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1 Introduction

Altova RaptorXML+XBRL Server (hereafter also called RaptorXML for short) is Altova’s third-generation, hyper-fast XML and XBRL* processor. It has been built to be optimized for the latest standards and parallel computing environments. Designed to be highly cross-platform capable, the engine takes advantage of today’s ubiquitous multi-core computers to deliver lightning fast processing of XML and XBRL data.

Note: XBRL processing is available only in RaptorXML+XBRL Server, not in RaptorXML Server.

This documentation
This documentation is delivered with the application and is also available online at the Altova website. This documentation is organized into the following sections:

- About RaptorXML
- Setting Up RaptorXML
- Command Line Interface
- Server APIs: HTTP, COM/.NET, Java
- Engine APIs: Python and .NET
- Taxonomy Manager
- Additional Information
- Engine Information

Altova website: XML validation server, XML validator

Last updated: 25 February 2021
2 About RaptorXML+XBRL Server

Editions and operating systems
There are two editions of RaptorXML, each suitable for a different set of requirements. These editions are described in the section Editions and Interfaces. RaptorXML is available for Windows, Linux, and macOS. For more details of system support, see the section System Requirements.

Features and supported specifications
RaptorXML provides XML and XBRL validation, XSLT transformations, and XQuery executions, each with a wide range of powerful options. See the section Features for a broad list of available functionality and key features. The section Supported Specifications provides a detailed list of the specifications to which RaptorXML conforms. For more information, visit the RaptorXML page at the Altova website.

XBRL certification
RaptorXML+XBRL Server has been XBRL-certified by XBRL International (see here for details). For more information about XBRL certification, see XBRL Software Certification.
2.1 Editions and Interfaces

Editions

RaptorXML is available in the following editions:

- **RaptorXML Server**, which is a fast server-based XML processing engine for the validation and processing of XML, XML Schema, XML Signature, XSLT, and XQuery documents.
- **RaptorXML+XBRL Server**, which provides all the functionality of RaptorXML Server plus a wide range of XBRL processing functionality.

See [here](#) for a list of the supported specifications.

Interfaces

After you install RaptorXML, you can access it in one or more of the following ways:

- **Command Line Interface (CLI)**: available for Windows, Linux, and macOS installations of RaptorXML
- **HTTP REST client interface**: uses RaptorXML's HTTP interface
- **COM/.NET server interface (Windows)**: uses RaptorXML's (i) COM/.NET API and (ii) HTTP REST interface
- **Java server interface (Windows, Linux, macOS)**: uses RaptorXML's (i) Java API and (ii) HTTP REST interface
- **Altova XMLSpy interface**: RaptorXML can be accessed from within the Altova XMLSpy user interface
- **Python engine interface**: uses (i) a RaptorXML Python-wheel in your Python environment and (ii) the Python API of RaptorXML in your Python script. In this way, RaptorXML functionality can be used in Python scripts together with third-party Python packages
- **.NET engine interface (Windows)**: uses (i) a RaptorXML DLL and (ii) the .NET API of RaptorXML to create independent .NET applications that use RaptorXML functionality

These seven interfaces can be organized into four groups:

- **Command Line Interface (CLI)**
- **Server APIs: HTTP, COM/.NET, Java**
- **Engine APIs: Python and .NET**
- **Altova XMLSpy**

CLI, Server APIs, and Altova XMLSpy

Access via the CLI, the Server APIs, and Altova XMLSpy can be visualized as in the figure below.

RaptorXML+XBRL Server defines an HTTP REST interface, which is used by clients to dispatch validation jobs to the server. Clients can either access the HTTP REST interface directly or use the high-level COM/.NET and Java Server APIs. These APIs provide easy to use COM/.NET and Java classes which manage the creation and dispatch of the HTTP REST requests. Additionally, Altova XMLSpy can be configured to run validation jobs on a remote RaptorXML+XBRL Server.
**Command line interface (CLI)**

- RaptorXML is licensed on the machine on which it is installed and this instance is accessed via the command line.
- Can be installed on Windows, Linux, and macOS.
- Provides command line usage for validation and processing of XML, XML Schema, XML Signature, XBRL, XQuery, and XSLT documents.
- Python 3.7 is bundled in RaptorXML and will be used when a Python script is invoked with the --script option.

**HTTP REST client interface**

- RaptorXML is licensed on the machine on which it is installed and this instance is accessed via an HTTP REST client interface.
- Client requests are made in JSON format. Each request is assigned a job directory on the server, in which output files are saved. Server responses to the client include all relevant information about the job.
- Python 3.7 is bundled in RaptorXML and will be used when a Python script is invoked with the --script option.

**COM/.NET interface**

- Available on Windows only.
- RaptorXML is automatically registered as a COM server object when installed, and so can be invoked from within applications and scripting languages that have programming support for COM calls.
- RaptorXML is licensed on the machine on which it is installed.
- The .NET interface is built as a wrapper around the COM interface.
• The **COM/.NET Server API** of RaptorXML provides objects that can be used in COM/.NET scripting languages to access RaptorXML functionality
• Python 3.7 is bundled in RaptorXML and will be used when a Python script is invoked with the **--script** option

**Java interface**

• RaptorXML is licensed on the machine on which it is installed and this instance is accessed via a Java program
• RaptorXML functionality is available in the **Java Server API** as Java classes that can be used in Java programs.
• Python 3.7 is bundled in RaptorXML and will be used when a Python script is invoked with the **--script** option

**Altova XMLSpy**

• If you have installed and licensed Altova XMLSpy and if XMLSpy can access RaptorXML+XBRL Server across a network, then you can use RaptorXML+XBRL Server from within the XMLSpy GUI to validate XML and XBRL documents, as well as run XSLT and XQuery transformations.
• You can validate the active document or all the documents in an XMLSpy project folder.
• The validation results are displayed in the Messages window of the XMLSpy GUI.
• In XMLSpy, you can (i) validate documents or (ii) run XSLT/XQuery transformation by using either XMLSpy's engines or RaptorXML Server.
• One of the main advantages of using Raptor is that you can configure individual validations by means of a large range of validation options. Furthermore, you can store a set of Raptor options as a "configuration" in XMLSpy, and then select one of your defined configurations for a particular Raptor validation. Using Raptor is also advantageous when large data collections are to be validated.

**Engine APIs**

The **Engine APIs** are different than the Server APIs in that RaptorXML is contained in the Python wheel and in the .NET DLL that are used, respectively, by Python programs and .NET applications (see figure below). These programs/applications must use, respectively, Raptor's **Python API** and Raptor's **.NET API** in order to access RaptorXML functionality.

**Note:** The functionality provided by the **Python API** and **.NET API** are considerably greater than that provided by either the CLI or the Server APIs; for example, the ability to read documents and manipulate data.
Python interface

- RaptorXML is available in a Python wheel package that can be installed in your Python 3.7 environment.
- A Python program can then be written that uses objects from RaptorXML's Python API. This API provides much more functionality than is available in the CLI, and it can be combined with the functionality provided by third-party libraries in your Python environment.
- When RaptorXML functionality is called via RaptorXML's Python wheel, a check is carried out for a valid RaptorXML license on that machine before the command is executed.

.NET interface

- RaptorXML is available in a DLL that can be embedded in an application that supports the .NET Framework. See the section .NET Framework API for information about the API.
- RaptorXML's .NET API provides access to RaptorXML. The available functionality is much more than that which is available in the RaptorXML CLI.
- When RaptorXML functionality is called via a .NET application, a check is carried out for a valid RaptorXML license on that machine.
2.2 System Requirements

RaptorXML+XBRL Server is supported on the following operating systems:

- **Windows**
  
  Windows 7 SP1 with Platform Update, Windows 8, Windows 10

- **Windows Server**
  
  Windows Server 2008 R2 SP1 with Platform Update or newer

- **Linux**
  
  - CentOS 7 or newer
  - RedHat 7 or newer
  - Debian 8 or newer
  - Ubuntu 16.04 LTS or newer

The following libraries are required as a prerequisite to install and run the application. If the packages below are not already available on your Linux machine, run the command `yum` (or `apt-get` if applicable) to install them.

<table>
<thead>
<tr>
<th>Required by</th>
<th>CentOS, RedHat</th>
<th>Debian</th>
<th>Ubuntu</th>
</tr>
</thead>
<tbody>
<tr>
<td>LicenseServer</td>
<td>krb5-libs</td>
<td>libgssapi-krb5-2</td>
<td>libgssapi-krb5-2</td>
</tr>
<tr>
<td>RaptorXML+XBRL Server</td>
<td>qt5-qtbase-gui, krb5-libs</td>
<td>libqt5gui5, libgssapi-krb5-2</td>
<td>libqt5gui5, libgssapi-krb5-2</td>
</tr>
</tbody>
</table>

**Note:** If you plan to use Altova's Charts functionality, then at least one font must be installed on your system to ensure that charts will be rendered correctly. To list installed fonts, use, for example, the `fc-list` command of the Fontconfig library.

- **macOS**
  
  macOS 10.13 or newer

RaptorXML is available for both 32-bit and 64-bit machines. Specifically these are x86 and amd64 (x86-64) instruction-set based cores: Intel Core i5, i7, XEON E5. To use RaptorXML via a COM interface, users should have privileges to use the COM interface, that is, to register the application and execute the relevant applications and/or scripts.
2.3 Features

RaptorXML provides the functionality listed below. Most functionality is common to command line usage and COM interface usage. One major difference is that COM interface usage on Windows allows documents to be constructed from text strings via the application or scripting code (instead of referencing XML, XBRL, DTD, XML Schema, XSLT, or XQuery files).

XML and XBRL Validation

- Validates the supplied XML or XBRL document against internal or external DTDs or XML Schemas
- Checks well-formedness of XML, DTD, XML Schema, XSLT, and XQuery documents
- Validates XBRL taxonomies, and XBRL documents against XBRL taxonomies
- Execution of XBRL Formulas and Validation Assertions
- Rendering of XBRL tables
- Support for the XBRL 2.1, Dimensions 1.0, and Formula 1.0 specifications, and the Table Linkbase 1.0
- Support for Inline XBRL
- Support for XBRL Taxonomy Packages
- Support for XULE queries

XSLT Transformations

- Transforms XML using supplied XSLT 1.0, 2.0, or 3.0 document
- XML and XSLT documents can be provided as a file (via a URL) or, in the case of COM usage, as a text string
- Output is returned as a file (at a named location) or, in the case of COM usage, as a text string
- XSLT parameters can be supplied via the command line and via the COM interface
- Altova extension functions, as well as XBRL, Java and .NET extension functions, enable specialized processing. This allows, for example, the creation of such features as charts and barcode in output documents

XQuery Execution

- Executes XQuery 1.0 and 3.0 documents
- XQuery and XML documents can be provided as a file (via a URL) or, in the case of COM usage, as a text string
- Output is returned as a file (at a named location) or, in the case of COM usage, as a text string
- External XQuery variables can be supplied via the command line and via the COM interface
- Serialization options include: output encoding, output method (that is, whether the output is XML, XHTML, HTML, or text), omitting the XML declaration, and indentation

JSON and Avro Validation/Conversion

- Validation of JSON schema and Avro schema documents
- Validation of JSON instances against JSON schemas and Avro schemas
- Validation of Avro binaries
- Conversion of Avro binaries to Avro schema and Avro data in JSON format
- Conversion of Avro JSON data to Avro binary
Hyper-performance Features

- Ultra-high performance code optimizations
  - Native instruction-set implementations
  - 32-bit or 64-bit version
- Ultra-low memory footprint
  - Extremely compact in-memory representation of XML Information Set
  - Streaming instance validation
- Cross platform capabilities
- Highly scalable code for multi-CPU/multi-core/parallel computing
- Parallel loading, validation, and processing by design

Developer Features

- Superior error reporting capabilities
- Windows server mode and Unix daemon mode (via command-line options)
- Python 3.x interpreter for scripting included
- RaptorXML functionality in a Python package enables import of the functionality as a Python library
- .NET Framework API allows access to underlying XML and XBRL data model
- COM API on Windows platform
- Java API everywhere
- XPath Extension functions Java, .NET, XBRL, and more
- Streaming serialization
- Built-in HTTP server with REST validation API

For more information, see the section Supported Specifications and the Altova website.
2.4 Supported Specifications

RaptorXML supports the following specifications.

W3C Recommendations
Website: World Wide Web Consortium (W3C)

- Extensible Markup Language (XML) 1.0 (Fifth Edition)
- Extensible Markup Language (XML) 1.1 (Second Edition)
- Namespaces in XML 1.0 (Third Edition)
- Namespaces in XML 1.1 (Second Edition)
- XML Information Set (Second Edition)
- XML Base (Second Edition)
- XML Inclusions (XInclude) Version 1.0 (Second Edition)
- XML Linking Language (XLink) Version 1.0
- W3C XML Schema Definition Language (XSD) 1.1 Part 1: Structures
- W3C XML Schema Definition Language (XSD) 1.1 Part 2: Datatypes
- XPointer Framework
- XPointer xmlns() Scheme
- XPointer element() Scheme
- XML Path Language (XPath) Version 1.0
- XSL Transformations (XSLT) Version 1.0
- XML Path Language (XPath) 2.0 (Second Edition)
- XSL Transformations (XSLT) Version 2.0
- XQuery 1.0: An XML Query Language (Second Edition)
- XQuery 1.0 and XPath 2.0 Functions and Operators (Second Edition)
- XSLT 2.0 and XQuery 1.0 Serialization (Second Edition)
- XML Path Language (XPath) 3.0
- XML Path Language (XPath) 3.1
- XQuery 3.0: An XML Query Language
- XQuery Update Facility 1.0
- XPath and XQuery Functions and Operators 3.0
- XSLT and XQuery Serialization 3.0

W3C Working Drafts & Candidate Recommendations
Website: World Wide Web Consortium (W3C)

- XSL Transformations (XSLT) Version 3.0 (subset)
- XQuery 3.1: An XML Query Language
- XPath and XQuery Functions and Operators 3.1
- XQuery Update Facility 3.0
- XSLT and XQuery Serialization 3.1

OASIS Standards
Website: OASIS Standards
• XML Catalogs V 1.1 - OASIS Standard V1.1

**JSON/Avro Standards**
Websites: JSON Schema and Apache Avro

• JSON Schema Draft 4
• JSON Schema Draft 6
• JSON Schema Draft 7
• Apache Avro™ 1.8.1

**XBRL Recommendations**
Website: Extensible Business Reporting Language (XBRL)

• XBRL 2.1
• Dimensions 1.0
• Extensible Enumerations 1.0 and 2.0 (as well as deprecated proposed recommendation 1.1)
• Formula Specifications 1.0
  o Aspect Cover Filters
  o Assertion Severity 1.0
  o Boolean Filters
  o Concept Filters
  o Concept Relation Filters
  o Consistency Assertions
  o Custom Function Implementation
  o Dimension Filters
  o Entity Filters
  o Existence Assertions
  o Formula
  o Function Registry
  o General Filters
  o Generic Messages
  o Implicit Filters
  o Match Filters
  o Period Filters
  o Relative Filters
  o Segment Scenario Filters
  o Tuple Filters
  o Unit Filters
  o Validation
  o Validation Messages
  o Value Assertions
  o Value Filters
  o Variables
• Table Linkbase 1.0
• Function Registry 1.0
• Data Type Registry
• Generic Links 1.0
  o Generic References
  o Generic Labels
  o Generic Preferred Label
• Units Registry 1.0
- Inline XBRL 1.0 and 1.1
  - Transformation Registry 1
  - Transformation Registry 2
  - Transformation Registry 3
- Taxonomy Packages 1.0
- XBRL Versioning 1.0
- XULE 1.0
3 Setting Up RaptorXML

This section describes procedures for setting up RaptorXML+XBRL Server. It describes the following:

- Information about processor cores and licenses
- Installation and licensing of RaptorXML on Windows, on Linux, and on macOS systems.
- How to use XML Catalogs.
- How to work with Altova global resources.
- Security issues related to RaptorXML.

RaptorXML has special options that support XML Catalogs and Altova global resources, both of which enhance portability and modularity. You can therefore leverage the use of these features in your environment to considerable advantage.

Note: Security concerns and how to set up important security solutions are described in the section Security Issues.
3.1 Processor Cores and Licenses

The licensing of Altova server products is based on the number of physical processor cores available on the product machine (as opposed to the number of logical cores). For example, a dual-core processor has two cores, a quad-core processor four cores, a hexa-core processor six cores, and so on. The number of cores licensed for a product must be greater than or equal to the number of cores available on that server machine, whether the server is a physical or virtual machine. For example, if a server has eight cores, you must purchase an 8-core license. You can also combine licenses to achieve the core count. So, two 4-core licenses can be used for an eight-core server instead of one 8-core license.

If you are using a computer server with a large number of CPU cores but only have a low volume to process, you may also create a virtual machine that is allocated a smaller number of cores, and purchase a license for that number. Such a deployment, of course, will have less processing speed than if all available cores of the computer were utilized.

Note: Each Altova server product license can be used for only one client machine at a time—the machine on which the Altova server product is installed—even if the license has unused licensing capacity. For example, if a 10-core license is used for a client machine that has 6 CPU cores, then the remaining 4 cores of licensing capacity cannot be used simultaneously for another client machine.

Single-thread execution

If an Altova server product allows single-thread execution, an option for Single-thread execution will be available. In these cases, if an Altova server-product license for only one core is available in the license pool, a machine with multiple cores can be assigned this one-core license. In such a case, the machine will run that product on a single core. Processing will therefore be slower, because multi-threading (which is possible on multiple cores) will not be available. The product will be executed in single thread mode on that machine.

To assign a single-core license to a multiple-core machine, in LicenseServer, select the Limit to single thread execution check box for that product.

Estimate of core requirements

There are various external factors that influence the data volumes and processing times your server can handle (for example: the hardware, the current load on the CPU, and memory allocation of other applications running on the server). In order to measure performance as accurately as possible, test the applications in your environment with data volumes and in conditions that approximate as closely as possible to real business situations.
3.2 Setup on Windows

This section describes the installation and licensing of RaptorXML+XBRL Server on Windows systems.

**Installation on Windows**
- System requirements
- Installing RaptorXML+XBRL Server
- Altova LicenseServer
- LicenseServer versions
- Trial license
- Application folder location

**Licensing on Windows**
- Start ServiceController
- Start LicenseServer
- Start RaptorXML+XBRL Server
- Register RaptorXML+XBRL Server
- Assign a license

**Note:** From version 2021 onwards, a 32-bit version of RaptorXML+XBRL Server cannot be installed over a 64-bit version, or a 64-bit version over a 32-bit version. You must either (i) remove the older version before installing the newer version, or (ii) upgrade to a newer version that is the same bit version as your older installation.

3.2.1 Installation on Windows

RaptorXML+XBRL Server is available for installation on Windows systems. Its installation and setup procedure is described below.

**System requirements**

- **Windows**
  - Windows 7 SP1 with Platform Update, Windows 8, Windows 10

- **Windows Server**
  - Windows Server 2008 R2 SP1 with Platform Update or newer

**Installing RaptorXML+XBRL Server**

RaptorXML+XBRL Server can be installed on Windows systems as follows:

- As a separate standalone server product called RaptorXML+XBRL Server. To install RaptorXML+XBRL Server, download and run the RaptorXML+XBRL Server installer. Follow the on-screen instructions.
- As part of the FlowForce Server installation package. To install RaptorXML+XBRL Server as part of the FlowForce Server package, download and run the FlowForce Server installer. Follow the on-screen instructions and make sure you check the option for installing RaptorXML+XBRL Server.
The installers of both RaptorXML+XBRL Server and FlowForce Server are available at the Altova Download Center (http://www.altova.com/download.html).

After installation, the RaptorXML+XBRL Server executable will be located by default at:

<ProgramFilesFolder>\Altova\RaptorXMLXBRLServer2021\bin\RaptorXMLXBRL.exe

All the necessary registrations to use RaptorXML+XBRL Server via a COM interface, as a Java interface, and in the .NET environment will be done by the installer. This includes registering the RaptorXML+XBRL Server executable as a COM server object and adding the Altova.RaptorXML.dll file to the .NET reference library.

**Installation on Windows Server Core**

Windows Server Core is a minimal Windows installation that does not use a number of GUI features. You can install RaptorXML+XBRL Server on a Windows Server Core machine as follows:

1. Download the RaptorXML+XBRL Server installer executable from the Altova website. This file is named RaptorXMLXBRLServer<version>.exe. Make sure to choose the executable matching your server platform (32-bit or 64-bit).
2. On a standard Windows machine (not the Windows Server Core machine), run the command RaptorXMLXBRLServer<version>.exe /u. This unpacks the .msi file to the same folder as the installer executable.
3. Copy the unpacked .msi file to the Windows Server Core machine.
4. If you are updating an earlier version of RaptorXML+XBRL Server, shut down RaptorXML+XBRL Server before carrying out the next step.
5. Use the .msi file for the installation by running the command msiexec /i RaptorXMLXBRLServer.msi. This starts the installation on Windows Server Core.

Keep the .msi file/s in a safe place. You will need them later to uninstall, repair or modify your installation/s.

To test the return value of the installation, run a script similar to the following. The return code will be in the %errorlevel% environment variable. A return code of 0 indicates success.

```
start /wait msiexec /i RaptorXMLXBRLServer.msi /q
echo %errorlevel%
```

For a silent installation with a return code and a log of the installation process, run:

```
start /wait msiexec /i RaptorXMLXBRLServer.msi /q /L*v! <pathToInstallLogFile>
```

To modify the installation, run:

```
msiexec /m RaptorXMLXBRLServer.msi
```

To repair the installation, run:

```
msiexec /r RaptorXMLXBRLServer.msi
```

To uninstall RaptorXML+XBRL Server, run:

```
msiexec /x RaptorXMLXBRLServer.msi
```

To uninstall RaptorXML+XBRL Server silently and report the detailed outcome in a log file:

```
start /wait msiexec /x RaptorXMLXBRLServer.msi /q /L*v! <pathToUninstallLogFile>
```
Note: On Windows Server Core, the charts functionality of RaptorXML+XBRL Server will not be available. To install taxonomies, use the Taxonomy Package Manager via the command line. See the RaptorXML+XBRL Server manual for information about how to do this.

Altova LicenseServer

- In order for RaptorXML+XBRL Server to work, it must be licensed via an Altova LicenseServer on your network.
- When you install RaptorXML+XBRL Server or FlowForce Server on Windows systems, an option is available that allows you to download and install Altova LicenseServer together with RaptorXML+XBRL Server or FlowForce Server.
- If an Altova LicenseServer is already installed on your network, you do not need to install another one—unless a newer version of Altova LicenseServer is required. (See next point, LicenseServer versions.)
- During the installation process of RaptorXML+XBRL Server or FlowForce Server, check or uncheck the option for installing Altova LicenseServer as appropriate. Note the following points:
  a. If you haven't installed Altova LicenseServer yet, leave the default settings as is. The wizard will install the latest version of Altova LicenseServer on the computer where you are running the wizard.
  b. If you haven't installed Altova LicenseServer yet and want to install Altova LicenseServer on another computer, clear the Install Altova LicenseServer on this machine check box, and then choose Register Later. In this case, you will need to install Altova LicenseServer and register RaptorXML+XBRL Server separately.
  c. If Altova LicenseServer has already been installed on your computer but it has a lower version than the one indicated by the installation wizard, leave the default settings as is. In this case, the installation wizard will automatically upgrade your LicenseServer version with the one indicated on the dialog box. Note that the existing registration and licensing information will be preserved after the upgrade.
  d. If Altova LicenseServer has already been installed on your computer or network, and if it has the same version as the one indicated by the wizard, do the following:
    i. Clear the Install Altova LicenseServer on this machine check box.
    ii. Under Register this product with, choose the Altova LicenseServer instance on which you want to register RaptorXML+XBRL Server, or choose Register later. Note that you can always select Register Later if you want to ignore the LicenseServer associations and carry on with the installation of RaptorXML+XBRL Server.

See the section, Licensing on Windows, for more information about how to register and license RaptorXML+XBRL Server with Altova LicenseServer.

LicenseServer versions

- Altova server products must be licensed either with the version of LicenseServer that is appropriate to the installed RaptorXML+XBRL Server version, or with a later version of LicenseServer.
- The LicenseServer version that is appropriate for a particular version of RaptorXML+XBRL Server is displayed during the installation of RaptorXML+XBRL Server. You can install this version of LicenseServer along with RaptorXML+XBRL Server, or you can install LicenseServer separately.
- Before installing a newer version of LicenseServer, any older one must be de-installed. The
LicenseServer installer will do this automatically if it detects an older version.

- LicenseServer versions are backwards compatible. They will work with older versions of RaptorXML+XBRL Server.
- If you install a new version of RaptorXML+XBRL Server and if your installed LicenseServer version is older than the appropriate LicenseServer, install the latest version available on the Altova website.
- At the time of LicenseServer de-installation, all registration and licensing information held in the older version of LicenseServer will be saved to a database on your server machine. This data will be imported automatically into the newer version when the newer version is installed.
- The version number of the currently installed LicenseServer is given at the bottom of the LicenseServer configuration page (all tabs).

**Current version: 3.6**

### Trial license

During the installation process, you will be given the option of requesting a 30-day trial license for RaptorXML+XBRL Server. After submitting the request, a trial license will be sent to the email address you registered.

### Application folder location

The application will be installed in the following folder:

<table>
<thead>
<tr>
<th>Operating System</th>
<th>Folder Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Windows 7, 8, 10</td>
<td>C:\Program Files\Altova\</td>
</tr>
<tr>
<td>32 bit Version on 64-bit OS</td>
<td>C:\Program Files (x86)\Altova\</td>
</tr>
</tbody>
</table>

### 3.2.2 Licensing on Windows

RaptorXML+XBRL Server must be licensed with Altova LicenseServer. Licensing is a two-step process:

1. **Register RaptorXML+XBRL Server** with LicenseServer. Registration is done from RaptorXML+XBRL Server.
2. **Assign a license** to RaptorXML+XBRL Server from LicenseServer. Download the latest version of LicenseServer from the [Altova website](https://www.altova.com), and install it on your local machine or a machine on your network.

The steps to carry out are given below in brief. For detailed information, see the [LicenseServer user manual](https://www.altova.com) at the [Altova website](https://www.altova.com).

### Start ServiceController

Altova ServiceController is started in order to start Altova LicenseServer and Altova RaptorXML+XBRL Server.

Altova ServiceController (ServiceController for short) is an application for conveniently starting, stopping
and configuring Altova services on Windows systems.

ServiceController is installed with Altova LicenseServer and with Altova server products that are installed as services (FlowForce Server, RaptorXML(+XBRL) Server, and Mobile Together Server). It can be started by clicking Start | Altova LicenseServer | Altova ServiceController. (This command is also available in the Start menu folders of Altova server products that are installed as services (FlowForce Server, RaptorXML(+XBRL) Server, and Mobile Together Server).) After ServiceController has been started, it can be accessed via the system tray (screenshot below).

To specify that ServiceController starts automatically on logging in to the system, click the ServiceController icon in the system tray to display the ServiceController menu (screenshot below), and then toggle on the command Run Altova ServiceController at Startup. (This command is toggled on by default.) To exit ServiceController, click the ServiceController icon in the system tray and, in the menu that appears (see screenshot below), click Exit Altova ServiceController.

Start LicenseServer

To start LicenseServer, click the ServiceController icon in the system tray, hover over Altova LicenseServer in the menu that pops up (see screenshot below), and then select Start Service from the LicenseServer submenu. If LicenseServer is already running, the Start Service option will be disabled.
Start RaptorXML+XBRL Server

To start RaptorXML+XBRL Server, click the ServiceController icon in the system tray, hover over Altova RaptorXML+XBRL Server in the menu that pops up (see screenshot below), and then select Start Service from the RaptorXML+XBRL Server submenu. If RaptorXML+XBRL Server is already running, the Start Service option will be disabled.

**Note:** If RaptorXML+XBRL Server has been licensed to run only single-thread executions (typically because your machine is multiple-core, but your license is single-core), then you can use only one instance of RaptorXML+XBRL Server at a time: either as a service or from the command line. This is because the single-core license will be assigned automatically to the first instance that is started and is currently running; a second instance cannot be started till the first instance stops running.

- If you wish to use RaptorXML+XBRL Server from the command line but the service is already running, then you must stop the service before using the command line.
- If you wish to start RaptorXML+XBRL Server as a service, make sure that no command line action is currently being executed. Otherwise, you will not be able to start the service.

Register RaptorXML+XBRL Server

To register RaptorXML+XBRL Server from the command line interface, use the licenseserver command:
RaptorXMLXBRL licenseserver [options] ServerName-Or-IP-Address

For example, if localhost is the name of the server on which LicenseServer is installed:

RaptorXMLXBRL licenseserver localhost

If RaptorXML+XBRL Server was installed as part of a FlowForce Server installation, registering FlowForce Server with LicenseServer will automatically also register RaptorXML+XBRL Server. Essentially: (i) Start Altova FlowForce Web as a service via ServiceController (see previous point); (ii) Enter your password to access the Setup page; (iii) Select the LicenseServer name or address and click Register with LicenseServer. For more information, see Register FlowForce Server.

After successful registration, go to the Client Management tab of LicenseServer's configuration page to assign a license to RaptorXML+XBRL Server.

▼ Assign a license

After successfully registering RaptorXML+XBRL Server, it will be listed in the Client Management tab of the configuration page of LicenseServer. Go there and assign a license to RaptorXML+XBRL Server.

The licensing of Altova server products is based on the number of processor cores available on the product machine. For example, a dual-core processor has two cores, a quad-core processor four cores, a hexa-core processor six cores, and so on. The number of cores licensed for a product must be greater than or equal to the number of cores available on that server machine, whether the server is a physical or virtual machine. For example, if a server has eight cores (an octa-core processor), you must purchase at least one 8-core license. You can also combine licenses to achieve the core count. So, two 4-core licenses can also be used for an octa-core server instead of one 8-core license.

If you are using a computer server with a large number of CPU cores but only have a low volume to process, you may also create a virtual machine that is allocated a smaller number of cores, and purchase a license for that number. Such a deployment, of course, will have less processing speed than if all available cores on the server were utilized.

Note: Each Altova server product license can be used for only one client machine—the machine on which the Altova server product is installed—at a time, even if the license has unused licensing capacity. For example, if a 10-core license is used for a client machine that has 6 CPU cores, then the remaining 4 cores of licensing capacity cannot be used simultaneously for another client machine.
3.3 Setup on Linux

This section describes the installation and licensing of RaptorXML+XBRL Server on Linux systems (Debian, Ubuntu, CentOS, RedHat).

Installation on Linux

- System requirements
- Note about root user
- Uninstall old versions of Altova server products
- Download the Linux package
- Install RaptorXML+XBRL Server
- Altova LicenseServer
- LicenseServer versions

Licensing on Linux

- Note about root user
- Start LicenseServer
- Start RaptorXML+XBRL Server
- Register RaptorXML+XBRL Server
- Assign a license

3.3.1 Installation on Linux

RaptorXML+XBRL Server is available for installation on Linux systems. Its installation and setup procedure is described below.

▼ System requirements

▼ Linux

- CentOS 7 or newer
- RedHat 7 or newer
- Debian 8 or newer
- Ubuntu 16.04 LTS or newer

The following libraries are required as a prerequisite to install and run the application. If the packages below are not already available on your Linux machine, run the command `yum (or apt-get if applicable)` to install them.

<table>
<thead>
<tr>
<th>Required by</th>
<th>CentOS, RedHat</th>
<th>Debian</th>
<th>Ubuntu</th>
</tr>
</thead>
<tbody>
<tr>
<td>LicenseServer</td>
<td>krb5-libs</td>
<td>libgssapi-krb5-2</td>
<td>libgssapi-krb5-2</td>
</tr>
<tr>
<td>RaptorXML+XBRL</td>
<td>qt5-qtbase-gui, krb5-</td>
<td>libqt5gui5, libgssapi-</td>
<td>libqt5gui5, libgssapi-</td>
</tr>
<tr>
<td>Server</td>
<td>libs</td>
<td>krb5-2</td>
<td>krb5-2</td>
</tr>
</tbody>
</table>

Note: If you plan to use Altova's Charts functionality, then at least one font must be installed on your system to ensure that charts will be rendered correctly. To list installed fonts, use, for example, the `fc-list` command of the Fontconfig library.
FlowForce Server integration

If you are installing RaptorXML+XBRL Server together with FlowForce Server, it is recommended that you install FlowForce Server first. Otherwise, after having installed both RaptorXML+XBRL Server and FlowForce Server, run the following command:

```bash
cp /opt/Altova/RaptorXMLXBRLServer2021/etc/*.tool /opt/Altova/FlowForceServer2021/tools
```

This command copies the `.tool` file from `/etc` directory of RaptorXML+XBRL Server to the FlowForce Server `/tools` directory. The `.tool` file is required by FlowForce Server; it contains the path to the RaptorXML+XBRL Server executable. You do not need to run this command if you install FlowForce Server before installing RaptorXML+XBRL Server.

Note about root user

You must have administrator (root) privileges to be able to install RaptorXML+XBRL Server. Installation must be done, therefore, as the root user. If you are logged in as root, you can leave out the `sudo` keyword from the commands listed below.

Uninstall old versions of Altova server products

If you need to uninstall a previous version, do this as follows. On the Linux command line interface (CLI), you can check which Altova server products are installed with the following command:

- [Debian, Ubuntu]: `dpkg --list | grep Altova`
- [CentOS, RedHat]: `rpm -qa | grep server`

If RaptorXML+XBRL Server is not installed, go ahead with the installation as documented below in `Installing RaptorXML+XBRL Server`.

If RaptorXML+XBRL Server is installed and you wish to install a newer version of RaptorXML+XBRL Server, uninstall the old version with the command:

- [Debian, Ubuntu]: `sudo dpkg --remove raptorxmlxbrlserver`
- [CentOS, RedHat]: `sudo rpm -e raptorxmlxbrlserver`

If you need to uninstall an old version of Altova LicenseServer, do this with the following command:

- [Debian, Ubuntu]: `sudo dpkg --remove licenseserver`
- [CentOS, RedHat]: `sudo rpm -e licenseserver`

On Debian and Ubuntu systems, it might happen that RaptorXML+XBRL Server still appears in the list of installed products after it has been installed. In this case, run the `purge` command to clear RaptorXML+XBRL Server from the list. You can also use the `purge` command instead of the `remove` command listed above.

- [Debian, Ubuntu]: `sudo dpkg --purge raptorxmlxbrlserver`

Download the Linux package

RaptorXML+XBRL Server installation packages for the following Linux systems are available at the [Altova website](https://www.altova.com/).

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Altova RaptorXML+XBRL Server 2021
After downloading the Linux package, copy it to any directory on the Linux system. Since you will need an Altova LicenseServer in order to run RaptorXML+XBRL Server, you may want to download LicenseServer from the Altova website at the same time as you download RaptorXML+XBRL Server, rather than download it at a later time.

Install RaptorXML+XBRL Server

In a terminal window, switch to the directory where you have copied the Linux package. For example, if you copied it to a user directory called MyAltova (that is located, say, in the /home/User directory), then switch to this directory as follows:

```
cd /home/User/MyAltova
```

Install RaptorXML+XBRL Server with the following command:

- [Debian]: `sudo dpkg --install raptorxmlxbrlserver-2021-debian.deb`
- [Ubuntu]: `sudo dpkg --install raptorxmlxbrlserver-2021-ubuntu.deb`
- [CentOS]: `sudo rpm -ivh raptorxmlxbrlserver-2021-1.x86_64.rpm`
- [RedHat]: `sudo rpm -ivh raptorxmlxbrlserver-2021-1.x86_64.rpm`

The RaptorXML+XBRL Server package will be installed in the folder:

```
/opt/Altova/RaptorXMLXBRLServer2021
```

Altova LicenseServer

In order for any Altova Server product—including RaptorXML+XBRL Server—to run, that server product must be licensed via an Altova LicenseServer on your network.

On Linux systems, Altova LicenseServer will need to be installed separately. Download LicenseServer from the Altova website and copy the package to any directory on the Linux system. Install it just like you installed RaptorXML+XBRL Server (see previous step).

- [Debian]: `sudo dpkg --install licenseserver-3.6-debian.deb`
- [Ubuntu]: `sudo dpkg --install licenseserver-3.6-ubuntu.deb`
- [CentOS]: `sudo rpm -ivh licenseserver-3.6-1.x86_64.rpm`
- [RedHat]: `sudo rpm -ivh licenseserver-3.6-1.x86_64.rpm`

The LicenseServer package will be installed in:

```
/opt/Altova/LicenseServer
```

For information about how to register RaptorXML+XBRL Server with Altova LicenseServer and license it, see the section, Licensing on Linux. Also see the LicenseServer documentation for more detailed information.
LicenseServer versions

- Altova server products must be licensed either with the version of LicenseServer that is appropriate to the installed RaptorXML+XBRL Server version, or with a later version of LicenseServer.
- The LicenseServer version that is appropriate for a particular version of RaptorXML+XBRL Server is displayed during the installation of RaptorXML+XBRL Server. You can install this version of LicenseServer along with RaptorXML+XBRL Server, or you can install LicenseServer separately.
- Before installing a newer version of LicenseServer, any older one must be de-installed. The LicenseServer installer will do this automatically if it detects an older version.
- LicenseServer versions are backwards compatible. They will work with older versions of RaptorXML+XBRL Server.
- If you install a new version of RaptorXML+XBRL Server and if your installed LicenseServer version is older than the appropriate LicenseServer, install the latest version available on the Altova website.
- At the time of LicenseServer de-installation, all registration and licensing information held in the older version of LicenseServer will be saved to a database on your server machine. This data will be imported automatically into the newer version when the newer version is installed.
- The version number of the currently installed LicenseServer is given at the bottom of the LicenseServer configuration page (all tabs).

Current version: 3.6

3.3.2 Licensing on Linux

RaptorXML+XBRL Server must be licensed with Altova LicenseServer. Licensing is a two-step process:

1. **Register RaptorXML+XBRL Server** with LicenseServer. Registration is done from RaptorXML+XBRL Server.
2. **Assign a license** to RaptorXML+XBRL Server from LicenseServer. Download the latest version of LicenseServer from the [Altova website](https://www.altova.com), and install it on your local machine or a machine on your network.

The steps to carry out are given below in brief. For detailed information, see the [LicenseServer user manual](https://www.altova.com) at the [Altova website](https://www.altova.com).

**Note about root user**

You must have administrator (root) privileges to be able to install RaptorXML+XBRL Server. Installation must be done, therefore, as the root user. If you are logged in as `root`, you can leave out the `sudo` keyword from the commands listed below.

**Start LicenseServer**

To correctly register and license RaptorXML+XBRL Server with LicenseServer, LicenseServer must be running as a daemon on the network. Start LicenseServer as a daemon with the following command:
Setting Up RaptorXML Setup on Linux

If at any time you need to stop LicenseServer, replace `start` with `stop` in the above commands. For example:

```
sudo /etc/init.d/licenseserver stop
```

### Start RaptorXML+XBRL Server

Start RaptorXML+XBRL Server as a daemon with the following command:

```
[< Debian 8]  sudo /etc/init.d/raptorxmlxbrlserver start
[≥ Debian 8]  sudo systemctl start raptorxmlxbrlserver
[< CentOS 7]  sudo initctl start raptorxmlxbrlserver
[≥ CentOS 7]  sudo systemctl start raptorxmlxbrlserver
[< Ubuntu 15] sudo initctl start raptorxmlxbrlserver
[≥ Ubuntu 15] sudo systemctl start raptorxmlxbrlserver
[RedHat]      sudo initctl start raptorxmlxbrlserver
```

### Register RaptorXML+XBRL Server

To register RaptorXML+XBRL Server from the command line interface, use the `licenseserver` command:

```
sudo /opt/Altova/RaptorXMLXBRLServer2021/bin/raptorxmlxbrl licenseserver [options] ServerName-Or-IP-Address
```

For example, if `localhost` is the name of the server on which LicenseServer is installed:

```
sudo /opt/Altova/RaptorXMLXBRLServer2021/bin/raptorxmlxbrl licenseserver localhost
```

In the command above, `localhost` is the name of the server on which LicenseServer is installed. Notice also that the location of the RaptorXML+XBRL Server executable is:
/opt/Altova/RaptorXMLXBRLServer2021/bin/

After successful registration, go to the Client Management tab of LicenseServer’s configuration page to assign a license to RaptorXML+XBRL Server.

Assign a license

After successfully registering RaptorXML+XBRL Server, it will be listed in the Client Management tab of the configuration page of LicenseServer. Go there and assign a license to RaptorXML+XBRL Server.

The licensing of Altova server products is based on the number of processor cores available on the product machine. For example, a dual-core processor has two cores, a quad-core processor four cores, a hexa-core processor six cores, and so on. The number of cores licensed for a product must be greater than or equal to the number of cores available on that server machine, whether the server is a physical or virtual machine. For example, if a server has eight cores (an octa-core processor), you must purchase at least one 8-core license. You can also combine licenses to achieve the core count. So, two 4-core licenses can also be used for an octa-core server instead of one 8-core license.

If you are using a computer server with a large number of CPU cores but only have a low volume to process, you may also create a virtual machine that is allocated a smaller number of cores, and purchase a license for that number. Such a deployment, of course, will have less processing speed than if all available cores on the server were utilized.

Note: Each Altova server product license can be used for only one client machine—the machine on which the Altova server product is installed—at a time, even if the license has unused licensing capacity. For example, if a 10-core license is used for a client machine that has 6 CPU cores, then the remaining 4 cores of licensing capacity cannot be used simultaneously for another client machine.
3.4 Setup on macOS

This section describes the installation and licensing of RaptorXML+XBRL Server on macOS systems.

Installation on macOS

- System requirements
- Note about root user
- Uninstall old versions of Altova server products
- Download the macOS package
- Install RaptorXML+XBRL Server
- Altova LicenseServer
- LicenseServer versions

Licensing on macOS

- Note about root user
- Start LicenseServer
- Start RaptorXML+XBRL Server
- Register RaptorXML+XBRL Server
- Assign a license

3.4.1 Installation on macOS

RaptorXML+XBRL Server is available for installation on macOS systems. Its installation and setup procedure is described below.

- System requirements
  - macOS 10.13 or newer

- FlowForce Server integration
  
  If you install RaptorXML+XBRL Server together with FlowForce Server, it is recommended that you install FlowForce Server first. If you install RaptorXML+XBRL Server before FlowForce Server, then, after having installed both RaptorXML+XBRL Server and FlowForce Server, run the following command:

  `cp /usr/local/Altova/RaptorXMLXBRLServer2021/etc/*.tool /usr/local/Altova/FlowForceServer2021/tools`

  This command copies the `.tool` file from `/etc` directory of RaptorXML+XBRL Server to the FlowForce Server `/tools` directory. The `.tool` file is required by FlowForce Server; it contains the path to the RaptorXML+XBRL Server executable. You do not need to run this command if you install FlowForce Server before installing RaptorXML+XBRL Server.

- Note about root user
You must have administrator (root) privileges to be able to install RaptorXML+XBRL Server. Installation must be done, therefore, as the root user. If you are logged in as root, you can leave out the sudo keyword from the commands listed below.

**Uninstall old versions of Altova server products**

Before uninstalling RaptorXML+XBRL Server, stop the service with the following command:

```bash
sudo launchctl unload /Library/LaunchDaemons/com.altova.RaptorXMLXBRLServer2021.plist
```

To check whether the service has been stopped, open the Activity Monitor in Finder and make sure that RaptorXML+XBRL Server is not in the list. In the Applications folder in Finder, right-click the RaptorXML+XBRL Server icon and select **Move to Trash**. The application will be moved to Trash. You will, however, still need to remove the application from the **usr** folder. Do this with the command:

```bash
sudo rm -rf /usr/local/Altova/RaptorXMLXBRLServer2021/
```

If you need to uninstall an old version of Altova LicenseServer, you must first stop it running as a service. Do this with the following command:

```bash
sudo launchctl unload /Library/LaunchDaemons/com.altova.LicenseServer.plist
```

To check whether the service has been stopped, open the Activity Monitor in Finder and make sure that LicenseServer is not in the list. Then proceed to uninstall in the same way as described above for RaptorXML+XBRL Server.

**Download the disk image file**

Download the disk image (.dmg) file from the Altova website (http://www.altova.com/download.html).

**Install RaptorXML+XBRL Server**

Click to open the downloaded disk image (.dmg). This causes the RaptorXML+XBRL Server installer to appear as a new virtual drive on your computer. On the new virtual drive, double-click the installer package (.pkg). Go through the successive steps of the installer wizard. These are self-explanatory and include one step in which you have to agree to the license agreement before being able to proceed. To eject the drive after installation, right-click it and select **Eject**.

The RaptorXML+XBRL Server package will be installed in the folder:

- `/usr/local/Altova/RaptorXMLXBRLServer2021` (application binaries)
- `/var/Altova/RaptorXMLXBRLServer` (data files: database and logs)

RaptorXML+XBRL Server server daemon starts automatically after installation and a re-boot of the machine. You can start RaptorXML+XBRL Server as a daemon with the following command:

```bash
sudo launchctl load /Library/LaunchDaemons/com.altova.RaptorXMLXBRLServer2021.plist
```

**Altova LicenseServer**

In order for any Altova Server product—including RaptorXML+XBRL Server—to run, that server product must be licensed via an Altova LicenseServer on your network.
The Altova LicenseServer installation package is available on the virtual drive you have mounted in the previous step. To install Altova LicenseServer, double-click the installer package included on the virtual drive and follow the on-screen instructions. You will need to accept the license agreement for installation to proceed.

Altova LicenseServer can also be downloaded and installed separately from the Altova website (http://www.altova.com/download.html).

The LicenseServer package will be installed in the folder:

```
/usr/local/Altova/LicenseServer
```

For information about how to register RaptorXML+XBRL Server with Altova LicenseServer and license it, see the section, Licensing on macOS.

LicenseServer versions

- Altova server products must be licensed either with the version of LicenseServer that is appropriate to the installed RaptorXML+XBRL Server version, or with a later version of LicenseServer.
- The LicenseServer version that is appropriate for a particular version of RaptorXML+XBRL Server is displayed during the installation of RaptorXML+XBRL Server. You can install this version of LicenseServer along with RaptorXML+XBRL Server, or you can install LicenseServer separately.
- Before installing a newer version of LicenseServer, any older one must be de-installed. The LicenseServer installer will do this automatically if it detects an older version.
- LicenseServer versions are backwards compatible. They will work with older versions of RaptorXML+XBRL Server.
- If you install a new version of RaptorXML+XBRL Server and if your installed LicenseServer version is older than the appropriate LicenseServer, install the latest version available on the Altova website.
- At the time of LicenseServer de-installation, all registration and licensing information held in the older version of LicenseServer will be saved to a database on your server machine. This data will be imported automatically into the newer version when the newer version is installed.
- The version number of the currently installed LicenseServer is given at the bottom of the LicenseServer configuration page (all tabs).

**Current version: 3.6**

### 3.4.2 Licensing on macOS

RaptorXML+XBRL Server must be licensed with Altova LicenseServer. Licensing is a two-step process:

1. **Register RaptorXML+XBRL Server** with LicenseServer. Registration is done from RaptorXML+XBRL Server.
2. **Assign a license** to RaptorXML+XBRL Server from LicenseServer. Download the latest version of LicenseServer from the Altova website, and install it on your local machine or a machine on your network.
Setting Up RaptorXML

The steps to carry out are given below in brief. For detailed information, see the LicenseServer user manual at the Altova website.

▼ Note about root user
You must have administrator (root) privileges to be able to install RaptorXML+XBRL Server. Installation must be done, therefore, as the root user. If you are logged in as root, you can leave out the sudo keyword from the commands listed below.

▼ Start LicenseServer
To correctly register and license RaptorXML+XBRL Server with LicenseServer, LicenseServer must be running as a daemon. Start LicenseServer as a daemon with the following command:

```
sudo launchctl load /Library/LaunchDaemons/com.altova.LicenseServer.plist
```

If at any time you need to stop LicenseServer, replace load with unload in the above command:

```
sudo launchctl unload /Library/LaunchDaemons/com.altova.LicenseServer.plist
```

▼ Start RaptorXML+XBRL Server
RaptorXML+XBRL Server server daemon starts automatically after installation and a re-boot of the machine. You can start RaptorXML+XBRL Server as a daemon with the following command:

```
sudo launchctl load /Library/LaunchDaemons/com.altova.RaptorXMLXBRLServer2021.plist
```

If at any time you need to stop RaptorXML+XBRL Server, use:

```
sudo launchctl unload /Library/LaunchDaemons/com.altova.RaptorXMLXBRLServer2021.plist
```

▼ Register RaptorXML+XBRL Server
To register RaptorXML+XBRL Server from the command line interface, use the licenseserver command:

```
sudo /usr/local/Altova/RaptorXMLXBRLServer2021/bin/RaptorXMLXBRL licenseserver [options] ServerName-Or-IP-Address
```

For example, if localhost is the name of the server on which LicenseServer is installed:

```
sudo /usr/local/Altova/RaptorXMLXBRLServer2021/bin/RaptorXMLXBRL licenseserver localhost
```

In the command above, localhost is the name of the server on which LicenseServer is installed. Notice also that the location of the RaptorXML+XBRL Server executable is:

```
/usr/local/Altova/RaptorXMLXBRLServer2021/bin/
```

After successful registration, go to the Client Management tab of LicenseServer’s configuration page to assign a license to RaptorXML+XBRL Server.

▼ Assign a license
After successfully registering RaptorXML+XBRL Server, it will be listed in the Client Management tab of the configuration page of LicenseServer. Go there and assign a license to RaptorXML+XBRL Server.

The licensing of Altova server products is based on the number of processor cores available on the product
machine. For example, a dual-core processor has two cores, a quad-core processor four cores, a hexa-core processor six cores, and so on. The number of cores licensed for a product must be greater than or equal to the number of cores available on that server machine, whether the server is a physical or virtual machine. For example, if a server has eight cores (an octa-core processor), you must purchase at least one 8-core license. You can also combine licenses to achieve the core count. So, two 4-core licenses can also be used for an octa-core server instead of one 8-core license.

If you are using a computer server with a large number of CPU cores but only have a low volume to process, you may also create a virtual machine that is allocated a smaller number of cores, and purchase a license for that number. Such a deployment, of course, will have less processing speed than if all available cores on the server were utilized.

**Note:** Each Altova server product license can be used for only one client machine—the machine on which the Altova server product is installed—at a time, even if the license has unused licensing capacity. For example, if a 10-core license is used for a client machine that has 6 CPU cores, then the remaining 4 cores of licensing capacity cannot be used simultaneously for another client machine.
3.5 XML Catalogs

The XML catalog mechanism enables files to be retrieved from local folders, thus increasing the overall processing speed, as well as improving the portability of documents—since only the catalog file URIs then need to be changed. See the section How Catalogs Work for details.

Altova's XML products use a catalog mechanism to quickly access and load commonly used files, such as DTDs and XML Schemas. This catalog mechanism can be customized and extended by the user, and it is described in the sections Catalog Structure in RaptorXML+XBRL Server and Customizing your Catalogs. The section Variables for System Locations list Windows variables for common system locations. These variables can be used in catalog files to locate commonly used folders.

This section is organized into the following sub-sections:

- How Catalogs Work
- Catalog Structure in RaptorXML+XBRL Server
- Customizing your Catalogs
- Variables for Windows System Locations

For more information on catalogs, see the XML Catalogs specification.

3.5.1 How Catalogs Work

Catalogs can be used to redirect both DTDs and XML Schemas. While the concept behind the mechanisms of both cases is the same, the details are different and are explained below.

DTDs

Catalogs are commonly used to redirect a call to a DTD to a local URI. This is achieved by mapping, in the catalog file, public or system identifiers to the required local URI. So when the DOCTYPE declaration in an XML file is read, its public or system identifier locates the required local resource via the catalog file mapping.

For popular schemas, the PUBLIC identifier is usually pre-defined, thus requiring only that the URI in the catalog file map the PUBLIC identifier to the correct local copy. When the XML document is parsed, the PUBLIC identifier in it is read. If this identifier is found in a catalog file, then the corresponding URL in the catalog file will be looked up and the schema will be read from this location. So, for example, if the following SVG file is opened in RaptorXML+XBRL Server:

```xml
<?xml version="1.0" standalone="no"?>
<!DOCTYPE svg PUBLIC "-//W3C//DTD SVG 1.1//EN" "http://www.w3.org/Graphics/SVG/1.1/DTD/svg11.dtd">
<svg width="20" height="20" xml:space="preserve">
  <g style="fill:red; stroke:#000000">
    <rect x="0" y="0" width="15" height="15"/>
    <rect x="5" y="5" width="15" height="15"/>
  </g>
</svg>
```

For more information on catalogs, see the XML Catalogs specification.
The catalog is searched for the **PUBLIC** identifier of this SVG file. Let’s say the catalog file contains the following entry:

```xml
<catalog>
  ...
  <public publicId="-//W3C//DTD SVG 1.1//EN" uri="schemas/svg/svg11.dtd"/>
  ...
</catalog>
```

In this case, there is a match for the **PUBLIC** identifier. As a result, the lookup for the SVG DTD is redirected to the URL `schemas/svg/svg11.dtd` (which is relative to the catalog file). This is a local file that will be used as the DTD for the SVG file. If there is no mapping for the **Public** ID in the catalog, then the URL in the XML document will be used (in the SVG file example above, this is the Internet URL: `http://www.w3.org/Graphics/SVG/1.1/DTD/svg11.dtd`).

**XML Schemas**

In RaptorXML+XBRL Server, you can also use catalogs with **XML Schemas**. In the XML instance file, the reference to the schema will occur in the `xsi:schemaLocation` attribute of the XML document’s top-level element. For example,

```xml
<xsi:schemaLocation="http://www.xmlspy.com/schemas/orgchart OrgChart.xsd"/>
```

The value of the `xsi:schemaLocation` attribute has two parts: a namespace part (green above) and a URI part (highlighted). The namespace part is used in the catalog to map to the alternative resource. For example, the following catalog entry redirects the schema reference above to a schema at an alternative location.

```xml
<uri name="http://www.xmlspy.com/schemas/orgchart" uri="C:\MySchemas\OrgChart.xsd"/>
```

Normally, the URI part of the `xsi:schemaLocation` attribute’s value is a path to the actual schema location. However, if the schema is referenced via a catalog, the URI part need not point to an actual XML Schema but must exist so that the lexical validity of the `xsi:schemaLocation` attribute is maintained. A value of `foo`, for example, would be sufficient for the URI part of the attribute’s value to be valid.

### 3.5.2 Catalog Structure in RaptorXML+XBRL Server

When RaptorXML+XBRL Server starts, it loads a file called **RootCatalog.xml** (*structure shown in listing below*), which contains a list of catalog files that will be looked up. You can modify this file and enter as many catalog files to look up as you like, each of which is referenced in a `nextCatalog` element. These catalog files are looked up and the URIs in them are resolved according to their mappings.

**Listing of RootCatalog.xml**

```xml
<?xml version="1.0" encoding="UTF-8"?>
<catalog
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:schemaLocation="urn:oasis:names:tc:entity:xmlns:xml:catalog Catalog.xsd">
  <nextCatalog catalog="%PersonalFolder%/Altova/%AppAndVersionName%/CustomCatalog.xml"/>
</catalog>
```

```xml
<!-- Include all catalogs under common schemas folder on the first directory level -->
<nextCatalog
  spy:recurseFrom="%CommonSchemasFolder%" catalog="catalog.xml"
/>```
The listing above references a custom catalog (named `CustomCatalog.xml`) and a set of catalogs that locate commonly used schemas (such as W3C XML Schemas and the SVG schema).

- **CustomCatalog.xml** is located in the RaptorXML+XBRL Server application folder's etc subfolder. It is a skeleton file in which you can create your own mappings. You can add mappings to `CustomCatalog.xml` for any schema you require that is not addressed by the catalog files in the Common Schemas Folder. Do this by using the supported elements of the OASIS catalog mechanism *(see next section)*.

- The Common Schemas Folder (located via the variable `%CommonSchemasFolder%`) contains a set of commonly used schemas. Inside each of these schema folders is a `catalog.xml` file that maps public and/or system identifiers to URIs that point to locally saved copies of the respective schemas.

- Schemas related to XBRL and various XBRL taxonomies are large and are installed locally on demand with the help of Altova's XBRL Taxonomy Manager. Individual schemas and taxonomies are mapped in the catalog `remapping.xml`, which is located in the `pkgs/.cache` subfolder of the Program Data Folder (located via the variable `%ApplicationWritableDataFolder%`). **Please do not edit this file**; the smallest error could seriously compromise large sets of references.

- **CoreCatalog.xml** is located in the RaptorXML+XBRL Server application folder, and is used to locate schemas and stylesheets used by RaptorXML+XBRL Server-specific processes, such as StyleVision Power Stylesheets which are stylesheets used to generate Altova's Authentic View of XML documents.

### Location variables

The variables that are used in `RootCatalog.xml (listing above)` have the following values:

<table>
<thead>
<tr>
<th>Variable</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>%PersonalFolder%</code></td>
<td>C:\Users&lt;name&gt;\Documents</td>
</tr>
<tr>
<td><code>%CommonSchemasFolder%</code></td>
<td>C:\ProgramData\Altova\Common2021\Schemas</td>
</tr>
<tr>
<td><code>%ApplicationWritableDataFolder%</code></td>
<td>C:\ProgramData\Altova</td>
</tr>
</tbody>
</table>

### Location of catalog files and schemas

Note the locations of the various catalog files.

- `RootCatalog.xml`, `CustomCatalog.xml`, and `CoreCatalog.xml` are in the RaptorXML+XBRL Server application folder.

- The `catalog.xml` files are each in a specific schema folder, these schema folders being inside the Common Schemas Folder.

### 3.5.3 Customizing your Catalogs

When creating entries in `CustomCatalog.xml` (or any other catalog file that is to be read by RaptorXML+XBRL Server), use only the following elements of the OASIS catalog specification. Each of the elements below is...
listed with an explanation of their attribute values. For a more detailed explanation, see the XML Catalogs specification. Note that each element can take the xml:base attribute, which is used to specify the base URI of that element.

- `<public publicId="PublicID of Resource" uri="URL of local file"/>
- `<system systemId="SystemID of Resource" uri="URL of local file"/>
- `<uri name="filename" uri="URL of file identified by filename"/>
- `<rewriteURI uriStartString="StartString of URI to rewrite" rewritePrefix="String to replace StartString"/>
- `<rewriteSystem systemIdStartString="StartString of SystemID" rewritePrefix="Replacement string to locate resource locally"/>

Note the following points:

- In cases where there is no public identifier, as with most stylesheets, the system identifier can be directly mapped to a URL via the system element.
- A URI can be mapped to another URI using the uri element.
- The rewriteURI and rewriteSystem elements enable the rewriting of the starting part of a URI or system identifier, respectively. This allows the start of a filepath to be replaced and consequently enables the targeting of another directory. For more information on these elements, see the XML Catalogs specification.

From release 2014 onwards, RaptorXML+XBRL Server adheres closely to the XML Catalogs specification (OASIS Standard V1.1, 7 October 2005) specification. This specification strictly separates external-identifier look-ups (those with a Public ID or System ID) from URI look-ups (URIs that are not Public IDs or System IDs). Namespace URIs must therefore be considered simply URIs—not Public IDs or System IDs—and must be used as URI look-ups rather than external-identifier look-ups. In RaptorXML+XBRL Server versions prior to version 2014, schema namespace URIs were translated through <public> mappings. From version 2014 onwards, <uri> mappings have to be used.


How RaptorXML+XBRL Server finds a referenced schema

A schema is referenced in an XML document via the xsi:schemaLocation attribute (shown below). The value of the xsi:schemaLocation attribute has two parts: a namespace part (green) and a URI part (highlighted).

`xsi:schemaLocation="http://www.xmlspy.com/schemas/orgchart OrgChart.xsd"

The set of steps that is followed to find a referenced schema depends on the validation options --schemalocation-hints and --schema-mapping. Given below are the procedures for each value of the two options:

- **--schemalocation-hints=load-by-schemalocation | load-by-namespace | load-combining-both | ignore**
  Specifies the behavior of the xsi:schemaLocation and xsi:noNamespaceSchemaLocation attributes: whether to load a schema document and, if yes, which information should be used to find it; (the default is load-by-schemalocation).
  ✤ load-by-schemalocation
Setting Up RaptorXML

1. If the URI part of the xsi:schemaLocation is mapped in a catalog, load the resulting URI.
2. Load the URI directly.
   - **load-by-namespace**
     1. If the namespace part of the xsi:schemaLocation is mapped in a catalog, load the resulting URI.
     2. Load nothing.
   - **load-combining-both**
     1. If the URI part of the xsi:schemaLocation is mapped in a catalog, load the resulting URI.
     2. If the namespace part of the xsi:schemaLocation is mapped in a catalog, load the resulting URI.
     3. Load the URI part directly.

- **--schema-mapping=prefer-schemalocation | prefer-namespace**
  If schema location and namespace are both used to find a schema document, then this option specifies which of the two should be preferred during catalog lookup; (the default is prefer-schemalocation). This option is used to change the order of the first two steps in the load-combining-both variant above.

XML Schema specifications

XML Schema specification information is built into RaptorXML+XBRL Server and the validity of XML Schema (.xsd) documents is checked against this internal information. In an XML Schema document, therefore, no references should be made to any schema that defines the XML Schema specification.

The catalog.xml file in the %AltovaCommonSchemasFolder%\Schemas\schema folder contains references to DTDs that implement older XML Schema specifications. You should not validate your XML Schema documents against these schemas. The referenced files are included solely to provide RaptorXML+XBRL Server with entry helper info for editing purposes should you wish to create documents according to these older recommendations.

3.5.4 Variables for Windows System Locations

Shell environment variables can be used in the nextCatalog element to specify the path to various system locations (see RootCatalog.xml listing above). The following shell environment variables are supported:

- %PersonalFolder% Full path to the Personal folder of the current user, for example C:\Users\<name>\Documents
- %CommonSchemaFolder% C:\ProgramData\Altova\Common2021\Schemas
- %ApplicationWritableDataFolder% C:\ProgramData\Altova
- %AltovaCommonFolder% C:\Program Files\Altova\Common2021
- %DesktopFolder% Full path to the Desktop folder of the current user.
%ProgramMenuFolder% Full path to the Program Menu folder of the current user.
%StartMenuFolder% Full path to Start Menu folder of the current user.
%StartUpFolder% Full path to Start Up folder of the current user.
%TemplateFolder% Full path to the Template folder of the current user.
%AdminToolsFolder% Full path to the file system directory that stores administrative tools of the current user.
/AppDataFolder% Full path to the Application Data folder of the current user.
%CommonAppDataFolder% Full path to the file directory containing application data of all users.
%FavoritesFolder% Full path of the Favorites folder of the current user.
%PersonalFolder% Full path to the Personal folder of the current user.
%SendToFolder% Full path to the SendTo folder of the current user.
%FontsFolder% Full path to the System Fonts folder.
%ProgramFilesFolder% Full path to the Program Files folder of the current user.
%CommonFilesFolder% Full path to the Common Files folder of the current user.
%WindowsFolder% Full path to the Windows folder of the current user.
[SystemFolder% Full path to the System folder of the current user.
%LocalAppDataFolder% Full path to the file system directory that serves as the data repository for local (nonroaming) applications.
%MyPicturesFolder% Full path to the MyPictures folder.
3.6 Global Resources

This section:

- About global resources
- Using global resources

About global resources

An Altova global resource file maps an alias to multiple resources via different configurations, as shown in the diagram below. An alias can therefore be switched to access a different resource by switching its configuration.

Global resources are defined in Altova products, such as Altova XMLSpy, and are saved in a global resources XML file. RaptorXML is able to use global resources as inputs. To do this, it requires the name and location of the global resources file, and the alias and configuration to be used.

The advantage of using global resources is that the resource can be changed merely by switching the name of the configuration. When using RaptorXML, this means that by providing a different value of the `--globalresourcesconfig | --gc` option, a different resource can be used. (See the example below.)

Using global resources with RaptorXML

To specify a global resource as an input for a RaptorXML command, the following parameters are required:

- The global resources XML file (specified on the CLI with the option `--globalresourcesfile | --gr`)
- The required configuration (specified on the CLI with the option `--globalresourcesconfig | --gc`)
- The alias. This can be specified directly on the CLI where a file name is required, or it can be at a location inside an XML file where RaptorXML looks for a filename (such as in an `xsi:schemaLocation` attribute).

For example, if you wish to transform `input.xml` with `transform.xslt` to `output.html`, this would typically be achieved on the CLI with the following command that uses filenames:

```
raptorxmlxbrl xslt --input=input.xml --output=output.html transform.xslt
```

If, however, you have a global resource definition that matches the alias `MyInput` to the file resource `FirstInput.xml` via a configuration called `FirstConfig`, then you could use the alias `MyInput` on the CLI as follows:

```
raptorxmlxbrl xslt --input=altova://file_resource/MyInput --gc=C:\MyGlobalResources.xml --gc=FirstConfig --output=Output.html transform.xslt
```
Now, if you have another file resource, say SecondInput.xml, that is matched to the alias MyInput via a configuration called SecondConfig, then this resource can be used by changing only the --gc option of the previous command:

```
raptorxmlxbrl xslt --input=altova://file_resource/MyInput --gr=C:\MyGlobalResources.xml --gc=SecondConfig --output=Output.html transform.xslt
```

**Note:** In the example above a file resource was used; a file resource must be prefixed with altova://file_resource/. You can also use global resources that are folders. To identify a folder resource, use: altova://folder_resource/AliasName. Note that, on the CLI, you can also use folder resources as part of a filepath. For example: altova://folder_resource/AliasName/input.xml.
3.7 Security Issues

This section:

- Security concerns related to the HTTP interface
- Making Python scripts safe

Some interface features of RaptorXML+XBRL Server pose security concerns. These are described below together with their solutions.

Security concerns related to the HTTP REST interface

The HTTP REST interface, by default, allows result documents to be written to any location specified by the client (that is accessible with the HTTP protocol). It is important therefore to consider this security aspect when configuring RaptorXML+XBRL Server.

If there is a concern that security might be compromised or that the interface might be misused, the server can be configured to write result documents to a dedicated output directory on the server itself. This is specified by setting the `server.unrestricted-filesystem-access` option of the server configuration file to `false`. When access is restricted in this way, the client can download result documents from the dedicated output directory with `GET` requests. Alternatively, an administrator can copy/upload result document files from the server to the target location.

Making Python scripts safe

When a Python script is specified in a command via HTTP to RaptorXML+XBRL Server, the script will only work if it is located in the trusted directory. The script is executed from the trusted directory. Specifying a Python script from any other directory will result in an error. The trusted directory is specified in the `server.script-root-dir` setting of the server configuration file, and a trusted directory must be specified if you wish to use Python scripts. Make sure that all Python scripts to be used are saved in this directory.

Though all output generated by the server for HTTP job requests is written to the job output directory (which is a sub-directory of the output-root-directory), this limitation does not apply to Python scripts, which can write to any location. The server administrator must review the Python scripts in the trusted directory for potential vulnerability issues.
4 Command Line Interface (CLI)

The RaptorXML+XBRL Server executable provides application functionality that can be called from the command line interface (CLI). The path to the executable is:

- **Linux** `/opt/Altova/RaptorXMLXBRLServer2021/bin/raptorxmlxbrl`
- **Mac** `/usr/local/Altova/RaptorXMLXBRLServer2021/bin/raptorxmlxbrl`
- **Windows** `<ProgramFilesFolder>\Altova\RaptorXMLXBRLServer2021\bin\RaptorXMLXBRL.exe`

Usage

The command line syntax is:

```
raptorxmlxbrl --h | --help | --version | <command> [options] [arguments]
```

- `--help` (short form `--h`) displays the help text of the given command. If no command is named, then all commands of the executable are listed, each with a brief description of the command.
- `--version` displays the version number of RaptorXML+XBRL Server.
- `<command>` is the command to execute. Commands are described in the sub-sections of this section (see list below).
- `[options]` are the options of a command; they are listed and described with their respective commands.
- `[arguments]` are the arguments of a command; they are listed and described with their respective commands.

Casing and slashes on the command line

- **RaptorXMLXBRL** (and **RaptorXMLXBRLServer** for administration commands) *on Windows*
- **raptorxmlxbrl** (and **raptorxmlxbrlserver** for administration commands) *on Windows and Unix (Linux, Mac)*

  * Note that lowercase (**raptorxmlxbrl** and **raptorxmlxbrlserver**) works on all platforms (Windows, Linux, and Mac), while upper-lower (**RaptorXMLXBRL**) works only on Windows and Mac.
  * Use forward slashes on Linux and Mac, backslashes on Windows.

CLI commands

The commands have been organized by their functionality as listed below, and are described in the sub-sections of this section.

- **XML, DTD, XSD Validation Commands**
- **Well-formedness Check Commands**
- **XBRL Validation Commands**
- **XQuery Commands**
- **XSLT Commands**
- **JSON/Avro Commands**
Command Line Interface (CLI) · XML Signature Commands · General Commands · Localization Commands · License Commands · Administration Commands
4.1 XML, DTD, XSD Validation Commands

XML validation commands can be used to validate the following types of document:

- valxml-withdtd: Validates an XML instance document against a DTD
- valxml-withxsd: Validates an XML instance document against an XML Schema
- valdtd: Validates a DTD document

4.1.1 valxml-withdtd (xml)

The valxml-withdtd | xml command validates one or more XML instance documents against a DTD.

```
raptorxmlxbrl valxml-withdtd | xml [options] InputFile
```

- The InputFile argument is the XML document to validate. If a reference to a DTD exists in the XML document, the --dtd option is not required.
- To validate multiple documents, either: (i) list the files to be validated on the CLI, with each file separated from the next by a space; or (ii) list the files to be validated in a text file (.txt file), with one filename per line, and supply this text file as the InputFile argument together with the --listfile option set to true (see the Options list below).

Examples

Examples of the valxml-withdtd command:

- raptorxmlxbrl valxml-withdtd --dtd=c:\MyDTD.dtd c:\Test.xml
- raptorxmlxbrl valxml-withdtd c:\Test.xml
- raptorxmlxbrl xml --verbose=true c:\Test.xml
- raptorxmlxbrl xml --listfile=true c:\FileList.txt

Casing and slashes on the command line

- RaptorXMLXBRL (and RaptorXMLXBRLServer for administration commands) on Windows
- raptorxmlxbrl (and raptorxmlxbrlserver for administration commands) on Windows and Unix (Linux, Mac)

* Note that lowercase (raptorxmlxbrl and raptorxmlxbrlserver) works on all platforms (Windows, Linux, and Mac), while upper-lower (RaptorXMLXBRL) works only on Windows and Mac.

* Use forward slashes on Linux and Mac, backslashes on Windows.

Backslashes, spaces, and special characters on Windows systems

On Windows systems: When spaces or special characters occur in strings (for example in file or folder names, or company, person or product names), use quotes: for example, "My File". Note, however, that a backslash followed by a double-quotiation mark (for example, "C:\My directory\") might not be read correctly. This is because the backslash character is also used to indicate the start of an escape sequence, and the escape sequence \" stands for the double-quotiation mark character. If you want to
escape this sequence of characters, use a preceding backslash, like this: \\". To summarize: If you need to write a file path that contains spaces or an end backslash, write it like this: "C:\My Directory\\".

Options
Options are listed in short form (if available) and long form. You can use one or two dashes for both short and long forms. An option may or may not take a value. If it takes a value, it is written like this: --option=value. Values can be specified without quotes except in two cases: (i) when the value string contains spaces, or (ii) when explicitly stated in the description of the option that quotes are required. If an option takes a Boolean value and no value is specified, then the option's default value is TRUE. Use the --h, --help option to display information about the command.

Validation and processing

- **dtd**
  --dtd = FILE
  Specifies the external DTD document to use for validation. If a reference to an external DTD is present in the XML document, then the CLI option overrides the external reference.

- **listfile**
  --listfile = true|false
  If true, treats the command's InputFile argument as a text file containing one filename per line. Default value is false. (An alternative is to list the files on the CLI with a space as separator. Note, however, that CLIs have a maximum-character limitation.) Note that the --listfile option applies only to arguments, and not to options.
  **Note:** Boolean option values are set to true if the option is specified without a value.

- **namespaces**
  --namespaces = true|false
  Enables namespace-aware processing. This is useful for checking the XML instance for errors due to incorrect namespaces. Default value is false.
  **Note:** Boolean option values are set to true if the option is specified without a value.

- **recurse**
  --recurse = true|false
  Used to select files within sub-directories, including in ZIP archives. If true, the command's InputFile argument will select the specified file also in subdirectories. For example: "test.zip|zip\test.xml" will select files named test.xml at all folder levels of the zip folder. References to ZIP files must be given in quotes. The wildcard characters * and ? may be used. So, *.xml will select all .xml files in the (zip) folder. The option's default value is false.
  **Note:** Boolean option values are set to true if the option is specified without a value.

- **streaming**
  --streaming = true|false
  Enables streaming validation. Default is true. In streaming mode, data stored in memory is minimized and processing is faster. The downside is that information that might be required
subsequently—for example, a data model of the XML instance document—will not be available. In situations where this is significant, streaming mode will need to be turned off (by giving --streaming a value of false). When using the --script option with the valxml-withxsd command, disable streaming. Note that the --streaming option is ignored if --parallel-assessment is set to true. **Note:** Boolean option values are set to true if the option is specified without a value.

### Catalogs and global resources

#### catalog

```bash
--catalog = FILE
```

Specifies the absolute path to a root catalog file that is not the installed root catalog file. The default value is the absolute path to the installed root catalog file (`<installation-folder>\Altova\RaptorXMLXBRLServer2021\etc\RootCatalog.xml`). See the section, XML Catalogs, for information about working with catalogs.

#### user-catalog

```bash
--user-catalog = FILE
```

Specifies the absolute path to an XML catalog to be used in addition to the root catalog. See the section, XML Catalogs, for information about working with catalogs.

#### enable-globalresources

```bash
--enable-globalresources = true|false
```

Enables global resources. Default value is false. **Note:** Boolean option values are set to true if the option is specified without a value.

#### globalresourceconfig [gc]

```bash
--gc | --globalresourceconfig = VALUE
```

Specifies the active configuration of the global resource (and enables global resources) (and enables `global resources`).

#### globalresourcefile [gr]

```bash
--gr | --globalresourcefile = FILE
```

Specifies the global resource file (and enables global resources).

### Messages, errors, help, timeout, version

#### error-format

```bash
--error-format = text|shortxml|longxml
```

Specifies the format of the error output. Default value is text. The other options generate XML formats, with longxml generating more detail.

#### error-limit

```bash
--error-limit = N | unlimited
```

Specifies the error limit with a value range of 1 to 9999 or unlimited. The default value is 100. Processing stops when the error limit is reached. Useful for limiting processor use during validation/transformation.
xml, dtd, xsd validation commands

command line interface (cli)

\-\-info-limit = N | unlimited

Specifies the information message limit in the range 1-65535 or unlimited. Processing continues if the specified info limit is reached, but further messages are not reported. The default value is 100.

\-\-help

Displays help text for the command. For example, valany --h. (Alternatively the help command can be used with an argument. For example: help valany.)

\-\-log-output = FILE

Writes the log output to the specified file URL. Ensure that the CLI has write permission to the output location.

\-\-network-timeout = VALUE

Specifies the timeout in seconds for remote I/O operations. Default is: 40.

\-\-verbose = \[true|false\]

A value of true enables output of additional information during validation. Default value is false. Note: Boolean option values are set to true if the option is specified without a value.

\-\-verbose-output = FILE

Writes verbose output to FILE.

\-\-version

Displays the version of RaptorXML+XBRL Server. If used with a command, place --version before the command.

\-\-warning-limit = N | unlimited

Specifies the warning limit in the range 1-65535 or unlimited. Processing continues if this limit is reached, but further warnings are not reported. The default value is 100.
4.1.2 valxml-withxsd (xsi)

The valxml-withxsd | xsi command validates one or more XML instance documents according to the W3C XML Schema Definition Language (XSD) 1.0 and 1.1 specifications.

```
raptorxmlxbrl valxml-withxsd | xsi [options] InputFile
```

- The **InputFile** argument is the XML document to validate. The `--schemalocation-hints` option specifies what mechanism is used to find the schema. The `--xsd=FILE` option specifies the schema/s to use if the XML or XBRL instance file contains no schema reference.
- To validate multiple documents, either: (i) list the files to be validated on the CLI, with each file separated from the next by a space; or (ii) list the files to be validated in a text file (.txt file), with one filename per line, and supply this text file as the InputFile argument together with the `--listfile` option set to true (see the Options list below).

**Note:** If using the `--script` option to run Python scripts, make sure to also specify `--streaming=false`.

**Examples**

Examples of the valxml-withxsd command:

- `raptorxmlxbrl valxml-withxsd --schemalocation-hints=load-by-schemalocation --xsd=c:\MyXSD.xsd c:\HasNoXSDRef.xml`
- `raptorxmlxbrl xsi c:\HasXSDRef.xml`
- `raptorxmlxbrl xsi --xsd-version=1.1 --listfile=true c:\FileList.txt`

▼ Casing and slashes on the command line

RaptorXMLXBRL (and RaptorXMLXBRLServer for administration commands) on Windows
raptorxmlxbrl (and raptorxmlxbrlserver for administration commands) on Windows and Unix (Linux, Mac)

* Note that lowercase (raptorxmlxbrl and raptorxmlxbrlserver) works on all platforms (Windows, Linux, and Mac), while upper-lower (RaptorXMLXBRL) works only on Windows and Mac.
* Use forward slashes on Linux and Mac, backslashes on Windows.

▼ Backslashes, spaces, and special characters on Windows systems

On Windows systems: When spaces or special characters occur in strings (for example in file or folder names, or company, person or product names), use quotes: for example, "My File". Note, however, that a backslash followed by a double-quotation mark (for example, "C:\My directory\") might not be read correctly. This is because the backslash character is also used to indicate the start of an escape sequence, and the escape sequence \" stands for the double-quotation mark character. If you want to escape this sequence of characters, use a preceding backslash, like this: \\\. To summarize: If you need to write a file path that contains spaces or an end backslash, write it like this: "C:\My Directory\".\"
Options
Options are listed in short form (if available) and long form. You can use one or two dashes for both short and long forms. An option may or may not take a value. If it takes a value, it is written like this: --option=value. Values can be specified without quotes except in two cases: (i) when the value string contains spaces, or (ii) when explicitly stated in the description of the option that quotes are required. If an option takes a Boolean value and no value is specified, then the option's default value is TRUE. Use the --h, --help option to display information about the command.

▶ Validation and processing

▶ assessment-mode

--assessment-mode = lax|strict
Specifies the schema-validity assessment mode as defined in the XSD specifications. Default value is strict. The XML instance document will be validated according to the mode specified with this option.

▶ ct-restrict-mode

--ct-restrict-mode = 1.0|1.1|default
Specifies how to check complex type restrictions. A value of 1.0 checks complex type restrictions as defined in the XSD 1.0 specification—even in XSD 1.1 validation mode. A value of 1.1 checks complex type restrictions as defined in the XSD 1.1 specification—even in XSD 1.0 validation mode. A value of default checks complex type restrictions as defined in the XSD specification of the current validation mode (1.0 or 1.1). The default value is default.

▶ listfile

--listfile = true|false
If true, treats the command's InputFile argument as a text file containing one filename per line. Default value is false. (An alternative is to list the files on the CLI with a space as separator. Note, however, that CLIs have a maximum-character limitation.) Note that the --listfile option applies only to arguments, and not to options.

Note: Boolean option values are set to true if the option is specified without a value.

▶ parallel-assessment [pa]

--pa | --parallel-assessment = true|false
If set to true, schema validity assessment is carried out in parallel. This means that if there are more than 128 elements at any level, these elements are processed in parallel using multiple threads. Very large XML files can therefore be processed faster if this option is enabled. Parallel assessment takes place on one hierarchical level at a time, but can occur at multiple levels within a single infoset. Note that parallel assessment does not work in streaming mode. For this reason, the --streaming option is ignored if --parallel-assessment is set to true. Also, memory usage is higher when the --parallel-assessment option is used. The default setting is false. Short form for the option is --pa.

Note: Boolean option values are set to true if the option is specified without a value.

▶ recurse

--recurse = true|false
Used to select files within sub-directories, including in ZIP archives. If true, the command's InputFile argument will select the specified file also in subdirectories. For example: "test.zip|
zip\test.xml" will select files named test.xml at all folder levels of the zip folder. References to ZIP files must be given in quotes. The wildcard characters * and ? may be used. So, *.xml will select all .xml files in the (zip) folder. The option's default value is false.

*Note*: Boolean option values are set to true if the option is specified without a value.

![_labels](image)

**report-import-namespace-mismatch-as-warning**

```--report-import-namespace-mismatch-as-warning = true|false```

Downgrades namespace or target-namespace mismatch errors when importing schemas with xs:import from errors to warnings. The default value is false.

*Note*: Boolean option values are set to true if the option is specified without a value.

**schema-imports**

```--schema-imports = load-by-schemalocation | load-preferring-schemalocation | load-by-namespace | load-combining-both | license-namespace-only```

Specifies the behaviour of xs:import elements, each of which has an optional namespace attribute and an optional schemalocation attribute: `<import namespace="someNS" schemalocation="someURL">`. The option specifies whether to load a schema document or just license a namespace, and, if a schema document is to be loaded, which information should be used to find it. Default: load-preferring-schemalocation. The behavior is as follows:

- **load-by-schemalocation**: The value of the schemalocation attribute is used to locate the schema, taking account of catalog mappings. If the namespace attribute is present, the namespace is imported (licensed).
- **load-preferring-schemalocation**: If the schemalocation attribute is present, it is used, taking account of catalog mappings. If no schemalocation attribute is present, then the value of the namespace attribute is used via a catalog mapping. This is the default value.
- **load-by-namespace**: The value of the namespace attribute is used to locate the schema via a catalog mapping.
- **load-combining-both**: If either the namespace or schemalocation attribute has a catalog mapping, then the mapping is used. If both have catalog mappings, then the value of the --schema-mapping option (XBRL option and XML/XSD option) decides which mapping is used. If no catalog mapping is present, the schemalocation attribute is used.
- **license-namespace-only**: The namespace is imported. No schema document is imported.

**schemalocation-hints**

```--schemalocation-hints = load-by-schemalocation | load-by-namespace | load-combining-both | ignore```

Specifies the behavior of the xsi:schemaLocation and xsi:noNamespaceSchemaLocation attributes: Whether to load a schema document, and, if yes, which information should be used to find it. Default: load-by-schemalocation.

- The load-by-schemalocation value uses the URL of the schema location in the xsi:schemaLocation and xsi:noNamespaceSchemaLocation attributes in XML or XBRL instance documents. This is the default value.
- The load-by-namespace value takes the namespace part of xsi:schemaLocation and an empty string in the case of xsi:noNamespaceSchemaLocation and locates the schema via a catalog mapping.
- If load-combining-both is used and if either the namespace part or the URL part has a
catalog mapping, then the catalog mapping is used. If both have catalog mappings, then the value of the --schema-mapping option (XBRL option and XML/XSD option) decides which mapping is used. If neither the namespace nor URL has a catalog mapping, the URL is used.
- If the option's value is ignore, then the xsi:schemaLocation and xsi:noNamespaceSchemaLocation attributes are both ignored.

---

**schema-mapping**

```
--schema-mapping = prefer-schemalocation | prefer-namespace
```

If schema location and namespace are both used to find a schema document, specifies which of them should be preferred during catalog lookup. (If either the --schemalocation-hints or the --schema-imports option has a value of load-combining-both, and if the namespace and URL parts involved both have catalog mappings, then the value of this option specifies which of the two mappings to use (namespace mapping or URL mapping; the prefer-schemalocation value refers to the URL mapping.)) Default is prefer-schemalocation.

---

**script**

```
--script = FILE
```

Executes the Python script in the submitted file after validation has been completed. Add the option multiple times to specify more than one script.

---

**script-api-version**

```
--api, --script-api-version = 1; 2; 2.1; 2.2; 2.3; 2.4; 2.4.1; 2.5; 2.6; 2.7; 2.8; 2.8.1; 2.8.2; 2.8.3
```

Specifies the Python API version to be used for the script. The default value is the latest version, currently 2.8.3. Instead of the values 1 and 2, you can also use the values 1.0 and 2.0, respectively.

---

**script-output**

```
--script-output = FILE
```

Writes the script's standard output to the file named in FILE.

---

**script-param**

```
--script-param = KEY:VALUE
```

Additional user-specified parameters that can be accessed during the execution of Python scripts. Add the option multiple times to specify more than one script parameter.

---

**streaming**

```
--streaming = true|false
```

Enables streaming validation. Default is true. In streaming mode, data stored in memory is minimized and processing is faster. The downside is that information that might be required subsequently—for example, a data model of the XML instance document—will not be available. In situations where this is significant, streaming mode will need to be turned off (by giving --streaming a value of false). When using the --script option with the valxml-withxsd command, disable streaming. Note that the --streaming option is ignored if --parallel-assessment is set to true.

**Note:** Boolean option values are set to true if the option is specified without a value.
- **xinclude**
  
  ```bash
  --xinclude = true|false
  ```

  Enables XML Inclusions (XInclude) support. Default value is `false`. When `false`, XInclude's include elements are ignored.

  **Note:** Boolean option values are set to `true` if the option is specified without a value.

- **xml-mode**
  
  ```bash
  --xml-mode = wf|id|valid
  ```

  Specifies the XML processing mode to use for the XML instance document: `wf` = wellformed check; `id` = wellformed with ID/IDREF checks; `valid` = validation. Default value is `wf`. Note that a value of `valid` requires that each instance document loaded during processing references a DTD. If no DTD exists, an error is reported.

- **xml-mode-for-schemas**
  
  ```bash
  --xml-mode-for-schemas = wf|id|valid
  ```

  Specifies the XML processing mode to use for XML schema documents: `wf` = wellformed check; `id` = wellformed with ID/IDREF checks; `valid` = validation. Default value is `wf`. Note that a value of `valid` requires that each schema document loaded during processing references a DTD. If no DTD exists, an error is reported.

- **xsd**
  
  ```bash
  --xsd = FILE
  ```

  Specifies one or more XML Schema documents to use for the validation of XML instance documents. Add the option multiple times to specify more than one schema document.

- **xsd-version**
  
  ```bash
  --xsd-version = 1.0|1.1|detect
  ```

  Specifies the W3C Schema Definition Language (XSD) version to use. Default is `1.0`. This option can also be useful to find out in what ways a schema which is 1.0-compatible is not 1.1-compatible. The `detect` option is an Altova-specific feature. It enables the version of the XML Schema document (1.0 or 1.1) to be detected by reading the value of the @vc:minVersion attribute of the document's <xs:schema> element. If the value of the @vc:minVersion attribute is `1.1`, the schema is detected as being version `1.1`. For any other value, or if the @vc:minVersion attribute is absent, the schema is detected as being version `1.0`.

### Catalogs and global resources

- **catalog**
  
  ```bash
  --catalog = FILE
  ```

  Specifies the absolute path to a root catalog file that is not the installed root catalog file. The default value is the absolute path to the installed root catalog file (<installation-folder>\Altova\RaptorXMLXBRLServer2021\etc\RootCatalog.xml). See the section, XML Catalogs, for information about working with catalogs.

- **user-catalog**
  
  ```bash
  --user-catalog = FILE
  ```
Specifies the absolute path to an XML catalog to be used in addition to the root catalog. See the section, XML Catalogs[^1], for information about working with catalogs.

**enable-globalresources**

```
--enable-globalresources = true|false
```

Enables global resources[^9]. Default value is false.

*Note:* Boolean option values are set to true if the option is specified without a value.

**globalresourceconfig [gc]**

```
--gc | --globalresourceconfig = VALUE
```

Specifies the active configuration of the global resource[^9] (and enables global resources[^9]).

**globalresourcefile [gr]**

```
--gr | --globalresourcefile = FILE
```

Specifies the global resource file[^9] (and enables global resources[^9]).

**Messages, errors, help, timeout, version**

**error-format**

```
--error-format = text|shortxml|longxml
```

Specifies the format of the error output. Default value is text. The other options generate XML formats, with longxml generating more detail.

**error-limit**

```
--error-limit = N | unlimited
```

Specifies the error limit with a value range of 1 to 9999 or unlimited. The default value is 100. Processing stops when the error limit is reached. Useful for limiting processor use during validation/transformation.

**info-limit**

```
--info-limit = N | unlimited
```

Specifies the information message limit in the range 1-65535 or unlimited. Processing continues if the specified info limit is reached, but further messages are not reported. The default value is 100.

**help**

```
--help
```

Displays help text for the command. For example, valany --h. (Alternatively the help command can be used with an argument. For example: help valany.)

**log-output**

```
--log-output = FILE
```

Writes the log output to the specified file URL. Ensure that the CLI has write permission to the output location.

**network-timeout**
---network-timeout = VALUE
Specifies the timeout in seconds for remote I/O operations. Default is: 40.

verbose
--verbose = true|false
A value of true enables output of additional information during validation. Default value is false.
Note: Boolean option values are set to true if the option is specified without a value.

verbose-output
--verbose-output = FILE
Writes verbose output to FILE.

version
--version
Displays the version of RaptorXML+XBRL Server. If used with a command, place --version before the command.

warning-limit
--warning-limit = N | unlimited
Specifies the warning limit in the range 1-65535 or unlimited. Processing continues if this limit is reached, but further warnings are not reported. The default value is 100.

4.1.3 valdtd (dtd)

The valdtd | dtd command validates one or more DTD documents according to the XML 1.0 or XML 1.1 specification.

raptorxmlxbrl valdtd | dtd [options] InputFile

- The InputFile argument is the DTD document to validate.
- To validate multiple documents, either: (i) list the files to be validated on the CLI, with each file separated from the next by a space; or (ii) list the files to be validated in a text file (.txt file), with one filename per line, and supply this text file as the InputFile argument together with the --listfile option set to true (see the Options list below).

Examples
Examples of the valdtd command:

- raptorxmlxbrl valdtd c:\Test.dtd
- raptorxmlxbrl dtd --verbose=true c:\Test.dtd
- raptorxmlxbrl dtd --listfile=true c:\FileList.txt
Casing and slashes on the command line

RaptorXMLXBRL (and RaptorXMLXBRLServer for administration commands) on Windows
raptorxmlxbrl (and raptorxmlxbrlserver for administration commands) on Windows and Unix (Linux, Mac)

* Note that lowercase (raptorxmlxbrl and raptorxmlxbrlserver) works on all platforms (Windows, Linux, and Mac), while upper-lower (RaptorXMLXBRL) works only on Windows and Mac.
* Use forward slashes on Linux and Mac, backslashes on Windows.

Backslashes, spaces, and special characters on Windows systems

On Windows systems: When spaces or special characters occur in strings (for example in file or folder names, or company, person or product names), use quotes: for example, "My File". Note, however, that a backslash followed by a double-quotation mark (for example, “C:\My directory\”) might not be read correctly. This is because the backslash character is also used to indicate the start of an escape sequence, and the escape sequence \" stands for the double-quotation mark character. If you want to escape this sequence of characters, use a preceding backslash, like this: \\". To summarize: If you need to write a file path that contains spaces or an end backslash, write it like this: "C:\My Directory\\".

Options

Options are listed in short form (if available) and long form. You can use one or two dashes for both short and long forms. An option may or may not take a value. If it takes a value, it is written like this: --option=value. Values can be specified without quotes except in two cases: (i) when the value string contains spaces, or (ii) when explicitly stated in the description of the option that quotes are required. If an option takes a Boolean value and no value is specified, then the option's default value is TRUE. Use the --h, --help option to display information about the command.

Validation and processing

- listfile
  --listfile = true|false
  If true, treats the command's InputFile argument as a text file containing one filename per line.
  Default value is false. (An alternative is to list the files on the CLI with a space as separator. Note, however, that CLIs have a maximum-character limitation.) Note that the --listfile option applies only to arguments, and not to options.
  Note: Boolean option values are set to true if the option is specified without a value.

- recurse
  --recurse = true|false
  Used to select files within sub-directories, including in ZIP archives. If true, the command's InputFile argument will select the specified file also in subdirectories. For example: "test.zip\zip\test.xml" will select files named test.xml at all folder levels of the zip folder. References to ZIP files must be given in quotes. The wildcard characters * and ? may be used. So, *.xml will select all .xml files in the (zip) folder. The option's default value is false.
  Note: Boolean option values are set to true if the option is specified without a value.
--script = FILE
Executes the Python script in the submitted file after validation has been completed. Add the option multiple times to specify more than one script.

- script-api-version
  --api, --script-api-version = 1; 2; 2.1; 2.2; 2.3; 2.4; 2.4.1; 2.5; 2.6; 2.7; 2.8; 2.8.1; 2.8.2; 2.8.3
  Specifies the Python API version to be used for the script. The default value is the latest version, currently 2.8.3. Instead of the values 1 and 2, you can also use the values 1.0 and 2.0, respectively.

- script-output
  --script-output = FILE
  Writes the script's standard output to the file named in FILE.

- script-param
  --script-param = KEY:VALUE
  Additional user-specified parameters that can be accessed during the execution of Python scripts. Add the option multiple times to specify more than one script parameter.

- Catalogs and global resources
  - catalog
    --catalog = FILE
    Specifies the absolute path to a root catalog file that is not the installed root catalog file. The default value is the absolute path to the installed root catalog file (<installation-folder>\Altova\RaptorXMLXBRLServer2021\etc\RootCatalog.xml). See the section, XML Catalogs, for information about working with catalogs.

  - user-catalog
    --user-catalog = FILE
    Specifies the absolute path to an XML catalog to be used in addition to the root catalog. See the section, XML Catalogs, for information about working with catalogs.

  - enable-globalresources
    --enable-globalresources = true|false
    Enables global resources. Default value is false.
    **Note:** Boolean option values are set to true if the option is specified without a value.

  - globalresourceconfig [gc]
    --gc | --globalresourceconfig = VALUE
    Specifies the active configuration of the global resource (and enables global resources).

  - globalresourcefile [gr]
    --gr | --globalresourcefile = FILE
Specifications the global resource file (and enables global resources).

- **Messages, errors, help, timeout, version**

  - **error-format**
    
    `--error-format = text|shortxml|longxml`
    
    Specifies the format of the error output. Default value is text. The other options generate XML formats, with longxml generating more detail.

  - **error-limit**
    
    `--error-limit = N | unlimited`
    
    Specifies the error limit with a value range of 1 to 9999 or unlimited. The default value is 100. Processing stops when the error limit is reached. Useful for limiting processor use during validation/transformation.

  - **info-limit**
    
    `--info-limit = N | unlimited`
    
    Specifies the information message limit in the range 1-65535 or unlimited. Processing continues if the specified info limit is reached, but further messages are not reported. The default value is 100.

  - **help**
    
    `--help`
    
    Displays help text for the command. For example, valany --h. (Alternatively the help command can be used with an argument. For example: help valany.)

  - **log-output**
    
    `--log-output = FILE`
    
    Writes the log output to the specified file URL. Ensure that the CLI has write permission to the output location.

  - **network-timeout**
    
    `--network-timeout = VALUE`
    
    Specifies the timeout in seconds for remote I/O operations. Default is: 40.

  - **verbose**
    
    `--verbose = true|false`
    
    A value of true enables output of additional information during validation. Default value is false. **Note**: Boolean option values are set to true if the option is specified without a value.

  - **verbose-output**
    
    `--verbose-output = FILE`
    
    Writes verbose output to FILE.

  - **version**
**--version**
Displays the version of RaptorXML+XBRL Server. If used with a command, place --version before the command.

**warning-limit**

```
--warning-limit = N | unlimited
```
Specifies the warning limit in the range 1-65535 or unlimited. Processing continues if this limit is reached, but further warnings are not reported. The default value is 100.

### 4.1.4 valxsd (xsd)

The `valxsd | xsd` command validates one or more XML Schema documents (XSD documents) according to the W3C XML Schema Definition Language (XSD) 1.0 or 1.1 specification. Note that it is the schema itself that is validated against the XML Schema specification, not an XML instance document against an XML Schema.

```
raptorxmlxbdl valxsd | xsd [options] InputFile
```

- The `InputFile` argument is the XML Schema document to validate. The `--xsd-version=1.0|1.1` option specifies the XSD version to validate against, with the default being 1.0.
- To validate multiple documents, either: (i) list the files to be validated on the CLI, with each file separated from the next by a space; or (ii) list the files to be validated in a text file (.txt file), with one filename per line, and supply this text file as the `InputFile` argument together with the `--listfile` option set to true (see the Options list below).

#### Examples

Examples of the `valxsd` command:

```
raptorxmlxbdl valxsd c:\Test.xsd
raptorxmlxbdl xsd --verbose=true c:\Test.xsd
raptorxmlxbdl xsd --listfile=true c:\FileList.txt
```

#### Backslashes, spaces, and special characters on Windows systems

On Windows systems: When spaces or special characters occur in strings (for example in file or folder names, or company, person or product names), use quotes: for example, "My File". Note, however, that
a backslash followed by a double-quotation mark (for example, “C:\My directory\”) might not be read correctly. This is because the backslash character is also used to indicate the start of an escape sequence, and the escape sequence \" stands for the double-quotation mark character. If you want to escape this sequence of characters, use a preceding backslash, like this: \\". To summarize: If you need to write a file path that contains spaces or an end backslash, write it like this: "C:\My Directory\".

Options
Options are listed in short form (if available) and long form. You can use one or two dashes for both short and long forms. An option may or may not take a value. If it takes a value, it is written like this: --option=value. Values can be specified without quotes except in two cases: (i) when the value string contains spaces, or (ii) when explicitly stated in the description of the option that quotes are required. If an option takes a Boolean value and no value is specified, then the option's default value is True. Use the --h, --help option to display information about the command.

/validation and processing

\ct-restrict-mode
--ct-restrict-mode = 1.0|1.1|default
Specifies how to check complex type restrictions. A value of 1.0 checks complex type restrictions as defined in the XSD 1.0 specification—even in XSD 1.1 validation mode. A value of 1.1 checks complex type restrictions as defined in the XSD 1.1 specification—even in XSD 1.0 validation mode. A value of default checks complex type restrictions as defined in the XSD specification of the current validation mode (1.0 or 1.1). The default value is default.

/listfile
--listfile = true|false
If true, treats the command's InputFile argument as a text file containing one filename per line. Default value is false. (An alternative is to list the files on the CLI with a space as separator. Note, however, that CLIs have a maximum-character limitation.) Note that the --listfile option applies only to arguments, and not to options.

Note: Boolean option values are set to true if the option is specified without a value.

/recurse
--recurse = true|false
Used to select files within subdirectories, including in ZIP archives. If true, the command's InputFile argument will select the specified file also in subdirectories. For example: "test.zip\zip\test.xml" will select files named test.xml at all folder levels of the zip folder. References to ZIP files must be given in quotes. The wildcard characters * and ? may be used. So, *.xml will select all .xml files in the (zip) folder. The option's default value is false.

Note: Boolean option values are set to true if the option is specified without a value.

/report-import-namespace-mismatch-as-warning
--report-import-namespace-mismatch-as-warning = true|false
Downgrades namespace or target-namespace mismatch errors when importing schemas with xs:import from errors to warnings. The default value is false.
**Note:** Boolean option values are set to `true` if the option is specified without a value.

### schema-imports

`--schema-imports = load-by-schemalocation | load-preferring-schemalocation | load-by-namespace | load-combining-both | license-namespace-only`

Specifies the behaviour of `xsimport` elements, each of which has an optional namespace attribute and an optional schemaLocation attribute: `<import namespace="someNS" schemaLocation="someURL">`. The option specifies whether to load a schema document or just license a namespace, and, if a schema document is to be loaded, which information should be used to find it. Default: `load-preferring-schemalocation`.

The behavior is as follows:

- **load-by-schemalocation:** The value of the schemaLocation attribute is used to locate the schema, taking account of catalog mappings. If the namespace attribute is present, the namespace is imported (licensed).
- **load-preferring-schemalocation:** If the schemaLocation attribute is present, it is used, taking account of catalog mappings. If no schemalocation attribute is present, then the value of the namespace attribute is used via a catalog mapping. This is the default value.
- **load-by-namespace:** The value of the namespace attribute is used to locate the schema via a catalog mapping.
- **load-combining-both:** If either the namespace or schemaLocation attribute has a catalog mapping, then the mapping is used. If both have catalog mappings, then the value of the --schema-mapping option (XBRL option and XML/XSD option) decides which mapping is used. If no catalog mapping is present, the schemaLocation attribute is used.
- **license-namespace-only:** The namespace is imported. No schema document is imported.

### schemalocation-hints

`--schemalocation-hints = load-by-schemalocation | load-by-namespace | load-combining-both | ignore`

Specifies the behavior of the xsi:schemaLocation and xsi:noNamespaceSchemaLocation attributes: Whether to load a schema document, and, if yes, which information should be used to find it. Default: load-by-schemalocation.

- The load-by-schemalocation value uses the URL of the schema location in the xsi:schemaLocation and xsi:noNamespaceSchemaLocation attributes in XML or XBRL instance documents. This is the default value.
- The load-by-namespace value takes the namespace part of xsi:schemaLocation and an empty string in the case of xsi:noNamespaceSchemaLocation and locates the schema via a catalog mapping.
- If load-combining-both is used and if either the namespace part or the URL part has a catalog mapping, then the catalog mapping is used. If both have catalog mappings, then the value of the --schema-mapping option (XBRL option and XML/XSD option) decides which mapping is used. If neither the namespace nor URL has a catalog mapping, the URL is used.
- If the option's value is ignore, then the xsi:schemaLocation and xsi:noNamespaceSchemaLocation attributes are both ignored.

### schema-mapping

`--schema-mapping = prefer-schemalocation | prefer-namespace`
If schema location and namespace are both used to find a schema document, specifies which of them should be preferred during catalog lookup. (If either the --schemalocation-hints or the --schema-imports option has a value of load-combining-both, and if the namespace and URL parts involved both have catalog mappings, then the value of this option specifies which of the two mappings to use (namespace mapping or URL mapping; the prefer-schemalocation value refers to the URL mapping.) Default is prefer-schemalocation.

- **script**
  ```
  --script = FILE
  ```
  Executes the Python script in the submitted file after validation has been completed. Add the option multiple times to specify more than one script.

- **script-api-version**
  ```
  --api, --script-api-version = 1; 2; 2.1; 2.2; 2.3; 2.4; 2.4.1; 2.5; 2.6; 2.7; 2.8; 2.8.1; 2.8.2; 2.8.3
  ```
  Specifies the Python API version to be used for the script. The default value is the latest version, currently 2.8.3. Instead of the values 1 and 2, you can also use the values 1.0 and 2.0, respectively.

- **script-output**
  ```
  --script-output = FILE
  ```
  Writes the script's standard output to the file named in FILE.

- **script-param**
  ```
  --script-param = KEY:VALUE
  ```
  Additional user-specified parameters that can be accessed during the execution of Python scripts. Add the option multiple times to specify more than one script parameter.

- **xinclude**
  ```
  --xinclude = true|false
  ```
  Enables XML Inclusions (XInclude) support. Default value is false. When false, XInclude's include elements are ignored.
  **Note:** Boolean option values are set to true if the option is specified without a value.

- **xml-mode-for-schemas**
  ```
  --xml-mode-for-schemas = wf|id|valid
  ```
  Specifies the XML processing mode to use for XML schema documents: wf=wellformed check; id=wellformed with ID/IDREF checks; valid=validation. Default value is wf. Note that a value of valid requires that each schema document loaded during processing references a DTD. If no DTD exists, an error is reported.

- **xsd-version**
  ```
  --xsd-version = 1.0|1.1|detect
  ```
  Specifies the W3C Schema Definition Language (XSD) version to use. Default is 1.0. This option can also be useful to find out in what ways a schema which is 1.0-compatible is not 1.1-compatible. The detect option is an Altova-specific feature. It enables the version of the XML Schema document (1.0
or 1.1) to be detected by reading the value of the vc:minVersion attribute of the document's <xs:schema> element. If the value of the @vc:minVersion attribute is 1.1, the schema is detected as being version 1.1. For any other value, or if the @vc:minVersion attribute is absent, the schema is detected as being version 1.0.

▼ Catalogs and global resources

▼ catalog

```
--catalog = FILE
```

Specifies the absolute path to a root catalog file that is not the installed root catalog file. The default value is the absolute path to the installed root catalog file (\installation-folder\Altova\RaptorXMLXBRLServer2021\etc\RootCatalog.xml). See the section, XML Catalogs, for information about working with catalogs.

▼ user-catalog

```
--user-catalog = FILE
```

Specifies the absolute path to an XML catalog to be used in addition to the root catalog. See the section, XML Catalogs, for information about working with catalogs.

▼ enable-globalresources

```
--enable-globalresources = true|false
```

Enables global resources. Default value is false.

**Note**: Boolean option values are set to true if the option is specified without a value.

▼ globalresourceconfig [gc]

```
--gc | --globalresourceconfig = VALUE
```

Specifies the active configuration of the global resource (and enables global resources).

▼ globalresourcefile [gr]

```
--gr | --globalresourcefile = FILE
```

Specifies the global resource file (and enables global resources).

▼ Messages, errors, help, timeout, version

▼ error-format

```
--error-format = text|shortxml|longxml
```

Specifies the format of the error output. Default value is text. The other options generate XML formats, with longxml generating more detail.

▼ error-limit

```
--error-limit = N | unlimited
```

Specifies the error limit with a value range of 1 to 9999 or unlimited. The default value is 100. Processing stops when the error limit is reached. Useful for limiting processor use during validation/transformation.
info-limit

  --info-limit = N | unlimited

  Specifies the information message limit in the range 1-65535 or unlimited. Processing continues if
  the specified info limit is reached, but further messages are not reported. The default value is 100.

help

  --help

  Displays help text for the command. For example, valany --h. (Alternatively the help command
  can be used with an argument. For example: help valany.)

log-output

  --log-output = FILE

  Writes the log output to the specified file URL. Ensure that the CLI has write permission to the output
  location.

network-timeout

  --network-timeout = VALUE

  Specifies the timeout in seconds for remote I/O operations. Default is: 40.

verbose

  --verbose = true|false

  A value of true enables output of additional information during validation. Default value is false.

  Note: Boolean option values are set to true if the option is specified without a value.

verbose-output

  --verbose-output = FILE

  Writes verbose output to FILE.

version

  --version

  Displays the version of RaptorXML+XBRL Server. If used with a command, place --version before
  the command.

warning-limit

  --warning-limit = N | unlimited

  Specifies the warning limit in the range 1-65535 or unlimited. Processing continues if this limit is
  reached, but further warnings are not reported. The default value is 100.
Well-formedness Check Commands

The well-formedness check commands can be used to check the well-formedness of XML documents and DTDs. These commands are listed below and described in detail in the sub-sections of this section:

- `wfxml`: Checks the well-formedness of XML documents
- `wfdtd`: Checks the well-formedness of DTDs
- `wfany`: Checks the well-formedness of an XML document or DTD. Type is detected automatically

4.2.1 wfxml

The `wfxml` command checks one or more XML documents for well-formedness according to the XML 1.0 or XML 1.1 specification.

```
raptorxmlxbrl wfxml [options] InputFile
```

- The `InputFile` argument is the XML document to check for well-formedness.
- To check multiple documents, either: (i) list the files to be checked on the CLI, with each file separated from the next by a space; or (ii) list the files to be checked in a text file (.txt file), with one filename per line, and supply this text file as the `InputFile` argument together with the `--listfile` option set to `true` (see the Options list below).

Examples

Examples of the `wfxml` command:

- `raptorxmlxbrl wfxml c:\Test.xml`
- `raptorxmlxbrl wfxml --verbose=true c:\Test.xml`
- `raptorxmlxbrl wfxml --listfile=true c:\FileList.txt`

Casing and slashes on the command line

RaptorXMLXBRL (and RaptorXMLXBRLServer for administration commands) on Windows
raptorxmlxbrl (and raptorxmlxbrlserver for administration commands) on Windows and Unix (Linux, Mac)

* Note that lowercase (raptorxmlxbrl and raptorxmlxbrlserver) works on all platforms (Windows, Linux, and Mac), while upper-lower (RaptorXMLXBRL) works only on Windows and Mac.
* Use forward slashes on Linux and Mac, backslashes on Windows.

Backslashes, spaces, and special characters on Windows systems

On Windows systems: When spaces or special characters occur in strings (for example in file or folder names, or company, person or product names), use quotes: for example, "My File". Note, however, that a backslash followed by a double-quotation mark (for example, "C:\My directory\") might not be read correctly. This is because the backslash character is also used to indicate the start of an escape sequence, and the escape sequence \" stands for the double-quotation mark character. If you want to escape this sequence of characters, use a preceding backslash, like this: \". To summarize: If you
need to write a file path that contains spaces or an end backslash, write it like this: "C:\My Directory\".

Options
Options are listed in short form (if available) and long form. You can use one or two dashes for both short and long forms. An option may or may not take a value. If it takes a value, it is written like this: --option=value. Values can be specified without quotes except in two cases: (i) when the value string contains spaces, or (ii) when explicitly stated in the description of the option that quotes are required. If an option takes a Boolean value and no value is specified, then the option's default value is TRUE. Use the --h, --help option to display information about the command.

- Validation and processing
  - dtd
    --dtd = FILE
    Specifies the external DTD document to use for validation. If a reference to an external DTD is present in the XML document, then the CLI option overrides the external reference.

  - listfile
    --listfile = true|false
    If true, treats the command's InputFile argument as a text file containing one filename per line. Default value is false. (An alternative is to list the files on the CLI with a space as separator. Note, however, that CLIs have a maximum-character limitation.) Note that the --listfile option applies only to arguments, and not to options. Note: Boolean option values are set to true if the option is specified without a value.

  - namespaces
    --namespaces = true|false
    Enables namespace-aware processing. This is useful for checking the XML instance for errors due to incorrect namespaces. Default value is false. Note: Boolean option values are set to true if the option is specified without a value.

  - recurse
    --recurse = true|false
    Used to select files within sub-directories, including in ZIP archives. If true, the command's InputFile argument will select the specified file also in subdirectories. For example: "test.zip|zip\test.xml" will select files named test.xml at all folder levels of the zip folder. References to ZIP files must be given in quotes. The wildcard characters * and ? may be used. So, *.xml will select all .xml files in the (zip) folder. The option's default value is false. Note: Boolean option values are set to true if the option is specified without a value.

  - streaming
    --streaming = true|false
    Enables streaming validation. Default is true. In streaming mode, data stored in memory is minimized and processing is faster. The downside is that information that might be required subsequently—for example, a data model of the XML instance document—will not be available. In
situations where this is significant, streaming mode will need to be turned off (by giving --streaming a value of false). When using the --script option with the valxml-withxsd command, disable streaming. Note that the --streaming option is ignored if --parallel-assessment is set to true.

**Note:** Boolean option values are set to true if the option is specified without a value.

### Catalogs and global resources

**catalog**

```bash
--catalog = FILE
```

Specifies the absolute path to a root catalog file that is not the installed root catalog file. The default value is the absolute path to the installed root catalog file (<installation-folder>\Altova\RaptorXMLXBRLServer2021\etc\RootCatalog.xml). See the section, XML Catalogs, for information about working with catalogs.

**user-catalog**

```bash
--user-catalog = FILE
```

Specifies the absolute path to an XML catalog to be used in addition to the root catalog. See the section, XML Catalogs, for information about working with catalogs.

**enable-globalresources**

```bash
--enable-globalresources = true|false
```

Enables global resources. Default value is false.

**Note:** Boolean option values are set to true if the option is specified without a value.

**globalresourceconfig [gc]**

```bash
--gc | --globalresourceconfig = VALUE
```

Specifies the active configuration of the global resource (and enables global resources).

**globalresourcefile [gr]**

```bash
--gr | --globalresourcefile = FILE
```

Specifies the global resource file (and enables global resources).

### Messages, errors, help, timeout, version

**error-format**

```bash
--error-format = text|shortxml|longxml
```

Specifies the format of the error output. Default value is text. The other options generate XML formats, with longxml generating more detail.

**error-limit**

```bash
--error-limit = N | unlimited
```

Specifies the error limit with a value range of 1 to 9999 or unlimited. The default value is 100. Processing stops when the error limit is reached. Useful for limiting processor use during validation/transformation.
Well-formedness Check Commands

- **info-limit**
  
  `--info-limit = N | unlimited`
  
  Specifies the information message limit in the range 1-65535 or unlimited. Processing continues if the specified info limit is reached, but further messages are not reported. The default value is 100.

- **help**
  
  `--help`
  
  Displays help text for the command. For example, `valany --h`. (Alternatively the `help` command can be used with an argument. For example: `help valany`.)

- **log-output**
  
  `--log-output = FILE`
  
  Writes the log output to the specified file URL. Ensure that the CLI has write permission to the output location.

- **network-timeout**
  
  `--network-timeout = VALUE`
  
  Specifies the timeout in seconds for remote I/O operations. Default is: 40.

- **verbose**
  
  `--verbose = true|false`
  
  A value of `true` enables output of additional information during validation. Default value is `false`. **Note:** Boolean option values are set to `true` if the option is specified without a value.

- **verbose-output**
  
  `--verbose-output = FILE`
  
  Writes verbose output to `FILE`.

- **version**
  
  `--version`
  
  Displays the version of RaptorXML+XBRL Server. If used with a command, place `--version` before the command.

- **warning-limit**
  
  `--warning-limit = N | unlimited`
  
  Specifies the warning limit in the range 1-65535 or unlimited. Processing continues if this limit is reached, but further warnings are not reported. The default value is 100.

4.2.2 **wfdtd**

The `wfdtd` command checks one or more DTD documents for well-formedness according to the XML 1.0 or XML 1.1 specification.
raptorxmlxbrl wfdtd [options] InputFile

- The InputFile argument is the DTD document to check for well-formedness.
- To check multiple documents, either: (i) list the files to be checked on the CLI, with each file separated from the next by a space; or (ii) list the files to be checked in a text file (.txt file), with one filename per line, and supply this text file as the InputFile argument together with the --listfile option set to true (see the Options list below).

Examples

Examples of the wfdtd command:

- raptorxmlxbrl wfdtd c:\Test.dtd
- raptorxmlxbrl wfdtd --verbose=true c:\Test.dtd
- raptorxmlxbrl wfdtd --listfile=true c:\FileList.txt

Casing and slashes on the command line

RaptorXMLXBRL (and RaptorXMLXBRLServer for administration commands) on Windows
raptorxmlxbrl (and raptorxmlxbrlserver for administration commands) on Windows and Unix (Linux, Mac)

* Note that lowercase (raptorxmlxbrl and raptorxmlxbrlserver) works on all platforms (Windows, Linux, and Mac), while upper-lower (RaptorXMLXBRL) works only on Windows and Mac.
* Use forward slashes on Linux and Mac, backslashes on Windows.

Backslashes, spaces, and special characters on Windows systems

On Windows systems: When spaces or special characters occur in strings (for example in file or folder names, or company, person or product names), use quotes: for example, "My File". Note, however, that a backslash followed by a double-quotation mark (for example, "C:\My directory") might not be read correctly. This is because the backslash character is also used to indicate the start of an escape sequence, and the escape sequence \" stands for the double-quotation mark character. If you want to escape this sequence of characters, use a preceding backslash, like this: \\\. To summarize: If you need to write a file path that contains spaces or an end backslash, write it like this: "C:\My Directory\\".

Options

Options are listed in short form (if available) and long form. You can use one or two dashes for both short and long forms. An option may or may not take a value. If it takes a value, it is written like this: --option=value. Values can be specified without quotes except in two cases: (i) when the value string contains spaces, or (ii) when explicitly stated in the description of the option that quotes are required. If an option takes a Boolean value and no value is specified, then the option's default value is TRUE. Use the --h, --help option to display information about the command.

Validation and processing

- listfile
--listfile = true|false
If true, treats the command's InputFile argument as a text file containing one filename per line. Default value is false. (An alternative is to list the files on the CLI with a space as separator. Note, however, that CLIs have a maximum-character limitation.) Note that the --listfile option applies only to arguments, and not to options.
Note: Boolean option values are set to true if the option is specified without a value.

• recurse
--recurse = true|false
Used to select files within sub-directories, including in ZIP archives. If true, the command's InputFile argument will select the specified file also in subdirectories. For example: "test.zip|zip\test.xml" will select files named test.xml at all folder levels of the zip folder. References to ZIP files must be given in quotes. The wildcard characters * and ? may be used. So, *.xml will select all .xml files in the (zip) folder. The option's default value is false.
Note: Boolean option values are set to true if the option is specified without a value.

• Catalogs and global resources

  • catalog
  --catalog = FILE
  Specifies the absolute path to a root catalog file that is not the installed root catalog file. The default value is the absolute path to the installed root catalog file (<installation-folder>\Altova\RaptorXMLXBRLServer2021\etc\RootCatalog.xml). See the section, XML Catalogs, for information about working with catalogs.

  • user-catalog
  --user-catalog = FILE
  Specifies the absolute path to an XML catalog to be used in addition to the root catalog. See the section, XML Catalogs, for information about working with catalogs.

  • enable-globalresources
  --enable-globalresources = true|false
  Enables global resources. Default value is false.
  Note: Boolean option values are set to true if the option is specified without a value.

  • globalresourceconfig [gc]
  --gc | --globalresourceconfig = VALUE
  Specifies the active configuration of the global resource (and enables global resources).

  • globalresourcefile [gr]
  --gr | --globalresourcefile = FILE
  Specifies the global resource file (and enables global resources).

• Messages, errors, help, timeout, version
  • error-format
--error-format = text|shortxml|longxml
Specifies the format of the error output. Default value is text. The other options generate XML formats, with longxml generating more detail.

\section*{error-limit}

--error-limit = \textit{N | unlimited}
Specifies the error limit with a value range of \textit{1 to 9999} or unlimited. The default value is 100. Processing stops when the error limit is reached. Useful for limiting processor use during validation/transformation.

\section*{info-limit}

--info-limit = \textit{N | unlimited}
Specifies the information message limit in the range \textit{1-65535} or unlimited. Processing continues if the specified info limit is reached, but further messages are not reported. The default value is 100.

\section*{help}

--help
Displays help text for the command. For example, valany --h. (Alternatively the help command can be used with an argument. For example: help valany.)

\section*{log-output}

--log-output = \textit{FILE}
Writes the log output to the specified file URL. Ensure that the CLI has write permission to the output location.

\section*{network-timeout}

--network-timeout = \textit{VALUE}
Specifies the timeout in seconds for remote I/O operations. Default is: 40.

\section*{verbose}

--verbose = \textit{true|false}
A value of \textit{true} enables output of additional information during validation. Default value is \textit{false}.
\textbf{Note}: Boolean option values are set to \textit{true} if the option is specified without a value.

\section*{verbose-output}

--verbose-output = \textit{FILE}
Writes verbose output to \textit{FILE}.

\section*{version}

--version
Displays the version of RaptorXML+XBRL Server. If used with a command, place --version before the command.

\section*{warning-limit}

--warning-limit = \textit{N | unlimited}
Well-formedness Check Commands

Command Line Interface (CLI)

Specifies the warning limit in the range 1-65535 or unlimited. Processing continues if this limit is reached, but further warnings are not reported. The default value is 100.

4.2.3  wfany

The `wfany` command checks an XML or DTD document for well-formedness according to the respective specification/s. The type of document is detected automatically.

```
  raptorxmlxbrl wfany [options] InputFile
```

- The `InputFile` argument is the document to check for well-formedness.
- Note that only one document can be submitted as the argument of the command. The type of the submitted document is detected automatically.

Examples

Examples of the `wfany` command:

- `raptorxmlxbrl wfany c:\Test.xml`
- `raptorxmlxbrl wfany --error-format=text c:\Test.xml`

Casing and slashes on the command line

- **RaptorXMLXBRL** (and RaptorXMLXBRLServer for administration commands) *on Windows*
- `raptorxmlxbrl` (and `raptorxmlxbrlserver` for administration commands) *on Windows and Unix (Linux, Mac)*

* Note that lowercase (`raptorxmlxbrl` and `raptorxmlxbrlserver`) works on all platforms (Windows, Linux, and Mac), while upper-lower (*RaptorXMLXBRL*) works only on Windows and Mac.
* Use forward slashes on Linux and Mac, backslashes on Windows.

Backslashes, spaces, and special characters on Windows systems

On Windows systems: When spaces or special characters occur in strings (for example in file or folder names, or company, person or product names), use quotes: for example, "My File". Note, however, that a backslash followed by a double-quotation mark (for example, “C:\My directory\”) might not be read correctly. This is because the backslash character is also used to indicate the start of an escape sequence, and the escape sequence \" stands for the double-quotation mark character. If you want to escape this sequence of characters, use a preceding backslash, like this: \\". To summarize: If you need to write a file path that contains spaces or an end backslash, write it like this: "C:\My Directory\ \\".

Options

Options are listed in short form (if available) and long form. You can use one or two dashes for both short and
long forms. An option may or may not take a value. If it takes a value, it is written like this: `--option=value`. Values can be specified without quotes except in two cases: (i) when the value string contains spaces, or (ii) when explicitly stated in the description of the option that quotes are required. If an option takes a Boolean value and no value is specified, then the option's default value is `TRUE`. Use the `--h, --help` option to display information about the command.

\section*{Processing}
\subsection*{listfile}
\subsubsection*{listfile = true|false}
If `true`, treats the command's `InputFile` argument as a text file containing one filename per line. Default value is `false`. (An alternative is to list the files on the CLI with a space as separator. Note, however, that CLIs have a maximum-character limitation.) Note that the `--listfile` option applies only to arguments, and not to options.

\textbf{Note}: Boolean option values are set to `true` if the option is specified without a value.

\section*{Catalogs and global resources}
\subsection*{catalog}
\subsubsection*{catalog = FILE}
Specifies the absolute path to a root catalog file that is not the installed root catalog file. The default value is the absolute path to the installed root catalog file (`\texttt{<installation-folder>/Altova/RaptorXMLXBRLServer2021/etc/RootCatalog.xml}`). See the section, \textit{XML Catalogs}, for information about working with catalogs.

\subsection*{user-catalog}
\subsubsection*{user-catalog = FILE}
Specifies the absolute path to an XML catalog to be used in addition to the root catalog. See the section, \textit{XML Catalogs}, for information about working with catalogs.

\subsection*{enable-globalresources}
\subsubsection*{enable-globalresources = true|false}
Enables \textit{global resources}. Default value is `false`.

\textbf{Note}: Boolean option values are set to `true` if the option is specified without a value.

\subsection*{globalresourceconfig [gc]}
\subsubsection*{gc | globalresourceconfig = VALUE}
Specifies the \textit{active configuration of the global resource} (and enables \textit{global resources}).

\subsection*{globalresourcefile [gr]}
\subsubsection*{gr | globalresourcefile = FILE}
Specifies the \textit{global resource file} (and enables \textit{global resources}).

\section*{Messages, errors, help, timeout, version}
\subsection*{error-format}
\subsubsection*{error-format = text|shortxml|longxml}
Well-formedness Check Commands

Specifies the format of the error output. Default value is text. The other options generate XML formats, with longxml generating more detail.

**error-limit**

```
--error-limit = N | unlimited
```

Specifies the error limit with a value range of 1 to 9999 or unlimited. The default value is 100. Processing stops when the error limit is reached. Useful for limiting processor use during validation/transformation.

**info-limit**

```
--info-limit = N | unlimited
```

Specifies the information message limit in the range 1-65535 or unlimited. Processing continues if the specified info limit is reached, but further messages are not reported. The default value is 100.

**help**

```
--help
```

Displays help text for the command. For example, valany --h. (Alternatively the help command can be used with an argument. For example: help valany.)

**log-output**

```
--log-output = FILE
```

Writes the log output to the specified file URL. Ensure that the CLI has write permission to the output location.

**network-timeout**

```
--network-timeout = VALUE
```

Specifies the timeout in seconds for remote I/O operations. Default is: 40.

**verbose**

```
--verbose = true|false
```

A value of true enables output of additional information during validation. Default value is false.  
*Note:* Boolean option values are set to true if the option is specified without a value.

**verbose-output**

```
--verbose-output = FILE
```

Writes verbose output to FILE.

**version**

```
--version
```

Displays the version of RaptorXML+XBRL Server. If used with a command, place --version before the command.

**warning-limit**

```
--warning-limit = N | unlimited
```

Specifies the warning limit in the range 1-65535 or unlimited. Processing continues if this limit is
reached, but further warnings are not reported. The default value is 100.
4.3 XBRL Validation Commands

The XBRL validation commands can be used to validate XBRL instance documents and XBRL taxonomies according to the XBRL 2.1, Dimensions 1.0 and Formula 1.0 specifications. The available commands are listed below and described in detail in the sub-sections of this section:

- **valxbrl**: Validates an XBRL instance document (.xbrl extension)
- **valinlinexbrl**: Validates one or more Inline XBRL (iXBRL) documents according to the Inline XBRL 1.0 or Inline XBRL 1.1 specification
- **valxbrltaxonomy**: Validates an XBRL taxonomy (schema) document (.xsd extension)
- **valtaxonomypackage**: Validates one or more XBRL taxonomy packages according to the Taxonomy 1.0 Packages specification
- **valxbrlver**: Validates one or more XBRL versioning reports according to the XBRL Versioning 1.0 specification

4.3.1 valxbrl (xbrl)

The `valxbrl` command validates one or more XBRL instance documents according to the XBRL 2.1, Dimensions 1.0 and Formula 1.0 specifications.

```
raptorxmlxbrl valxbrl | xbrl [options] InputFile
```

- The `InputFile` argument is the XBRL instance document to validate.
- To validate multiple documents, either: (i) list the files to be validated on the CLI, with each file separated from the next by a space; or (ii) list the files to be validated in a text file (.txt file), with one filename per line, and supply this text file as the `InputFile` argument together with the `--listfile` option set to true (see the Options list below).

**Note:** The XBRL instance document must not be nested in another XML document and must have the `xbrl` element as its root element.

```
<xbrl xmlns="http://www.xbrl.org/2003/instance"> ... </xbrl>
```

EDGAR validation

EDGAR (Electronic Data Gathering, Analysis, and Retrieval) is a system that performs automated collection, validation, and indexing of financial statements filed by companies to the United States SEC (Securities and Exchange Commission). raptorxmlxbrl supports EDGAR validation via Raptor's Python API. To run an EDGAR validation on an XBRL instance file, use the `--script` option to run the EDGAR validation Python script. In raptorxmlxbrl, this script, `efm-validation.py`, is located in the etc\scripts\sec-edgar-tools folder of the application folder:

```
valxbrl --script="C:\Program Files\Altova\RaptorXMLXBRLServer2021\etc\scripts\sec-edgar-tools\efm-validation.py" myinstance.xbrl
```

**Examples**

Examples of the `valxbrl` command:
Casing and slashes on the command line

RaptorXMLXBRL (and RaptorXMLXBRLServer for administration commands) on Windows
raptorxmlxbrl (and raptorxmlxbrlserver for administration commands) on Windows and Unix (Linux, Mac)

* Note that lowercase (raptorxmlxbrl and raptorxmlxbrlserver) works on all platforms (Windows, Linux, and Mac), while upper-lower (RaptorXMLXBRL) works only on Windows and Mac.
* Use forward slashes on Linux and Mac, backslashes on Windows.

Backslashes, spaces, and special characters on Windows systems

On Windows systems: When spaces or special characters occur in strings (for example in file or folder names, or company, person or product names), use quotes: for example, "My File". Note, however, that a backslash followed by a double-quotation mark (for example, “C:\My directory") might not be read correctly. This is because the backslash character is also used to indicate the start of an escape sequence, and the escape sequence \ stands for the double-quotation mark character. If you want to escape this sequence of characters, use a preceding backslash, like this: \\". To summarize: If you need to write a file path that contains spaces or an end backslash, write it like this: "C:\My Directory\".

Options

Options are listed in short form (if available) and long form. You can use one or two dashes for both short and long forms. An option may or may not take a value. If it takes a value, it is written like this: --option=value. Values can be specified without quotes except in two cases: (i) when the value string contains spaces, or (ii) when explicitly stated in the description of the option that quotes are required. If an option takes a Boolean value and no value is specified, then the option's default value is TRUE. Use the --h, --help option to display information about the command.

XBRL validation and processing

additional-dts-entry-point

--additional-dts-entry-point = FILE

Forces the specified entry-point file to be included in the DTS discovery process. Add the option multiple times to specify more than one entry point.

ct-restrict-mode

--ct-restrict-mode = 1.0|1.1|default

Specifies how to check complex type restrictions. A value of 1.0 checks complex type restrictions as defined in the XSD 1.0 specification—even in XSD 1.1 validation mode. A value of 1.1 checks complex type restrictions as defined in the XSD 1.1 specification—even in XSD 1.0 validation mode.
A value of `default` checks complex type restrictions as defined in the XSD specification of the current validation mode (1.0 or 1.1). The default value is `default`.

**deduplicate**

`--deduplicate = true|false`

Enables de-duplication according to the [Handling Duplicate Facts in XBRL and Inline XBRL 1.0 specification](https://docs.oasis-open.org/ebxml-corebusters/ebxml-corebusters-v12.pdf). Removes facts that are (i) complete duplicates, (ii) consistent duplicates (by definition these are numeric facts; the most accurate of the duplicates is retained for processing). Inconsistent and multi-language duplicates are not affected by this option. Default value is `false`.  
*Note:* Boolean option values are set to `true` if the option is specified without a value.

**dimensions**

`--dimensions = true|false`

Enables XBRL Dimension 1.0 extensions. Default is `true`.  
*Note:* Boolean option values are set to `true` if the option is specified without a value.

**dts**

`--dts = FILE`

Preloads the DTS entry point given in `FILE`, and uses it for the validation of instance files. Add the option multiple times to specify more than one entry point. Entry points in instance files will be ignored. The command is used to batch validate multiple instance files that all refer to the same taxonomy. The `--dts` option instructs the Raptor engine to load the DTS only a single time—and not for each instance in the file list. (A file list is given either on the CLI, or in a text file that is indicated as a file list by setting the `--listfile` option to `true`.) If an instance file in the file list references a different taxonomy, then a warning is issued. This command can greatly speed up validation time when validating many small instance files each that have a large supporting DTS; it provides no advantage when validating a single instance file.

**essence-alias-checks**

`--essence-alias-checks = true|false`

Enables reporting of essence-alias inconsistencies. Default value is `true`.  
*Note:* Boolean option values are set to `true` if the option is specified without a value.

**extensible-enumerations**

`--extensible-enumerations = true|false`

If `true`, enables the [XBRL Extensible Enumerations](https://docs.oasis-open.org/ebxml-corebusters/ebxml-corebusters-v12.pdf) extension. Default is: `true`.

**generic-links**

`--generic-links = true|false`

Enables the XBRL Generic Links 1.0 extension. Default value is `true`.  
*Note:* Boolean option values are set to `true` if the option is specified without a value.

**generic-preferred-label**

`--generic-preferred-label = true|false`

Enables the XBRL Generic Preferred Label 1.0 extension. Default value is `true`.  
*Note:* Boolean option values are set to `true` if the option is specified without a value.
inconsistencies-limit

\[\text{--inconsistencies-limit} = N | \text{unlimited}\]

Specifies the XBRL inconsistencies limit, with values being in the range [1-65535] or unlimited. Processing continues if the limit is reached, but further inconsistencies are not reported. The default value is 100.

listfile

\[\text{--listfile} = \text{true}|\text{false}\]

If true, treats the command's InputFile argument as a text file containing one filename per line. Default value is false. (An alternative is to list the files on the CLI with a space as separator. Note, however, that CLIs have a maximum-character limitation.) Note that the --listfile option applies only to arguments, and not to options.

Note: Boolean option values are set to true if the option is specified without a value.

parallel-assessment [pa]

\[\text{--pa} | \text{--parallel-assessment} = \text{true}|\text{false}\]

If set to true, schema validity assessment is carried out in parallel. This means that if there are more than 128 elements at any level, these elements are processed in parallel using multiple threads. Very large XML files can therefore be processed faster if this option is enabled. Parallel assessment takes place on one hierarchical level at a time, but can occur at multiple levels within a single infoset. Note that parallel assessment does not work in streaming mode. For this reason, the --streaming option is ignored if --parallel-assessment is set to true. Also, memory usage is higher when the --parallel-assessment option is used. The default setting is false. Short form for the option is --pa.

Note: Boolean option values are set to true if the option is specified without a value.

preload-xbrl-schemas

\[\text{--preload-xbrl-schemas} = \text{true}|\text{false}\]

Preloads schemas of the XBRL 2.1 specification. Default is true.

Note: Boolean option values are set to true if the option is specified without a value.

recurse

\[\text{--recurse} = \text{true}|\text{false}\]

Used to select files within sub-directories, including in ZIP archives. If true, the command's InputFile argument will select the specified file also in subdirectories. For example: "test.zip|zip\test.xml" will select files named test.xml at all folder levels of the zip folder. References to ZIP files must be given in quotes. The wildcard characters * and ? may be used. So, *.xml will select all .xml files in the (zip) folder. The option's default value is false.

Note: Boolean option values are set to true if the option is specified without a value.

report-duplicates

\[\text{--report-duplicates} = \text{all}|\text{complete}|\text{consistent}|\text{inconsistent}|\text{inconsistent-numeric}|\text{inconsistent-non-numeric}|\text{multi-language}\]

Enables the reporting of duplicate facts of the specified duplicate class. Add the option multiple times to specify more than one duplicate class. There is no default value. If no value is specified, then no check for duplicates is carried out.
**report-duplicates-severity**

```
--report-duplicates-severity = [info|warning|inconsistency|error]
```

Specifies whether the detected duplicate facts should be reported as errors or warnings. If they are reported as errors, then the XBRL validation of the instance will fail. The default is **error**.

**report-import-namespace-mismatch-as-warning**

```
--report-import-namespace-mismatch-as-warning = [true|false]
```

Downgrades namespace or target-namespace mismatch errors when importing schemas with `xs:import` from errors to warnings. The default value is **false**.

*Note:* Boolean option values are set to **true** if the option is specified without a value.

**requires-element-checks**

```
--requires-element-checks = [true|false]
```

Enables reporting of requires-element inconsistencies. The default value is **true**.

*Note:* Boolean option values are set to **true** if the option is specified without a value.

**schema-imports**

```
--schema-imports = [load-by-schemalocation | load-preferring-schemalocation | load-by-namespace | load-combining-both | license-namespace-only]
```

Specifies the behaviour of `xs:import` elements, each of which has an optional namespace attribute and an optional schemalocation attribute: `<import namespace="someNS" schemalocation="someURL">`. The option specifies whether to load a schema document or just license a namespace, and, if a schema document is to be loaded, which information should be used to find it. Default: **load-preferring-schemalocation**.

The behavior is as follows:

- **load-by-schemalocation:** The value of the schemalocation attribute is used to locate the schema, taking account of catalog mappings. If the namespace attribute is present, the namespace is imported (licensed).
- **load-preferring-schemalocation:** If the schemalocation attribute is present, it is used, taking account of catalog mappings. If no schemalocation attribute is present, then the value of the namespace attribute is used via a catalog mapping. This is the default value.
- **load-by-namespace:** The value of the namespace attribute is used to locate the schema via a catalog mapping.
- **load-combining-both:** If either the namespace or schemalocation attribute has a catalog mapping, then the mapping is used. If both have catalog mappings, then the value of the --schema-mapping option (XBRL option and XML/XSD option) decides which mapping is used. If no catalog mapping is present, the schemalocation attribute is used.
- **license-namespace-only:** The namespace is imported. No schema document is imported.

**schema-mapping**

```
--schema-mapping = [prefer-schemalocation | prefer-namespace]
```

If schema location and namespace are both used to find a schema document, specifies which of them should be preferred during catalog lookup. (If either the --schemalocation-hints or the --schema-imports option has a value of load-combining-both, and if the namespace and URL parts involved both have catalog mappings, then the value of this option specifies which of the two mappings to use (namespace mapping or URL mapping); the prefer-schemalocation value refers to the URL mapping.) Default is **prefer-schemalocation**.
schemalocation-hints

```
--schemalocation-hints = load-by-schemalocation | load-by-namespace | load-combining-both | ignore
```

Specifies the behavior of the `xsi:schemaLocation` and `xsi:noNamespaceSchemaLocation` attributes: Whether to load a schema document, and, if yes, which information should be used to find it. Default: `load-by-schemalocation`.

- The `load-by-schemalocation` value uses the URL of the schema location in the `xsi:schemaLocation` and `xsi:noNamespaceSchemaLocation` attributes in XML or XBRL instance documents. This is the default value.
- The `load-by-namespace` value takes the namespace part of `xsi:schemaLocation` and an empty string in the case of `xsi:noNamespaceSchemaLocation` and locates the schema via a catalog mapping.
- If `load-combining-both` is used and if either the namespace part or the URL part has a catalog mapping, then the catalog mapping is used. If both have catalog mappings, then the value of the `--schema-mapping` option (XBRL option and XML/XSD option) decides which mapping is used. If neither the namespace nor URL has a catalog mapping, the URL is used.
- If the option's value is `ignore`, then the `xsi:schemaLocation` and `xsi:noNamespaceSchemaLocation` attributes are both ignored.

script

```
--script = FILE
```

Executes the Python script in the submitted file after validation has been completed. Add the option multiple times to specify more than one script.

script-api-version

```
--api, --script-api-version = 1; 2; 2.1; 2.2; 2.3; 2.4; 2.4.1; 2.5; 2.6; 2.7; 2.8; 2.8.1; 2.8.2; 2.8.3
```

Specifies the Python API version to be used for the script. The default value is the latest version, currently `2.8.3`. Instead of the values 1 and 2, you can also use the values 1.0 and 2.0, respectively.

script-output

```
--script-output = FILE
```

Writes the script's standard output to the file named in `FILE`.

script-param

```
--script-param = KEY:VALUE
```

Additional user-specified parameters that can be accessed during the execution of Python scripts. Add the option multiple times to specify more than one script parameter.

summation-item-checks

```
--summation-item-checks = true|false
```

Enables reporting of summation-item inconsistencies. The default value is `true`.

Note: Boolean option values are set to `true` if the option is specified without a value.
### taxonomy-package

`--taxonomy-package = FILE`

Specifies the absolute path to an additional taxonomy package as described in the Taxonomy Package 1.0 and Taxonomy Packages 1.0 working drafts. The value of FILE gives the location of the taxonomy package. Add the option multiple times to specify more than one taxonomy package.

### taxonomy-packages-config-file

`--taxonomy-packages-config-file = FILE`

Specifies the path to the TaxonomyPackagesConfig.json file, which is used to load XBRL taxonomy packages. The file's convenience is that it serves as a catalog of taxonomy packages. The structure of the JSON file is as in the example listing below. The value of the `uri` key gives the location of the package. The `active` key (of a set of packages) switches on usage of those packages.

```json
{
  "taxonomies": {
    "EIOPA Solvency II XBRL Taxonomy 2.1.0": {
      "packages": [
        {"uri":"C:\test\XBRL\EIOPA_SolvencyII_XBRL_Taxonomy_2.1.0.zip"},
        {"uri":"C:\test\XBRL\AdditionalTestPkg.zip"}
      ],"active":true
    },
    "Test Taxonomy": {
      "packages": [{"uri":"C:\test\XBRL\test.zip"}, "active":true
    }
  }
}
```

### treat-custom-role-errors-as-warnings

`--treat-custom-role-errors-as-warnings = true|false`

Reports non-critical XBRL errors related to custom role/arcrole types (for example, missing `roleRefs`) as warnings. Default value is false.

**Note:** Boolean option values are set to `true` if the option is specified without a value.

### treat-invalid-use-of-standard-role-as-warning

`--treat-invalid-use-of-standard-role-as-warning = true|false`

Specifies whether the invalid use of standard roles should be reported only as a warning. Default value is `false`.

**Note:** Boolean option values are set to `true` if the option is specified without a value.

### treat-inconsistencies-as-errors

`--treat-inconsistencies-as-errors = true|false`

Causes XBRL validation to fail if the file contains any inconsistency as defined by the XBRL 2.1 specification. Default value is `false`.

**Note:** Boolean option values are set to `true` if the option is specified without a value.

### utr

`--utr = true|false`

If `true`, enables the XBRL Unit Registry 1.0 extension. Default is: `false`. 
utr-file

```
--utr-file = FILE
```

Specifies the path to the Units Registry file. The default is: http://www.xbrl.org/utr/utr.xml.

utr-status

```
--utr-status = PWD|CR|REC|NIE|PROPOSED|IWD|ACK|RR
```

Enables support of unit definitions with the given status in the Units Registry. Add the option multiple times to specify more than one unit status. Default is REC.

validate-dts-only

```
--validate-dts-only = true|false
```

The DTS is discovered by starting from the XBRL instance document. All referenced taxonomy schemas and linkbases are discovered and validated. The rest of the XBRL instance document is ignored. Default value is false. 

Note: Boolean option values are set to true if the option is specified without a value.

xinclude

```
--xinclude = true|false
```

Enables XML Inclusions (XInclude) support. Default value is false. When false, XInclude's include elements are ignored.

Note: Boolean option values are set to true if the option is specified without a value.

XBRL formulas and assertions

assertion-severity

```
--assertion-severity = true|false
```

Enables the Assertion Severity 1.0 extension. Default is true.

Note: Boolean option values are set to true if the option is specified without a value.

assertions-output

```
--assertions-output = FILE
```

Writes the output of the assertion evaluation to the specified FILE. If set, automatically specifies --formula-execution=true.

assertions-output-format

```
--assertions-output-format = json|xml
```

Specifies the output format of the assertion evaluation. Default is json.

enable-formula-optimizations

```
--enable-formula-optimizations = true|false
```

Enables optimizations for variable sets in which there are no explicit dependencies between fact variables. Default value is false.

Note: Boolean option values are set to true if the option is specified without a value.
evaluate-referenced-parameters-only

---evaluate-referenced-parameters-only = true|false
If false, forces evaluation of all parameters even if they are not referenced by any formulas/assertions/tables. Default is: true.

formula

---formula = true|false
Enables the XBRL Formula 1.0 extension. Default is true.

Note: Boolean option values are set to true if the option is specified without a value.

formula-assertion-set  [[DEPRECATED]]

---formula-assertion-set = VALUE
Limits formula execution to the given assertion set only. Add the option multiple times to specify more than one assertion set. Short form is --as. The VALUE is either the value of the @id attribute, or a URI with an XPointer fragment that identifies the resource. The special values ##none and ##all can also be used.

formula-execution

---formula-execution = true|false
Enables evaluation of XBRL formulas. Default is true. If true, automatically specifies --formula=true.

Note: Boolean option values are set to true if the option is specified without a value.

formula-output

---formula-output = FILE
Writes the output of formula evaluation to the specified FILE. If set, automatically specifies --formula-execution=true.

formula-parameters

---formula-parameters = JSON-ARRAY
Specifies parameters for XBRL formula evaluation as array of JSON maps directly on the CLI. See the section Formula Parameters for details.

formula-parameters-file

---formula-parameters-file = FILE
Specifies a FILE containing the parameters for XBRL formula evaluation. The file can be either an XML file or JSON file. See the section Formula Parameters.

ignore-assertion

---ignore-assertion = VALUE
Excludes the given assertion from the execution. Add this option multiple times to specify more than one assertion.

ignore-assertions-file

---ignore-assertions-file = FILE
Specifies a path to a file that contains a list of IDs/XPointers of assertions to exclude from processing. In the file, enter one assertion per line.

**ignore-formula**

```plaintext
--ignore-formula = VALUE
```

Excludes the given formula from the execution. Add this option multiple times to specify more than one formula.

**ignore-formulas-file**

```plaintext
--ignore-formulas-file = FILE
```

Specifies a path to a file that contains a list of formula IDs/XPointers to exclude from processing. In the file, enter one formula per line.

**message-lang**

```plaintext
--message-lang = VALUE
```

Specifies the language to use when displaying validation messages. Default is: en. Other accepted values are de, es, fr, ja, for, respectively, German, Spanish, French, and Japanese.

**message-role**

```plaintext
--message-role = VALUE
```

Specifies the preferred message role to use when displaying validation messages. Default is: http://www.xbrl.org/2010/role/message.

**preload-formula-schemas**

```plaintext
--preload-formula-schemas = true|false
```

Preloads schemas of the XBRL Formula 1.0 specification. Default is false.

*Note:* Boolean option values are set to true if the option is specified without a value.

**process-assertion [a]**

```plaintext
--a | --process-assertion = VALUE
```

Limits formula execution to the given assertion only. Add the option multiple times to specify more than one assertion. Short form is --a. The VALUE is either the value of the @id attribute, or a URI with an XPointer fragment that identifies the resource. The special values ##none and ##all can also be used.

**process-assertion-set [as]**

```plaintext
--as | --process-assertion-set = VALUE
```

Limits formula execution to the given assertion set only. Add the option multiple times to specify more than one assertion set. Short form is --as. The VALUE is either the value of the @id attribute, or a URI with an XPointer fragment that identifies the resource. The special values ##none and ##all can also be used.

**process-assertions-file**

```plaintext
--process-assertions-file = FILE
```

Specifies a path to a file that contains a list of IDs/XPointers of assertions to execute. In the file, enter one assertion per line.
process-formula [f]

--f | --process-formula = VALUE
Limits formula execution to the given formula only. Add the option multiple times to specify more than one formula. Short form is --f. The VALUE is either the value of the @id attribute, or a URI with an XPointer fragment that identifies the resource. The special values ##none and ##all can also be used.

process-formulas-file

--process-formulas-file = FILE
Specifies a path to a file that contains a list of IDs/XPointers of formulas to execute. In the file, enter one formula per line.

report-unsatisfied-assertion-evaluations

--report-unsatisfied-assertion-evaluations = true|false
Reports the evaluation of unsatisfied assertion as errors or warnings depending on the assigned assertion severity level. The default value is false.  
Note: Boolean option values are set to true if the option is specified without a value.

validate-formula-output

--validate-formula-output = true|false
Enables XBRL validation of Formula output instance. The default value is false.  
Note: Boolean option values are set to true if the option is specified without a value.

variableset-execution-timeout

--variableset-execution-timeout = VALUE
Applied when executing formulas (--formula-execution=true). Specifies the maximum time allowed for executing a single variable set (a formula or a value, or an existence or consistency assertion). The time is specified in minutes and must be a positive number. The default is 30min. If a particular variable set doesn’t finish execution before the timeout is reached, then it is aborted. An error message is displayed (and entered in the verbose log). Note, however, that the timeout check is carried out only after every variable set evaluation—and not during execution of individual XPath expressions. So, if a single XPath expression takes long to execute, the timeout limit might be crossed. Execution of a variable set is aborted only once a complete variable set evaluation has been executed.

XBRL tables

aspect-node-order

--aspect-node-order = lexical|instance
Specifies the layout order of an open aspectNode. The default is lexical.

concept-label-linkrole

--concept-label-linkrole = VALUE
Specifies the preferred extended link role to use when rendering concept labels.
concept-label-role

```command-line
--concept-label-role = VALUE
```

Specifies the preferred label role to use when rendering concept labels. Default is:

generic-label-linkrole

```command-line
--generic-label-linkrole = VALUE
```

Specifies the preferred extended link role to use when rendering generic labels.

generic-label-role

```command-line
--generic-label-role = VALUE
```

Specifies the preferred label role to use when rendering generic labels. Default is:

label-lang

```command-line
--label-lang = VALUE
```

Specifies the preferred language to use when rendering labels. Default is: en.

preload-table-schemas

```command-line
--preload-table-schemas = true|false
```

Preloads schemas of the XBRL Table 1.0 specification. Default is false.

**Note:** Boolean option values are set to true if the option is specified without a value.

process-table [t]

```command-line
--t | --process-table = VALUE
```

Limits formula execution to the given table only. Add the option multiple times to specify more than one table. Short form is --t. The VALUE is either the value of the @id attribute, or a URI with an XPointer fragment that identifies the resource. The special values ##none and ##all can also be used.

table

```command-line
--table = true|false
```

Enables the XBRL Table 1.0 extension. Default value is true. If true, automatically specifies --formula=true and --dimensions=true.

**Note:** Boolean option values are set to true if the option is specified without a value.

table-elimination

```command-line
--table-elimination = true|false
```

Enables elimination of empty table rows/columns in HTML output. Default is true.

**Note:** Boolean option values are set to true if the option is specified without a value.

table-execution

```command-line
--table-execution = true|false
```

Enables evaluation of XBRL tables. Default is false. Will be set to true if --table-output is
specified. If \texttt{true}, automatically specifies \texttt{--table=true}.

\textbf{Note}: Boolean option values are set to \texttt{true} if the option is specified without a value.

\small

\textbf{table-linkbase-namespace}

\texttt{--table-linkbase-namespace =}

\begin{verbatim}
##detect | http://xbrl.org/PWD/2013-05-17/table |
http://xbrl.org/PWD/2013-08-28/table |
http://xbrl.org/FR/2013-12-18/table |
http://xbrl.org/2014/table
\end{verbatim}

Enables loading of table linkbases written with a previous draft specification. Table linkbase validation, resolution, and layout is, however, always performed according to the Table Linkbase 1.0 Recommendation of 18 March 2014. Use \texttt{##detect} to enable auto-detection.

\textbf{table-output}

\texttt{--table-output = FILE}

Writes the table output to the specified \texttt{FILE}. If set, automatically specifies \texttt{--table-execution=true}.

\textbf{table-output-format}

\texttt{--table-output-format = xml|html}

Specifies the format of the table output. Default is \texttt{xml}.

\textbf{XULE execution}

\textbf{xule}

\texttt{--xule = FILE}

Executes the XULE rules contained in the specified file. If a directory or zip archive is specified, then all .xule files in that directory or archive will be executed. Add the option multiple times to specify more than one XULE file.

\textbf{process-xule-rule}

\texttt{--process-xule-rule = VALUE}

XULE rules have names. This option limits XULE execution to the rule whose name is given as the value of the option. Add the option multiple times to specify more than one rule.

\textbf{xule-instance-namespace-bindings}

\texttt{--xule-instance-namespace-bindings = true|false}

Makes namespace bindings from the root element of the XBRL instance available in the XULE processor. This would enable you to use (in the XULE document) the same namespace prefixes as those of the XBRL instance document. The default is \texttt{false}.

\textbf{Note}: Boolean option values are set to \texttt{true} if the option is specified without a value.

\textbf{xule-output}
Command Line Interface (CLI) XBRL Validation Commands

--xule-output = FILE
Serializes XULE output to the file named here.

- `xule-report-rule-evaluations`
  --xule-report-rule-evaluations = [true|false]
  Depending on the severity of the rules, evaluations of XULE assertions are reported as errors, warnings, or infos. The default value is true.
  **Note:** Boolean option values are set to true if the option is specified without a value.

- `xule-stack-size`
  --xule-stack-size = VALUE
  Specifies the stack size for function calls to the XULE processor. The default value is 1000.

- Catalogs and global resources
  - `catalog`
    --catalog = FILE
    Specifies the absolute path to a root catalog file that is not the installed root catalog file. The default value is the absolute path to the installed root catalog file (`<installation-folder>\Altova\RaptorXMLXBRLServer2021\etc\RootCatalog.xml`). See the section, XML Catalogs, for information about working with catalogs.

  - `user-catalog`
    --user-catalog = FILE
    Specifies the absolute path to an XML catalog to be used in addition to the root catalog. See the section, XML Catalogs, for information about working with catalogs.

  - `enable-globalresources`
    --enable-globalresources = [true|false]
    Enables global resources. Default value is false.
    **Note:** Boolean option values are set to true if the option is specified without a value.

  - `globalresourceconfig [gc]`
    --gc | --globalresourceconfig = VALUE
    Specifies the active configuration of the global resource (and enables global resources).

  - `globalresourcefile [gr]`
    --gr | --globalresourcefile = FILE
    Specifies the global resource file (and enables global resources).

- Messages, errors, help, timeout, version
  - `error-format`
    --error-format = text|shortxml|longxml
Specifies the format of the error output. Default value is text. The other options generate XML formats, with longxml generating more detail.

▼ error-limit

--error-limit = N | unlimited
Specifies the error limit with a value range of 1 to 9999 or unlimited. The default value is 100. Processing stops when the error limit is reached. Useful for limiting processor use during validation/transformation.

▼ info-limit

--info-limit = N | unlimited
Specifies the information message limit in the range 1-65535 or unlimited. Processing continues if the specified info limit is reached, but further messages are not reported. The default value is 100.

▼ help

--help
Displays help text for the command. For example, valany --h. (Alternatively the help command can be used with an argument. For example: help valany.)

▼ log-output

--log-output = FILE
Writes the log output to the specified file URL. Ensure that the CLI has write permission to the output location.

▼ network-timeout

--network-timeout = VALUE
Specifies the timeout in seconds for remote I/O operations. Default is: 40.

▼ verbose

--verbose = true|false
A value of true enables output of additional information during validation. Default value is false. Note: Boolean option values are set to true if the option is specified without a value.

▼ verbose-output

--verbose-output = FILE
Writes verbose output to FILE.

▼ version

--version
Displays the version of RaptorXML+XBRL Server. If used with a command, place --version before the command.

▼ warning-limit

--warning-limit = N | unlimited
Specifies the warning limit in the range 1-65535 or unlimited. Processing continues if this limit is
reached, but further warnings are not reported. The default value is 100.

### 4.3.2 valinlinexbrl (ixbrl)

The `valinlinexbrl` | `ixbrl` command validates one or more Inline XBRL (iXBRL) documents according to the [Inline XBRL 1.0 or Inline XBRL 1.1 specification](https://altova.com/xbrl). An XBRL file is generated from the Inline XBRL and can be saved.

```
raptorxmlxbrl valinlinexbrl | ixbrl [options] InputFile
```

- The `InputFile` argument specifies the Inline XBRL document (typically, an XHTML document) to validate. In the first step of the validation, command execution transforms the XHTML to XBRL by extracting the Inline XBRL. If no error is generated in this first step and if the `--validate-xbrl` option is set to `true`, then the generated XBRL is validated against the XBRL taxonomy specified in the Inline XBRL.
- To validate multiple documents, either: (i) list the files to be validated on the CLI, with each file separated from the next by a space; or (ii) list the files to be validated in a text file (.txt file), with one filename per line, and supply this text file as the `InputFile` argument together with the `--listfile` option set to `true` (see the Options list below). Note that even when multiple Inline XBRL input files are processed, only one XBRL document is generated.

#### Examples

Examples of the `valinlinexbrl` command:

```
• raptorxmlxbrl valinlinexbrl c:\MyIXBRL.xhtml
• raptorxmlxbrl valinlinexbrl --ixbrl-version=1.1 c:\MyIXBRL.xhtml
• raptorxmlxbrl ixbrl --validate-xbrl=true --xbrl-output=C:\MyOutXBRL.xbrl C:\MyIXBRL.xhtml
• raptorxmlxbrl ixbrl --validate-xbrl=false --xbrl-output=C:\MyOutXBRL.xbrl C:\MyIXBRL.xhtml
• raptorxmlxbrl ixbrl --xbrl-output=C:\MyOutXBRL.xbrl --document-set=true --listfile=true C:\MyFileList.txt
```

#### Casing and slashes on the command line

- **RaptorXMLXBRL** (and RaptorXMLXBRLServer for administration commands) on Windows
- **raptorxmlxbrl** (and raptorxmlxbrlserver for administration commands) on Windows and Unix (Linux, Mac)

  * Note that lowercase (raptorxmlxbrl and raptorxmlxbrlserver) works on all platforms (Windows, Linux, and Mac), while upper-lower (RaptorXMLXBRL) works only on Windows and Mac.

  * Use forward slashes on Linux and Mac, backslashes on Windows.

#### Backslashes, spaces, and special characters on Windows systems
On Windows systems: When spaces or special characters occur in strings (for example in file or folder names, or company, person or product names), use quotes: for example, "My File". Note, however, that a backslash followed by a double-quotiation mark (for example, “C:\My directory\”) might not be read correctly. This is because the backslash character is also used to indicate the start of an escape sequence, and the escape sequence \" stands for the double-quotiation mark character. If you want to escape this sequence of characters, use a preceding backslash, like this: \\". To summarize: If you need to write a file path that contains spaces or an end backslash, write it like this: "C:\My Directory\\".

Options

Options are listed in short form (if available) and long form. You can use one or two dashes for both short and long forms. An option may or may not take a value. If it takes a value, it is written like this: --option=value. Values can be specified without quotes except in two cases: (i) when the value string contains spaces, or (ii) when explicitly stated in the description of the option that quotes are required. If an option takes a Boolean value and no value is specified, then the option's default value is TRUE. Use the --h, --help option to display information about the command.

\XBRL validation and processing

\v
\ additional-dts-entry-point

```
--additional-dts-entry-point = FILE
```
Forces the specified entry-point file to be included in the DTS discovery process. Add the option multiple times to specify more than one entry point.

\v
\ ct-restrict-mode

```
--ct-restrict-mode = 1.0|1.1|default
```
Specifies how to check complex type restrictions. A value of 1.0 checks complex type restrictions as defined in the XSD 1.0 specification—even in XSD 1.1 validation mode. A value of 1.1 checks complex type restrictions as defined in the XSD 1.1 specification—even in XSD 1.0 validation mode. A value of default checks complex type restrictions as defined in the XSD specification of the current validation mode (1.0 or 1.1). The default value is default.

\v
\ deduplicate

```
--deduplicate = true|false
```
Enables de-duplication according to the Handling Duplicate Facts in XBRL and Inline XBRL 1.0 specification. Removes facts that are (i) complete duplicates, (ii) consistent duplicates (by definition these are numeric facts; the most accurate of the duplicates is retained for processing). Inconsistent and multi-language duplicates are not affected by this option. Default value is false. 

\Note: Boolean option values are set to true if the option is specified without a value.

\v
\ dimensions

```
--dimensions = true|false
```
Enables XBRL Dimension 1.0 extensions. Default is true. 

\Note: Boolean option values are set to true if the option is specified without a value.

\v
\ dts
Preloads the DTS entry point given in FILE, and uses it for the validation of instance files. Add the option multiple times to specify more than one entry point. Entry points in instance files will be ignored. The --dts option instructs the Raptor engine to load the DTS only a single time—and not for each instance in the file list. (A file list is given either on the CLI, or in a text file that is indicated as a file list by setting the --listfile option to true.) If an instance file in the file list references a different taxonomy, then a warning is issued. This command can greatly speed up validation time when validating many small instance files each that have a large supporting DTS; it provides no advantage when validating a single instance file.

**essence-alias-checks**

```
--essence-alias-checks = true|false
```

Enables reporting of essence-alias inconsistencies. Default value is true.

*Note:* Boolean option values are set to true if the option is specified without a value.

**extensible-enumerations**

```
--extensible-enumerations = true|false
```

If true, enables the XBRL Extensible Enumerations extension. Default is: true.

**generic-links**

```
--generic-links = true|false
```

Enables the XBRL Generic Links 1.0 extension. Default value is true.

*Note:* Boolean option values are set to true if the option is specified without a value.

**generic-preferred-label**

```
--generic-preferred-label = true|false
```

Enables the XBRL Generic Preferred Label 1.0 extension. Default value is true.

*Note:* Boolean option values are set to true if the option is specified without a value.

**inconsistencies-limit**

```
--inconsistencies-limit = N | unlimited
```

Specifies the XBRL inconsistencies limit, with values being in the range 1-65535 or unlimited. Processing continues if the limit is reached, but further inconsistencies are not reported. The default value is 100.

**listfile**

```
--listfile = true|false
```

If true, treats the command's InputFile argument as a text file containing one filename per line. Default value is false. (An alternative is to list the files on the CLI with a space as separator. Note, however, that CLIs have a maximum-character limitation.) Note that the --listfile option applies only to arguments, and not to options.

*Note:* Boolean option values are set to true if the option is specified without a value.

**parallel-assessment [pa]**

```
--pa | --parallel-assessment = true|false
```

This option has become obsolete. It is only included here in order to maintain backwards compatibility with older versions of the CLI.

---

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If set to `true`, schema validity assessment is carried out in parallel. This means that if there are more than 128 elements at any level, these elements are processed in parallel using multiple threads. Very large XML files can therefore be processed faster if this option is enabled. Parallel assessment takes place on one hierarchical level at a time, but can occur at multiple levels within a single infoset. Note that parallel assessment does not work in streaming mode. For this reason, the `--streaming` option is ignored if `--parallel-assessment` is set to `true`. Also, memory usage is higher when the `--parallel-assessment` option is used. The default setting is `false`. Short form for the option is `--pa`.

**Note:** Boolean option values are set to `true` if the option is specified without a value.

```
--preload-xbrl-schemas = true|false
```

Preloads schemas of the XBRL 2.1 specification. Default is `true`.

**Note:** Boolean option values are set to `true` if the option is specified without a value.

```
--recurse = true|false
```

Used to select files within sub-directories, including in ZIP archives. If `true`, the command's `InputFile` argument will select the specified file also in subdirectories. For example: `"test.zip|zip\test.xml"` will select files named `test.xml` at all folder levels of the zip folder. References to ZIP files must be given in quotes. The wildcard characters `*` and `?` may be used. So, `*.xml` will select all `.xml` files in the (zip) folder. The option's default value is `false`.

**Note:** Boolean option values are set to `true` if the option is specified without a value.

```
--report-duplicates = all|complete|consistent|inconsistent|inconsistent-numeric|
inconsistent-non-numeric|multi-language
```

Enables the reporting of duplicate facts of the specified duplicate class. Add the option multiple times to specify more than one duplicate class. There is no default value. If no value is specified, then no check for duplicates is carried out.

```
--report-duplicates-severity = info|warning|inconsistency|error
```

Specifies whether the detected duplicate facts should be reported as errors or warnings. If they are reported as errors, then the XBRL validation of the instance will fail. The default is `error`.

```
--report-import-namespace-mismatch-as-warning = true|false
```

Downgrades namespace or target-namespace mismatch errors when importing schemas with `xs:import` from errors to warnings. The default value is `false`.

**Note:** Boolean option values are set to `true` if the option is specified without a value.

```
--requires-element-checks = true|false
```

Enables reporting of requires-element inconsistencies. The default value is `true`.

**Note:** Boolean option values are set to `true` if the option is specified without a value.
--schema-imports = load-by-schemalocation | load-preferring-schemalocation | load-by-namespace | load-combining-both | license-namespace-only

Specifies the behaviour of \texttt{xsl:import} elements, each of which has an optional \texttt{namespace} attribute and an optional \texttt{schemalocation} attribute: \texttt{<import namespace="someNS" schemalocation="someURL">}. The option specifies whether to load a schema document or just license a namespace, and, if a schema document is to be loaded, which information should be used to find it. Default: load-preferring-schemalocation.

The behavior is as follows:

- load-by-schemalocation: The value of the \texttt{schemalocation} attribute is used to locate the schema, taking account of catalog mappings. If the namespace attribute is present, the namespace is imported (licensed).
- load-preferring-schemalocation: If the \texttt{schemalocation} attribute is present, it is used, taking account of catalog mappings. If no \texttt{schemalocation} attribute is present, then the value of the namespace attribute is used via a catalog mapping. This is the default value.
- load-by-namespace: The value of the namespace attribute is used to locate the schema via a catalog mapping.
- load-combining-both: If either the namespace or schemalocation attribute has a catalog mapping, then the mapping is used. If both have catalog mappings, then the value of the \texttt{--schema-mapping} option (XBRL option and XML/XSD option) decides which mapping is used. If no catalog mapping is present, the schemalocation attribute is used.
- license-namespace-only: The namespace is imported. No schema document is imported.

\textbf{schema-mapping}

\textbf{--schema-mapping = prefer-schemalocation | prefer-namespace}

If schema location and namespace are both used to find a schema document, specifies which of them should be preferred during catalog lookup. (If either the \texttt{--schemalocation-hints} or the \texttt{--schema-imports} option has a value of load-combining-both, and if the namespace and URL parts involved both have catalog mappings, then the value of this option specifies which of the two mappings to use (namespace mapping or URL mapping; the prefer-schemalocation value refers to the URL mapping.) Default is prefer-schemalocation.

\textbf{schemalocation-hints}

\textbf{--schemalocation-hints = load-by-schemalocation | load-by-namespace | load-combining-both | ignore}

Specifies the behavior of the \texttt{xsi:schemaLocation} and \texttt{xsi:noNamespaceSchemaLocation} attributes: Whether to load a schema document, and, if yes, which information should be used to find it. Default: load-by-schemalocation.

- The load-by-schemalocation value uses the URL of the schema location in the \texttt{xsi:schemaLocation} and \texttt{xsi:noNamespaceSchemaLocation} attributes in XML or XBRL instance documents. This is the default value.
- The load-by-namespace value takes the namespace part of \texttt{xsi:schemaLocation} and an empty string in the case of \texttt{xsi:noNamespaceSchemaLocation} and locates the schema via a catalog mapping.
- If load-combining-both is used and if either the namespace part or the URL part has a catalog mapping, then the catalog mapping is used. If both have catalog mappings, then the value of the \texttt{--schema-mapping} option (XBRL option and XML/XSD option) decides which mapping is used. If neither the namespace nor URL has a catalog mapping, the URL is used.
• If the option's value is ignore, then the xsi:schemaLocation and xsi:noNamespaceSchemaLocation attributes are both ignored.


• If the option's value is ignore, then the xsi:schemaLocation and xsi:noNamespaceSchemaLocation attributes are both ignored.


• If the option's value is ignore, then the xsi:schemaLocation and xsi:noNamespaceSchemaLocation attributes are both ignored.


• If the option's value is ignore, then the xsi:schemaLocation and xsi:noNamespaceSchemaLocation attributes are both ignored.


• If the option's value is ignore, then the xsi:schemaLocation and xsi:noNamespaceSchemaLocation attributes are both ignored.


• If the option's value is ignore, then the xsi:schemaLocation and xsi:noNamespaceSchemaLocation attributes are both ignored.


• If the option's value is ignore, then the xsi:schemaLocation and xsi:noNamespaceSchemaLocation attributes are both ignored.


• If the option's value is ignore, then the xsi:schemaLocation and xsi:noNamespaceSchemaLocation attributes are both ignored.


• If the option's value is ignore, then the xsi:schemaLocation and xsi:noNamespaceSchemaLocation attributes are both ignored.


• If the option's value is ignore, then the xsi:schemaLocation and xsi:noNamespaceSchemaLocation attributes are both ignored.


• If the option's value is ignore, then the xsi:schemaLocation and xsi:noNamespaceSchemaLocation attributes are both ignored.


• If the option's value is ignore, then the xsi:schemaLocation and xsi:noNamespaceSchemaLocation attributes are both ignored.


• If the option's value is ignore, then the xsi:schemaLocation and xsi:noNamespaceSchemaLocation attributes are both ignored.


• If the option's value is ignore, then the xsi:schemaLocation and xsi:noNamespaceSchemaLocation attributes are both ignored.


• If the option's value is ignore, then the xsi:schemaLocation and xsi:noNamespaceSchemaLocation attributes are both ignored.


• If the option's value is ignore, then the xsi:schemaLocation and xsi:noNamespaceSchemaLocation attributes are both ignored.


• If the option's value is ignore, then the xsi:schemaLocation and xsi:noNamespaceSchemaLocation attributes are both ignored.


• If the option's value is ignore, then the xsi:schemaLocation and xsi:noNamespaceSchemaLocation attributes are both ignored.


• If the option's value is ignore, then the xsi:schemaLocation and xsi:noNamespaceSchemaLocation attributes are both ignored.


• If the option's value is ignore, then the xsi:schemaLocation and xsi:noNamespaceSchemaLocation attributes are both ignored.


• If the option's value is ignore, then the xsi:schemaLocation and xsi:noNamespaceSchemaLocation attributes are both ignored.
treat-custom-role-errors-as-warnings

--treat-custom-role-errors-as-warnings = true|false
Reports non-critical XBRL errors related to custom role/arcrole types (for example, missing roleRefs) as warnings. Default value is false.

Note: Boolean option values are set to true if the option is specified without a value.

treat-inconsistencies-as-errors

--treat-inconsistencies-as-errors = true|false
Causes XBRL validation to fail if the file contains any inconsistency as defined by the XBRL 2.1 specification. Default value is false.

Note: Boolean option values are set to true if the option is specified without a value.

utr

--utr = true|false
If true, enables the XBRL Unit Registry 1.0 extension. Default is false.

utr-file

--utr-file = FILE
Specifies the path to the Units Registry file. The default is: http://www.xbrl.org/utr/utr.xml.

utr-status

--utr-status = PWD|CR|REC|NIE|PROPOSED|IWD|ACK|RR
Enables support of unit definitions with the given status in the Units Registry. Add the option multiple times to specify more than one unit status. Default is REC.

validate-dts-only

--validate-dts-only = true|false
The DTS is discovered by starting from the XBRL instance document. All referenced taxonomy schemas and linkbases are discovered and validated. The rest of the XBRL instance document is ignored. Default value is false.

Note: Boolean option values are set to true if the option is specified without a value.

xinclude

--xinclude = true|false
Enables XML Inclusions (XInclude) support. Default value is false. When false, XInclude’s include elements are ignored.

Note: Boolean option values are set to true if the option is specified without a value.
Inline XBRL

- **document-set**
  
  ```--document-set = true|false```
  
  If set to `true`, all submitted files (the Inline XBRL documents) will be treated as an Inline XBRL Document Set. The default value is `false`.
  
  **Note**: Boolean option values are set to `true` if the option is specified without a value.

- **extended-whitespace-normalization**
  
  ```--extended-whitespace-normalization = true|false```
  
  If `true`, enables normalization of Unicode Category Z whitespace characters, including non-breaking spaces. Default is `false`.

- **ixbrl-version**
  
  ```--ixbrl-version = 1.0|1.1|detect```
  
  Specifies the version of the Inline XBRL specification to use for validation. The default is `detect`.

- **non-numeric-whitespace-normalization**
  
  ```--non-numeric-whitespace-normalization = preserve|replace|collapse|trim```
  
  Specifies how to handle whitespace normalization in `ix:nonNumeric` elements that do not have a format attribute. The default is `preserve`.

- **transformation-registry**
  
  
  In Inline XBRL, date and numeric types may be rendered in a variety of lexical formats, but in XBRL these types have specific formats. For example, a date in the Inline XBRL might be given as 01 January 2017, but in XBRL the format of this date would be 2017-01-01. The Inline XBRL Transformation Registries specify the conversion rules to follow when date and numeric values are converted from Inline XBRL to XBRL. The transformation-registry option limits the registry that will be used to that which you specify. Add the option multiple times to specify more than one transformation registry. The default value is `#all`, which selects all available transformation registries. *(For the list of available transformation registries in your version of RaptorXML+XBRL Server, check the description of the command on the CLI.)*

- **uri-transformation**
  
  ```--uri-transformation = none|make-absolute|make-relative|keep-relative```
  
  Specifies how URIs should written to the generated XBRL document.
  
  - `none`: Copy URI verbatim to target document
  - `make-absolute`: Make any relative URIs absolute by resolving against the in-scope base
URI at the respective element in the input document. For example: if the input file is `c:\test\inlinexbrl.xhtml`, and it contains a relative reference to a schema, `schemas\schema.xsd`, then the relative reference would be resolved to: `c:\test\schemas\schema.xsd`. Note that xml:base attributes in the input document can change the base URI.

- **make-relative**: If possible, make any absolute and relative URIs relative to the output document (otherwise write the resolved absolute URI)
- **keep-relative**: If possible, make only the relative URIs relative to the output document (and copy any absolute URI)

### validate-xbrl

```
--validate-xbrl = true|false
```

If set to `true`, enables validation of the XBRL document that is generated from the Inline XBRL document. If set to `false`, then validation stops after the first step that generates the XBRL. The default value is `true`.

*Note*: Boolean option values are set to `true` if the option is specified without a value.

### xbrl-output

```
--xbrl-output = FILE
```

Writes the generated XBRL output to the file location specified in this option. Note that even when multiple Inline XBRL input files are processed, only one XBRL document is generated.

### XBRL formulas and assertions

#### assertion-severity

```
--assertion-severity = true|false
```

Enables the Assertion Severity 1.0 extension. Default is `true`.

*Note*: Boolean option values are set to `true` if the option is specified without a value.

#### assertions-output

```
--assertions-output = FILE
```

Writes the output of the assertion evaluation to the specified `FILE`. If set, automatically specifies `--formula-execution=true`.

#### assertions-output-format

```
--assertions-output-format = json|xml
```

Specifies the output format of the assertion evaluation. Default is `json`.

#### enable-formula-optimizations

```
--enable-formula-optimizations = true|false
```

Enables optimizations for variable sets in which there are no explicit dependencies between fact variables. Default value is `false`.

*Note*: Boolean option values are set to `true` if the option is specified without a value.

#### evaluate-referenced-parameters-only

```
--evaluate-referenced-parameters-only = true|false
```
If false, forces evaluation of all parameters even if they are not referenced by any formulas/assertions/tables. Default is: true.

- **formula**
  
  `--formula = true|false`

  Enables the XBRL Formula 1.0 extension. Default is true.

  *Note*: Boolean option values are set to true if the option is specified without a value.

- **formula-assertion-set** [[DEPRECATED]]

  `--formula-assertion-set = VALUE`

  Limits formula execution to the given assertion set only. Add the option multiple times to specify more than one assertion set. Short form is --as. The VALUE is either the value of the @id attribute, or a URI with an XPointer fragment that identifies the resource. The special values ##none and ##all can also be used.

- **formula-execution**

  `--formula-execution = true|false`

  Enables evaluation of XBRL formulas. Default is true. If true, automatically specifies --formula=true.

  *Note*: Boolean option values are set to true if the option is specified without a value.

- **formula-output**

  `--formula-output = FILE`

  Writes the output of formula evaluation to the specified FILE. If set, automatically specifies --formula-execution=true.

- **formula-parameters**

  `--formula-parameters = JSON-ARRAY`

  Specifies parameters for XBRL formula evaluation as array of JSON maps directly on the CLI. See the section Formula Parameters for details.

- **formula-parameters-file**

  `--formula-parameters-file = FILE`

  Specifies a FILE containing the parameters for XBRL formula evaluation. The file can be either an XML file or JSON file. See the section Formula Parameters.

- **ignore-assertion**

  `--ignore-assertion = VALUE`

  Excludes the given assertion from the execution. Add this option multiple times to specify more than one assertion.

- **ignore-assertions-file**

  `--ignore-assertions-file = FILE`

  Specifies a path to a file that contains a list of IDs/XPointers of assertions to exclude from processing. In the file, enter one assertion per line.
**ignore-formula**

```
--ignore-formula = VALUE
```

Excludes the given formula from the execution. Add this option multiple times to specify more than one formula.

**ignore-formulas-file**

```
--ignore-formulas-file = FILE
```

Specifies a path to a file that contains a list of formula IDs/XPointers to exclude from processing. In the file, enter one formula per line.

**message-lang**

```
--message-lang = VALUE
```

Specifies the language to use when displaying validation messages. Default is: en. Other accepted values are de, es, fr, ja, for, respectively, German, Spanish, French, and Japanese.

**message-role**

```
--message-role = VALUE
```

Specifies the preferred message role to use when displaying validation messages. Default is: http://www.xbrl.org/2010/role/message.

**preload-formula-schemas**

```
--preload-formula-schemas = true|false
```

Preloads schemas of the XBRL Formula 1.0 specification. Default is false.

*Note*: Boolean option values are set to true if the option is specified without a value.

**process-assertion [a]**

```
--a | --process-assertion = VALUE
```

Limits formula execution to the given assertion only. Add the option multiple times to specify more than one assertion. Short form is --a. The VALUE is either the value of the @id attribute, or a URI with an XPointer fragment that identifies the resource. The special values ##none and ##all can also be used.

**process-assertion-set [as]**

```
--as | --process-assertion-set = VALUE
```

Limits formula execution to the given assertion set only. Add the option multiple times to specify more than one assertion set. Short form is --as. The VALUE is either the value of the @id attribute, or a URI with an XPointer fragment that identifies the resource. The special values ##none and ##all can also be used.

**process-assertions-file**

```
--process-assertions-file = FILE
```

Specifies a path to a file that contains a list of IDs/XPointers of assertions to execute. In the file, enter one assertion per line.

**process-formula [f]**

```
--f | --process-formula = VALUE
```

```
Limits formula execution to the given formula only. Add the option multiple times to specify more than one formula. Short form is \(-f\). The \texttt{VALUE} is either the value of the \texttt{@id} attribute, or a URI with an XPointer fragment that identifies the resource. The special values \texttt{##none} and \texttt{##all} can also be used.

\textbf{process-formulas-file}

\texttt{--process-formulas-file = FILE}

Specifies a path to a file that contains a list of IDs/XPointers of formulas to execute. In the file, enter one formula per line.

\textbf{report-unsatisfied-assertion-evaluations}

\texttt{--report-unsatisfied-assertion-evaluations = true|false}

Reports the evaluation of unsatisfied assertion as errors or warnings depending on the assigned assertion severity level. The default value is \texttt{false}.

\textit{Note}: Boolean option values are set to \texttt{true} if the option is specified without a value.

\textbf{variables-set-execution-timeout}

\texttt{--variables-set-execution-timeout = VALUE}

Applied when executing formulas (\texttt{--formula-execution=true}). Specifies the maximum time allowed for executing a single variable set (a formula or a value, or an existence or consistency assertion). The time is specified in minutes and must be a positive number. The default is 30min. If a particular variable set doesn’t finish execution before the timeout is reached, then it is aborted. An error message is displayed (and entered in the verbose log). Note, however, that the timeout check is carried out only after every variable set evaluation—and not during execution of individual XPath expressions. So, if a single XPath expression takes long to execute, the timeout limit might be crossed. Execution of a variable set is aborted only once a complete variable set evaluation has been executed.

\textbf{XBRL tables}

\textbf{aspect-node-order}

\texttt{--aspect-node-order = lexical|instance}

Specifies the layout order of an open aspectNode. The default is \texttt{lexical}.

\textbf{concept-label-linkrole}

\texttt{--concept-label-linkrole = VALUE}

Specifies the preferred extended link role to use when rendering concept labels.

\textbf{concept-label-role}

\texttt{--concept-label-role = VALUE}

Specifies the preferred label role to use when rendering concept labels. Default is:


\textbf{generic-label-linkrole}

\texttt{--generic-label-linkrole = VALUE}
Specifies the preferred extended link role to use when rendering generic labels.

- **generic-label-role**
  
  \[
  --\text{generic-label-role} = \text{VALUE}
  \]
  
  Specifies the preferred label role to use when rendering generic labels. Default is:
  
  `http://www.xbrl.org/2003/role/label`

- **label-lang**
  
  \[
  --\text{label-lang} = \text{VALUE}
  \]
  
  Specifies the preferred language to use when rendering labels. Default is: `en`.

- **preload-table-schemas**
  
  \[
  --\text{preload-table-schemas} = \text{true|false}
  \]
  
  Preloads schemas of the XBRL Table 1.0 specification. Default is `false`.
  
  **Note**: Boolean option values are set to `true` if the option is specified without a value.

- **process-table**
  
  \[
  --\text{t | --process-table} = \text{VALUE}
  \]
  
  Limits formula execution to the given table only. Add the option multiple times to specify more than one table. Short form is `--t`. The `VALUE` is either the value of the `@id` attribute, or a URI with an XPath fragment that identifies the resource. The special values `##none` and `##all` can also be used.

- **table**
  
  \[
  --\text{table} = \text{true|false}
  \]
  
  Enables the XBRL Table 1.0 extension. Default value is `true`. If `true`, automatically specifies `--formula=true` and `--dimensions=true`.
  
  **Note**: Boolean option values are set to `true` if the option is specified without a value.

- **table-elimination**
  
  \[
  --\text{table-elimination} = \text{true|false}
  \]
  
  Enables elimination of empty table rows/columns in HTML output. Default is `true`.
  
  **Note**: Boolean option values are set to `true` if the option is specified without a value.

- **table-execution**
  
  \[
  --\text{table-execution} = \text{true|false}
  \]
  
  Enables evaluation of XBRL tables. Default is `false`. Will be set to `true` if `--table-output` is specified. If `true`, automatically specifies `--table=true`.
  
  **Note**: Boolean option values are set to `true` if the option is specified without a value.

- **table-linkbase-namespace**
  
  \[
  \]
XBRL Validation Commands

Command Line Interface (CLI)


Enables loading of table linkbases written with a previous draft specification. Table linkbase validation, resolution, and layout is, however, always performed according to the Table Linkbase 1.0 Recommendation of 18 March 2014. Use `##detect` to enable auto-detection.

```
table-output
--table-output = FILE
```
Writes the table output to the specified `FILE`. If set, automatically specifies `--table-execution=true`.

```
table-output-format
--table-output-format = xml|html
```
Specifies the format of the table output. Default is `xml`.

```
XULE execution

xule
--xule = FILE
```
Executes the XULE rules contained in the specified file. If a directory or zip archive is specified, then all `.xule` files in that directory or archive will be executed. Add the option multiple times to specify more than one XULE file.

```
process-xule-rule
--process-xule-rule = VALUE
```
XULE rules have names. This option limits XULE execution to the rule whose name is given as the value of the option. Add the option multiple times to specify more than one rule.

```
xule-instance-namespace-bindings
--xule-instance-namespace-bindings = true|false
```
Makes namespace bindings from the root element of the XBRL instance available in the XULE processor. This would enable you to use (in the XULE document) the same namespace prefixes as those of the XBRL instance document. The default is `false`.

**Note:** Boolean option values are set to `true` if the option is specified without a value.

```
xule-output
--xule-output = FILE
```
Serializes XULE output to the file named here.

```
xule-report-rule-evaluations
--xule-report-rule-evaluations = true|false
```
Depending on the severity of the rules, evaluations of XULE assertions are reported as errors, warnings, or infos. The default value is `true`.

**Note:** Boolean option values are set to `true` if the option is specified without a value.
xule-stack-size

```
--xule-stack-size = VALUE
```
Specifies the stack size for function calls to the XULE processor. The default value is 1000.

Catalogs and global resources

catalog

```
--catalog = FILE
```
Specifies the absolute path to a root catalog file that is not the installed root catalog file. The default value is the absolute path to the installed root catalog file (`<installation-folder>\Altova\RaptorXMLXBRLServer2021\etc\RootCatalog.xml`). See the section, XML Catalogs, for information about working with catalogs.

user-catalog

```
--user-catalog = FILE
```
Specifies the absolute path to an XML catalog to be used in addition to the root catalog. See the section, XML Catalogs, for information about working with catalogs.

enable-globalresources

```
--enable-globalresources = true|false
```
Enables global resources. Default value is `false`.

Note: Boolean option values are set to `true` if the option is specified without a value.

globalresourceconfig [gc]

```
--gc | --globalresourceconfig = VALUE
```
Specifies the active configuration of the global resource (and enables global resources).

globalresourcefile [gr]

```
--gr | --globalresourcefile = FILE
```
Specifies the global resource file (and enables global resources).

Messages, errors, help, timeout, version

error-format

```
--error-format = text|shortxml|longxml
```
Specifies the format of the error output. Default value is `text`. The other options generate XML formats, with `longxml` generating more detail.

error-limit

```
--error-limit = N | unlimited
```
Specifies the error limit with a value range of 1 to 9999 or unlimited. The default value is 100. Processing stops when the error limit is reached. Useful for limiting processor use during validation/transformation.

info-limit
--info-limit = \texttt{N | unlimited}
Specifies the information message limit in the range 1-65535 or unlimited. Processing continues if
the specified info limit is reached, but further messages are not reported. The default value is 100.

\textbf{help}

\texttt{--help}
Displays help text for the command. For example, \texttt{valany --h}. (Alternatively the \texttt{help}
command can be used with an argument. For example: \texttt{help valany}.)

\textbf{log-output}

\texttt{--log-output = \texttt{FILE}}
Writes the log output to the specified file URL. Ensure that the CLI has write permission to the output
location.

\textbf{network-timeout}

\texttt{--network-timeout = \texttt{VALUE}}
Specifies the timeout in seconds for remote I/O operations. Default is: 40.

\textbf{verbose}

\texttt{--verbose = \texttt{true|false}}
A value of \texttt{true} enables output of additional information during validation. Default value is \texttt{false}.
\textbf{Note:} Boolean option values are set to \texttt{true} if the option is specified without a value.

\textbf{verbose-output}

\texttt{--verbose-output = \texttt{FILE}}
Writes verbose output to \texttt{FILE}.

\textbf{version}

\texttt{--version}
Displays the version of RaptorXML+XBRL Server. If used with a command, place \texttt{--version} before
the command.

\textbf{warning-limit}

\texttt{--warning-limit = \texttt{N | unlimited}}
Specifies the warning limit in the range 1-65535 or unlimited. Processing continues if this limit is
reached, but further warnings are not reported. The default value is 100.

\section*{4.3.3 \texttt{valxbrrntaxonomy (dts)}}

The \texttt{valxbrrntaxonomy | dts} command validates one or more XBRL taxonomies (schemas) according to the
XBRL 2.1, Dimensions 1.0 and Formula 1.0 specifications.
raptorxmlxbrl valxbrltaxonomy | dts [options] InputFile

- The **InputFile** argument is the XBRL taxonomy to validate.
- To validate multiple documents, either: (i) list the files to be validated on the CLI, with each file separated from the next by a space; or (ii) list the files to be validated in a text file (.txt file), with one filename per line, and supply this text file as the **InputFile** argument together with the `--listfile` option set to true (see the Options list below).

**Examples**

Examples of the **valxbrltaxonomy** command:

- `raptorxmlxbrl valxbrltaxonomy c:\Test.xsd`
- `raptorxmlxbrl dts --listfile c:\FileList.txt`

**Casing and slashes on the command line**

RaptorXMLXBRL (and RaptorXMLXBRLServer for administration commands) on Windows

raptorxmlxbrl (and raptorxmlxbrlserver for administration commands) on Windows and Unix (Linux, Mac)

* Note that lowercase (raptorxmlxbrl and raptorxmlxbrlserver) works on all platforms (Windows, Linux, and Mac), while upper-lower (RaptorXMLXBRL) works only on Windows and Mac.

* Use forward slashes on Linux and Mac, backslashes on Windows.

**Backslashes, spaces, and special characters on Windows systems**

On Windows systems: When spaces or special characters occur in strings (for example in file or folder names, or company, person or product names), use quotes: for example, "My File". Note, however, that a backslash followed by a double-quotation mark (for example, "C:\My directory") might not be read correctly. This is because the backslash character is also used to indicate the start of an escape sequence, and the escape sequence \" stands for the double-quotation mark character. If you want to escape this sequence of characters, use a preceding backslash, like this: \". To summarize: If you need to write a file path that contains spaces or an end backslash, write it like this: "C:\My Directory\".

**Options**

Options are listed in short form (if available) and long form. You can use one or two dashes for both short and long forms. An option may or may not take a value. If it takes a value, it is written like this: `--option=value`. Values can be specified without quotes except in two cases: (i) when the value string contains spaces, or (ii) when explicitly stated in the description of the option that quotes are required. If an option takes a Boolean value and no value is specified, then the option's default value is true. Use the `--h, --help` option to display information about the command.

**XBRL validation and processing**

- **ct-restrict-mode**
  `--ct-restrict-mode = 1.0|1.1|default`
Specifies how to check complex type restrictions. A value of 1.0 checks complex type restrictions as defined in the XSD 1.0 specification—even in XSD 1.1 validation mode. A value of 1.1 checks complex type restrictions as defined in the XSD 1.1 specification—even in XSD 1.0 validation mode. A value of default checks complex type restrictions as defined in the XSD specification of the current validation mode (1.0 or 1.1). The default value is default.

- **assertion-severity**
  
  --assertion-severity = true|false

  Enables the Assertion Severity 1.0 extension. Default is true. 
  
  *Note:* Boolean option values are set to true if the option is specified without a value.

- **dimensions**
  
  --dimensions = true|false

  Enables XBRL Dimension 1.0 extensions. Default is true.

  *Note:* Boolean option values are set to true if the option is specified without a value.

- **evaluate-referenced-parameters-only**
  
  --evaluate-referenced-parameters-only = true|false

  If false, forces evaluation of all parameters even if they are not referenced by any formulas/assertions/tables. Default is: true.

- **extensible-enumerations**
  
  --extensible-enumerations = true|false

  If true, enables the [XBRL Extensible Enumerations](#) extension. Default is: true.

- **inconsistencies-limit**
  
  --inconsistencies-limit = N | unlimited

  Specifies the XBRL inconsistencies limit, with values being in the range 1-65535 or unlimited. Processing continues if the limit is reached, but further inconsistencies are not reported. The default value is 100.

- **formula**
  
  --formula = true|false

  Enables the XBRL Formula 1.0 extension. Default is true.

  *Note:* Boolean option values are set to true if the option is specified without a value.

- **formula-parameters**
  
  --formula-parameters = JSON-ARRAY

  Specifies parameters for XBRL formula evaluation as array of JSON maps directly on the CLI. See the section [Formula Parameters](#) for details.

- **formula-parameters-file**
  
  --formula-parameters-file = FILE

  Specifies a FILE containing the parameters for XBRL formula evaluation. The file can be either an XML file or JSON file. See the section, [Formula Parameters](#).
<?xml version="1.0" ?>
<doc xmlns="http://www.altova.com/altova.xmi">
  <section id="116">
    <title>Command Line Interface (CLI) XBRL Validation Commands</title>
    <p>generic-links</p>
    <command id="116-1" name="generic-links">
      <property id="116-1-1" name="--generic-links" type="true|false">
        Enables the XBRL Generic Links 1.0 extension. Default value is true.<br />
        <note>Boolean option values are set to true if the option is specified without a value.</note>
      </property>
    </command>
    <p>generic-preferred-label</p>
    <command id="116-2" name="generic-preferred-label">
      <property id="116-2-1" name="--generic-preferred-label" type="true|false">
        Enables the XBRL Generic Preferred Label 1.0 extension. Default value is true.<br />
        <note>Boolean option values are set to true if the option is specified without a value.</note>
      </property>
    </command>
    <p>inconsistencies-limit</p>
    <command id="116-3" name="inconsistencies-limit">
      <property id="116-3-1" name="--inconsistencies-limit" type="N | unlimited">
        Specifies the XBRL inconsistencies limit, with values being in the range 1-65535 or unlimited. Processing continues if the limit is reached, but further inconsistencies are not reported. The default value is 100.<br />
      </property>
    </command>
    <p>listfile</p>
    <command id="116-4" name="listfile">
      <property id="116-4-1" name="--listfile" type="true|false">
        If true, treats the command's InputFile argument as a text file containing one filename per line. Default value is false. (An alternative is to list the files on the CLI with a space as separator. Note, however, that CLIs have a maximum-character limitation.) Note that the --listfile option applies only to arguments, and not to options.<br />
        <note>Boolean option values are set to true if the option is specified without a value.</note>
      </property>
    </command>
    <p>preload-formula-schemas</p>
    <command id="116-5" name="preload-formula-schemas">
      <property id="116-5-1" name="--preload-formula-schemas" type="true|false">
        Preloads schemas of the XBRL Formula 1.0 specification. Default is false.<br />
        <note>Boolean option values are set to true if the option is specified without a value.</note>
      </property>
    </command>
    <p>preload-xbrl-schemas</p>
    <command id="116-6" name="preload-xbrl-schemas">
      <property id="116-6-1" name="--preload-xbrl-schemas" type="true|false">
        Preloads schemas of the XBRL 2.1 specification. Default is true.<br />
        <note>Boolean option values are set to true if the option is specified without a value.</note>
      </property>
    </command>
    <p>recurse</p>
    <command id="116-7" name="recurse">
      <property id="116-7-1" name="--recurse" type="true|false">
        Used to select files within sub-directories, including in ZIP archives. If true, the command's InputFile argument will select the specified file also in subdirectories. For example: "test.zip|zip\test.xml" will select files named test.xml at all folder levels of the zip folder. References to ZIP files must be given in quotes. The wildcard characters * and ? may be used. So, *.xml will select all .xml files in the (zip) folder. The option's default value is false.<br />
        <note>Boolean option values are set to true if the option is specified without a value.</note>
      </property>
    </command>
    <p>report-import-namespace-mismatch-as-warning</p>
    <command id="116-8" name="report-import-namespace-mismatch-as-warning">
      <property id="116-8-1" name="--report-import-namespace-mismatch-as-warning" type="true|false">
      </property>
    </command>
  </section>
</doc>
Downgrades namespace or target-namespace mismatch errors when importing schemas with |
xs:import from errors to warnings. The default value is false. |

**Note:** Boolean option values are set to true if the option is specified without a value.

---

### schema-imports

`--schema-imports = load-by-schemalocation | load-preferring-schemalocation | load-
by-namespace | load-combining-both | license-namespace-only`

Specifies the behaviour of xs:import elements, each of which has an optional namespace attribute
and an optional schemalocation attribute: `<import namespace="someNS"
schemalocation="someURL">`. The option specifies whether to load a schema document or just
license a namespace, and, if a schema document is to be loaded, which information should be used
to find it. Default: load-preferring-schemalocation. The behavior is as follows:

- **load-by-schemalocation:** The value of the schemalocation attribute is used to locate the
  schema, taking account of catalog mappings. If the namespace attribute is present, the
  namespace is imported (licensed).

- **load-preferring-schemalocation:** If the schemalocation attribute is present, it is used,
taking account of catalog mappings. If no schemalocation attribute is present, then the
  value of the namespace attribute is used via a catalog mapping. This is the default value.

- **load-by-namespace:** The value of the namespace attribute is used to locate the schema via a
catalog mapping.

- **load-combining-both:** If either the namespace or schemalocation attribute has a catalog
  mapping, then the mapping is used. If both have catalog mappings, then the value of the
--schema-mapping option (XBRL option and XML/XSD option) decides which mapping
is used. If no catalog mapping is present, the schemalocation attribute is used.

- **license-namespace-only:** The namespace is imported. No schema document is imported.

---

### schema-mapping

`--schema-mapping = prefer-schemalocation | prefer-namespace`

If schema location and namespace are both used to find a schema document, specifies which of
them should be preferred during catalog lookup. (If either the --schemalocation-hints or the
--schema-imports option has a value of load-combining-both, and if the namespace and URL parts
involved both have catalog mappings, then the value of this option specifies which of the two
mappings to use (namespace mapping or URL mapping; the prefer-schemalocation value refers to
the URL mapping).) Default is prefer-schemalocation.

---

### schemalocation-hints

`--schemalocation-hints = load-by-schemalocation | load-by-namespace | load-
combining-both | ignore`

Specifies the behavior of the xsi:schemaLocation and xsi:noNamespaceSchemaLocation
attributes: Whether to load a schema document, and, if yes, which information should be used to find

- The load-by-schemalocation value uses the URL of the schema location in the
  xsi:schemaLocation and xsi:noNamespaceSchemaLocation attributes in XML or XBRL
  instance documents. This is the default value.
- The load-by-namespace value takes the namespace part of xsi:schemaLocation and an
  empty string in the case of xsi:noNamespaceSchemaLocation and locates the schema via a

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catalog mapping

- If `load-combining-both` is used and if either the namespace part or the URL part has a catalog mapping, then the catalog mapping is used. If both have catalog mappings, then the value of the --schema-mapping option (XBRL option and XML/XSD option) decides which mapping is used. If neither the namespace nor URL has a catalog mapping, the URL is used.
- If the option's value is ignore, then the xsi:schemaLocation and xsi:noNamespaceSchemaLocation attributes are both ignored.

**script**

--script = FILE

Executes the Python script in the submitted file after validation has been completed. Add the option multiple times to specify more than one script.

**script-api-version**

--api, --script-api-version = 1; 2; 2.1; 2.2; 2.3; 2.4; 2.4.1; 2.5; 2.6; 2.7; 2.8; 2.8.1; 2.8.2; 2.8.3

Specifies the Python API version to be used for the script. The default value is the latest version, currently 2.8.3. Instead of the values 1 and 2, you can also use the values 1.0 and 2.0, respectively.

**script-output**

--script-output = FILE

Writes the script's standard output to the file named in FILE.

**script-param**

--script-param = KEY:VALUE

Additional user-specified parameters that can be accessed during the execution of Python scripts. Add the option multiple times to specify more than one script parameter.

**single-dts**

--single-dts = true|false

If set to true, all submitted files (the XBRL taxonomy schemas and linkbases) will be treated as a single XBRL discoverable taxonomy set. The default is false.

Note: Boolean option values are set to true if the option is specified without a value.

**taxonomy-package**

--taxonomy-package = FILE

Specifies the absolute path to an additional taxonomy package as described in the Taxonomy Package 1.0 and Taxonomy Packages 1.0 working drafts. The value of FILE gives the location of the taxonomy package. Add the option multiple times to specify more than one taxonomy package.

**taxonomy-packages-config-file**

--taxonomy-packages-config-file = FILE

Specifies the path to the TaxonomyPackagesConfig.json file, which is used to load XBRL taxonomy packages. The file's convenience is that it serves as a catalog of taxonomy packages. The structure
of the JSON file is as in the example listing below. The value of the uri key gives the location of the package. The active key (of a set of packages) switches on usage of those packages.

```json
{"taxonomies":
   {"EIOPA Solvency II XBRL Taxonomy 2.1.0":
      {"packages":[
         {"uri":"C:\test\XBRL\EIOPA_SolvencyII_XBRL_Taxonomy_2.1.0.zip"},
         {"uri":"C:\test\XBRL\AdditionalTestPkg.zip"
      ],"active":true
   },"Test Taxonomy":
      {"packages":[
         {"uri":"C:\test\XBRL\test.zip"
      ],"active":true
   }
}
}
```

**treat-custom-role-errors-as-warnings**

```
--treat-custom-role-errors-as-warnings = true|false
```

Reports non-critical XBRL errors related to custom role/arcrole types (for example, missing roleRefs) as warnings. Default value is false.

*Note:* Boolean option values are set to true if the option is specified without a value.

**treat-inconsistencies-as-errors**

```
--treat-inconsistencies-as-errors = true|false
```

Causes XBRL validation to fail if the file contains any inconsistency as defined by the XBRL 2.1 specification. Default value is false.

*Note:* Boolean option values are set to true if the option is specified without a value.

**treat-invalid-use-of-standard-role-as-warning**

```
--treat-invalid-use-of-standard-role-as-warning = true|false
```

Specifies whether the invalid use of standard roles should be reported only as a warning. Default value is false.

*Note:* Boolean option values are set to true if the option is specified without a value.

**xinclude**

```
--xinclude = true|false
```

Enables XML Inclusions (XInclude) support. Default value is false. When false, XInclude's include elements are ignored.

*Note:* Boolean option values are set to true if the option is specified without a value.

**XBRL tables**

**aspect-node-order**

```
--aspect-node-order = lexical|instance
```

Specifies the layout order of an open aspectNode. The default is lexical.

**concept-label-linkrole**
---concept-label-linkrole = VALUE
Specifies the preferred extended link role to use when rendering concept labels.

concept-label-role
---concept-label-role = VALUE
Specifies the preferred label role to use when rendering concept labels. Default is:

evaluate-referenced-parameters-only
---evaluate-referenced-parameters-only = true|false
If false, forces evaluation of all parameters even if they are not referenced by any formulas/assertions/tables. Default is: true.

generic-label-linkrole
---generic-label-linkrole = VALUE
Specifies the preferred extended link role to use when rendering generic labels.

generic-label-role
---generic-label-role = VALUE
Specifies the preferred label role to use when rendering generic labels. Default is:

label-lang
---label-lang = VALUE
Specifies the preferred language to use when rendering labels. Default is: en.

preload-table-schemas
---preload-table-schemas = true|false
Preloads schemas of the XBRL Table 1.0 specification. Default is false. 
Note: Boolean option values are set to true if the option is specified without a value.

process-table [t]
---t | --process-table = VALUE
Limits formula execution to the given table only. Add the option multiple times to specify more than one table. Short form is --t. The VALUE is either the value of the @id attribute, or a URI with an XPath fragment that identifies the resource. The special values ##none and ##all can also be used.

table
---table = true|false
Enables the XBRL Table 1.0 extension. Default value is true. If true, automatically specifies --
formula=true and --dimensions=true. 
Note: Boolean option values are set to true if the option is specified without a value.

table-execution
--table-execution = true|false
Enables evaluation of XBRL tables. Default is false. Will be set to true if --table-output is specified. If true, automatically specifies --table=true.

Note: Boolean option values are set to true if the option is specified without a value.

**table-linkbase-namespace**

```--table-linkbase-namespace =
  ##detect | http://xbrl.org/PWD/2013-05-17/table |
  http://xbrl.org/PWD/2013-08-28/table |
  http://xbrl.org/FR/2013-12-18/table |
  http://xbrl.org/2014/table```

Enables loading of table linkbases written with a previous draft specification. Table linkbase validation, resolution, and layout is, however, always performed according to the Table Linkbase 1.0 Recommendation of 18 March 2014. Use ##detect to enable auto-detection.

**table-output**

```--table-output = FILE
Writers the table output to the specified FILE. If set, automatically specifies --table-execution=true.
```

**table-output-format**

```--table-output-format = xml|html
Specifies the format of the table output. Default is xml.
```

### Catalogs and global resources

**catalog**

```--catalog = FILE
Specifies the absolute path to a root catalog file that is not the installed root catalog file. The default value is the absolute path to the installed root catalog file (<installation-folder>/Altova\RaptorXMLXBRLServer2021\etc\RootCatalog.xml). See the section, XML Catalogs, for information about working with catalogs.
```

**user-catalog**

```--user-catalog = FILE
Specifies the absolute path to an XML catalog to be used in addition to the root catalog. See the section, XML Catalogs, for information about working with catalogs.
```

**enable-globalresources**

```--enable-globalresources = true|false
Enables global resources. Default value is false.

Note: Boolean option values are set to true if the option is specified without a value.
```
globalresourceconfig [gc]

`--gc | --globalresourceconfig = VALUE`

Specifies the active configuration of the **global resource** (and enables **global resources**).

globalresourcefile [gr]

`--gr | --globalresourcefile = FILE`

Specifies the **global resource file** (and enables **global resources**).

Messages, errors, help, timeout, version

error-format

`--error-format = text|shortxml|longxml`

Specifies the format of the error output. Default value is `text`. The other options generate XML formats, with `longxml` generating more detail.

error-limit

`--error-limit = N | unlimited`

Specifies the error limit with a value range of `1` to `9999` or `unlimited`. The default value is `100`. Processing stops when the error limit is reached. Useful for limiting processor use during validation/transformation.

info-limit

`--info-limit = N | unlimited`

Specifies the information message limit in the range `1-65535` or `unlimited`. Processing continues if the specified info limit is reached, but further messages are not reported. The default value is `100`.

help

`--help`

Displays help text for the command. For example, `valany --h` (Alternatively the `help` command can be used with an argument. For example: `help valany`.)

log-output

`--log-output = FILE`

Writes the log output to the specified file URL. Ensure that the CLI has write permission to the output location.

network-timeout

`--network-timeout = VALUE`

Specifies the timeout in seconds for remote I/O operations. Default is: `40`.

verbose

`--verbose = true|false`

A value of `true` enables output of additional information during validation. Default value is `false`.

**Note:** Boolean option values are set to `true` if the option is specified without a value.
## Command Line Interface (CLI)

### XBRL Validation Commands

#### verbose-output

```bash
--verbose-output = FILE
```

Writes verbose output to `FILE`.

#### version

```bash
--version
```

Displays the version of RaptorXML+XBRL Server. If used with a command, place `--version` before the command.

#### warning-limit

```bash
--warning-limit = N | unlimited
```

Specifies the warning limit in the range 1-65535 or `unlimited`. Processing continues if this limit is reached, but further warnings are not reported. The default value is 100.

### 4.3.4 valtaxonomypackage (taxpkg)

The `valtaxonomypackage | taxpkg` command validates one or more XBRL taxonomy packages according to the [Taxonomy 1.0 Packages specification](https://www.xbrl.org/specifications/taxonomy-packages).

```bash
raptorxmlxbrl valtaxonomypackage | taxpkg [options] TaxonomyPackage
```

- The `TaxonomyPackage` argument is the XBRL taxonomy package to validate. The taxonomy package is typically a ZIP file.
- To validate multiple taxonomy packages, either: (i) list the packages to be validated on the CLI, with each package separated from the next by a space; or (ii) list the packages to be validated in a text file (.txt file), with one filename per line, and supply this text file as the `TaxonomyPackage` argument together with the `--listfile` option set to `true` (see the Options list below).

#### Examples

Examples of the `valtaxonomypackage` command:

- ```bash
   raptorxmlxbrl valtaxonomypackage c:\Test.zip
   ```
- ```bash
   raptorxmlxbrl taxpkg --listfile=true c:\TaxonomyPackageList.txt
   ```
- ```bash
   raptorxmlxbrl taxpkg --listfile c:\TaxonomyPackageList.txt
   ```

#### Casing and slashes on the command line

- `RaptorXMLXBRL (and RaptorXMLXBRLServer for administration commands) on Windows`
- `raptorxmlxbrl (and raptorxmlxbrlserver for administration commands) on Windows and Unix (Linux, Mac)`

* Note that lowercase (`raptorxmlxbrl and raptorxmlxbrlserver`) works on all platforms (Windows, Linux, and Mac), while upper-lower (`RaptorXMLXBRL`) works only on Windows and Mac.
* Use forward slashes on Linux and Mac, backslashes on Windows.

**Backslashes, spaces, and special characters on Windows systems**

On Windows systems: When spaces or special characters occur in strings (for example in file or folder names, or company, person or product names), use quotes: for example, "My File". Note, however, that a backslash followed by a double-quotation mark (for example, "C:\My directory") might not be read correctly. This is because the backslash character is also used to indicate the start of an escape sequence, and the escape sequence \" stands for the double-quotation mark character. If you want to escape this sequence of characters, use a preceding backslash, like this: \\". To summarize: If you need to write a file path that contains spaces or an end backslash, write it like this: "C:\My Directory\".

**Options**

Options are listed in short form (if available) and long form. You can use one or two dashes for both short and long forms. An option may or may not take a value. If it takes a value, it is written like this: --option=value. Values can be specified without quotes except in two cases: (i) when the value string contains spaces, or (ii) when explicitly stated in the description of the option that quotes are required. If an option takes a Boolean value and no value is specified, then the option's default value is TRUE. Use the --h, --help option to display information about the command.

**Processing**

**listfile**

--listfile = true|false
If true, treats the command's InputFile argument as a text file containing one filename per line. Default value is false. (An alternative is to list the files on the CLI with a space as separator. Note, however, that CLIs have a maximum-character limitation.) Note that the --listfile option applies only to arguments, and not to options.

*Note:* Boolean option values are set to true if the option is specified without a value.

**recurse**

--recurse = true|false
Used to select files within sub-directories, including in ZIP archives. If true, the command's InputFile argument will select the specified file also in subdirectories. For example: "test.zip|zip\test.xml" will select files named test.xml at all folder levels of the zip folder. References to ZIP files must be given in quotes. The wildcard characters * and ? may be used. So, *.xml will select all .xml files in the (zip) folder. The option's default value is false.

*Note:* Boolean option values are set to true if the option is specified without a value.

**schema-imports**

--schema-imports = load-by-schemalocation | load-preferring-schemalocation | load-by-namespace | load-combining-both | license-namespace-only
Specifies the behaviour of xs:import elements, each of which has an optional namespace attribute and an optional schemalocation attribute: <import namespace="someNS" schemalocation="someURL">. The option specifies whether to load a schema document or just license a namespace, and, if a schema document is to be loaded, which information should be used to find it. Default: load-preferring-schemalocation.
The behavior is as follows:

- **load-by-schemalocation**: The value of the `schemaLocation` attribute is used to locate the schema, taking account of catalog mappings. If the namespace attribute is present, the namespace is imported (licensed).
- **load-prefering-schemalocation**: If the `schemaLocation` attribute is present, it is used, taking account of catalog mappings. If no `schemaLocation` attribute is present, then the value of the namespace attribute is used via a catalog mapping. This is the default value.
- **load-by-namespace**: The value of the namespace attribute is used to locate the schema via a catalog mapping.
- **load-combining-both**: If either the `namespace` or `schemaLocation` attribute has a catalog mapping, then the mapping is used. If both have catalog mappings, then the value of the `--schema-mapping` option (XBRL option and XML/XSD option) decides which mapping is used. If no catalog mapping is present, the `schemaLocation` attribute is used.
- **license-namespace-only**: The namespace is imported. No schema document is imported.

### schema-mapping

```
--schema-mapping = prefer-schemalocation | prefer-namespace
```

If schema location and namespace are both used to find a schema document, specifies which of them should be preferred during catalog lookup. (If either the `--schemalocation-hints` or the `--schema-imports` option has a value of `load-combining-both`, and if the namespace and URL parts involved both have catalog mappings, then the value of this option specifies which of the two mappings to use (namespace mapping or URL mapping; the `prefer-schemalocation` value refers to the URL mapping).) Default is `prefer-schemalocation`.

### schemalocation-hints

```
--schemalocation-hints = load-by-schemalocation | load-by-namespace | load-combining-both | ignore
```

Specifies the behavior of the `xsi:schemaLocation` and `xsi:noNamespaceSchemaLocation` attributes: Whether to load a schema document, and, if yes, which information should be used to find it. Default: `load-by-schemalocation`.

- The `load-by-schemalocation` value uses the URL of the schema location in the `xsi:schemaLocation` and `xsi:noNamespaceSchemaLocation` attributes in XML or XBRL instance documents. This is the default value.
- The `load-by-namespace` value takes the namespace part of `xsi:schemaLocation` and an empty string in the case of `xsi:noNamespaceSchemaLocation` and locates the schema via a catalog mapping. If `load-combining-both` is used and if either the namespace part or the URL part has a catalog mapping, then the catalog mapping is used. If both have catalog mappings, then the value of the `--schema-mapping` option (XBRL option and XML/XSD option) decides which mapping is used. If neither the namespace nor URL has a catalog mapping, the URL is used.
- If the option's value is `ignore`, then the `xsi:schemaLocation` and `xsi:noNamespaceSchemaLocation` attributes are both ignored.

### script

```
--script = FILE
```

Executes the Python script in the submitted file after validation has been completed. Add the option
multiple times to specify more than one script.

- **script-api-version**
  ```
  --script-api-version = 1; 2; 2.1; 2.2; 2.3; 2.4; 2.4.1; 2.5; 2.6; 2.7; 2.8; 2.8.1; 2.8.2; 2.8.3
  ```
  Specifies the Python API version to be used for the script. The default value is the latest version, currently 2.8.3. Instead of the values 1 and 2, you can also use the values 1.0 and 2.0, respectively.

- **script-output**
  ```
  --script-output = FILE
  ```
  Writes the script's standard output to the file named in FILE.

- **script-param**
  ```
  --script-param = KEY:VALUE
  ```
  Additional user-specified parameters that can be accessed during the execution of Python scripts. Add the option multiple times to specify more than one script parameter.

- **Catalogs and global resources**
  - **catalog**
    ```
    --catalog = FILE
    ```
    Specifies the absolute path to a root catalog file that is not the installed root catalog file. The default value is the absolute path to the installed root catalog file (<installation-folder>\Altova\RaptorXMLXBRLServer2021\etc\RootCatalog.xml). See the section, XML Catalogs, for information about working with catalogs.

  - **user-catalog**
    ```
    --user-catalog = FILE
    ```
    Specifies the absolute path to an XML catalog to be used in addition to the root catalog. See the section, XML Catalogs, for information about working with catalogs.

  - **enable-globalresources**
    ```
    --enable-globalresources = true|false
    ```
    Enables global resources. Default value is false. **Note:** Boolean option values are set to true if the option is specified without a value.

  - **globalresourceconfig [gc]**
    ```
    --gc | --globalresourceconfig = VALUE
    ```
    Specifies the active configuration of the global resource (and enables global resources).

  - **globalresourcefile [gr]**
    ```
    --gr | --globalresourcefile = FILE
    ```
    Specifies the global resource file (and enables global resources).
Messages, errors, help, timeout, version

error-format

--error-format = text|shortxml|longxml
Specifies the format of the error output. Default value is text. The other options generate XML formats, with longxml generating more detail.

error-limit

--error-limit = N | unlimited
Specifies the error limit with a value range of 1 to 9999 or unlimited. The default value is 100. Processing stops when the error limit is reached. Useful for limiting processor use during validation/transformation.

info-limit

--info-limit = N | unlimited
Specifies the information message limit in the range 1-65535 or unlimited. Processing continues if the specified info limit is reached, but further messages are not reported. The default value is 100.

help

--help
Displays help text for the command. For example, valany --h. (Alternatively the help command can be used with an argument. For example: help valany.)

log-output

--log-output = FILE
 Writes the log output to the specified file URL. Ensure that the CLI has write permission to the output location.

network-timeout

--network-timeout = VALUE
 Specifies the timeout in seconds for remote I/O operations. Default is 40.

verbose

--verbose = true|false
A value of true enables output of additional information during validation. Default value is false. Note: Boolean option values are set to true if the option is specified without a value.

verbose-output

--verbose-output = FILE
 Writes verbose output to FILE.

version

--version
Displays the version of RaptorXML+XBRL Server. If used with a command, place --version before the command.

warning-limit
4.3.5 valxbrlver

The **valxbrlver** command validates one or more XBRL versioning reports according to the [XBRL Versioning 1.0 specification](#).  

```
  raptorxmlxbrl valxbrlver [options] InputFile
```

- The **InputFile** argument is the XBRL versioning report, which is an XML document (with a .xml extension).
- To validate multiple documents, either: (i) list the files to be validated on the CLI, with each file separated from the next by a space; or (ii) list the files to be validated in a text file (.txt file), with one filename per line, and supply this text file as the **InputFile** argument together with the `--listfile [options]` option set to `true` (see the Options list below).

**Examples**

Examples of the **valxbrlver** command:

- `raptorxmlxbrl valxbrlver c:\MyXBRLVersioningReport.xml`
- `raptorxmlxbrl valxbrlver c:\MyXBRLVersioningReports.txt`

**Casing and slashes on the command line**

*RaptorXMLXBRL* (and *RaptorXMLXBRLServer* for administration commands) on Windows

*RaptorXMLxbrl* (and *raptorxmlxbrlserver* for administration commands) on Windows and Unix (Linux, Mac)

* Note that lowercase (*raptorxmlxbrl* and *raptorxmlxbrlserver*) works on all platforms (Windows, Linux, and Mac), while upper-lower (*RaptorXMLXBRL*) works only on Windows and Mac.

* Use forward slashes on Linux and Mac, backslashes on Windows.

**Backslashes, spaces, and special characters on Windows systems**

On Windows systems: When spaces or special characters occur in strings (for example in file or folder names, or company, person or product names), use quotes: for example, "My File". Note, however, that a backslash followed by a double-quotation mark (for example, “C:\My directory\”) might not be read correctly. This is because the backslash character is also used to indicate the start of an escape sequence, and the escape sequence \" stands for the double-quotation mark character. If you want to escape this sequence of characters, use a preceding backslash, like this: \\". To summarize: If you need to write a file path that contains spaces or an end backslash, write it like this: "C:\My Directory\".
Options

Options are listed in short form (if available) and long form. You can use one or two dashes for both short and long forms. An option may or may not take a value. If it takes a value, it is written like this: --option=value. Values can be specified without quotes except in two cases: (i) when the value string contains spaces, or (ii) when explicitly stated in the description of the option that quotes are required. If an option takes a Boolean value and no value is specified, then the option's default value is TRUE. Use the --h, --help option to display information about the command.

⚠️ Messages, errors, help, timeout, version

⚠️ error-format

**--error-format = text|shortxml|longxml**

Specifies the format of the error output. Default value is text. The other options generate XML formats, with longxml generating more detail.

⚠️ error-limit

**--error-limit = N | unlimited**

Specifies the error limit with a value range of 1 to 9999 or unlimited. The default value is 100. Processing stops when the error limit is reached. Useful for limiting processor use during validation/transformation.

⚠️ info-limit

**--info-limit = N | unlimited**

Specifies the information message limit in the range 1-65535 or unlimited. Processing continues if the specified info limit is reached, but further messages are not reported. The default value is 100.

⚠️ help

**--help**

Displays help text for the command. For example, valany --h. (Alternatively the help command can be used with an argument. For example: help valany.)

⚠️ log-output

**--log-output = FILE**

Writes the log output to the specified file URL. Ensure that the CLI has write permission to the output location.

⚠️ network-timeout

**--network-timeout = VALUE**

Specifies the timeout in seconds for remote I/O operations. Default is: 40.

⚠️ verbose

**--verbose = true|false**

A value of true enables output of additional information during validation. Default value is false.

**Note:** Boolean option values are set to true if the option is specified without a value.

⚠️ verbose-output
--verbose-output = FILE
Writes verbose output to FILE.

version
--version
Displays the version of RaptorXML+XBRL Server. If used with a command, place --version before the command.

warning-limit
--warning-limit = N | unlimited
Specifies the warning limit in the range 1-65535 or unlimited. Processing continues if this limit is reached, but further warnings are not reported. The default value is 100.

Catalogs and global resources
catalog
--catalog = FILE
Specifies the absolute path to a root catalog file that is not the installed root catalog file. The default value is the absolute path to the installed root catalog file (<installation-folder>\Altova\RaptorXMLXBRLServer2021\etc\RootCatalog.xml). See the section, XML Catalogs, for information about working with catalogs.

user-catalog
--user-catalog = FILE
Specifies the absolute path to an XML catalog to be used in addition to the root catalog. See the section, XML Catalogs, for information about working with catalogs.

toggle enables global resources
--enable-globalresources = true|false
Enables global resources. Default value is false.
Note: Boolean option values are set to true if the option is specified without a value.

globalresourceconfig [gc]
--gc | --globalresourceconfig = VALUE
Specifies the active configuration of the global resource (and enables global resources).

globalresourcefile [gr]
--gr | --globalresourcefile = FILE
Specifies the global resource file (and enables global resources).

XML Schema
schema-imports
--schema-imports = load-by-schemalocation | load-preferring-schemalocation | load-
by-namespace | load-combining-both | license-namespace-only

Specifies the behaviour of `<xs:import>` elements, each of which has an optional `namespace` attribute and an optional `schemaLocation` attribute: `<import namespace="someNS" schemaLocation="someURL">`. The option specifies whether to load a schema document or just license a namespace, and, if a schema document is to be loaded, which information should be used to find it. Default: load-preferring-schemalocation.

The behavior is as follows:

- **load-by-schemalocation**: The value of the `schemaLocation` attribute is used to locate the schema, taking account of catalog mappings. If the namespace attribute is present, the namespace is imported (licensed).
- **load-preferring-schemalocation**: If the `schemaLocation` attribute is present, it is used, taking account of catalog mappings. If no `schemaLocation` attribute is present, then the value of the `namespace` attribute is used via a catalog mapping. This is the default value.
- **load-by-namespace**: The value of the `namespace` attribute is used to locate the schema via a catalog mapping.
- **load-combining-both**: If either the `namespace` or `schemaLocation` attribute has a catalog mapping, then the mapping is used. If both have catalog mappings, then the value of the `--schema-mapping` option (XBRL option and XML/XSD option) decides which mapping is used. If no catalog mapping is present, the `schemaLocation` attribute is used.
- **license-namespace-only**: The namespace is imported. No schema document is imported.

---

**schema-mapping**

`--schema-mapping = prefer-schemalocation | prefer-namespace`

If schema location and namespace are both used to find a schema document, specifies which of them should be preferred during catalog lookup. (If either the `--schemalocation-hints` or the `--schema-imports` option has a value of `load-combining-both`, and if the namespace and URL parts involved both have catalog mappings, then the value of this option specifies which of the two mappings to use (namespace mapping or URL mapping; the `prefer-schemalocation` value refers to the URL mapping.) Default is `prefer-schemalocation`.

---

**schemalocation-hints**

`--schemalocation-hints = load-by-schemalocation | load-by-namespace | load-combining-both | ignore`

Specifies the behavior of the `xsi:schemaLocation` and `xsi:noNamespaceSchemaLocation` attributes: Whether to load a schema document, and, if yes, which information should be used to find it. Default: `load-by-schemalocation`.

- The `load-by-schemalocation` value uses the **URL of the schema location** in the `xsi:schemaLocation` and `xsi:noNamespaceSchemaLocation` attributes in XML or XBRL instance documents. This is the default value.
- The `load-by-namespace` value takes the **namespace part** of `xsi:schemaLocation` and an empty string in the case of `xsi:noNamespaceSchemaLocation` and locates the schema via a catalog mapping.
- If `load-combining-both` is used and if either the namespace part or the URL part has a catalog mapping, then the catalog mapping is used. If both have catalog mappings, then the value of the `--schema-mapping` option (XBRL option and XML/XSD option) decides which mapping is used. If neither the namespace nor URL has a catalog mapping, the URL is used.
- If the option's value is `ignore`, then the `xsi:schemaLocation` and
The **valxule** command validates one or more XULE documents according to the XULE 1.0 specification.

```
raptorxmlxbrl valxule [options] InputFile
```

- The **InputFile** argument is the XULE document to validate.
- To validate multiple documents, either: (i) list the files to be validated on the CLI, with each file separated from the next by a space; or (ii) list the files to be validated in a text file (.txt file), with one filename per line, and supply this text file as the **InputFile** argument together with the **--listfile** option set to true (see the Options list below).

### Internet links
- [XULE homepage (contains a brief overview of XULE)](https://xulerules.org)
- [XULE Language Syntax Documentation](https://xulerules.org/docs/syntax)

### Examples
Examples of the **valxule** command:

- `raptorxmlxbrl valxule c:\xule\Test.xule`
- `raptorxmlxbrl valxule --listfile=true c:\xule\MyXULEDocs.txt`

#### Casing and slashes on the command line
RaptorXMLXBRL (and RaptorXMLXBRLServer for administration commands) on Windows
raptorxmlxbrl (and raptorxmlxbrlserver for administration commands) on Windows and Unix (Linux, Mac)

* Note that lowercase (raptorxmlxbrl and raptorxmlxbrlserver) works on all platforms (Windows, Linux, and Mac), while upper-lower (RaptorXMLXBRL) works only on Windows and Mac.
* Use forward slashes on Linux and Mac, backslashes on Windows.

** Backslashes, spaces, and special characters on Windows systems

On Windows systems: When spaces or special characters occur in strings (for example in file or folder names, or company, person or product names), use quotes: for example, "My File". Note, however, that a backslash followed by a double-quotation mark (for example, “C:\My directory\”) might not be read correctly. This is because the backslash character is also used to indicate the start of an escape sequence, and the escape sequence " stands for the double-quotation mark character. If you want to escape this sequence of characters, use a preceding backslash, like this: \". To summarize: If you need to write a file path that contains spaces or an end backslash, write it like this: "C:\My Directory\".

** Options

Options are listed in short form (if available) and long form. You can use one or two dashes for both short and long forms. An option may or may not take a value. If it takes a value, it is written like this: --option=value. Values can be specified without quotes except in two cases: (i) when the value string contains spaces, or (ii) when explicitly stated in the description of the option that quotes are required. If an option takes a Boolean value and no value is specified, then the option's default value is TRUE. Use the --h, --help option to display information about the command.

** Catalogs and global resources

- catalog
  --catalog = FILE
  Specifies the absolute path to a root catalog file that is not the installed root catalog file. The default value is the absolute path to the installed root catalog file (<installation-folder>\Altova\RaptorXMLXBRLServer2021\etc\RootCatalog.xml). See the section, XML Catalogs, for information about working with catalogs.

- user-catalog
  --user-catalog = FILE
  Specifies the absolute path to an XML catalog to be used in addition to the root catalog. See the section, XML Catalogs, for information about working with catalogs.

- enable-globalresources
  --enable-globalresources = true|false
  Enables global resources. Default value is false.
  Note: Boolean option values are set to true if the option is specified without a value.

- globalresourceconfig [gc]
Command Line Interface (CLI) XBRL Validation Commands

--gc | --globalresourceconfig = VALUE
Specifies the active configuration of the global resource (and enables global resources).

▶ globalresourcefile [gr]
--gr | --globalresourcefile = FILE
Specifies the global resource file (and enables global resources).

▶ Messages, errors, help, timeout, version
▶ error-format
--error-format = text|shortxml|longxml
Specifies the format of the error output. Default value is text. The other options generate XML formats, with longxml generating more detail.

▶ error-limit
--error-limit = N | unlimited
Specifies the error limit with a value range of 1 to 9999 or unlimited. The default value is 100. Processing stops when the error limit is reached. Useful for limiting processor use during validation/transformation.

▶ info-limit
--info-limit = N | unlimited
Specifies the information message limit in the range 1-65535 or unlimited. Processing continues if the specified info limit is reached, but further messages are not reported. The default value is 100.

▶ help
--help
Displays help text for the command. For example, valany --h. (Alternatively the help command can be used with an argument. For example: help valany.)

▶ log-output
--log-output = FILE
Writes the log output to the specified file URL. Ensure that the CLI has write permission to the output location.

▶ network-timeout
--network-timeout = VALUE
Specifies the timeout in seconds for remote I/O operations. Default is: 40.

▶ verbose
--verbose = true|false
A value of true enables output of additional information during validation. Default value is false. Note: Boolean option values are set to true if the option is specified without a value.

▶ verbose-output
Command Line Interface (CLI)  

XBRL Validation Commands  

--verbose-output = FILE
Writes verbose output to FILE.

version
--version
Displays the version of RaptorXML+XBRL Server. If used with a command, place --version before the command.

warning-limit
--warning-limit = N | unlimited
Specifies the warning limit in the range 1-65535 or unlimited. Processing continues if this limit is reached, but further warnings are not reported. The default value is 100.

XBRL XULE processing

listfile
--listfile = true|false
If true, treats the command's InputFile argument as a text file containing one filename per line. Default value is false. (An alternative is to list the files on the CLI with a space as separator. Note, however, that CLIs have a maximum-character limitation.) Note that the --listfile option applies only to arguments, and not to options.

Note: Boolean option values are set to true if the option is specified without a value.

xule-enable-static-checks
--xule-enable-static-checks = true|false
Performs a series of static checks that report unresolved function and variable references. The default is true.

Note: Boolean option values are set to true if the option is specified without a value.

xule-json-ast
--xule-json-ast = FILE
Serializes the XULE abstract syntax tree (AST) as JSON to the file specified.
4.4 XQuery Commands

The XQuery commands are:

- `xquery`: for executing XQuery documents, optionally with an input document
- `xqueryupdate`: for executing an XQuery update, using an XQuery document and, optionally, the input XML document to update
- `valxquery`: for validating XQuery documents
- `valxqueryupdate`: for validating an XQuery (update) document

4.4.1 xquery

The `xquery` command takes an XQuery file as its single argument and executes it with an optional input file to produce an output file. The input and output files are specified as options.

```
raptorxmlxbrl xquery [options] XQuery-File
```

- The argument `XQuery-File` is the path and name of the XQuery file to be executed.
- You can use XQuery 1.0 or 3.0. By default XQuery 3.0 is used.

Examples

Examples of the `xquery` command:

- `raptorxmlxbrl xquery --output=c:\Output.xml c:\TestQuery.xq`
- `raptorxmlxbrl xquery --input=c:\Input.xml --output=c:\Output.xml  --param=company:"Altova" --p=date:"2006-01-01" c:\TestQuery.xq`
- `raptorxmlxbrl xquery --input=c:\Input.xml --output=c:\Output.xml --param=source:"doc( 'c:\test\books.xml' )//book "`
- `raptorxmlxbrl xquery --output=c:\Output.xml --omit-xml-declaration=false --output-encoding=ASCII c:\TestQuery.xq`

Casing and slashes on the command line

RaptorXMLXBRL (and RaptorXMLXBRLServer for administration commands) on Windows
raptorxmlxbrl (and raptorxmlxbrlserver for administration commands) on Windows and Unix (Linux, Mac)

* Note that lowercase (`raptorxmlxbrl` and `raptorxmlxbrlserver`) works on all platforms (Windows, Linux, and Mac), while upper-lower (`RaptorXMLXBRL`) works only on Windows and Mac.
* Use forward slashes on Linux and Mac, backslashes on Windows.

Backslashes, spaces, and special characters on Windows systems

On Windows systems: When spaces or special characters occur in strings (for example in file or folder names, or company, person or product names), use quotes: for example, "My File". Note, however, that a backslash followed by a double-quotiation mark (for example, "c:\My directory\") might not be read correctly. This is because the backslash character is also used to indicate the start of an escape
sequence, and the escape sequence \" stands for the double-quotation mark character. If you want to escape this sequence of characters, use a preceding backslash, like this: \\". To summarize: If you need to write a file path that contains spaces or an end backslash, write it like this: "C:\My Directory\".

Options

Options are listed in short form (if available) and long form. You can use one or two dashes for both short and long forms. An option may or may not take a value. If it takes a value, it is written like this: --option=value. Values can be specified without quotes except in two cases: (i) when the value string contains spaces, or (ii) when explicitly stated in the description of the option that quotes are required. If an option takes a Boolean value and no value is specified, then the option's default value is TRUE. Use the --h, --help option to display information about the command.

XQuery Processing

- **indent-characters**
  ```
  --indent-characters = VALUE
  ```
  Specifies the character string to be used as indentation.

- **input**
  ```
  --input = FILE
  ```
  The URL of the XML file to be transformed.

- **omit-xml-declaration**
  ```
  --omit-xml-declaration = true|false
  ```
  Serialization option to specify whether the XML declaration should be omitted from the output or not. If true, there will be no XML declaration in the output document. If false, an XML declaration will be included. Default value is false.
  **Note**: Boolean option values are set to true if the option is specified without a value.

- **output, xsltoutput**
  ```
  output = FILE, xsltoutput = FILE
  ```
  The URL of the primary-output file. For example, in the case of multiple-file HTML output, the primary-output file will be the location of the entry point HTML file. Additional output files, such as generated image files, are reported as xslt-additional-output-files. If no --output or --xsltoutput option is specified, output is written to standard output.

- **output-encoding**
  ```
  --output-encoding = VALUE
  ```
  The value of the encoding attribute in the output document. Valid values are names in the IANA character set registry. Default value is UTF-8.

- **output-indent**
  ```
  --output-indent = true|false
  ```
  If true, the output will be indented according to its hierarchic structure. If false, there will be no hierarchical indentation. Default is false.
Note: Boolean option values are set to `true` if the option is specified without a value.

- **output-method**
  
  ```
  --output-method = xml|html|xhtml|text
  ```
  
  Specifies the output format. Default value is `xml`.

- **param [p]**
  
  ```
  --p | --param = KEY:VALUE
  ```
  
  Specifies the value of an external parameter. An external parameter is declared in the XQuery document with the `declare variable` declaration followed by a variable name and then the `external` keyword followed by the trailing semi-colon. For example:
  
  `declare variable $foo as xs:string external;`
  
  The `external` keyword `$foo` becomes an external parameter, the value of which is passed at runtime from an external source. The external parameter is given a value with the CLI command. For example:
  
  ```
  --param=foo:'MyName'
  ```
  
  In the description statement above, `KEY` is the external parameter name, `VALUE` is the value of the external parameter, given as an XPath expression. Parameter names used on the CLI must be declared in the XQuery document. If multiple external parameters are passed values on the CLI, each must be given a separate `--param` option. Double quotes must be used if the XPath expression contains spaces.

- **XSLT**
  
  Specifies a global stylesheet parameter. `KEY` is the parameter name, `VALUE` is an XPath expression that provides the parameter value. Parameter names used on the CLI must be declared in the stylesheet. If multiple parameters are used, the `--param` switch must be used before each parameter. Double quotes must be used around the XPath expression if it contains a space—whether the space is in the XPath expression itself or in a string literal in the expression. For example:
  
  ```
  raptorxmlxbrl xslt --input=c:\Test.xml --output=c:\Output.xml --param=date://node[1]/@att1 --p=title:'stringwithoutspace' --param=title:'string with spaces' --p=amount:456 c:\Test.xslt
  ```

- **xpath-static-type-errors-as-warnings**
  
  ```
  --xpath-static-type-errors-as-warnings = true|false
  ```
  
  If `true`, degrades to warnings any type errors that are detected in the XPath static context. Whereas an error would cause the execution to fail, a warning would enable processing to continue. Default is `false`.

- **xquery-version**
  
  ```
  --xquery-version = 1|1.0|3.0|3.1
  ```
  
  Specifies whether the XQuery processor should use XQuery 1.0 or XQuery 3.0. Default value is 3.1.

- **XML Schema and XML instance**
  
  ```
  load-xml-with-psvi
  ```
--load-xml-with-psvi = true|false
Enables validation of input XML files and generates post-schema-validation information for them. Default is: true.

• schema-imports
  --schema-imports = load-by-schemalocation | load-preferring-schemalocation | load-by-namespace | load-combining-both | license-namespace-only
  Specifies the behaviour of xsi:import elements, each of which has an optional namespace attribute and an optional schemaLocation attribute: <import namespace="someNS" schemaLocation="someURL">. The option specifies whether to load a schema document or just license a namespace, and, if a schema document is to be loaded, which information should be used to find it. Default: load-preferring-schemalocation.
  The behavior is as follows:

  • load-by-schemalocation: The value of the schemaLocation attribute is used to locate the schema, taking account of catalog mappings. If the namespace attribute is present, the namespace is imported (licensed).
  • load-preferring-schemalocation: If the schemaLocation attribute is present, it is used, taking account of catalog mappings. If no schemaLocation attribute is present, then the value of the namespace attribute is used via a catalog mapping. This is the default value.
  • load-by-namespace: The value of the namespace attribute is used to locate the schema via a catalog mapping.
  • load-combining-both: If either the namespace or schemaLocation attribute has a catalog mapping, then the mapping is used. If both have catalog mappings, then the value of the --schema-mapping option (XBRL option and XML/XSD option) decides which mapping is used. If no catalog mapping is present, the schemaLocation attribute is used.
  • license-namespace-only: The namespace is imported. No schema document is imported.

• schemalocation-hints
  --schemalocation-hints = load-by-schemalocation | load-by-namespace | load-combining-both | ignore
  Specifies the behavior of the xsi:schemaLocation and xsi:noNamespaceSchemaLocation attributes: Whether to load a schema document, and, if yes, which information should be used to find it. Default: load-by-schemalocation.

  • The load-by-schemalocation value uses the URL of the schema location in the xsi:schemaLocation and xsi:noNamespaceSchemaLocation attributes in XML or XBRL instance documents. This is the default value.
  • The load-by-namespace value takes the namespace part of xsi:schemaLocation and an empty string in the case of xsi:noNamespaceSchemaLocation and locates the schema via a catalog mapping.
  • If load-combining-both is used and if either the namespace part or the URL part has a catalog mapping, then the catalog mapping is used. If both have catalog mappings, then the value of the --schema-mapping option (XBRL option and XML/XSD option) decides which mapping is used. If neither the namespace nor URL has a catalog mapping, the URL is used.
  • If the option's value is ignore, then the xsi:schemaLocation and xsi:noNamespaceSchemaLocation attributes are both ignored.
--schema-mapping = prefer-schemalocation | prefer-namespace
If schema location and namespace are both used to find a schema document, specifies which of them should be preferred during catalog lookup. (If either the --schemalocation-hints or the --schema-imports option has a value of load-combining-both, and if the namespace and URL parts involved both have catalog mappings, then the value of this option specifies which of the two mappings to use (namespace mapping or URL mapping; the prefer-schemalocation value refers to the URL mapping.) Default is prefer-schemalocation.

\begin{itemize}
\item \texttt{--xinclude = true|false}
Enables XML Inclusions (XInclude) support. Default value is false. When false, XInclude's include elements are ignored.
\textbf{Note:} Boolean option values are set to true if the option is specified without a value.
\end{itemize}

\begin{itemize}
\item \texttt{--xml-mode = wf|id|valid}
Specifies the XML processing mode to use for the XML instance document: \texttt{wf} = wellformed check; \texttt{id} = wellformed with ID/IDREF checks; \texttt{valid} = validation. Default value is \texttt{wf}. Note that a value of \texttt{valid} requires that each instance document loaded during processing references a DTD. If no DTD exists, an error is reported.
\end{itemize}

\begin{itemize}
\item \texttt{--xml-mode-for-schemas = wf|id|valid}
Specifies the XML processing mode to use for XML schema documents: \texttt{wf} = wellformed check; \texttt{id} = wellformed with ID/IDREF checks; \texttt{valid} = validation. Default value is \texttt{wf}. Note that a value of \texttt{valid} requires that each schema document loaded during processing references a DTD. If no DTD exists, an error is reported.
\end{itemize}

\begin{itemize}
\item \texttt{--xml-validation-error-as-warning = true|false}
If true, treats validation errors as warnings. If errors are treated as warnings, additional processing, such as XSLT transformations, will continue regardless of errors. Default is false.
\end{itemize}

\begin{itemize}
\item \texttt{--xsd = FILE}
Specifies one or more XML Schema documents to use for the validation of XML instance documents. Add the option multiple times to specify more than one schema document.
\end{itemize}

\begin{itemize}
\item \texttt{--xsd-version = 1.0|1.1|detect}
Specifies the W3C Schema Definition Language (XSD) version to use. Default is 1.0. This option can also be useful to find out in what ways a schema which is 1.0-compatible is not 1.1-compatible. The detect option is an Altova-specific feature. It enables the version of the XML Schema document (1.0 or 1.1) to be detected by reading the value of the vc:minVersion attribute of the document's <xs:schema> element. If the value of the @vc:minVersion attribute is 1.1, the schema is detected as being version 1.1. For any other value, or if the @vc:minVersion attribute is absent, the schema is detected as being version 1.0.
\end{itemize}
Catalogs and global resources

```
catalog
  --catalog = FILE
  Specifies the absolute path to a root catalog file that is not the installed root catalog file. The default value is the absolute path to the installed root catalog file (<installation-folder>\Altova\RaptorXMLXBRLServer2021\etc\RootCatalog.xml). See the section, XML Catalogs [18], for information about working with catalogs.
```

```
user-catalog
  --user-catalog = FILE
  Specifies the absolute path to an XML catalog to be used in addition to the root catalog. See the section, XML Catalogs [18], for information about working with catalogs.
```

```
enable-globalresources
  --enable-globalresources = true|false
  Enables global resources [47]. Default value is false.
  Note: Boolean option values are set to true if the option is specified without a value.
```

```
globalresourceconfig [gc]
  --gc | --globalresourceconfig = VALUE
  Specifies the active configuration of the global resource [47] (and enables global resources) [47].
```

```
globalresourcefile [gr]
  --gr | --globalresourcefile = FILE
  Specifies the global resource file [47] (and enables global resources) [47].
```

Extensions

These options define the handling of special extension functions that are available in a number of Enterprise-level Altova products (such as XMLSpy Enterprise Edition). Their use is described in the user manuals of these products.

```
chartext-disable
  --chartext-disable = true|false
  Disables chart extensions. Default value is false.
  Note: Boolean option values are set to true if the option is specified without a value.
```

```
dotnetext-disable
  --dotnetext-disable = true|false
  Disables .NET extensions. Default value is false.
  Note: Boolean option values are set to true if the option is specified without a value.
```

```
jvm-location
```

---

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--jvm-location = FILE

FILE specifies the location of the Java Virtual Machine (DLL on Windows, shared object on Linux). The JVM is needed if you use Java extension functions in your XSLT/XQuery code. Default is false.

javaext-barcode-location

--javaext-barcode-location = FILE

Specifies the path to the folder that contains the barcode extension file AltovaBarcodeExtension.jar. The path must be given in one of the following forms:

- A file URI, for example: --javaext-barcode-location="file:///C:/Program Files/Altova/RaptorXMLXBRLServer2021/etc/jar/"
- A Windows path with backslashes escaped, for example: --javaext-barcode-location="C:\\Program Files\\Altova\\RaptorXMLXBRLServer2021\\etc\\jar\\"

javaext-disable

--javaext-disable = true|false

Disables Java extensions. Default value is false.
Note: Boolean option values are set to true if the option is specified without a value.

Messages, errors, help, timeout, version

error-format

--error-format = text|shortxml|longxml

Specifies the format of the error output. Default value is text. The other options generate XML formats, with longxml generating more detail.

timeout

--timeout = N

Specifies the time limit in seconds. Processing stops when the timeout is reached. The default value is 10 seconds.

Help

--help

Displays help text for the command. For example, valany --h. (Alternatively the help command can be used with an argument. For example: help valany.)

log-output

--log-output = FILE

Writes the log output to the specified file URL. Ensure that the CLI has write permission to the output.
location.

\section*{network-timeout}
\begin{verbatim}
--network-timeout = VALUE
\end{verbatim}
Specifies the timeout in seconds for remote I/O operations. Default is: 40.

\section*{verbose}
\begin{verbatim}
--verbose = true|false
\end{verbatim}
A value of \texttt{true} enables output of additional information during validation. Default value is \texttt{false}.
\textit{Note:} Boolean option values are set to \texttt{true} if the option is specified without a value.

\section*{verbose-output}
\begin{verbatim}
--verbose-output = FILE
\end{verbatim}
Writes verbose output to \texttt{FILE}.

\section*{version}
\begin{verbatim}
--version
\end{verbatim}
Displays the version of RaptorXML+XBRL Server. If used with a command, place \texttt{--version} before the command.

\section*{warning-limit}
\begin{verbatim}
--warning-limit = N | unlimited
\end{verbatim}
Specifies the warning limit in the range \texttt{1-65535} or \texttt{unlimited}. Processing continues if this limit is reached, but further warnings are not reported. The default value is \texttt{100}.

\subsection*{4.4.2 xqueryupdate}
The \texttt{xqueryupdate} command takes an XQuery file as its single argument and executes it with an optional input file to produce an updated output file. The input and output files are specified as options.

\begin{verbatim}
raptorxmlxbrl xqueryupdate [options] XQuery-File
\end{verbatim}

- The argument \texttt{XQuery-File} is the path and name of the XQuery file to be executed.
- You can specify whether XQuery Update 1.0 or 3.0 should be used. By default XQuery Update 3.0 is used.

\subsection*{Examples}
Examples of the \texttt{xqueryupdate} command:

- \begin{verbatim}
raptorxmlxbrl xqueryupdate --output=c:\Output.xml c:\TestQuery.xq
\end{verbatim}
- \begin{verbatim}
raptorxmlxbrl xqueryupdate --input=c:\Input.xml --output=c:\Output.xml --param-company:"Altova" --p=date:"2006-01-01" c:\TestQuery.xq
\end{verbatim}
• **raptorxmlxbrl xqueryupdate** --input=c:\Input.xml --output=c:\Output.xml --param=source:" doc( 'c:\test\books.xml' )//book " c:\TestQuery.xq
• **raptorxmlxbrl xqueryupdate** --output=c:\Output.xml --omit-xml-declaration=false -- output-encoding=ASCII c:\TestQuery.xq

### Casing and slashes on the command line

*RaptorXMLXBRL (and RaptorXMLXBRLServer for administration commands) on Windows*

*raptorxmlxbrl (and raptorxmlxbrlserver for administration commands) on Windows and Unix (Linux, Mac)*

* Note that lowercase (raptorxmlxbrl and raptorxmlxbrlserver) works on all platforms (Windows, Linux, and Mac), while upper-lower (RaptorXMLXBRL) works only on Windows and Mac.

* Use forward slashes on Linux and Mac, backslashes on Windows.

### Backslashes, spaces, and special characters on Windows systems

On Windows systems: When spaces or special characters occur in strings (for example in file or folder names, or company, person or product names), use quotes: for example, "My File". Note, however, that a backslash followed by a double-quotation mark (for example, “C:\My directory\”) might not be read correctly. This is because the backslash character is also used to indicate the start of an escape sequence, and the escape sequence \" stands for the double-quotation mark character. If you want to escape this sequence of characters, use a preceding backslash, like this: \\\. To summarize: If you need to write a file path that contains spaces or an end backslash, write it like this: "C:\My Directory\"

### Options

Options are listed in short form (if available) and long form. You can use one or two dashes for both short and long forms. An option may or may not take a value. If it takes a value, it is written like this: --option=value. Values can be specified without quotes except in two cases: (i) when the value string contains spaces, or (ii) when explicitly stated in the description of the option that quotes are required. If an option takes a Boolean value and no value is specified, then the option's default value is **TRUE**. Use the **--h, --help** option to display information about the command.

### XQuery Update Processing

#### indent-characters

--indent-characters = **VALUE**

Specifies the character string to be used as indentation.

#### input

--input = **FILE**

The URL of the XML file to be transformed.

#### omit-xml-declaration

--omit-xml-declaration = **true|false**

Serialization option to specify whether the XML declaration should be omitted from the output or not. If **true**, there will be no XML declaration in the output document. If **false**, an XML declaration will be
included. Default value is false.

**Note:** Boolean option values are set to true if the option is specified without a value.

**output, xsltoutput**

```
output = FILE, xsltoutput = FILE
```

The URL of the primary-output file. For example, in the case of multiple-file HTML output, the primary-output file will be the location of the entry point HTML file. Additional output files, such as generated image files, are reported as xslt-additional-output-files. If no --output or --xsltoutput option is specified, output is written to standard output.

**output-encoding**

```
--output-encoding = VALUE
```

The value of the encoding attribute in the output document. Valid values are names in the IANA character set registry. Default value is UTF-8.

**output-indent**

```
--output-indent = true|false
```

If true, the output will be indented according to its hierarchic structure. If false, there will be no hierarchical indentation. Default is false.

**output-method**

```
--output-method = xml|html|xhtml|text
```

Specifies the output format. Default value is xml.

**param [p]**

```
--p | --param = KEY:VALUE
```

**XQuery**

Specifies the value of an external parameter. An external parameter is declared in the XQuery document with the `declare variable` declaration followed by a variable name and then the `external` keyword followed by the trailing semi-colon. For example:

```
declare variable $foo as xs:string external;
```

The `external` keyword `$foo` becomes an external parameter, the value of which is passed at runtime from an external source. The external parameter is given a value with the CLI command. For example:

```
--param=foo:'MyName'
```

In the description statement above, `KEY` is the external parameter name, `VALUE` is the value of the external parameter, given as an XPath expression. Parameter names used on the CLI must be declared in the XQuery document. If multiple external parameters are passed values on the CLI, each must be given a separate `--param` option. Double quotes must be used if the XPath expression contains spaces.

**XSLT**

Specifies a global stylesheet parameter. `KEY` is the parameter name, `VALUE` is an XPath expression that provides the parameter value. Parameter names used on the CLI must be declared in the stylesheet. If multiple parameters are used, the `--param` switch must be used
before each parameter. Double quotes must be used around the XPath expression if it contains
a space—whether the space is in the XPath expression itself or in a string literal in the
expression. For example:

```
raptorxmlxbrl xslt --input=c:\Test.xml --output=c:\Output.xml --
param=date://node[1]/@att1 --p=title:'stringwithoutspace' --
param=title:"'string with spaces'" --p=amount:456 c:\Test.xslt
```

- **xpath-static-type-errors-as-warnings**
  
  **--xpath-static-type-errors-as-warnings = true|false**
  
  If true, degrades to warnings any type errors that are detected in the XPath static context. Whereas
  an error would cause the execution to fail, a warning would enable processing to continue. Default is
  false.

- **xquery-update-version**
  
  **--xquery-update-version = 1|1.0|3|3.0**
  
  Specifies whether the XQuery processor should use XQuery Update Facility 1.0 or XQuery Update
  Facility 3.0. Default value is 3.

- **keep-formatting**
  
  **--keep-formatting = true|false**
  
  Keeps the formatting of the target document to the maximum extent that this is possible. Default is:
  true.

- **updated-xml**
  
  **--updated-xml = discard|writeback|asmainresult**
  
  Specifies how the updated XML file should be handled. The updates can be either:
  
  - discarded and not written to file (discard)
  - written back to the input XML file that is specified with the --input option (writeback)
  - saved either to standard output or to the location specified in the --output option (if this is
    defined)
  
  Default is: discard.

- **XML Schema and XML instance**

  - **load-xml-with-psvi**
    
    **--load-xml-with-psvi = true|false**
    
    Enables validation of input XML files and generates post-schema-validation information for them.
    Default is: true.

  - **schema-imports**
    
    **--schema-imports = load-by-schemalocation | load-preferring-schemalocation | load-
    by-namespace | load-combining-both | license-namespace-only**
    
    Specifies the behaviour of xs:import elements, each of which has an optional namespace attribute
    and an optional schemaLocation attribute: `<import namespace="someNS"`
schemaLocation="someURL">. The option specifies whether to load a schema document or just license a namespace, and, if a schema document is to be loaded, which information should be used to find it. Default: load-prefering-schemalocation. The behavior is as follows:

- **load-by-schemalocation**: The value of the schemaLocation attribute is used to locate the schema, taking account of catalog mappings. If the namespace attribute is present, the namespace is imported (licensed).
- **load-prefering-schemalocation**: If the schemaLocation attribute is present, it is used, taking account of catalog mappings. If no schemaLocation attribute is present, then the value of the namespace attribute is used via a catalog mapping. This is the default value.
- **load-by-namespace**: The value of the namespace attribute is used to locate the schema via a catalog mapping.
- **load-combining-both**: If either the namespace or schemaLocation attribute has a catalog mapping, then the mapping is used. If both have catalog mappings, then the value of the --schema-mapping option (XBRL option and XML/XSD option) decides which mapping is used. If no catalog mapping is present, the schemaLocation attribute is used.
- **license-namespace-only**: The namespace is imported. No schema document is imported.

### --schemalocation-hints

```
--schemalocation-hints = load-by-schemalocation | load-by-namespace | load-combining-both | ignore
```

Specifies the behavior of the xsi:schemaLocation and xsi:noNamespaceSchemaLocation attributes: Whether to load a schema document, and, if yes, which information should be used to find it. Default: load-by-schemalocation.

- The load-by-schemalocation value uses the URL of the schema location in the xsi:schemaLocation and xsi:noNamespaceSchemaLocation attributes in XML or XBRL instance documents. This is the default value.
- The load-by-namespace value takes the namespace part of xsi:schemaLocation and an empty string in the case of xsi:noNamespaceSchemaLocation and locates the schema via a catalog mapping.
- If load-combining-both is used and if either the namespace part or the URL part has a catalog mapping, then the catalog mapping is used. If both have catalog mappings, then the value of the --schema-mapping option (XBRL option and XML/XSD option) decides which mapping is used. If neither the namespace nor URL has a catalog mapping, the URL is used.
- If the option's value is ignore, then the xsi:schemaLocation and xsi:noNamespaceSchemaLocation attributes are both ignored.

### --schema-mapping

```
--schema-mapping = prefer-schemalocation | prefer-namespace
```

If schema location and namespace are both used to find a schema document, specifies which of them should be preferred during catalog lookup. (If either the --schemalocation-hints or the --schema-imports option has a value of load-combining-both, and if the namespace and URL parts involved both have catalog mappings, then the value of this option specifies which of the two mappings to use (namespace mapping or URL mapping; the prefer-schemalocation value refers to the URL mapping).) Default is prefer-schemalocation.

### xinclude
**--xinclude = true|false**
Enables XML Inclusions (XInclude) support. Default value is false. When false, XInclude's include elements are ignored.

*Note:* Boolean option values are set to true if the option is specified without a value.

**xml-mode**

```
--xml-mode = wf|id|valid
```

Specifies the XML processing mode to use for the XML instance document: wf=wellformed check; id=wellformed with ID/IDREF checks; valid=validation. Default value is wf. Note that a value of valid requires that each instance document loaded during processing references a DTD. If no DTD exists, an error is reported.

**xml-mode-for-schemas**

```
--xml-mode-for-schemas = wf|id|valid
```

Specifies the XML processing mode to use for XML schema documents: wf=wellformed check; id=wellformed with ID/IDREF checks; valid=validation. Default value is wf. Note that a value of valid requires that each schema document loaded during processing references a DTD. If no DTD exists, an error is reported.

**xml-validation-error-as-warning**

```
--xml-validation-error-as-warning = true|false
```

If true, treats validation errors as warnings. If errors are treated as warnings, additional processing, such as XSLT transformations, will continue regardless of errors. Default is false.

**xsd**

```
--xsd = FILE
```

Specifies one or more XML Schema documents to use for the validation of XML instance documents. Add the option multiple times to specify more than one schema document.

**xsd-version**

```
--xsd-version = 1.0|1.1|detect
```

Specifies the W3C Schema Definition Language (XSD) version to use. Default is 1.0. This option can also be useful to find out in what ways a schema which is 1.0-compatible is not 1.1-compatible. The detect option is an Altova-specific feature. It enables the version of the XML Schema document (1.0 or 1.1) to be detected by reading the value of the vc:minVersion attribute of the document's <xs:schema> element. If the value of the @vc:minVersion attribute is 1.1, the schema is detected as being version 1.1. For any other value, or if the @vc:minVersion attribute is absent, the schema is detected as being version 1.0.

**Catalogs and global resources**

**catalog**

```
--catalog = FILE
```

Specifies the absolute path to a root catalog file that is not the installed root catalog file. The default value is the absolute path to the installed root catalog file (installation-folder\Altova\RaptorXMLXBRLServer2021\etc\RootCatalog.xml). See the section, XML.
Command Line Interface (CLI)

Catalogs, for information about working with catalogs.

\[\text{user-catalog}\]

\[\text{--user-catalog} = \text{FILE}\]

Specifies the absolute path to an XML catalog to be used in addition to the root catalog. See the section, XML Catalogs, for information about working with catalogs.

\[\text{enable-globalresources}\]

\[\text{--enable-globalresources} = \text{true|false}\]

Enables global resources. Default value is false.

\textbf{Note}: Boolean option values are set to true if the option is specified without a value.

\[\text{globalresourceconfig [gc]}\]

\[\text{--gc} | \text{--globalresourceconfig} = \text{VALUE}\]

Specifies the active configuration of the global resource (and enables global resources).

\[\text{globalresourcefile [gr]}\]

\[\text{--gr} | \text{--globalresourcefile} = \text{FILE}\]

Specifies the global resource file (and enables global resources).

\[\text{Extensions}\]

These options define the handling of special extension functions that are available in a number of Enterprise-level Altova products (such as XMLSpy Enterprise Edition). Their use is described in the user manuals of these products.

\[\text{chartext-disable}\]

\[\text{--chartext-disable} = \text{true|false}\]

Disables chart extensions. Default value is false.

\textbf{Note}: Boolean option values are set to true if the option is specified without a value.

\[\text{dotnetext-disable}\]

\[\text{--dotnetext-disable} = \text{true|false}\]

Disables .NET extensions. Default value is false.

\textbf{Note}: Boolean option values are set to true if the option is specified without a value.

\[\text{jvm-location}\]

\[\text{--jvm-location} = \text{FILE}\]

\textit{FILE} specifies the location of the Java Virtual Machine (DLL on Windows, shared object on Linux). The JVM is needed if you use Java extension functions in your XSLT/XQuery code. Default is false.

\[\text{javaext-barcode-location}\]

\[\text{--javaext-barcode-location} = \text{FILE}\]

Specifies the path to the folder that contains the barcode extension file AltovaBarcodeExtension.jar. The path must be given in one of the following forms:
• A file URI, for example:  
  --javaext-barcode-location="file:///C:/Program
  Files/Altova/RaptorXMLXBRLServer2021/etc/jar/"
• A Windows path with backslashes escaped, for example:  
  --javaext-barcode-location="C:\Program
  Files\Altova\RaptorXMLXBRLServer2021\etc\jar\"

    **javaext-disable**
    
    **--javaext-disable** = **true|false**
    
    Disables Java extensions. Default value is **false**.
    
    **Note**: Boolean option values are set to **true** if the option is specified without a value.

**Messages, errors, help, timeout, version**

  **error-format**
  
  **--error-format** = **text|shortxml|longxml**
  
  Specifies the format of the error output. Default value is **text**. The other options generate XML formats, with **longxml** generating more detail.

  **error-limit**
  
  **--error-limit** = **N | unlimited**
  
  Specifies the error limit with a value range of 1 to 9999 or unlimited. The default value is 100. Processing stops when the error limit is reached. Useful for limiting processor use during validation/transformation.

  **info-limit**
  
  **--info-limit** = **N | unlimited**
  
  Specifies the information message limit in the range 1-65535 or unlimited. Processing continues if the specified info limit is reached, but further messages are not reported. The default value is 100.

  **help**
  
  **--help**
  
  Displays help text for the command. For example, valany --h. (Alternatively the help command can be used with an argument. For example: help valany.)

  **log-output**
  
  **--log-output** = **FILE**
  
  Writes the log output to the specified file URL. Ensure that the CLI has write permission to the output location.

  **network-timeout**
  
  **--network-timeout** = **VALUE**
  
  Specifies the timeout in seconds for remote I/O operations. Default is: 40.

  **verbose**
  
  **--verbose** = **true|false**
A value of true enables output of additional information during validation. Default value is false.

Note: Boolean option values are set to true if the option is specified without a value.

\[ \text{verbose-output} \]
\[ --\text{verbose-output} = \text{FILE} \]
Writes verbose output to FILE.

\[ \text{version} \]
\[ --\text{version} \]
Displays the version of RaptorXML+XBRL Server. If used with a command, place --version before the command.

\[ \text{warning-limit} \]
\[ --\text{warning-limit} = N | \text{unlimited} \]
Specifies the warning limit in the range 1-65535 or unlimited. Processing continues if this limit is reached, but further warnings are not reported. The default value is 100.

4.4.3 valxquery

The valxquery command takes an XQuery file as its single argument and validates it.

\[
\text{raptorxmlxbir} \text{valxquery} [\text{options}] \text{XQuery-File}
\]

- The XQuery-File argument is the path and name of the XQuery file to be validated.

Examples

Examples of the valxquery command:

- raptorxmlxbir valxquery c:\Test.xquery
- raptorxmlxbir valxquery --xquery-version=1 c:\Test.xquery

\[ \text{Casing and slashes on the command line} \]

\[ \text{RaptorXMLXBIR} \text{ (and RaptorXMLXBRLServer for administration commands) on Windows} \]
\[ \text{raptorxmlxbir} \text{ (and raptorxmlxbirserver for administration commands) on Windows and Unix (Linux, Mac)} \]

* Note that lowercase (raptorxmlxbir and raptorxmlxbirserver) works on all platforms (Windows, Linux, and Mac), while upper-lower (RaptorXMLXBRL) works only on Windows and Mac.
* Use forward slashes on Linux and Mac, backslashes on Windows.

\[ \text{Backslashes, spaces, and special characters on Windows systems} \]

On Windows systems: When spaces or special characters occur in strings (for example in file or folder
names, or company, person or product names), use quotes: for example, "My File". Note, however, that a backslash followed by a double-quotation mark (for example, “c:\My directory\”) might not be read correctly. This is because the backslash character is also used to indicate the start of an escape sequence, and the escape sequence \" stands for the double-quotation mark character. If you want to escape this sequence of characters, use a preceding backslash, like this: \". To summarize: If you need to write a file path that contains spaces or an end backslash, write it like this: "C:\My Directory\".

Options
Options are listed in short form (if available) and long form. You can use one or two dashes for both short and long forms. An option may or may not take a value. If it takes a value, it is written like this: --option=value. Values can be specified without quotes except in two cases: (i) when the value string contains spaces, or (ii) when explicitly stated in the description of the option that quotes are required. If an option takes a Boolean value and no value is specified, then the option's default value is TRUE. Use the --h, --help option to display information about the command.

XQuery processing

- **omit-xml-declaration**

  --omit-xml-declaration = true|false

  Serialization option to specify whether the XML declaration should be omitted from the output or not. If true, there will be no XML declaration in the output document. If false, an XML declaration will be included. Default value is false.

  **Note:** Boolean option values are set to true if the option is specified without a value.

- **xquery-version**

  --xquery-version = 1|1.0|3|3.0|3.1

  Specifies whether the XQuery processor should use XQuery 1.0 or XQuery 3.0. Default value is 3.1.

XML Schema and XML instance

- **load-xml-with-psvi**

  --load-xml-with-psvi = true|false

  Enables validation of input XML files and generates post-schema-validation information for them. Default is: true.

- **schema-imports**

  --schema-imports = load-by-schemalocation | load-preferring-schemalocation | load-by-namespace | load-combining-both | license-namespace-only

  Specifies the behaviour of xs:import elements, each of which has an optional namespace attribute and an optional schemaLocation attribute: <import namespace="someNS" schemaLocation="someURL">. The option specifies whether to load a schema document or just license a namespace, and, if a schema document is to be loaded, which information should be used to find it. Default: load-preferring-schemalocation.

  The behavior is as follows:
• load-by-schemalocation: The value of the schemaLocation attribute is used to locate the schema, taking account of catalog mappings. If the namespace attribute is present, the namespace is imported (licensed).

• load-prefering-schemalocation: If the schemaLocation attribute is present, it is used, taking account of catalog mappings. If no schemaLocation attribute is present, then the value of the namespace attribute is used via a catalog mapping. This is the default value.

• load-by-namespace: The value of the namespace attribute is used to locate the schema via a catalog mapping.

• load-combining-both: If either the namespace or schemaLocation attribute has a catalog mapping, then the mapping is used. If both have catalog mappings, then the value of the --schema-mapping option (XBRL option and XML/XSD option) decides which mapping is used. If no catalog mapping is present, the schemaLocation attribute is used.

• license-namespace-only: The namespace is imported. No schema document is imported.

\subsection{schemalocation-hints}

\texttt{--schemalocation-hints = load-by-schemalocation \mid load-by-namespace \mid load-combining-both \mid ignore}

Specifies the behavior of the xsi:schemaLocation and xsi:noNamespaceSchemaLocation attributes: Whether to load a schema document, and, if yes, which information should be used to find it. Default: load-by-schemalocation.

• The load-by-schemalocation value uses the URL of the schema location in the xsi:schemaLocation and xsi:noNamespaceSchemaLocation attributes in XML or XBRL instance documents. This is the default value.

• The load-by-namespace value takes the namespace part of xsi:schemaLocation and an empty string in the case of xsi:noNamespaceSchemaLocation and locates the schema via a catalog mapping.

• If load-combining-both is used and if either the namespace part or the URL part has a catalog mapping, then the mapping is used. If both have catalog mappings, then the value of the --schema-mapping option (XBRL option and XML/XSD option) decides which mapping is used. If neither the namespace nor URL has a catalog mapping, the URL is used.

• If the option’s value is ignore, then the xsi:schemaLocation and xsi:noNamespaceSchemaLocation attributes are both ignored.

\subsection{schema-mapping}

\texttt{--schema-mapping = prefer-schemalocation \mid prefer-namespace}

If schema location and namespace are both used to find a schema document, specifies which of them should be preferred during catalog lookup. (If either the --schemalocation-hints or the --schema-imports option has a value of load-combining-both, and if the namespace and URL parts involved both have catalog mappings, then the value of this option specifies which of the two mappings to use (namespace mapping or URL mapping; the prefer-schemalocation value refers to the URL mapping.) Default is prefer-schemalocation.

\subsection{xinclude}

\texttt{--xinclude = true|false}

Enables XML Inclusions (XInclude) support. Default value is false. When false, XInclude’s include elements are ignored.

\textbf{Note:} Boolean option values are set to true if the option is specified without a value.
xml-mode

--xml-mode = wf|id|valid
Specifies the XML processing mode to use for the XML instance document: wf=wellformed check; id=wellformed with ID/IDREF checks; valid=validation. Default value is wf. Note that a value of valid requires that each instance document loaded during processing references a DTD. If no DTD exists, an error is reported.

xml-mode-for-schemas

--xml-mode-for-schemas = wf|id|valid
Specifies the XML processing mode to use for XML schema documents: wf=wellformed check; id=wellformed with ID/IDREF checks; valid=validation. Default value is wf. Note that a value of valid requires that each schema document loaded during processing references a DTD. If no DTD exists, an error is reported.

xpath-static-type-errors-as-warnings

--xpath-static-type-errors-as-warnings = true|false
If true, degrades to warnings any type errors that are detected in the XPath static context. Whereas an error would cause the execution to fail, a warning would enable processing to continue. Default is false.
	xsd-version

--xsd-version = 1.0|1.1|detect
Specifies the W3C Schema Definition Language (XSD) version to use. Default is 1.0. This option can also be useful to find out in what ways a schema which is 1.0-compatible is not 1.1-compatible. The detect option is an Altova-specific feature. It enables the version of the XML Schema document (1.0 or 1.1) to be detected by reading the value of the vc:minVersion attribute of the document's <xs:schema> element. If the value of the @vc:minVersion attribute is 1.1, the schema is detected as being version 1.1. For any other value, or if the @vc:minVersion attribute is absent, the schema is detected as being version 1.0.

Catalogs and global resources

catalog

--catalog = FILE
Specifies the absolute path to a root catalog file that is not the installed root catalog file. The default value is the absolute path to the installed root catalog file (<installation-folder>\Altova\RaptorXMLXBRLServer2021\etc\RootCatalog.xml). See the section, XML Catalogs, for information about working with catalogs.

user-catalog

--user-catalog = FILE
Specifies the absolute path to an XML catalog to be used in addition to the root catalog. See the section, XML Catalogs, for information about working with catalogs.

enable-globalresources
---enable-globalresources = true|false

Enables global resources. Default value is false.

Note: Boolean option values are set to true if the option is specified without a value.

- globalresourceconfig [gc]

---gc | --globalresourceconfig = VALUE

Specifies the active configuration of the global resource (and enables global resources).

- globalresourcefile [gr]

---gr | --globalresourcefile = FILE

Specifies the global resource file (and enables global resources).

Extensions

These options define the handling of special extension functions that are available in a number of Enterprise-level Altova products (such as XMLSpy Enterprise Edition). Their use is described in the user manuals of these products.

- chartext-disable

---chartext-disable = true|false

Disables chart extensions. Default value is false.

Note: Boolean option values are set to true if the option is specified without a value.

- dotnetext-disable

---dotnetext-disable = true|false

Disables .NET extensions. Default value is false.

Note: Boolean option values are set to true if the option is specified without a value.

- jvm-location

---jvm-location = FILE

FILE specifies the location of the Java Virtual Machine (DLL on Windows, shared object on Linux). The JVM is needed if you use Java extension functions in your XSLT/XQuery code. Default is false.

- javaext-barcode-location

---javaext-barcode-location = FILE

Specifies the path to the folder that contains the barcode extension file AltovaBarcodeExtension.jar. The path must be given in one of the following forms:

- A file URI, for example: ---javaext-barcode-location="file:///C:/Program Files/Altova/RaptorXMLXBRLServer2021/etc/jar/"
- A Windows path with backslashes escaped, for example: ---javaext-barcode-location="C:\\Program Files\\Altova\\RaptorXMLXBRLServer2021\\etc\\jar\\"

- javaext-disable

---javaext-disable = true|false

Disables Java extensions. Default value is false.
**Note:** Boolean option values are set to `true` if the option is specified without a value.

▼ Messages, errors, help, timeout, version

▼ error-format

```
--error-format = text|shortxml|longxml
```

Specifies the format of the error output. Default value is `text`. The other options generate XML formats, with `longxml` generating more detail.

▼ error-limit

```
--error-limit = N | unlimited
```

Specifies the error limit with a value range of 1 to 9999 or unlimited. The default value is 100. Processing stops when the error limit is reached. Useful for limiting processor use during validation/transformation.

▼ info-limit

```
--info-limit = N | unlimited
```

Specifies the information message limit in the range 1-65535 or unlimited. Processing continues if the specified info limit is reached, but further messages are not reported. The default value is 100.

▼ help

```
--help
```

Displays help text for the command. For example, `valany --h`. (Alternatively the `help` command can be used with an argument. For example: `help valany`.)

▼ log-output

```
--log-output = FILE
```

Writes the log output to the specified file URL. Ensure that the CLI has write permission to the output location.

▼ network-timeout

```
--network-timeout = VALUE
```

Specifies the timeout in seconds for remote I/O operations. Default is: 40.

▼ verbose

```
--verbose = true|false
```

A value of `true` enables output of additional information during validation. Default value is `false`. **Note:** Boolean option values are set to `true` if the option is specified without a value.

▼ verbose-output

```
--verbose-output = FILE
```

Writes `verbose` output to `FILE`.

▼ version
--version
Displays the version of RaptorXML+XBRL Server. If used with a command, place --version before the command.

- warning-limit
  --warning-limit = N | unlimited
  Specifies the warning limit in the range 1-65535 or unlimited. Processing continues if this limit is reached, but further warnings are not reported. The default value is 100.

4.4.4 valxqueryupdate

The valxqueryupdate command takes an XQuery file as its single argument and validates it.

raptorxmlxbrl valxqueryupdate [options] XQuery-File

- The XQuery-File argument is the path and name of the XQuery file to be validated.

Examples

Examples of the valxqueryupdate command:

- raptorxmlxbrl valxqueryupdate c:\Test.xqu
- raptorxmlxbrl valxqueryupdate --xquery-update-version=1 c:\Test.xqu

Casing and slashes on the command line

RaptorXMLXBRL (and RaptorXMLXBRLServer for administration commands) on Windows
raptorxmlxbrl (and raptorxmlxbrlserver for administration commands) on Windows and Unix (Linux, Mac)

* Note that lowercase (raptorxmlxbrl and raptorxmlxbrlserver) works on all platforms (Windows, Linux, and Mac), while upper-lower (RaptorXMLXBRL) works only on Windows and Mac.
* Use forward slashes on Linux and Mac, backslashes on Windows.

Backslashes, spaces, and special characters on Windows systems

On Windows systems: When spaces or special characters occur in strings (for example in file or folder names, or company, person or product names), use quotes: for example, "My File". Note, however, that a backslash followed by a double-quotation mark (for example, "C:\My directory") might not be read correctly. This is because the backslash character is also used to indicate the start of an escape sequence, and the escape sequence \" stands for the double-quotation mark character. If you want to escape this sequence of characters, use a preceding backslash, like this: "\". To summarize: If you need to write a file path that contains spaces or an end backslash, write it like this: "C:\My Directory\".
Options

Options are listed in short form (if available) and long form. You can use one or two dashes for both short and long forms. An option may or may not take a value. If it takes a value, it is written like this: `--option=value`. Values can be specified without quotes except in two cases: (i) when the value string contains spaces, or (ii) when explicitly stated in the description of the option that quotes are required. If an option takes a Boolean value and no value is specified, then the option's default value is `true`. Use the `--h`, `--help` option to display information about the command.

- **XQuery processing**
  - **omit-xml-declaration**
    
    **--omit-xml-declaration = true|false**
    
    Serialization option to specify whether the XML declaration should be omitted from the output or not. If `true`, there will be no XML declaration in the output document. If `false`, an XML declaration will be included. Default value is `false`.
    
    **Note:** Boolean option values are set to `true` if the option is specified without a value.

- **xquery-update-version**
  
  **--xquery-update-version = 1|1.0|3|3.0**
  
  Specifies whether the XQuery processor should use XQuery Update Facility 1.0 or XQuery Update Facility 3.0. Default value is `3`.

- **XML Schema and XML instance**
  
  **load-xml-with-psvi**
  
  **--load-xml-with-psvi = true|false**
  
  Enables validation of input XML files and generates post-schema-validation information for them. Default is `true`.

- **schema-imports**
  
  **--schema-imports = load-by-schemalocation | load-preferring-schemalocation | load-by-namespace | load-combining-both | license-namespace-only**
  
  Specifies the behaviour of `xs:import` elements, each of which has an optional `namespace` attribute and an optional `schemaLocation` attribute: `<import namespace="someNS" schemaLocation="someURL">`. The option specifies whether to load a schema document or just license a namespace, and, if a schema document is to be loaded, which information should be used to find it. Default: `load-preferring-schemalocation`.
  
  The behavior is as follows:
  
  - **load-by-schemalocation:** The value of the `schemaLocation` attribute is used to locate the schema, taking account of catalog mappings. If the namespace attribute is present, the namespace is imported (licensed).
  - **load-preferring-schemalocation:** If the `schemaLocation` attribute is present, it is used, taking account of catalog mappings. If no `schemaLocation` attribute is present, then the value of the namespace attribute is used via a catalog mapping. This is the default value.
  - **load-by-namespace:** The value of the namespace attribute is used to locate the schema via a catalog mapping.
• **load-combining-both**: If either the namespace or schemaLocation attribute has a catalog mapping, then the mapping is used. If both have catalog mappings, then the value of the --schema-mapping option (XBRL option and XML/XSD option) decides which mapping is used. If no catalog mapping is present, the schemaLocation attribute is used.

• **license-namespace-only**: The namespace is imported. No schema document is imported.

### schemalocation-hints

```
--schemalocation-hints = load-by-schemalocation | load-by-namespace | load-combining-both | ignore
```

Specifies the behavior of the xsi:schemaLocation and xsi:noNamespaceSchemaLocation attributes: Whether to load a schema document, and, if yes, which information should be used to find it. Default: load-by-schemalocation.

* The load-by-schemalocation value uses the URL of the schema location in the xsi:schemaLocation and xsi:noNamespaceSchemaLocation attributes in XML or XBRL instance documents. This is the default value.
* The load-by-namespace value takes the namespace part of xsi:schemaLocation and an empty string in the case of xsi:noNamespaceSchemaLocation and locates the schema via a catalog mapping.
* If load-combining-both is used and if either the namespace part or the URL part has a catalog mapping, then the value of the --schema-mapping option (XBRL option and XML/XSD option) decides which mapping is used. If neither the namespace nor URL has a catalog mapping, the URL is used.
* If the option's value is ignore, then the xsi:schemaLocation and xsi:noNamespaceSchemaLocation attributes are both ignored.

### schema-mapping

```
--schema-mapping = prefer-schemalocation | prefer-namespace
```

If schema location and namespace are both used to find a schema document, specifies which of them should be preferred during catalog lookup. (If either the --schemalocation-hints or the --schema-imports option has a value of load-combining-both, and if the namespace and URL parts involved both have catalog mappings, then the value of this option specifies which of the two mappings to use (namespace mapping or URL mapping; the prefer-schemalocation value refers to the URL mapping).) Default is prefer-schemalocation.

### xinclude

```
--xinclude = true|false
```

Enables XML Inclusions (XInclude) support. Default value is false. When false, XInclude's include elements are ignored.

**Note:** Boolean option values are set to true if the option is specified without a value.

### xml-mode

```
--xml-mode = wf|id|valid
```

Specifies the XML processing mode to use for the XML instance document: wf=wellformed check; id=wellformed with ID/IDREF checks; valid=validation. Default value is wf. Note that a value of valid requires that each instance document loaded during processing references a DTD. If no DTD exists, an error is reported.
\textbf{xml-mode-for-schemas}

\texttt{--xml-mode-for-schemas = \texttt{wf|id|valid}}

Specifies the XML processing mode to use for XML schema documents: \texttt{wf=wellformed check; id=wellformed with ID/IDREF checks; valid=validation}. Default value is \texttt{wf}. Note that a value of \texttt{valid} requires that each schema document loaded during processing references a DTD. If no DTD exists, an error is reported.

\textbf{xpath-static-type-errors-as-warnings}

\texttt{--xpath-static-type-errors-as-warnings = true|false}

If \texttt{true}, degrades to warnings any type errors that are detected in the XPath static context. Whereas an error would cause the execution to fail, a warning would enable processing to continue. Default is \texttt{false}.

\textbf{xsd-version}

\texttt{--xsd-version = 1.0|1.1|detect}

Specifies the W3C Schema Definition Language (XSD) version to use. Default is \texttt{1.0}. This option can also be useful to find out in what ways a schema which is 1.0-compatible is not 1.1-compatible. The \texttt{detect} option is an Altova-specific feature. It enables the version of the XML Schema document (1.0 or 1.1) to be detected by reading the value of the \texttt{vc:minVersion} attribute of the document's \texttt{<xs:schema>} element. If the value of the \texttt{vc:minVersion} attribute is \texttt{1.1}, the schema is detected as being version \texttt{1.1}. For any other value, or if the \texttt{vc:minVersion} attribute is absent, the schema is detected as being version \texttt{1.0}.

\textbf{Catalogs and global resources}

\textbf{catalog}

\texttt{--catalog = FILE}

Specifies the absolute path to a root catalog file that is not the installed root catalog file. The default value is the absolute path to the installed root catalog file (<installation-folder>\Altova\RaptorXMLXBRLServer2021\etc\RootCatalog.xml). See the section, XML Catalogs \textsuperscript{18}, for information about working with catalogs.

\textbf{user-catalog}

\texttt{--user-catalog = FILE}

Specifies the absolute path to an XML catalog to be used in addition to the root catalog. See the section, XML Catalogs \textsuperscript{19}, for information about working with catalogs.

\textbf{enable-globalresources}

\texttt{--enable-globalresources = true|false}

Enables \texttt{global resources} \textsuperscript{17}. Default value is \texttt{false}.

\textit{Note:} Boolean option values are set to \texttt{true} if the option is specified without a value.

\textbf{globalresourceconfig [gc]}

\texttt{--gc | --globalresourceconfig = VALUE}

Specifies the \texttt{active configuration of the global resource} \textsuperscript{18} (and enables \texttt{global resources}) \textsuperscript{17}.
Extensions

These options define the handling of special extension functions that are available in a number of Enterprise-level Altova products (such as XMLSpy Enterprise Edition). Their use is described in the user manuals of these products.

- **chartext-disable**
  
  `--chartext-disable = true|false`
  
  Disables chart extensions. Default value is `false`.
  
  **Note:** Boolean option values are set to `true` if the option is specified without a value.

- **dotnetext-disable**
  
  `--dotnetext-disable = true|false`
  
  Disables .NET extensions. Default value is `false`.
  
  **Note:** Boolean option values are set to `true` if the option is specified without a value.

- **jvm-location**
  
  `--jvm-location = FILE`
  
  Specifies the location of the Java Virtual Machine (DLL on Windows, shared object on Linux). The JVM is needed if you use Java extension functions in your XSLT/XQuery code. Default is `false`.

- **javaext-barcode-location**
  
  `--javaext-barcode-location = FILE`
  
  Specifies the path to the folder that contains the barcode extension file `AltovaBarcodeExtension.jar`. The path must be given in one of the following forms:
  
  - A file URI, for example: `--javaext-barcode-location="file:///C:/Program Files/Altova/RaptorXMLXBRLServer2021/etc/jar/"`
  - A Windows path with backslashes escaped, for example: `--javaext-barcode-location="C:\Program Files\Altova\RaptorXMLXBRLServer2021\etc\jar\"`

- **javaext-disable**
  
  `--javaext-disable = true|false`
  
  Disables Java extensions. Default value is `false`.
  
  **Note:** Boolean option values are set to `true` if the option is specified without a value.

Messages, errors, help, timeout, version

- **error-format**
  
  `--error-format = text|shortxml|longxml`
  
  Specifies the format of the error output. Default value is `text`. The other options generate XML.
formats, with longxml generating more detail.

▼ error-limit

```command_line
--error-limit = N | unlimited
```

Specifies the error limit with a value range of 1 to 9999 or unlimited. The default value is 100. Processing stops when the error limit is reached. Useful for limiting processor use during validation/transformation.

▼ info-limit

```command_line
--info-limit = N | unlimited
```

Specifies the information message limit in the range 1-65535 or unlimited. Processing continues if the specified info limit is reached, but further messages are not reported. The default value is 100.

▼ help

```command_line
--help
```

Displays help text for the command. For example, `valany --h`. (Alternatively the `help` command can be used with an argument. For example: `help valany`.)

▼ log-output

```command_line
--log-output = FILE
```

Writes the log output to the specified file URL. Ensure that the CLI has write permission to the output location.

▼ network-timeout

```command_line
--network-timeout = VALUE
```

Specifies the timeout in seconds for remote I/O operations. Default is: 40.

▼ verbose

```command_line
--verbose = true|false
```

A value of `true` enables output of additional information during validation. Default value is `false`.

*Note:* Boolean option values are set to `true` if the option is specified without a value.

▼ verbose-output

```command_line
--verbose-output = FILE
```

Writes verbose output to `FILE`.

▼ version

```command_line
--version
```

Displays the version of RaptorXML+XBRL Server. If used with a command, place `--version` before the command.

▼ warning-limit

```command_line
--warning-limit = N | unlimited
```

Specifies the warning limit in the range 1-65535 or unlimited. Processing continues if this limit is reached, but further warnings are not reported. The default value is 100.
4.5 XSLT Commands

The XSLT commands are:

- `xslt`: for transforming XML documents with an XSLT document
- `valxslt`: for validating XSLT documents

4.5.1 xslt

The `xslt` command takes an XSLT file as its single argument and uses it to transform an input XML file to produce an output file. The input and output files are specified as options.

```
raptorxmlxbrl xslt [options] XSLT-File
```

- The `XSLT-File` argument is the path and name of the XSLT file to use for the transformation.
- An input XML file (`--input`) or a named template entry point (`--template-entry-point`) is required.
- To transform JSON data, load the JSON data via the `json-doc($path)` function of XPath 3.1, and use the `xslt` command's `--initial-match-selection` option. See the last item in the examples given below.
- If no `--output` option is specified, output is written to standard output. You can use XSLT 1.0, 2.0, or 3.0. By default XSLT 3.0 is used.

Examples

Examples of the `xslt` command:

```
- raptorxmlxbrl xslt --input=c:\Test.xml --output=c:\Output.xml c:\Test.xslt
- raptorxmlxbrl xslt --template-entry-point=StartTemplate --output=c:\Output.xml c:\Test.xslt
- raptorxmlxbrl xslt --input=c:\Test.xml --output=c:\Output.xml --param=date://node[1]/@att1 --p=title:'stringwithoutspace' --param=title:'"string with spaces"' --p=amount:456 c:\Test.xslt
- raptorxmlxbrl xslt --initial-match-selection=json-doc('MyData.json', map{'liberal':true()}) --output=c:\MyData.xml c:\Test.xslt
```

Casing and slashes on the command line

- **RaptorXMLXBL** (and **RaptorXMLXBRLServer** for administration commands) on **Windows**
- **raptorxmlxbrl** (and **raptorxmlxbrlserver** for administration commands) on **Windows and Unix (Linux, Mac)**

* Note that lowercase (**raptorxmlxbrl** and **raptorxmlxbrlserver**) works on all platforms (Windows, Linux, and Mac), while upper-lower (**RaptorXMLXBL**) works only on Windows and Mac.
* Use forward slashes on Linux and Mac, backslashes on Windows.

Backslashes, spaces, and special characters on Windows systems

On Windows systems: When spaces or special characters occur in strings (for example in file or folder
names, or company, person or product names), use quotes: for example, "My File". Note, however, that a backslash followed by a double-quotation mark (for example, “C:\My directory\”) might not be read correctly. This is because the backslash character is also used to indicate the start of an escape sequence, and the escape sequence \" stands for the double-quotation mark character. If you want to escape this sequence of characters, use a preceding backslash, like this: \\\. To summarize: If you need to write a file path that contains spaces or an end backslash, write it like this: "C:\My Directory\\".

Options
Options are listed in short form (if available) and long form. You can use one or two dashes for both short and long forms. An option may or may not take a value. If it takes a value, it is written like this: --option=value. Values can be specified without quotes except in two cases: (i) when the value string contains spaces, or (ii) when explicitly stated in the description of the option that quotes are required. If an option takes a Boolean value and no value is specified, then the option's default value is TRUE. Use the --h, --help option to display information about the command.

XSLT processing

- **indent-characters**
  --indent-characters = VALUE
  Specifies the character string to be used as indentation.

- **function-param**
  --function-param = VALUE
  Specifies the functions that will be passed to the initial function. To specify more than one function, use the option multiple times. Note, however, that order is important.

- **global-context-item**
  --global-context-item = VALUE
  Specifies the context item that is to be used to evaluate global variables.

- **initial-function**
  --initial-function = VALUE
  The name of a function that is to be executed as the entry point of the transformation.

- **initial-match-selection**
  --initial-match-selection = VALUE
  Specifies the value (sequence) of the initial match selection.

- **initial-mode, template-mode**
  --initial-mode, --template-mode = VALUE
  Specifies the template mode to use for the transformation.

- **initial-template, template-entry-point**
  --initial-template, --template-entry-point = VALUE
Gives the name of a named template in the XSLT stylesheet that is the entry point of the transformation.

- **input**
  
  ```
  --input = FILE
  ```

  The URL of the XML file to be transformed.

- **output, xsltoutput**
  
  ```
  output = FILE, xsltoutput = FILE
  ```

  The URL of the primary-output file. For example, in the case of multiple-file HTML output, the primary-output file will be the location of the entry point HTML file. Additional output files, such as generated image files, are reported as `xslt-additional-output-files`. If no `--output` or `--xsltoutput` option is specified, output is written to standard output.

- **param [p]**
  
  ```
  --p | --param = KEY:VALUE
  ```

  **XQuery**

  Specifies the value of an external parameter. An external parameter is declared in the XQuery document with the `declare variable` declaration followed by a variable name and then the `external` keyword followed by the trailing semi-colon. For example:
  ```
  declare variable $foo as xs:string external;
  ```

  The `external` keyword `$foo` becomes an external parameter, the value of which is passed at runtime from an external source. The external parameter is given a value with the CLI command. For example:
  ```
  --param=foo:'MyName'
  ```

  In the description statement above, `KEY` is the external parameter name, `VALUE` is the value of the external parameter, given as an XPath expression. Parameter names used on the CLI must be declared in the XQuery document. If multiple external parameters are passed values on the CLI, each must be given a separate `--param` option. Double quotes must be used if the XPath expression contains spaces.

  **XSLT**

  Specifies a global stylesheet parameter. `KEY` is the parameter name, `VALUE` is an XPath expression that provides the parameter value. Parameter names used on the CLI must be declared in the stylesheet. If multiple parameters are used, the `--param` switch must be used before each parameter. Double quotes must be used around the XPath expression if it contains a space—whether the space is in the XPath expression itself or in a string literal in the expression. For example:
  ```
  raptorxmlxbrl xslt --input=c:\Test.xml --output=c:\Output.xml --param=date://node[1]/@att1 --p=title:'stringwithoutspace' --param=title:"string with spaces" --p=amount:456 c:\Test.xslt
  ```

- **streaming-serialization-enabled**
  
  ```
  --streaming-serialization-enabled = true|false
  ```

  Enables streaming serialization. Default value is `true`. 
  **Note**: Boolean option values are set to `true` if the option is specified without a value.
**template-param**

`--template-param = KEY:VALUE`

Specifies parameters that will be passed to the initial template only (and not to any descending template call). To specify multiple parameters, use the option once for each parameter.

**tunnel-param**

`--tunnel-param = KEY:VALUE`

Specifies parameters that will be passed to the initial template and to descending template calls. To specify multiple parameters, use the option once for each parameter.

**xpath-static-type-errors-as-warnings**

`--xpath-static-type-errors-as-warnings = true|false`

If true, degrades to warnings any type errors that are detected in the XPath static context. Whereas an error would cause the execution to fail, a warning would enable processing to continue. Default is false.

**xslt-version**

`--xslt-version = 1|1.0|2|2.0|3|3.0|3.1`

Specifies whether the XSLT processor should use XSLT 1.0, XSLT 2.0, or XSLT 3.0. Default value is 3.

**XML Schema and XML instance**

**load-xml-with-psvi**

`--load-xml-with-psvi = true|false`

Enables validation of input XML files and generates post-schema-validation information for them. Default is true.

**schema-imports**

`--schema-imports = load-by-schemalocation | load-preferring-schemalocation | load-by-namespace | load-combining-both | license-namespace-only`

Specifies the behaviour of `xs:import` elements, each of which has an optional namespace attribute and an optional `schemalocation` attribute. The option specifies whether to load a schema document or just license a namespace, and, if a schema document is to be loaded, which information should be used to find it. Default: load-preferring-schemalocation.

The behavior is as follows:

- load-by-schemalocation: The value of the `schemalocation` attribute is used to locate the schema, taking account of catalog mappings. If the namespace attribute is present, the namespace is imported (licensed).
- load-preferring-schemalocation: If the `schemalocation` attribute is present, it is used, taking account of catalog mappings. If no `schemalocation` attribute is present, then the value of the namespace attribute is used via a catalog mapping. This is the default value.
- load-by-namespace: The value of the namespace attribute is used to locate the schema via a
catalog mapping

- load-combining-both: If either the namespace or schemaLocation attribute has a catalog mapping, then the mapping is used. If both have catalog mappings, then the value of the --schema-mapping option (XBRL option and XML/XSD option) decides which mapping is used. If no catalog mapping is present, the schemaLocation attribute is used.
- license-namespace-only: The namespace is imported. No schema document is imported.

---

schemalocation-hints

--schemalocation-hints = load-by-schemalocation | load-by-namespace | load-combining-both | ignore

Specifies the behavior of the xsi:schemaLocation and xsi:noNamespaceSchemaLocation attributes: Whether to load a schema document, and, if yes, which information should be used to find it. Default: load-by-schemalocation.

- The load-by-schemalocation value uses the URL of the schema location in the xsi:schemaLocation and xsi:noNamespaceSchemaLocation attributes in XML or XBRL instance documents. This is the default value.
- The load-by-namespace value takes the namespace part of xsi:schemaLocation and an empty string in the case of xsi:noNamespaceSchemaLocation and locates the schema via a catalog mapping.
- If load-combining-both is used and if either the namespace part or the URL part has a catalog mapping, then the catalog mapping is used. If both have catalog mappings, then the value of the --schema-mapping option (XBRL option and XML/XSD option) decides which mapping is used. If neither the namespace nor URL has a catalog mapping, the URL is used.
- If the option's value is ignore, then the xsi:schemaLocation and xsi:noNamespaceSchemaLocation attributes are both ignored.

---

schema-mapping

--schema-mapping = prefer-schemalocation | prefer-namespace

If schema location and namespace are both used to find a schema document, specifies which of them should be preferred during catalog lookup. (If either the --schemalocation-hints or the --schema-imports option has a value of load-combining-both, and if the namespace and URL parts involved both have catalog mappings, then the value of this option specifies which of the two mappings to use (namespace mapping or URL mapping; the prefer-schemalocation value refers to the URL mapping).) Default is prefer-schemalocation.

---

xinclude

--xinclude = true|false

Enables XML Inclusions (XInclude) support. Default value is false. When false, XInclude's include elements are ignored.

Note: Boolean option values are set to true if the option is specified without a value.

---

xml-mode

--xml-mode = wf|id|valid

Specifies the XML processing mode to use for the XML instance document: wf = wellformed check; id = wellformed with ID/IDREF checks; valid = validation. Default value is wf. Note that a value of valid requires that each instance document loaded during processing references a DTD. If no DTD exists, an error is reported.
xml-mode-for-schemas

```
--xml-mode-for-schemas = wf|id|valid
```

Specifies the XML processing mode to use for XML schema documents: 
wf=wellformed check; id=wellformed with ID/IDREF checks; valid=validation. Default value is wf. Note that a value of valid requires that each schema document loaded during processing references a DTD. If no DTD exists, an error is reported.

xml-validation-error-as-warning

```
--xml-validation-error-as-warning = true|false
```

If true, treats validation errors as warnings. If errors are treated as warnings, additional processing, such as XSLT transformations, will continue regardless of errors. Default is false.

xsd

```
--xsd = FILE
```

Specifies one or more XML Schema documents to use for the validation of XML instance documents. Add the option multiple times to specify more than one schema document.

xsd-version

```
--xsd-version = 1.0|1.1|detect
```

Specifies the W3C Schema Definition Language (XSD) version to use. Default is 1.0. This option can also be useful to find out in what ways a schema which is 1.0-compatible is not 1.1-compatible. The detect option is an Altova-specific feature. It enables the version of the XML Schema document (1.0 or 1.1) to be detected by reading the value of the @vc:minVersion attribute of the document's <xs:schema> element. If the value of the @vc:minVersion attribute is 1.1, the schema is detected as being version 1.1. For any other value, or if the @vc:minVersion attribute is absent, the schema is detected as being version 1.0.

Catalogs and global resources

catalog

```
--catalog = FILE
```

Specifies the absolute path to a root catalog file that is not the installed root catalog file. The default value is the absolute path to the installed root catalog file (<installation-folder>\Altova\RaptorXMLXBRLServer2021\etc\RootCatalog.xml). See the section, XML Catalogs, for information about working with catalogs.

catalog

```
--user-catalog = FILE
```

Specifies the absolute path to an XML catalog to be used in addition to the root catalog. See the section, XML Catalogs, for information about working with catalogs.

enable-globalresources

```
--enable-globalresources = true|false
```

Enables global resources. Default value is false.

*Note:* Boolean option values are set to true if the option is specified without a value.

---

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globalresourceconfig [gc]

--gc | --globalresourceconfig = VALUE
Specifies the active configuration of the global resource (and enables global resources).

globalresourcefile [gr]

--gr | --globalresourcefile = FILE
Specifies the global resource file (and enables global resources).

Extensions

These options define the handling of special extension functions that are available in a number of Enterprise-level Altova products (such as XMLSpy Enterprise Edition). Their use is described in the user manuals of these products.

chartext-disable

--chartext-disable = true|false
Disables chart extensions. Default value is false.

Note: Boolean option values are set to true if the option is specified without a value.

dotnetext-disable

--dotnetext-disable = true|false
Disables .NET extensions. Default value is false.

Note: Boolean option values are set to true if the option is specified without a value.

jvm-location

--jvm-location = FILE
FILE specifies the location of the Java Virtual Machine (DLL on Windows, shared object on Linux). The JVM is needed if you use Java extension functions in your XSLT/XQuery code. Default is false.

javaext-barcode-location

--javaext-barcode-location = FILE
Specifies the path to the folder that contains the barcode extension file AltovaBarcodeExtension.jar. The path must be given in one of the following forms:

- A file URI, for example: --javaext-barcode-location="file:///C:/Program Files/Altova/RaptorXMLXBRLServer2021/etc/jar/"
- A Windows path with backslashes escaped, for example: --javaext-barcode-location="C:\\Program Files\\Altova\\RaptorXMLXBRLServer2021\\etc\\jar\\"

javaext-disable

--javaext-disable = true|false
Disables Java extensions. Default value is false.

Note: Boolean option values are set to true if the option is specified without a value.
Messages, errors, help, timeout, version

error-format

`--error-format = text|shortxml|longxml`

Specifies the format of the error output. Default value is text. The other options generate XML formats, with longxml generating more detail.

error-limit

`--error-limit = N | unlimited`

Specifies the error limit with a value range of 1 to 9999 or unlimited. The default value is 100. Processing stops when the error limit is reached. Useful for limiting processor use during validation/transformation.

info-limit

`--info-limit = N | unlimited`

Specifies the information message limit in the range 1-65535 or unlimited. Processing continues if the specified info limit is reached, but further messages are not reported. The default value is 100.

help

`--help`

Displays help text for the command. For example, `valany --h`. (Alternatively the `help` command can be used with an argument. For example: `help valany`.)

log-output

`--log-output = FILE`

Writes the log output to the specified file URL. Ensure that the CLI has write permission to the output location.

network-timeout

`--network-timeout = VALUE`

Specifies the timeout in seconds for remote I/O operations. Default is: 40.

verbose

`--verbose = true|false`

A value of true enables output of additional information during validation. Default value is false. Note: Boolean option values are set to true if the option is specified without a value.

verbose-output

`--verbose-output = FILE`

Writes verbose output to FILE.

version

`--version`

Displays the version of RaptorXML+XBRL Server. If used with a command, place --version before the command.

warning-limit
4.5.2 valxslt

The `valxslt` command takes an XSLT file as its single argument and validates it.

```
  raptorxmlxbrl valxslt [options] XSLT-File
```

- The `XSLT-File` argument is the path and name of the XSLT file to be validated.
- Validation can be according to the XSLT 1.0, 2.0, or 3.0 specification. By default XSLT 3.0 is the specification used.

Examples

Examples of the `valxslt` command:

- `raptorxmlxbrl valxslt c:\Test.xslt`
- `raptorxmlxbrl valxslt --xslt-version=2 c:\Test.xslt`

Casing and slashes on the command line

- In Windows, use `raptorxmlxbrl` (and `raptorxmlxbrlserver` for administration commands).
- In Unix (Linux, Mac), use `raptorxmlxbrl` (and `raptorxmlxbrlserver` for administration commands).

* Note that lowercase (`raptorxmlxbrl` and `raptorxmlxbrlserver`) works on all platforms (Windows, Linux, and Mac), while upper-lower (`RaptorXMLXBRL`) works only on Windows and Mac.
* Use forward slashes on Linux and Mac, backslashes on Windows.

Backslashes, spaces, and special characters on Windows systems

On Windows systems: When spaces or special characters occur in strings (for example in file or folder names, or company, person or product names), use quotes: for example, "My File". Note, however, that a backslash followed by a double-quotation mark (for example, “C:\My directory\”) might not be read correctly. This is because the backslash character is also used to indicate the start of an escape sequence, and the escape sequence \" stands for the double-quotation mark character. If you want to escape this sequence of characters, use a preceding backslash, like this: \". To summarize: If you need to write a file path that contains spaces or an end backslash, write it like this: "C:\My Directory\".

Options

Options are listed in short form (if available) and long form. You can use one or two dashes for both short and
long forms. An option may or may not take a value. If it takes a value, it is written like this: --option=value. Values can be specified without quotes except in two cases: (i) when the value string contains spaces, or (ii) when explicitly stated in the description of the option that quotes are required. If an option takes a Boolean value and no value is specified, then the option’s default value is TRUE. Use the --h, --help option to display information about the command.

**XSLT processing**

**- initial-mode, template-mode**

```
--initial-mode, --template-mode = VALUE
```

Specifies the template mode to use for the transformation.

**- initial-template, template-entry-point**

```
--initial-template, --template-entry-point = VALUE
```

Gives the name of a named template in the XSLT stylesheet that is the entry point of the transformation.

**- xslt-version**

```
--xslt-version = 1|1.0|2.0|3.0|3.1
```

Specifies whether the XSLT processor should use XSLT 1.0, XSLT 2.0, or XSLT 3.0. Default value is 3.

**XML Schema and XML instance**

**- load-xml-with-psvi**

```
--load-xml-with-psvi = true|false
```

Enables validation of input XML files and generates post-schema-validation information for them. Default is: true.

**schema-imports**

```
--schema-imports = load-by-schemalocation | load-preferring-schemalocation | load-by-namespace | load-combining-both | license-namespace-only
```

Specifies the behaviour of xs:import elements, each of which has an optional namespace attribute and an optional schemaLocation attribute: `<import namespace="someNS" schemaLocation="someURL">`. The option specifies whether to load a schema document or just license a namespace, and, if a schema document is to be loaded, which information should be used to find it. Default: load-preferring-schemalocation.

The behavior is as follows:

- **load-by-schemalocation**: The value of the schemaLocation attribute is used to locate the schema, taking account of catalog mappings. If the namespace attribute is present, the namespace is imported (licensed).
- **load-preferring-schemalocation**: If the schemaLocation attribute is present, it is used, taking account of catalog mappings. If no schemaLocation attribute is present, then the value of the namespace attribute is used via a catalog mapping. This is the default value.
- **load-by-namespace**: The value of the namespace attribute is used to locate the schema via a catalog mapping.
- **load-combining-both**: If either the namespace or schemaLocation attribute has a catalog mapping, then the mapping is used. If both have catalog mappings, then the value of the...
--schema-mapping option (XBRL option and XML/XSD option) decides which mapping is used. If no catalog mapping is present, the schemaLocation attribute is used.

- license-namespace-only: The namespace is imported. No schema document is imported.

- schemalocation-hints

  --schemalocation-hints = load-by-schemalocation | load-by-namespace | load-combining-both | ignore

  Specifies the behavior of the xsi:schemaLocation and xsi:noNamespaceSchemaLocation attributes: Whether to load a schema document, and, if yes, which information should be used to find it. Default: load-by-schemalocation.

  - The load-by-schemalocation value uses the URL of the schema location in the xsi:schemaLocation and xsi:noNamespaceSchemaLocation attributes in XML or XBRL instance documents. This is the default value.
  - The load-by-namespace value takes the namespace part of xsi:schemaLocation and an empty string in the case of xsi:noNamespaceSchemaLocation and locates the schema via a catalog mapping.
  - If load-combining-both is used and if either the namespace part or the URL part has a catalog mapping, then the catalog mapping is used. If both have catalog mappings, then the value of the --schema-mapping option (XBRL option and XML/XSD option) decides which mapping is used. If neither the namespace nor URL has a catalog mapping, the URL is used.
  - If the option's value is ignore, then the xsi:schemaLocation and xsi:noNamespaceSchemaLocation attributes are both ignored.

- schema-mapping

  --schema-mapping = prefer-schemalocation | prefer-namespace

  If schema location and namespace are both used to find a schema document, specifies which of them should be preferred during catalog lookup. (If either the --schemalocation-hints or the --schema-imports option has a value of load-combining-both, and if the namespace and URL parts involved both have catalog mappings, then the value of this option specifies which of the two mappings to use (namespace mapping or URL mapping; the prefer-schemalocation value refers to the URL mapping).) Default is prefer-schemalocation.

- xinclude

  --xinclude = true|false

  Enables XML Inclusions (XInclude) support. Default value is false. When false, XInclude's include elements are ignored.

  Note: Boolean option values are set to true if the option is specified without a value.

- xml-mode

  --xml-mode = wf|id|valid

  Specifies the XML processing mode to use for the XML instance document: wf=wellformed check; id=wellformed with ID/IDREF checks; valid=validation. Default value is wf. Note that a value of valid requires that each instance document loaded during processing references a DTD. If no DTD exists, an error is reported.

- xml-mode-for-schemas
---xml-mode-for-schemas = \texttt{wf|id|valid}
Specifies the XML processing mode to use for XML schema documents: \texttt{wf=wellformed check}; \texttt{id=wellformed with ID/IDREF checks}; \texttt{valid=validation}. Default value is \texttt{wf}. Note that a value of \texttt{valid} requires that each schema document loaded during processing references a DTD. If no DTD exists, an error is reported.

\section*{xpath-static-type-errors-as-warnings}

---xpath-static-type-errors-as-warnings = \texttt{true|false}
If \texttt{true}, degrades to warnings any type errors that are detected in the XPath static context. Whereas an error would cause the execution to fail, a warning would enable processing to continue. Default is \texttt{false}.

\section*{xsd-version}

---xsd-version = \texttt{1.0|1.1|detect}
Specifies the W3C Schema Definition Language (XSD) version to use. Default is \texttt{1.0}. This option can also be useful to find out in what ways a schema which is 1.0-compatible is not 1.1-compatible. The \texttt{detect} option is an Altova-specific feature. It enables the version of the XML Schema document (1.0 or 1.1) to be detected by reading the value of the vc:minVersion attribute of the document's <xs:schema> element. If the value of the @vc:minVersion attribute is \texttt{1.1}, the schema is detected as being version 1.1. For any other value, or if the @vc:minVersion attribute is absent, the schema is detected as being version \texttt{1.0}.

\section*{Catalogs and global resources}

\section*{catalog}

---catalog = \texttt{FILE}
Specifies the absolute path to a root catalog file that is not the installed root catalog file. The default value is the absolute path to the installed root catalog file (<installation-folder>/Altova/RaptorXMLXBRLServer2021/etc/RootCatalog.xml). See the section, XML Catalogs, for information about working with catalogs.

\section*{user-catalog}

---user-catalog = \texttt{FILE}
Specifies the absolute path to an XML catalog to be used in addition to the root catalog. See the section, XML Catalogs, for information about working with catalogs.

\section*{enable-globalresources}

---enable-globalresources = \texttt{true|false}
Enables \texttt{global resources}. Default value is \texttt{false}.

\textbf{Note:} Boolean option values are set to \texttt{true} if the option is specified without a value.

\section*{globalresourceconfig [gc]}

---gc | --globalresourceconfig = \texttt{VALUE}
Specifies the active configuration of the global resource (and enables \texttt{global resources}).

\section*{globalresourcefile [gr]
Extensions

These options define the handling of special extension functions that are available in a number of Enterprise-level Altova products (such as XMLSpy Enterprise Edition). Their use is described in the user manuals of these products.

chartext-disable

--chartext-disable = true|false

Disables chart extensions. Default value is false.

Note: Boolean option values are set to true if the option is specified without a value.

dotnetext-disable

--dotnetext-disable = true|false

Disables .NET extensions. Default value is false.

Note: Boolean option values are set to true if the option is specified without a value.

jvm-location

--jvm-location = FILE

FILE specifies the location of the Java Virtual Machine (DLL on Windows, shared object on Linux). The JVM is needed if you use Java extension functions in your XSLT/XQuery code. Default is false.

javaext-barcode-location

--javaext-barcode-location = FILE

Specifies the path to the folder that contains the barcode extension file AltovaBarcodeExtension.jar. The path must be given in one of the following forms:

- A file URI, for example: --javaext-barcode-location="file:///C:/Program Files/Altova/RaptorXMLXBRLServer2021/etc/jar/"
- A Windows path with backslashes escaped, for example: --javaext-barcode-location="C:\\Program Files\\Altova\\RaptorXMLXBRLServer2021\\etc\\jar\\"

javaext-disable

--javaext-disable = true|false

Disables Java extensions. Default value is false.

Note: Boolean option values are set to true if the option is specified without a value.

Messages, errors, help, timeout, version

error-format

--error-format = text|shortxml|longxml

Specifies the format of the error output. Default value is text. The other options generate XML formats, with longxml generating more detail.
error-limit

```
--error-limit = N | unlimited
```

Specifies the error limit with a value range of 1 to 9999 or unlimited. The default value is 100. Processing stops when the error limit is reached. Useful for limiting processor use during validation/transformation.

info-limit

```
--info-limit = N | unlimited
```

Specifies the information message limit in the range 1-65535 or unlimited. Processing continues if the specified info limit is reached, but further messages are not reported. The default value is 100.

help

```
--help
```

Displays help text for the command. For example, valany --h. (Alternatively the help command can be used with an argument. For example: help valany.)

log-output

```
--log-output = FILE
```

Writes the log output to the specified file URL. Ensure that the CLI has write permission to the output location.

network-timeout

```
--network-timeout = VALUE
```

Specifies the timeout in seconds for remote I/O operations. Default is: 40.

verbose

```
--verbose = true|false
```

A value of true enables output of additional information during validation. Default value is false. Note: Boolean option values are set to true if the option is specified without a value.

verbose-output

```
--verbose-output = FILE
```

Writes verbose output to FILE.

version

```
--version
```

Displays the version of RaptorXML+XBRL Server. If used with a command, place --version before the command.

warning-limit

```
--warning-limit = N | unlimited
```

Specifies the warning limit in the range 1-65535 or unlimited. Processing continues if this limit is reached, but further warnings are not reported. The default value is 100.
4.6  JSON/Avro Commands

The JSON commands can be used to check the validity and well-formedness of JSON schema and instance documents. These commands are listed below and described in detail in the sub-sections of this section:

- **avroextractschema**: Extracts the Avro schema from an Avro binary file
- **valavro**: Validates the data in one or more Avro binaries against the respective Avro schema of each binary
- **valavrojson**: Validates one or more JSON data files against an Avro schema
- **valavroschema**: Validates an Avro schema against the Avro schema specification
- **valjsonschema**: Checks the validity of JSON schema documents
- **valjson**: Checks the validity of JSON documents
- **wfjson**: Checks the well-formedness of JSON documents.

4.6.1  avroextractschema

An Avro binary file contains an Avro data block preceded by the Avro schema that defines the structure of the data block. The **avroextractschema** command extracts the Avro schema from the Avro binary and serializes the Avro schema as JSON.

```
raptorxmlxbrl avroextractschema [options] --avrooutput=AvroSchemaFile AvroBinaryFile
```

- The **AvroBinaryFile** argument specifies the Avro binary file from which the Avro schema is to be extracted.
- The **--avrooutput** option specifies the location of the extracted Avro schema.

**Example**

Example of the **avroextractschema** command:

```
raptorxmlxbrl avroextractschema --avrooutput=c:\MyAvroSchema.avsc c:\MyAvroBinary.avro
```

**Casing and slashes on the command line**

RaptorXML (and RaptorXMLServer for administration commands) on Windows

raptorxml (and raptorxmlserver for administration commands) on Windows and Unix (Linux, Mac)

* Note that lowercase (raptorxml and raptorxmlserver) works on all platforms (Windows, Linux, and Mac), while upper-lower (RaptorXML) works only on Windows and Mac.
* Use forward slashes on Linux and Mac, backslashes on Windows.

**Backslashes, spaces, and special characters on Windows systems**

On Windows systems: When spaces or special characters occur in strings (for example in file or folder names, or company, person or product names), use quotes: for example, "My File". Note, however, that a backslash followed by a double-quotation mark (for example, "C:\My directory\") might not be read...
correctly. This is because the backslash character is also used to indicate the start of an escape sequence, and the escape sequence " stands for the double-quotation mark character. If you want to escape this sequence of characters, use a preceding backslash, like this: \\". To summarize: If you need to write a file path that contains spaces or an end backslash, write it like this: "C:\My Directory\".

**Options**

Options are listed in short form (if available) and long form. You can use one or two dashes for both short and long forms. An option may or may not take a value. If it takes a value, it is written like this: --option=value. Values can be specified without quotes except in two cases: (i) when the value string contains spaces, or (ii) when explicitly stated in the description of the option that quotes are required. If an option takes a Boolean value and no value is specified, then the option's default value is TRUE. Use the --h, --help option to display information about the command.

**Processing**

- **output, avrooutput**
  
  ```
  --output = FILE, --avrooutput = FILE
  ```
  Sets the location of the Avro output file.

- **recurse**
  
  ```
  --recurse = true|false
  ```
  Used to select files within sub-directories, including in ZIP archives. If true, the command's InputFile argument will select the specified file also in subdirectories. For example: "test.zip|zip\test.xml" will select files named test.xml at all folder levels of the zip folder. References to ZIP files must be given in quotes. The wildcard characters * and ? may be used. So, *.xml will select all .xml files in the (zip) folder. The option's default value is false.
  
  **Note:** Boolean option values are set to true if the option is specified without a value.

**Catalogs and global resources**

- **catalog**
  
  ```
  --catalog = FILE
  ```
  Specifies the absolute path to a root catalog file that is not the installed root catalog file. The default value is the absolute path to the installed root catalog file (<installation-folder>\Altova\RaptorXMLXBRLServer2021\etc\RootCatalog.xml). See the section, XML Catalogs, for information about working with catalogs.

- **user-catalog**
  
  ```
  --user-catalog = FILE
  ```
  Specifies the absolute path to an XML catalog to be used in addition to the root catalog. See the section, XML Catalogs, for information about working with catalogs.

- **enable-globalresources**
  
  ```
  --enable-globalresources = true|false
  ```
Enables global resources. Default value is false.

*Note:* Boolean option values are set to true if the option is specified without a value.

**globalresourceconfig [gc]**

```bash
--gc | --globalresourceconfig = VALUE
```

Specifies the active configuration of the global resource (and enables global resources).

**globalresourcefile [gr]**

```bash
--gr | --globalresourcefile = FILE
```

Specifies the global resource file (and enables global resources).

**Messages, errors, help, timeout, version**

**error-format**

```bash
--error-format = text|shortxml|longxml
```

Specifies the format of the error output. Default value is text. The other options generate XML formats, with longxml generating more detail.

**error-limit**

```bash
--error-limit = N | unlimited
```

Specifies the error limit with a value range of 1 to 9999 or unlimited. The default value is 100. Processing stops when the error limit is reached. Useful for limiting processor use during validation/transformation.

**info-limit**

```bash
--info-limit = N | unlimited
```

Specifies the information message limit in the range 1-65535 or unlimited. Processing continues if the specified info limit is reached, but further messages are not reported. The default value is 100.

**help**

```bash
--help
```

Displays help text for the command. For example, valany --h. (Alternatively the help command can be used with an argument. For example: help valany.)

**log-output**

```bash
--log-output = FILE
```

Writes the log output to the specified file URL. Ensure that the CLI has write permission to the output location.

**network-timeout**

```bash
--network-timeout = VALUE
```

Specifies the timeout in seconds for remote I/O operations. Default is 40.

**verbose**

```bash
--verbose = true|false
```
A value of `true` enables output of additional information during validation. Default value is `false`.

**Note:** Boolean option values are set to `true` if the option is specified without a value.

- **verbose-output**
  ```bash
  --verbose-output = FILE
  ```
  Writes verbose output to `FILE`.

- **version**
  ```bash
  --version
  ```
  Displays the version of RaptorXML+XBRL Server. If used with a command, place `--version` before the command.

- **warning-limit**
  ```bash
  --warning-limit = N | unlimited
  ```
  Specifies the warning limit in the range 1-65535 or `unlimited`. Processing continues if this limit is reached, but further warnings are not reported. The default value is 100.

### 4.6.2 valavro (avro)

The `valavro` | `avro` command validates the data block in one or more Avro binary files against the respective Avro schemas in each binary file.

```bash
raptorxmlxbrl valavro | avro [options] AvroBinaryFile
```

- The `AvroBinaryFile` argument specifies one or more Avro binary files to validate. Specifically, the data block in each Avro binary file is validated against the Avro schema in that binary file.
- To validate multiple Avro binaries, either: (i) list the files to be validated on the CLI, with each file separated from the next by a space; or (ii) list the files to be validated in a text file (.txt file), with one filename per line, and supply this text file as the `AvroBinaryFile` argument together with the `--listfile` option set to `true` (see the Options list below).

**Examples**

Examples of the `valavro` command:

- `raptorxmlxbrl valavro c:\MyAvroBinary.avro`
- `raptorxmlxbrl valavro c:\MyAvroBinary01.avro c:\MyAvroBinary02.avro`
- `raptorxmlxbrl avro --listfile=true c:\MyFileList.txt`

**Casing and slashes on the command line**

- **RaptorXMLXBRL** (and **RaptorXMLXBRLServer** for administration commands) on Windows
- **raptorxmlxbrl** (and **raptorxmlxbrlserver** for administration commands) on Windows and Unix (Linux, Mac)
* Note that lowercase (`raptorxmlxbrl` and `raptorxmlxbrlserver`) works on all platforms (Windows, Linux, and Mac), while upper-lower (`RaptorXMLXBRL`) works only on Windows and Mac.
* Use forward slashes on Linux and Mac, backslashes on Windows.

**Backslashes, spaces, and special characters on Windows systems**

On Windows systems: When spaces or special characters occur in strings (for example in file or folder names, or company, person or product names), use quotes: for example, "My File". Note, however, that a backslash followed by a double-quotation mark (for example, “C:\My directory\”) might not be read correctly. This is because the backslash character is also used to indicate the start of an escape sequence, and the escape sequence " stands for the double-quotation mark character. If you want to escape this sequence of characters, use a preceding backslash, like this: \". To summarize: If you need to write a file path that contains spaces or an end backslash, write it like this: "C:\My Directory\".

**Options**

Options are listed in short form (if available) and long form. You can use one or two dashes for both short and long forms. An option may or may not take a value. If it takes a value, it is written like this: `--option=value`. Values can be specified without quotes except in two cases: (i) when the value string contains spaces, or (ii) when explicitly stated in the description of the option that quotes are required. If an option takes a Boolean value and no value is specified, then the option's default value is `true`. Use the `--h`, `--help` option to display information about the command.

**Processing**

**listfile**

```
--listfile = true|false
```

If `true`, treats the command's `InputFile` argument as a text file containing one filename per line. Default value is `false`. (An alternative is to list the files on the CLI with a space as separator. Note, however, that CLIs have a maximum-character limitation.) Note that the `--listfile` option applies only to arguments, and not to options.

**Note:** Boolean option values are set to `true` if the option is specified without a value.

**recurse**

```
--recurse = true|false
```

Used to select files within sub-directories, including in ZIP archives. If `true`, the command's `InputFile` argument will select the specified file also in subdirectories. For example: "test.zip|zip\test.xml" will select files named test.xml at all folder levels of the zip folder. References to ZIP files must be given in quotes. The wildcard characters * and ? may be used. So, "*.xml" will select all .xml files in the (zip) folder. The option's default value is `false`.

**Note:** Boolean option values are set to `true` if the option is specified without a value.

**Catalogs and global resources**

**catalog**

```
--catalog = FILE
```
Specifies the absolute path to a root catalog file that is not the installed root catalog file. The default value is the absolute path to the installed root catalog file (\installation-folder\Altova\RaptorXMLXBRLServer2021\etc\RootCatalog.xml). See the section, XML Catalogs, for information about working with catalogs.

- **user-catalog**
  
  **--user-catalog = FILE**
  
  Specifies the absolute path to an XML catalog to be used in addition to the root catalog. See the section, XML Catalogs, for information about working with catalogs.

- **enable-globalresources**

  **--enable-globalresources = true|false**
  
  Enables global resources. Default value is false.
  
  **Note:** Boolean option values are set to true if the option is specified without a value.

- **globalresourceconfig [gc]**

  **--gc | --globalresourceconfig = VALUE**
  
  Specifies the active configuration of the global resource (and enables global resources).

- **globalresourcefile [gr]**

  **--gr | --globalresourcefile = FILE**
  
  Specifies the global resource file (and enables global resources).

- **Messages, errors, help, timeout, version**

  - **error-format**
    
    **--error-format = text|shortxml|longxml**
    
    Specifies the format of the error output. Default value is text. The other options generate XML formats, with longxml generating more detail.

  - **error-limit**
    
    **--error-limit = N | unlimited**
    
    Specifies the error limit with a value range of 1 to 9999 or unlimited. The default value is 100. Processing stops when the error limit is reached. Useful for limiting processor use during validation/transformation.

  - **info-limit**
    
    **--info-limit = N | unlimited**
    
    Specifies the information message limit in the range 1-65535 or unlimited. Processing continues if the specified info limit is reached, but further messages are not reported. The default value is 100.

  - **help**
    
    **--help**
    
    Displays help text for the command. For example, valany --h. (Alternatively the help command can be used with an argument. For example: help valany.)
\[\text{log-output}\]

---log-output = FILE
Waits the log output to the specified file URL. Ensure that the CLI has write permission to the output location.

\[\text{network-timeout}\]

---network-timeout = VALUE
Specifies the timeout in seconds for remote I/O operations. Default is: 40.

\[\text{verbose}\]

---verbose = true|false
A value of true enables output of additional information during validation. Default value is false.
Note: Boolean option values are set to true if the option is specified without a value.

\[\text{verbose-output}\]

---verbose-output = FILE
Writes verbose output to FILE.

\[\text{version}\]

--version
Displays the version of RaptorXML+XBRL Server. If used with a command, place --version before the command.

\[\text{warning-limit}\]

---warning-limit = N \mid unlimited
Specifies the warning limit in the range 1-65535 or unlimited. Processing continues if this limit is reached, but further warnings are not reported. The default value is 100.

### 4.6.3 valavrojson (avrojson)

The valavrojson | avrojson command validates a JSON document against an Avro schema.

```
raptorxmlxbrl valavrojson | avrojson [options] --avroschema=AvroSchema JSONFile
```

- The JSONFile argument specifies the JSON document to validate.
- The --avroschema option specifies the Avro schema against which the JSON document is to be validated.
- To validate multiple JSON files, either: (i) list the files on the CLI, with each file separated from the next by a space; or (ii) list the files to validate in a text file (.txt file), with one filename per line, and supply this text file as the JSONFile argument together with the --listfile option set to true (see the Options list below).
Examples
Examples of the valavrojson command:

- raptorxmlxbrl valavrojson --avroschema=c:\MyAvroSchema.avsc c:\MyJSONDataFile.json
- raptorxmlxbrl avrojson --avroschema=c:\MyAvroSchema.avsc c:\MyJSONDataFile.json

Casing and slashes on the command line

RaptorXMLXBRL (and RaptorXMLXBRLServer for administration commands) on Windows
raptorxmlxbrl (and raptorxmlxbrlserver for administration commands) on Windows and Unix (Linux, Mac)

* Note that lowercase (raptorxmlxbrl and raptorxmlxbrlserver) works on all platforms (Windows, Linux, and Mac), while upper-lower (RaptorXMLXBRL) works only on Windows and Mac.
* Use forward slashes on Linux and Mac, backslashes on Windows.

Backslashes, spaces, and special characters on Windows systems

On Windows systems: When spaces or special characters occur in strings (for example in file or folder names, or company, person or product names), use quotes: for example, "My File". Note, however, that a backslash followed by a double-quotiation mark (for example, "C:\My directory") might not be read correctly. This is because the backslash character is also used to indicate the start of an escape sequence, and the escape sequence \ stands for the double-quotation mark character. If you want to escape this sequence of characters, use a preceding backslash, like this: \". To summarize: If you need to write a file path that contains spaces or an end backslash, write it like this: "C:\My Directory\".

Options
Options are listed in short form (if available) and long form. You can use one or two dashes for both short and long forms. An option may or may not take a value. If it takes a value, it is written like this: --option=value. Values can be specified without quotes except in two cases: (i) when the value string contains spaces, or (ii) when explicitly stated in the description of the option that quotes are required. If an option takes a Boolean value and no value is specified, then the option's default value is TRUE. Use the --h, --help option to display information about the command.

Processing

- listfile
  --listfile = true|false
  If true, treats the command's InputFile argument as a text file containing one filename per line. Default value is false. (An alternative is to list the files on the CLI with a space as separator. Note, however, that CLIs have a maximum-character limitation.) Note that the --listfile option applies only to arguments, and not to options.
  Note: Boolean option values are set to true if the option is specified without a value.

- recurse
  --recurse = true|false
Used to select files within sub-directories, including in ZIP archives. If true, the command's 
InputFile argument will select the specified file also in subdirectories. For example: "test.zip| 
zip\test.xml" will select files named test.xml at all folder levels of the zip folder. References to 
ZIP files must be given in quotes. The wildcard characters * and ? may be used. So, *.xml will 
select all .xml files in the (zip) folder. The option's default value is false. 
**Note**: Boolean option values are set to true if the option is specified without a value.

- **Catalogs and global resources**
  - **catalog**
    
    --catalog = FILE
    
    Specifies the absolute path to a root catalog file that is not the installed root catalog file. The default 
    value is the absolute path to the installed root catalog file (<installation-
    folder>\Altova\RaptorXMLXBRLServer2021\etc\RootCatalog.xml). See the section, XML 
    Catalogs, for information about working with catalogs.

  - **user-catalog**
    
    --user-catalog = FILE
    
    Specifies the absolute path to an XML catalog to be used in addition to the root catalog. See the 
    section, XML Catalogs, for information about working with catalogs.

  - **enable-globalresources**
    
    --enable-globalresources = true|false
    
    Enables global resources. Default value is false. 
    **Note**: Boolean option values are set to true if the option is specified without a value.

  - **globalresourceconfig [gc]**
    
    --gc | --globalresourceconfig = VALUE
    
    Specifies the active configuration of the global resource (and enables global resources).

  - **globalresourcefile [gr]**
    
    --gr | --globalresourcefile = FILE
    
    Specifies the global resource file (and enables global resources).

- **Messages, errors, help, timeout, version**
  - **error-format**
    
    --error-format = text|shortxml|longxml
    
    Specifies the format of the error output. Default value is text. The other options generate XML 
    formats, with longxml generating more detail.

  - **error-limit**
    
    --error-limit = N | unlimited
    
    Specifies the error limit with a value range of 1 to 9999 or unlimited. The default value is 100. 
    Processing stops when the error limit is reached. Useful for limiting processor use during
validation/transformation.

▼ info-limit

    --info-limit = N | unlimited
Specifies the information message limit in the range 1-65535 or unlimited. Processing continues if the specified info limit is reached, but further messages are not reported. The default value is 100.

▼ help

    --help
Displays help text for the command. For example, valany --h. (Alternatively the help command can be used with an argument. For example: help valany.)

▼ log-output

    --log-output = FILE
Writes the log output to the specified file URL. Ensure that the CLI has write permission to the output location.

▼ network-timeout

    --network-timeout = VALUE
Specifies the timeout in seconds for remote I/O operations. Default is: 40.

▼ verbose

    --verbose = true|false
A value of true enables output of additional information during validation. Default value is false. Note: Boolean option values are set to true if the option is specified without a value.

▼ verbose-output

    --verbose-output = FILE
Writes verbose output to FILE.

▼ version

    --version
Displays the version of RaptorXML+XBRL Server. If used with a command, place --version before the command.

▼ warning-limit

    --warning-limit = N | unlimited
Specifies the warning limit in the range 1-65535 or unlimited. Processing continues if this limit is reached, but further warnings are not reported. The default value is 100.
4.6.4  valavroschema (avroschema)

The `valavroschema` | `avroschema` command validates one or more Avro schema documents against the Avro schema specification.

```
  raptorxmlxbrl valavroschema | avroschema [options] AvroSchema
```

- The `AvroSchema` argument is the Avro schema document to validate.
- To validate multiple Avro schemas, either: (i) list the files to be validated on the CLI, with each file separated from the next by a space; or (ii) list the files to be validated in a text file (.txt file), with one filename per line, and supply this text file as the `AvroSchema` argument together with the `--listfile` option set to `true` (see the Options list below).

Examples

Examples of the `valavroschema` command:

```
  raptorxmlxbrl valavroschema c:\MyAvroSchema.avsc
  raptorxmlxbrl valavroschema c:\MyAvroSchema01.avsc c:\MyAvroSchema02.avsc
  raptorxmlxbrl avroschema --listfile=true c:\MyFileList.txt
```

Casing and slashes on the command line

RaptorXMLXBRL (and RaptorXMLXBRLServer for administration commands) on Windows
raptorxmlxbrl (and raptorxmlxbrlserver for administration commands) on Windows and Unix (Linux, Mac)

* Note that lowercase (raptorxmlxbrl and raptorxmlxbrlserver) works on all platforms (Windows, Linux, and Mac), while upper-lower (RaptorXMLXBRL) works only on Windows and Mac.
* Use forward slashes on Linux and Mac, backslashes on Windows.

Backslashes, spaces, and special characters on Windows systems

On Windows systems: When spaces or special characters occur in strings (for example in file or folder names, or company, person or product names), use quotes: for example, "My File". Note, however, that a backslash followed by a double-quotation mark (for example, "C:\My directory\") might not be read correctly. This is because the backslash character is also used to indicate the start of an escape sequence, and the escape sequence \" stands for the double-quotation mark character. If you want to escape this sequence of characters, use a preceding backslash, like this: \\". To summarize: If you need to write a file path that contains spaces or an end backslash, write it like this: "C:\My Directory\\".

Options

Options are listed in short form (if available) and long form. You can use one or two dashes for both short and long forms. An option may or may not take a value. If it takes a value, it is written like this: `--option=value`. Values can be specified without quotes except in two cases: (i) when the value string contains spaces, or (ii) when explicitly stated in the description of the option that quotes are required. If an option takes a Boolean value and no value is specified, then the option's default value is `TRUE`. Use the `--h, --help` option to display
information about the command.

### Processing

#### listfile

```
--listfile = true|false
```

If true, treats the command's InputFile argument as a text file containing one filename per line. Default value is false. (An alternative is to list the files on the CLI with a space as separator. Note, however, that CLIs have a maximum-character limitation.) Note that the --listfile option applies only to arguments, and not to options.

**Note:** Boolean option values are set to true if the option is specified without a value.

#### recurse

```
--recurse = true|false
```

Used to select files within sub-directories, including in ZIP archives. If true, the command's InputFile argument will select the specified file also in subdirectories. For example: "test.zip|zip\test.xml" will select files named test.xml at all folder levels of the zip folder. References to ZIP files must be given in quotes. The wildcard characters * and ? may be used. So, *.xml will select all .xml files in the (zip) folder. The option's default value is false.

**Note:** Boolean option values are set to true if the option is specified without a value.

### Catalogs and global resources

#### catalog

```
--catalog = FILE
```

Specifies the absolute path to a root catalog file that is not the installed root catalog file. The default value is the absolute path to the installed root catalog file (<installation-folder>\Altova\RaptorXMLXBRLServer2021\etc\RootCatalog.xml). See the section, XML Catalogs, for information about working with catalogs.

#### user-catalog

```
--user-catalog = FILE
```

Specifies the absolute path to an XML catalog to be used in addition to the root catalog. See the section, XML Catalogs, for information about working with catalogs.

#### enable-globalresources

```
--enable-globalresources = true|false
```

Enables global resources. Default value is false.

**Note:** Boolean option values are set to true if the option is specified without a value.

#### globalresourceconfig [gc]

```
--gc | --globalresourceconfig = VALUE
```

Specifies the active configuration of the global resource (and enables global resources).

#### globalresourcefile [gr]

```
--gr | --globalresourcefile = FILE
```

Specifies the global resource file (and enables global resources).
Messages, errors, help, timeout, version

error-format

```bash
--error-format = text|shortxml|longxml
```

Specifies the format of the error output. Default value is text. The other options generate XML formats, with longxml generating more detail.

error-limit

```bash
--error-limit = N | unlimited
```

Specifies the error limit with a value range of 1 to 9999 or unlimited. The default value is 100. Processing stops when the error limit is reached. Useful for limiting processor use during validation/transformation.

info-limit

```bash
--info-limit = N | unlimited
```

Specifies the information message limit in the range 1-65535 or unlimited. Processing continues if the specified info limit is reached, but further messages are not reported. The default value is 100.

help

```bash
--help
```

Displays help text for the command. For example, valany --h. (Alternatively the help command can be used with an argument. For example: help valany.)

log-output

```bash
--log-output = FILE
```

Writes the log output to the specified file URL. Ensure that the CLI has write permission to the output location.

network-timeout

```bash
--network-timeout = VALUE
```

Specifies the timeout in seconds for remote I/O operations. Default is: 40.

verbose

```bash
--verbose = true|false
```

A value of true enables output of additional information during validation. Default value is false. Note: Boolean option values are set to true if the option is specified without a value.

verbose-output

```bash
--verbose-output = FILE
```

Writes verbose output to FILE.

version

```bash
--version
```
Displays the version of RaptorXML+XBRL Server. If used with a command, place --version before the command.

\begin{itemize}
  \item warning-limit
\end{itemize}

\begin{itemize}
  \item \texttt{--warning-limit = N | unlimited}
\end{itemize}

Specifies the warning limit in the range 1-65535 or unlimited. Processing continues if this limit is reached, but further warnings are not reported. The default value is 100.

\subsection*{4.6.5 \texttt{valjsonschema (jsonschema)}}

The \texttt{valjsonschema | jsonschema} command validates one or more JSON schema documents according to the JSON Schema Draft 4, Draft 6, or Draft 7 specifications.

\begin{verbatim}
raptorxmlxbrl valjsonschema | jsonschema [options] InputFile
\end{verbatim}

\begin{itemize}
  \item The \textit{InputFile} argument is the JSON schema document to validate.
  \item To validate multiple documents, either: (i) list the files to be validated on the CLI, with each file separated from the next by a space; or (ii) list the files to be validated in a text file (.txt file), with one filename per line, and supply this text file as the \textit{InputFile} argument together with the \texttt{--listfile} option set to \texttt{true} (see the Options list below).
\end{itemize}

**Examples**

Examples of the \texttt{valjsonschema} command:

\begin{itemize}
  \item \texttt{raptorxmlxbrl valjsonschema c:\MyJSONSchema.json}
  \item \texttt{raptorxmlxbrl jsonschema c:\MyJSONSchema-01.json c:\MyJSONSchema-02.json}
  \item \texttt{raptorxmlxbrl jsonschema --listfile=true c:\FileList.txt}
\end{itemize}

\begin{itemize}
  \item Casing and slashes on the command line
  \begin{verbatim}
  RaptorXMLXBRL (and RaptorXMLXBRLServer for administration commands) on Windows
  raptorxmlxbrl (and raptorxmlxbrlserver for administration commands) on Windows and Unix (Linux, Mac)
  \end{verbatim}
  \item Note that lowercase (\texttt{raptorxmlxbrl} and \texttt{raptorxmlxbrlserver}) works on all platforms (Windows, Linux, and Mac), while upper-lower (\texttt{RaptorXMLXBRL}) works only on Windows and Mac.
  \item Use forward slashes on Linux and Mac, backslashes on Windows.
\end{itemize}

\begin{itemize}
  \item Backslashes, spaces, and special characters on Windows systems
  \begin{verbatim}
  On Windows systems: When spaces or special characters occur in strings (for example in file or folder names, or company, person or product names), use quotes: for example, "My File". Note, however, that a backslash followed by a double- quotation mark (for example, "C:\My directory\") might not be read correctly. This is because the backslash character is also used to indicate the start of an escape
  \end{verbatim}
\end{itemize}
sequence, and the escape sequence " stands for the double-quotation mark character. If you want to escape this sequence of characters, use a preceding backslash, like this: \\\. To summarize: If you need to write a file path that contains spaces or an end backslash, write it like this: "C:\My Directory\\".

Options
Options are listed in short form (if available) and long form. You can use one or two dashes for both short and long forms. An option may or may not take a value. If it takes a value, it is written like this: --option=value. Values can be specified without quotes except in two cases: (i) when the value string contains spaces, or (ii) when explicitly stated in the description of the option that quotes are required. If an option takes a Boolean value and no value is specified, then the option's default value is TRUE. Use the --h, --help option to display information about the command.

- Validation and processing
  - listfile
    --listfile = true|false
    If true, treats the command's InputFile argument as a text file containing one filename per line. Default value is false. (An alternative is to list the files on the CLI with a space as separator. Note, however, that CLIs have a maximum-character limitation.) Note that the --listfile option applies only to arguments, and not to options.
    Note: Boolean option values are set to true if the option is specified without a value.

  - recurse
    --recurse = true|false
    Used to select files within sub-directories, including in ZIP archives. If true, the command's InputFile argument will select the specified file also in subdirectories. For example: "test.zip\zip\test.xml" will select files named test.xml at all folder levels of the zip folder. References to ZIP files must be given in quotes. The wildcard characters * and ? may be used. So, *.xml will select all .xml files in the (zip) folder. The option's default value is false.
    Note: Boolean option values are set to true if the option is specified without a value.

- JSON validation options
  - additional-schema
    --additional-schema = FILE
    Specifies URIs of an additional schema document. The additional schema will be loaded by the main schema and can be referenced from the main schema by the additional schemas id or $id property.

  - disable-format-checks
    --disable-format-checks = true|false
    Disables the semantic validation imposed by the format attribute. Default value is false.
    Note: Boolean option values are set to true if the option is specified without a value.

  - jsonschema-version
    --jsonschema-version = draft04|draft06|draft07|latest|detect
Specifies which version of the JSON Schema specification draft version to use. Default is detect.

### Catalogs and global resources

- **catalog**
  ```
  --catalog = FILE
  ```
  Specifies the absolute path to a root catalog file that is not the installed root catalog file. The default value is the absolute path to the installed root catalog file (`<installation-folder>\Altova\RaptorXMLXBRLServer2021\etc\RootCatalog.xml`). See the section, XML Catalogs, for information about working with catalogs.

- **user-catalog**
  ```
  --user-catalog = FILE
  ```
  Specifies the absolute path to an XML catalog to be used in addition to the root catalog. See the section, XML Catalogs, for information about working with catalogs.

- **enable-globalresources**
  ```
  --enable-globalresources = true|false
  ```
  Enables global resources. Default value is false.
  **Note:** Boolean option values are set to true if the option is specified without a value.

- **globalresourceconfig [gc]**
  ```
  --gc | --globalresourceconfig = VALUE
  ```
  Specifies the active configuration of the global resource (and enables global resources).

- **globalresourcefile [gr]**
  ```
  --gr | --globalresourcefile = FILE
  ```
  Specifies the global resource file (and enables global resources).

### Messages, errors, help, timeout, version

- **error-format**
  ```
  --error-format = text|shortxml|longxml
  ```
  Specifies the format of the error output. Default value is text. The other options generate XML formats, with longxml generating more detail.

- **error-limit**
  ```
  --error-limit = N | unlimited
  ```
  Specifies the error limit with a value range of 1 to 9999 or unlimited. The default value is 100. Processing stops when the error limit is reached. Useful for limiting processor use during validation/ transformation.

- **info-limit**
  ```
  --info-limit = N | unlimited
  ```
Specifies the information message limit in the range 1-65535 or unlimited. Processing continues if the specified info limit is reached, but further messages are not reported. The default value is 100.

-help
   Displays help text for the command. For example, valany --h. (Alternatively the help command can be used with an argument. For example: help valany.)

-log-output = FILE
   Writes the log output to the specified file URL. Ensure that the CLI has write permission to the output location.

-network-timeout = VALUE
   Specifies the timeout in seconds for remote I/O operations. Default is: 40.

-verbose = true|false
   A value of true enables output of additional information during validation. Default value is false.
   Note: Boolean option values are set to true if the option is specified without a value.

-verbose-output = FILE
   Writes verbose output to FILE.

-version
   Displays the version of RaptorXML+XBRL Server. If used with a command, place --version before the command.

-warning-limit = N | unlimited
   Specifies the warning limit in the range 1-65535 or unlimited. Processing continues if this limit is reached, but further warnings are not reported. The default value is 100.

4.6.6 valjson (json)

The valjson | json command validates one or more JSON instance documents according to the JSON schema supplied with the --schema option.

raptorxmlxbrl valjson | json [options] --jsonschema=File InputFile
The `InputFile` argument is the JSON instance document to validate.

To validate multiple documents, either: (i) list the files to be validated on the CLI, with each file separated from the next by a space; or (ii) list the files to be validated in a text file (.txt file), with one filename per line, and supply this text file as the `InputFile` argument together with the `--listfile` option set to true (see the Options list below).

**Examples**

Examples of the `valjson` command:

- `raptorxmlxbrl valjson --jsonschema=c:\MyJSONSchema.json c:\MyJSONInstance.json`
- `raptorxmlxbrl json --jsonschema=c:\MyJSONSchema.json c:\MyJSONInstance-01.json c:\MyJSONInstance-02.json`
- `raptorxmlxbrl json --jsonschema=c:\MyJSONSchema.json --listfile=true c:\FileList.txt`

**Casing and slashes on the command line**

`RaptorXMLXBRL` (and `RaptorXMLXBRLServer` for administration commands) on Windows

`raptorxmlxbrl` (and `raptorxmlxbrlserver` for administration commands) on Windows and Unix (Linux, Mac)

* Note that lowercase (`raptorxmlxbrl` and `raptorxmlxbrlserver`) works on all platforms (Windows, Linux, and Mac), while upper-lower (`RaptorXMLXBRL`) works only on Windows and Mac.

* Use forward slashes on Linux and Mac, backslashes on Windows.

**Backslashes, spaces, and special characters on Windows systems**

On Windows systems: When spaces or special characters occur in strings (for example in file or folder names, or company, person or product names), use quotes: for example, "My File". Note, however, that a backslash followed by a double-quotation mark (for example, "C:\My directory\") might not be read correctly. This is because the backslash character is also used to indicate the start of an escape sequence, and the escape sequence \" stands for the double-quotation mark character. If you want to escape this sequence of characters, use a preceding backslash, like this: \". To summarize: If you need to write a file path that contains spaces or an end backslash, write it like this: "C:\My Directory\".

**Options**

Options are listed in short form (if available) and long form. You can use one or two dashes for both short and long forms. An option may or may not take a value. If it takes a value, it is written like this: `--option=value`. Values can be specified without quotes except in two cases: (i) when the value string contains spaces, or (ii) when explicitly stated in the description of the option that quotes are required. If an option takes a Boolean value and no value is specified, then the option's default value is `TRUE`. Use the `--h`, `--help` option to display information about the command.

**Validation and processing**

- `schema`, `jsonschema`

  `--schema = FILE, --jsonschema = FILE`

  Specifies the path to the JSON Schema document to use for the validation of JSON instance
documents.

listfile

--listfile = true|false
If true, treats the command's InputFile argument as a text file containing one filename per line. Default value is false. (An alternative is to list the files on the CLI with a space as separator. Note, however, that CLIs have a maximum-character limitation.) Note that the --listfile option applies only to arguments, and not to options.

Note: Boolean option values are set to true if the option is specified without a value.

additional-schema

--additional-schema = FILE
Specifies URIs of an additional schema document. The additional schema will be loaded by the main schema and can be referenced from the main schema by the additional schemas id or $id property.

recurse

--recurse = true|false
Used to select files within sub-directories, including in ZIP archives. If true, the command's InputFile argument will select the specified file also in subdirectories. For example: "test.zip\zip\test.xml" will select files named test.xml at all folder levels of the zip folder. References to ZIP files must be given in quotes. The wildcard characters * and ? may be used. So, *.xml will select all .xml files in the (zip) folder. The option's default value is false.

Note: Boolean option values are set to true if the option is specified without a value.

json5

--json5 = true|false
Enables JSON5 support. Default value is false.

Note: Boolean option values are set to true if the option is specified without a value.

jsonc

--jsonc = true|false
Enables support for comments in JSON. Default value is false.

Note: Boolean option values are set to true if the option is specified without a value.

json-lines

--json-lines = true|false
Enables support for JSON Lines (that is, one JSON value per line). Default value is false.

Note: Boolean option values are set to true if the option is specified without a value.

jsonschema-version

--jsonschema-version = draft04|draft06|draft07|latest|detect
Specifies which version of the JSON Schema specification draft version to use. Default is detect.

disable-format-checks

--disable-format-checks = true|false
Disables the semantic validation imposed by the format attribute. Default value is false.
**Note:** Boolean option values are set to `true` if the option is specified without a value.

### Catalogs and global resources

- **catalog**
  ```
  --catalog = FILE
  ```
  Specifies the absolute path to a root catalog file that is not the installed root catalog file. The default value is the absolute path to the installed root catalog file (`<installation-folder>\Altova\RaptorXMLXBRLServer2021\etc\RootCatalog.xml`). See the section, XML Catalogs, for information about working with catalogs.

- **user-catalog**
  ```
  --user-catalog = FILE
  ```
  Specifies the absolute path to an XML catalog to be used in addition to the root catalog. See the section, XML Catalogs, for information about working with catalogs.

- **enable-globalresources**
  ```
  --enable-globalresources = true|false
  ```
  Enables global resources. Default value is `false`. **Note:** Boolean option values are set to `true` if the option is specified without a value.

- **globalresourceconfig [gc]**
  ```
  --gc | --globalresourceconfig = VALUE
  ```
  Specifies the active configuration of the global resource (and enables global resources).

- **globalresourcefile [gr]**
  ```
  --gr | --globalresourcefile = FILE
  ```
  Specifies the global resource file (and enables global resources).

### Messages, errors, help, timeout, version

- **error-format**
  ```
  --error-format = text|shortxml|longxml
  ```
  Specifies the format of the error output. Default value is `text`. The other options generate XML formats, with `longxml` generating more detail.

- **error-limit**
  ```
  --error-limit = N | unlimited
  ```
  Specifies the error limit with a value range of 1 to 9999 or unlimited. The default value is 100. Processing stops when the error limit is reached. Useful for limiting processor use during validation/transformation.

- **info-limit**
  ```
  --info-limit = N | unlimited
  ```
Specifies the information message limit in the range 1-65535 or unlimited. Processing continues if the specified info limit is reached, but further messages are not reported. The default value is 100.

`--help`

Displays help text for the command. For example, `valany --h`. (Alternatively the `help` command can be used with an argument. For example: `help valany`.)

`--log-output = FILE`

Writes the log output to the specified file URL. Ensure that the CLI has write permission to the output location.

`--network-timeout = VALUE`

Specifies the timeout in seconds for remote I/O operations. Default is: 40.

`--verbose = true|false`

A value of `true` enables output of additional information during validation. Default value is `false`. **Note:** Boolean option values are set to `true` if the option is specified without a value.

`--verbose-output = FILE`

Writes verbose output to `FILE`.

`--version`

Displays the version of RaptorXML+XBRL Server. If used with a command, place `--version` before the command.

`--warning-limit = N | unlimited`

Specifies the warning limit in the range 1-65535 or unlimited. Processing continues if this limit is reached, but further warnings are not reported. The default value is 100.

### 4.6.7 wfjson

The `wfjson` command checks one or more JSON documents according to the ECMA-404 specification for well-formedness.

```
raptorxmlxbrl wfjson [options] InputFile
```
The `InputFile` argument is the JSON document (schema or instance) to check for well-formedness.

To check multiple documents, either: (i) list the files to be checked on the CLI, with each file separated from the next by a space; or (ii) list the files to be checked in a text file (.txt file), with one filename per line, and supply this text file as the `InputFile` argument together with the `--listfile` option set to true (see the Options list below).

### Examples

Examples of the `wfjson` command:

- `raptorxmlxbrl wfjson c:\MyJSONFile.json`
- `raptorxmlxbrl wfjson c:\MyJSONFile-01.json c:\MyJSONFile-02.json`
- `raptorxmlxbrl wfjson --listfile=true c:\FileList.txt`

#### Casing and slashes on the command line

RaptorXMLXBRL (and RaptorXMLXBRLServer for administration commands) on Windows  
raptorxmlxbrl (and raptorxmlxbrlserver for administration commands) on Windows and Unix (Linux, Mac)

* Note that lowercase (raptorxmlxbrl and raptorxmlxbrlserver) works on all platforms (Windows, Linux, and Mac), while upper-lower (RaptorXMLXBRL) works only on Windows and Mac.  
* Use forward slashes on Linux and Mac, backslashes on Windows.

#### Backslashes, spaces, and special characters on Windows systems

On Windows systems: When spaces or special characters occur in strings (for example in file or folder names, or company, person or product names), use quotes: for example, "My File". Note, however, that a backslash followed by a double-quotiation mark (for example, "C:\My directory") might not be read correctly. This is because the backslash character is also used to indicate the start of an escape sequence, and the escape sequence \" stands for the double-quotiation mark character. If you want to escape this sequence of characters, use a preceding backslash, like this: \\". To summarize: If you need to write a file path that contains spaces or an end backslash, write it like this: "C:\My Directory\\".

### Options

Options are listed in short form (if available) and long form. You can use one or two dashes for both short and long forms. An option may or may not take a value. If it takes a value, it is written like this: `--option=value`. Values can be specified without quotes except in two cases: (i) when the value string contains spaces, or (ii) when explicitly stated in the description of the option that quotes are required. If an option takes a Boolean value and no value is specified, then the option's default value is `true`. Use the `--h, --help` option to display information about the command.

#### Validation and processing

- **json5**
  
  `--json5 = true|false`
  
  Enables JSON5 support. Default value is `false`.  
  **Note:** Boolean option values are set to `true` if the option is specified without a value.
\textbf{\texttt{jsonc}}

:\texttt{--jsonc = true|false}

Enables support for comments in JSON. Default value is \textit{false}.

\textit{Note}: Boolean option values are set to \textit{true} if the option is specified without a value.

\textbf{\texttt{json-lines}}

:\texttt{--json-lines = true|false}

Enables support for JSON Lines (that is, one JSON value per line). Default value is \textit{false}.

\textit{Note}: Boolean option values are set to \textit{true} if the option is specified without a value.

\textbf{\texttt{listfile}}

:\texttt{--listfile = true|false}

If \textit{true}, treats the command's \texttt{InputFile} argument as a text file containing one filename per line. Default value is \textit{false}. (An alternative is to list the files on the CLI with a space as separator. Note, however, that CLIs have a maximum-character limitation.) Note that the --listfile option applies only to arguments, and not to options.

\textit{Note}: Boolean option values are set to \textit{true} if the option is specified without a value.

\textbf{\texttt{recurse}}

:\texttt{--recurse = true|false}

Used to select files within sub-directories, including in ZIP archives. If \textit{true}, the command's \texttt{InputFile} argument will select the specified file also in subdirectories. For example: "test.zip|zip\test.xml" will select files named test.xml at all folder levels of the zip folder. References to ZIP files must be given in quotes. The wildcard characters * and ? may be used. So, *.xml will select all .xml files in the (zip) folder. The option's default value is \textit{false}.

\textit{Note}: Boolean option values are set to \textit{true} if the option is specified without a value.

\textbf{Catalogs and global resources}

\textbf{\texttt{catalog}}

:\texttt{--catalog = FILE}

Specifies the absolute path to a root catalog file that is not the installed root catalog file. The default value is the absolute path to the installed root catalog file (<installation-folder>\Altova\RaptorXMLXBRLServer2021\etc\RootCatalog.xml). See the section, XML Catalogs, for information about working with catalogs.

\textbf{\texttt{user-catalog}}

:\texttt{--user-catalog = FILE}

Specifies the absolute path to an XML catalog to be used in addition to the root catalog. See the section, XML Catalogs, for information about working with catalogs.

\textbf{\texttt{enable-globalresources}}

:\texttt{--enable-globalresources = true|false}

Enables \texttt{global resources}. Default value is \textit{false}.

\textit{Note}: Boolean option values are set to \textit{true} if the option is specified without a value.
globalresourceconfig [gc]
  --gc | --globalresourceconfig = VALUE
  Specifies the active configuration of the global resource (and enables global resources).

globalresourcefile [gr]
  --gr | --globalresourcefile = FILE
  Specifies the global resource file (and enables global resources).

Messages, errors, help, timeout, version
  error-format
    --error-format = text|shortxml|longxml
    Specifies the format of the error output. Default value is text. The other options generate XML formats, with longxml generating more detail.

  error-limit
    --error-limit = N | unlimited
    Specifies the error limit with a value range of 1 to 9999 or unlimited. The default value is 100. Processing stops when the error limit is reached. Useful for limiting processor use during validation/transformation.

  info-limit
    --info-limit = N | unlimited
    Specifies the information message limit in the range 1-65535 or unlimited. Processing continues if the specified info limit is reached, but further messages are not reported. The default value is 100.

  help
    --help
    Displays help text for the command. For example, valany --h. (Alternatively the help command can be used with an argument. For example: help valany.)

  log-output
    --log-output = FILE
    Writes the log output to the specified file URL. Ensure that the CLI has write permission to the output location.

  network-timeout
    --network-timeout = VALUE
    Specifies the timeout in seconds for remote I/O operations. Default is: 40.

  verbose
    --verbose = true|false
    A value of true enables output of additional information during validation. Default value is false.
**Note**: Boolean option values are set to `true` if the option is specified without a value.

- **verbose-output**
  ```
  --verbose-output = FILE
  ```
  Writes verbose output to `FILE`.

- **version**
  ```
  --version
  ```
  Displays the version of RaptorXML+XBRL Server. If used with a command, place `--version` before the command.

- **warning-limit**
  ```
  --warning-limit = N | unlimited
  ```
  Specifies the warning limit in the range `1-65535` or `unlimited`. Processing continues if this limit is reached, but further warnings are not reported. The default value is `100`. 
4.7 XML Signature Commands

The XML Signature commands can be used to sign an XML document and to verify a signed document. These commands are listed below and described in detail in the sub-sections of this section:

- **xmlsignature-sign**: Creates an XML signature output document from an input document
- **xmlsignature-verify**: Verifies an XML signature document
- **xmlsignature-update**: Updates the signature of a (modified) XML document
- **xmlsignature-remove**: Removes the signature of an XML document

4.7.1 xmlsignature-sign

The `xmlsignature-sign` command takes an XML document as input and creates an XML signature output document using the specified signing options.

```
raptorxmlxbrl xmlsignature-sign [options] --output=File --signature-type=Value --signature-canonicalization-method=Value --certname=Value|hmackey=Value InputFile
```

- The `InputFile` argument is the XML document to sign.
- The `--output` option specifies the location of the document that contains the XML signature.

Example

Example of the `xmlsignature-sign` command:

```
raptorxmlxbrl xsign --output=c:\SignedFile.xml --signature-type=enveloped --signature-canonicalization-method=xml-c14n11 --hmackey=secretpassword c:\SomeUnsigned.xml
```

Casing and slashes on the command line

- **RaptorXMLXBLR** (and **RaptorXMLXBRLSERVER** for administration commands) on **Windows**
- **raptorxmlxbrl** (and **raptorxmlxbrlsrver** for administration commands) on **Windows and Unix** (Linux, Mac)

  * Note that lowercase (**raptorxmlxbrl** and **raptorxmlxbrlsrver**) works on all platforms (Windows, Linux, and Mac), while upper-lower (**RaptorXMLXBLR**) works only on Windows and Mac.
  * Use forward slashes on Linux and Mac, backslashes on Windows.

Backslashes, spaces, and special characters on Windows systems

On Windows systems: When spaces or special characters occur in strings (for example in file or folder names, or company, person or product names), use quotes: for example, "My File". Note, however, that a backslash followed by a double-quotation mark (for example, "C:\My directory\") might not be read correctly. This is because the backslash character is also used to indicate the start of an escape sequence, and the escape sequence " stands for the double-quotation mark character. If you want to escape this sequence of characters, use a preceding backslash, like this: \". To summarize: If you need to write a file path that contains spaces or an end backslash, write it like this: "C:\My Directory\"
Options
Options are listed in short form (if available) and long form. You can use one or two dashes for both short and long forms. An option may or may not take a value. If it takes a value, it is written like this: --option=value. Values can be specified without quotes except in two cases: (i) when the value string contains spaces, or (ii) when explicitly stated in the description of the option that quotes are required. If an option takes a Boolean value and no value is specified, then the option's default value is TRUE. Use the --h, --help option to display information about the command.

Common options

output

*output* = FILE
The URL of the output document that is created with the new XML signature.

verbose

**--verbose** = true|false
A value of true enables output of additional information during validation. Default value is false.

*Note:* Boolean option values are set to true if the option is specified without a value.

XML Signature options

absolute-reference-uri

**--absolute-reference-uri** = true|false
Specifies whether the URI of the signed document is to be read as absolute (true) or relative (false). Default is false.

*Note:* Boolean option values are set to true if the option is specified without a value.

certname, certificate-name

**--certname**, **--certificate-name** = VALUE
The name of the certificate used for signing.

*Windows*
This is the Subject name of a certificate from the selected --certificate-store.

Example to list the certificates (under PowerShell)
% ls cert://CurrentUser/My
PSPath: Microsoft.PowerShell.Security\Certificate::CurrentUser\My
Thumbprint Subject
--------- -------
C9DF64BB0A0A5FA73474D78B7CCFCC3795BFC6C CN=certificate1
... CN=...

Example: --certificate-name==certificate1
**Linux/MacOS**

```
--certname specifies the file name of a PEM encoded X.509v3 certificate with the private key. Such files usually have the extension .pem.
```

*Example:*  
```
--certificate-name=/path/to/certificat1.pem
```

**certstore, certificate-store**

```
--certstore, --certificate-store = VALUE
```

The location where the certificate specified with `--certificate-name` is stored.

**Windows**

The name of a certificate store under `cert://CurrentUser`. The available certificate stores can be listed (under PowerShell) by using `% ls cert://CurrentUser/`. Certificates would then be listed as follows:

```
Name : TrustedPublisher
Name : ClientAuthIssuer
Name : Root
Name : UserDS
Name : CA
Name : ACRS
Name : REQUEST
Name : AuthRoot
Name : MSIEHistoryJournal
Name : TrustedPeople
Name : MyCertStore
Name : Local NonRemovable Certificates
Name : SmartCardRoot
Name : Trust
Name : Disallowed
```

*Example:*  
```
--certificate-store=MyCertStore
```

**Linux/MacOS**

The `--certstore` option is currently not supported.

**digest, digest-method**

```
--digest, --digest-method = sha1|sha256|sha384|sha512
```

The algorithm that is used to compute the digest value over the input XML file. Available values are: sha1|sha256|sha384|sha512.

**hmackey, hmac-secret-key**

```
--hmackey, --hmac-secret-key = VALUE
```

The HMAC shared secret key; must have a minimum length of six characters.

*Example:*  
```
--hmackey=secretpassword
```
**hmaclen, hmac-output-length**

```
--hmaclen, --hmac-output-length = LENGTH
```

Truncates the output of the HMAC algorithm to `LENGTH` bits. If specified, this value must be

- a multiple of 8
- larger than 80
- larger than half of the underlying hash algorithm's output length

**keyinfo, append-keyinfo**

```
--keyinfo, --append-keyinfo = true|false
```

Specifies whether to include the KeyInfo element in the signature or not. The default is false.

**sigc14nmeth, signature-canonicalization-method**

```
--sigc14nmeth, --signature-canonicalization-method = VALUE
```

Specifies the canonicalization algorithm to apply to the SignedInfo element. The value must be one of:

- REC-xml-c14n-20010315
- xml-c14n11
- xml-exc-c14n#

**sigmeth, signature-method**

```
--sigmeth, --signature-method = VALUE
```

Specifies the algorithm to use for generating the signature.

*When a certificate is used*

If a certificate is specified, then SignatureMethod is optional and the value for this parameter is derived from the certificate. If specified, it must match the algorithm used by the certificate. Example: rsa-sha256.

*When --hmac-secret-key is used*

When HMACSecretKey is used, then SignatureMethod is mandatory. The value must be one of the supported HMAC algorithms:

- hmac-sha256
- hmac-sha386
- hmac-sha512
- hmac-sha1 (discouraged by the specification)

*Example:* hmac-sha256

**sigtype, signature-type**

```
--sigtype, --signature-type = detached | enveloping | enveloped
```

Specifies the type of signature to be generated.

**transforms**

```
--transforms = VALUE
```

Specifies the XML Signature transformations applied to the input document. The supported values are:
XML Signature Commands

Command Line Interface (CLI)

- REC-xml-c14n-20010315 for Canonical XML 1.0 (omit comments)
- xml-cl4n11 for Canonical XML 1.1 (omit comments)
- xml-exc-cl4n# for Exclusive XML Canonicalization 1.0 (omit comments)
- REC-xml-cl4n-20010315#WithComments for Canonical XML 1.0 (with comments)
- xml-cl4n11#WithComments for Canonical XML 1.1 (with comments)
- xml-exc-cl4n#WithComments for Exclusive XML Canonicalization 1.0 (with comments)
- base64
- strip-whitespaces Altova extension

Example: --transforms=xml-cl4n11

Note: This option can be specified multiple times. If specified multiple times, then the order of specification is significant. The first specified transformation receives the input document. The last specified transformation is used immediately before calculation of the digest value.

- write-default-attributes

  --write-default-attributes = true|false

  Specifies whether to include default attribute values from the DTD in the signed document.

- Help and version options

  - help

    --help

    Displays help text for the command. For example, valany --h. (Alternatively the help command can be used with an argument. For example: help valany.)

  - version

    --version

    Displays the version of RaptorXML+XBRL Server. If used with a command, place --version before the command.

4.7.2 xmlsignature-verify

The xmlsignature-verify | xverify command verifies the XML signature of the input file.

raptorxmlxbrl xmlsignature-verify [options] InputFile

- The InputFile argument is the signed XML document to verify.
- If the verification is successful, a result="OK" message is displayed; otherwise, a result="Failed" message is displayed.
Example

Example of the `xmlsignature-verify` command:

- `raptorxmlxbrl xverify c:\SignedFile.xml`

**Casing and slashes on the command line**

- `RaptorXMLXBRL` (and `RaptorXMLXBRLServer` for administration commands) on Windows
- `raptorxmlxbrl` (and `raptorxmlxbrlserver` for administration commands) on Windows and Unix (Linux, Mac)

* Note that lowercase (`raptorxmlxbrl` and `raptorxmlxbrlserver`) works on all platforms (Windows, Linux, and Mac), while upper-lower (`RaptorXMLXBRL`) works only on Windows and Mac.
* Use forward slashes on Linux and Mac, backslashes on Windows.

**Backslashes, spaces, and special characters on Windows systems**

On Windows systems: When spaces or special characters occur in strings (for example in file or folder names, or company, person or product names), use quotes: for example, "My File". Note, however, that a backslash followed by a double-quotation mark (for example, "C:\My directory\") might not be read correctly. This is because the backslash character is also used to indicate the start of an escape sequence, and the escape sequence \" stands for the double-quotation mark character. If you want to escape this sequence of characters, use a preceding backslash, like this: \". To summarize: If you need to write a file path that contains spaces or an end backslash, write it like this: "C:\My Directory\".

**Options**

Options are listed in short form (if available) and long form. You can use one or two dashes for both short and long forms. An option may or may not take a value. If it takes a value, it is written like this: `--option=value`. Values can be specified without quotes except in two cases: (i) when the value string contains spaces, or (ii) when explicitly stated in the description of the option that quotes are required. If an option takes a Boolean value and no value is specified, then the option's default value is `TRUE`. Use the `--h, --help` option to display information about the command.

**Common options**

**verbose**

`--verbose = true|false`

A value of `true` enables output of additional information during validation. Default value is `false`.

*Note*: Boolean option values are set to `true` if the option is specified without a value.

**XML Signature options**

**certname, certificate-name**

`--certname, --certificate-name = VALUE`

The name of the certificate used for signing.
Windows
This is the Subject name of a certificate from the selected --certificate-store.

Example to list the certificates (under PowerShell)
% ls cert://CurrentUser/My
PSParentPath: Microsoft.PowerShell.Security\Certificate::CurrentUser\My
Thumbprint Subject
---------- -------
C9DF64BB0AAF5FA73474D78B7CCFFC37C95BFC6C CN=certificate1
... CN=...

Example: --certificate-name==certificate1

Linux/MacOS
--certname specifies the file name of a PEM encoded X.509v3 certificate with the private key. Such files usually have the extension .pem.

Example: --certificate-name==/path/to/certificate1.pem

certstore, certificate-store
--certstore, --certificate-store = VALUE
The location where the certificate specified with --certificate-name is stored.

Windows
The name of a certificate store under cert://CurrentUser. The available certificate stores can be listed (under PowerShell) by using % ls cert://CurrentUser/. Certificates would then be listed as follows:

Name : TrustedPublisher
Name : ClientAuthIssuer
Name : Root
Name : UserDS
Name : CA
Name : ACRS
Name : REQUEST
Name : AuthRoot
Name : MSIEHistoryJournal
Name : TrustedPeople
Name : MyCertStore
Name : Local NonRemovable Certificates
Name : SmartCardRoot
Name : Trust
Name : Disallowed

Example: --certificate-store==MyCertStore
Linux/MacOS
The --certstore option is currently not supported.

\textbf{hmackey, hmac-secret-key}

\texttt{--hmackey, --hmac-secret-key = VALUE}
The HMAC shared secret key; must have a minimum length of six characters.

\textit{Example:} \texttt{--hmackey=secretpassword}

\textbf{Help and version options}

\textbf{help}

\texttt{--help}
Displays help text for the command. For example, \texttt{valany --h}. (Alternatively the \texttt{help} command can be used with an argument. For example: \texttt{help valany}.)

\textbf{version}

\texttt{--version}
Displays the version of RaptorXML+XBRL Server. If used with a command, place \texttt{--version} before the command.

4.7.3 \texttt{xmlsignature-update}

The \texttt{xmlsignature-update | xupdate} command updates the XML signature in the signed input file. If the document has been modified, the updated XML signature will be different; otherwise, the updated signature will be the same as the previous signature.

\texttt{raptorxmlxbrl xmlsignature-update [options] --output=File SignedFile}

- The \texttt{SignedFile} argument is the signed XML document to update.
- Either (i) the \texttt{hmac-secret-key} option or (ii) the \texttt{certificate-name} and \texttt{certificate-store} options must be specified.
- If the \texttt{certificate-name} and \texttt{certificate-store} options are specified, then they must match those that were used to sign the XML document previously. (Note that the \texttt{certificate-store} option is currently not supported on Linux and macOS.)

\textbf{Examples}

Examples of the \texttt{xmlsignature-update} command:

- \texttt{raptorxmlxbrl xupdate --output=c:\UpdatedSignedFile.xml --certname=certificate1 --certstore=MyCertStore c:\SomeSignedFile.xml}
• `raptorxmlxbrl xupdate --output=c:\UpdatedSignedFile.xml --hmackey=SecretPassword c:\SomeSignedFile.xml`

△ Casing and slashes on the command line

RaptorXMLXBRL (and RaptorXMLXBRLServer for administration commands) on Windows
raptorxmlxbrl (and raptorxmlxbrlserver for administration commands) on Windows and Unix (Linux, Mac)

* Note that lowercase (raptorxmlxbrl and raptorxmlxbrlserver) works on all platforms (Windows, Linux, and Mac), while upper-lower (RaptorXMLXBRL) works only on Windows and Mac.
* Use forward slashes on Linux and Mac, backslashes on Windows.

△ Backslashes, spaces, and special characters on Windows systems

On Windows systems: When spaces or special characters occur in strings (for example in file or folder names, or company, person or product names), use quotes: for example, "My File". Note, however, that a backslash followed by a double-quotation mark (for example, “C:\My directory\”) might not be read correctly. This is because the backslash character is also used to indicate the start of an escape sequence, and the escape sequence " stands for the double-quotation mark character. If you want to escape this sequence of characters, use a preceding backslash, like this: \". To summarize: If you need to write a file path that contains spaces or an end backslash, write it like this: "C:\My Directory\".

Options

Options are listed in short form (if available) and long form. You can use one or two dashes for both short and long forms. An option may or may not take a value. If it takes a value, it is written like this: `--option=value`. Values can be specified without quotes except in two cases: (i) when the value string contains spaces, or (ii) when explicitly stated in the description of the option that quotes are required. If an option takes a Boolean value and no value is specified, then the option's default value is TRUE. Use the `--h, --help` option to display information about the command.

△ Common options

△ output

`output = FILE`
The URL of the output document that is created with the new XML signature.

△ verbose

`--verbose = true|false`
A value of `true` enables output of additional information during validation. Default value is `false`. 
*Note*: Boolean option values are set to `true` if the option is specified without a value.

△ XML Signature options

△ certname, certificate-name

`--certname, --certificate-name = VALUE`
The name of the certificate used for signing.
Windows
This is the Subject name of a certificate from the selected \--certificate-store.

Example to list the certificates (under PowerShell)
% ls cert://CurrentUser/My
PSParentPath: Microsoft.PowerShell.Security\Certificate::CurrentUser\My
Thumbprint Subject
---------- -------
C9DF64BB0AAF5FA73474D78B7CCFFC37C95BFC6C CN=certificate1
... CN=...

Example: \--certificate-name==certificate1

Linux/MacOS
\--certname specifies the file name of a PEM encoded X.509v3 certificate with the private key. Such files usually have the extension .pem.

Example: \--certificate-name==/path/to/certificate1.pem

\> certstore, certificate-store

\>\--certstore, \--certificate-store = VALUE
The location where the certificate specified with \--certificate-name is stored.

Windows
The name of a certificate store under cert://CurrentUser. The available certificate stores can be listed (under PowerShell) by using \% ls cert://CurrentUser/. Certificates would then be listed as follows:

Name : TrustedPublisher
Name : ClientAuthIssuer
Name : Root
Name : UserDS
Name : CA
Name : ACRS
Name : REQUEST
Name : AuthRoot
Name : MSIEHistoryJournal
Name : TrustedPeople
Name : MyCertStore
Name : Local NonRemovable Certificates
Name : SmartCardRoot
Name : Trust
Name : Disallowed

Example: \--certificate-store==MyCertStore
**Linux/MacOS**
The `--certstore` option is currently not supported.

- **hmackey, hmac-secret-key**

  
  **--hmackey, --hmac-secret-key = VALUE**

  The HMAC shared secret key; must have a minimum length of six characters.

  **Example:** `--hmackey=secretpassword`

- **Help and version options**
  - **help**

    **--help**

    Displays help text for the command. For example, `valany --h` (Alternatively the `help` command can be used with an argument. For example: `help valany`.)

  - **version**

    **--version**

    Displays the version of RaptorXML+XBRL Server. If used with a command, place `--version` before the command.

---

### 4.7.4 `xmlsignature-remove`

The `xmlsignature-remove` command removes the XML signature of the signed input file, and saves the resulting unsigned document to an output location that you specify.

```
  raptorxmlxbrl xmlsignature-remove [options] --output=File SignedFile
```

- The `SignedFile` argument is the signed XML document from which you want to remove the XML signature.
- The `--output` option specifies the location of the unsigned XML document that is generated.

**Example**

Example of the `xmlsignature-remove` command:

```
  raptorxmlxbrl xremove --output=c:\UnsignedFile.xml c:\SignedFile.xml
```

- **Casing and slashes on the command line**

  *RaptorXMLXBRL* (and *RaptorXMLXBRLServer* for administration commands) on *Windows*
  
  *raptorxmlxbrl* (and *raptorxmlxbrlserver* for administration commands) on *Windows and Unix (Linux, Mac)*
* Note that lowercase (raptorxmlxbrl and raptorxmlxbrlserver) works on all platforms (Windows, Linux, and Mac), while upper-lower (RaptorXMLXBRL) works only on Windows and Mac.
* Use forward slashes on Linux and Mac, backslashes on Windows.

### Backslashes, spaces, and special characters on Windows systems

On Windows systems: When spaces or special characters occur in strings (for example in file or folder names, or company, person or product names), use quotes: for example, "My File". Note, however, that a backslash followed by a double-quotation mark (for example, “C:\My directory\”) might not be read correctly. This is because the backslash character is also used to indicate the start of an escape sequence, and the escape sequence \" stands for the double-quotation mark character. If you want to escape this sequence of characters, use a preceding backslash, like this: \\". To summarize: If you need to write a file path that contains spaces or an end backslash, write it like this: "C:\My Directory\".

### Options

Options are listed in short form (if available) and long form. You can use one or two dashes for both short and long forms. An option may or may not take a value. If it takes a value, it is written like this: --option=value. Values can be specified without quotes except in two cases: (i) when the value string contains spaces, or (ii) when explicitly stated in the description of the option that quotes are required. If an option takes a Boolean value and no value is specified, then the option's default value is TRUE. Use the --h, --help option to display information about the command.

#### Common options

- **output**
  
  output = FILE
  
  The URL of the output document that is created with the XML signature removed.

- **verbose**

  --verbose = true|false
  
  A value of true enables output of additional information during validation. Default value is false. **Note**: Boolean option values are set to true if the option is specified without a value.

#### Help and version options

- **help**

  --help
  
  Displays help text for the command. For example, valany --h. (Alternatively the help command can be used with an argument. For example: help valany.)

- **version**

  --version
  
  Displays the version of RaptorXML+XBRL Server. If used with a command, place --version before the command.
4.8 General Commands

This section contains a description of the following general commands:

- **valany**: validates the submitted document according to its type
- **script**: executes a Python script
- **help**: displays information about the named command

4.8.1 valany

The `valany` command is a general command that validates a document on the basis of what type of document it is. The type of the input document is detected automatically, and the corresponding validation is carried out according to the respective specification. The `InputFile` argument is the document to validate. Note that only one document can be submitted as the argument of the command.

```
raptorxmlxbrl valany [options] InputFile
```

The `valany` command covers the following types of validation. Its options are those that are available for the corresponding individual validation command. See the description of the respective validation commands for a list of their respective options.

- `valdtd (dtd)`
- `valxsd (xsd)`
- `valxml-withdtd (xml)`
- `valxml-withxsd (xsi)`
- `valxslt`
- `valxquery`
- `valxbrl (xbrl)`
- `valinlinexbrl (ixbrl)`
- `valxbrltaxonomy (dts)`
- `valavrojson (avrojson)`

Examples

- `raptorxmlxbrl valany c:\Test.xsd`
- `raptorxmlxbrl valany --error-format=text c:\Test.xbrl`

Casing and slashes on the command line

- **RaptorXMLXBRL** (and **RaptorXMLXBRLServer** for administration commands) on **Windows**
- **raptorxmlxbrl** (and **raptorxmlxbrlserver** for administration commands) on **Windows and Unix (Linux, Mac)**

* Note that lowercase (**raptorxmlxbrl** and **raptorxmlxbrlserver**) works on all platforms (Windows, Linux, and Mac), while upper-lower (**RaptorXMLXBRL**) works only on Windows and Mac.
* Use forward slashes on Linux and Mac, backslashes on Windows.
Backslashes, spaces, and special characters on Windows systems

On Windows systems: When spaces or special characters occur in strings (for example in file or folder names, or company, person or product names), use quotes: for example, "My File". Note, however, that a backslash followed by a double-quotiation mark (for example, "C:\My directory\") might not be read correctly. This is because the backslash character is also used to indicate the start of an escape sequence, and the escape sequence \" stands for the double-quotiation mark character. If you want to escape this sequence of characters, use a preceding backslash, like this: \". To summarize: If you need to write a file path that contains spaces or an end backslash, write it like this: "C:\My Directory\".

Options

See the description of the respective validation commands for a list of their respective options. Note, however, that while most individual validation commands accept multiple input documents, the valany command accepts only one input document. Options such as the --listfile option will therefore not apply to valany.

4.8.2 script

The script command executes a Python 3.7 script that uses the RaptorXML Python API.

raptorxmlxbrl script [options] PythonScriptFile

The File argument is the path to the Python script you want to execute. Additional options are available for this command. To obtain a list of these options, run the following command:

raptorxmlxbrl script [-h | --help]

Examples

- raptorxmlxbrl script c:\MyPythonScript.py
- raptorxmlxbrl script -h
- raptorxmlxbrl script script # Without a script file, an interactive Python shell is started
- raptorxmlxbrl script -m pip # Loads and executes the pip module; see the Options section below

Casing and slashes on the command line

RaptorXMLXBRL (and RaptorXMLXBRLServer for administration commands) on Windows
raptorxmlxbrl (and raptorxmlxbrlserver for administration commands) on Windows and Unix (Linux, Mac)

* Note that lowercase (raptorxmlxbrl and raptorxmlxbrlserver) works on all platforms (Windows, Linux, and Mac), while upper-lower (RaptorXMLXBRL) works only on Windows and Mac.
* Use forward slashes on Linux and Mac, backslashes on Windows.
### Backslashes, spaces, and special characters on Windows systems

On Windows systems: When spaces or special characters occur in strings (for example in file or folder names, or company, person or product names), use quotes: for example, "My File". Note, however, that a backslash followed by a double-quotation mark (for example, "C:\My directory") might not be read correctly. This is because the backslash character is also used to indicate the start of an escape sequence, and the escape sequence \\ stands for the double-quotation mark character. If you want to escape this sequence of characters, use a preceding backslash, like this: \\\. To summarize: If you need to write a file path that contains spaces or an end backslash, write it like this: "C:\My Directory\\".

### Options

Any options and arguments after the `script` command are forwarded directly to the Python interpreter. Please consult the Python documentation page [https://docs.python.org/3.7/using/cmdline.html](https://docs.python.org/3.7/using/cmdline.html) for a complete listing of available options.

### 4.8.3 help

#### Syntax and description

The `help` command takes a single argument (Command), which is the name of the command for which help is required. It displays the command's syntax, its options, and other relevant information. If the Command argument is not specified, then all commands of the executable are listed, with each having a brief text description. The `help` command can be called from either executable: `raptorxmlxbrl` or `raptorxmlxbrlserver`.

```
  raptorxmlxbrl help Command
  raptorxmlxbrlserver help Command
```

#### Casing and slashes on the command line

- `RaptorXMLXBRL` (and `RaptorXMLXBRLServer` for administration commands) on Windows
- `raptorxmlxbrl` (and `raptorxmlxbrlserver` for administration commands) on Windows and Unix (Linux, Mac)

* Note that lowercase (`raptorxmlxbrl` and `raptorxmlxbrlserver`) works on all platforms (Windows, Linux, and Mac), while upper-lower (`RaptorXMLXBRL`) works only on Windows and Mac.
* Use forward slashes on Linux and Mac, backslashes on Windows.

#### Example

Examples of the `help` command to display information about the `licenser` command (this command is available in both executables):

```
  raptorxmlxbrl help licenseserver
  raptorxmlxbrlserver help licenseserver
```
The --help option
Help information about a command is also available by using the --help option of the command for which help information is required. The two commands below produce the same results:

```
raptorxmlxbrl licenseserver --help
```

The command above uses the --help option of the licenseserver command.

```
raptorxmlxbrl help licenseserver
```

The help command takes licenseserver as its argument.

Both commands display help information about the licenseserver command.
4.9 Localization Commands

You can create a localized version of the RaptorXML application for any language of your choice. Five localized versions (English, German, Spanish, French, and Japanese) are already available in the `<ProgramFilesFolder>`\Altova\RaptorXMLXBRLServer2021\bin\ folder. These five language versions therefore do not need to be created.

Create a localized version in another language as follows:

1. Generate an XML file containing the resource strings. Do this with the `exportresourcestrings` command. The resource strings in the generated XML file will be one of the five supported languages: English (`en`), German (`de`), Spanish (`es`), French (`fr`), or Japanese (`ja`), according to the argument used with the command.
2. Translate the resource strings from the language of the generated XML file into the target language. The resource strings are the contents of the `<string>` elements in the XML file. Do not translate variables in curly brackets, such as `{option}` or `{product}`.
3. Contact Altova Support to generate a localized RaptorXML DLL file from your translated XML file.
4. After you receive your localized DLL file from Altova Support, save the DLL in the `<ProgramFilesFolder>`\Altova\RaptorXMLXBRLServer2021\bin\ folder. Your DLL file will have a name of the form `RaptorXMLXBRLServer lc.dll`. The `_lc` part of the name contains the language code. For example, in `RaptorXMLXBRLServer_de.dll`, the `de` part is the language code for German (Deutsch).
5. Run the `setdeflang` command to set your localized DLL file as the RaptorXML application to use. For the argument of the `setdeflang` command, use the language code that is part of the DLL name.

**Note:** Altova RaptorXML+XBRL Server is delivered with support for five languages: English, German, Spanish, French, and Japanese. So you do not need to create a localized version of these languages. To set any of these five languages as the default language, use the CLI’s `setdeflang` command.

4.9.1 `exportresourcestrings`

Syntax and description

The `exportresourcestrings` command outputs an XML file containing the resource strings of the RaptorXML+XBRL Server application in the specified language. Available export languages are English (`en`), German (`de`), Spanish (`es`), French (`fr`), and Japanese (`ja`).

```
raptorxmlxb Burl exportresourcestrings [options] LanguageCode XMLOutputFile
raptorxmlxburlserver exportresourcestrings [options] LanguageCode XMLOutputFile
```

- The `LanguageCode` argument gives the language of the resource strings in the output XML file; this is the `export language`. Allowed export languages (with their language codes in parentheses) are: English (`en`), German (`de`), Spanish (`es`), French (`fr`), and Japanese (`ja`).
- The `XMLOutputFile` argument specifies the path and name of the output XML file.
- The `exportresourcestrings` command can be called from either executable: `raptorxmlxburl` or `raptorxmlxburlserver`. 
How to create localizations is described below.

▼ Casing and slashes on the command line

- `RaptorXMLXBRL` (and `RaptorXMLXBRLServer` for administration commands) **on Windows**
- `raptorxmlxbrl` (and `raptorxmlxbrlserver` for administration commands) **on Windows and Unix (Linux, Mac)**

* Note that lowercase (`raptorxmlxbrl` and `raptorxmlxbrlserver`) works on all platforms (Windows, Linux, and Mac), while upper-lower (`RaptorXMLXBRL`) works only on Windows and Mac.
* Use forward slashes on Linux and Mac, backslashes on Windows.

▼ Backslashes, spaces, and special characters on Windows systems

On Windows systems: When spaces or special characters occur in strings (for example in file or folder names, or company, person or product names), use quotes: for example, "My File". Note, however, that a backslash followed by a double-quotation mark (for example, "C:\My directory\") might not be read correctly. This is because the backslash character is also used to indicate the start of an escape sequence, and the escape sequence \" stands for the double-quotation mark character. If you want to escape this sequence of characters, use a preceding backslash, like this: \\". To summarize: If you need to write a file path that contains spaces or an end backslash, write it like this: "C:\My Directory\".

Examples

Examples of the `exportresourcestrings` command:

- `raptorxmlxbrl exportresourcestrings de c:\Strings.xml`
- `raptorxmlxbrlserver exportresourcestrings de c:\Strings.xml`

- The first command above creates a file called `Strings.xml` at `c:\` that contains the resource strings of RaptorXML+XBRL Server in German.
- The second command calls the server-executable to do the same thing as the first example.

Creating localized versions of RaptorXML+XBRL Server

You can create a localized version of RaptorXML+XBRL Server for any language of your choice. Five localized versions (English, German, Spanish, French, and Japanese) are already available in the `C:\Program Files (x86)\Altova\RaptorXMLXBRLServer2021\bin` folder, and therefore do not need to be created.

Create a localized version as follows:

1. Generate an XML file containing the resource strings by using the `exportresourcestrings` command *(see command syntax above)*. The resource strings in this XML file will be one of the five supported languages: English (en), German (de), Spanish (es), French (fr), or Japanese (ja), according to the `LanguageCode` argument used with the command.
2. Translate the resource strings from one of the five supported languages into the target language. The resource strings are the contents of the `<string>` elements in the XML file. Do not translate variables in curly brackets, such as `{option}` or `{product}`.
3. Contact Altova Support to generate a localized RaptorXML+XBRL Server DLL file from your translated XML file.
4. After you receive your localized DLL file from Altova Support, save the DLL in the C:\Program Files (x86)\Altova\RaptorXMLXBRLServer2021\bin folder. Your DLL file will have a name of the form RaptorXMLXBRL2021_lc.dll. The _lc part of the name contains the language code. For example, in RaptorXMLXBRL2021_de.dll, the de part is the language code for German (Deutsch).

5. Run the setdeflang command to set your localized DLL file as the RaptorXML+XBRL Server application to use. For the argument of the setdeflang command, use the language code that is part of the DLL name.

Note: Altova RaptorXML+XBRL Server is delivered with support for five languages: English, German, Spanish, French, and Japanese. So you do not need to create a localized version of these languages. To set any of these languages as the default language, use RaptorXML+XBRL Server’s setdeflang command.

4.9.2 setdeflang

Syntax and description
The setdeflang command (short form is sdl) sets the default language of RaptorXML+XBRL Server. Available languages are English (en), German (de), Spanish (es), French (fr), and Japanese (ja). The command takes a mandatory LanguageCode argument.

```
raptorxmlxbrl setdeflang [options] LanguageCode
raptorxmlxbrlserver setdeflang [options] LanguageCode
```

- The LanguageCode argument is required and sets the default language of RaptorXML+XBRL Server.
- The respective values to use are: en, de, es, fr, ja.
- The setdeflang command can be called from either executable: raptorxmlxbrl or raptorxmlxbrlserver.
- Use the --h, --help option to display information about the command.

Casing and slashes on the command line

RaptorXMLXBRL (and RaptorXMLXBRLServer for administration commands) on Windows
raptorxmlxbrl (and raptorxmlxbrlserver for administration commands) on Windows and Unix (Linux, Mac)

* Note that lowercase (raptorxmlxbrl and raptorxmlxbrlserver) works on all platforms (Windows, Linux, and Mac), while upper-lower (RaptorXMLXBRL) works only on Windows and Mac.
* Use forward slashes on Linux and Mac, backslashes on Windows.

Examples
Examples of the setdeflang (sdl) command:

```
raptorxmlxbrl sdl de
raptorxmlxbrl setdeflang es
raptorxmlxbrlserver setdeflang es
```

- The first command sets the default language of RaptorXML+XBRL Server to German.
• The second command sets the default language of RaptorXML+XBRL Server to Spanish.
• The third command is the same as the second command, but is executed by the server-executable.

Options
Use the `--h, --help` option to display information about the command.
4.10 License Commands

This section describes commands that can be used for licensing RaptorXML+XBRL Server:

- **licenseserver** to register RaptorXML+XBRL Server with Altova LicenseServer on your network
- **assignlicense** to upload a license file to LicenseServer (Windows only)
- **verifylicense** to verify whether RaptorXML+XBRL Server is licensed (Windows only)

**Note:** These commands can also be executed via the server executable for administration commands.

For more information about licensing Altova products with Altova LicenseServer, see the Altova LicenseServer documentation.

4.10.1 licenseserver

**Syntax and description**

The licenseserver command registers RaptorXML+XBRL Server with the Altova LicenseServer specified by the Server-Or-IP-Address argument. For the licenseserver command to be executed successfully, the two servers (RaptorXML+XBRL Server and LicenseServer) must be on the same network and LicenseServer must be running. You must also have administrator privileges in order to register RaptorXML+XBRL Server with LicenseServer.

```
raptorxmlxbrl licenseserver [options] Server-Or-IP-Address
raptorxmlxbrlserver licenseserver [options] Server-Or-IP-Address
```

- The **Server-Or-IP-Address** argument takes the name or IP address of the LicenseServer machine.
- The licenseserver command can be called from either executable: raptorxmlxbrl or raptorxmlxbrlserver.

Once RaptorXML+XBRL Server has been successfully registered with LicenseServer, you will receive a message to this effect. The message will also display the URL of the LicenseServer. You can now go to LicenseServer to assign RaptorXML+XBRL Server a license. For details about licensing, see the LicenseServer documentation (https://www.altova.com/manual/AltovaLicenseServer/).

**Casing and slashes on the command line**

* Note that lowercase (raptorxmlxbrl and raptorxmlxbrlserver) works on all platforms (Windows, Linux, and Mac), while upper-lower (RaptorXMLXBRL) works only on Windows and Mac.
* Use forward slashes on Linux and Mac, backslashes on Windows.

**Backslashes, spaces, and special characters on Windows systems**

On Windows systems: When spaces or special characters occur in strings (for example in file or folder names, or company, person or product names), use quotes: for example, "My File". Note, however, that
a backslash followed by a double-quotation mark (for example, “C:\My directory\”) might not be read correctly. This is because the backslash character is also used to indicate the start of an escape sequence, and the escape sequence \ stands for the double-quotation mark character. If you want to escape this sequence of characters, use a preceding backslash, like this: \". To summarize: If you need to write a file path that contains spaces or an end backslash, write it like this: "C:\My Directory\".

Examples
Examples of the licenseserver command:

```
raptorxmlxbrl licenseserver DOC.altova.com
raptorxmlxbrl licenseserver localhost
raptorxmlxbrl licenseserver 127.0.0.1
raptorxmlxbrlserver licenseserver 127.0.0.1
```

The commands above specify, respectively, the machine named DOC.altova.com, and the user's machine (localhost and 127.0.0.1) as the machine running Altova LicenseServer. In each case, the command registers RaptorXML+XBRL Server with the LicenseServer on the machine specified. The last command calls the server-executable to execute the command.

Options
Options are listed in short form (if available) and long form. You can use one or two dashes for both short and long forms. An option may or may not take a value. If it takes a value, it is written like this: --option=value. Values can be specified without quotes except in two cases: (i) when the value string contains spaces, or (ii) when explicitly stated in the description of the option that quotes are required. If an option takes a Boolean value and no value is specified, then the option's default value is TRUE. Use the --h, --help option to display information about the command.

```
json [j]
--j, --json = true|false
```

Values are true|false. If true, prints the result of the registration attempt as a machine-parsable JSON object.

4.10.2 assignlicense (Windows only)

Syntax and description
The assignlicense command is available on Windows only (not on Linux or Mac systems). It uploads a license file to the Altova LicenseServer with which RaptorXML+XBRL Server is registered (see the licenseserver command), and assigns the license to RaptorXML+XBRL Server. It takes the path of a license file as its argument. The command also allows you to test the validity of a license.

```
raptorxmlxbrl assignlicense [options] FILE
raptorxmlxbrlserver assignlicense [options] FILE
```
The `FILE` argument takes the path of the license file.

- The `--test-only` option uploads the license file to LicenseServer and validates the license, but does not assign the license to RaptorXML+XBRL Server.
- The `assignlicense` command can be called from either executable: `raptorxmlxbrl` or `raptorxmlxbrlserver`.

For details about licensing, see the LicenseServer documentation (https://www.altova.com/manual/AltovaLicenseServer/).

### Casing and slashes on the command line

- **RaptorXMLXBRL** (and **RaptorXMLXBRLServer** for administration commands) *on Windows*
- **raptorxmlxbrl** (and **raptorxmlxbrlserver** for administration commands) *on Windows and Unix (Linux, Mac)*

  * Note that lowercase (**raptorxmlxbrl** and **raptorxmlxbrlserver**) works on all platforms (Windows, Linux, and Mac), while upper-lower (**RaptorXMLXBRL**) works only on Windows and Mac.
  * Use forward slashes on Linux and Mac, backslashes on Windows.

### Backslashes, spaces, and special characters on Windows systems

On Windows systems: When spaces or special characters occur in strings (for example in file or folder names, or company, person or product names), use quotes: for example, “My File”. Note, however, that a backslash followed by a double-quotation mark (for example, “C:\My directory\”) might not be read correctly. This is because the backslash character is also used to indicate the start of an escape sequence, and the escape sequence `\` stands for the double-quotation mark character. If you want to escape this sequence of characters, use a preceding backslash, like this: `\``. To summarize: If you need to write a file path that contains spaces or an end backslash, write it like this: `C:\My Directory\`.

### Examples

Examples of the `assignlicense` command:

```
raptorxmlxbrl assignlicense C:\licensepool\mylicensekey.altova_licenses
raptorxmlxbrlserver assignlicense C:\licensepool\mylicensekey.altova_licenses
raptorxmlxbrl assignlicense --test-only=true C:\licensepool\mylicensekey.altova_licenses
```

- The first command above uploads the specified license to LicenseServer and assigns it to RaptorXML+XBRL Server.
- The second command calls the server-executable to do the same thing as the first command.
- The last command uploads the specified license to LicenseServer and validates it, without assigning it to RaptorXML+XBRL Server.

### Options

Options are listed in short form (if available) and long form. You can use one or two dashes for both short and long forms. An option may or may not take a value. If it takes a value, it is written like this: `--option=value`. Values can be specified without quotes except in two cases: (i) when the value string contains spaces, or (ii) when explicitly stated in the description of the option that quotes are required. If an option takes a Boolean
value and no value is specified, then the option's default value is `TRUE`. Use the `--h, --help` option to display information about the command.

* test-only [t]
  
  `-t, --test-only = true|false`
  
  Values are `true|false`. If `true`, then the license file is uploaded to LicenseServer and validated, but not assigned.

### 4.10.3 verifylicense (Windows only)

#### Syntax and description

The `verifylicense` command checks whether the current product is licensed. Additionally, the `--license-key` option enables you to check whether a specific license key is already assigned to the product. This command is supported only on Windows systems. It is not supported on Linux or Mac systems.

```
raptorxmlxbrl verifylicense [options]
raptorxmlxbrlserver verifylicense [options]
```

- To check whether a specific license is assigned to RaptorXML+XBRL Server, supply the license key as the value of the `--license-key` option.
- The `verifylicense` command can be called from either executable: `raptorxmlxbrl` or `raptorxmlxbrlserver`.

For details about licensing, see the LicenseServer documentation ([https://www.altova.com/manual/AltovaLicenseServer/](https://www.altova.com/manual/AltovaLicenseServer/)).

#### Casing and slashes on the command line

- RaptorXMLXBRL (and `RaptorXMLXBRLLServer` for administration commands) on Windows
- `raptorxmlxbrl` (and `raptorxmlxbrlserver` for administration commands) on Windows and Unix (Linux, Mac)

  * Note that lowercase (`raptorxmlxbrl` and `raptorxmlxbrlserver`) works on all platforms (Windows, Linux, and Mac), while upper-lower (`RaptorXMLXBRL`) works only on Windows and Mac.
  * Use forward slashes on Linux and Mac, backslashes on Windows.

#### Examples

Example of the `verifylicense` command:

```
raptorxmlxbrl verifylicense
raptorxmlxbrl verifylicense --license-key=ABCD123-ABCD123-ABCD123-ABCD123-ABCD123
raptorxmlxbrlserver verifylicense --license-key=ABCD123-ABCD123-ABCD123-ABCD123-ABCD123
```

- The first command checks whether RaptorXML+XBRL Server is licensed.
The second command checks whether RaptorXML+XBRL Server is licensed with the license key specified with the `--license-key` option.

The third command is the same as the second command, but is executed by the server-executable.

**Options**

Options are listed in short form (if available) and long form. You can use one or two dashes for both short and long forms. An option may or may not take a value. If it takes a value, it is written like this: `--option=value`. Values can be specified without quotes except in two cases: (i) when the value string contains spaces, or (ii) when explicitly stated in the description of the option that quotes are required. If an option takes a Boolean value and no value is specified, then the option's default value is `TRUE`. Use the `--h, --help` option to display information about the command.

`license-key [l]`

`--l, --license-key = Value`

Checks whether RaptorXML+XBRL Server is licensed with the license key specified as the value of this option.
4.11 Administration Commands

Administration commands (such as installation-as-service and licensing commands) are issued to the server executable of RaptorXML+XBRL Server (named RaptorXMLXBRLServer). This executable is located by default at:

- **Windows**: `<ProgramFilesFolder>\Altova\RaptorXMLXBRLServer2021\bin\RaptorXMLXBRLServer.exe`
- **Linux**: `/opt/Altova/RaptorXMLXBRLServer2021/bin/raptorxmlxbrlserver`
- **Mac**: `/usr/local/Altova/RaptorXMLXBRLServer2021/bin/raptorxmlxbrlserver`

**Usage**

The command line syntax is:

```
raptorxmlxbrlserver --h | --help | --version | <command> [options] [arguments]
```

- **--help** (short form **--h**) displays the help text of the given command. If no command is named, then all commands of the executable are listed, each with a brief description of the command.
- **--version** displays RaptorXML+XBRL Server version number.
- **<command>** is the command to execute. Commands are displayed in the sub-sections of this section (see list below).
- **[options]** are the options of a command; they are listed and described with their respective commands.
- **[arguments]** are the arguments of a command; they are listed and described with their respective commands.

**Casing and slashes on the command line**

RaptorXMLXBRL (and RaptorXMLXBRLServer for administration commands) on Windows
raptorxmlxbrl (and raptorxmlxbrlserver for administration commands) on Windows and Unix (Linux, Mac)

* Note that lowercase (raptorxmlxbrl and raptorxmlxbrlserver) works on all platforms (Windows, Linux, and Mac), while upper-lower (RaptorXMLXBRL) works only on Windows and Mac.
* Use forward slashes on Linux and Mac, backslashes on Windows.

**Administration commands**

Commands of the server executable provide administration functionality. They are listed below and described in the sub-sections of this section:

- **install**
- **uninstall**
- **start**
- **setdeflang**
- **licenseserver**
4.11.1 install

Syntax and description
The install command installs RaptorXML+XBRL Server as a service on the server machine.

```
raptorxmlxbrlserver install [options]
```

- Note that installing RaptorXML+XBRL Server as a service does not automatically start the service. To start the service, use the `start` command.
- To uninstall RaptorXML+XBRL Server as a service, use the `uninstall` command.
- Use the `--h, --help` option to display information about the command.

▼ Casing and slashes on the command line
- RaptorXMLXBRL (and RaptorXMLXBRLServer for administration commands) on Windows
- raptorxmlxbrl (and raptorxmlxbrlserver for administration commands) on Windows and Unix (Linux, Mac)

* Note that lowercase (raptorxmlxbrl and raptorxmlxbrlserver) works on all platforms (Windows, Linux, and Mac), while upper-lower (RaptorXMLXBRL) works only on Windows and Mac.
* Use forward slashes on Linux and Mac, backslashes on Windows.

Example
Example of the install command:

```
raptorxmlxbrlserver install
```

4.11.2 uninstall

Syntax and description
The uninstall command uninstalls RaptorXML+XBRL Server as a service on the server machine.

```
raptorxmlxbrlserver uninstall [options]
```

To re-install RaptorXML+XBRL Server as a service, use the `install` command.

▼ Casing and slashes on the command line
- RaptorXMLXBRL (and RaptorXMLXBRLServer for administration commands) on Windows
**raptorxmlxbrl** (and **raptorxmlxbrlserver** for administration commands) on Windows and Unix (Linux, Mac)

* Note that lowercase (**raptorxmlxbrl** and **raptorxmlxbrlserver**) works on all platforms (Windows, Linux, and Mac), while upper-lower (**RaptorXMLXBRL**) works only on Windows and Mac.
* Use forward slashes on Linux and Mac, backslashes on Windows.

**Example**

Example of the **uninstall** command:

`raptorxmlxbrlserver uninstall`

### 4.11.3 **start**

**Syntax and description**

The **start** command starts RaptorXML+XBRL Server as a service on the server machine.

```
raptorxmlxbrlserver start [options]
```

- If RaptorXML+XBRL Server is not installed as a service, install it first with the **install** command (before starting it).
- To uninstall RaptorXML+XBRL Server as a service, use the **uninstall** command.
- Use the **--h, --help** option to display information about the command.

**Casing and slashes on the command line**

**RaptorXMLXBRL** (and **RaptorXMLXBRLServer** for administration commands) on Windows

**raptorxmlxbrl** (and **raptorxmlxbrlserver** for administration commands) on Windows and Unix (Linux, Mac)

* Note that lowercase (**raptorxmlxbrl** and **raptorxmlxbrlserver**) works on all platforms (Windows, Linux, and Mac), while upper-lower (**RaptorXMLXBRL**) works only on Windows and Mac.
* Use forward slashes on Linux and Mac, backslashes on Windows.

**Backslashes, spaces, and special characters on Windows systems**

On Windows systems: When spaces or special characters occur in strings (for example in file or folder names, or company, person or product names), use quotes: for example, "My File". Note, however, that a backslash followed by a double-quotiation mark (for example, "C:\My directory") might not be read correctly. This is because the backslash character is also used to indicate the start of an escape sequence, and the escape sequence \" stands for the double-quotiation mark character. If you want to escape this sequence of characters, use a preceding backslash, like this: \\". To summarize: If you need to write a file path that contains spaces or an end backslash, write it like this: "C:\My Directory\\".
Example
Example of the start command:

    raptorxmlxbrlserver start

Options
Options are listed in short form (if available) and long form. You can use one or two dashes for both short and long forms. An option may or may not take a value. If it takes a value, it is written like this: `--option=value`. Values can be specified without quotes except in two cases: (i) when the value string contains spaces, or (ii) when explicitly stated in the description of the option that quotes are required. If an option takes a Boolean value and no value is specified, then the option's default value is `TRUE`.

Use the `--h, --help` option to display information about the command.

- **config [c]**
  
  `--c, --config = File`
  
  Specifies the path to a configuration file.

- **fork**
  
  `--fork = true|false`
  
  Provides the ability to fork when using classic `init` on Unix servers. The default is `false`.

- **port**
  
  `--port = PortNumber`
  
  The port number of the debug instance of RaptorXML+XBRL Server.

4.11.4 setdeflang

Syntax and description
The setdeflang command (short form is `sdl`) sets the default language of RaptorXML+XBRL Server. Available languages are English (`en`), German (`de`), Spanish (`es`), French (`fr`), and Japanese (`ja`). The command takes a mandatory `LanguageCode` argument.

```
raptorxmlxbrl setdeflang [options] LanguageCode
raptorxmlxbrlserver setdeflang [options] LanguageCode
```

- The `LanguageCode` argument is required and sets the default language of RaptorXML+XBRL Server. The respective values to use are: `en, de, es, fr, ja`.
- The setdeflang command can be called from either executable: `raptorxmlxbrl` or `raptorxmlxbrlserver`.
- Use the `--h, --help` option to display information about the command.

Casing and slashes on the command line
RaptorXMLXBRL (and RaptorXMLXBRLServer for administration commands) on Windows
raptorxmlxbrl (and raptorxmlxbrlserver for administration commands) on Windows and Unix (Linux, Mac)

* Note that lowercase (raptorxmlxbrl and raptorxmlxbrlserver) works on all platforms (Windows, Linux, and Mac), while upper-lower (RaptorXMLXBRL) works only on Windows and Mac.
* Use forward slashes on Linux and Mac, backslashes on Windows.

Examples
Examples of the setdeflang (sdl) command:

```bash
raptorxmlxbrl sdl de
raptorxmlxbrl setdeflang es
raptorxmlxbrlserver setdeflang es
```

- The first command sets the default language of RaptorXML+XBRL Server to German.
- The second command sets the default language of RaptorXML+XBRL Server to Spanish.
- The third command is the same as the second command, but is executed by the server-executable.

Options
Use the `-h, --help` option to display information about the command.

### 4.11.5 licenseserver

Syntax and description
The licenseserver command registers RaptorXML+XBRL Server with the Altova LicenseServer specified by the `Server-Or-IP-Address` argument. For the licenseserver command to be executed successfully, the two servers (RaptorXML+XBRL Server and LicenseServer) must be on the same network and LicenseServer must be running. You must also have administrator privileges in order to register RaptorXML+XBRL Server with LicenseServer.

```bash
raptorxmlxbrl licenseserver [options] Server-Or-IP-Address
raptorxmlxbrlserver licenseserver [options] Server-Or-IP-Address
```

- The `Server-Or-IP-Address` argument takes the name or IP address of the LicenseServer machine.
- The licenseserver command can be called from either executable: `raptorxmlxbrl` or `raptorxmlxbrlserver`.

Once RaptorXML+XBRL Server has been successfully registered with LicenseServer, you will receive a message to this effect. The message will also display the URL of the LicenseServer. You can now go to LicenseServer to assign RaptorXML+XBRL Server a license. For details about licensing, see the LicenseServer documentation (https://www.altova.com/manual/AltovaLicenseServer/).

⚠️ Casing and slashes on the command line
RaptorXMLXBRL (and RaptorXMLXBRLServer for administration commands) on Windows
raptorxmlxbrl (and raptorxmlxbrlserver for administration commands) on Windows and Unix (Linux, Mac)

* Note that lowercase (raptorxmlxbrl and raptorxmlxbrlserver) works on all platforms (Windows, Linux, and Mac), while upper-lower (RaptorXMLXBRL) works only on Windows and Mac.
* Use forward slashes on Linux and Mac, backslashes on Windows.

▼ Backslashes, spaces, and special characters on Windows systems

On Windows systems: When spaces or special characters occur in strings (for example in file or folder names, or company, person or product names), use quotes: for example, "My File". Note, however, that a backslash followed by a double-quotiation mark (for example, "C:\My directory\") might not be read correctly. This is because the backslash character is also used to indicate the start of an escape sequence, and the escape sequence \" stands for the double-quotiation mark character. If you want to escape this sequence of characters, use a preceding backslash, like this: \\". To summarize: If you need to write a file path that contains spaces or an end backslash, write it like this: "C:\My Directory\".

Examples

Examples of the licenseserver command:

    raptorxmlxbrl licenseserver DOC.altova.com
    raptorxmlxbrl licenseserver localhost
    raptorxmlxbrl licenseserver 127.0.0.1
    raptorxmlxbrlserver licenseserver 127.0.0.1

The commands above specify, respectively, the machine named DOC.altova.com, and the user's machine (localhost and 127.0.0.1) as the machine running Altova LicenseServer. In each case, the command registers RaptorXML+XBRL Server with the LicenseServer on the machine specified. The last command calls the server-executable to execute the command.

Options

Options are listed in short form (if available) and long form. You can use one or two dashes for both short and long forms. An option may or may not take a value. If it takes a value, it is written like this: --option=value. Values can be specified without quotes except in two cases: (i) when the value string contains spaces, or (ii) when explicitly stated in the description of the option that quotes are required. If an option takes a Boolean value and no value is specified, then the option's default value is TRUE. Use the --h, --help option to display information about the command.

▼ json []

    --j, --json = true|false
    Values are true|false. If true, prints the result of the registration attempt as a machine-parsable JSON object.
4.11.6 assignlicense (Windows only)

Syntax and description
The assignlicense command is available on Windows only (not on Linux or Mac systems). It uploads a license file to the Altova LicenseServer with which RaptorXML+XBRL Server is registered (see the licenseserver command), and assigns the license to RaptorXML+XBRL Server. It takes the path of a license file as its argument. The command also allows you to test the validity of a license.

```
  raptorxmlxbrl assignlicense [options] FILE
  raptorxmlxbrlserver assignlicense [options] FILE
```

- The **FILE** argument takes the path of the license file.
- The **--test-only** option uploads the license file to LicenseServer and validates the license, but does not assign the license to RaptorXML+XBRL Server.
- The assignlicense command can be called from either executable: `raptorxmlxbrl` or `raptorxmlxbrlserver`.

For details about licensing, see the LicenseServer documentation (https://www.altova.com/manual/AltovaLicenseServer/).

Casing and slashes on the command line

- **RaptorXMLXBRL** (and **RaptorXMLXBRLServer** for administration commands) on Windows
- **raptorxmlxbrl** (and **raptorxmlxbrlserver** for administration commands) on Windows and Unix (Linux, Mac)

  * Note that lowercase (raptorxmlxbrl and raptorxmlxbrlserver) works on all platforms (Windows, Linux, and Mac), while upper-lower (RaptorXMLXBRL) works only on Windows and Mac.
  * Use forward slashes on Linux and Mac, backslashes on Windows.

Backslashes, spaces, and special characters on Windows systems

On Windows systems: When spaces or special characters occur in strings (for example in file or folder names, or company, person or product names), use quotes: for example, "My File". Note, however, that a backslash followed by a double-quotation mark (for example, “C:\My directory\”) might not be read correctly. This is because the backslash character is also used to indicate the start of an escape sequence, and the escape sequence \" stands for the double-quotation mark character. If you want to escape this sequence of characters, use a preceding backslash, like this: \". To summarize: If you need to write a file path that contains spaces or an end backslash, write it like this: "C:\My Directory\".

Examples
Examples of the assignlicense command:

```
  raptorxmlxbrl assignlicense C:\licensepool\mylicensekey.altova_licenses
  raptorxmlxbrlserver assignlicense C:\licensepool\mylicensekey.altova_licenses
  raptorxmlxbrl assignlicense --test-only=true C:\licensepool\mylicensekey.altova_licenses
```
• The first command above uploads the specified license to LicenseServer and assigns it to RaptorXML+XBRL Server.
• The second command calls the server-executable to do the same thing as the first command.
• The last command uploads the specified license to LicenseServer and validates it, without assigning it to RaptorXML+XBRL Server.

Options
Options are listed in short form (if available) and long form. You can use one or two dashes for both short and long forms. An option may or may not take a value. If it takes a value, it is written like this: --option=value. Values can be specified without quotes except in two cases: (i) when the value string contains spaces, or (ii) when explicitly stated in the description of the option that quotes are required. If an option takes a Boolean value and no value is specified, then the option's default value is TRUE. Use the --h, --help option to display information about the command.

▼ test-only [t]
 --t, --test-only = true|false
 Values are true|false. If true, then the license file is uploaded to LicenseServer and validated, but not assigned.

4.11.7 verifylicense (Windows only)

Syntax and description
The verifylicense command checks whether the current product is licensed. Additionally, the --license-key option enables you to check whether a specific license key is already assigned to the product. This command is supported only on Windows systems. It is not supported on Linux or Mac systems.

raptorxmlxbrl verifylicense [options]
raptorxmlxbrlserver verifylicense [options]

• To check whether a specific license is assigned to RaptorXML+XBRL Server, supply the license key as the value of the --license-key option.
• The verifylicense command can be called from either executable: raptorxmlxbrl or raptorxmlxbrlserver.

For details about licensing, see the LicenseServer documentation (https://www.altova.com/manual/AltovaLicenseServer/).

▼ Casing and slashes on the command line
RaptorXMLXBRL (and RaptorXMLXBRLServer for administration commands) on Windows
raptorxmlxbrl (and raptorxmlxbrlserver for administration commands) on Windows and Unix (Linux, Mac)

* Note that lowercase (raptorxmlxbrl and raptorxmlxbrlserver) works on all platforms (Windows, Linux, and Mac), while upper-lower (RaptorXMLXBRL) works only on Windows and Mac.
* Use forward slashes on Linux and Mac, backslashes on Windows.
Examples

Example of the `verifylicense` command:

```
raptorxmlxbrl verifylicense
raptorxmlxbrl verifylicense --license-key=ABCD123-ABCD123-ABCD123-ABCD123-ABCD123-
ABCD123
raptorxmlxbrlserver verifylicense --license-key=ABCD123-ABCD123-ABCD123-ABCD123-ABCD123-
ABCD123
```

- The first command checks whether RaptorXML+XBRL Server is licensed.
- The second command checks whether RaptorXML+XBRL Server is licensed with the license key specified with the `--license-key` option.
- The third command is the same as the second command, but is executed by the server-executable.

Options

Options are listed in short form (if available) and long form. You can use one or two dashes for both short and long forms. An option may or may not take a value. If it takes a value, it is written like this: `--option=value`. Values can be specified without quotes except in two cases: (i) when the value string contains spaces, or (ii) when explicitly stated in the description of the option that quotes are required. If an option takes a Boolean value and no value is specified, then the option's default value is `TRUE`. Use the `--h, --help` option to display information about the command.

- `license-key [l]`
  
  `--l, --license-key = Value`
  
  Checks whether RaptorXML+XBRL Server is licensed with the license key specified as the value of this option.

4.11.8 `createconfig`

Syntax and description

The `createconfig` command overwrites the server configuration file with default values.

```
raptorxmlxbrlserver createconfig [options]
```

- The `--lang` option specifies the default language of the server configuration file.

For more information about server configuration files, see Configuring the Server.

Casing and slashes on the command line:

- `RaptorXMLXBRL` (and `RaptorXMLXBRLServer` for administration commands) on Windows
- `raptorxmlxbrl` (and `raptorxmlxbrlserver` for administration commands) on Windows and Unix (Linux, Mac)
* Note that lowercase (raptorxmlxbrl and raptorxmlxbrlserver) works on all platforms (Windows, Linux, and Mac), while upper-lower (RaptorXMLXBRL) works only on Windows and Mac. * Use forward slashes on Linux and Mac, backslashes on Windows.

**Examples**

Examples of the createconfig command:

```
raptorxmlxbrl createconfig
raptorxmlxbrl createconfig --lang=de
```

**Options**

- **lang**
  
  ```
  --lang = en|de|es|fr|ja
  ```
  Specifies the default language of the server configuration file. The following options are available: English (en), German (de), Spanish (es), French (fr), Japanese (ja). If the option is not specified, English is chosen as the default language.

Use the **--h, --help** option to display information about the command.

Options are listed in short form (if available) and long form. You can use one or two dashes for both short and long forms. An option may or may not take a value. If it takes a value, it is written like this: **--option=value**. Values can be specified without quotes except in two cases: (i) when the value string contains spaces, or (ii) when explicitly stated in the description of the option that quotes are required. If an option takes a Boolean value and no value is specified, then the option's default value is **TRUE**. Use the **--h, --help** option to display information about the command.

### 4.11.9 exportresourcestrings

**Syntax and description**

The **exportresourcestrings** command outputs an XML file containing the resource strings of the RaptorXML+XBRL Server application in the specified language. Available export languages are English (en), German (de), Spanish (es), French (fr), and Japanese (ja).

```
raptorxmlxbrl exportresourcestrings [options] LanguageCode XMLOutputFile
raptorxmlxbrlserver exportresourcestrings [options] LanguageCode XMLOutputFile
```

- The **LanguageCode** argument gives the language of the resource strings in the output XML file; this is the **export language**. Allowed export languages (with their language codes in parentheses) are: English (en), German (de), Spanish (es), French (fr), and Japanese (ja).
- The **XMLOutputFile** argument specifies the path and name of the output XML file.
- The **exportresourcestrings** command can be called from either executable: raptorxmlxbrl or raptorxmlxbrlserver.
How to create localizations is described below.

▼ Casing and slashes on the command line

RaptorXMLXBRL (and RaptorXMLXBRLServer for administration commands) on Windows
raptorxmlxbrl (and raptorxmlxbrlserver for administration commands) on Windows and Unix (Linux, Mac)

* Note that lowercase (raptorxmlxbrl and raptorxmlxbrlserver) works on all platforms (Windows, Linux, and Mac), while upper-lower (RaptorXMLXBRL) works only on Windows and Mac.
* Use forward slashes on Linux and Mac, backslashes on Windows.

▼ Backslashes, spaces, and special characters on Windows systems

On Windows systems: When spaces or special characters occur in strings (for example in file or folder names, or company, person or product names), use quotes: for example, "My File". Note, however, that a backslash followed by a double-quotation mark (for example, “C:\My directory\”) might not be read correctly. This is because the backslash character is also used to indicate the start of an escape sequence, and the escape sequence \ stands for the double-quotation mark character. If you want to escape this sequence of characters, use a preceding backslash, like this: \". To summarize: If you need to write a file path that contains spaces or an end backslash, write it like this: "C:\My Directory\".

Examples

Examples of the exportresourcestrings command:

raptorxmlxbrl exportresourcestrings de c:\Strings.xml
raptorxmlxbrlserver exportresourcestrings de c:\Strings.xml

- The first command above creates a file called Strings.xml at c:\ that contains the resource strings of RaptorXML+XBRL Server in German.
- The second command calls the server-executable to do the same thing as the first example.

Creating localized versions of RaptorXML+XBRL Server

You can create a localized version of RaptorXML+XBRL Server for any language of your choice. Five localized versions (English, German, Spanish, French, and Japanese) are already available in the C:\Program Files (x86)\Altova\RaptorXMLXBRLServer2021\bin folder, and therefore do not need to be created.

Create a localized version as follows:

1. Generate an XML file containing the resource strings by using the exportresourcestrings command (see command syntax above). The resource strings in this XML file will be one of the five supported languages: English (en), German (de), Spanish (es), French (fr), or Japanese (ja), according to the LanguageCode argument used with the command.
2. Translate the resource strings from one of the five supported languages into the target language. The resource strings are the contents of the <string> elements in the XML file. Do not translate variables in curly brackets, such as {option} or {product}.
3. Contact Altova Support to generate a localized RaptorXML+XBRL Server DLL file from your translated
XML file.

4. After you receive your localized DLL file from Altova Support, save the DLL in the `C:\Program Files (x86)\Altova\RaptorXMLXBRLServer2021\bin` folder. Your DLL file will have a name of the form `RaptorXMLXBRLL2021_lc.dll`. The `_lc` part of the name contains the language code. For example, in `RaptorXMLXBRLL2021_de.dll`, the `de` part is the language code for German (Deutsch).

5. Run the `setdeflang` command to set your localized DLL file as the RaptorXML+XBRL Server application to use. For the argument of the `setdeflang` command, use the language code that is part of the DLL name.

**Note:** Altova RaptorXML+XBRL Server is delivered with support for five languages: English, German, Spanish, French, and Japanese. So you do not need to create a localized version of these languages. To set any of these languages as the default language, use RaptorXML+XBRL Server's `setdeflang` command.

### 4.11.10 debug

**Syntax and description**

The `debug` command starts RaptorXML+XBRL Server for debugging—not as a service. To stop RaptorXML+XBRL Server in this mode, press `Ctrl+C`.

```
raptorxmlxbrlserver debug [options]
```

**Casing and slashes on the command line**

- `RaptorXMLXBRL` (and `RaptorXMLXBRLServer` for administration commands) on Windows
- `raptorxmlxbrl` (and `raptorxmlxbrlserver` for administration commands) on Windows and Unix (Linux, Mac)

* Note that lowercase (`raptorxmlxbrl` and `raptorxmlxbrlserver`) works on all platforms (Windows, Linux, and Mac), while upper-lower (`RaptorXMLXBRL`) works only on Windows and Mac.
* Use forward slashes on Linux and Mac, backslashes on Windows.

**Backslashes, spaces, and special characters on Windows systems**

On Windows systems: When spaces or special characters occur in strings (for example in file or folder names, or company, person or product names), use quotes: for example, "My File". Note, however, that a backslash followed by a double-quotation mark (for example, “C:\My directory\”) might not be read correctly. This is because the backslash character is also used to indicate the start of an escape sequence, and the escape sequence \" stands for the double-quotation mark character. If you want to escape this sequence of characters, use a preceding backslash, like this: \". To summarize: If you need to write a file path that contains spaces or an end backslash, write it like this: "C:\My Directory\".

**Example**

Example of the `debug` command:

```
raptorxmlxbrlserver debug
```
Options
Options are listed in short form (if available) and long form. You can use one or two dashes for both short and long forms. An option may or may not take a value. If it takes a value, it is written like this: \texttt{--option=value}. Values can be specified without quotes except in two cases: (i) when the value string contains spaces, or (ii) when explicitly stated in the description of the option that quotes are required. If an option takes a Boolean value and no value is specified, then the option's default value is \texttt{TRUE}. Use the \texttt{--h, --help} option to display information about the command.

\texttt{\textasciitilde c [c]}
\texttt{--c, --config = File}
Specifies the path to a configuration file.

\texttt{\textasciitilde p [p]}
\texttt{--port = PortNumber}
The port number of the debug instance of RaptorXML+XBRL Server

4.11.11 help

Syntax and description
The \texttt{help} command takes a single argument (\texttt{Command}), which is the name of the command for which help is required. It displays the command's syntax, its options, and other relevant information. If the \texttt{Command} argument is not specified, then all commands of the executable are listed, with each having a brief text description. The \texttt{help} command can be called from either executable: \texttt{raptorxmlxbrl} or \texttt{raptorxmlxbrlserver}.

\begin{verbatim}
raptorxmlxbrl help Command
raptorxmlxbrlserver help Command
\end{verbatim}

\textbullet\ Casing and slashes on the command line
\begin{verbatim}
RaptorXMLXBRL (and RaptorXMLXBRLServer for administration commands) on Windows
raptorxmlxbrl (and raptorxmlxbrlserver for administration commands) on Windows and Unix (Linux, Mac)
\end{verbatim}

\textbullet\ Note that lowercase (\texttt{raptorxmlxbrl} and \texttt{raptorxmlxbrlserver}) works on all platforms (Windows, Linux, and Mac), while upper-lower (\texttt{RaptorXMLXBRL}) works only on Windows and Mac.
\textbullet\ Use forward slashes on Linux and Mac, backslashes on Windows.

Example
Examples of the \texttt{help} command to display information about the \texttt{licenserver} command (this command is available in both executables):
The `--help` option
Help information about a command is also available by using the `--help` option of the command for which help information is required. The two commands below produce the same results:

```
raptorxmlxbrl licenseserver --help
```

The command above uses the `--help` option of the `licenseserver` command.

```
raptorxmlxbrl help licenseserver
```

The `help` command takes `licenseserver` as its argument.

Both commands display help information about the `licenseserver` command.

### 4.11.12 version

#### Syntax and description
The `version` command displays the version number of RaptorXML+XBRL Server. It can be called from either executable: `raptorxmlxbrl` or `raptorxmlxbrlserver`.

```
raptorxmlxbrl version
raptorxmlxbrlserver version
```

▼ Casing and slashes on the command line

*RaptorXMLXBRL* (and *RaptorXMLXBRLServer* for administration commands) *on Windows*  
*raptorxmlxbrl* (and *raptorxmlxbrlserver* for administration commands) *on Windows and Unix (Linux, Mac)*

* Note that lowercase (*raptorxmlxbrl* and *raptorxmlxbrlserver*) works on all platforms (Windows, Linux, and Mac), while upper-lower (*RaptorXMLXBRL*) works only on Windows and Mac.  
* Use forward slashes on Linux and Mac, backslashes on Windows.

#### Example
Examples of the `version` command:

```
raptorxmlxbrl version
raptorxmlxbrlserver version
```
4.12 Options

This section contains a description of all CLI options, organized by functionality. To find out which options may be used with each command, see the description of the respective commands.

- Catalogs, Global Resources, ZIP Files
- Messages, Errors, Help
- Processing
- XBRL
- XML
- XSD
- XQuery
- XSLT
- JSON/Avro
- XML Signatures

4.12.1 Catalogs, Global Resources, ZIP Files

#### catalog

```bash
--catalog = FILE
```

Specifies the absolute path to a root catalog file that is not the installed root catalog file. The default value is the absolute path to the installed root catalog file (`<installation-folder>\Altova\RaptorXMLXBRLServer2021\etc\RootCatalog.xml`). See the section, XML Catalogs, for information about working with catalogs.

#### user-catalog

```bash
--user-catalog = FILE
```

Specifies the absolute path to an XML catalog to be used in addition to the root catalog. See the section, XML Catalogs, for information about working with catalogs.

#### enable-globalresources

```bash
--enable-globalresources = true|false
```

Enables global resources. Default value is false.

*Note*: Boolean option values are set to true if the option is specified without a value.

#### globalresourceconfig [gc]

```bash
--gc | --globalresourceconfig = VALUE
```

Specifies the active configuration of the global resource (and enables global resources).

#### globalresourcefile [gr]

```bash
--gr | --globalresourcefile = FILE
```

Specifies the global resource file (and enables global resources).

#### recurse

```bash
--recurse = true|false
```
Used to select files within sub-directories, including in ZIP archives. If true, the command's InputFile argument will select the specified file also in subdirectories. For example: "test.zip|zip\test.xml" will select files named test.xml at all folder levels of the zip folder. References to ZIP files must be given in quotes. The wildcard characters * and ? may be used. So, *.xml will select all .xml files in the (zip) folder. The option's default value is false.

Note: Boolean option values are set to true if the option is specified without a value.

4.12.2 Messages, Errors, Help, Timeout, Version

error-format
--error-format = text|shortxml|longxml
Specifies the format of the error output. Default value is text. The other options generate XML formats, with longxml generating more detail.

error-limit
--error-limit = N | unlimited
Specifies the error limit with a value range of 1 to 9999 or unlimited. The default value is 100. Processing stops when the error limit is reached. Useful for limiting processor use during validation/transformation.

help
--help
Displays help text for the command. For example, valany --h. (Alternatively the help command can be used with an argument. For example: help valany.)

info-limit
--info-limit = N | unlimited
Specifies the information message limit in the range 1-65535 or unlimited. Processing continues if the specified info limit is reached, but further messages are not reported. The default value is 100.

log-output
--log-output = FILE
Writes the log output to the specified file URL. Ensure that the CLI has write permission to the output location.

network-timeout
--network-timeout = VALUE
Specifies the timeout in seconds for remote I/O operations. Default is: 40.

verbose
--verbose = true|false
A value of true enables output of additional information during validation. Default value is false.

Note: Boolean option values are set to true if the option is specified without a value.
**--verbose-output = FILE**

Writes verbose output to FILE.

▼ **version**

**--version**

Displays the version of RaptorXML+XBRL Server. If used with a command, place **--version** before the command.

▼ **warning-limit**

**--warning-limit = N | unlimited**

Specifies the warning limit in the range 1-65535 or unlimited. Processing continues if this limit is reached, but further warnings are not reported. The default value is 100.

### 4.12.3 Processing

▼ **listfile**

**--listfile = true|false**

If true, treats the command’s InputFile argument as a text file containing one filename per line. Default value is false. (An alternative is to list the files on the CLI with a space as separator. Note, however, that CLIs have a maximum-character limitation.) Note that the --listfile option applies only to arguments, and not to options.

*Note:* Boolean option values are set to true if the option is specified without a value.

▼ **parallel-assessment [pa]**

**--pa | --parallel-assessment = true|false**

If set to true, schema validity assessment is carried out in parallel. This means that if there are more than 128 elements at any level, these elements are processed in parallel using multiple threads. Very large XML files can therefore be processed faster if this option is enabled. Parallel assessment takes place on one hierarchical level at a time, but can occur at multiple levels within a single infoset. Note that parallel assessment does not work in streaming mode. For this reason, the --streaming option is ignored if --parallel-assessment is set to true. Also, memory usage is higher when the --parallel-assessment option is used. The default setting is false. Short form for the option is --pa.

*Note:* Boolean option values are set to true if the option is specified without a value.

▼ **script**

**--script = FILE**

Executes the Python script in the submitted file after validation has been completed. Add the option multiple times to specify more than one script.

▼ **script-api-version**

**--api, --script-api-version = 1; 2; 2.1; 2.2; 2.3; 2.4; 2.4.1; 2.5; 2.6; 2.7; 2.8; 2.8.1; 2.8.2; 2.8.3**

Specifies the Python API version to be used for the script. The default value is the latest version, currently 2.8.3. Instead of the values 1 and 2, you can also use the values 1.0 and 2.0, respectively.
script-param

\[--\text{script-param} = \text{KEY:VALUE}\]

Additional user-specified parameters that can be accessed during the execution of Python scripts. Add the option multiple times to specify more than one script parameter.

streaming

\[--\text{streaming} = \text{true|false}\]

Enables streaming validation. Default is true. In streaming mode, data stored in memory is minimized and processing is faster. The downside is that information that might be required subsequently—for example, a data model of the XML instance document—will not be available. In situations where this is significant, streaming mode will need to be turned off (by giving \(--\text{streaming}\) a value of false). When using the --script option with the valxml-withxsd command, disable streaming. Note that the --streaming option is ignored if --parallel-assessment is set to true.

\textit{Note}: Boolean option values are set to true if the option is specified without a value.

xml-validation-error-as-warning

\[--\text{xml-validation-error-as-warning} = \text{true|false}\]

If true, treats validation errors as warnings. If errors are treated as warnings, additional processing, such as XSLT transformations, will continue regardless of errors. Default is false.

4.12.4 XBRL

XBRL validation and processing options

additional-dts-entry-point

\[--\text{additional-dts-entry-point} = \text{FILE}\]

Forces the specified entry-point file to be included in the DTS discovery process. Add the option multiple times to specify more than one entry point.

cf-restrict-mode

\[--\text{ct-restrict-mode} = 1.0|1.1|\text{default}\]

Specifies how to check complex type restrictions. A value of 1.0 checks complex type restrictions as defined in the XSD 1.0 specification—even in XSD 1.1 validation mode. A value of 1.1 checks complex type restrictions as defined in the XSD 1.1 specification—even in XSD 1.0 validation mode. A value of default checks complex type restrictions as defined in the XSD specification of the current validation mode (1.0 or 1.1). The default value is default.

deduplicate

\[--\text{deduplicate} = \text{true|false}\]

Enables de-duplication according to the Handling Duplicate Facts in XBRL and Inline XBRL 1.0 specification. Removes facts that are (i) complete duplicates, (ii) consistent duplicates (by definition these are numeric facts; the most accurate of the duplicates is retained for processing). Inconsistent and multi-language duplicates are not affected by this option. Default value is false.

\textit{Note}: Boolean option values are set to true if the option is specified without a value.
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Command Line Interface (CLI) Options

▼ dimensions

**--dimensions = true|false**
Enables XBRL Dimension 1.0 extensions. Default is true.

*Note:* Boolean option values are set to true if the option is specified without a value.

▼ dts

**--dts = FILE**
Preloads the DTS entry point given in FILE, and uses it for the validation of instance files. Add the option multiple times to specify more than one entry point. Entry points in instance files will be ignored. The command is used to batch validate multiple instance files that all refer to the same taxonomy. The --dts option instructs the Raptor engine to load the DTS only a single time—and not for each instance in the file list. (A file list is given either on the CLI, or in a text file that is indicated as a file list by setting the --listfile option to true.) If an instance file in the file list references a different taxonomy, then a warning is issued. This command can greatly speed up validation time when validating many small instance files each that have a large supporting DTS; it provides no advantage when validating a single instance file.

▼ essence-alias-checks

**--essence-alias-checks = true|false**
Enables reporting of essence-alias inconsistencies. Default value is true.

*Note:* Boolean option values are set to true if the option is specified without a value.

▼ extensible-enumerations

**--extensible-enumerations = true|false**
If true, enables the XBRL Extensible Enumerations extension. Default is true.

▼ generic-links

**--generic-links = true|false**
Enables the XBRL Generic Links 1.0 extension. Default value is true.

*Note:* Boolean option values are set to true if the option is specified without a value.

▼ generic-preferred-label

**--generic-preferred-label = true|false**
Enables the XBRL Generic Preferred Label 1.0 extension. Default value is true.

*Note:* Boolean option values are set to true if the option is specified without a value.

▼ inconsistencies-limit

**--inconsistencies-limit = N | unlimited**
Specifies the XBRL inconsistencies limit, with values being in the range 1-65535 or unlimited. Processing continues if the limit is reached, but further inconsistencies are not reported. The default value is 100.

▼ listfile

**--listfile = true|false**
If true, treats the command’s InputFile argument as a text file containing one filename per line.
Default value is `false`. (An alternative is to list the files on the CLI with a space as separator. Note, however, that CLIs have a maximum-character limitation.) Note that the `--listfile` option applies only to arguments, and not to options.

**Note:** Boolean option values are set to `true` if the option is specified without a value.

**parallel-assessment** [pa]

```
--pa | --parallel-assessment = true|false
```

If set to `true`, schema validity assessment is carried out in parallel. This means that if there are more than 128 elements at any level, these elements are processed in parallel using multiple threads. Very large XML files can therefore be processed faster if this option is enabled. Parallel assessment takes place on one hierarchical level at a time, but can occur at multiple levels within a single infoset. Note that parallel assessment does not work in streaming mode. For this reason, the `--streaming` option is ignored if `--parallel-assessment` is set to `true`. Also, memory usage is higher when the `--parallel-assessment` option is used. The default setting is `false`. Short form for the option is `--pa`.

**Note:** Boolean option values are set to `true` if the option is specified without a value.

**preload-xbrl-schemas**

```
--preload-xbrl-schemas = true|false
```

Preloads schemas of the XBRL 2.1 specification. Default is `true`.

**Note:** Boolean option values are set to `true` if the option is specified without a value.

**recurse**

```
--recurse = true|false
```

Used to select files within sub-directories, including in ZIP archives. If `true`, the command's `InputFile` argument will select the specified file also in subdirectories. For example: "test.zip|zip\test.xml" will select files named `test.xml` at all folder levels of the zip folder. References to ZIP files must be given in quotes. The wildcard characters `*` and `?` may be used. So, `*.xml` will select all `.xml` files in the (zip) folder. The option's default value is `false`.

**Note:** Boolean option values are set to `true` if the option is specified without a value.

**report-duplicates**

```
--report-duplicates = all|complete|consistent|inconsistent|inconsistent-numeric|
inconsistent-non-numeric|multi-language
```

Enables the reporting of duplicate facts of the specified duplicate class. Add the option multiple times to specify more than one duplicate class. There is no default value. If no value is specified, then no check for duplicates is carried out.

**report-duplicates-severity**

```
--report-duplicates-severity = info|warning|inconsistency|error
```

Specifies whether the detected duplicate facts should be reported as errors or warnings. If they are reported as errors, then the XBRL validation of the instance will fail. The default is `error`.

**requires-element-checks**

```
--requires-element-checks = true|false
```

Enables reporting of requires-element inconsistencies. The default value is `true`.

**Note:** Boolean option values are set to `true` if the option is specified without a value.
schema-imports

\[ \text{--schema-imports = load-by-schemalocation | load-preferring-schemalocation | load-by-namespace | load-combining-both | license-namespace-only} \]

Specifies the behaviour of \texttt{xsi:import} elements, each of which has an optional \texttt{namespace} attribute and an optional \texttt{schemalocation} attribute: \texttt{<import namespace="someNS" schemalocation="someURL">}. The option specifies whether to load a schema document or just license a namespace, and, if a schema document is to be loaded, which information should be used to find it. Default: load-preferring-schemalocation.

The behavior is as follows:

- **load-by-schemalocation**: The value of the \texttt{schemalocation} attribute is used to locate the schema, taking account of catalog mappings. If the namespace attribute is present, the namespace is imported (licensed).
- **load-preferring-schemalocation**: If the \texttt{schemalocation} attribute is present, it is used, taking account of catalog mappings. If no \texttt{schemalocation} attribute is present, then the value of the namespace attribute is used via a catalog mapping. This is the default value.
- **load-by-namespace**: The value of the \texttt{namespace} attribute is used to locate the schema via a catalog mapping.
- **load-combining-both**: If either the \texttt{namespace} or \texttt{schemalocation} attribute has a catalog mapping, then the mapping is used. If both have catalog mappings, then the value of the \texttt{--schema-mapping} option (XBRL option and XML/XSD option) decides which mapping is used. If no catalog mapping is present, the \texttt{schemalocation} attribute is used.
- **license-namespace-only**: The namespace is imported. No schema document is imported.

schema-mapping

\[ \text{--schema-mapping = prefer-schemalocation | prefer-namespace} \]

If schema location and namespace are both used to find a schema document, specifies which of them should be preferred during catalog lookup. (If either the \texttt{--schemalocation-hints} or the \texttt{--schema-imports} option has a value of load-combining-both, and if the namespace and URL parts involved both have catalog mappings, then the value of this option specifies which of the two mappings to use (namespace mapping or URL mapping; the \texttt{prefer-schemalocation} value refers to the URL mapping).) Default is \texttt{prefer-schemalocation}.

schemalocation-hints

\[ \text{--schemalocation-hints = load-by-schemalocation | load-by-namespace | load-combining-both | ignore} \]

Specifies the behavior of the \texttt{xsi:schemaLocation} and \texttt{xsi:noNamespaceSchemaLocation} attributes: Whether to load a schema document, and, if yes, which information should be used to find it. Default: load-by-schemalocation.

- The **load-by-schemalocation** value uses the \texttt{URL of the schema location} in the \texttt{xsi:schemaLocation} and \texttt{xsi:noNamespaceSchemaLocation} attributes in XML or XBRL instance documents. This is the default value.
- The **load-by-namespace** value takes the \texttt{namespace part} of \texttt{xsi:schemaLocation} and an empty string in the case of \texttt{xsi:noNamespaceSchemaLocation} and locates the schema via a catalog mapping.
- If \texttt{load-combining-both} is used and if either the namespace part or the URL part has a catalog mapping, then the catalog mapping is used. If both have catalog mappings, then the value of the \texttt{--schema-mapping} option (XBRL option and XML/XSD option) decides which mapping is used. If neither the namespace nor URL has a catalog mapping, the
If the option's value is `ignore`, then the `xsi:schemaLocation` and `xsi:noNamespaceSchemaLocation` attributes are both ignored.

- **script**
  ```--script = FILE```
  Executes the Python script in the submitted file after validation has been completed. Add the option multiple times to specify more than one script.

- **script-api-version**
  ```--api --script-api-version = 1; 2; 2.1; 2.2; 2.3; 2.4; 2.4.1; 2.5; 2.6; 2.7; 2.8; 2.8.1; 2.8.2; 2.8.3```
  Specifies the Python API version to be used for the script. The default value is the latest version, currently `2.8.3`. Instead of the values `1` and `2`, you can also use the values `1.0` and `2.0`, respectively.

- **script-output**
  ```--script-output = FILE```
  Writes the script's standard output to the file named in `FILE`.

- **script-param**
  ```--script-param = KEY:VALUE```
  Additional user-specified parameters that can be accessed during the execution of Python scripts. Add the option multiple times to specify more than one script parameter.

- **single-dts**
  ```--single-dts = true|false```
  If set to `true`, all submitted files (the XBRL taxonomy schemas and linkbases) will be treated as a single XBRL discoverable taxonomy set. The default is `false`.  
  **Note**: Boolean option values are set to `true` if the option is specified without a value.

- **summation-item-checks**
  ```--summation-item-checks = true|false```
  Enables reporting of summation-item inconsistencies. The default value is `true`.  
  **Note**: Boolean option values are set to `true` if the option is specified without a value.

- **taxonomy-package**
  ```--taxonomy-package = FILE```
  Specifies the absolute path to an additional taxonomy package as described in the [Taxonomy Package 1.0](https://www.xbrl.org/taxonomypackage/1.0) and [Taxonomy Packages 1.0](https://www.xbrl.org/taxonomypackage/1.0) working drafts. The value of `FILE` gives the location of the taxonomy package. Add the option multiple times to specify more than one taxonomy package.

- **taxonomy-packages-config-file**
  ```--taxonomy-packages-config-file = FILE```
  Specifies the path to the `TaxonomyPackagesConfig.json` file, which is used to load XBRL taxonomy
packages. The file’s convenience is that it serves as a catalog of taxonomy packages. The structure of the JSON file is as in the example listing below. The value of the uri key gives the location of the package. The active key (of a set of packages) switches on usage of those packages.

```json
{"taxonomies":
   {"EIOPA Solvency II XBRL Taxonomy 2.1.0":
      {"packages": [
         {"uri": "C:\\test\\XBRL\\EIOPA_SolvencyII_XBRL_Taxonomy_2.1.0.zip"},
         {"uri": "C:\\test\\XBRL\\AdditionalTestPkg.zip"}
      ], "active": true}
   },
   "Test Taxonomy":
      {"packages": [{"uri": "C:\\test\\XBRL\\test.zip"}], "active": true}
}
```

**treat-inconsistencies-as-errors**

`--treat-inconsistencies-as-errors = true|false`

Causes XBRL validation to fail if the file contains any inconsistency as defined by the XBRL 2.1 specification. Default value is false.

*Note:* Boolean option values are set to true if the option is specified without a value.

**treat-invalid-use-of-standard-role-as-warning**

`--treat-invalid-use-of-standard-role-as-warning = true|false`

Specifies whether the invalid use of standard roles should be reported only as a warning. Default value is false.

*Note:* Boolean option values are set to true if the option is specified without a value.

**utr**

`--utr = true|false`

If true, enables the XBRL Unit Registry 1.0 extension. Default is: false.

**utr-file**

`--utr-file = FILE`

Specifies the path to the Units Registry file. The default is: http://www.xbrl.org/utr/utr.xml.

**utr-status**

`--utr-status = PWD|CR|REC|NIE|PROPOSED|IWD|ACK|RR`

Enables support of unit definitions with the given status in the Units Registry. Add the option multiple times to specify more than one unit status. Default is REC.

**validate-dts-only**

`--validate-dts-only = true|false`

The DTS is discovered by starting from the XBRL instance document. All referenced taxonomy schemas and linkbases are discovered and validated. The rest of the XBRL instance document is ignored. Default value is false.

*Note:* Boolean option values are set to true if the option is specified without a value.
**xinclude**

```bash
--xinclude = true|false
```

Enables XML Inclusions (XInclude) support. Default value is `false`. When `false`, XInclude's include elements are ignored.

*Note:* Boolean option values are set to `true` if the option is specified without a value.

**Inline XBRL options**

**document-set**

```bash
--document-set = true|false
```

If set to `true`, all submitted files (the Inline XBRL documents) will be treated as an Inline XBRL Document Set. The default value is `false`.

*Note:* Boolean option values are set to `true` if the option is specified without a value.

**extended-whitespace-normalization**

```bash
--extended-whitespace-normalization = true|false
```

If `true`, enables normalization of Unicode Category Z whitespace characters, including non-breaking spaces. Default is `false`.

**ixbrl-version**

```bash
--ixbrl-version = 1.0|1.1|detect
```

Specifies the version of the Inline XBRL specification to use for validation. The default is `detect`.

**non-numeric-whitespace-normalization**

```bash
--non-numeric-whitespace-normalization = preserve|replace|collapse|trim
```

Specifies how to handle whitespace normalization in `ix:nonNumeric` elements that do not have a format attribute. The default is `preserve`.

**transformation-registry**

```bash
--transformation-registry =

#all | http://www.xbrl.org/2008/inlineXBRL/transformation |
http://www.xbrl.org/inlineXBRL/transformation/2010-04-20 |
http://www.xbrl.org/inlineXBRL/transformation/2015-02-26 |
```

In Inline XBRL, date and numeric types may be rendered in a variety of lexical formats, but in XBRL these types have specific formats. For example, a date in the Inline XBRL might be given as 01 January 2017, but in XBRL the format of this date would be 2017-01-01. The Inline XBRL Transformation Registries specify the conversion rules to follow when date and numeric values are converted from Inline XBRL to XBRL. The `transformation-registry` option limits the registry that will be used to that which you specify. Add the option multiple times to specify more than one transformation registry. The default value is `#all`, which selects all available transformation registries.

*(For the list of available transformation registries in your version of RaptorXML+XBRL Server, check...*
the description of the command on the CLI.)

- **treat-custom-role-errors-as-warnings**
  
  ```
  --treat-custom-role-errors-as-warnings = true|false
  ```

  Reports non-critical XBRL errors related to custom role/arcrole types (for example, missing roleRefs) as warnings. Default value is false.
  
  **Note:** Boolean option values are set to true if the option is specified without a value.

- **validate-xbrl**
  
  ```
  --validate-xbrl = true|false
  ```

  If set to true, enables validation of the XBRL document that is generated from the Inline XBRL document. If set to false, then validation stops after the first step that generates the XBRL. The default value is true.

  **Note:** Boolean option values are set to true if the option is specified without a value.

- **xbrl-output**
  
  ```
  --xbrl-output = FILE
  ```

  Writes the generated XBRL output to the file location specified in this option. Note that even when multiple Inline XBRL input files are processed, only one XBRL document is generated.

- **XBRL formula and assertion options**

  - **assertion-severity**
    
    ```
    --assertion-severity = true|false
    ```

    Enables the Assertion Severity 1.0 extension. Default is true.

    **Note:** Boolean option values are set to true if the option is specified without a value.

  - **assertions-output**
    
    ```
    --assertions-output = FILE
    ```

    Writes the output of the assertion evaluation to the specified FILE. If set, automatically specifies `--formula-execution=true`.

  - **assertions-output-format**
    
    ```
    --assertions-output-format = json|xml
    ```

    Specifies the output format of the assertion evaluation. Default is json.

  - **evaluate-referenced-parameters-only**
    
    ```
    --evaluate-referenced-parameters-only = true|false
    ```

    If false, forces evaluation of all parameters even if they are not referenced by any formulas/assertions/tables. Default is true.

  - **formula**
    
    ```
    --formula = true|false
    ```

    Enables the XBRL Formula 1.0 extension. Default is true.

    **Note:** Boolean option values are set to true if the option is specified without a value.
- **formula-assertion-set**  [[DEPRECATED]]
  ```bash
  --formula-assertion-set = VALUE
  ```
  Limits formula execution to the given assertion set only. Add the option multiple times to specify more than one assertion set. Short form is `--as`. The `VALUE` is either the value of the `@id` attribute, or a URI with an XPointer fragment that identifies the resource. The special values `##none` and `##all` can also be used.

- **formula-execution**
  ```bash
  --formula-execution = true|false
  ```
  Enables evaluation of XBRL formulas. Default is `true`. If `true`, automatically specifies `--formula=true`. **Note**: Boolean option values are set to `true` if the option is specified without a value.

- **formula-output**
  ```bash
  --formula-output = FILE
  ```
  Writes the output of formula evaluation to the specified `FILE`. If set, automatically specifies `--formula-execution=true`.

- **formula-parameters**
  ```bash
  --formula-parameters = JSON-ARRAY
  ```
  Specifies parameters for XBRL formula evaluation as array of JSON maps directly on the CLI. See the section [Formula Parameters](#) for details.

- **formula-parameters-file**
  ```bash
  --formula-parameters-file = FILE
  ```
  Specifies a `FILE` containing the parameters for XBRL formula evaluation. The file can be either an XML file or JSON file. See the section, [Formula Parameters](#).

- **ignore-assertion**
  ```bash
  --ignore-assertion = VALUE
  ```
  Excludes the given assertion from the execution. Add this option multiple times to specify more than one assertion.

- **ignore-assertions-file**
  ```bash
  --ignore-assertions-file = FILE
  ```
  Specifies a path to a file that contains a list of IDs/XPointers of assertions to exclude from processing. In the file, enter one assertion per line.

- **ignore-formula**
  ```bash
  --ignore-formula = VALUE
  ```
  Excludes the given formula from the execution. Add this option multiple times to specify more than one formula.

- **ignore-formulas-file**
--ignore-formulas-file = FILE
Specifies a path to a file that contains a list of formula IDs/XPointers to exclude from processing. In the file, enter one formula per line.

message-lang
--message-lang = VALUE
Specifies the language to use when displaying validation messages. Default is: en. Other accepted values are de, es, fr, ja, for, respectively, German, Spanish, French, and Japanese.

message-role
--message-role = VALUE
Specifies the preferred message role to use when displaying validation messages. Default is: http://www.xbrl.org/2010/role/message.

preload-formula-schemas
--preload-formula-schemas = true|false
Preloads schemas of the XBRL Formula 1.0 specification. Default is false.
Note: Boolean option values are set to true if the option is specified without a value.

process-assertion [a]
--a | --process-assertion = VALUE
Limits formula execution to the given assertion only. Add the option multiple times to specify more than one assertion. Short form is --a. The VALUE is either the value of the @id attribute, or a URI with an XPointer fragment that identifies the resource. The special values ##none and ##all can also be used.

process-assertion-set [as]
--as | --process-assertion-set = VALUE
Limits formula execution to the given assertion set only. Add the option multiple times to specify more than one assertion set. Short form is --as. The VALUE is either the value of the @id attribute, or a URI with an XPointer fragment that identifies the resource. The special values ##none and ##all can also be used.

process-assertions-file
--process-assertions-file = FILE
Specifies a path to a file that contains a list of IDs/XPointers of assertions to execute. In the file, enter one assertion per line.

process-formula [f]
--f | --process-formula = VALUE
Limits formula execution to the given formula only. Add the option multiple times to specify more than one formula. Short form is --f. The VALUE is either the value of the @id attribute, or a URI with an XPointer fragment that identifies the resource. The special values ##none and ##all can also be used.

process-formulas-file
**--process-formulas-file = FILE**
Specifies a path to a file that contains a list of IDs/XPointers of formulas to execute. In the file, enter one formula per line.

**--report-unsatisfied-assertion-evaluations = true|false**
Reports the evaluation of unsatisfied assertion as errors or warnings depending on the assigned assertion severity level. The default value is false.  
*Note:* Boolean option values are set to true if the option is specified without a value.

**--validate-formula-output = true|false**
Enables XBRL validation of Formula output instance. The default value is false.  
*Note:* Boolean option values are set to true if the option is specified without a value.

**--variableset-execution-timeout = VALUE**
Applied when executing formulas (--formula-execution=true). Specifies the maximum time allowed for executing a single variable set (a formula or a value, or an existence or consistency assertion). The time is specified in minutes and must be a positive number. The default is 30min. If a particular variable set doesn’t finish execution before the timeout is reached, then it is aborted. An error message is displayed (and entered in the verbose log). Note, however, that the timeout check is carried out only after every variable set evaluation—and not during execution of individual XPath expressions. So, if a single XPath expression takes long to execute, the timeout limit might be crossed. Execution of a variable set is aborted only once a complete variable set evaluation has been executed.

**XBRL table options**

**--aspect-node-order = lexical|instance**
Specifies the layout order of an open aspectNode. The default is lexical.

**--concept-label-linkrole = VALUE**
Specifies the preferred extended link role to use when rendering concept labels.

**--concept-label-role = VALUE**
Specifies the preferred label role to use when rendering concept labels. Default is: http://www.xbrl.org/2003/role/label.

**--evaluate-referenced-parameters-only = true|false**
If false, forces evaluation of all parameters even if they are not referenced by any formulas/assertions/tables. Default is: true.
generic-label-linkrole

```
--generic-label-linkrole = VALUE
```
Specifies the preferred extended link role to use when rendering generic labels.

generic-label-role

```
--generic-label-role = VALUE
```
Specifies the preferred label role to use when rendering generic labels. Default is: http://www.xbrl.org/2003/role/label.

label-lang

```
--label-lang = VALUE
```
Specifies the preferred language to use when rendering labels. Default is: en.

pre-load-table-schemas

```
--pre-load-table-schemas = true|false
```
Preloads schemas of the XBRL Table 1.0 specification. Default is false.

Note: Boolean option values are set to true if the option is specified without a value.

process-table [t]

```
--t | --process-table = VALUE
```
Limits formula execution to the given table only. Add the option multiple times to specify more than one table. Short form is --t. The VALUE is either the value of the @id attribute, or a URI with an XPath fragment that identifies the resource. The special values ##none and ##all can also be used.

table

```
--table = true|false
```
Enables the XBRL Table 1.0 extension. Default value is true. If true, automatically specifies --formula=true and --dimensions=true.

Note: Boolean option values are set to true if the option is specified without a value.

table-elimination

```
--table-elimination = true|false
```
Enables elimination of empty table rows/columns in HTML output. Default is true.

Note: Boolean option values are set to true if the option is specified without a value.

table-execution

```
--table-execution = true|false
```
Enables evaluation of XBRL tables. Default is false. Will be set to true if --table-output is specified. If true, automatically specifies --table=true.

Note: Boolean option values are set to true if the option is specified without a value.

table-linkbase-namespace

```
--table-linkbase-namespace =
``
Table Linkbase validation, resolution, and layout is, however, always performed according to the Table Linkbase 1.0 Recommendation of 18 March 2014. Use `#detect` to enable auto-detection.

**table-output**

```
--table-output = FILE
```

Writes the table output to the specified `FILE`. If set, automatically specifies `--table-execution=true`.

**table-output-format**

```
--table-output-format = xml|html
```

Specifies the format of the table output. Default is `xml`.

**XBRL XULE**

**xule**

```
--xule = FILE
```

Executes the XULE rules contained in the specified file. If a directory or zip archive is specified, then all `.xule` files in that directory or archive will be executed. Add the option multiple times to specify more than one XULE file.

**xule-enable-static-checks**

```
--xule-enable-static-checks = true|false
```

Performs a series of static checks that report unresolved function and variable references. The default is `true`.

*Note:* Boolean option values are set to `true` if the option is specified without a value.

**xule-instance-namespace-bindings**

```
--xule-instance-namespace-bindings = true|false
```

Makes namespace bindings from the root element of the XBRL instance available in the XULE processor. This would enable you to use (in the XULE document) the same namespace prefixes as those of the XBRL instance document. The default is `false`.

*Note:* Boolean option values are set to `true` if the option is specified without a value.

**xule-json-ast**

```
--xule-json-ast = FILE
```

Serializes the XULE abstract syntax tree (AST) as JSON to the file specified.

**xule-output**
--xule-output = FILE
Serializes XULE output to the file named here.

- xule-report-rule-evaluations
  --xule-report-rule-evaluations = true|false
  Depending on the severity of the rules, evaluations of XULE assertions are reported as errors, warnings, or infos. The default value is true.
  Note: Boolean option values are set to true if the option is specified without a value.

- process-xule-rule
  --process-xule-rule = VALUE
  XULE rules have names. This option limits XULE execution to the rule whose name is given as the value of the option. Add the option multiple times to specify more than one rule.

- xule-stack-size
  --xule-stack-size = VALUE
  Specifies the stack size for function calls to the XULE processor. The default value is 1000.

4.12.5 XML

- assessment-mode
  --assessment-mode = lax|strict
  Specifies the schema-validity assessment mode as defined in the XSD specifications. Default value is strict. The XML instance document will be validated according to the mode specified with this option.

- dtd
  --dtd = FILE
  Specifies the external DTD document to use for validation. If a reference to an external DTD is present in the XML document, then the CLI option overrides the external reference.

- load-xml-with-psvi
  --load-xml-with-psvi = true|false
  Enables validation of input XML files and generates post-schema-validation information for them. Default is: true.

- namespaces
  --namespaces = true|false
  Enables namespace-aware processing. This is useful for checking the XML instance for errors due to incorrect namespaces. Default value is false.
  Note: Boolean option values are set to true if the option is specified without a value.

- xinclude
---xinclude = true|false
Enables XML Inclusions (XInclude) support. Default value is false. When false, XInclude's include elements are ignored.
Note: Boolean option values are set to true if the option is specified without a value.

xml-mode
---xml-mode = wf|id|valid
Specifies the XML processing mode to use for the XML instance document: wf=wellformed check; id=wellformed with ID/IDREF checks; valid=validation. Default value is wf. Note that a value of valid requires that each instance document loaded during processing references a DTD. If no DTD exists, an error is reported.

xml-validation-error-as-warning
---xml-validation-error-as-warning = true|false
If true, treats validation errors as warnings. If errors are treated as warnings, additional processing, such as XSLT transformations, will continue regardless of errors. Default is false.

txsd
---xsd = FILE
Specifies one or more XML Schema documents to use for the validation of XML instance documents. Add the option multiple times to specify more than one schema document.

4.12.6 XSD

assessment-mode
---assessment-mode = lax|strict
Specifies the schema-validity assessment mode as defined in the XSD specifications. Default value is strict. The XML instance document will be validated according to the mode specified with this option.

tct-restrict-mode
---ct-restrict-mode = 1.0|1.1|default
Specifies how to check complex type restrictions. A value of 1.0 checks complex type restrictions as defined in the XSD 1.0 specification—even in XSD 1.1 validation mode. A value of 1.1 checks complex type restrictions as defined in the XSD 1.1 specification—even in XSD 1.0 validation mode. A value of default checks complex type restrictions as defined in the XSD specification of the current validation mode (1.0 or 1.1). The default value is default.

namespaces
---namespaces = true|false
Enables namespace-aware processing. This is useful for checking the XML instance for errors due to incorrect namespaces. Default value is false.
Note: Boolean option values are set to true if the option is specified without a value.

report-import-namespace-mismatch-as-warning
---report-import-namespace-mismatch-as-warning = true|false

Downgrades namespace or target-namespace mismatch errors when importing schemas with `xs:import` from errors to warnings. The default value is `false`.

**Note:** Boolean option values are set to `true` if the option is specified without a value.

**schema-imports**

---schema-imports = load-by-schemalocation | load-preferring-schemalocation | load-by-namespace | load-combining-both | license-namespace-only

Specifies the behaviour of `xs:import` elements, each of which has an optional `namespace` attribute and an optional `schemaLocation` attribute: `<import namespace="someNS" schemaLocation="someURL">`. The option specifies whether to load a schema document or just license a namespace, and, if a schema document is to be loaded, which information should be used to find it. Default: `load-preferring-schemalocation`.

The behavior is as follows:

- **load-by-schemalocation:** The value of the `schemalocation` attribute is used to locate the schema, taking account of catalog mappings. If the `namespace` attribute is present, the namespace is imported (licensed).
- **load-preferring-schemalocation:** If the `schemalocation` attribute is present, it is used, taking account of catalog mappings. If no `schemalocation` attribute is present, then the value of the `namespace` attribute is used via a catalog mapping. This is the default value.
- **load-by-namespace:** The value of the `namespace` attribute is used to locate the schema via a catalog mapping.
- **load-combining-both:** If either the `namespace` or `schemaLocation` attribute has a catalog mapping, then the mapping is used. If both have catalog mappings, then the value of the --schema-mapping option (XBRL option and XML/XSD option) decides which mapping is used. If neither the namespace nor URL has a catalog mapping, the URL is used.
- **license-namespace-only:** The namespace is imported. No schema document is imported.

**schemalocation-hints**

---schemalocation-hints = load-by-schemalocation | load-by-namespace | load-combining-both | ignore

Specifies the behavior of the `xsi:schemaLocation` and `xsi:noNamespaceSchemaLocation` attributes: Whether to load a schema document, and, if yes, which information should be used to find it. Default: `load-by-schemalocation`.

- The `load-by-schemalocation` value uses the URL of the schema location in the `xsi:schemaLocation` and `xsi:noNamespaceSchemaLocation` attributes in XML or XBRL instance documents. This is the default value.
- The `load-by-namespace` value takes the namespace part of `xsi:schemaLocation` and an empty string in the case of `xsi:noNamespaceSchemaLocation` and locates the schema via a catalog mapping.
- If `load-combining-both` is used and if either the namespace part or the URL part has a catalog mapping, then the catalog mapping is used. If both have catalog mappings, then the value of the --schema-mapping option (XBRL option and XML/XSD option) decides which mapping is used. If neither the namespace nor URL has a catalog mapping, the URL is used.
- If the option's value is `ignore`, then the `xsi:schemaLocation` and `xsi:noNamespaceSchemaLocation` attributes are both ignored.

**schema-mapping**
---schema-mapping = prefer-schemalocation | prefer-namespace
If schema location and namespace are both used to find a schema document, specifies which of them should be preferred during catalog lookup. (If either the --schemalocation-hints or the --schema-Imports option has a value of load-combining-both, and if the namespace and URL parts involved both have catalog mappings, then the value of this option specifies which of the two mappings to use (namespace mapping or URL mapping; the prefer-schemalocation value refers to the URL mapping).) Default is prefer-schemalocation.

xml-mode-for-schemas
---xml-mode-for-schemas = wf|id|valid
Specifies the XML processing mode to use for XML schema documents: wf=wellformed check; id=wellformed with ID/IDREF checks; valid=validation. Default value is wf. Note that a value of valid requires that each schema document loaded during processing references a DTD. If no DTD exists, an error is reported.

xsd-version
---xsd-version = 1.0|1.1|detect
Specifies the W3C Schema Definition Language (XSD) version to use. Default is 1.0. This option can also be useful to find out in what ways a schema which is 1.0-compatible is not 1.1-compatible. The detect option is an Altova-specific feature. It enables the version of the XML Schema document (1.0 or 1.1) to be detected by reading the value of the @vc:minVersion attribute of the document's <xs:schema> element. If the value of the @vc:minVersion attribute is 1.1, the schema is detected as being version 1.1. For any other value, or if the @vc:minVersion attribute is absent, the schema is detected as being version 1.0.

4.12.7 XQuery

indent-characters
---indent-characters = VALUE
Specifies the character string to be used as indentation.

input
---input = FILE
The URL of the XML file to be transformed.

keep-formatting
---keep-formatting = true|false
Keeps the formatting of the target document to the maximum extent that this is possible. Default is: true.

omit-xml-declaration
---omit-xml-declaration = true|false
Serialization option to specify whether the XML declaration should be omitted from the output or not. If true, there will be no XML declaration in the output document. If false, an XML declaration will be included. Default value is false. Note: Boolean option values are set to true if the option is specified without a value.
output, xsltoutput

```plaintext
output = FILE, xsltoutput = FILE
```

The URL of the primary-output file. For example, in the case of multiple-file HTML output, the primary-output file will be the location of the entry point HTML file. Additional output files, such as generated image files, are reported as xslt-additional-output-files. If no --output or --xsltoutput option is specified, output is written to standard output.

output-encoding

```plaintext
--output-encoding = VALUE
```

The value of the encoding attribute in the output document. Valid values are names in the IANA character set registry. Default value is UTF-8.

output-indent

```plaintext
--output-indent = true|false
```

If true, the output will be indented according to its hierarchic structure. If false, there will be no hierarchical indentation. Default is false.

**Note:** Boolean option values are set to true if the option is specified without a value.

output-method

```plaintext
--output-method = xml|html|xhtml|text
```

Specifies the output format. Default value is xml.

param [p]

```plaintext
--p | --param = KEY:VALUE
```

**XQuery**

Specifies the value of an external parameter. An external parameter is declared in the XQuery document with the declare variable declaration followed by a variable name and then the external keyword followed by the trailing semi-colon. For example:

```xml
declare variable $foo as xs:string external;
```

The external keyword $foo becomes an external parameter, the value of which is passed at runtime from an external source. The external parameter is given a value with the CLI command. For example:

```bash
--param=foo:'MyName'
```

In the description statement above, **KEY** is the external parameter name, **VALUE** is the value of the external parameter, given as an XPath expression. Parameter names used on the CLI must be declared in the XQuery document. If multiple external parameters are passed values on the CLI, each must be given a separate --param option. Double quotes must be used if the XPath expression contains spaces.

**XSLT**

Specifies a global stylesheet parameter. **KEY** is the parameter name, **VALUE** is an XPath expression that provides the parameter value. Parameter names used on the CLI must be declared in the stylesheet. If multiple parameters are used, the --param switch must be used before each parameter. Double quotes must be used around the XPath expression if it contains a space—whether the space is in the XPath expression itself or in a string literal in the expression. For example:

```bash
raptorxmlxbrl xsll --input=c:\Test.xml --output=c:\Output.xml --param=date://node[1]/@att1 --p=title:'stringwithoutspace' --param=title:'stringwithoutspace'
```
with spaces" --p=amount:456 c:\Test.xslt

updated-xml

--updated-xml = discard|writeback|asmainresult
Specifies how the updated XML file should be handled. The updates can be either:

- discarded and not written to file (discard)
- written back to the input XML file that is specified with the --input option (writeback)
- saved either to standard output or to the location specified in the --output option (if this is defined)

Default is: discard.

xpath-static-type-errors-as-warnings

--xpath-static-type-errors-as-warnings = true|false
If true, degrades to warnings any type errors that are detected in the XPath static context. Whereas an error would cause the execution to fail, a warning would enable processing to continue. Default is false.

xquery-update-version

--xquery-update-version = 1|1.0|3|3.0|
Specifies whether the XQuery processor should use XQuery Update Facility 1.0 or XQuery Update Facility 3.0. Default value is 3.

xquery-version

--xquery-version = 1|1.0|3|3.0|3.1
Specifies whether the XQuery processor should use XQuery 1.0 or XQuery 3.0. Default value is 3.1.

4.12.8 XSLT

chartext-disable

--chartext-disable = true|false
Disables chart extensions. Default value is false.

Note: Boolean option values are set to true if the option is specified without a value.

dotnetext-disable

--dotnetext-disable = true|false
Disables .NET extensions. Default value is false.

Note: Boolean option values are set to true if the option is specified without a value.

indent-characters

--indent-characters = VALUE
Specifies the character string to be used as indentation.
**input**

`--input = FILE`

The URL of the XML file to be transformed.

**javaext-barcode-location**

`--javaext-barcode-location = FILE`

Specifies the path to the folder that contains the barcode extension file `AltovaBarcodeExtension.jar`. The path must be given in one of the following forms:

- A file URI, for example: `--javaext-barcode-location="file:///C:/Program Files/Altova/RaptorXMLXBRLServer2021/etc/jar/"`
- A Windows path with backslashes escaped, for example: `--javaext-barcode-location="C:\Program Files\Altova\RaptorXMLXBRLServer2021\etc\jar\"

**javaext-disable**

`--javaext-disable = true|false`

Disables Java extensions. Default value is `false`.

*Note:* Boolean option values are set to `true` if the option is specified without a value.

**output, xsltoutput**

`output = FILE, xsltoutput = FILE`

The URL of the primary-output file. For example, in the case of multiple-file HTML output, the primary-output file will be the location of the entry point HTML file. Additional output files, such as generated image files, are reported as `xslt-additional-output-files`. If no `--output` or `--xsltoutput` option is specified, output is written to standard output.

**param [p]**

`--p | --param = KEY:VALUE`

**XQuery**

Specifies the value of an external parameter. An external parameter is declared in the XQuery document with the `declare variable` declaration followed by a variable name and then the `external` keyword followed by the trailing semi-colon. For example:

```
declare variable $foo as xs:string external;
```

The `external` keyword `$foo` becomes an external parameter, the value of which is passed at runtime from an external source. The external parameter is given a value with the CLI command. For example:

```
--param=foo:'MyName'
```

In the description statement above, `KEY` is the external parameter name, `VALUE` is the value of the external parameter, given as an XPath expression. Parameter names used on the CLI must be declared in the XQuery document. If multiple external parameters are passed values on the CLI, each must be given a separate `--param` option. Double quotes must be used if the XPath expression contains spaces.

**XSLT**

Specifies a global stylesheet parameter. `KEY` is the parameter name, `VALUE` is an XPath expression that provides the parameter value. Parameter names used on the CLI must be declared in the stylesheet. If multiple parameters are used, the `--param` switch must be used before each parameter. Double quotes must be used around the XPath expression if it contains a space—whether
the space is in the XPath expression itself or in a string literal in the expression. For example:

```
raptorxmlxbrl xslt --input=c:\Test.xml --output=c:\Output.xml --param=date:/node[1]/@att1 --p=title:'stringwithoutspace' --param=title:'string with spaces' --p=amount:456 c:\Test.xslt
```

**streaming**

```--streaming = true|false```

Enables streaming validation. Default is true. In streaming mode, data stored in memory is minimized and processing is faster. The downside is that information that might be required subsequently—for example, a data model of the XML instance document—will not be available. In situations where this is significant, streaming mode will need to be turned off (by giving --streaming a value of false). When using the --script option with the valxml-withxsd command, disable streaming. Note that the --streaming option is ignored if --parallel-assessment is set to true.

*Note:* Boolean option values are set to true if the option is specified without a value.

**initial-template, template-entry-point**

```--initial-template, --template-entry-point = VALUE```

Gives the name of a named template in the XSLT stylesheet that is the entry point of the transformation.

**initial-mode, template-mode**

```--initial-mode, --template-mode = VALUE```

Specifies the template mode to use for the transformation.

**xpath-static-type-errors-as-warnings**

```--xpath-static-type-errors-as-warnings = true|false```

If true, degrades to warnings any type errors that are detected in the XPath static context. Whereas an error would cause the execution to fail, a warning would enable processing to continue. Default is false.

**xslt-version**

```--xslt-version = 1|1.0|2|2.0|3|3.0|3.1```

Specifies whether the XSLT processor should use XSLT 1.0, XSLT 2.0, or XSLT 3.0. Default value is 3.

### 4.12.9 JSON/Avro

**additional-schema**

```--additional-schema = FILE```

Specifies URIs of an additional schema document. The additional schema will be loaded by the main schema and can be referenced from the main schema by the additional schemas $id or $id property.

**disable-format-checks**

```--disable-format-checks = true|false```

Disables the semantic validation imposed by the format attribute. Default value is false.
Note: Boolean option values are set to true if the option is specified without a value.

```jsonc
--jsonc = true|false
```
Enables support for comments in JSON. Default value is false.

Note: Boolean option values are set to true if the option is specified without a value.

```json-lines
--json-lines = true|false
```
Enables support for JSON Lines (that is, one JSON value per line). Default value is false.

Note: Boolean option values are set to true if the option is specified without a value.

### 4.12.10 XML Signatures

```absolute-reference-uri
--absolute-reference-uri = true|false
```
Specifies whether the URI of the signed document is to be read as absolute (true) or relative (false). Default is false.

Note: Boolean option values are set to true if the option is specified without a value.

```certname, certificate-name
--certname, --certificate-name = VALUE
```
The name of the certificate used for signing.

**Windows**

This is the Subject name of a certificate from the selected --certificate-store.

*Example to list the certificates (under PowerShell)*

```bash
% ls cert://CurrentUser/My
Thumbprint Subject

C9DF64BB0AAF5FA73474D78B7CCFFC37C95BFC6C CN=certificate1
... CN=...
```

*Example:* `--certificate-name==certificate1`

**Linux/MacOS**

`--certname` specifies the file name of a PEM encoded X.509v3 certificate with the private key. Such files usually have the extension .pem.

*Example:* `--certificate-name=/path/to/certificate1.pem`

```certstore, certificate-store
```

**--certstore, --certificate-store = VALUE**
The location where the certificate specified with **--certificate-name** is stored.

**Windows**
The name of a certificate store under `cert://CurrentUser`. The available certificate stores can be listed (under PowerShell) by using `ls cert://CurrentUser/`. Certificates would then be listed as follows:

- Name: TrustedPublisher
- Name: ClientAuthIssuer
- Name: Root
- Name: UserDS
- Name: CA
- Name: ACRS
- Name: REQUEST
- Name: AuthRoot
- Name: MSIEHistoryJournal
- Name: TrustedPeople
- Name: **MyCertStore**
- Name: Local NonRemovable Certificates
- Name: SmartCardRoot
- Name: Trust
- Name: Disallowed

*Example:* **--certificate-store=**MyCertStore

**Linux/MacOS**
The **--certstore** option is currently not supported.

**digest, digest-method**

**--digest, --digest-method = sha1|sha256|sha384|sha512**
The algorithm that is used to compute the digest value over the input XML file. Available values are: `sha1|sha256|sha384|sha512`.

**hmackey, hmac-secret-key**

**--hmackey, --hmac-secret-key = VALUE**
The HMAC shared secret key; must have a minimum length of six characters.

*Example:* **--hmackey=**secretpassword

**hmaclen, hmac-output-length**

**--hmaclen, --hmac-output-length = LENGTH**
Truncates the output of the HMAC algorithm to length bits. If specified, this value must be
- a multiple of 8
- larger than 80
- larger than half of the underlying hash algorithm's output length

**keyinfo, append-keyinfo**

**--keyinfo, --append-keyinfo = true|false**
Specifies whether to include the KeyInfo element in the signature or not. The default is false.

```
- sigc14nmeth, signature-canonicalization-method
```

```
--sigc14nmeth, --signature-canonicalization-method=VALUE
```

Specifies the canonicalization algorithm to apply to the SignedInfo element. The value must be one of:

- REC-xml-c14n-20010315
- xml-c14n11
- xml-exc-c14n#

```
- sigmeth, signature-method
```

```
--sigmeth, --signature-method=VALUE
```

Specifies the algorithm to use for generating the signature.

**When a certificate is used**

If a certificate is specified, then SignatureMethod is optional and the value for this parameter is derived from the certificate. If specified, it must match the algorithm used by the certificate. Example: rsa-sha256.

**When --hmac-secret-key is used**

When HMACSecretKey is used, then SignatureMethod is mandatory. The value must be one of the supported HMAC algorithms:

- hmac-sha256
- hmac-sha384
- hmac-sha512
- hmac-sha1 (discouraged by the specification)

*Example:* hmac-sha256

```
- sigtype, signature-type
```

```
--sigtype, --signature-type=detached | enveloping | enveloped
```

Specifies the type of signature to be generated.

```
- transforms
```

```
--transforms=VALUE
```

Specifies the XML Signature transformations applied to the input document. The supported values are:

- REC-xml-c14n-20010315 for Canonical XML 1.0 (omit comments)
- xml-c14n11 for Canonical XML 1.1 (omit comments)
- xml-exc-c14n# for Exclusive XML Canonicalization 1.0 (omit comments)
- REC-xml-c14n-20010315#WithComments for Canonical XML 1.0 (with comments)
- xml-c14n11#WithComments for Canonical XML 1.1 (with comments)
- xml-exc-c14n#WithComments for Exclusive XML Canonicalization 1.0 (with comments)
- base64
- strip-whitespaces Altova extension

*Example:* --transforms=xml-c14n11
Note: This option can be specified multiple times. If specified multiple times, then the order of specification is significant. The first specified transformation receives the input document. The last specified transformation is used immediately before calculation of the digest value.

write-default-attributes
--write-default-attributes = true|false
Specifies whether to include default attribute values from the DTD in the signed document.
5 Server APIs: HTTP REST, COM/.NET, Java

RaptorXML+XBRL Server defines an HTTP REST interface, which is used by clients to dispatch validation jobs to the server. Clients can either access the HTTP REST interface directly or use the high-level COM/.NET and Java Server APIs. These APIs provide easy-to-use COM/.NET and Java classes which manage the creation and dispatch of the HTTP REST requests. The figure below shows a summary of the available HTTP REST client methods to communicate with the RaptorXML server.

There are three server APIs that can be used to communicate with RaptorXML via the HTTP REST interface (also see figure above).

- **HTTP REST client interface**
- **COM/.NET API**
- **Java API**

**Note:** The server APIs offer similar functionality as the command line interface (CLI). This includes validation and document transformations. If you wish to use advanced functionality, such as reading, extracting, and analysing data, then use the Engine APIs. The Engine APIs can provide additional information such as the count of elements, their positions in the document, and complex XBRL data access and manipulation.

**Usage**

RaptorXML+XBRL Server should be installed on a machine that is accessible by clients over the local network. Once the RaptorXML+XBRL Server service has been started, clients can connect to the server and issue commands. The following access methods are labeled as Server APIs because they provide a way to communicate with a remote RaptorXML server.

- **HTTP REST client interface**: Client requests are made in JSON format as described in the section **HTTP REST Client Interface**. Each request is assigned a job directory on the server, in which output files are saved. The server responds to the client with all the information relevant to the job.
- **COM/.NET API** and **Java API**: Applications and scripts in COM/.NET programming languages and Java applications use objects of the **RaptorXML Server API** to access
functionality of RaptorXML+XBRL Server. The RaptorXML Server API will issue the corresponding HTTP REST requests on behalf of the client. See the respective sub-sections for more information.

Licensing

RaptorXML+XBRL Server is licensed on the machine on which it is installed. Connections to RaptorXML+XBRL Server are made via HTTP.
5.1 HTTP REST Client Interface

RaptorXML+XBRL Server accepts validation jobs submitted via HTTP (or HTTPS). The job description as well as the results are exchanged in JSON format. The basic workflow is as shown in the diagram below.

---

**Security concerns related to the HTTP REST interface**

The HTTP REST interface, by default, allows result documents to be written to...
any location specified by the client (that is accessible with the HTTP protocol). It is important therefore to consider this security aspect when configuring RaptorXML+XBRL Server.

If there is a concern that security might be compromised or that the interface might be misused, the server can be configured to write result documents to a dedicated output directory on the server itself. This is specified by setting the `server.unrestricted-filesystem-access` option of the server configuration file to `false`. When access is restricted in this way, the client can download result documents from the dedicated output directory with `GET` requests. Alternatively, an administrator can copy/upload result document files from the server to the target location.

In this section
Before sending a client request, RaptorXML+XBRL Server must be started and properly configured. How to do this is described in the section Server Setup. How to send client requests is described in the section Client Requests.

5.1.1 Server Setup

RaptorXML must be licensed on the machine on which it is installed. This installation can then be accessed via an HTTP REST Interface. To correctly set up RaptorXML+XBRL Server, do the following. We assume that RaptorXML+XBRL Server has already been correctly installed and licensed.

1. RaptorXML+XBRL Server must be either started as a service or an application in order for it to be correctly accessed via HTTP or HTTPS. How to do this differs according to operating system and is described here: on Windows, on Linux, on macOS.
2. Use the initial server configuration to test the connection to the server. (The initial server configuration is the default configuration you get on installation.) You can use a simple HTTP `GET` request like `http://localhost:8087/v1/version` to test the connection. (The request can also be typed in the address bar of a browser window.) If the service is running you must get a response to an HTTP test request such as the version request above.
3. Look at the server configuration file, `server_config.xml`. If you wish to change any settings in the file, edit the server configuration file and save the changes. HTTPS is disabled by default, and will need to be enabled in the configuration file.
4. If you have edited the server configuration file, then restart RaptorXML+XBRL Server as a service so that the new configuration settings are applied. Test the connection again to make sure that the service is running and accessible.

Note: Server startup errors, the server configuration file that is used, and license errors are reported in the system log. So, refer to the system log if there are problems with the server.

For more information about HTTPS, see the section HTTPS Settings.
5.1.1.1 Starting the Server

This section:

- Location of the Server executable
- Starting RaptorXML as a service on Windows
- Starting RaptorXML as a service on Linux
- Starting RaptorXML as a service on macOS

Location of the Server executable file

The RaptorXML+XBRL Server executable is installed by default in the folder:

\ProgramFilesFolder\Altova\RaptorXMLXBRLServer2021\bin\RaptorXMLXBRL.exe

The executable can be used to start RaptorXML+XBRL Server as a service.

Starting as a service on Windows

The installation process will have registered RaptorXML+XBRL Server as a service on Windows. You must, however, start RaptorXML+XBRL Server as a service. You can do this in the following ways:

- Via the Altova ServiceController, which is available as an icon in the system tray. If the icon is not available, you can start Altova ServiceController and add its icon to the system tray by going to the Start menu, then selecting All Programs | Altova | Altova LicenseServer | Altova ServiceController.
- Via the Windows Services Management Console: Control Panel | All Control Panel Items | Administrative Tools | Services.
- Via the command prompt started with administrator rights. Use the following command under any directory: net start "AltovaRaptorXMLXBRLServer"
- Via the RaptorXML+XBRL Server executable in a command prompt window: RaptorXMLXBRLServer.exe debug. This starts the server, with server activity information going directly to the command prompt window. The display of server activity information can be turned on and off with the http.log-screen setting of the server configuration file. To stop the server, press Ctrl+Break (or Ctrl+Pause). When the server is started this way—rather than as a service as described in the three previous steps—the server will stop when the command line console is closed or when the user logs off.

Starting as a service on Linux

Start RaptorXML+XBRL Server as a service with the following command:

| [< Debian 8] | sudo /etc/init.d/raptorxmlxbrlserver start |
| [≥ Debian 8] | sudo systemctl start raptorxmlxbrlserver |
| [< CentOS 7] | sudo initctl start raptorxmlxbrlserver |
| [≥ CentOS 7] | sudo systemctl start raptorxmlxbrlserver |
| [< Ubuntu 15] | sudo initctl start raptorxmlxbrlserver |
| [≥ Ubuntu 15] | sudo systemctl start raptorxmlxbrlserver |
If at any time you need to stop RaptorXML+XBRL Server, use:

```
[< Debian 8]   sudo /etc/init.d/raptorxmlxbrlserver stop
[>= Debian 8]  sudo systemctl stop raptorxmlxbrlserver
[< CentOS 7]   sudo initctl stop raptorxmlxbrlserver
[>= CentOS 7]  sudo systemctl stop raptorxmlxbrlserver
[< Ubuntu 15]  sudo initctl stop raptorxmlxbrlserver
[>= Ubuntu 15] sudo systemctl stop raptorxmlxbrlserver
[RedHat]       sudo initctl stop raptorxmlxbrlserver
```

5.1.1.2 Testing the Connection

This section:
- GET request to test the connection
- Server response and JSON data structure listing

GET request to test the connection

After RaptorXML+XBRL Server has been started, test the connection using a GET request. (You can also type this request in the address bar of a browser window.)

```
http://localhost:8087/v1/version
```

Note: The interface and port number of RaptorXML+XBRL Server is specified in the server configuration file, server_config.xml, which is described in the next section, Server Configuration.
Server response and JSON data structure listing
If the service is running and the server is correctly configured, the request should never fail. RaptorXML+XBRL Server will return its version information as a JSON data structure (listing below).

```json
{
    "copyright": "Copyright (c) 1998-2013 Altova GmbH. ...",
    "name": "Altova RaptorXML+XBRL Server 2013 rel. 2 sp1",
    "eula": "http://www.altova.com/server_software_license_agreement.html"
}
```

**Note:** If you modify the server configuration—by editing the server configuration file—you should test the connection again.

5.1.1.3 Configuring the Server

This section:

- Server configuration file: initial settings
- Server configuration file: modifying the initial settings, reverting to initial settings
- Server configuration file: listing and settings
- Server configuration file: description of settings
- Configuring the server address

Server configuration file: initial settings

RaptorXML+XBRL Server is configured by means of a configuration file called `server_config.xml`, which is located by default at:

```
C:\Program Files (x86)\Altova\RaptorXMLXBRLServer2021\etc\server_config.xml
```

The initial configuration for RaptorXML+XBRL Server defines the following:

- A port number of 8087 as the server's port.
- That the server listens only for local connections (localhost).
- That the server writes output to `C:\ProgramData\Altova\RaptorXMLXBRLServer2021\Output\`

Other default settings are shown in the listing of `server_config.xml` below.

Server configuration file: modifying the initial settings, reverting to initial settings

If you wish to change the initial settings, you must edit the server configuration file, `server_config.xml` (see listing below), save it, and then restart RaptorXML+XBRL Server as a service.

If you wish to recreate the original server configuration file (so that the server is configured with the initial settings again), run the command `createconfig`:

```
RaptorXMLXBRLServer.exe createconfig
```
On running this command, the initial settings file will be recreated and will overwrite the file server_config.xml. The createconfig command is useful if you wish to reset server configuration to the initial settings.

Server configuration file: listing and settings
The server configuration file, server_config.xml, is listed below with initial settings. Settings available in it are explained below the listing.

server_config.xml

<config xmlns="http://www.altova.com/schemas/altova/raptorxml/config"
  xsi:schemaLocation="http://www.altova.com/schemas/altova/raptorxml/config
http://www.altova.com/schemas/altova/raptorxml/config.xsd"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xmlns:xs="http://www.w3.org/2001/XMLSchema">
  <language>en</language>
  <server.unrestricted-filesystem-access>true</server.unrestricted-filesystem-access>
  <server.output-root-dir>C:\ProgramData\Altova\RaptorXMLXBRLServer2021\output\</server.output-root-dir>
  <server.script-root-dir>C:\ProgramFiles\Altova\RaptorXMLXBRLServer2021\etc\scripts\</server.script-root-dir>
  <http.enable>true</http.enable>
  <http.environment>production</http.environment>
  <http.socket-host>127.0.0.1</http.socket-host>
  <http.socket-port>8087</http.socket-port>
  <http.log-screen>true</http.log-screen>
  <http.access-file>C:\ProgramData\Altova\RaptorXMLXBRLServer2021\Log\access.log</http.access-file>
  <http.error-file>C:\ProgramData\Altova\RaptorXMLXBRLServer2021\Log\error.log</http.error-file>
  <https.enable>false</https.enable>
  <https.socket-host>127.0.0.1</https.socket-host>
  <https.socket-port>443</https.socket-port>
  <https.private-key>C:\ProgramFiles\Altova\RaptorXMLXBRLServer2021\etc\cert\key.pem</https.private-key>
  <https.certificate>C:\ProgramFiles\Altova\RaptorXMLXBRLServer2021\etc\cert\cert.pem</https.certificate>
</config>

Settings

language
Sets the language of server messages, in an optional language element. The default value is en (English). Allowed values are en|de|es|fr|ja (English, German, Spanish, French, and Japanese, respectively). See Localization Commands for an overview of how to localize RaptorXML.

server.unrestricted-filesystem-access

- When set to true (the default value), output files will be written directly to the location specified by the user and in Python scripts (possibly overwriting existing files of the same name). Note, however, that local file paths cannot be used to access files from a remote machine via HTTP. So, if RaptorXML+XBRL Server is running on a remote machine, set the value of this option to false. Setting the value to true is only viable if the client and server are on the same machine and you want to write the output files to a directory on that machine.
- When set to false, files will be written to the job's directory in the output directory, and the URLs of these files will be included in the result document. Setting the value to false provides a layer of security, since files can be written to disk only in a dedicated and known job directory on the server. Job output files can subsequently be copied by trusted means to other locations.

server.output-root-dir
Directory in which the output of all submitted jobs is saved.

server.script-root-dir
Directory in which trusted Python scripts are to be saved. The script option, when used via the HTTP interface, will only work when scripts from this trusted directory are used. Specifying a Python script from any other directory will result in an error. See Making Python Scripts Safe.

server.default-script-api-version
Default Python API version used to run Python scripts. By default the newest version of the Python API is used. Currently supported values are 1 and 2.

server.catalog-file
URL of the XML catalog file to use. By default, the catalog file RootCatalog.xml, which is located in the folder <ProgramFilesFolder>\Altova\RaptorXMLXBRLServer2021\etc, will be used. Use the server.catalog-file setting only if you wish to change the default catalog file.

server.log-file
Name and location of the server log file. Events on the server, like Server started/stopped, are logged continuously in the system's event log and displayed in a system event viewer such as Windows Event Viewer. In addition to the viewer display, log messages can also be written to the file specified with the server.log-file option. The server log file will contain information about all activities on the server, including server startup errors, the configuration file used, and license errors.

http.enable
A boolean value to enable or disable HTTP: true | false. HTTP can be enabled/disabled independently of HTTPS, and both can be active concurrently.
http.environment
Internal environments of raptorxml: production | development. The Development environment will be more geared to the needs of developers, allowing easier debugging than when the Production environment is used.

http.socket-host
The interface via which RaptorXML+XBRL Server is accessed. If you wish RaptorXML+XBRL Server to accept connections from remote machines, uncomment the element and set its content to: 0.0.0.0, like this: <http.socket-host>0.0.0.0</http.socket-host>. This hosts the service on every addressable interface of the server machine. In this case, ensure that firewall settings are suitably configured. Inbound firewall exceptions for Altova products must be registered as follows: Altova LicenseServer: port 8088; Altova RaptorXML+XBRL Server: port 8087; Altova FlowForce Server: port 8082.

http.socket-port
The port via which the service is accessed. The port must be fixed and known so that HTTP requests can be correctly addressed to the service.

http.log-screen
If RaptorXML+XBRL Server is started with the command RaptorXMLXBRLServer.exe debug, (see Starting the Server) and if http.log-screen is set to true, then server activity is displayed in the command line console. Otherwise server activity is not displayed. The log screen is displayed in addition to the writing of log files.

http.access-file
Name and location of the HTTP access file. The access file contains information about access-related activity. It contains information that is useful for resolving connection issues.

http.error-file
Name and location of the HTTP error file. The error file contains errors related to traffic to and from the server. If there are connection problems, this file can provide useful information towards resolving them.

http.max_request_body_size
This option specifies the maximum size of the request body that RaptorXML+XBRL Server accepts. The default value is 100MB. If the size of a request body is larger than the value specified for this option, then the server responds with HTTP Error 413: Request entity too large. The option’s value must be greater than or equal to zero. The limit can be disabled with http.max_request_body_size=0.

https.enable
A boolean value to enable or disable HTTPS: true | false. HTTPS can be enabled/disabled independently of HTTP, and both can be active concurrently. HTTPS support is disabled by default and must be enabled by changing the value of this setting to true.

https.socket-host
Takes a string value which is the host address on which HTTPS connections are accepted. To accept connections from the local host only, set `localhost` or `127.0.0.1`. If you wish RaptorXML+XBRL Server to accept connections from all remote machines, set the value to: `0.0.0.0`, like this: `<https.socket-host>0.0.0.0</https.socket-host>`. This hosts the service on every addressable interface of the server machine. In this case, ensure that firewall settings are suitably configured. Inbound firewall exceptions for Altova products must be registered as follows: Altova LicenseServer: port 8088; Altova RaptorXML+XBRL Server: port 8087; Altova FlowForce Server: port 8082. You can also use IPv6 addresses such as: `::`.

**https.socket-port**
An integer value that is the port on which HTTPS is accepted. The port must be fixed and known so that HTTP requests can be correctly addressed to the service.

**https.private-key, https.certificate**
URIs that are the paths, respectively, to the server's private key and certificate files. Both are required. See [HTTPS Settings](#) and [Setting Up SSL Encryption](#) for more information. On Windows machines, you can also use Windows paths.

**https.certificate-chain**
An optional setting, this is a URI which locates the intermediate certificate file. If you have two intermediate certificates (primary and secondary), then combine them into one file as described in Step 7 at [Setting Up SSL Encryption](#). See [HTTPS Settings](#) and [Setting Up SSL Encryption](#) for more information.

---

**The RaptorXML+XBRL Server address**
The HTTP address of the server consists of the socket-host and socket-port:

```
http://{socket-host}:{socket-port}/
```

The address as set up with the initial configuration will be:

```
http://localhost:8087/
```

To change the address, modify the `http.socket-host` and `http.socket-port` settings in the server configuration file, `server_config.xml`. For example, say the server machine has an IP address of 123.12.123.1, and that the following server configuration settings have been made:

```
<http.socket-host>0.0.0.0</http.socket-host>
<http.socket-port>8087</http.socket-port>
```

RaptorXML+XBRL Server can then be addressed with:

```
http://123.12.123.1:8087/
```

**Note:** After `server_config.xml` has been modified, RaptorXML+XBRL Server must be restarted for the new values to be applied.

**Note:** If there are problems connecting to RaptorXML+XBRL Server, information in the files named in `http.access-file` and `http.error-file` can help resolve issues.
Note: Messages submitted to RaptorXML+XBRL Server must contain path names that are valid on the server machine. Documents on the server machine can be accessed either locally or remotely (in the latter case with HTTP URIs, for example).

5.1.1.4 HTTPS Settings

RaptorXML+XBRL Server supports startup not only as an HTTP server, but also as an HTTPS server. Both types of connection may be active concurrently.

Enabling HTTPS

HTTPS support is disabled by default. To enable HTTPS, in the server configuration file, server_config.xml, change the https.enable setting to true. Modify the various HTTPS settings of the configuration file according to your server requirements.

Private key and certificate

You can obtain a private key and certificate files in one of the following ways:

- From a certificate authority: Follow the steps described in the section Setting Up SSL Encryption.
- Create a self-signed certificate by using the following OpenSSL command (suitably modified for your environment):
  
  openssl req -x509 -newkey rsa:4096 -nodes -keyout key.pem -out cert.pem -days 365 -subj "/C=AT/ST=vienna/L=vienna/O=Altova GmbH/OU=dev/CN=www.altova.com"

Testing the connection

A good way to test your connection is via the curl command line tool for transferring data with URLs. You can use the following command:

  curl.exe https://localhost:443/v1/version

If the certificate is not trusted, use the -k option, like this:

  curl.exe -k https://localhost:443/v1/version

The following command executes the HTTP Python example that is distributed with RaptorXML+XBRL Server:

  python3.exe examples\ServerAPI\python\RunRaptorXML.py --host localhost -p 443 -s

5.1.1.5 Setting Up SSL Encryption

If you wish to encrypt your RaptorXML+XBRL Server data transfers using the SSL protocol, you will need to:

- Generate an SSL private key and create an SSL public key certificate file
- Set up RaptorXML+XBRL Server for SSL communication.
The steps to do this are listed below.

This method uses the open-source OpenSSL toolkit to manage SSL encryption. The steps listed below, therefore, need to be carried out on a computer on which OpenSSL is available. OpenSSL typically comes pre-installed on most Linux distributions and on macOS machines. It can also be installed on Windows computers. For download links to installer binaries, see the OpenSSL Wiki.

To generate a private key and obtain a certificate from a certificate authority, do the following:

1. **Generate a private key**

   SSL requires that a **private key** is installed on RaptorXML+XBRL Server. This private key will be used to encrypt all RaptorXML+XBRL Server data. To create the private key, use the following OpenSSL command:
   
   ```
   openssl genrsa -out private.key 2048
   ```
   
   This creates a file called `private.key`, which contains your private key. Note where you save the file. You will need the private key to (i) generate the Certificate Signing Request (CSR), and (ii) be installed on RaptorXML+XBRL Server.

2. **Certificate Signing Requests (CSRs)**

   A Certificate Signing Request (CSR) is sent to a certificate authority (CA), such as VeriSign or Thawte, to request a public key certificate. The CSR is based on your private key and contains information about your organization. Create a CSR with the following OpenSSL command (which provides the private-key file, `private.key`, that was created in Step 1, as one of its parameters):
   
   ```
   openssl req -new -nodes -key private.key -out my.csr
   ```
   
   During generation of the CSR you will need to give information about your organization, such as that listed below. This information will be used by the certificate authority to verify your company's identity.

   - **Country**
   - **Locality** (the city where your business is located)
   - **Organization** (your company name). **Do not use special characters; these will invalidate your certificate**
   - **Common Name** (the DNS name of your server). **This must exactly match your server's official name, that is, the DNS name client apps will use to connect to the server**
   - **A challenge password. Keep this entry blank!**

3. **Buy an SSL certificate**

   Purchase an SSL certificate from a recognized certificate authority (CA), such as VeriSign or Thawte. For the rest of these instructions, we follow the VeriSign procedure. The procedure with other CAs is similar.

   - Go to the VeriSign website.
   - Click **Buy SSL Certificates**.
• Different types of SSL certificates are available. For RaptorXML+XBRL Server, Secure Site or Secure Site Pro certificates should be sufficient. EV (extended verification) is not necessary, since there is no “green address bar” for users to see.
• Proceed through the sign-up process, and fill in the information required to place your order.
• When prompted for the CSR (created in Step 2), copy and paste the content of the `my.csr` file into the order form.
• Pay for the certificate with your credit card.

### Allow time for obtaining a certificate

Obtaining public key certificates from an SSL certificate authority (CA) typically takes **two to three business days**. Please take this into account when setting up your RaptorXML+XBRL Server.

4. Receive public key from CA

Your certificate authority will complete the enrollment process over the next two to three business days. During this time you might get emails or phone calls to check whether you are authorized to request an SSL certificate for your DNS domain. Please work with the authority to complete the process.

After the authorization and enrollment process has been completed, you will get an email containing the **public key** of your SSL certificate. The public key will be in plain text form or attached as a `.cer` file.

5. Save public key to file

For use with RaptorXML+XBRL Server, the public key must be saved in a `.cer` file. If the public key was supplied as text, copy-paste all the lines from

```plaintext
--BEGIN CERTIFICATE--
...
--END CERTIFICATE--
```

into a text file that we will call `mycertificate.cer`.

6. Save CA’s intermediate certificates to file

To complete your SSL certificate, you will need two additional certificates: the **primary** and **secondary intermediate certificates**. Your certificate authority (CA) will list content of intermediate certificates on its website.

- Verisign's intermediate certificates for its Secure Site product: [https://knowledge.verisign.com/support/ssl-certificates-support/index?page=content&id=AR1735](https://knowledge.verisign.com/support/ssl-certificates-support/index?page=content&id=AR1735)
Copy-paste both intermediate certificates (primary and secondary) into separate text files and save them on your computer.

7. Optionally combine certificates in one public key certificate file

You now have three certificate files:

- Public key (mycertificate.cer)
- Secondary intermediate certificate
- Primary intermediate certificate

You can integrate your intermediate certificates into your public key certificate if you like. How to do this is described below. (Alternatively, you can use the https.certificate-chain configuration file setting to specify the location of intermediate certificates.)

Each contains text blocks bracketed by lines that look like this:

```
--BEGIN CERTIFICATE--
...
--END CERTIFICATE--
```

Now copy-paste all three certificates into one file so that they are in sequence. The order of the sequence is important: (i) public key, (ii) secondary intermediate certificate, (iii) primary intermediate certificate. Ensure that there are no lines between certificates.

```
--BEGIN CERTIFICATE--
  public key from mycertificate.cer (see Step 5)
--END CERTIFICATE--
--BEGIN CERTIFICATE--
  secondary intermediate certificate (see Step 6)
--END CERTIFICATE--
--BEGIN CERTIFICATE--
  primary intermediate certificate (see Step 6)
--END CERTIFICATE--
```

Save the resulting combined certificate text to a file named publickey.cer. This is the public key certificate file of your SSL certificate. It includes your public key certificate as well as the complete chain of trust in the form of the intermediate certificates that were used by the CA to sign your certificate.

### 5.1.2 Client Requests

After RaptorXML+XBRL Server has been started as a service, its functionality can be accessed by any HTTP client which can:

- use the HTTP methods GET, PUT, POST, and DELETE
- set the Content-Type header field
An easy-to-use HTTP client

There are a number of web clients available for download from the Internet. An easy-to-use and reliable web client we found was Mozilla's RESTClient, which can be added as a Firefox plugin. It's easy to install, supports the HTTP methods required by RaptorXML, and provides sufficiently good JSON syntax coloring. If you have no previous experience with HTTP clients, you might want to try RESTClient. Note, however, that installation and usage of RESTClient is at your own risk.

A typical client request would consist of a series of steps as shown in the diagram below.

The important points about each step are noted below. Key terms are in bold.
1. An HTTP POST method is used to make a request, with the body of the request being in JSON format. The request could be for any functionality of RaptorXML+XBRL Server. For example, the request could be for a validation, or for an XSLT transformation. The commands, arguments, and options used in the request are the same as those used on the command line. The request is posted to: http://localhost:8087/v1/queue, assuming localhost:8087 is the address of RaptorXML+XBRL Server (the initial address of the server). Such a request is termed a RaptorXML+XBRL Server job.

2. If the request is received and accepted for processing by RaptorXML+XBRL Server, a result document containing the results of the server action will be created after the job has been processed. The URI of this result document (the Result-Doc-URI in the diagram above), is returned to the client. Note that the URI will be returned immediately after the job has been accepted (queued) for processing and even if processing has not been completed.

3. The client sends a request for the result document (using the result document URI) in a GET method to the server. If processing of the job has not yet started or has not yet been completed at the time the request is received, the server returns a status of Running. The GET request must be repeated till such time that job processing has been completed and the result document been created.

4. RaptorXML+XBRL Server returns the result document in JSON format. The result document might contain the URIs of error or output documents produced by RaptorXML+XBRL Server processing the original request. Error logs are returned, for example, if a validation returned errors. Primary output documents, such as the result of an XSLT transformation, are returned if an output-producing job is completed successfully.

5. The client sends the URLs of the output documents received in Step 4 via an HTTP GET method to the server. Each request is sent in a separate GET method.

6. RaptorXML+XBRL Server returns the requested documents in response to the GET requests made in Step 5.

7. The client can delete unwanted documents on the server that were generated as a result of a job request. This is done by submitting, in an HTTP DELETE method, the URI of the result document in question. All files on disk related to that job are deleted. This includes the result document file, any temporary files, and error and output document files. This step is useful for freeing up space on the server's hard disk.

The details of each step are described in the sub-sections of this section.

### 5.1.2.1 Initiating Jobs with POST

*This section:*

- Sending the request
- JSON syntax for POST requests
- Uploading files with the POST request
- Uploading ZIP archives
Sending the request

A RaptorXML+XBRL Server job is initiated with the HTTP POST method

<table>
<thead>
<tr>
<th>HTTP Method</th>
<th>URI</th>
<th>Content-Type</th>
<th>Body</th>
</tr>
</thead>
<tbody>
<tr>
<td>POST</td>
<td><a href="http://localhost:8087/v1/queue/">http://localhost:8087/v1/queue/</a></td>
<td>application/json</td>
<td>JSON</td>
</tr>
</tbody>
</table>

Note the following points:

- The URI above has a server address that uses the settings of the initial configuration.
- The URI has a /v1/queue/ path, which must be present in the URI. It can be considered to be an abstract folder in memory into which the job is placed.
- The correct version number /vN is the one that the server returns (and not necessarily the one in this documentation). The number that the server returns is the version number of the current HTTP interface. Previous version numbers indicate older versions of the HTTP interface, which are still supported for backward compatibility.
- The header must contain the field: Content-Type: application/json. However, if you wish to upload files within the body of the POST request, then the message header must have its content type set to multipart/form-data (i.e. Content-Type: multipart/form-data). See the section Uploading files with the POST request for details.
- The body of the request must be in JSON format.
- Files to be processed must be on the server. So files must either be copied to the server before a request is made, or be uploaded along with the POST request. In this case the message header must have its content type set to multipart/form-data. See the section Uploading files with the POST request below for details.

To check the well-formedness of an XML file, the request in JSON format would look something like this:

```json
{
    "command": "wfxml", "args": [ "file:///c:/Test/Report.xml" ]
}
```

Valid commands, and their arguments and options, are as documented in the Command Line section.

JSON syntax for HTTP POST requests

```json
{
    "command": "Command-Name",
    "options": {"opt1": "opt1-value", "opt2": "opt2-value"},
    "args" : ["file:///c:/filename1", "file:///c:/filename2"]
}
```

- All black text is fixed and must be included. This includes all braces, double quotes, colons, commas, and square brackets. Whitespace can be normalized.
Blue italics are placeholders and stand for command names, options and option values, and argument values. Refer to the command line section for a description of the commands.

The **command** and **args** keys are mandatory. The **options** key is optional. Some **options** keys have default values; so, of these options, only those for which the default values need to be changed need be specified.

All strings must be enclosed in double quotes. Boolean values and numbers must not have quotes. So: {"error-limit": "unlimited"} and {"error-limit": 1} is correct usage.

Notice that file URIs—rather than file paths—are recommended and that they use forward slashes. Windows file paths, if used, take backslashes. Furthermore, Windows file-path backslashes must be escaped in JSON (with backslash escapes; so "c:\dir\filename"). Note that file URIs and file paths are strings and, therefore, must be in quotes.

Here is an example with options. Notice that some options (like input or xslt-version) take a straight option value, while others (like param) take a key-value pair as their value, and therefore require a different syntax.

```
{
  "command": "xslt",
  "args": [
    "file:///C:/Work/Test.xslt"
  ],
  "options": {
    "input": "file:///C:/Work/Test.xml",
    "xslt-version": "1",
    "param": {
      "key": "myTestParam",
      "value": "SomeParamValue"
    },
    "output": "file:///C:/temp/out2.xml"
  }
}
```

The example below shows a third type of option: that of an array of values (as for the xsd option below). In this case, the syntax to be used is that of a JSON Array.

```
{
  "command": "xsi",
  "args": [
    "file:///C:/Work/Test.xml"
  ],
  "options": {
    "xsd": ["file:///C:/Work/File1.xsd", "file:///C:/Work/File2.xsd"]
  }
}
```
Uploading files with the POST request

Files to be processed can be uploaded within the body of the POST request. In this case, the POST request must be made as follows.

**Request header**

In the request header, set `Content-Type: multipart/form-data` and specify any arbitrary string as the boundary. Here is an example header:

```plaintext
Content-Type: multipart/form-data; boundary=----PartBoundary
```

The purpose of the boundary is to set the boundaries of the different form-data parts in the request body (see below).

**Request body: Message part**

The body of the request has the following form-data parts, separated by the boundary string specified in the request header (see above):

- *Mandatory form-data parts:* `msg`, which specifies the processing action requested, and `args`, which contains the files to be uploaded as the argument/s of the command specified in the `msg` form-data part. See the listing below.
- *Optional form-data part:* A form-data part name `additional-files`, which contains files referenced from files in the `msg` or `args` form-data parts. Additionally form-data parts named after an option of the command can also contain files to be uploaded.

**Note:** All uploaded files are created in a single virtual directory.

See Example-1 (with Callouts): Validate XML for a detailed explanation of the code, and Example-2: Using a Catalog to Find the Schema.

---

**Testing with CURL**

You can use a third-party data-transfer application such as CURL (http://curl.haxx.se/) to test the POST request. CURL provides a helpful trace option that generates and lists the part boundaries of the requests. This will save you the task of manually creating the part boundaries. How you can use CURL is described in the section, Testing with CURL.

---

**Uploading ZIP archives**

ZIP archives can also be uploaded, and files within a ZIP can be referenced by using the `additional-files` scheme. For example:

```plaintext
additional-files:///mybigarchive.zip%7Czip/biginstance.xml
```
Note: The `zip/` part needs to be URI-escaped as `%7Czip/` in order to conform to the URI RFC since the pipe symbol is not directly allowed. The use of glob patterns (`*` and `?`) is also allowed. So you can use something like this to validate all XML files within the ZIP archive:

```json
{"command": "xsi", "args": ["additional-files:///mybigarchive.zip%7Czip/*.xml"], "options": {...}}
```

See Example-3: Using ZIP Archives for a listing of example code.

### 5.1.2.1.1 Example-1 (with Callouts): Validate XML

Given below is a listing of the body of a POST request. It has numbered callouts that are explained below. The command submitted in the listing request would have the following CLI equivalent:

```
raptorxmlxbrl xsi First.xml Second.xml --xsd=Demo.xsd
```

The request is for the validation of two XML files according to a schema. The body of the request would look something like this, assuming that `---PartBoundary` has been specified in the header as the boundary string (see Request Header above).

```
-----PartBoundary
Content-Disposition: form-data; name="msg"
Content-Type: application/json

{"command": "xsi", "options": {}, "args": []}
-----PartBoundary
Content-Disposition: attachment; filename="First.xml"; name="args"
Content-Type: application/octet-stream

```xml
<test xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">42</test>
```

-----PartBoundary
Content-Disposition: attachment; filename="Second.xml"; name="args"
Content-Type: application/octet-stream

```xml
<test xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">35</test>
```

-----PartBoundary
Content-Disposition: attachment; filename="Demo.xsd"; name="additional-files"
Content-Type: application/octet-stream

```xml
---PartBoundary
```
The name of the main form-data part boundaries are declared in the request header. The part boundary separator must be a unique string that will not occur anywhere in the embedded documents. It is prefixed with two dashes and is used to separate the multiple parts. The first form-data part in this example is `msg`. Note that the content type is `application/json`.

This is the standard syntax for HTTP POST requests. If `args` contains a reference to a file and if additional files are uploaded, both sets of files will be passed to the server.

The first member of the `args` array is a file attachment called `First.xml`.

The text of the file `First.xml`. It contains a reference to a schema called `Demo.xsd`, which will also be uploaded—in the additional-files form-data part.

The second member of the `args` array is an attachment called `Second.xml`.

The text of the file `Second.xml`. It too contains a reference to the schema `Demo.xsd`. See callout 7.

The first additional files part contains the `Demo.xsd` attachment metadata.

The text of the file `Demo.xsd`.

The end of the `Demo.xsd` additional files part, and the additional-files form-data part. Note that the last part boundary separator is both prefixed and postfixed with two dashes.

### 5.1.2.1.2 Example-2: Using a Catalog to Find the Schema

In this example, a catalog file is used to find the XML schema that is referenced by the XML files to be validated.

```json
{"command": "xsi", "args": ["additional-files:///First.xml", "additional-files:///Second.xml"], "options": {"user-catalog": "additional-files:///catalog.xml"}}
```
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<?xml version="1.0" encoding="UTF-8"?>
<test xsi:noNamespaceSchemaLocation="http://example.com/Demo.xsd"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">42</test>
-----PartBoundary
Content-Disposition: attachment; filename="Second.xml"; name="additional-files"
Content-Type: application/octet-stream
<?xml version="1.0" encoding="UTF-8"?>
<test xsi:noNamespaceSchemaLocation="http://example.com/Demo.xsd"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">35</test>
-----PartBoundary
Content-Disposition: attachment; filename="Demo.xsd"; name="additional-files"
Content-Type: application/octet-stream
<?xml version="1.0" encoding="UTF-8"?>
<xs:schema xmlns:xs="http://www.w3.org/2001/XMLSchema" elementFormDefault="qualified"
attributeFormDefault="unqualified">
<xs:element name="test" type="xs:int"/>
</xs:schema>
-----PartBoundary
Content-Disposition: attachment; filename="catalog.xml"; name="additional-files"
Content-Type: application/octet-stream
<?xml version='1.0' encoding='UTF-8'?>
<catalog xmlns='urn:oasis:names:tc:entity:xmlns:xml:catalog'
xmlns:xsi='http://www.w3.org/2001/XMLSchema-instance'
xsi:schemaLocation='urn:oasis:names:tc:entity:xmlns:xml:catalog Catalog.xsd'>
<uri name="http://example.com/Demo.xsd" uri="additionalfiles:///Demo.xsd"/>
</catalog>
-----PartBoundary--

5.1.2.1.3

Example-3: Using ZIP Archives

ZIP archives can also be uploaded, and files within a ZIP can be referenced by using the additional-files
scheme. For example:
additional-files:///mybigarchive.zip%7Czip/biginstance.xml

Note:

The |zip/ part needs to be URI-escaped as %7Czip/ in order to conform to the URI RFC since the
pipe | symbol is not directly allowed. The use of glob patterns (* and ?) is also allowed. So you can
use something like this to validate all XML files within the ZIP archive:
{“command”: “xsi”, “args”: [“additional-files:///mybigarchive.zip%7Czip/*.xml”],
“options”: {…}}

Note:

'Content-Disposition: form-data' is also valid, in addition to 'Content-Disposition:
attachment'. Since several tools generate form-data as content-disposition, the value form-data is

accepted as valid.

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Example: Validating all XML files in a ZIP archive

In this example, it is assumed that all schema references are relative paths and that all schemas are contained within the zip.

```
-----PartBoundary
Content-Disposition: form-data; name="msg"
Content-Type: application/json

{"command": "xsi", "args": ["additional-files:///Demo.zip%7Czip/*.xml"], "options": {}}
-----PartBoundary
```

Example: Validating XML files in a ZIP archive containing references to external schemas

In this example, the XML files in a ZIP archive are validated using references to an external schema, which is provided in a second ZIP archive.

```
-----PartBoundary
Content-Disposition: form-data; name="msg"
Content-Type: application/json

{"command": "xsi", "args": ["additional-files:///Instances.zip%7Czip/*.xml"], "options":
{"user-catalog": "additional-files:///Schemas.zip%7Czip/catalog.xml"}}
-----PartBoundary
```

Binary content of Demo.zip archive

```
-----PartBoundary--
```

Binary content of Instances.zip archive

```
-----PartBoundary--
```

Binary content of Schemas.zip archive

```
-----PartBoundary--
```
5.1.2.1.4 Testing with CURL

The third-party application CURL (http://curl.haxx.se/) is a command line utility that you can use to test the `POST` request. CURL provides a very useful trace option that generates and lists the part boundaries of requests, which you can use directly in your requests or as a reference.

Given below is a sample test scenario in which an XML file is validated against an XML Schema. We assume the following:

- the commands below are executed from the folder in which the files to be submitted for validation are located; (this enables us to write simple relative paths to these files). If you have installed Altova's XMLSpy application, the files used in this example can be found in the application's Examples folder, which is located by default at: C:\Users\<username>\Documents\Altova\XMLSpy2021\Examples
- RaptorXML+XBRL Sener is running locally on port 8087

For more information about the CURL command line options, see the CURL Help.

**Call CURL with the validation command on Windows**

```powershell
$path\to\curl.exe -F "msg={"command": "xsi", "args":[]}" -F "additional-files=@PurchaseOrder.zip;type=application/octet-stream" http://localhost:8087/v1/queue
```

**Note:** In powershell, if quotes occur within quotes, different types of quotes (single/double) must be used.

```cmd
$path\to\curl.exe -F "msg={"command": "xsi", "args":[]}" -F "additional-files=@PurchaseOrder.zip;type=application/octet-stream" http://localhost:8087/v1/queue
```

**[output]**

```
{"jobid": "058F9E97-CB95-43EF-AC0A-496CD3AC43A3", "result": "/v1/results/058F9E97-CB95-43EF-AC0A-496CD3AC43A3"}
```

**Use the URL of "result" to fetch the result**

```powershell
$path\to\curl.exe http://localhost:8087/v1/results/058F9E97-CB95-43EF-AC0A-496CD3AC43A3
```

**[output]**

```
{"jobid": "058F9E97-CB95-43EF-AC0A-496CD3AC43A3", "state": "OK", "error": {}, "jobs": [{"file": "additional-files:///PurchaseOrder.zip?%7Czip/ipo.xml", "jobid": "D4B91CBO-CF03-4D29-B563-B6506E123A06", "output": {}, "state": "OK", "error": {}}]}
```
**CURL's trace option**

CURL has a trace option (`--trace-ascii`), which traces the HTTP traffic sent to and from the server. The option is very useful since it lists the part boundaries that are required for initiating jobs with POST. You can use the information in the trace, either directly or as a reference, to create the part boundaries. The listing below shows the trace obtained by running the command given above.

---

**Trace listing**

```
== Info: Trying ::1...
== Info: Connected to localhost (::1) port 8087 (#0)
> Send header, 217 bytes (0xd9)
0000: POST /v1/queue HTTP/1.1
0019: Host: localhost:8087
002f: User-Agent: curl/7.42.1
0048: Accept: */*
0055: Content-Length: 2939
006b: Expect: 100-continue
0081: Content-Type: multipart/form-data; boundary=-------------------------
00c1: ----d887ed58324015c3
00d7: <= Recv header, 23 bytes (0x17)
0000: HTTP/1.1 100 Continue
> Send data, 393 bytes (0x189)
0000: --------------------------d887ed58324015c3
002c: Content-Disposition: form-data; name="msg"
0058: Content-Type: application/json
0078: 007a: {"command": "xsi", "args": ["additional-files:///PurchaseOrder.zip%7Czip/ipo.xml"], "options": {}}
00dc: --------------------------d887ed58324015c3
0108: Content-Disposition: form-data; name="additional-files"; filename="PurchaseOrder.zip"
0148: e="PurchaseOrder.zip"
015f: Content-Type: application/octet-stream
0187: > Send data, 2498 bytes (0x9c2)
0000: PK........".6).c.....M........ipo.xsd.T.N.8.}N....O 5v.)....S....( 0040: .JU/...$Y..5.{.E.8.....I*...g...Y...\.....Z........P.A.ct....8y. 0940: ..........".6]g........1....................address.xsdPK....... 0980: ...."....6I.vorporfrofipr......ipo.xmlPK.............. 09c0: ...
> Send data, 48 bytes (0x30)
0000: 0002: --------------------------d887ed58324015c3--
<= Recv header, 22 bytes (0x16)
0000: HTTP/1.1 201 Created
<= Recv header, 13 bytes (0xd)
0000: Allow: POST
<= Recv header, 32 bytes (0x20)
0000: Content-Type: application/json
<= Recv header, 37 bytes (0x25)
0000: Date: Fri, 24 Jul 2015 16:58:08 GMT
<= Recv header, 24 bytes (0x18)
```

---
0000: Server: CherryPy/3.6.0
< Recv header, 21 bytes (0x15)
0000: Content-Length: 111
< Recv header, 2 bytes (0x2)
0000:
< Recv data, 111 bytes (0x6f)
0000: {"jobid": "058F9E97-CB95-43EF-AC0A-496CD3AC43A3", "result": "/v1
0040: /results/058F9E97-CB95-43EF-AC0A-496CD3AC43A3"}
== Info: Connection #0 to host localhost left intact

Note: Notice from the above listing that 'Content-Disposition: form-data' is also valid, in addition to 'Content-Disposition: attachment'.

Call CURL with the well-formed-check command on Linux

/path/to/curl -F 'msg={"command": "wfxml", "args"[:];type=application/json' -F
"args=@ipo.xml;type=application/octet-stream" http://localhost:8087/v1/queue

/path/to/curl -F 'msg={"command": "wfxml", "args": ["additional-files:///ipo.zip%
7Czip/ipo.xml"]};type=application/json' -F "additional-
files=@ipo.zip;type=application/octet-stream" http://localhost:8087/v1/queue

5.1.2.2 Server Response to POST Request

This section:

- Overview of possible server responses
- Response: Request failed, no response from server
- Response: Request communicated, but job rejected by server
- Response: Job executed (with positive or negative result)

When a POST request is made successfully to the server, the job is placed in the server queue. A 201 Created message and a result document URI are returned. The job will be processed at the earliest. In the meantime, if the result document is requested, a "status": "Running" message is returned if the job has not been completed; the client should try again at a later time. A Dispatched state indicates that the job is in the server queue but has not yet been started.

The result of the job (for example, a validation request) may be negative (validation failed) or positive (validation successful). In either case a 201 Created message is returned and a result document is generated. It is also possible that the POST request was not communicated to the server (Request failed), or the request was communicated but the job was rejected by the server (Request communicated, but job rejected). The various possible outcomes are shown in the diagram below.
The possible outcomes to the client's POST request are as follows:

**Request failed, no response from server**
When requests cannot be made successfully to the server, the most common errors are those listed below:

<table>
<thead>
<tr>
<th>Message</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>404 Not Found</td>
<td>The correct path is: <a href="http://localhost:8087/v1/queue/">http://localhost:8087/v1/queue/</a></td>
</tr>
<tr>
<td>405 Method Not Allowed</td>
<td>Specified method is invalid for this resource. Use the POST method.</td>
</tr>
<tr>
<td>415 Unsupported Media Type</td>
<td>The message header should be Content-Type:application/json.</td>
</tr>
</tbody>
</table>

**Request communicated, but job rejected by server**
When requests are made successfully to the server, the server could reject them for the following reasons:

<table>
<thead>
<tr>
<th>Message</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>400 Bad Request (bad cmd)</td>
<td>The RaptorXML command is incorrect.</td>
</tr>
<tr>
<td>400 Bad Request (json error)</td>
<td>The request body has a JSON syntax error.</td>
</tr>
</tbody>
</table>
Job executed (with positive or negative result)
When a job (for example, a validation job) is executed, its result can be positive (OK) or negative (Failed). For example, the result of a validation job is positive (OK) when the document to be validated is valid, negative (Failed) if the document is invalid.

In both cases, the job is executed, but with different results. A 201 Created message is returned in both cases as soon as the job is successfully placed in the queue. Also, in both cases a result document URI is returned to the HTTP client that made the request. (The result document itself might not yet have been created if processing of the job has not yet started or completed.) After the result document has been created, it can be fetched with an HTTP GET request. In addition to the result document, other documents may be generated also, as follows:

- **Job executed with result 'Failed':** An error log is created in three formats: text, long XML, and short XML. The URIs of these three documents are sent in the result document (which is in JSON format). The URIs can be used in an HTTP GET request to fetch the error documents.
- **Job executed with result 'OK':** The job is processed successfully and output documents—such as the output produced by an XSLT transformation—are created. If output files have been generated, their URIs are sent in the JSON-format result document. The URIs can then be used in an HTTP GET request to fetch the output documents. Note that not all jobs will have output files; for example, a validation job. Also a job can finish with a state of 'OK', but there might have been warnings and/or other messages that were written to error files. In this case, error file URIs are also sent in the result document (that is, in addition to output documents).

See [Getting the Result Document](#) and [Getting Error/Output Documents](#) for a description of these documents and how to access them.

### 5.1.2.3 Getting the Result Document

This section:

- The Result Document URI
- Fetching the Result Document
- Result Document containing URIs of error documents
- Result Document containing URIs of output documents
- Result Document containing no URI
- Accessing error and output documents listed in the Result Document

The Result Document URI
A result document will be created every time a job is created, no matter whether the result of a job (for example, a validation) is positive (document valid) or negative (document invalid). In both cases a 201 Created message is returned. This message will be in JSON format and will contain a relative URI of the result document. The JSON fragment will look something like this:

```
{ 
  "result": "/v1/results/E6C4262D-8ADB-49CB-8693-990DF79EABEB",
}
```
The `result` object contains the relative URI of the result document. The URI is relative to the server address. For example, if the server address is `http://localhost:8087/` (the initial configuration address), then the expanded URI of the result document specified in the listing above will be:

```
http://localhost:8087/v1/results/E6C4262D-8ADB-49CB-8693-990DF79EABEB
```

**Note:** The correct version number `/vN` is the one that the server returns (and is not necessarily the one in this documentation). The number that the server returns is the version number of the current HTTP interface. Previous version numbers indicate older versions of the HTTP interface, which, however, are still supported for backward compatibility.

### Fetching the Result Document

To get the result document submit the document's expanded URI (see above), in an HTTP GET request. The result document is returned and could be one of the generic types described below.

**Note:** When a job is successfully placed in the server queue, the server returns the URI of the result document. If the client requests the result before the job has been started (it is still in the queue), a "status": "Dispatched" message will be returned. If the job has been started but not completed (say, because it is a large job), a "status": "Running" message will be returned. In these two situations, the client should wait for some time before making a fresh request for the result document.

**Note:** The example documents below all assume restricted client access. So error documents, message documents, and output documents are all assumed to be saved in the relevant job directory on the server. The URIs for them in the result document are therefore all relative URIs. None is a file URI (which would be the kind of URI generated in cases of unrestricted client access). For the details of these URIs, see the section Getting Error/Message/Output Documents.

#### Result document containing URIs of error documents

If the requested job finished with a state of *Failed*, then the job returned a negative result. For example, a validation job returned a document-invalid result. The errors encountered while executing the job are stored in error logs, created in three file formats: (i) text, (ii) long-XML (detailed error log), and (iii) short-XML (less-detailed error log). See the JSON listing below.

```
{
  "jobid": "6B4EE31B-FAC9-4834-B50A-582FABF47B58",
  "state": "Failed",
  "error": {
    "text": "/v1/results/6B4EE31B-FAC9-4834-B50A-582FABF47B58/error/error.txt",
    "longxml": "/v1/results/6B4EE31B-FAC9-4834-B50A-582FABF47B58/error/long.xml",
    "shortxml": "/v1/results/6B4EE31B-FAC9-4834-B50A-582FABF47B58/error/short.xml"
  },
  "jobs": [
    {
      "file": "file:///c:/Test/ExpReport.xml",
      "jobid": "20008201-219F-4790-BB59-C091C276FED2",
      "output":
    }
  ]
}
```
Note the following:

- Jobs have sub-jobs.
- Errors at sub-job level propagate up to the top-level job. The state of the top-level job will be OK only if all of its sub-jobs have a state of OK.
- Each job or sub-job has its own error log.
- Error logs include warning logs. So, even though a job finishes with a state of OK, it might have URIs of error files.
- The URIs of the error files are relative to the server address (see above).

**Result document containing URIs of output documents**

If the requested job finished with a state of OK, then the job returned a positive result. For example, a validation job returned a document-valid result. If the job produced an output document—for example, the result of an XSLT transformation—then the URI of the output document is returned. See the JSON listing below.

```json
{
    "jobid": "5E47A3E9-D229-42F9-83B4-CC11F8366466",
    "state": "OK",
    "error": {}
}
```

```json
"jobs": [
    {
        "file": "file:///c:/Test/SimpleExample.xml",
        "jobid": "D34B5684-C6FF-4A7A-BF35-EBB9A8A8C2C8",
        "output": {
            "xslt-output-file": [
                "/v1/results/D34B5684-C6FF-4A7A-BF35-EBB9A8A8C2C8/output/1"
            ],
            "state": "OK",
            "output-mapping": {
                "/v1/results/D34B5684-C6FF-4A7A-BF35-EBB9A8A8C2C8/output/1": "file:///c:/temp/test.html"
            },
            "error": {}       
        }
    }
]
Note the following:

- The output file is created in the `output folder` of the job. You can use its relative URI to access the file.
- The URIs of the output files are relative to the server address (see above).
- The `output-mapping` item maps the output document in the job directory on the server to the file location specified by the client in the job request. Notice that only output documents specified by the client in the job request have a mapping; job-related files generated by the server (such as error files) have no mapping.
- Alternatively, it is possible to retrieve all the generated result documents for a specific job as a zip archive using the URL `/v1/results/JOBID/output/zip`. This feature is not available in unrestricted filesystem mode. Please note that the zip archive will contain mangled file names, which need to be mapped back to the actual names using the `output-mapping` object.

**Result document containing no URI**

If the requested job finished with a state of `OK`, then the job returned a positive result. For example, a validation job returned a document-valid result. Some jobs—such as a validation or well-formed-test—produce no output document. If a job of this type finishes with a state of `OK`, then the result document will have neither the URI of an output document nor the URI of an error log. See the JSON listing below.

```json
{
    "jobid": "3FC8B90E-A2E5-427B-B9E9-27CB7BB6B405",
    "state": "OK",
    "error": {
    },
    "jobs": [
    {
        "file": "file:///c:/Test/SimpleExample.xml",
        "jobid": "532F14A9-F9F8-4FED-BCDA-16A17A848FEA",
        "output": {
        },
        "state": "OK",
        "error": {
        }
    }
    ]
}
```

Note the following:

- Both the output and error components of the sub-job in the listing above are empty.
- A job could finish with a state of `OK` but still contain warnings or other messages, which are logged in error files. In such cases, the result document will contain URIs of error files even though the job finished with a state of `OK`.

**Accessing error and output documents listed in the Result Document**

Error and output documents can be accessed with HTTP `GET` requests. These are described in the next section, [Getting Error/Output Documents](#).
5.1.2.4 Getting Error/Message/Output Documents

A result document can contain the file URIs or relative URIs of error documents, message documents (such as logs), and/or output documents. (There are some situations in which a result document might not contain any URI.) The various kinds of URIs are described below.

To access these documents via HTTP, do the following:

1. Expand the relative URI of the file in the result document to its absolute URI
2. Use the expanded URI in an HTTP GET request to access the file

URIs (in the result document) of error/message/output documents

The result document contains URIs of error, message, and/or output documents. Error and message documents are job-related documents that are generated by the server; they are always saved in the job directory on the server. Output documents (such as the output of XSLT transformations) can be saved to one of the following locations:

- To any file location accessible to the server. For output files to be saved to any location, the server must be configured to allow the client unrestricted access (the default setting).
- To the job directory on the server. The server is configured to restrict client access.

If a client specifies that an output file be created, the location to which the output file is saved will be determined by the server.unrestricted-filesystem-access option of the server configuration file.

- If access is unrestricted, the file will be saved to the location specified by the client and the URI returned for the document will be a file URI.
- If access is restricted, the file will be saved to the job directory and its URI will be a relative URI. Additionally, there will be a mapping of this relative URI to the file URL specified by the client. (See the listing of Result document containing URIs of output documents.)

In summary, therefore, the following kinds of URIs will be encountered:

File URI of error/message documents
These documents are saved in the job directory on the server. File URIs will have this form:

```
file://<output-root-dir>/JOBID/message.doc
```

File URI of output documents
These documents are saved at any location. File URIs will have this form:

```
file://<path-to-file>/output.doc
```

HTTP URI of error/message/output documents
These documents are saved in the job directory on the server. URIs are relative to the server address and must be expanded to the full HTTP URI. The relative will have this form:

```
/vn/results/JOBID/error/error.txt for error documents
/vn/results/JOBID/output/verbose.log for message documents
/vn/results/JOBID/output/1 for output documents
```

In the case of output documents, output mappings are given (see example listing). These mappings map each output document URI in the result document to the corresponding document in the client request.
Expand the relative URI

Expand the relative URI in the result document to an absolute HTTP URI by prefixing the relative URI with the server address. For example, if the server address is:

http://localhost:8087/ (the initial configuration address)

and the relative URI of an error file in the result document is:

/v1/results/20008201-219F-4790-BB59-C091C276FED2/error/error.txt

then the expanded absolute address will be


For more related information, see the sections: Configuring the Server and Getting the Result Document.

Use an HTTP GET request to access the file

Use the expanded URI in an HTTP GET request to obtain the required file. RaptorXML+XBRL Server returns the requested document.

5.1.2.5 Freeing Server Resources after Processing

RaptorXML+XBRL Server keeps the result document file, temporary files, and error and output document files related to a processed job on hard disk. These files can be deleted in one of two ways:

- By providing the URI of the result document with the HTTP DELETE method. This deletes all files related to the job indicated by the submitted result-document URI, including error and output documents.
- Manual deletion of individual files on the server by an administrator.

The structure of the URI to use with the HTTP DELETE method is as shown below. Notice that the full URI consists of the server address plus the relative URI of the result document.

<table>
<thead>
<tr>
<th>HTTP Method</th>
<th>URI</th>
</tr>
</thead>
<tbody>
<tr>
<td>DELETE</td>
<td><a href="http://localhost:8087/v1/result/D405A84A-AB96-482A-96E7-4399885FAB0F">http://localhost:8087/v1/result/D405A84A-AB96-482A-96E7-4399885FAB0F</a></td>
</tr>
</tbody>
</table>

To locate the output directory of a job on disk, construct the URI as follows:

[
<server.output-root-dir> see server configuration file] + [jobid]

Note: Since a large number of error and output document files can be created, it is advisable to monitor hard disk usage and schedule deletions according to your environment and requirements.
5.2  COM/.NET API

RaptorXML+XBRL Server is licensed on the machine on which it is installed. The .NET interface is built as a wrapper around the COM interface. The COM and .NET interfaces of RaptorXML+XBRL Server use a single API: the COM/.NET API of RaptorXML+XBRL Server (object reference here).

You can use RaptorXML+XBRL Server with:

- Scripting languages, such as JavaScript, via the COM interface
- Programming languages, such as C#, via the .NET interface

5.2.1  COM Interface

RaptorXML+XBRL Server is automatically registered as a COM server object when RaptorXML+XBRL Server is installed. So it can be invoked from within applications and scripting languages that have programming support for COM calls. If you wish to change the location of the RaptorXML+XBRL Server installation package, it is best to de-install RaptorXML+XBRL Server and then re-install it at the required location. In this way the necessary de-registration and registration are carried out by the installer process.

Check the success of the registration

If the registration was successful, the Registry will contain the RaptorXML.Server classes. These classes will typically be found under HKEY_LOCAL_MACHINE\SOFTWARE\Classes.

Code examples

- A VBScript example showing how the RaptorXML API can be used via its COM interface is listed in the following topic.
- An example file corresponding to this listing is available in the examples/API folder of the RaptorXML application folder.

5.2.2  COM Example: VBScript

The VBScript example below is structured into the following parts:

- **Set up and initialize the RaptorXML COM object**
- **Validate an XML file**
- **Perform an XSLT transformation, return the result as a string**
- **Process an XQuery document, save the result in a file**
- **Set up the execution sequence of the script and its entry point**

' The RaptorXML COM object
dim objRaptor

' Initialize the RaptorXML COM object
sub Init
    On Error Resume Next
    objRaptor = Null
    Set objRaptor = WScript.GetObject( "", "RaptorXML.Server" )
    On Error Goto 0
    if ( IsNull( objRaptor ) ) then
        Set objRaptor = WScript.GetObject( "", "RaptorXML_x64.Server" )
    end if
    objRaptor.ErrorLimit = 1
    objRaptor.ReportOptionalWarnings = true
    objRaptor.ServerName = "::1"
    objRaptor.ServerPort = 8087
end sub

sub ValidateXML
    objXMLValidator = objRaptor.GetXMLValidator()
    objXMLValidator.InputFileName = "MyXMLFile.xml"
    if ( objXMLValidator.IsValid() ) then
        MsgBox( "Input string is valid" )
    else
        MsgBox( objXMLValidator.LastErrorMessage )
    end if
end sub

sub RunXSLT
    objXSLT = objRaptor.GetXSLT
    objXSLT.InputXMLFileName = "MyXMLFile.xml"
    objXSLT.XSLFileName = "MyTransformation.xsl"
    MsgBox( objXSLT.ExecuteAndGetResultAsString() )
end sub

' Execute an XQuery; save the result in a file
sub RunXQuery
    ' Get an XQuery engine instance from the Server object
    dim objXQ
    set objXQ = objRaptor.GetXQuery()

    ' Configure input data
    objXQ.InputXMLFileName = "MyXMLFile.xml"
    objXQ.XQueryFileName = "MyQuery.xq"

    ' Configure serialization (optional - for fine-tuning the result's formatting)
    objXQ.OutputEncoding = "UTF8"
    objXQ.OutputIndent = true
    objXQ.OutputMethod = "xml"
    objXQ.OutputOmitXMLDeclaration = false

    ' Run the query; the result will be serialized to the given path
    call objXQ.Execute( "MyQueryResult.xml" )
end sub

' Perform all sample functions
sub main
    Init
    ValidateXML
    RunXSLT
    RunXQuery
end sub

' Script entry point; run the main function
main

5.2.3 .NET Interface

The .NET interface is built as a wrapper around the RaptorXML+XBRL Server COM interface. It is provided as a primary interop assembly signed by Altova; it uses the namespace Altova.RaptorXMLServer.

Adding the RaptorXML DLL as a reference to a Visual Studio .NET project

In order to use RaptorXML+XBRL Server in your .NET project, add a reference to the RaptorXML DLL (Altova.RaptorXMLServer.dll) in your project. Your RaptorXML+XBRL Server installation contains a signed DLL file, named Altova.RaptorXMLServer.dll. This DLL file will automatically be added to the global assembly cache (GAC) when RaptorXML+XBRL Server is installed using the RaptorXML+XBRL Server installer. The GAC is typically in the folder: C:\WINDOWS\assembly.

To add the RaptorXML DLL as a reference in a .NET project, do the following:

1. With the .NET project open, click Project | Add Reference. The Add Reference dialog (screenshot below) pops up.
2. In the Browse tab, go to the folder: `<RaptorXML application folder>/bin`, select the RaptorXML DLL `Altova.RaptorXMLServer.dll`, and click OK.
3. Select the command View | Object Browser to see the objects of the RaptorXML API.

Once the `Altova.RaptorXMLServer.dll` is available to the .NET interface and RaptorXML has been registered as a COM server object, RaptorXML functionality will be available in your .NET project.

**Note:** RaptorXML will automatically be registered as a COM server object during installation. There is no need for a manual registration.

**Note:** If you receive an access error, check that permissions are correctly set. Go to Component Services and give permissions to the same account that runs the application pool containing RaptorXML.

**Code examples**

A [C# example](#) and a [Visual Basic .NET example](#) showing how the RaptorXML API can be used via its .NET interface are listed in the following topics. The files corresponding to these listings are available in the `examples/serverAPI` folder of the RaptorXML application folder.

### 5.2.4 .NET Example: C#

The C# example below does the following:
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·
·
·
·

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Set up and initialize the RaptorXML .NET object 309
Validate an XML file 309
Perform an XSLT transformation, return the result as a string 309
Process an XQuery document, save the result in a file 310
Set up the execution sequence of the code and its entry point 310

using System;
using System.Text;
using Altova.RaptorXMLServer;
namespace RaptorXMLRunner
{
class Program
{
// The RaptorXML Server .NET object
static ServerClass objRaptorXMLServer;
// Initialize the RaptorXML Server .NET object
static void Init()
{
// Allocate a RaptorXML Server object
objRaptorXMLServer = new ServerClass();
// Configure the server: error reporting, HTTP server name and port
// (IPv6 localhost in this example)
objRaptorXMLServer.ErrorLimit = 1;
objRaptorXMLServer.ReportOptionalWarnings = true;
objRaptorXMLServer.ServerName = "::1"
objRaptorXMLServer.ServerPort = 8087
}

// Validate one file
static void ValidateXML()
{
// Get a validator engine instance from the Server object
XMLValidator objXMLValidator = objRaptorXMLServer.GetXMLValidator();
// Configure input data
objXMLValidator.InputFileName = "MyXMLFile.xml";
// Validate; in case of invalid file,
report the problem returned by RaptorXML
if ( objXMLValidator.IsValid() )
Console.WriteLine( "Input string is valid" );
else
Console.WriteLine( objXMLValidator.LastErrorMessage );
}

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// Perform an XSLT transformation, and
// return the result as a string
static void RunXSLT()
{
    // Get an XSLT engine instance from the Server object
    XSLT objXSLT = objRaptorXMLServer.GetXSLT();

    // Configure input data
    objXSLT.InputXMLFileName = "MyXMLFile.xml";
    objXSLT.XSLFileName = "MyTransformation.xsl";

    // Run the transformation.
    // In case of success, the result is returned.
    // In case of errors, an error listing
    Console.WriteLine( objXSLT.ExecuteAndGetResultAsString() );
}

// Execute an XQuery, save the result in a file
static void RunXQuery()
{
    // Get an XQuery engine instance from the Server object
    XQuery objXQuery = objRaptorXMLServer.GetXQuery();

    // Configure input data
    objXQuery.InputXMLFileName = exampleFolder + "simple.xml";
    objXQuery.XQueryFileName = exampleFolder + "CopyInput.xq";

    // Configure serialization (optional, for better formatting)
    objXQuery.OutputEncoding = "UTF8"
    objXQuery.OutputIndent = true
    objXQuery.OutputMethod = "xml"
    objXQuery.OutputOmitXMLDeclaration = false

    // Run the query; result serialized to given path
    objXQuery.Execute( "MyQueryResult.xml" );
}

static void Main(string[] args)
{
    try
    {
        // Entry point. Perform all functions
        Init();
        ValidateXML();
        RunXSLT();
        RunXQuery();
    }
    catch (System.Exception ex)
    {

Option Explicit On
Imports Altova.RaptorXMLServer

Module RaptorXMLRunner

' The RaptorXML .NET object
Dim objRaptor As Server

' Initialize the RaptorXML .NET object
Sub Init()

' Allocate a RaptorXML object
objRaptor = New Server()

' Configure the server: error reporting, HTTP server name and port (IPv6 localhost in this example)
objRaptor.ErrorLimit = 1
objRaptor.ReportOptionalWarnings = True
objRaptor.ServerName = '::1'
objRaptor.ServerPort = 8087
End Sub

' Validate one file
Sub ValidateXML()

' Get a validator instance from the RaptorXML object
Dim objXMLValidator As XMLValidator
objXMLValidator = objRaptor.GetXMLValidator()

' Configure input data
objXMLValidator.InputFileName = "MyXMLFile.xml"

' Validate; in case of invalid file report the problem returned by RaptorXML
Console.WriteLine( ex.Message );
Console.WriteLine( ex.ToString() );

"5.2.5 .NET Example: Visual Basic .NET"

The Visual Basic example below does the following:

- Set up and initialize the RaptorXML .NET object
- Validate an XML file
- Perform an XSLT transformation, return the result as a string
- Process an XQuery document, save the result in a file
- Set up the execution sequence of the code and its entry point
If (objXMLValidator.IsValid()) Then
    Console.WriteLine("Input string is valid")
Else
    Console.WriteLine(objXMLValidator.LastErrorMessage)
End If
End Sub

' Perform a transformation; return the result as a string
Sub RunXSLT()

' Get an XSLT engine instance from the Server object
Dim objXSLT As XSLT
objXSLT = objRaptor.GetXSLT()

' Configure input data
objXSLT.InputXMLFileName = "MyXMLFile.xml"
objXSLT.XSLFileName = "MyTransformation.xsl"

' Run the transformation; in case of success the result will be returned, in case of errors the engine returns an error listing
Console.WriteLine(objXSLT.ExecuteAndGetResultAsString())
End Sub

' Execute an XQuery; save the result in a file
Sub RunXQuery()

' Get an XQuery engine instance from the Server object
Dim objXQ As XQuery
objXQ = objRaptor.GetXQuery()

' Configure input data
objXQ.InputXMLFileName = "MyXMLFile.xml"
objXQ.XQueryFileName = "MyQuery.xq"

' Configure serialization (optional - for fine-tuning the result's formatting)
objXQ.OutputEncoding = "UTF8"
objXQ.OutputIndent = true
objXQ.OutputMethod = "xml"
objXQ.OutputOmitXMLDeclaration = false

' Run the query; the result will be serialized to the given path
objXQ.Execute("MyQueryResult.xml")
End Sub

Sub Main()
' Entry point; perform all sample functions
Init()
ValidateXML()
RunXSLT()
RunXQuery()
End Sub
End Module
5.3 Java API

The RaptorXML+XBRL Server API can be accessed from Java code. To access RaptorXML+XBRL Server from Java code, the libraries listed below must be listed in the classpath. These libraries are installed in the `bin` folder of the installation folder.

- RaptorXMLServer.jar: The library that communicates with the RaptorXML server using HTTP requests
- RaptorXMLServer_JavaDoc.zip: A Javadoc file containing help documentation for the Java API

**Note:** In order to use the Java API, the Jar file must be on the Java Classpath. You may copy the Jar file to any location if this fits your project setup better than referencing it from the installed location.

### 5.3.1 Overview of the Interface

The Java API is packaged in the `com.altova.raptorxml` package. The `RaptorXML` class provides an entry-point method called `getFactory()`, which returns `RaptorXMLFactory` objects. So, a `RaptorXMLFactory` instance can be created with the call: `RaptorXML.getFactory()`.

The `RaptorXMLFactory` interface provides methods for getting engine objects for validation and other processing functionality (such as XSLT transformation).

#### RaptorXMLFactory

The public `RaptorXMLFactory` interface is described by the following listing:

```java
public interface RaptorXMLFactory {
    public XMLValidator getXMLValidator();
    public XBRL getXBRL();
    public XMLDSig getXMLDSig();
    public XQuery getXQuery();
    public XSLT getXSLT();
    public void setServerName(String name) throws RaptorXMLException;
    public void setServerPath(String path) throws RaptorXMLException;
    public void setServerPort(int port) throws RaptorXMLException;
    public void setGlobalCatalog(String catalog);
    public void setUserCatalog(String catalog);
    public void setGlobalResourcesFile(String file);
    public void setGlobalResourceConfig(String config);
    public void setErrorFormat(RaptorXMLException format);
    public void setErrorLimit(int limit);
    public void setReportOptionalWarnings(boolean report);
}
```

For more details, see the descriptions of `RaptorXMLFactory` and the respective Java methods. Also see the Example Java Project.
### 5.3.2 Example Java Project

The Java code listing below shows how basic functionality can be accessed. It is structured into the following parts:

- Locate the examples folder, and create a RaptorXML COM object instance
- Validate an XML file
- Perform an XSLT transformation, return the result as a string
- Process an XQuery document, return the result as a string
- Run the project

This basic functionality is included in the files in the `examples/API` folder of the RaptorXML+XBRL Server application folder.

```java
public class RunRaptorXML {
    // Locate samples installed with the product
    // (will be two levels higher from examples/API/Java)
    // REMARK: You might need to modify this path
    static final String strExamplesFolder = System.getProperty("user.dir") + "/../../";

    static com.altova.raptorxml.RaptorXMLFactory rxml;

    static void ValidateXML() throws com.altova.raptorxml.RaptorXMLException {
        com.altova.raptorxml.XMLValidator xmlValidator = rxml.getXMLValidator();
        System.out.println("RaptorXML Java - XML validation");
        xmlValidator.setInputFromText("<!DOCTYPE root [ <!ELEMENT root (#PCDATA)> ]>
        <root>simple input document</root>");
        if (xmlValidator.isWellFormed())
            System.out.println("The input string is well-formed");
        else
            System.out.println("Input string is not well-formed: " +
                xmlValidator.getLastErrorMessage());

        if (xmlValidator.isValid())
            System.out.println("The input string is valid");
        else
            System.out.println("Input string is not valid: " +
                xmlValidator.getLastErrorMessage());
    }

    static void RunXSLT() throws com.altova.raptorxml.RaptorXMLException {
        System.out.println("RaptorXML Java - XSL Transformation");
        com.altova.raptorxml.XSLT xsltEngine = rxml.getXSLT();
        xsltEngine.setInputXMLFileName(strExamplesFolder + "simple.xml");
    }
}
```
xsltEngine.setXSLFileName( strExamplesFolder + "transform.xsl" );
String result = xsltEngine.executeAndGetResultAsString();
if( result == null )
    System.out.println( "Transformation failed: " +
xsltEngine.getLastErrorMessage() );
else
    System.out.println( "Result is " + result );
}

static void RunXQuery() throws com.altova.raptorxml.RaptorXMLException
{
    System.out.println("RaptorXML Java - XQuery execution");
    com.altova.raptorxml.XQuery xqEngine = rxml.getXQuery();
    xqEngine.setInputXMLFileName( strExamplesFolder + "simple.xml" );
    xqEngine.setXQueryFileName( strExamplesFolder + "CopyInput.xq" );
    System result = xqEngine.executeAndGetResultAsString();
    if( result == null )
        System.out.println( "Execution failed: " + xqEngine.getLastErrorMessage() );
    else
        System.out.println( "Result is " + result );
}

public static void main(String[] args)
{
    try
    {
        rxml = com.altova.raptorxml.RaptorXML.getFactory();
        rxml.setErrorLimit( 3 );

        ValidateXML();
        RunXSLT();
        RunXQuery();
    }
    catch( com.altova.raptorxml.RaptorXMLException e )
    {
        e.printStackTrace();
    }
}
5.4 Server API Reference

This section describes the RaptorXML+XBRL Server API: its object model and the details of its interfaces and enumerations. The API description applies to both the COM/.NET and Java interfaces. While the structure of the API is the same for both interfaces, the names of methods and properties are different. For this reason, each method, property, and enumeration is described with a separate signature for COM/.NET and Java.

The starting point for using the functionality of RaptorXML+XBRL Server is the IServer interface (COM/.NET) or RaptorXMLFactory class (Java).

5.4.1 Interfaces/Classes

The starting point for using the functionality of RaptorXML is the IServer interface (COM/.NET) or RaptorXMLFactory class (Java). This object contains the objects that provide the RaptorXML functionality: XML validation, XBRL validation, XQuery document and XML Signature processing, and XSLT transformations.

The hierarchy of the object model is shown below, and the interfaces are described in detail in the corresponding sections. The methods and properties of each interface are described in the section for that interface.

IServer (COM/.NET) / RaptorXMLFactory (Java)
|-- IXBRL (COM/.NET) / XBRL (Java)
|-- IXMDSig (COM/.NET) / XMLDSig (Java)
|-- IXMLValidator (COM/.NET) / XMLValidator (Java)
|-- IXSLT (COM/.NET) / XSLT (Java)
|-- IXQuery (COM/.NET) / XQuery (Java)

5.4.1.1 IServer/RaptorXMLFactory

Use the IServer/RaptorXMLFactory interface to access the RaptorXML engine that you want. Note that the name of the interface in the COM/.NET API is different than that of the interface in the Java API:

- In COM/.NET: IServer
- In Java: RaptorXMLFactory

The methods and properties of IServer/RaptorXMLFactory are described in this section.

Java API entry-point method

The Java API is packaged in the com.altova.raptorxml package. The RaptorXML class provides an entry-point method called getFactory(), which returns RaptorXMLFactory objects. So, a RaptorXMLFactory instance can be created with the call: RaptorXML.getFactory().
5.4.1.1.1 Methods

The methods of the IServer (COM/.NET) and RaptorXMLFactory (Java) interfaces return an instance of the respective RaptorXML engine or class: XBRL, XMLDSig, XML Validator, XSLT, and XQuery.

<table>
<thead>
<tr>
<th>COM/.NET</th>
<th>Java</th>
</tr>
</thead>
<tbody>
<tr>
<td>GetXBRL</td>
<td>getXBRL</td>
</tr>
<tr>
<td>GetXMLDsig (for XML Signatures)</td>
<td>getXMLDsig (for XML Signatures)</td>
</tr>
<tr>
<td>GetXMLValidator</td>
<td>getXMLValidator</td>
</tr>
<tr>
<td>GetXQuery</td>
<td>getXQuery</td>
</tr>
<tr>
<td>GetXSLT</td>
<td>getXSLT</td>
</tr>
</tbody>
</table>

5.4.1.1.1.1 GetXBRL

Returns an instance of the XBRL Engine.

**COM and .NET**

*Signature:*

\[IXBRL\] GetXBRL()

**Java**

*Signature:*

\[public XBRL\] getXBRL()

5.4.1.1.1.2 GetXMLDsig (for XML Signatures)

Returns an instance of the XML Signature interface/class (XMLDSig).

**COM and .NET**

*Signature:*

\[IXMLDsig\] GetXMLDsig()

**Java**

*Signature:*

\[public XMLDsig\] getXMLDsig()
5.4.1.1.1.3  GetXMLValidator
Returns an instance of the XML Validator Engine.

COM and .NET

Signature: IXMLValidator.GetXMLValidator()

Java

Signature: public XMLValidator.getXMLValidator()

5.4.1.1.1.4  GetXQuery
Returns an instance of the XQuery Engine.

COM and .NET

Signature: IXQueryGetXQuery()

Java

Signature: public XQuery getXQuery()

5.4.1.1.1.5  GetXSLT
Returns an instance of the XSLT Engine.

COM and .NET

Signature: IXSLTGetXSLT()

Java

Signature: public XSLT getXSLT()
5.4.1.1.2 Properties

The properties of the IServer (COM/.NET) and RaptorXMLFactory (Java) interfaces are described in this section.

<table>
<thead>
<tr>
<th>COM/.NET</th>
<th>Java</th>
</tr>
</thead>
<tbody>
<tr>
<td>APIMajorVersion</td>
<td>getAPIMajorVersion</td>
</tr>
<tr>
<td>APIMinorVersion</td>
<td>getAPIMinorVersion</td>
</tr>
<tr>
<td>APIServicePackVersion</td>
<td>getAPIServicePackVersion</td>
</tr>
<tr>
<td>ErrorFormat</td>
<td>setErrorFormat</td>
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<tr>
<td>ErrorLimit</td>
<td>setErrorLimit</td>
</tr>
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<td>GlobalCatalog</td>
<td>setGlobalCatalog</td>
</tr>
<tr>
<td>GlobalResourceConfig</td>
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<td>GlobalResourcesFile</td>
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<tr>
<td>Is64Bit</td>
<td>ss64Bit</td>
</tr>
<tr>
<td>MajorVersion</td>
<td>getMajorVersion</td>
</tr>
<tr>
<td>MinorVersion</td>
<td>getMinorVersion</td>
</tr>
<tr>
<td>ProductName</td>
<td>getProductName</td>
</tr>
<tr>
<td>ProductNameAndVersion</td>
<td>getProductNameAndVersion</td>
</tr>
<tr>
<td>ReportOptionalWarnings</td>
<td>setReportOptionalWarnings</td>
</tr>
<tr>
<td>ServerName</td>
<td>setServerName</td>
</tr>
<tr>
<td>ServerPath</td>
<td>setServerPath</td>
</tr>
<tr>
<td>ServerPort</td>
<td>setServerPort</td>
</tr>
<tr>
<td>ServicePackVersion</td>
<td>getServicePackVersion</td>
</tr>
<tr>
<td>UserCatalog</td>
<td>setUserCatalog</td>
</tr>
</tbody>
</table>

5.4.1.1.2.1 APIMajorVersion

Returns the major version of the API as an integer. The API major version can be different from the product's major version if the API is connected to another server.
**5.4.1.1.2.2 APIMinorVersion**

Returns the minor version of the API as an integer. The API minor version can be different from the product's minor version if the API is connected to another server.

**COM and .NET**

**Signature:**  

```java
public int getAPIMinorVersion()
```

**Java**

**Signature:**  

```java
public int getAPIMinorVersion()
```

**5.4.1.1.2.3 APIServicePackVersion**

Returns the service pack version of the API as an integer. The service pack version of the API can be different from the product's service pack version if the API is connected to another server.

**COM and .NET**

**Signature:**  

```java
public int getAPIServicePackVersion()
```

**Java**

**Signature:**  

```java
public int getAPIServicePackVersion()
```

**5.4.1.1.2.4 ErrorFormat**

Sets the RaptorXML error format to one of the ENUMErrorFormat literals (Text, ShortXML, LongXML).

**COM and .NET**

**Signature:**  

```java
ErrorFormat(ENUMErrorFormat format)
```
Java

Signature: `public void setErrorFormat(ENUMErrorFormat format)`

5.4.1.1.2.5  ErrorLimit

Sets the RaptorXML validation error limit. The `limit` parameter is of type `int` (Java), `uint` (COM/.NET), and specifies the number of errors to be reported before execution is halted. Use -1 to set `limit` to be unlimited (that is, all errors will be reported). The default value is 100.

COM and .NET

Signature: `ErrorLimit(uint limit)`

Java

Signature: `public int setErrorLimit(int limit)`

5.4.1.1.2.6  GlobalCatalog

Sets the location, as a URL, of the main (entry-point) catalog file. The supplied string must be an absolute URL that gives the exact location of the main catalog file to use.

COM and .NET

Signature: `GlobalCatalog(string catalog)`

Java

Signature: `public void setGlobalCatalog(string catalog)`

5.4.1.1.2.7  GlobalResourceConfig

Sets the active configuration of the global resource. The `config` parameter is of type `String`, and specifies the name of the configuration used by the active global resource.

COM and .NET

Signature: `GlobalResourceConfig(string config)`
Java

Signature: public void setGlobalResourceConfig(string config)

5.4.1.1.2.8 GlobalResourcesFile

Sets the location, as a URL, of the Global Resources XML File. The supplied string must be an absolute URL that gives the exact location of the Global Resources XML File.

COM and .NET

Signature: GlobalResourcesFile(string url)

Java

Signature: public void setGlobalResourcesFile(string url)

5.4.1.1.2.9 Is64Bit

Checks if the application is a 64-bit executable. Returns boolean true if the application is 64 bit, false if it is not. Example: For Altova RaptorXML+XBRL Server 2021r2sp1(x64), returns true. If an error occurs, a RaptorXMLException is raised.

COM and .NET

Signature: boolean Is64Bit()

Java

Signature: public boolean is64Bit()

5.4.1.1.2.10 MajorVersion

Returns the major version of the product as an integer. Example: For Altova RaptorXML+XBRL Server 2018r2sp1(x64), returns 20 (the difference between the major version (2018) and the initial year 1998). If an error occurs, a RaptorXMLException is raised.

COM and .NET
**5.4.1.1.2.11  MinorVersion**

Returns the minor version of the product as an integer. *Example:* For **Altova RaptorXML+XBRL Server 2021r2sp1(x64)**, returns 2 (from the minor version number r2). If an error occurs, a `RaptorXMLException` is raised.

**COM and .NET**

**Signature:** `int MinorVersion()`

**Java**

**Signature:** `public int getMinorVersion()`

---

**5.4.1.1.2.12  ProductName**

Returns the name of the product as a string. *Example:* For **Altova RaptorXML+XBRL Server 2021r2sp1(x64)**, returns **Altova RaptorXML+XBRL Server**. If an error occurs, a `RaptorXMLException` is raised.

**COM and .NET**

**Signature:** `string ProductName()`

**Java**

**Signature:** `public string getProductName()`

---

**5.4.1.1.2.13  ProductNameAndVersion**

Returns the product name, major version, minor version, and service pack version of the product as a string. *Example:* For **Altova RaptorXML+XBRL Server 2021r2sp1(x64)**, returns **Altova RaptorXML+XBRL Server 2021r2sp1(x64)**. If an error occurs, a `RaptorXMLException` is raised.
COM and .NET

Signature: `string ProductNameAndVersion()`

Java

Signature: `public string getProductNameAndVersion()`

5.4.1.1.2.14 ReportOptionalWarnings

Enables/disables the reporting of warnings. A value of `true` enables warnings; `false` disables them.

COM and .NET

Signature: `ReportOptionalWarnings(boolean report)`

Java

Signature: `public void setReportOptionalWarnings(boolean report)`

5.4.1.1.2.15 ServerName

Sets the name of the HTTP server through which the connection to RaptorXML+XBRL Server is made. The input parameter is a string that gives the name of the HTTP server. If an error occurs, a `RaptorXMLException` is raised.

COM and .NET

Signature: `ServerName(string name)`

Java

Signature: `public void setServerName(string name)`
5.4.1.1.2.16  **ServerPath**

Specifies, in the form of a URL, the path to the HTTP server.

**COM and .NET**

*Signature:* `ServerPath(string path)`

**Java**

*Signature:* `public void setServerPath(string path)`

5.4.1.1.2.17  **ServerPort**

Sets the port on the HTTP server via which the service is accessed. The port must be fixed and known so that HTTP requests can be correctly addressed to the service. The input parameter is an integer that specifies the access port on the HTTP server. If an error occurs, a `RaptorXMLException` is raised.

**COM and .NET**

*Signature:* `ServerPort(int port)`

**Java**

*Signature:* `public void setServerPort(int port)`

5.4.1.1.2.18  **ServicePackVersion**

Returns the service pack version of the product as an integer. **Example:** For RaptorXML+XBRL Server 2021r2sp1(x64), returns 1 (from the service pack version number sp1). If an error occurs, a `RaptorXMLException` is raised.

**COM and .NET**

*Signature:* `int ServicePackVersion()`

**Java**

*Signature:* `public int getServicePackVersion()`
5.4.1.1.2.19 UserCatalog

Sets the location, as a URL, of the custom user catalog file. The supplied string must be an absolute URL that gives the exact location of the custom catalog file to use.

**COM and .NET**

*Signature:* `UserCatalog(string userCatalog)`

**Java**

*Signature:* `public void setUserCatalog(string userCatalog)`

5.4.1.2 RaptorXMLException

Generates an exception that contains information about an error that occurs during processing. The `message` parameter provides information about the error.

**COM and .NET**

*Signature:* `RaptorXMLException(string message)`

**Java**

*Signature:* `public void RaptorXMLException(string message)`

5.4.1.3 XBRL

The `IXBRL/XBRL` interface/class provides methods to validate XBRL instance and taxonomy documents, as well as methods to evaluate formulas and generate XBRL tables. Validations results are boolean `true` or `false`. The interface also enables formula parameters to be passed through for formula evaluation. Formula assertions and formula output can also be read and be returned as strings. The properties of the interface define its parameters.

Note that the name of the interface in the COM/.NET API is different than that of the class in the Java API:

- In COM/.NET: `IXBRL`
- In Java: `XBRL`

**Note:** Where string inputs are to be interpreted as URLs, absolute paths should be used. If a relative path is used, a mechanism to resolve the relative path should be defined in the calling module.
COM/.NET structures
The following COM/.NET structure is defined.

```csharp
public struct XBRLParamValuePair
{
    string ParamType;
    string ParamValue;
}
```

Java utility class
The following Java utility class is defined.

```java
public class ParamValuePair
{
    public String paramType;
    public String paramValue;
    public ParamValuePair( String type, String value )
    {
        paramType = type;
        paramValue = value;
    }
}
```

5.4.1.3.1 Methods
The methods of the IXBRL interface (COM/.NET) and XBRL class (Java) are described in this section.

<table>
<thead>
<tr>
<th>COM/.NET</th>
<th>Java</th>
</tr>
</thead>
<tbody>
<tr>
<td>AddAssertionForProcessing</td>
<td>addAssertionForProcessing</td>
</tr>
<tr>
<td>AddAssertionSetForProcessing</td>
<td>addAssertionSetForProcessing</td>
</tr>
<tr>
<td>AddExternalDTS</td>
<td>addExternalDTS</td>
</tr>
<tr>
<td>AddFormulaArrayParameter</td>
<td>addFormulaArrayParameter</td>
</tr>
<tr>
<td>AddFormulaForProcessing</td>
<td>addFormulaForProcessing</td>
</tr>
<tr>
<td>AddFormulaParameter</td>
<td>addFormulaParameter</td>
</tr>
<tr>
<td>AddFormulaParameterNamespace</td>
<td>addFormulaParameterNamespace</td>
</tr>
<tr>
<td>AddIXBRLTransformationRegistryLimit</td>
<td>addIXBRLTransformationRegistryLimit</td>
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<tr>
<td>AddPythonScriptFile</td>
<td>setPythonScriptFile</td>
</tr>
<tr>
<td>AddTableForProcessing</td>
<td>addTableForProcessing</td>
</tr>
<tr>
<td>AddTaxonomyPackage</td>
<td>addTaxonomyPackage</td>
</tr>
</tbody>
</table>
5.4.1.3.1.1 AddAssertionForProcessing

Limits assertion evaluation to the given assertion only. Call multiple times to specify more than one assertion. The supplied string holds the name of the assertion set. Use ##none for no assertion, and ##all for all assertions.

**COM and .NET**

*Signature:* `AddAssertionForProcessing(string assertion)`

**Java**

*Signature:* `public void addAssertionForProcessing(string assertion)`

5.4.1.3.1.2 AddAssertionSetForProcessing

Limits assertion set execution to the given assertion set only. Call multiple times to specify more than one assertion set. The supplied string holds the name of the assertion set. Use ##none for processing no assertion set and ##all for processing all assertion sets.
COM and .NET

Signature: `AddAssertionSetForProcessing(string assertionSet)`

Java

Signature: `public void addAssertionSetForProcessing(string assertionSet)`

5.4.1.3.1.3   AddExternalDTS

Specifies the URL of an external DTS (Discoverable Taxonomy Set) that will be used for XBRL evaluation.

COM and .NET

Signature: `AddExternalDTS(string DTS)`

Java

Signature: `public void addExternalDTS(string DTS)`

5.4.1.3.1.4   AddFormulaArrayParameter

Adds an array-parameter used in the formula evaluation process. All the arguments are strings:

- `type` is the default datatype of non-pair values inside array values; default is `xs:string`;
- `name` is the parameter's name;
- `values` is an array of value and datatype-value pairs.

For more information and code samples, see the section, `XBRL Formula Parameters`.

COM and .NET

Signature: `AddFormulaArrayParameter(string type, string name, object[] values)`

Java

Signature: `public void addFormulaArrayParameter(string type, string name, object[] values)`
5.4.1.3.1.5  AddFormulaForProcessing

Limits formula execution to the given formula only. Call multiple times to specify more than one formula. The supplied string holds the name of the formula. Use \#none for processing no formula and \#all for processing all formulas.

**COM and .NET**

*Signature:* AddFormulaForProcessing(*string* formula)

**Java**

*Signature:* `public void addFormulaForProcessing(string formula)`

5.4.1.3.1.6  AddFormulaParameter

Adds a parameter used in the formula evaluation process. Each parameter must be specified in a separate call to the method. If this method is used, the namespace is passed to AddFormulaParameterNamespace. All the arguments are strings:

- `type` is a string that gives the parameter's datatype;
- `name` is the parameter's name;
- `value` is a string that gives the parameter's value;
- `namespace` is a string that gives the parameter's namespace; default is the empty string.

For more information and code samples, see the section, [XBRL Formula Parameters](#).

**COM and .NET**

*Signature:* AddFormulaParameter(*string* type, *string* name, *string* value, *string* namespace)

**Java**

*Signature:* `public void addFormulaParameter(string type, string name, string value, string namespace)`

5.4.1.3.1.7  AddFormulaParameterNamespace

Defines a namespace used in the QNames of parameter names, types, or values. All the arguments are strings:

- `prefix` is the namespace-prefix of values passed to AddFormulaArrayParameter;
- `uri` is the namespace URI to use.
For more information and code samples, see the section, XBRL Formula Parameters.

**COM and .NET**

*Signature:* `AddFormulaParameterNamespace(string prefix, string uri)`

*Java*

*Signature:* `public void addFormulaParameterNamespace(string prefix, string uri)`

### 5.4.1.3.1.8 AddIXBRLTransformationRegistryLimit

Limit the available Inline XBRL Transformation Registries to the specified version. The `limit` parameter is the version to which available Inline XBRL Registries are limited.

**COM and .NET**

*Signature:* `AddIXBRLTransformationRegistryLimit(string version)`

*Java*

*Signature:* `public void addIXBRLTransformationRegistryLimit(string version)`

### 5.4.1.3.1.9 AddPythonScriptFile

Specifies the Python script file that provides additional processing of the file submitted for validation. The supplied string must be an absolute URL of the Python script. The Python script will be processed with a Python package that is bundled with RaptorXML+XBRL Server. The bundled Python package is version 3.7.

**COM and .NET**

*Signature:* `AddPythonScriptFile(string filepath)`

*Java*

*Signature:* `public void addPythonScriptFile(string filepath)`
5.4.1.3.1.10 AddTableForProcessing

Limits table generation to the given table only. Call multiple times to specify more than one table. The supplied string holds the name of the table. Use ##none for processing no table and ##all for processing all tables.

COM and .NET

*Signature:* AddTableForProcessing(string table)

Java

*Signature:* public void addTableForProcessing(string table)

5.4.1.3.1.11 AddTaxonomyPackage

Specifies the URL of a taxonomy package to use for XBRL evaluation.

COM and .NET

*Signature:* AddTaxonomyPackage(string package)

Java

*Signature:* public void addTaxonomyPackage(string package)

5.4.1.3.1.12 AddXuleFile

Specifies the URL of a XULE file and executes the rules in the specified XULE file. If a directory or zip archive is specified, all *.xule files in that directory or zip archive will be executed. Add the option multiple times to specify more than one XULE file.

COM and .NET

*Signature:* AddXuleFile(string filepath)

Java

*Signature:* public void addXuleFile(string filepath)
5.4.1.3.1.13  AddProcessXuleRule
Specifies the XULE rule to execute from among the rules in the file/s specified with AddXuleFile. Add the option multiple times to specify more than one XULE rule.

COM and .NET

Signature: AddProcessXuleRule(string ruleName)

Java

Signature: public void addProcessXuleRule(string ruleName)

5.4.1.3.1.14  ClearExternalDTS
Removes any external DTS list previously specified with AddExternalDTS.

COM and .NET

Signature: ClearExternalDTS()

Java

Signature: public void clearExternalDTS()

5.4.1.3.1.15  ClearFormulaParameterList
Removes any formula parameter list previously specified with AddFormulaParameter.

COM and .NET

Signature: ClearFormulaParameterList()

Java

Signature: public void clearFormulaParameterList()
5.4.1.3.1.16  **ClearIXBRLTransformationRegistryLimit**

Removes any limit specified for Inline XBRL Transformation Registries previously specified with `AddIXBRLTransformationRegistryLimit`.

**COM and .NET**

*Signature:* `ClearIXBRLTransformationRegistryLimit()`

**Java**

*Signature:* `public void clearIXBRLTransformationRegistryLimit()`

5.4.1.3.1.17  **ClearPythonScriptFiles**

Clears Python script files added with the `AddPythonScriptFile` method or `PythonScriptFile` property.

**COM and .NET**

*Signature:* `ClearPythonScriptFiles()`

**Java**

*Signature:* `public void clearPythonScriptFiles()`

5.4.1.3.1.18  **ClearTaxonomyPackage**

Removes any reference to a taxonomy package previously specified with `AddTaxonomyPackage`.

**COM and .NET**

*Signature:* `ClearTaxonomyPackage()`

**Java**

*Signature:* `public void clearTaxonomyPackage()`
5.4.1.3.1.19  **ClearXuleFileList**

Clears the list of XULE files added with [AddXuleFile](#).

**COM and .NET**

*Signature*: `ClearXuleFileList()`

**Java**

*Signature*: `public void clearXuleFileList()`

5.4.1.3.1.20  **ClearProcessXuleRuleList**

Clears the list of XULE rules listed for processing via [AddProcessXuleRule](#).

**COM and .NET**

*Signature*: `ClearProcessXuleRuleList()`

**Java**

*Signature*: `public void clearProcessXuleRuleList()`

5.4.1.3.1.21  **EvaluateFormula**

Returns the result of evaluating XBRL formulas in an XBRL instance file. The result is `true` on success, `false` on failure. If an error occurs, a [RaptorXMLException](#) is raised. Use the `LastErrorMessage` property to access additional information.

**COM and .NET**

*Signature*: `boolean EvaluateFormula()`

**Java**

*Signature*: `public boolean evaluateFormula()`
5.4.1.3.1.22 GenerateTables

Evaluates XBRL tables in an instance file. The result is true on success, false on failure. If an error occurs, a `RaptorXMLException` is raised. Use the `LastErrorMessage` property to access additional information.

COM and .NET

*Signature:* `boolean GenerateTables()`

Java

*Signature:* `public boolean generateTables()`

5.4.1.3.1.23 IsValid

The type of XBRL document to validate is specified by the `type` parameter, which takes an `ENUMXBRLValidationType` literal as its value. The result is true on success, false on failure. If an error occurs, a `RaptorXMLException` is raised. Use `LastErrorMessage` to access additional information.

COM and .NET

*Signature:* `boolean IsValid(ENUMXBRLValidationType type)`

Java

*Signature:* `public boolean isValid(ENUMXBRLValidationType type)`

5.4.1.3.1.24 ReadFormulaAssertions

Retrieves formula assertions from the file being evaluated, and returns a string containing the formula assertions.

COM and .NET

*Signature:* `string ReadFormulaAssertions()`

Java

*Signature:* `public string readFormulaAssertions()`
5.4.1.3.1.25  ReadFormulaOutput

Reads the output of the file's formula assertions, and returns a string containing the output.

**COM and .NET**

*Signature:* `string ReadFormulaOutput()`

**Java**

*Signature:* `public string readFormulaOutput()`

5.4.1.3.2  Properties

The properties of the `IXBRL` interface (COM/.NET) and `XBRL` class (Java) are described in this section.

5.4.1.3.2.1  XuleInstanceNamespaceBindings

Makes namespace bindings from the XBRL root element available in the XULE processor. As a result, node names in the XULE document need only to have the namespace prefixes that correspond to the respective bindings in the XBRL document. The default is `false`.

**COM and .NET**

*Signature:* `XuleInstanceNamespaceBindings(boolean enable)`

**Java**

*Signature:* `public void setXuleInstanceNamespaceBindings(boolean enable)`

5.4.1.3.2.2  XuleReportRuleEvaluations

Reports XULE rule evaluations as errors, warnings, or information depending on the assigned rule severity. The default is `true`.

**COM and .NET**

*Signature:* `XuleReportRuleEvaluations(boolean enable)`
Java

Signature: public void setXuleReportRuleEvaluations(boolean enable)

5.4.1.3.2.3  XuleOutput
Serializes XULE output to the specified file.

COM and .NET

Signature: XuleOutput(string filepath)

Java

Signature: public void setXuleOutput(string filepath)

5.4.1.3.2.4  XuleStackSize
Specifies the XULE processor stack size. The default is 1000.

COM and .NET

Signature: XuleStackSize(int value)

Java

Signature: public void setXuleStackSize(int value)

5.4.1.3.2.5  ConceptLabelLinkrole
Specifies the preferred extended link role to use when rendering concept labels. The supplied string holds the preferred link role.

COM and .NET

Signature: ConceptLabelLinkrole(string labelLinkrole)
Java

Signature: `public void setConceptLabelLinkrole(string labelLinkrole)`

5.4.1.3.2.6 ConceptLabelRole

Specifies the preferred label role to use when rendering concept labels. The supplied string holds the preferred label role. Default is: `http://www.xbrl.org/2008/role/label`.

COM and .NET

Signature: `ConceptLabelRole(string labelRole)`

Java

Signature: `public void setConceptLabelRole(string labelRole)`

5.4.1.3.2.7 DimensionExtensionEnabled

Enables XBRL Dimension extension validation. Takes boolean `true` or `false`. A value of `true` enables support; `false` disables it. Default is `true`.

COM and .NET

Signature: `DimensionExtensionEnabled(boolean enable)`

Java

Signature: `public void setDimensionExtensionEnabled(boolean enable)`

5.4.1.3.2.8 EvaluateReferencedParametersOnly

If set to `false`, forces evaluation of all parameters even if they are not referenced by any formulas/assertions/tables. Default is `true`.

COM and .NET

Signature: `EvaluateReferenceParametersOnly(boolean evaluate)`
Java

**Signature:** `public void setEvaluateReferenceParametersOnly(boolean evaluate)`

### 5.4.1.3.2.9  ExtensibleEnumerationsEnabled

Enables extensible enumerations. Takes boolean `true` or `false`. A value of `true` enables support; `false` disables it.

**COM and .NET**

**Signature:** `ExtensionEnumerationsEnabled(boolean enable)`

Java

**Signature:** `public void setExtensionEnumerationsEnabled(boolean enable)`

### 5.4.1.3.2.10  FormulaAssertionsAsXML

Enables XML formatting of the assertion file when RaptorXML+XBRL is run with assertions enabled. A value of `true` enables XML output; `false` generates JSON output. Default is `false`.

**COM and .NET**

**Signature:** `FormulaAssertionsAsXML(boolean enable)`

Java

**Signature:** `public void setFormulaAssertionsAsXML(boolean enable)`

### 5.4.1.3.2.11  FormulaAssertionsOutput

Specifies the location of the file containing the retrieved formula assertions. The `outputFile` argument is a string that holds the full path of the output file.

**COM and .NET**

**Signature:** `FormulaAssertionsOutput(string outputFile)`
Java

Signature: `public void setFormulaAssertionsOutput(String outputFile)`

5.4.1.3.2.12  **FormulaExtensionEnabled**

Enables XBRL formula extensions for validation. A value of `true` enables support; `false` disables it. Default is `true`.

COM and .NET

Signature: `FormulaExtensionEnabled(Boolean enable)`

Java

Signature: `public void setFormulaExtensionEnabled(Boolean enable)`

5.4.1.3.2.13  **FormulaOutput**

Sets the location of the file containing the output of formula evaluation. The supplied string holds the full path of the output file.

COM and .NET

Signature: `FormulaOutput(String file)`

Java

Signature: `public void setFormulaOutput(String file)`

5.4.1.3.2.14  **FormulaParameterFile**

Sets the location of the formula parameter file. The full path must be specified.

COM and .NET

Signature: `FormulaParameterFile(String file)`
Java

Signature: `public void setFormulaParameterFile(string file)`

5.4.1.3.2.15  **FormulaPreloadSchemas**

Defines whether XBRL formula schemas will be preloaded. A value of `true` preloads the schemas; `false` does not. The default value is `false`.

COM and .NET

Signature: `FormulaPreloadSchemas(boolean preload)`

Java

Signature: `public void setFormulaPreloadSchemas(boolean preload)`

5.4.1.3.2.16  **GenericLabelLinkrole**

Specifies the preferred extended link role to use when rendering generic labels. The supplied string holds the preferred link role.

COM and .NET

Signature: `GenericLabelLinkrole(string labelLinkrole)`

Java

Signature: `public void setGenericLabelLinkrole(string labelLinkrole)`

5.4.1.3.2.17  **GenericLabelRole**

Specifies the preferred label role to use when rendering generic labels. The supplied string holds the preferred label role. Default is: `http://www.xbrl.org/2008/role/label`.

COM and .NET

Signature: `GenericLabelRole(string labelRole)`
Java

Signature: public void setGenericLabelRole(string labelRole)

5.4.1.3.2.18  InputFileArray

Provides an array of URLs of the files to be used as input data. The array is an object containing the strings of the absolute URLs of each of the input files.

COM and .NET

Signature: InputFileArray(object fileArray)

Java

Signature: public void setInputFileArray(object fileArray)

5.4.1.3.2.19  InputFileName

Sets the location, as a URL, of the input data file to process. The supplied string must be an absolute URL that gives the location of the input file.

COM and .NET

Signature: InputFileName(string filepath)

Java

Signature: public void setInputFileName(string filepath)

5.4.1.3.2.20  InputFromText

Supplies a string that is the text content of the document to process.

COM and .NET

Signature: InputFromText(string doc)
Java

*Signature:* `public void setInputFromText(string doc)`

### 5.4.1.3.2.21 InputTextArray

Provides an array of the URLs of the text-files to be used as input data. The property supplies an object containing, as strings, the absolute URLs of each of the text files.

**COM and .NET**

*Signature:* `InputTextArray(object textfileArray)`

**Java**

*Signature:* `public void setInputTextArray(object textfileArray)`

### 5.4.1.3.2.22 IXBRLOutput

If specified, the generated XBRL output will be written to this path. The supplied string holds the absolute URL of the output location.

**COM and .NET**

*Signature:* `IXBRLOutput(string outputFile)`

**Java**

*Signature:* `public void setIXBRLOutput(string outputFile)`

### 5.4.1.3.2.23 IXBRLUriTransformationStrategy

Specifies how Inline XBRL URIs should be transformed in the generated XBRL document. The selected enumeration literal specifies the strategy to follow. The default enumeration is `eStrategyKeepRelative`.

**COM and .NET**

*Signature:* `IXBRLUriTransformationStrategy(ENUMIXBRLUriStrategy strategy)`
Java

Signature: `public void setIXBRLUriTransformationStrategy(EnumIXBRLUriStrategy strategy)`

5.4.1.3.2.24 **IXBRLValidateTarget**

Defines whether the IXBRL output will be validated. Takes boolean `true` or `false`.

COM and .NET

Signature: `IXBRLValidateTarget(boolean validate)`

Java

Signature: `public void setIXBRLValidateTarget(boolean validate)`

5.4.1.3.2.25 **IXBRLVersion**

Specifies the Inline XBRL version to use. Takes the `EnumIXBRLVersion` literal that is specified.

COM and .NET

Signature: `IXBRLVersion(EnumIXBRLVersion version)`

Java

Signature: `public void setIXBRLVersion(EnumIXBRLVersion version)`

5.4.1.3.2.26 **LabelLang**

Specifies the preferred label language to use when rendering labels. The supplied string holds the preferred label language. Default is: `en`.

COM and .NET

Signature: `LabelLang(string lang)`
Java

Signature: `public void setLabelLang(string lang)`

### 5.4.1.3.2.27 ParallelAssessment

Enables or disables the use of parallel assessment. A value of `true` enables parallel assessment; `false` disables it. The default value is `false`.

**COM and .NET**

Signature: `ParallelAssessment(boolean enable)`

Java

Signature: `public void setParallelAssessment(boolean enable)`

### 5.4.1.3.2.28 PreloadSchemas

Defines whether XBRL 2.1 schemas will be pre-loaded. Takes boolean `true` or `false`. A value of `true` indicates preloads; `false` disables it. Default is `true`.

**COM and .NET**

Signature: `PreloadSchemas(boolean preload)`

Java

Signature: `public void setPreloadSchemas(boolean preload)`

### 5.4.1.3.2.29 PreloadSchemasEnabled

Defines whether XBRL 2.1 schemas will be pre-loaded. Takes boolean `true` or `false`. A value of `true` indicates preloads; `false` disables it. Default is `true`.

**COM and .NET**

Signature: `PreloadSchemasEnabled(boolean enable)`
Java

*Signature:* `public void setPreloadSchemasEnabled(boolean enable)`

### 5.4.1.3.2.30 PythonScriptFile

Specifies the Python script file that provides additional processing of the file submitted for validation. The supplied string must be an absolute URL of the Python script. The Python script will be processed with a Python package that is bundled with RaptorXML+XBRL Server. The bundled Python package is version 3.7.

**COM and .NET**

*Signature:* `PythonScriptFile(string filepath)`

Java

*Signature:* `public void setPythonScriptFile(string filepath)`

### 5.4.1.3.2.31 SchemaImports

Specifies how schema imports are to be handled based on the attribute values of the `xs:import` elements. The kind of handling is specified by the `ENUMSchemaImports` literal that is submitted.

**COM and .NET**

*Signature:* `SchemaImports(ENUMSchemaImports importOption)`

Java

*Signature:* `public void setSchemaImports(ENUMSchemaImports importOption)`

### 5.4.1.3.2.32 SchemalocationHints

Specifies the mechanism to use to locate the schema. The mechanism is specified by the `ENUMLoadSchemalocation` literal that is selected.

**COM and .NET**

*Signature:* `SchemalocationHints(ENUMLoadSchemalocation hint)`
Java

Signature: `public void setSchemalocationHints(ENUMLoadSchemalocation hint)`

5.4.1.3.2.33  **SchemaMapping**

Sets what mapping to use in order to locate the schema. The mapping is specified by the `ENUMSchemaMapping` literal that is selected.

**COM and .NET**

Signature: `SchemaMapping(ENUMSchemaMapping mappingOption)`

Java

Signature: `public void setSchemaMapping(ENUMSchemaMapping mappingOption)`

5.4.1.3.2.34  **TableEliminateEmptyRows**

Enables the elimination of empty table rows/columns in HTML output only. A value of `true` enables support; `false` disables it.

**COM and .NET**

Signature: `TableEliminateEmptyRows(boolean enable)`

Java

Signature: `public void setTableEliminateEmptyRows(boolean enable)`

5.4.1.3.2.35  **TableExtensionEnabled**

Enables XBRL Table 1.0 extensions for validation. A value of `true` enables support; `false` disables it.

**COM and .NET**

Signature: `TableExtensionEnabled(boolean enable)`
Java

**Signature:** `public void setTableExtensionEnabled(boolean enable)`

### 5.4.1.3.2.36 `TableLinkbaseNamespace`

Enables the loading of table linkbases written with a previous draft specification. The `namespace` parameter specifies the table linkbase. Table linkbase validation, resolution, and layout is, however, always performed according to the Table Linkbase 1.0 Recommendation of 18 March 2014. Use `##detect` to enable auto-detection.

The following values are recognized for the `namespace` parameter:

- `##detect`
- `http://xbrl.org/PWD/2013-05-17/table`
- `http://xbrl.org/PWD/2013-08-28/table`
- `http://xbrl.org/PR/2013-12-18/table`
- `http://xbrl.org/2014/table`

**COM and .NET**

**Signature:** `TableLinkbaseNamespace(string namespace)`

Java

**Signature:** `public void setTableLinkbaseNamespace(string namespace)`

### 5.4.1.3.2.37 `TableOutput`

Sets the location of the file containing the output of table generation. The supplied string holds the full path of the output file.

**COM and .NET**

**Signature:** `TableOutput(string outputFile)`

Java

**Signature:** `public void setTableOutput(string outputFile)`
5.4.1.3.2.38  TableOutputFormat

Sets the format of the table output file. The format will be a literal of ENUMTableOutputFormat.

COM and .NET

Signature: TableOutputFormat(ENUMTableOutputFormat format)

Java

Signature: public void setTableOutputFormat(ENUMTableOutputFormat format)

5.4.1.3.2.39  TablePreloadSchemas

Enables preloading of schemas of the XBRL Table 1.0 specification. A value of true enables support; false disables it. Default is false.

COM and .NET

Signature: TablePreloadSchemas(boolean preload)

Java

Signature: public void setTablePreloadSchemas(boolean preload)

5.4.1.3.2.40  TaxonomyPackagesConfigFile

Specifies the path to the TaxonomyPackagesConfig.json file, which is used to load XBRL taxonomy packages. The file’s convenience is that it serves as a catalog of taxonomy packages. The structure of the JSON file is as in the example listing below. The value of the uri key gives the location of the package. The active key (of a set of packages) switches on usage of those packages.

```json
{"taxonomies":
  {"EIOPA Solvency II XBRL Taxonomy 2.1.0":
   {"packages":[
     {"uri":"C:\test\XBRL\EIOPA_SolvencyII_XBRL_Taxonomy_2.1.0.zip"},
     {"uri":"C:\test\XBRL\AdditionalTestPkg.zip"
   },
   "active":true
   },
  "Test Taxonomy":
  {"packages": [{"uri":"C:\test\XBRL\test.zip"}], "active":true
}}
```
COM and .NET

**Signature:** `TaxonomyPackagesConfigFile(string filepath)`

Java

**Signature:** `public void setTaxonomyPackagesConfigFile(string filepath)`

5.4.1.3.2.41 **TreatXBRLInconsistenciesAsErrors**

A value of `true` causes XBRL validation to fail if the file contains any inconsistencies as defined by the XBRL 2.1 specification. Takes boolean `true` or `false`. Default is `false`. When `false`, XBRL inconsistencies according to the XBRL 2.1 specification are not treated as errors.

COM and .NET

**Signature:** `TreatXBRLInconsistenciesAsErrors(boolean enable)`

Java

**Signature:** `public void setTreatXBRLInconsistenciesAsErrors(boolean enable)`

5.4.1.3.2.42 **UTREnabled**

If `true`, enables the [XBRL Unit Registry 1.0](https://www.xbrl.org/2010/registry) extension. Default is: `false`.

COM and .NET

**Signature:** `UTREnabled(boolean enable)`

Java

**Signature:** `public void setUTREnabled(boolean enable)`

5.4.1.3.2.43 **ValidateDTSOnly**

If set to `true`, the DTS is discovered by starting from the XBRL instance document. All referenced taxonomy schemas and linkbases are discovered and validated. The rest of the XBRL instance document is ignored. Default value is `false`.
COM and .NET

Signature: `ValidateDTSOnly(boolean dts)`

Java

Signature: `public void setValidateDTSOnly(boolean dts)`

5.4.1.3.2.44  XincludeSupport

Enables or disables the use of XInclude elements. A value of `true` enables XInclude support; `false` disables it. The default value is `false`.

COM and .NET

Signature: `XincludeSupport(boolean xinclude)`

Java

Signature: `public void setXincludeSupport(boolean xinclude)`

5.4.1.4  XMLDSig (for XML Signatures)

Methods of the `IXMLDSig/IXMLDSig` interface/class can be used to sign XML documents, verify signed documents, update (with a new signature) previously signed documents that have been modified, and remove signatures.

Note that the name of the interface in the COM/.NET API is different than that of the class in the Java API:

- In COM/.NET: `IXMLDSig`
- In Java: `XMLDSig`

5.4.1.4.1  Methods

The methods of the `IXMLDSig` interface (COM/.NET) and `XMLDSig` class (Java) are described in this section.
5.4.1.4.1.1 ExecuteRemove

Removes the XML signature of the signed XML file, and saves the resulting unsigned document to an output location defined by `outputPath`, which is a string that provides the URL of the file location. The result is `true` on success, `false` on failure.

**COM and .NET**

`Signature:` `boolean ExecuteRemove(string outputPath)`

**Java**

`Signature:` `public boolean executeRemove(string outputPath)`

5.4.1.4.1.2 ExecuteSign

Signs the XML document according to the specified signing options (given in the `signatureType` and `canonicalizationMethod` parameters; see the `xmlsignature-sign CLI command` for available values). The output file is defined by `outputPath`, which is a string that provides the URL of the output file. The result is `true` on success, `false` on failure.

**COM and .NET**

`Signature:` `boolean ExecuteSign(string outputPath, string signatureType, string canonicalizationMethod)`

**Java**

`Signature:` `public boolean executeSign(string outputPath, string signatureType, string canonicalizationMethod)`

5.4.1.4.1.3 ExecuteUpdate

Updates the XML signature in the signed XML file. If the document has been modified, the updated XML signature will be different; otherwise, the updated signature will be the same as the previous signature. The output file is specified with `outputPath`, which is a string that provides the URL of the file with the updated signature. The result is `true` on success, `false` on failure.

Either (i) the HMAC secret key property or (ii) the certificate-name and certificate-store properties must be specified. If the certificate options are specified, then they must match those that were used to sign the XML document previously. (Note that the certificate-store option is currently not supported on Linux and macOS.)
COM and .NET

*Signature:* `boolean ExecuteUpdate(string outputPath)`

Java

*Signature:* `public boolean executeUpdate(string outputPath)`

5.4.1.4.1 ExecuteVerify

Returns the result of the signature verification: `true` if verification is successful, `false` otherwise.

COM and .NET

*Signature:* `boolean ExecuteVerify()`

Java

*Signature:* `public boolean executeVerify()`

5.4.1.4.2 Properties

The properties of the `IXMLDSig` interface (COM/.NET) and `XMLDSig` class (Java) are described in this section.

5.4.1.4.2.1 AbsoluteReferenceUri

Specifies whether the URI of the signed document is to be read as absolute (`true`) or relative (`false`). Default is `false`.

COM and .NET

*Signature:* `AbsoluteReferenceUri(boolean absoluteuri)`

Java

*Signature:* `public void setAbsoluteReferenceUri(boolean absoluteuri)`
5.4.1.4.2.2  AppendKeyInfo

Specifies whether to include the KeyInfo element in the signature or not. The default is false.

**COM and .NET**

*Signature:* AppendKeyInfo(boolean include)

**Java**

*Signature:* public void setAppendKeyInfo(boolean include)

5.4.1.4.2.3  CertificateName

The name of the certificate used for signing.

**Windows**

This is the Subject name of a certificate from the selected `--certificate-store`.

*Example to list the certificates (under PowerShell)*

```
% ls cert://CurrentUser/My
PSParentPath: Microsoft.PowerShell.Security\Certificate::CurrentUser\My
Thumbprint Subject
---------- -------
C9DF64BB0AAF5FA73474D7CCFF37C95BFC6C CN=certificate1
... CN=...
```

*Example:* `--certificate-name==certificate1`

**Linux/MacOS**

`--certname` specifies the file name of a PEM encoded X.509v3 certificate with the private key. Such files usually have the extension .pem.

*Example:* `--certificate-name==/path/to/certificate1.pem`

**COM and .NET**

*Signature:* CertificateName(string name)

**Java**

*Signature:* public void setCertificateName(string name)
5.4.1.4.2.4  CertificateStore

The location where the certificate specified with --certificate-name is stored.

Windows
The name of a certificate store under cert://CurrentUser. The available certificate stores can be listed (under PowerShell) by using % ls cert://CurrentUser/. Certificates would then be listed as follows:

Name : TrustedPublisher
Name : ClientAuthIssuer
Name : Root
Name : UserDS
Name : CA
Name : ACRS
Name : REQUEST
Name : AuthRoot
Name : MSIEHistoryJournal
Name : TrustedPeople
Name : MyCertStore
Name : Local NonRemovable Certificates
Name : SmartCardRoot
Name : Trust
Name : Disallowed

Example: --certificate-store=MyCertStore

Linux/MacOS
The --certstore option is currently not supported.

COM and .NET

Signature: CertificateStore(string filelocation)

Java

Signature: public void setCertificateStore(string filelocation)

5.4.1.4.2.5  DigestMethod

The algorithm that is used to compute the digest value over the input XML file. Available values are: sha1|sha256|sha384|sha512.

COM and .NET
**Signature:** `DigestMethod(string algo)`

**Java**

**Signature:** `public void setDigestMethod(string algo)`

---

**5.4.1.4.2.6 HMACOutputLength**

Truncates the output of the HMAC algorithm to `length` bits. If specified, this value must be
- a multiple of 8
- larger than 80
- larger than half of the underlying hash algorithm’s output length

**COM and .NET**

**Signature:** `HMACOutputLength(int length)`

**Java**

**Signature:** `public void setHMACOutputLength(int length)`

---

**5.4.1.4.2.7 HMACSecretKey**

The HMAC shared secret key; must have a minimum length of six characters.

**COM and .NET**

**Signature:** `HMACSecretKey(string key)`

**Java**

**Signature:** `public void setHMACSecretKey(string key)`

---

**5.4.1.4.2.8 InputXMLFileName**

Sets the location, as a URL, of the XML document to process. The supplied string must be an absolute URL that gives the exact location of the XML file.

**COM and .NET**
Signature: `InputXMLFileName(string filepath)`

Java

Signature: `public void setInputXMLFileName(string filepath)`

5.4.1.4.2.9  LastErrorMessage
Retrieves a string that is the last error message from the RaptorXML engine.

COM and .NET

Signature: `string LastErrorMessage()`

Java

Signature: `public string getLastErrorMessage()`

5.4.1.4.2.10  SignatureMethod
Specifies the algorithm to use for generating the signature.

When a certificate is used
If a certificate is specified, then `SignatureMethod` is optional and the value for this parameter is derived from the certificate. If specified, it must match the algorithm used by the certificate. Example: `rsa-sha256`.

When --hmac-secret-key is used
When `HMACSecretKey` is used, then `SignatureMethod` is mandatory. The value must be one of the supported HMAC algorithms:
- `hmac-sha256`
- `hmac-sha386`
- `hmac-sha512`
  - `hmac-sha1` (discouraged by the specification)

Example: `hmac-sha256`

COM and .NET

Signature: `SignatureMethod(string algo)`

Java
5.4.1.4.2.11 Transforms

Specifies the XML Signature transformations applied to the input document. The supported values are:

- REC-xml-c14n-20010315 for Canonical XML 1.0 (omit comments)
- xml-c14n11 for Canonical XML 1.1 (omit comments)
- xml-exc-c14n# for Exclusive XML Canonicalization 1.0 (omit comments)
- REC-xml-c14n-20010315#WithComments for Canonical XML 1.0 (with comments)
- xml-c14n11#WithComments for Canonical XML 1.1 (with comments)
- xml-exc-c14n#WithComments for Exclusive XML Canonicalization 1.0 (with comments)
- base64
- strip-whitespaces Altova extension

**COM and .NET**

Signature: `Transforms(string value)`

**Java**

Signature: `public void setTransforms(string value)`

5.4.1.4.2.12 WriteDefaultAttributes

Specifies whether to include default attribute values from the DTD in the signed document.

**COM and .NET**

Signature: `WriteDefaultAttributes(boolean write)`

**Java**

Signature: `public void setWriteDefaultAttributes(boolean write)`

5.4.1.5 XMLValidator

The `IXMLValidator/XMLValidator` interface/class provides methods to (i) validate various types of documents, (ii) check documents for well-formedness, and (iii) extract an Avro schema from an Avro binary. You can also provide additional processing via a Python script.

Note that the name of the interface in the COM/.NET API is different than that of the class in the Java API:
In COM/.NET: **IXMLValidator**
In Java: **XMLValidator**

### 5.4.1.5.1 Methods

The methods of the **IXMLValidator** interface (COM/.NET) and **XMLValidator** class (Java) are described in this section.

#### 5.4.1.5.1.1 AddPythonScriptFile

Specifies the Python script file that provides additional processing of the file submitted for validation. The supplied string must be an absolute URL of the Python script. The Python script will be processed with a Python package that is bundled with RaptorXML+XBRL Server. The bundled Python package is version 3.7.

**COM and .NET**

*Signature:* `AddPythonScriptFile(string filepath)`

**Java**

*Signature:* `public void addPythonScriptFile(string filepath)`

#### 5.4.1.5.1.2 ClearPythonScriptFile

Clears Python script files added with the **AddPythonScriptFile** method or **PythonScriptFile** property.

**COM and .NET**

*Signature:* `ClearPythonScriptFile()`

**Java**

*Signature:* `public void clearPythonScriptFile()`

#### 5.4.1.5.1.3 ExtractAvroSchema

Extracts an Avro schema from a binary file. The `outputPath` parameter is an absolute URL that specifies the output location. The result is `true` on success, `false` on failure. If an error occurs, a **RaptorXMLException** is raised. Use **LastErrorMessage** to access additional information.
COM and .NET

**Signature:** `ExtractAvroSchema(string outputPath)`

Java

**Signature:** `public void extractAvroSchema(string outputPath)`

5.4.1.5.1.4   **IsValid**

Returns the result of validating the XML document, schema document, or DTD document. The type of document to validate is specified by the `type` parameter, which takes an `ENUMValidationType` literal as its value. The result is `true` on success, `false` on failure. If an error occurs, a `RaptorXMLException` is raised. Use `LastErrorMessage` to access additional information.

COM and .NET

**Signature:** `boolean IsValid(ENUMValidationType type)`

Java

**Signature:** `public boolean isValid(ENUMValidationType type)`

5.4.1.5.1.5   **IsWellFormed**

Returns the result of checking the XML document or DTD document for well-formedness. The type of document to check is specified by the `type` parameter, which takes an `ENUMWellformedCheckType` literal as its value. The result is `true` on success, `false` on failure. If an error occurs, a `RaptorXMLException` is raised. Use `LastErrorMessage` to access additional information.

COM and .NET

**Signature:** `boolean isWellFormed(ENUMWellformedCheckType type)`

Java

**Signature:** `public boolean isWellFormed(ENUMWellformedCheckType type)`
5.4.1.5.2 Properties

The properties of the IXMLValidator interface (COM/.NET) and XMLValidator class (Java) are described in this section.

5.4.1.5.2.1 AssessmentMode

Sets the assessment mode of the XML validation (Strict/Lax), which is given by an ENUMAssessmentMode literal.

COM and .NET

Signature: AssessmentMode (ENUMAssessmentMode mode)

Java

Signature: public void setAssessmentMode (ENUMAssessmentMode mode)

5.4.1.5.2.2 AvroSchemaFileName

Sets the location, as a URL, of the external Avro Schema to use. The supplied string must be an absolute URL that gives the exact location of the Avro Schema file.

COM and .NET

Signature: AvroSchemaFileName (string url)

Java

Signature: public void setAvroSchemaFileName (string url)

5.4.1.5.2.3 AvroSchemaFromText

Supplies a string that is the text content of the Avro Schema document to use.

COM and .NET

Signature: AvroSchemaFromText (string avroschema)
Java

Signature: `public void setAvroSchemaFromText(string avroschema)`

### 5.4.1.5.2.4 DTDFileName

Sets the location, as a URL, of the DTD document to use for validation. The supplied string must be an absolute URL that gives the exact location of the DTD document.

**COM and .NET**

Signature: `DTDFileName(string url)`

Java

Signature: `public void setDTDFileName(string url)`

### 5.4.1.5.2.5 DTDFromText

Supplies a string that is the text content of the DTD document to use for validation.

**COM and .NET**

Signature: `DTDFromText(string dtdtext)`

Java

Signature: `public void setDTDFromText(string dtdtext)`

### 5.4.1.5.2.6 EnableNamespaces

Enables namespace-aware processing. This is useful for checking the XML instance for errors due to incorrect namespaces. A value of `true` enables namespace-aware processing; `false` disables it. The default is `false`.

**COM and .NET**

Signature: `EnableNamespaces(boolean enableNS)`
Java

Signature: `public void setEnableNamespaces(boolean enableNS)`

5.4.1.5.2.7  **InputFileArray**

Provides an array of URLs of the files to be used as input data. The array is an object containing the strings of the absolute URLs of each of the input files.

COM and .NET

Signature: `InputFileArray(object fileArray)`

Java

Signature: `public void setInputFileArray(object fileArray)`

5.4.1.5.2.8  **InputFileName**

Sets the location, as a URL, of the input data file to process. The supplied string must be an absolute URL that gives the location of the input file.

COM and .NET

Signature: `InputFileName(string filepath)`

Java

Signature: `public void setInputFileName(string filepath)`

5.4.1.5.2.9  **InputFromText**

Supplies a string that is the text content of the document to process.

COM and .NET

Signature: `InputFromText(string doc)`
Java

Signature: `public void setInputFromText(string doc)`

5.4.1.5.2.10  **InputTextArray**

Provides an array of the URLs of the text-files to be used as input data. The property supplies an object containing, as strings, the absolute URLs of each of the text files.

COM and .NET

Signature: `InputTextArray(object textfileArray)`

Java

Signature: `public void setInputTextArray(object textfileArray)`

5.4.1.5.2.11  **InputXMLFileName**

Sets the location, as a URL, of the XML document to process. The supplied string must be an absolute URL that gives the exact location of the XML file.

COM and .NET

Signature: `InputXMLFileName(string url)`

Java

Signature: `public void setInputXMLFileName(string url)`

5.4.1.5.2.12  **InputXMLFromText**

Supplies a string that is the text content of the XML document to process.

COM and .NET

Signature: `InputXMLFromText(string xml)`
Java

Signature: `public void setInputXMLFromText(string xml)`

5.4.1.5.2.13  Json5
If set to true, enables JSON 5 support.

COM and .NET

Signature: `Json5(boolean json5)`

Java

Signature: `public void setJson5(boolean json5)`

5.4.1.5.2.14  JSONSchemaFileName
Sets the location, as a URL, of the JSON Schema file that will be used for JSON instance-document validation. The supplied string must be an absolute URL that gives the exact location of the JSON Schema file.

COM and .NET

Signature: `JSONSchemaFileName(string url)`

Java

Signature: `public void setJSONSchemaFileName(string url)`

5.4.1.5.2.15  JSONSchemaFromText
Supplies a string that is the text content of the JSON Schema document that will be used for validation of the JSON instance document.

COM and .NET

Signature: `JSONSchemaFromText(string jsonschema)`
Java

Signature: `public void setJSONSchemaFromText(string jsonschema)`

5.4.1.5.2.16 LastErrorMessage
Retrieves a string that is the last error message from the RaptorXML engine.

COM and .NET

Signature: `string LastErrorMessage()`

Java

Signature: `public string getLastErrorMessage()`

5.4.1.5.2.17 ParallelAssessment
Enables/disables parallel schema validity assessment.

COM and .NET

Signature: `ParallelAssessment(boolean enable)`

Java

Signature: `public void setParallelAssessment(boolean enable)`

5.4.1.5.2.18 PythonScriptFile
Specifies the Python script file that provides additional processing of the file submitted for validation. The supplied string must be an absolute URL of the Python script. The Python script will be processed with a Python package that is bundled with RaptorXML+XBRL Server. The bundled Python package is version 3.7.

COM and .NET

Signature: `PythonScriptFile(string filepath)`
5.4.1.5.2.19  **SchemaFileArray**

Supplies the collection of XML Schema files that will be used as external XML Schemas. The files are identified by their URLs. The input is a collection of strings, each of which is the absolute URL of an XML Schema file.

**COM and .NET**

*Signature:* `SchemaFileArray(object urlArray)`

**Java**

*Signature:* `public void setSchemaFileArray(object urlArray)`

5.4.1.5.2.20  **SchemaFileName**

Sets the location, as a URL, of the XML Schema document to be used for validation. The supplied string must be an absolute URL that gives the exact location of the XML Schema file.

**COM and .NET**

*Signature:* `SchemaFileName(string filepath)`

**Java**

*Signature:* `public void setSchemaFileName(string filepath)`

5.4.1.5.2.21  **SchemaFromText**

Supplies a string that is the text content of the XML Schema document to use for validation of the XML instance document.

**COM and .NET**

*Signature:* `SchemaFileName(string xsdText)`
Java

Signature: `public void setSchemaFileName(string xsdText)`

### 5.4.1.5.2.22 SchemaImports

Specifies how schema imports are to be handled based on the attribute values of the `xs:import` elements. The kind of handling is specified by the `ENUMSchemaImports` literal that is submitted.

**COM and .NET**

Signature: `SchemaImports(ENUMSchemaImports importOption)`

**Java**

Signature: `public void setSchemaImports(ENUMSchemaImports importOption)`

### 5.4.1.5.2.23 SchemalocationHints

Specifies the mechanism to use to locate the schema. The mechanism is specified by the `ENUMLoadSchemalocation` literal that is selected.

**COM and .NET**

Signature: `SchemalocationHints(ENUMLoadSchemalocation hint)`

**Java**

Signature: `public void setSchemalocationHints(ENUMLoadSchemalocation hint)`

### 5.4.1.5.2.24 SchemaMapping

Sets what mapping to use in order to locate the schema. The mapping is specified by the `ENUMSchemaMapping` literal that is selected.

**COM and .NET**

Signature: `SchemaMapping(ENUMSchemaMapping mappingOption)`
Java

Signature: `public void setSchemaMapping([ENUMSchemaMapping] mappingOption)`

### 5.4.1.5.2.25 SchemaTextArray

Supplies the content of multiple XML Schema files. The input is a collection of strings, each of which is the content of an XML Schema document.

**COM and .NET**

Signature: `SchemaTextArray(object schemaDocs)`

**Java**

Signature: `public void setSchemaTextArray(object schemaDocs)`

### 5.4.1.5.2.26 Streaming

Enables streaming validation. In streaming mode, data that is stored in memory is minimized and processing is faster. A value of `true` enables streaming; `false` disables it. Default is `true`.

**COM and .NET**

Signature: `Streaming(boolean enable)`

**Java**

Signature: `public void setStreaming(boolean enable)`

### 5.4.1.5.2.27 XincludeSupport

Enables or disables the use of XInclude elements. A value of `true` enables XInclude support; `false` disables it. The default value is `false`.

**COM and .NET**

Signature: `XincludeSupport(boolean xinclude)`
Java

Signature: `public void setXinclusSupport(boolean xinclude)`

5.4.1.5.2.28 XMLValidationMode

Sets the XML validation mode, which is an enumeration literal of `ENUMXMLValidationMode` that determines whether to check validity or well-formedness.

COM and .NET

Signature: `XMLValidationMode(ENUMXMLValidationMode valMode)`

Java

Signature: `public void setXMLValidationMode(ENUMXMLValidationMode valMode)`

5.4.1.5.2.29 XSDVersion

Sets the XML Schema version against which the XML document will be validated. Value is an enumeration literal of `ENUMXSDVersion`.

COM and .NET

Signature: `XSDVersion(ENUMXSDVersion version)`

Java

Signature: `public void setXSDVersion(ENUMXSDVersion version)`

5.4.1.6 XQuery

The `IXQuery/XQuery` interface/class provides methods to (i) execute XQuery documents and XQuery updates, and (ii) validate XQuery-related documents. You can also provide data for the executions via external variables.

Note that the name of the interface in the COM/.NET API is different than that of the class in the Java API:

- In COM/.NET: `IXQuery`
- In Java: `XQuery`
5.4.1.6.1 Methods

The methods of the `IXQuery` interface (COM/.NET) and `XQuery` class (Java) are described in this section.

5.4.1.6.1.1 AddExternalVariable

Adds the name and value of a new external variable. Each external variable and its value is to be specified in a separate call to the method. Variables must be declared in the XQuery document (with an optional type declaration). If the variable value is a string, enclose the value in single quotes. The `name` parameter holds the name of the variable, which is a QName, as a string. The `value` parameter holds the value of the variable as a string.

**COM and .NET**

*Signature:* `AddExternalVariable(string name, string value)`

**Java**

*Signature:* `public void addExternalVariable(string name, string value)`

5.4.1.6.1.2 ClearExternalVariableList

Clears the external variables list created by the `AddExternalVariable` method.

**COM and .NET**

*Signature:* `ClearExternalVariableList()`

**Java**

*Signature:* `public void clearExternalVariableList()`

5.4.1.6.1.3 Execute

Executes the XQuery transformation according to the XQuery version named in the `EngineVersion` property, and saves the result to the output file named in the `outputFile` parameter. The parameter is a string that provides the location (path and filename) of the output file. The result is `true` on success, `false` on failure.
If an error occurs, a \texttt{RaptorXMLException} is raised. Use the \texttt{LastErrorMessage} property to access additional information.

**COM and .NET**

\textit{Signature:} \texttt{boolean Execute(string outputFile)}

\textit{Java}

\textit{Signature:} \texttt{public boolean execute(string outputFile)}

### 5.4.1.6.1.4 \textit{ExecuteAndGetResultAsString}

Executes the XQuery update according to the XQuery Update specification named in the \texttt{EngineVersion} property, and returns the result as a string. This method does not produce additional result files, such as charts or secondary results. It also does not hold binary results such as .docx OOXML files. If additional output files are needed, use the \texttt{Execute} method.

**COM and .NET**

\textit{Signature:} \texttt{string ExecuteAndGetResultAsString()}

\textit{Java}

\textit{Signature:} \texttt{public string executeAndGetResultAsString()}

### 5.4.1.6.1.5 \textit{ExecuteUpdate}

Executes the XQuery update according to the XQuery Update specification named in the \texttt{XQueryUpdateVersion} property, and saves the result to the output file named in the \texttt{outputFile} parameter. The parameter is a string that provides the location (path and filename) of the output file. The result is \texttt{true} on success, \texttt{false} on failure. If an error occurs, a \texttt{RaptorXMLException} is raised. Use the \texttt{LastErrorMessage} property to access additional information.

**COM and .NET**

\textit{Signature:} \texttt{boolean ExecuteUpdate(string outputFile)}

\textit{Java}

\textit{Signature:} \texttt{public boolean executeUpdate(string outputFile)}
5.4.1.6.1.6 ExecuteUpdateAndGetResultAsString

Executes the XQuery update according to the XQuery Update specification named in the XQueryUpdateVersion property, and returns the result as a string. This method does not produce additional result files, such as charts or secondary results. It also does not hold binary results such as .docx OOXML files.

COM and .NET

Signature: string ExecuteUpdateAndGetResultAsString()

Java

Signature: public string executeUpdateAndGetResultAsString()
Java

Signature: `public boolean isValidUpdate()`

5.4.1.6.2  Properties
The properties of the `IXQuery` interface (COM/.NET) and `XQuery` class (Java) are described in this section.

5.4.1.6.2.1  AdditionalOutputs
Returns the additional outputs of the last executed job.

COM and .NET

Signature: `string AdditionalOutputs()`

Java

Signature: `public string getAdditionalOutputs()`

5.4.1.6.2.2  ChartExtensionsEnabled
Enables or disables Altova's chart extension functions. A value of `true` enables chart extensions; `false` disables them. Default value is `true`.

COM and .NET

Signature: `ChartExtensionsEnabled(boolean enable)`

Java

Signature: `public void setChartExtensionsEnabled(boolean enable)`
5.4.1.6.2.3  **DotNetExtensionsEnabled**

Enables or disables .NET extension functions. A value of `true` enables .NET extensions; `false` disables them. Default value is `true`.

**COM and .NET**

*Signature:* `DotNetExtensionsEnabled(boolean enable)`

**Java**

*Signature:* `public void setDotNetExtensionsEnabled(boolean enable)`

5.4.1.6.2.4  **EngineVersion**

Specifies the XQuery version to use. The property value is an `ENUMXQueryVersion` literal.

**COM and .NET**

*Signature:* `EngineVersion(ENUMXQueryVersion version)`

**Java**

*Signature:* `public void setEngineVersion(ENUMXQueryVersion version)`

5.4.1.6.2.5  **IndentCharacters**

Submits the character string that will be used as indentation in the output.

**COM and .NET**

*Signature:* `IndentCharacters(string indentChars)`

**Java**

*Signature:* `public void setIndentCharacters(string indentChars)`
5.4.1.6.2.6  **InputXMLFileName**

Sets the location, as a URL, of the XML document to process. The supplied string must be an absolute URL that gives the exact location of the XML file.

**COM and .NET**

*Signature:* `InputXMLFileName(string url)`

**Java**

*Signature:* `public void setInputXMLFileName(string url)`

5.4.1.6.2.7  **InputXMLFromText**

Supplies a string that is the text content of the XML document to process.

**COM and .NET**

*Signature:* `InputXMLFromText(string xml)`

**Java**

*Signature:* `public void setInputXMLFromText(string xml)`

5.4.1.6.2.8  **JavaBarcodeExtensionLocation**

Specifies the location of the barcode extension file. See the section on Altova's barcode extension functions for more information. The supplied string must be an absolute URL that gives the base location of the file to use.

**COM and .NET**

*Signature:* `JavaBarcodeExtensionLocation(string url)`

**Java**

*Signature:* `public void setJavaBarcodeExtensionLocation(string url)`
5.4.1.6.2.9  JavaExtensionsEnabled

Enables or disables Java extension functions. A value of true enables Java extensions; false disables them. Default value is true.

COM and .NET

Signature: `JavaExtensionsEnabled(boolean enable)`

Java

Signature: `public void setJavaExtensionsEnabled(boolean enable)`

5.4.1.6.2.10  KeepFormatting

Specifies whether the formatting of the original document should be kept (as far as possible) or not. A value of true keeps formatting; false does not keep formatting. Default value is true.

COM and .NET

Signature: `KeepFormatting(boolean keep)`

Java

Signature: `public void setKeepFormatting(boolean keep)`

5.4.1.6.2.11  LastErrorMessage

Retrieves a string that is the last error message from the RaptorXML engine.

COM and .NET

Signature: `string LastErrorMessage()`

Java

Signature: `public string getLastErrorMessage()`
5.4.1.6.2.12  

**LoadXMLWithPSVI**

Enables validation of input XML files and generates post-schema-validation info for them. A value of `true` enables XML validation and generates post-schema-validation info for the XML files; `false` disables validation. Default value is `true`.

**COM and .NET**

*Signature:* `LoadXMLWithPSVI(boolean enable)`

**Java**

*Signature:* `public void setLoadXMLWithPSVI(boolean enable)`

5.4.1.6.2.13  

**MainOutput**

Returns the main output of the last executed job.

**COM and .NET**

*Signature:* `string MainOutput()`

**Java**

*Signature:* `public string getMainOutput()`

5.4.1.6.2.14  

**OutputEncoding**

Sets the encoding for the result document. Use an official IANA encoding name, such as `UTF-8`, `UTF-16`, `US-ASCII`, `ISO-8859-1`, as a string.

**COM and .NET**

*Signature:* `OutputEncoding(string encoding)`

**Java**

*Signature:* `public void setOutputEncoding(string encoding)`
5.4.1.6.2.15  **OutputIndent**

Enables or disables indentation in the output document. A value of `true` enables indentation; `false` disables it.

**COM and .NET**

*Signature:* `OutputIndent(boolean outputIndent)`

**Java**

*Signature:* `public void setOutputIndent(boolean outputIndent)`

5.4.1.6.2.16  **OutputMethod**

Specifies the serialization of the output document. Valid values are: `xml|xhtml|html|text`. Default value is `xml`.

**COM and .NET**

*Signature:* `OutputMethod(string format)`

**Java**

*Signature:* `public void setOutputMethod(string format)`

5.4.1.6.2.17  **OutputOmitXMLDeclaration**

Enables/disables the inclusion of the XML declaration in the result document. A value of `true` omits the declaration; `false` includes it. Default value is `false`.

**COM and .NET**

*Signature:* `OutputOmitXMLDeclaration(boolean omitDeclaration)`

**Java**

*Signature:* `public void setOutputOmitXMLDeclaration(boolean omitDeclaration)`
5.4.1.6.2.18  UpdatedXMLWriteMode
Specifies how updates to the XML file are handled. The property value is an ENUMQueryUpdatedXML literal.

COM and .NET

Signature: UpdateXMLWriteMode(ENUMQueryUpdatedXML updateMode)

Java

Signature: public void setUpdateXMLWriteMode(ENUMQueryUpdatedXML updateMode)

5.4.1.6.2.19  XincludeSupport
Enables or disables the use of XInclude elements. A value of true enables XInclude support; false disables it. The default value is false.

COM and .NET

Signature: XincludeSupport(boolean xinclude)

Java

Signature: public void setXincludeSupport(boolean xinclude)

5.4.1.6.2.20  XMLValidationErrorsAsWarnings
Enables the treating of XML validation errors as warnings. Takes boolean true or false.

COM and .NET

Signature: XMLValidationErrorsAsWarnings(boolean enable)

Java

Signature: public void setXMLValidationErrorsAsWarnings(boolean enable)
5.4.1.6.2.21  XMLValidationMode

Sets the XML validation mode, which is an enumeration literal of ENUMXMLValidationMode that determines whether to check validity or well-formedness.

**COM and .NET**

*Signature:* XMLValidationMode(ENUMXMLValidationMode valMode)

**Java**

*Signature:* public void setXMLValidationMode(ENUMXMLValidationMode valMode)

5.4.1.6.2.22  XQueryFileName

Specifies the XQuery file to use. The supplied string must be an absolute URL that gives the location of the XQuery file to use.

**COM and .NET**

*Signature:* XQueryFileName(string fileurl)

**Java**

*Signature:* public void setXQueryFileName(string fileurl)

5.4.1.6.2.23  XQueryFromText

Supplies, as a text string, the contents of the XQuery document to use.

**COM and .NET**

*Signature:* XQueryFromText(string xqtext)

**Java**

*Signature:* public void setXQueryFromText(string xqtext)
5.4.1.6.2.24  **XQueryUpdateVersion**

Specifies the XQuery Update version to use. The property value is an `ENUMQueryVersion` literal.

**COM and .NET**

*Signature:* `XQueryUpdateVersion(ENUMQueryVersion version)`

**Java**

*Signature:* `public void setXQueryUpdateVersion(ENUMQueryVersion version)`

5.4.1.6.2.25  **XSDVersion**

Sets the XML Schema version against which the XML document will be validated. Value is an enumeration literal of `ENUMXSDVersion`.

**COM and .NET**

*Signature:* `XSDVersion(ENUMXSDVersion version)`

**Java**

*Signature:* `public void setXSDVersion(ENUMXSDVersion version)`

5.4.1.7  **XSLT**

The `IXSLT/XSLT` interface/class provides methods to execute XSLT transformations and validate XSLT-related documents. You can also provide data for the transformation via external parameters.

Note that the name of the interface in the COM/.NET API is different than that of the class in the Java API:

- In COM/.NET: `IXSLT`
- In Java: `XSLT`

5.4.1.7.1  **Methods**

The methods of the `IXSLT` interface (COM/.NET) and `XSLT` class (Java) are described in this section.
5.4.1.7.1.1  AddExternalParameter

Adds the name and value of a new external parameter. Each external parameter and its value is to be specified in a separate call to the method. Parameters must be declared in the XSLT document. Since parameter values are XPath expressions, parameter values that are strings must be enclosed in single quotes. The name parameter holds the name of the variable, which is a QName, as a string. The value parameter holds the value of the variable as a string.

**COM and .NET**

*Signature:* `AddExternalParameter(string name, string value)`

**Java**

*Signature:* `public void addExternalParameter(string name, string value)`

5.4.1.7.1.2  ClearExternalParameterList

Clears the external parameters list created by the `AddExternalParameter` method.

**COM and .NET**

*Signature:* `ClearExternalParameterList()`

**Java**

*Signature:* `public void clearExternalParameterList()`

5.4.1.7.1.3  Execute

Executes the XSLT transformation according to the XSLT specification named in the `EngineVersion` property, and saves the result to the output file named in the `outputFile` parameter. If an error occurs, a `RaptorXMLException` is raised. Use the `LastErrorMessage` property to access additional information.

**COM and .NET**

*Signature:* `boolean Execute(string outputFile)`

**Java**

*Signature:* `public boolean execute(string outputFile)`
5.4.1.7.1.4  **ExecuteAndGetStringAsString**

Executes the XSLT transformation according to the XSLT specification named in the EngineVersion property, and returns the result as a string. This method does not produce additional result files, such as charts or secondary results. It also does not hold binary results such as .docx OOXML files. If additional output files are needed, use the Execute method. If an error occurs, a RaptorXMLException is raised. Use the LastErrorMessage property to access additional information.

**COM and .NET**

*Signature:* string ExecuteAndGetStringAsString()

**Java**

*Signature:* public string executeAndGetStringAsString()

5.4.1.7.1.5  **ExecuteAndGetStringAsStringWithBaseOutputURI**

Executes the XSLT transformation according to the XSLT specification named in the EngineVersion property, and returns the result as a string at the location defined by the base URI. The baseURI parameter is a string that provides a URI. This method does not produce additional result files, such as charts or secondary results. It also does not hold binary results such as .docx OOXML files. If additional output files are needed, use the Execute method. If an error occurs, a RaptorXMLException is raised. Use the LastErrorMessage property to access additional information.

**COM and .NET**

*Signature:* string ExecuteAndGetStringAsStringWithBaseOutputURI(string baseURI)

**Java**

*Signature:* public string ExecuteAndGetStringAsStringWithBaseOutputURI(string baseURI)

5.4.1.7.1.6  **IsValid**

Returns the result of validating the XSLT document according to the XSLT specification named in the EngineVersion property. The result is true on success, false on failure. If an error occurs, a RaptorXMLException is raised. Use the LastErrorMessage property to access additional information.

**COM and .NET**
5.4.1.7.2 Properties

The properties of the IXSLT interface (COM/.NET) and XSLT class (Java) are described in this section.

5.4.1.7.2.1 AdditionalOutputs

Returns the additional outputs of the last executed job.

**COM and .NET**

*Signature:* string AdditionalOutputs()

**Java**

*Signature:* public string getAdditionalOutputs()

5.4.1.7.2.2 ChartExtensionsEnabled

Enables or disables Altova’s chart extension functions. A value of true enables chart extensions; false disables them. Default value is true.

**COM and .NET**

*Signature:* ChartExtensionsEnabled(boolean enable)

**Java**

*Signature:* public void setChartExtensionsEnabled(boolean enable)
5.4.1.7.2.3  **DotNetExtensionsEnabled**

Enables or disables .NET extension functions. A value of `true` enables .NET extensions; `false` disables them. Default value is `true`.

**COM and .NET**

*Signature:* `DotNetExtensionsEnabled(boolean enable)`

**Java**

*Signature:* `public void setDotNetExtensionsEnabled(boolean enable)`

5.4.1.7.2.4  **EngineVersion**

Specifies the XSLT version to use. The property value is an `ENUMXSLTVersion` literal.

**COM and .NET**

*Signature:* `EngineVersion(ENUMXSLTVersion version)`

**Java**

*Signature:* `public void setEngineVersion(ENUMXSLTVersion version)`

5.4.1.7.2.5  **IndentCharacters**

Submits the character string that will be used as indentation in the output.

**COM and .NET**

*Signature:* `IndentCharacters(string indentChars)`

**Java**

*Signature:* `public void setIndentCharacters(string indentChars)"
5.4.1.7.2.6  InitialTemplateMode
Sets the initial mode for XSLT processing. Templates with a mode value equal to the submitted string will be processed.

COM and .NET

Signature: InitialTemplateMode(string mode)

Java

Signature: public void setInitialTemplateMode(string mode)

5.4.1.7.2.7  InputXMLFileName
Sets the location, as a URL, of the XML document to process. The supplied string must be an absolute URL that gives the exact location of the XML file.

COM and .NET

Signature: InputXMLFileName(string url)

Java

Signature: public void setInputXMLFileName(string url)

5.4.1.7.2.8  InputXMLFromText
Supplies a string that is the text content of the XML document to process.

COM and .NET

Signature: InputXMLFromText(string xml)

Java

Signature: public void setInputXMLFromText(string xml)
5.4.1.7.2.9  **JavaBarcodeExtensionLocation**

Specifies the location of the barcode extension file. See the section on Altova's barcode extension functions for more information. The supplied string must be an absolute URL that gives the base location of the file to use.

**COM and .NET**

*Signature:* `JavaBarcodeExtensionLocation(string url)`

**Java**

*Signature:* `public void setJavaBarcodeExtensionLocation(string url)`

5.4.1.7.2.10  **JavaExtensionsEnabled**

Enables or disables Java extension functions. A value of `true` enables Java extensions; `false` disables them. Default value is `true`.

**COM and .NET**

*Signature:* `JavaExtensionsEnabled(boolean enable)`

**Java**

*Signature:* `public void setJavaExtensionsEnabled(boolean enable)`

5.4.1.7.2.11  **LastErrorMessage**

Retrieves a string that is the last error message from the RaptorXML engine.

**COM and .NET**

*Signature:* `string LastErrorMessage()`

**Java**

*Signature:* `public string getLastErrorMessage()`
5.4.1.7.2.12  LoadXMLWithPSVI

Enables validation of input XML files and generates post-schema-validation info for them. A value of `true` enables XML validation and generates post-schema-validation info for the XML files; `false` disables validation. Default value is `true`.

**COM and .NET**

*Signature:* `LoadXMLWithPSVI(boolean enable)`

**Java**

*Signature:* `public void setLoadXMLWithPSVI(boolean enable)`

5.4.1.7.2.13  MainOutput

Returns the main output of the last executed job.

**COM and .NET**

*Signature:* `string MainOutput()`

**Java**

*Signature:* `public string getMainOutput()`

5.4.1.7.2.14  NamedTemplateEntryPoint

Specifies the name, as a string, of the named template to use as an entry point for the transformation.

**COM and .NET**

*Signature:* `NamedTemplateEntryPoint(string template)`

**Java**

*Signature:* `public void setNamedTemplateEntryPoint(string template)`
5.4.1.7.2.15  SchemaImports

Specifies how schema imports are to be handled based on the attribute values of the xs:import elements. The kind of handling is specified by the ENUMSchemaImports literal that is submitted.

COM and .NET

Signature: SchemaImports(ENUMSchemaImports importOption)

Java

Signature: public void setSchemaImports(ENUMSchemaImports importOption)

5.4.1.7.2.16  SchemalocationHints

Specifies the mechanism to use to locate the schema. The mechanism is specified by the ENUMLoadSchemalocation literal that is selected.

COM and .NET

Signature: SchemalocationHints(ENUMLoadSchemalocation hint)

Java

Signature: public void setSchemalocationHints(ENUMLoadSchemalocation hint)

5.4.1.7.2.17  SchemaMapping

Sets what mapping to use in order to locate the schema. The mapping is specified by the ENUMSchemaMapping literal that is selected.

COM and .NET

Signature: SchemaMapping(ENUMSchemaMapping mappingOption)

Java

Signature: public void setSchemaMapping(ENUMSchemaMapping mappingOption)
5.4.1.7.2.18  StreamingSerialization

Enables streaming serialization. In streaming mode, data stored in memory is minimized and processing is faster. A value of true enables streaming serialization; false disables it.

COM and .NET

Signature: StreamingSerialization(boolean enable)

Java

Signature: public void setStreaming Serialization(boolean enable)

5.4.1.7.2.19  XincludeSupport

Enables or disables the use of XInclude elements. A value of true enables XInclude support; false disables it. The default value is false.

COM and .NET

Signature: XincludeSupport(boolean xinclude)

Java

Signature: public void setXincludeSupport(boolean xinclude)

5.4.1.7.2.20  XMLValidationErrorsAsWarnings

Enables the treating of XML validation errors as warnings. Takes boolean true or false.

COM and .NET

Signature: XMLValidationErrorsAsWarnings(boolean enable)

Java

Signature: public void setXMLValidationErrorsAsWarnings(boolean enable)
5.4.1.7.2.21 XMLValidationMode

Sets the XML validation mode, which is an enumeration literal of `ENUMXMLValidationMode` that determines whether to check validity or well-formedness.

**COM and .NET**

*Signature:* `XMLValidationMode(ENUMXMLValidationMode valMode)`

**Java**

*Signature:* `public void setXMLValidationMode(ENUMXMLValidationMode valMode)`

5.4.1.7.2.22 XSDVersion

Sets the XML Schema version against which the XML document will be validated. Value is an enumeration literal of `ENUMXSDVersion`.

**COM and .NET**

*Signature:* `XSDVersion(ENUMXSDVersion version)`

**Java**

*Signature:* `public void setXSDVersion(ENUMXSDVersion version)`

5.4.1.7.2.23 XSLFileName

Specifies the XSLT file to use. The supplied string must be an absolute URL that gives the location of the XSLT file to use.

**COM and .NET**

*Signature:* `XSLFileName(string fileurl)`

**Java**

*Signature:* `public void setXSLFileName(string fileurl)`
5.4.1.7.2.24  XSLFromText

Supplies, as a text string, the contents of the XSLT document to use

**COM and .NET**

*Signature:* `XSLFromText(string xsltext)`

**Java**

*Signature:* `public void setXSLFromText(string xsltext)`

### 5.4.2  Enumerations

Enumerations of the COM/.NET and Java Server APIs are described in this section. Each description includes links to the methods or properties that use the enumeration.

- `ENUMAssessmentMode`
- `ENUMErrorFormat`
- `ENUMIXBRLUriStrategy`
- `ENUMIXBRLVersion`
- `ENUMLoadSchemalocation`
- `ENUMSchemalnports`
- `ENUMSchemaMapping`
- `ENUMTableOutputFormat`
- `ENUMValidationType`
- `ENUMWellformedCheckType`
- `ENUMXBRLValidationType`
- `ENUMXMLValidationMode`
- `ENUMXQueryUpdatedXML`
- `ENUMXQueryVersion`
- `ENUMXSDVersion`
- `ENUMXSLTVersion`

### 5.4.2.1  ENUMAssessmentMode

Defines the assessment mode of the XML Validator to be strict or lax:

- `eAssessmentModeStrict`: Sets the schema-validity assessment mode to *Strict*. This is the default value.
- `eAssessmentModeLax`: Sets the schema-validity assessment mode to *Lax*. 
COM and .NET

<table>
<thead>
<tr>
<th>eAssessmentModeStrict</th>
<th>= 0</th>
</tr>
</thead>
<tbody>
<tr>
<td>eAssessmentModeLax</td>
<td>= 1</td>
</tr>
</tbody>
</table>

*Used by*

<table>
<thead>
<tr>
<th>Interface</th>
<th>Property</th>
</tr>
</thead>
<tbody>
<tr>
<td>IXMLValidator</td>
<td>AssessmentMode</td>
</tr>
</tbody>
</table>

Java

```java
public enum ENUMAssessmentMode {
    eAssessmentModeLax,
    eAssessmentModeStrict
}
```

*Used by*

<table>
<thead>
<tr>
<th>Class</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>XMLValidator</td>
<td>setAssessmentMode</td>
</tr>
</tbody>
</table>

5.4.2.2 ENUMErrorFormat

Specifies the format of the error output:

- **eFormatText**: Sets the error output format to Text. The default value.
- **eFormatShortXML**: Sets the error output format to ShortXML. This format is an abbreviated form of the LongXML format.
- **eFormatLongXML**: Sets the error output format to LongXML. This format provides the most detail of all three output formats.

COM and .NET

<table>
<thead>
<tr>
<th>eFormatText</th>
<th>= 0</th>
</tr>
</thead>
<tbody>
<tr>
<td>eFormatShortXML</td>
<td>= 1</td>
</tr>
<tr>
<td>eFormatLongXML</td>
<td>= 2</td>
</tr>
</tbody>
</table>

*Used by*

<table>
<thead>
<tr>
<th>Interface</th>
<th>Property</th>
</tr>
</thead>
<tbody>
<tr>
<td>IServer</td>
<td>ErrorFormat</td>
</tr>
</tbody>
</table>
Java

```java
public enum ENUMErrorFormat {
    eFormatText,
    eFormatShortXML,
    eFormatLongXML
}
```

**Used by**

<table>
<thead>
<tr>
<th>Class</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>RaptorXMLFactory</td>
<td>setErrorFormat</td>
</tr>
</tbody>
</table>

**5.4.2.3 ENUMIXBRLUriStrategy**

Specifies how URIs in the Inline XBRL should be written to the generated XBRL document:

- **eStrategyNone**: Copies the URI verbatim to the target document.
- **eStrategyMakeAbsolute**: Makes any relative URIs absolute by resolving against the in-scope base URI at the respective element in the input document.
- **eStrategyMakeRelative**: If possible, makes any absolute and relative URIs relative to the output document (otherwise writes the resolved absolute URI).
- **eStrategyKeepRelative**: If possible, makes only the relative URIs relative to the output document (and copies any absolute URI).

**COM and .NET**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>eStrategyNone</td>
<td>( = 0 )</td>
</tr>
<tr>
<td>eStrategyMakeAbsolute</td>
<td>( = 1 )</td>
</tr>
<tr>
<td>eStrategyMakeRelative</td>
<td>( = 2 )</td>
</tr>
<tr>
<td>eStrategyKeepRelative</td>
<td>( = 3 )</td>
</tr>
</tbody>
</table>

**Used by**

<table>
<thead>
<tr>
<th>Interface</th>
<th>Property</th>
</tr>
</thead>
<tbody>
<tr>
<td>IXBRL</td>
<td>IXBRLUriStrategy</td>
</tr>
</tbody>
</table>

Java

```java
public enum ENUMIXBRLUriStrategy {
    eStrategyNone,
    eStrategyMakeAbsolute,
    eStrategyMakeRelative,
    eStrategyKeepRelative
}
```
5.4.2.4 ENUMIXBRLVersion

Specifies which version of the Inline XBRL specification to use: Inline XBRL 1.0 or Inline XBRL 1.1. eVersionDetect enables auto-detection.

- eIXBRLVersion10: Specifies that the Inline XBRL 1.0 specification be used.
- eIXBRLVersion11: Specifies that the Inline XBRL 1.1 specification be used.
- eIXBRLVersionDetect: Enables auto-detection of the version from the submitted Inline XBRL document.

### COM and .NET

<table>
<thead>
<tr>
<th>Enum</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>eIXBRLVersion10</td>
<td>0</td>
</tr>
<tr>
<td>eIXBRLVersion11</td>
<td>1</td>
</tr>
<tr>
<td>eIXBRLVersionDetect</td>
<td>2</td>
</tr>
</tbody>
</table>

### Java

```java
public enum ENUMIXBRLVersion {
  eVersion10,
  eVersion11,
  eVersionDetect
}
```

### Used by

<table>
<thead>
<tr>
<th>Class</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>XBRL</td>
<td>setIXBRLUriTransformationStrategy</td>
</tr>
</tbody>
</table>
5.4.2.5 ENUMLoadSchemalocation

Indicates how the schema's location should be determined. The selection is based on the schema location attribute of the XML or XBRL instance document. This attribute could be xsi:schemaLocation or xsi:noNamespaceSchemaLocation.

- eSHLoadBySchemalocation uses the URL of the schema location attribute in the XML or XBRL instance document. This enumeration literal is the default value.
- eSHLoadByNamespace uses the namespace part of xsi:schemaLocation and an empty string in the case of xsi:noNamespaceSchemaLocation to locate the schema via a catalog mapping.
- eSHLoadCombiningBoth: If either the namespace URL or schema location URL has a catalog mapping, then the catalog mapping is used. If both have catalog mappings, then the value of ENUMSchemaMapping decides which mapping is used. If neither the namespace nor schema location has a catalog mapping, the schema location URL is used.
- eSHLoadIgnore: The xsi:schemaLocation and xsi:noNamespaceSchemaLocation attributes are both ignored.

**COM and .NET**

<table>
<thead>
<tr>
<th>ENUM</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>eSHLoadBySchemalocation</td>
<td>0</td>
</tr>
<tr>
<td>eSHLoadByNamespace</td>
<td>1</td>
</tr>
<tr>
<td>eSHLoadCombiningBoth</td>
<td>2</td>
</tr>
<tr>
<td>eSHLoadIgnore</td>
<td>3</td>
</tr>
</tbody>
</table>

**Used by**

<table>
<thead>
<tr>
<th>Interface</th>
<th>Property</th>
</tr>
</thead>
<tbody>
<tr>
<td>IXBRL</td>
<td>SchemalocationHints</td>
</tr>
<tr>
<td>XMLValidator</td>
<td>SchemalocationHints</td>
</tr>
<tr>
<td>IXSLT</td>
<td>SchemalocationHints</td>
</tr>
</tbody>
</table>

**Java**

```java
public enum ENUMLoadSchemalocation {
    eSHLoadBySchemalocation,
    eSHLoadByNamespace,
    eSHLoadCombiningBoth,
    eSHLoadIgnore
}
```

**Used by**

<table>
<thead>
<tr>
<th>Class</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>XBRL</td>
<td>setSchemalocationHints</td>
</tr>
<tr>
<td>XMLValidator</td>
<td>setSchemalocationHints</td>
</tr>
</tbody>
</table>
5.4.2.6 ENUMSchemalImports

Defines the behavior of the schema's xs:import elements, each of which has an optional namespace attribute and an optional schemaLocation attribute.

- `eSILoadBySchemalocation` uses the value of the schemaLocation attribute to locate the schema, taking account of catalog mappings. If the namespace attribute is present, the namespace is imported (licensed).
- `eSILoadPreferringSchemalocation`: If the schemaLocation attribute is present, it is used, taking account of catalog mappings. If no schemaLocation attribute is present, then the value of the namespace attribute is used via a catalog mapping. This enumeration literal is the default value.
- `eSILoadByNamespace` uses the value of the namespace attribute to locate the schema via a catalog mapping.
- `eSILoadCombiningBoth`: If either the namespace URL or schemaLocation URL has a catalog mapping, then the catalog mapping is used. If both have catalog mappings, then the value of ENUMSchemalMapping decides which mapping is used. If neither the namespace nor schemaLocation URL has a catalog mapping, the schemaLocation URL is used.
- `eSILicenseNamespaceOnly`: The namespace is imported. No schema document is imported.

### COM and .NET

<table>
<thead>
<tr>
<th>ENUMSchemalImports</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>eSILoadBySchemalocation</td>
<td>0</td>
</tr>
<tr>
<td>eSILoadPreferringSchemalocation</td>
<td>1</td>
</tr>
<tr>
<td>eSILoadByNamespace</td>
<td>2</td>
</tr>
<tr>
<td>eSILoadCombiningBoth</td>
<td>3</td>
</tr>
<tr>
<td>eSILicenseNamespaceOnly</td>
<td>4</td>
</tr>
</tbody>
</table>

#### Used by

<table>
<thead>
<tr>
<th>Interface</th>
<th>Property</th>
</tr>
</thead>
<tbody>
<tr>
<td>IXBRL</td>
<td>SchemaImports</td>
</tr>
<tr>
<td>IXMLValidator</td>
<td>SchemaImports</td>
</tr>
<tr>
<td>IXSLT</td>
<td>SchemaImports</td>
</tr>
</tbody>
</table>

#### Java

```java
public enum ENUMSchemalImports {
    eSILoadBySchemalocation,
    eSILoadPreferringSchemalocation,
    eSILoadByNamespace,
    eSILoadCombiningBoth,
    eSILicenseNamespaceOnly
}
```
5.4.2.7 ENUMSchemaMapping

Specifies which of two catalog mappings is preferred: namespaces or schema-location URLs. This enumeration is useful for disambiguating ENUMLoadSchemaLocation and ENUMSchemaImports.

- eSMPreferNamespace: Selects the namespace.
- eSMPreferSchemaLocation: Selects the schema location. This is the default value.

### COM and .NET

<table>
<thead>
<tr>
<th>Interface</th>
<th>Property</th>
</tr>
</thead>
<tbody>
<tr>
<td>XBRL</td>
<td>SchemaMapping</td>
</tr>
<tr>
<td>XMLValidator</td>
<td>SchemaMapping</td>
</tr>
<tr>
<td>XSLT</td>
<td>SchemaMapping</td>
</tr>
</tbody>
</table>

### Java

```java
public enum ENUMSchemaMapping {
    eSMPreferSchemaLocation,
    eSMPreferNamespace
}
```

### Used by

<table>
<thead>
<tr>
<th>Class</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>XBRL</td>
<td>setSchemaMapping</td>
</tr>
<tr>
<td>XMLValidator</td>
<td>setSchemaMapping</td>
</tr>
<tr>
<td>XSLT</td>
<td>setSchemaMapping</td>
</tr>
</tbody>
</table>

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5.4.2.8 ENUMTableOutputFormat

Specifies the output format of the document containing the generated XBRL tables.

- **eFormatXML**: The output document with the generated tables is in XML format.
- **eFormatHTML**: The output document with the generated tables is in HTML format.

**COM and .NET**

<table>
<thead>
<tr>
<th>ENUM</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>eFormatXML</td>
<td>0</td>
</tr>
<tr>
<td>eFormatHTML</td>
<td>1</td>
</tr>
</tbody>
</table>

**Used by**

<table>
<thead>
<tr>
<th>Interface</th>
<th>Property</th>
</tr>
</thead>
<tbody>
<tr>
<td>IXBRL</td>
<td>TableOutputFormat</td>
</tr>
</tbody>
</table>

**Java**

```java
public enum ENUMTableOutputFormat {
    eFormatXML,
    eFormatHTML
}
```

**Used by**

<table>
<thead>
<tr>
<th>Class</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>XBRL</td>
<td>setTableOutputFormat</td>
</tr>
</tbody>
</table>

5.4.2.9 ENUMValidationType

Specifies what validation to carry out and, in the case of XML documents, whether validation is against a DTD or XSD.

- **eValidateAny**: The document type (for example, XML or XSD) is detected, and validation is set automatically for that document type.
- **eValidateXMLWithDTD**: Specifies validation of an XML document against a DTD.
- **eValidateXMLWithXSD**: Specifies validation of an XML document against an XSD (XML Schema).
- **eValidateDTD**: Specifies validation of a DTD document.
- **eValidateXSD**: Specifies validation of an XSD (W3C XMLSchema) document.
- **eValidateJSON**: Specifies validation of a JSON instance document.
- **eValidateJSONSchema**: Specifies validation of a JSON Schema document according to JSON Schema v4.
- **eValidateAvro**: Specifies validation of an Avro binary file. The Avro data in the binary file is validated against the Avro Schema contained in the binary file.
- **eValidateAvroSchema**: Specifies validation of an Avro schema against the Avro schema specification.
- **eValidateAvroJSON**: Specifies validation of a JSON-serialized Avro data file against an Avro schema.

### COM and .NET

<table>
<thead>
<tr>
<th>Enum</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>eValidateAny</td>
<td>0</td>
</tr>
<tr>
<td>eValidateXMLWithDTD</td>
<td>1</td>
</tr>
<tr>
<td>eValidateXMLWithXSD</td>
<td>2</td>
</tr>
<tr>
<td>eValidateDTD</td>
<td>3</td>
</tr>
<tr>
<td>eValidateXSD</td>
<td>4</td>
</tr>
<tr>
<td>eValidateJSON</td>
<td>5</td>
</tr>
<tr>
<td>eValidateJSONSchema</td>
<td>6</td>
</tr>
<tr>
<td>eValidateAvro</td>
<td>7</td>
</tr>
<tr>
<td>eValidateAvroSchema</td>
<td>8</td>
</tr>
<tr>
<td>eValidateAvroJSON</td>
<td>9</td>
</tr>
</tbody>
</table>

**Used by**

<table>
<thead>
<tr>
<th>Interface</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>IXMLValidator</td>
<td>isValid</td>
</tr>
</tbody>
</table>

### Java

```java
public enum ENUMValidationType {
    eValidateAny,
    eValidateXMLWithDTD,
    eValidateXMLWithXSD,
    eValidateDTD,
    eValidateXSD,
    eValidateJSON,
    eValidateJSONSchema,
    eValidateAvro,
    eValidateAvroSchema,
    eValidateAvroJSON
}
```

**Used by**

<table>
<thead>
<tr>
<th>Class</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>XMLValidator</td>
<td>isValid</td>
</tr>
</tbody>
</table>
5.4.2.10 ENUMWellformedCheckType

Specifies the type of well-formed check to make (for XML, DTD, or JSON).

- **eWellformedAny**: The document type is detected, and the type of check is set automatically.
- **eWellformedXML**: Checks an XML document for well-formedness.
- **eWellformedDTD**: Checks a DTD document for well-formedness.
- **eWellformedJSON**: Checks a JSON document for well-formedness.

### COM and .NET

<table>
<thead>
<tr>
<th>ENUMWellformedCheckType</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>eWellformedAny</td>
<td>0</td>
</tr>
<tr>
<td>eWellformedXML</td>
<td>1</td>
</tr>
<tr>
<td>eWellformedDTD</td>
<td>2</td>
</tr>
<tr>
<td>eWellformedJSON</td>
<td>3</td>
</tr>
</tbody>
</table>

**Used by**

<table>
<thead>
<tr>
<th>Interface</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>IXMLValidator</td>
<td>isWellformed</td>
</tr>
</tbody>
</table>

**Java**

```java
public enum ENUMWellformedCheckType {
    eWellformedAny,
    eWellformedXML,
    eWellformedDTD,
    eWellformedJSON
}
```

**Used by**

<table>
<thead>
<tr>
<th>Class</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>XMLValidator</td>
<td>isWellformed</td>
</tr>
</tbody>
</table>

5.4.2.11 ENUMXBRLValidationType

Specifies the type of XBRL validation to carry out: document to validate (for example, an XBRL instance, XBRL taxonomy, etc).

- **eValidateXBRLAny**: The document type is detected automatically, and the type of validation is set automatically according to the document type.
- **eValidateXBRLInstance**: Sets the validation type to *Instance*. Validates an XBRL instance document (*.xbrl file extension).
- **eValidateXBRLTaxonomy**: Sets the validation type to Taxonomy. Validates an XBRL taxonomy (.xsd file extension).
- **eValidateInline**: Sets the validation type to Inline. Validates an Inline XBRL (iXBRL) document against the [Inline XBRL 1.0 or Inline XBRL 1.1 specification](https://www.xbrl.org/standards/release-05).
- **eValidateTaxonomyPackage**: Sets the validation type to TaxonomyPackage. Validates an XBRL taxonomy package according to the [Taxonomy 1.0 Packages specification](https://www.xbrl.org/standards/release-05).
- **eValidate(XBRL)VersioningReport**: Sets the validation type to XBRLVersion. Validates an XBRL versioning report (an XBRL Versioning document) according to the XBRL Versioning 1.0 specification. Note that this enumeration literal in Java does not contain XBRL. See below for exact COM/.NET and Java literals, respectively.

### Names in COM/.NET are different than in Java

Note that not only is the name of the enumeration different (**ENUMXBRLValidationType** and **ENUMXValidationType**). Some enumeration values are also different. The differently named values (by their COM/.NET names) are: `eValidateXBRLAny`, `eValidateXBRLInstance`, `eValidateXBRLTaxonomy`, `eValidateXBRLVersioningReport`. See the Java section below for the corresponding Java names.

### COM and .NET

<table>
<thead>
<tr>
<th>Enum</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>eValidateXBRLAny</td>
<td>0</td>
</tr>
<tr>
<td>eValidateXBRLInstance</td>
<td>1</td>
</tr>
<tr>
<td>eValidateXBRLTaxonomy</td>
<td>2</td>
</tr>
<tr>
<td>eValidateInline</td>
<td>3</td>
</tr>
<tr>
<td>eValidateTaxonomyPackage</td>
<td>4</td>
</tr>
<tr>
<td>eValidateXBRLVersioningReport</td>
<td>5</td>
</tr>
<tr>
<td>eValidateXBLXule</td>
<td>6</td>
</tr>
</tbody>
</table>

### Java

```java
public enum ENUMValidationType {
    eValidateAny,
    eValidateInstance,
    eValidateTaxonomy,
    eValidateInline,
    eValidateTaxonomyPackage,
    eValidateVersioningReport,
    eValidateXule
}
```
### 5.4.2.12 ENUMXMLValidationMode

Specifies the type of XML validation to perform (validation or well-formedness check).

- **eProcessingModeWF**: Sets the XML processing mode to **wellformed**. This is the default value.
- **eProcessingModeValid**: Sets the XML processing mode to **validation**.
- **eProcessingModeID**: Internal, not for use.

#### COM and .NET

<table>
<thead>
<tr>
<th>ENUMXMLValidationModeWF</th>
<th>0</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENUMXMLValidationModeID</td>
<td>1</td>
</tr>
<tr>
<td>ENUMXMLValidationModeValid</td>
<td>2</td>
</tr>
</tbody>
</table>

#### Java

```java
public enum ENUMXMLValidationMode {
    eProcessingModeValid,
    eProcessingModeWF,
    eProcessingModeID
}
```

#### Used by

<table>
<thead>
<tr>
<th>Class</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>XBRL</td>
<td>IsValid</td>
</tr>
<tr>
<td>IXMLValidator</td>
<td>XMLValidationMode</td>
</tr>
<tr>
<td>IXQuery</td>
<td>XMLValidationMode</td>
</tr>
<tr>
<td>IXSLT</td>
<td>XMLValidationMode</td>
</tr>
</tbody>
</table>
5.4.2.13 ENUMXQueryUpdatedXML

Specifies how XQuery updates are handled.

- **eUpdatedDiscard**: Updates are discarded and not written to file.
- **eUpdatedWriteback**: Updates are written to the input XML file specified with `InputXMLFileName`.
- **eUpdatedAsMainResult**: Updates are written to the location specified by the `outputFile` parameter of `ExecuteUpdate`.

**COM and .NET**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>eUpdatedDiscard</td>
<td>= 1</td>
</tr>
<tr>
<td>eUpdatedWriteback</td>
<td>= 2</td>
</tr>
<tr>
<td>eUpdatedAsMainResult</td>
<td>= 3</td>
</tr>
</tbody>
</table>

**Used by**

<table>
<thead>
<tr>
<th>Interface</th>
<th>Property</th>
</tr>
</thead>
<tbody>
<tr>
<td>IXQuery</td>
<td>UpdatedXMLWriteMode</td>
</tr>
</tbody>
</table>

**Java**

```java
public enum ENUMXQueryUpdatedXML {
    eUpdatedDiscard,
    eUpdatedWriteback,
    eUpdatedAsMainResult
}
```

**Used by**

<table>
<thead>
<tr>
<th>Class</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>XQuery</td>
<td>setUpdatedXMLWriteMode</td>
</tr>
</tbody>
</table>

5.4.2.14 ENUMXQueryVersion

Sets the XQuery version to be used for processing (execution or validation).

- **eXQVersion10**: Sets the XQuery version to XQuery 1.0.
- **eXQVersion30**: Sets the XQuery version to XQuery 3.0. The default value.
- **eXQVersion31**: Sets the XQuery version to XQuery 3.1.

**Note**: The Java enumeration literals are differently named than the COM/.NET literals. See below.
COM and .NET

| eXQVersion10 | = 1 |
| eXQVersion30 | = 3 |
| eXQVersion31 | = 31 |

Used by

<table>
<thead>
<tr>
<th>Interface</th>
<th>Property</th>
</tr>
</thead>
<tbody>
<tr>
<td>IXQuery</td>
<td>EngineVersion</td>
</tr>
</tbody>
</table>

Java

```java
public enum ENUMXQueryVersion {
    eVersion10,
    eVersion30,
    eVersion31
}
```

Used by

<table>
<thead>
<tr>
<th>Class</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>XQuery</td>
<td>setEngineVersion</td>
</tr>
</tbody>
</table>

5.4.2.15 ENUMXSDVersion

Specifies the XML Schema version to use for validation.

- **eXSDVersionAuto**: The XML Schema version is detected automatically from the XSD document's `vc:minVersion` attribute. If this attribute's value is 1.1, then the document is considered to be XSD 1.1. If the attribute has any other value, or if no value exists, then the document is considered to be XSD 1.0.
- **eXSDVersion10**: Sets the XML Schema version for validation to XML Schema 1.0.
- **eXSDVersion11**: Sets the XML Schema version for validation to XML Schema 1.1.

COM and .NET

<table>
<thead>
<tr>
<th>eXSDVersionAuto</th>
<th>= 0</th>
</tr>
</thead>
<tbody>
<tr>
<td>eXSDVersion10</td>
<td>= 1</td>
</tr>
<tr>
<td>eXSDVersion11</td>
<td>= 2</td>
</tr>
</tbody>
</table>

Used by
### Java

```java
public enum ENUMXSDVersion {
    eXSDVersionAuto,
    eXSDVersion10,
    eXSDVersion11,
}
```

**Used by**

<table>
<thead>
<tr>
<th>Class</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>XMLValidator</td>
<td>setXSDVersion</td>
</tr>
<tr>
<td>XQuery</td>
<td>setXSDVersion</td>
</tr>
<tr>
<td>XSLT</td>
<td>setXSDVersion</td>
</tr>
</tbody>
</table>

### 5.4.2.16 ENUMXSLTVersion

Sets the XSLT version to be used for processing (validation or XSLT transformation).

- **eVersion10**: Sets the XSLT version to XSLT 1.0.
- **eVersion20**: Sets the XSLT version to XSLT 2.0.
- **eVersion30**: Sets the XSLT version to XSLT 3.0.

### COM and .NET

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>eVersion10</td>
<td>= 1</td>
</tr>
<tr>
<td>eVersion20</td>
<td>= 2</td>
</tr>
<tr>
<td>eVersion30</td>
<td>= 3</td>
</tr>
</tbody>
</table>

**Used by**

<table>
<thead>
<tr>
<th>Interface</th>
<th>Property</th>
</tr>
</thead>
<tbody>
<tr>
<td>IXSLT</td>
<td>EngineVersion</td>
</tr>
</tbody>
</table>

### Java

```java
public enum ENUMXSLTVersion {
    eVersion10,
    eVersion20,
    eVersion30,
}
```
### Used by

<table>
<thead>
<tr>
<th>Class</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>XSLT</td>
<td>setEngineVersion</td>
</tr>
</tbody>
</table>
6 Engine APIs: Python and .NET

RaptorXML+XBRL Server provides two engine APIs:

- a Python wheel file (.whl), which is the Python Engine API: `raptorxml<versiondetails>.whl`
- a .NET DLL file (.dll), which is the .NET Engine API: `raptorxmlxbrlapi.dll`

These two engine APIs provide the RaptorXML+XBRL Server functionality as separate packages that are standalone and independent from RaptorXML+XBRL Server (see figure below). Each package must be installed on the user's machine before it can be imported as a Python module or integrated into a custom .NET application. Because all processing is performed locally on the user's machine, the Python and .NET engine APIs provide detailed access to the data models of any valid XML and XBRL instances, XSD schemas and XBRL taxonomies. The APIs expose a rich set of methods to iterate over the content of XBRL instances or allow to retrieve specific bits of information from XBRL taxonomies with a few lines of code.

![Diagram of Engine APIs]

Note the following points about the Engine APIs:

- After you install RaptorXML+XBRL Server, both engine APIs will be located in the bin folder of the RaptorXML+XBRL Server installation folder.
- The engine APIs provide additional advanced processing via more versatile objects in their APIs.
- In order to use an engine API, a licensed version of RaptorXML+XBRL Server must be installed on the machine on which the Python program or .NET application is executed (see Usage below).

Usage

You can create a Python program or .NET application as follows:

**Python program**

A Python program can access RaptorXML functionality by using Python API objects (see here). When the Python program is executed, it will use the RaptorXML library that has been installed in your Python
environment when you install the Python wheel. Note that the Python wheel is compatible with Python version 3.7 only.

.NET application
A .NET application can access RaptorXML functionality by using .NET API objects (see [here](#)). When the .NET application is executed, it will use the RaptorXML that is contained in the .NET API DLL.

Licensing
In order to use an engine API, a licensed version of RaptorXML+XBRL Server must be installed on the machine on which the Python program or .NET application is executed. See the section [Licensing](#) for more detailed information.
6.1 Licensing

In order for an API package to run on a client machine, that machine will have to be licensed as a RaptorXML+XBRL Server client. Licensing consists of two steps:

1. Registering the machine as a RaptorXML+XBRL Server client with Altova LicenseServer
2. Assigning a RaptorXML+XBRL Server license from LicenseServer to that machine.

If you plan to use the API package from a given machine, then two possible situations arise:

- If the client machine is already running a licensed installation of RaptorXML+XBRL Server, then the API package can be run without you needing to take any additional steps. This is because the machine is already licensed to run RaptorXML+XBRL Server. Consequently, use of the API package on this machine is covered by the license assigned to RaptorXML+XBRL Server on that machine.
- If RaptorXML+XBRL Server is not installed on the client machine and you do not want to install RaptorXML+XBRL Server on that machine for whatever reason. In this case, you can still register the machine as a RaptorXML+XBRL Server client and assign it a RaptorXML+XBRL Server license. How to do this is described below.

To register a machine (on which RaptorXML+XBRL Server is not installed) as a RaptorXML+XBRL Server client, use the command line application `registerlicense.exe`, which is located in the application's bin folder:

<table>
<thead>
<tr>
<th>Platform</th>
<th>Path</th>
</tr>
</thead>
<tbody>
<tr>
<td>Windows</td>
<td>Program Files\Altova\RaptorXMLXBRLServer2021\bin</td>
</tr>
<tr>
<td>Linux</td>
<td>/opt/Altova/RaptorXMLXBRLServer2021/bin</td>
</tr>
<tr>
<td>Mac</td>
<td>/usr/local/Altova/RaptorXMLXBRLServer2021/bin</td>
</tr>
</tbody>
</table>

On the command line run the command:

```
registerlicense <LicenseServer>
```

where `<LicenseServer>` is the IP address or host name of the LicenseServer machine.

This command will register the machine as a RaptorXML+XBRL Server client with Altova LicenseServer. For information about how to assign a RaptorXML+XBRL Server license to the machine and for more information about licensing, see the Altova LicenseServer documentation.

Deploying on Linux

To deploy the `registerlicense` application with your Python wheel package, the shared libraries that are listed below need to be present in a sibling `lib` directory. The shared libraries can be copied from your Raptor installation folder:

```
/opt/Altova/RaptorXMLServerRaptorXMLXBRLServer2021/lib
```

- libcrypto.so.1.0.0
- libssl.so.1.0.0
- libstdc++.so.6
- libtbb.so.2
6.2 Python API

The RaptorXML Python API enables data in XML documents, XML Schema documents, XBRL instance documents, and XBRL taxonomy documents to be accessed and manipulated in Python scripts. Some typical use cases of the Python API include:

- implement custom validation rules and error messages
- export content from XML and XBRL documents to a database
- export content from XML and XBRL documents to custom data formats
- interactively navigate and query the data model of XML and XBRL documents within a Python shell or Jupyter notebook (http://jupyter.org/)

The Python APIs

The Python APIs (for XML, XSD and XBRL) provide access to the meta-information, structural information, and data contained in XML, XSD, and XBRL instance and taxonomy documents. As a result, Python scripts can be created that make use of the APIs to access and process document information. For example, a Python script can be passed to RaptorXML+XBRL Server that writes data from an XML or XBRL instance document to a database or to a CSV file.

Example scripts for Raptor's Python APIs are available at: https://github.com/altova

The Python APIs are described in their API references:

- Python API v1 Reference
- Python API v2 Reference

Note: Raptor's Python API v1 is deprecated. Please use Python API v2.

RaptorXML+XBRL Server package for Python

In your installation of RaptorXML+XBRL Server, you will also find a Python package in wheel format. You can use Python's pip command to install this package as a module of your Python installation. After the RaptorXMLXBRL module has been installed, you can use the module's functions within your code. In this way, RaptorXMLXBRL's functionality can be used easily in any Python program you write, together with other third-party Python libraries, such as graphics libraries.

For information about how to use RaptorXML+XBRL Server's Python package, see the section RaptorXML+XBRL Server as a Python Package.

Note: The Python wheel is compatible with Python version 3.7 only.

Python scripts

A user-created Python script is submitted with the --script parameter of the following commands:

- valxml-withxsd (xsi)
- valxsd (xsd)
- valxbrltaxonomy (dts)
- valxbrl (xbrl)
These commands invoking Python scripts can be used both on the Command Line Interface (CLI) and via the HTTP Interface. The usage of Python scripts with the Python APIs of RaptorXML+XBRL Server are described at: https://github.com/altova.

Making Python scripts safe

When a Python script is specified in a command via HTTP to RaptorXML+XBRL Server, the script will only work if it is located in the trusted directory. The script is executed from the trusted directory. Specifying a Python script from any other directory will result in an error. The trusted directory is specified in the server.script-root-dir setting of the server configuration file, and a trusted directory must be specified if you wish to use Python scripts. Make sure that all Python scripts to be used are saved in this directory.

Though all output generated by the server for HTTP job requests is written to the job output directory (which is a sub-directory of the output-root-directory), this limitation does not apply to Python scripts, which can write to any location. The server administrator must review the Python scripts in the trusted directory for potential vulnerability issues.

6.2.1 Python API Versions

RaptorXML+XBRL Server supports multiple Python API versions. Any previous Python API version is also supported by the current version of RaptorXML+XBRL Server. The Python API version is selected by the --script-api-version=MAJOR_VERSION command line flag. The default of the MAJOR_VERSION argument is always the current version. A new RaptorXML+XBRL Server Python API MAJOR_VERSION is introduced when incompatible changes or major enhancements are introduced. Users of the API do not need to upgrade their existing scripts when a new major version is released.

It is recommended that:

- You use the --script-api-version=MAJOR_VERSION flag to invoke utility scripts from the RaptorXML+XBRL Server command-line (or Web-API). This ensures that scripts still work as expected after RaptorXML+XBRL Server updates—even if a new API MAJOR_VERSION has been released.
- You use the latest version of the API for new projects, even though previous versions will be supported by future RaptorXML+XBRL Server releases.

The Python API versions listed below are currently available. The documentation of the different APIs are available online at the locations given below.

Example files

For examples of scripts that use Raptor's Python APIs, go to https://github.com/altova.

Python API version 1

Introduced with RaptorXML+XBRL Server v2014

Command line flag: --script-api-version=1

Documentation: Python API Version 1 Reference
This is the original RaptorXML+XBRL Server Python API. It covers support to access the internal model of RaptorXML+XBRL Server for:

- XML 1.0 and XML 1.1 (API module `xml`)
- XMLSchema 1.0 and XMLSchema 1.1 (API module `xsd`)
- XBRL 2.1 (API module `xbrl`)

The API can be used through callback functions which are implemented in a Python script file.

- `on_xsi_valid`
- `on_xsd_valid`
- `on_dts_valid`
- `on_xbrl_valid`

A script is specified with the `--script` option on the command line. The callback functions are invoked only if the validation succeeds. Details about the callback functions and the API are described in the RaptorXML+XBRL Server Python API version 1 reference.

**Note:** Raptor’s Python API v1 is deprecated. Please use Python API v2.

### Python API version 2

Introduced with RaptorXML+XBRL Server v2015r3. The latest API version is 2.8.3.

<table>
<thead>
<tr>
<th>Command line flag</th>
<th>Release</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>--script-api-version=2</code></td>
<td>v 2015r3</td>
</tr>
<tr>
<td><code>--script-api-version=2.1</code></td>
<td>v 2015r4</td>
</tr>
<tr>
<td><code>--script-api-version=2.2</code></td>
<td>v 2016</td>
</tr>
<tr>
<td><code>--script-api-version=2.3</code></td>
<td>v 2016r2</td>
</tr>
<tr>
<td><code>--script-api-version=2.4</code></td>
<td>v 2017</td>
</tr>
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<td><code>--script-api-version=2.4.1</code></td>
<td>v 2018</td>
</tr>
<tr>
<td><code>--script-api-version=2.5.0</code></td>
<td>v 2018r2</td>
</tr>
<tr>
<td><code>--script-api-version=2.6.0</code></td>
<td>v 2019</td>
</tr>
<tr>
<td><code>--script-api-version=2.7.0</code></td>
<td>v2019r3</td>
</tr>
<tr>
<td><code>--script-api-version=2.8.0</code></td>
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<td><code>--script-api-version=2.8.2</code></td>
<td>v2021</td>
</tr>
<tr>
<td><code>--script-api-version=2.8.3</code></td>
<td>v2021r2</td>
</tr>
</tbody>
</table>

**Documentation:** [Python API Version 2 Reference](#)
This API version introduces over 300 new classes and reorganizes the modules from the RaptorXML+XBRL Server Python API version 1 in such a way that frequently used information (for example, PSVI data) can be accessed more simply and related APIs are grouped logically together (for example, `xbrl.taxonomy`, `xbrl.formula`, `xbrl.table`). In this version, the callback functions are invoked not only if validation succeeds, but also if validation fails. To reflect this behavior, the name of the callback functions are changed to:

- `on_xsi_finished`
- `on_xsd_finished`
- `on_dts_finished`
- `on_xbrl_finished`

To enable modularization, RaptorXML+XBRL Server now supports multiple `--script` options. The callbacks implemented in these Python script files are executed in the order specified on the command line.

### 6.2.2 RaptorXML+XBRL Server as a Python Package

Starting with RaptorXML+XBRL Server 2017, the Python API is available as a native Python wheel package for Python 3.7. The Python wheel package can be installed as an extension module into your favored Python 3.7 distribution (for example, from [python.org](http://python.org)). Some Python 3 distributions (for example, from [jupyter.org](http://jupyter.org), [anaconda.org](http://anaconda.org) and [SciPy.org](http://scipy.org)) include a wide range of extension modules for big data, mathematics, science, engineering and graphics. These modules now become available to RaptorXML+XBRL Server without the need to build these modules specifically for RaptorXML+XBRL Server. Otherwise, the wheel package works the same way as the `RaptorXMLXBRL-python.exe` application that is included with RaptorXML+XBRL Server.

**Note:** The Python wheel package is a native Python 3.7 extension module and is compatible with Python version 3.7.

**Note:** The Python wheel package does not include the Python API v1.

**Note:** If you update your version of RaptorXML+XBRL Server, make sure to update the Python wheel package in your Python environment.

The information required to correctly install the RaptorXML+XBRL Server package is given in the sections below:

- **Name of wheel file**
- **Location of wheel file**
- **Installing a wheel with pip**
- **The root catalog file**
- **The JSON config file**

For information about how to use RaptorXML+XBRL Server's Python API, see the [Python API Reference and examples](https://github.com/altova). Also see example scripts that use Raptor's Python API at [https://github.com/altova](https://github.com/altova).

**Name of wheel file**

Wheel files are named according to the following pattern:

```
raptorxmlserver-<version>-<build tag>-<python tag>-<abi tag>-<platform tag>.whl```

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Altova RaptorXML+XBRL Server 2021
Example:
`raptorxmlserver-2.8.1-cp35-cp35m-win_amd64.whl`

Location of wheel file
A wheel file is packaged with your installation of RaptorXML+XBRL Server. It is located in the application's `bin` folder:

<table>
<thead>
<tr>
<th>Platform</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Windows</td>
<td>Program Files\Altova\RaptorXMLXBRLServer2021\bin</td>
</tr>
<tr>
<td>Linux</td>
<td>/opt/Altova/RaptorXMLXBRLServer2021/bin</td>
</tr>
<tr>
<td>Mac</td>
<td>/usr/local/Altova/RaptorXMLXBRLServer2021/bin</td>
</tr>
</tbody>
</table>

Installing a wheel with pip
To install the RaptorXML+XBRL Server package as a Python module, use the `pip` command:

```
pip install <wheel-file>.whl
```

```
python -m pip install <wheel-file>.whl
```

If you have installed Python 3.7 or later from python.org, then `pip` will already be installed. Otherwise, you will need to install `pip` first. For more information, see [https://docs.python.org/3/installing/](https://docs.python.org/3/installing/).

The root catalog file
The RaptorXMLXBRL module for Python must be able to locate `RootCatalog.xml`, the root catalog file that is stored in your RaptorXML+XBRL Server installation folder. This is so that the RaptorXMLXBRL module can use the catalog to correctly locate the various resources, such as schemas and other specifications, that the module references in order to carry out functions such as validations and transformations. The RaptorXMLXBRL module will automatically locate `RootCatalog.xml` if the catalog's location has not been changed subsequent to the installation of RaptorXML+XBRL Server.

In case you move or modify your RaptorXML+XBRL Server environment, or if you move `RootCatalog.xml` from its original installed location, then you can specify the catalog's location by means of environment variables and the RaptorXMLXBRL module's JSON Config File. See the list below for the various ways in which you can do this. The RaptorXMLXBRL module determines the location of `RootCatalog.xml` by looking up the following resources in the order given.

<table>
<thead>
<tr>
<th>Resource Type</th>
<th>Location</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Environment variable</td>
<td>ALTTOA_RAPTORXML_PYTHON_CATALOGPATH</td>
<td>Create with a value that is the path to <code>RootCatalog.xml</code></td>
</tr>
<tr>
<td>2 HKLM Registry:</td>
<td>SOFTWARE\Altova\RaptorXML+XBRLServer\Installation_v2021_x64\Setup\CatalogPath</td>
<td>Registry key is added by RaptorXML+XBRL Server installer. Value is the path to <code>RootCatalog.xml</code>. Windows only</td>
</tr>
<tr>
<td>3 Location:</td>
<td>/opt/Altova/RaptorXMLXBRLServer2021/etc/RootCatalog.xml</td>
<td>Linux only</td>
</tr>
<tr>
<td>4 Location:</td>
<td>/usr/local/Altova/RaptorXMLXBRLServer2021/etc/RootCatalog.xml</td>
<td>Mac only</td>
</tr>
</tbody>
</table>
The JSON config file

You can create a JSON config file for the RaptorXML+XBRL Server module. This file will be used by options 5 to 8 in the table above to locate the root catalog file. The JSON config file must contain a map with a "CatalogPath" key that has a value which is the path to the root catalog file.

Listing of JSON config file

```json
{
  "CatalogPath": "/path/to/RootCatalog.xml"
}
```

6.2.3 Debugging Server-Side Python Scripts

Most of the debugging functionality—apart the server-specific callbacks—can be used in a standard Python interpreter or (virtual) environment after the RaptorXML+XBRL Server module has been installed by using `pip`:

```
pip install --upgrade "/path/to/RaptorXML/application-folder/bin/raptorxml-version-cp37-cp37m-winversion.whl"
```

After installing the wheel, you should be able to use any Python IDE to debug a script. You could try to extract the main functionality into a separate function which takes an instance object. This can then be called (i) by the RaptorXML Server callbacks, or (ii) by directly executing the script with a Python interpreter.

```python
from altova_api.v2 import xml, xsd, xbrl

def main(instance):
    # Here goes the application specific logic

    # Main entry point, will be called by RaptorXML after the XML instance validation job has finished
    def on_xsi_finished(job, instance):
        # instance object will be None if XML Schema validation was not successful
        if instance:
            main(instance)
```

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# Main entry point, will be called by RaptorXML after the XBRL instance validation job has finished

def on_xbrl_finished(job, instance):
    # instance object will be None if XBRL 2.1 validation was not successful
    if instance:
        main(instance)

if __name__ == '__main__':
    # parse arguments and create an instance
    instance = …
    main(instance)

## 6.2.4 Debugging Python Scripts in Visual Studio Code

We assume an up-to-date Visual Studio Code (VS Code) installation with the ms-python.python extension installed. Please read the official Python debug configurations in Visual Studio Code guide for a general overview.

Note the following points:

- This guide uses `raptorxmlxbrl-python` as the command to execute RaptorXML+XBRL Server as a Python interpreter.
- The `raptorxmlxbrl-python` executable is available in the bin folder of your RaptorXML+XBRL Server application folder.

### Overview

We introduce two methods to use VS Code to debug Python scripts in RaptorXML+XBRL Server.

- Method 1 also works for servers and RaptorXML Python callbacks (--script option).
- Method 2 doesn't require any source code modifications. It is a modified invocation of RaptorXML. Method 2 doesn't work for servers and RaptorXML Python callbacks (--script option).
- Both methods work with a standard Python interpreter and the imported RaptorXML Python module ('import altova_api.v2 as altova').

### Method 1: Change your source code

Carry out the following steps:

1. Run: `raptorxml-python -m pip install --upgrade debugpy`
2. Add the following lines to your Python source code:
   ```python
   import debugpy
   debugpy.listen(5678)
   debugpy.wait_for_client()
   debugpy.breakpoint()
   ```
3. Copy this launch configuration to VS Code launch.json (defaults will do for the above values) and select it for Run.
   ```json5
   ```
You can also run by using the menu command Run->Add Configuration...->Python->Remote Attach with the defaults accepted.

4. Run your Python script (or RaptorXML with --script callbacks) as usual.
5. Start debugging (usually with the shortcut F5).

**Method 2: Use a modified command line**

Carry out the following steps:

1. Add a launch configuration (as in Method 1 above), and select it for Run.
2. Set a breakpoint in your Python script.
3. Run the command: `raptorxml-python -m debugpy --listen 0.0.0.0:5678 --wait-for-client your-script-.py`  
4. Start debugging (usually with the shortcut F5).

**Note:** Debugging also works with containers and remote servers. You have to change the `host` key of the `connect` entry in the launch configuration. You may also use other ports as long as code or command line and launch.json have consistent values.

**Setting raptorxml-python.exe as VS Code’s default interpreter**

It is possible to configure `raptorxml-python.exe` as the default Python interpreter of VS Code. Do this by adding the following to your VS Code settings.json file:

```json
"python.defaultInterpreterPath": "/path/to/raptorxml-python.exe"
```

In this case, it is also possible to use a "Current File" launch configuration that starts the script for debugging. Consult the official VS Code documentation for details.
6.2.5 FAQs

Q: I want to write a Python script that creates a new XML instance one element at a time while running inside the raptor server. These need to be serialized to the output with different encodings and formatting depending on parameters. Is this possible in RaptorXML+XBRL Server.

A: No, this is currently not possible because we do not have an API for creating arbitrary XML instances. However, when it comes to generating XBRL instances, we do have a high-level API which manages a lot of the technical details (such as avoiding writing duplicate contexts/units, and lots more). See https://www.altova.com/manual/RaptorXML/pyapi2/html/xbrl.InstanceDocumentBuilder.html for more information.

Q: I would like to use lxml. Can I install lxml libraries into “RaptorXMLXBRLServer2020/lib/python3.7/site-packages/”?

A: You can install most Python modules directly by running the following command in a terminal that has administrator rights:

```
"/path/to/RaptorXML/application-folder/bin/RaptorXMLXBRL-python.exe" -m pip install lxml
```

Q: Would it be all right to create a big string that contains the XML instance, then parse the whole thing and re-serialize it.

A: That is one possibility. You can parse and validate XML and XBRL instances from a string buffer using the Python API like this:

```python
from altova_api.v2 import xml

txt = """""""<?xml version="1.0" encoding="utf-8"?>
""""<doc>
""""<elem attr="foo">bar</elem>
""""</doc>"

inst = xml.Instance.create_from_buffer(txt.encode('utf-8')).result
print(inst.serialize())
```
6.3 .NET Framework API

The .NET Framework API of RaptorXML+XBRL Server enables you to integrate the RaptorXML engine in applications written in C# and other .NET languages.

It is implemented as a .NET assembly and puts the RaptorXML engine directly inside an application or a .NET-framework-based extension mechanism like VSTO (Visual Studio Tools for Office). The API provides fine-grained access to validate documents and to query their internal data model from RaptorXML+XBRL Server.

Reference and resources

- **Example code:** The example code is hosted at [https://github.com/altova/RaptorXML-Examples](https://github.com/altova/RaptorXML-Examples).
7  XBRL Taxonomy Manager

XBRL Taxonomy Manager is a tool that provides a centralized way to install and manage XBRL taxonomies for use across all Altova XBRL-enabled applications, including RaptorXML+XBRL Server. On Windows, XBRL Taxonomy Manager has a graphical user interface and is also available at the command line. On Linux and Mac*, the tool is available at the command line only.

* The Linux and macOS operating systems are applicable only if you are running XBRL Taxonomy Manager on those operating systems in conjunction with Altova cross-platform server applications such as MapForce Server, StyleVision Server, or RaptorXML+XBRL Server.

XBRL Taxonomy Manager provides the following features:

- View XBRL taxonomies installed on your computer, and check whether new versions are available for download.
- Download newer versions of XBRL taxonomies independently of the Altova product release cycle. All taxonomies are maintained by Altova on an online-based storage accessible to XBRL Taxonomy Manager, and you can download them as soon as they become available.
- Install or uninstall any of the multiple versions of a given taxonomy (or all versions if necessary).
- A single XBRL taxonomy represents a "package" but it may have dependencies on other taxonomies. Whenever you choose to install or uninstall a particular taxonomy, any dependent taxonomies are detected and also installed or removed automatically. The graphical user interface (or the command line if applicable) informs you when dependencies are being added or removed.
- XBRL taxonomies maintained through XBRL Taxonomy Manager benefit from the XML catalog mechanism that enables URI references in instance or schema documents to be resolved from local files, as opposed to being retrieved from the Internet. This is extremely important in the case of big XBRL taxonomies where schema resolution from remote URIs is not practical or even recommended, mainly for performance reasons.

XBRL Taxonomy Manager provides a way to administer any of the XBRL taxonomies required for use in any one of the Altova XBRL-enabled applications. These include the European Banking Authority Reporting Framework taxonomies, US-GAAP Financial Reporting taxonomies, and various other country- or domain-specific XBRL taxonomies. To view the full list, either run XBRL Taxonomy Manager or run the `list` command at the command line.

Custom XBRL Taxonomies

If you need to work with custom XBRL taxonomies that are not included with XBRL Taxonomy Manager, you can enable those as follows:

- From your Altova XBRL-enabled desktop application, run the Tools | Options menu command, and then go to the XBRL | Taxonomy Packages settings page. From the settings page, browse for the .zip package of your custom XBRL taxonomy.
- From your Altova XBRL-enabled server application, provide the `--taxonomy-package` or `--taxonomy-package-config-file` options when running commands or API methods that support them. For example, these options are supported by XBRL validation commands such as `valxbrl` or `valxbrltaxonomy` in RaptorXML+XBRL Server, or by the `run` command (or the equivalent API method) in MapForce Server.
Altova XBRL-enabled applications

The following Altova applications are XBRL-enabled and thus benefit from the features provided by XBRL Taxonomy Manager:

- Altova XBRL Add-ins for Excel (EBA, Solvency II)
- MapForce Enterprise Edition
- MapForce Server
- MapForce Server Advanced Edition
- RaptorXML+XBRL Server
- StyleVision Server
- StyleVision Enterprise Edition
- XMLSpy Enterprise Edition

Changes in XBRL taxonomies using XBRL Taxonomy Manager take effect for all the applications listed above if they are installed on the same computer.

Installation

XBRL Taxonomy Manager is installed automatically whenever you install any Altova XBRL-enabled application or the Altova Mission Kit Enterprise Edition. Likewise, it is removed automatically when you uninstall the last Altova XBRL-enabled application from your computer or the Altova Mission Kit Enterprise Edition.

How it works

Altova maintains an online taxonomy storage where all XBRL taxonomies used in Altova products are stored. This taxonomy storage is updated on a periodical basis, for example, shortly after new versions of relevant taxonomies are released by their issuing organizations.

Whenever you run XBRL Taxonomy Manager at the graphical user interface, information about the latest available taxonomies is displayed in a dialog box, where you can view, install, upgrade or uninstall them. You can also perform the same actions at the command line interface.
You may also install taxonomies by running .altova_taxonomies files downloaded from the Altova website (https://www.altova.com/taxonomy-manager). In addition, when you take an action that requires loading XBRL taxonomies, RaptorXML+XBRL Server prompts you to install the missing XBRL taxonomies.

Regardless of the manner in which taxonomies were installed, all information about installed taxonomies is tracked in a centralized location on your computer, also known as the local cache directory. The local cache directory contains information about Altova packages (except for the actual taxonomy files, which are installed on demand). The local cache directory is at the following path:

- **Linux**: /var/opt/Altova/pkgs
- **macOS**: /var/Altova/pkgs
The local cache directory gets updated automatically from time to time, so as to propagate the latest state of the online storage to the local computer. More specifically, the cache is updated as follows:

- When you run the XBRL Taxonomy Manager.
- When you run RaptorXML+XBRL Server for the first time in the same calendar day.
- If RaptorXML+XBRL Server is already running, the cache directory gets updated every 24 hours.
- You can also update the local cache from the online storage on demand, by running the update command at the command line interface.

As you install or uninstall taxonomies, the local cache directory gets automatically updated with information about the available and installed taxonomies, as well as the taxonomy files themselves.

The local cache directory is maintained automatically based on the taxonomies you install or uninstall; it should not be altered or deleted manually. If you ever need to reset XBRL Taxonomy Manager to the original "pristine" state, run the `reset` command of the command line interface, and then run the `initialize` command. (Alternatively, run the `reset` command with the `-i` option.)
7.1 Run XBRL Taxonomy Manager

You can run XBRL Taxonomy Manager by using the approaches listed below, as applicable.

**Graphical user interface (Windows only)**
If RaptorXML+XBRL Server runs on Windows, you can run XBRL Taxonomy Manager as follows:

- Run (double-click) a file with .altova_taxonomies extension downloaded from the Altova website.
- From the Windows Control Panel, right-click the Altova Taxonomy Manager entry and select Change or Uninstall from the context menu.

In addition, the check box **Invoke Altova Taxonomy Manager** is available on the last page of the installation wizard, after you complete the installation of RaptorXML+XBRL Server.

**Command line interface (Windows)**
To run XBRL Taxonomy Manager from a command line interface:

1. Open a command prompt window and change directory to C:\ProgramData\Altova\SharedBetweenVersions.
2. To display help at the command line, run:

   ```
   TaxonomyManager.exe --help
   ```

**Command line interface (Linux, macOS)**
To run XBRL Taxonomy Manager from a command line interface:

1. Open a terminal window and change directory to %INSTALLDIR%/bin, where %INSTALLDIR% is the program's installation directory.
2. To display help at the command line, run:

   ```
   sudo ./taxonomymanager --help
   ```
7.2 Install a Taxonomy

You can install a taxonomy by using the approaches listed below, as applicable.

Note the following:

- Installing or uninstalling a taxonomy from XBRL Taxonomy Manager takes effect for all users accounts on the same computer.
- Installing or uninstalling a taxonomy from XBRL Taxonomy Manager takes effect in all Altova XBRL-enabled applications installed on the same computer.
- If the current taxonomy has dependencies on other taxonomies, the dependent taxonomies are also installed (or uninstalled, as applicable).

Note: In order to be able to use the newly installed taxonomies, you must re-start RaptorXML+XBRL Server, as described here for Windows, Linux, macOS.

Graphical user interface (Windows only)
To install a taxonomy:

1. Run XBRL Taxonomy Manager.
2. Select the check box next to the taxonomies or taxonomy versions you want to install, and click Apply.

Alternatively, if you have downloaded a file with .altova_taxonomies extension from the Altova website (https://www.altova.com/taxonomy-manager), double-click the .altova_taxonomies file to run it. XBRL Taxonomy Manager opens when you run the .altova_taxonomies file.

Command line interface (Windows)
To install a taxonomy, run:

```
TaxonomyManager.exe install FILTER...
```

Where FILTER means one of the following:

1. A taxonomy identifier in the format <name>-<version>, for example: eba-2.10, us-gaap-2020.0. To view all the available taxonomy identifiers and versions, run the list command.
2. An .altova_taxonomies file downloaded from the Altova website.

Command line interface (Linux, macOS)
To install a taxonomy, run:

```
sudo ./taxonomymanager install FILTER...
```

Where FILTER means one of the following:

1. A taxonomy identifier in the format <name>-<version>, for example: eba-2.10, us-gaap-2020.0. To view all the available taxonomy identifiers and versions, run the list command.
2. An `.altova_taxonomies` file downloaded from the Altova website.

### Installing taxonomies on demand

Whenever RaptorXML+XBRL Server detects that certain XBRL taxonomies must be installed on your computer, you may be prompted to install taxonomies on demand. For example, if you run a command that requires loading XBRL taxonomies, and if no XBRL taxonomies are currently installed, the command is cancelled and an error message similar to the following appears:

```
Unable to load a schema with target namespace [...] from [...].
Details:
I/O Error: File [...] is part of missing taxonomy [...]. Call 'taxonomymanager install [...]'.
```

To install the missing taxonomy, run the `install` command as suggested by the error message. You can always view all of the previously installed taxonomies by running the `list` command.

### Applying patches

Occasionally, XBRL taxonomies may receive patches from their issuers. When the XBRL Taxonomy Manager detects that patches are available, the following happens:

- If you use XBRL Taxonomy Manager through the Windows graphical user interface, the respective XBRL taxonomies are shown with the ![patch](https://example.com/patch-icon.png) icon.
- If you use the command line or a Linux/macOS system, any XBRL taxonomies that have patches are listed when you run the executable with the `list -u` command.

### To apply a patch on Windows:

1. Click the **Patch Selection** button. The icon of each XBRL taxonomy that qualifies changes from ![before](https://example.com/old-icon.png) to ![after](https://example.com/new-icon.png), and the dialog box informs you about the patches that are to be applied, for example:
Note: The Patch Selection button is enabled only when there are patches available for any of the currently installed XBRL taxonomies.

2. Click Apply.

To apply a patch at the command line interface:

1. Run the list -u command. This lists any taxonomies where patch upgrades are available.
2. Run the upgrade command to install the patches.

For more information, see the reference to the Command Line Interface.
7.3 View Installed Taxonomies

You can view the currently installed taxonomies by using the approaches listed below, as applicable.

Graphical user interface (Windows only)
To view all installed taxonomies from a graphical user interface, run XBRL Taxonomy Manager. A selected check box next to a taxonomy (or a taxonomy version) indicates that that taxonomy is installed.

Command line interface (Windows)
To view all available taxonomies from a command line interface, run:

```
TaxonomyManager.exe list
```

To view only installed taxonomies, run:

```
TaxonomyManager.exe list -i
```

To view only taxonomies where a newer version is available, run:

```
TaxonomyManager.exe list -u
```

Command line interface (Linux, macOS)
To view all available taxonomies, run:

```
sudo ./taxonomymanager list
```

To view only installed taxonomies, run:

```
sudo ./taxonomymanager list -i
```

To view only taxonomies where a newer version is available, run:

```
sudo ./taxonomymanager list -u
```
You can uninstall a taxonomy by using the approaches listed below, as applicable.

**Graphical user interface (Windows only)**
To uninstall a taxonomy:

1. Run XBRL Taxonomy Manager.
2. Clear the check box next to the taxonomies or taxonomy versions you want to uninstall. If the selected taxonomy is dependent on other taxonomy packages, a dialog box opens, informing you that the dependencies will be removed as well, for example:

   ![Package Dependencies](image)

3. Click **Apply** to remove the taxonomy and its dependencies.

**Command line interface (Windows)**
To uninstall a taxonomy, run:

```
TaxonomyManager.exe uninstall FILTER...
```

Where **FILTER** means one of the following:

1. A taxonomy identifier in the format `<name>-<version>`, for example: **eba-2.10**, **us-gaap-2020.0**. To view all the available taxonomy identifiers and versions, run the **list** command.
2. An **.altova_taxonomies** file downloaded from the Altova website.

**Command line interface (Linux, macOS)**
To uninstall a package, run:

```
sudo ./taxonomymanager uninstall FILTER...
```

Where **FILTER** means one of the following:

1. A taxonomy identifier in the format `<name>-<version>`, for example: **eba-2.10**, **us-gaap-2020.0**. To view all the available taxonomy identifiers and versions, run the **list** command.
2. An **.altova_taxonomies** file downloaded from the Altova website.
### 7.5 Command Line Interface

To call XBRL Taxonomy Manager at the command line, you need to know the path of the executable. By default, the XBRL Taxonomy Manager executable is installed at the following path:

<table>
<thead>
<tr>
<th>Operating System</th>
<th>Path</th>
</tr>
</thead>
<tbody>
<tr>
<td>Linux*</td>
<td><code>/opt/Altova/RaptorXMLXBRLServer2021/bin/taxonomymanager</code></td>
</tr>
<tr>
<td>macOS*</td>
<td><code>/usr/local/Altova/RaptorXMLXBRLServer2021/bin/taxonomymanager</code></td>
</tr>
<tr>
<td>Windows</td>
<td><code>C:\ProgramData\Altova\SharedBetweenVersions\TaxonomyManager.exe</code></td>
</tr>
</tbody>
</table>

* The Linux and macOS paths are applicable only if you are running XBRL Taxonomy Manager on those operating systems in conjunction with Altova cross-platform server applications such as MapForce Server, StyleVision Server, or RaptorXML+XBRL Server.

By convention, this documentation omits the full path of the executable when describing a given command, and uses `<exec>` instead of the executable name, for example:

```
<exec> help
```

Where `<exec>` is the path or name of the executable.

#### Calling XBRL Taxonomy Manager from the installation directory

To call the executable without having to type the full path, change the current directory to the one below:

<table>
<thead>
<tr>
<th>Operating System</th>
<th>Command</th>
</tr>
</thead>
<tbody>
<tr>
<td>Linux</td>
<td><code>cd /opt/Altova/RaptorXMLXBRLServer2021/bin</code></td>
</tr>
<tr>
<td>macOS</td>
<td><code>cd /usr/local/Altova/RaptorXMLXBRLServer2021/bin</code></td>
</tr>
<tr>
<td>Windows</td>
<td><code>cd &quot;C:\ProgramData\Altova\SharedBetweenVersions&quot;</code></td>
</tr>
</tbody>
</table>

You can now run a command by calling the executable with a relative path, for example:

```
Linux         sudo ./taxonomymanager help
macOS         sudo ./taxonomymanager help
Windows       TaxonomyManager.exe help
```

**Note:** On Linux and macOS systems, the prefix `./` indicates that the executable is in the current directory. The prefix `sudo` indicates that the command must be run with root privileges.

#### Calling XBRL Taxonomy Manager from any directory

To call the executable from any directory, refer to it using the absolute path. Alternatively, if you want to call the program by typing just the executable name, you can edit the PATH environment variable of your operating system.
system so that it includes the full path to the executable's directory. For ways to change the PATH environment variable, refer to the documentation of your operating system.

Notes:

- After changing the PATH environment variable, you may need to close the terminal window and open a new one, in order for the changes to take effect.
- On Linux and macOS, using `sudo` does not take into account the user's PATH.

Command line syntax
The general syntax for using the command line is as follows:

```
<exec> -h | --help | --version | <command> [options] [arguments]
```

In the listing above, the vertical bar `|` separates a set of mutually exclusive items. The square brackets `[]` indicate optional items. Essentially, you can type the executable path followed by either `--h`, `--help`, or `--version` options, or by a command. Each command may have options and arguments. The list of commands is described in the following sections.

7.5.1 help
This command provides contextual help about commands pertaining to XBRL Taxonomy Manager executable.

Syntax

```
<exec> help [command]
```

Where `[command]` is an optional argument which specifies any valid command name.

Remarks
You can also invoke help by typing a command followed by `-h` or `--help`, for example:

```
<exec> list -h
```

You can also invoke general help by typing `-h` or `--help` directly after the executable, for example:

```
<exec> --help
```

Example
The following command displays help about the `list` command:

```
Linux, macOS  ./taxonomymanager help list
```
7.5.2 info

This command displays detailed information for each of the taxonomies supplied as argument. The detailed information includes the title, version, description, publisher, and dependency references.

Syntax

<exec> info [options] FILTER...

To specify multiple taxonomies, repeat FILTER as many times as necessary.

Arguments

| FILTER | List only taxonomies that contain this string in their name (for example, eba or us-gaap-2020.0). You can specify this argument multiple times. To view the full list of identifiers, run the list command. |

Options

| --help, --h | Display help about this command at the command line. |

Example

The following command displays detailed information about the eba-2.10 and us-gaap-2020.0 taxonomies:

- **Linux, macOS**: ./taxonomymanager info eba-2.10 us-gaap-2020.0
- **Windows**: TaxonomyManager.exe info eba-2.10 us-gaap-2020.0

7.5.3 initialize

This command initializes XBRL Taxonomy Manager environment. It creates a cache directory where information about all taxonomies is stored. Initialization is performed automatically the first time when you install an Altova application that includes supports for XBRL Taxonomy Manager, so you don't need to run this command under normal circumstances. You typically need to run this command after executing the reset command.

Syntax

<exec> initialize [options]
The alias of this command is `init`.

### Options

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>--help</code>, <code>--h</code></td>
<td>Display help about this command at the command line.</td>
</tr>
<tr>
<td><code>--silent</code>, <code>--s</code></td>
<td>Display only error messages. The default value is <code>false</code>.</td>
</tr>
<tr>
<td><code>--verbose</code>, <code>--v</code></td>
<td>Display more information during execution. The default value is <code>false</code>.</td>
</tr>
</tbody>
</table>

#### 7.5.4 `install`

This command installs one or more taxonomies. Note the following:

- Installing or uninstalling a taxonomy from XBRL Taxonomy Manager takes effect for all users accounts on the same computer.
- Installing or uninstalling a taxonomy from XBRL Taxonomy Manager takes effect in all Altova XBRL-enabled applications installed on the same computer.
- If the current taxonomy has dependencies on other taxonomies, the dependent taxonomies are also installed (or uninstalled, as applicable).

### Syntax

```
<exec> install [options] FILTER...
```

To specify multiple taxonomies to install, repeat `FILTER` as many times as necessary.

### Arguments

<table>
<thead>
<tr>
<th>FILTER</th>
<th>Where <code>FILTER</code> means one of the following:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1. A taxonomy identifier in the format <code>&lt;name&gt;-&lt;version&gt;</code>, for example: <code>eba-2.10</code>, <code>us-gaap-2020.0</code>. To view all the available taxonomy identifiers and versions, run the <code>list</code> command.</td>
</tr>
<tr>
<td></td>
<td>2. An <code>.altova_taxonomies</code> file downloaded from the Altova website.</td>
</tr>
<tr>
<td></td>
<td>You can also use abbreviated identifiers if they are unique, for example, <code>eba</code>. If you use an abbreviated identifier, this will install the latest available version of that taxonomy.</td>
</tr>
</tbody>
</table>

### Options

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><code>--help</code>, <code>--h</code></td>
<td>Display help about this command at the command line.</td>
</tr>
<tr>
<td><code>--silent</code>, <code>--s</code></td>
<td>Display only error messages. The default value is <code>false</code>.</td>
</tr>
<tr>
<td><code>--verbose</code>, <code>--v</code></td>
<td>Display more information during execution. The default value is <code>false</code>.</td>
</tr>
</tbody>
</table>
Example

The following command installs the latest **eba** (European Banking Authority) and **us-gaap** (US Generally Accepted Accounting Principles) taxonomies:

| Linux, macOS | ./taxonomymanager install eba us-gaap |
| Windows     | TaxonomyManager.exe install eba us-gaap |

### 7.5.5 list

Use this command to list taxonomies at the command line, in one of the following ways:

- list all available taxonomies
- list specific taxonomies
- list only installed taxonomies
- list only taxonomies that require upgrade.

**Syntax**

```
<exec> list [options] [FILTER...]  
```

This command can be abbreviated with `ls`.

**Arguments**

| FILTER | List only taxonomies that contain this string in their name. You can specify this argument multiple times. |

**Options**

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>--help, --h</td>
<td>Display help about this command at the command line.</td>
</tr>
<tr>
<td>--installed, --i</td>
<td>List only installed taxonomies. The default value is <strong>false</strong>.</td>
</tr>
<tr>
<td>--upgradeable, --u</td>
<td>List only taxonomies where patch upgrades are available. The default value is <strong>false</strong>.</td>
</tr>
</tbody>
</table>

**Examples**

To list all available taxonomies, run:

| Linux, macOS          | ./taxonomymanager list |
| Windows               | TaxonomyManager.exe list |
To list only installed taxonomies, run:

<table>
<thead>
<tr>
<th>Platform</th>
<th>Command</th>
</tr>
</thead>
<tbody>
<tr>
<td>Linux, macOS</td>
<td>./taxonomymanager list -i</td>
</tr>
<tr>
<td>Windows</td>
<td>TaxonomyManager.exe list -i</td>
</tr>
</tbody>
</table>

To list all taxonomies that contain either "eba" or "us-gaap" in their name, run:

<table>
<thead>
<tr>
<th>Platform</th>
<th>Command</th>
</tr>
</thead>
<tbody>
<tr>
<td>Linux, macOS</td>
<td>./taxonomymanager list eba us-gaap</td>
</tr>
<tr>
<td>Windows</td>
<td>TaxonomyManager.exe list eba us-gaap</td>
</tr>
</tbody>
</table>

### 7.5.6 reset

This command removes all installed taxonomies and the cache directory.

**Warning:** This command deletes all installed taxonomies and their information.

After running this command, make sure to run the `initialize` command, in order to recreate the cache directory. Alternatively, run the `reset` command with the `-i` option.

Note that `reset -i` restores the original installation of the product, so it's recommended to run the `update` command as well, after performing a reset. Alternatively, run the `reset` command with the `-i` and `-u` options.

**Syntax**

```bash
<exec> reset [options]
```

**Options**

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>--help, --h</td>
<td>Display help about this command at the command line.</td>
</tr>
<tr>
<td>--init, --i</td>
<td>Initialize the XBRL Taxonomy Manager environment after reset. Valid values are <code>true</code> and <code>false</code>. The default value is <code>false</code>.</td>
</tr>
<tr>
<td>--silent, --s</td>
<td>Display only error messages. The default value is <code>false</code>.</td>
</tr>
<tr>
<td>--update, --u</td>
<td>Initialize and update the XBRL Taxonomy Manager environment after reset. Valid values are <code>true</code> and <code>false</code>. The default value is <code>false</code>.</td>
</tr>
<tr>
<td>--verbose, --v</td>
<td>Display additional information during execution. The default value is <code>false</code>.</td>
</tr>
</tbody>
</table>

**Examples**

To reset the XBRL Taxonomy Manager, run:
### 7.5.7 setdeflang

This command sets the language of XBRL Taxonomy Manager.

**Syntax**

```bash
<exec> setdeflang language
```

Where `language` is a mandatory argument supplying the language code. The alias of this command is `sdl`.

**Arguments**

| language | The language to be set. Valid values are English (en), French (fr), German (de), Japanese (ja), and Spanish (es). |

**Options**

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>--help, --h</td>
<td>Display help about this command at the command line.</td>
</tr>
</tbody>
</table>

**Examples**

To set the language to Spanish, run:

<table>
<thead>
<tr>
<th>Platform</th>
<th>Command</th>
</tr>
</thead>
<tbody>
<tr>
<td>Linux, macOS</td>
<td><code>.taxonomymanager setdeflang es</code></td>
</tr>
<tr>
<td>Windows</td>
<td><code>TaxonomyManager.exe setdeflang es</code></td>
</tr>
</tbody>
</table>

### 7.5.8 uninstall

This command uninstalls one or more taxonomies. By default, any taxonomies referenced by the current one are uninstalled as well. To uninstall just the current taxonomy and keep the referenced taxonomies, set the option `--k`.

**Syntax**

```bash
<exec> uninstall FILTER...
```

To specify multiple taxonomies, repeat `FILTER` as many times as necessary.
Arguments

<table>
<thead>
<tr>
<th>FILTER</th>
<th>Where FILTER means one of the following:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1. A taxonomy identifier in the format <code>&lt;name&gt;-&lt;version&gt;</code>, for example: <code>eba-2.10, us-gaap-2020.0</code>. To view all the available taxonomy identifiers and versions, run the <code>list</code> command.</td>
</tr>
<tr>
<td></td>
<td>2. An <code>.altova_taxonomies</code> file downloaded from the Altova website.</td>
</tr>
</tbody>
</table>

Options

| --help, --h | Display help about this command at the command line. |
| --keep-references, --k | If this option is set, then referenced taxonomies are not uninstalled. The default value is `false`. |
| --silent, --s | Display only error messages. The default value is `false`. |
| --verbose, --v | Display additional information during execution. The default value is `false`. |

Example

The following command uninstalls the `eba-2.10` and `us-gaap-2020.0` taxonomies and their dependencies:

```
Linux, macOS ./taxonomymanager uninstall eba-2.10 us-gaap-2020.0
Windows TaxonomyManager.exe uninstall eba-2.10 us-gaap-2020.0
```

7.5.9 update

This command queries the list of taxonomies available from the online storage and updates the local cache directory. The update of this information takes place implicitly and you shouldn't need to run this command unless you have performed a `reset` and `initialize`.

Syntax

```
<exec> update [options]
```

Options

| --help, --h | Display help about this command at the command line. |
| --silent, --s | Display only error messages. The default value is `false`. |
| --verbose, --v | Display additional information during execution. The default value is `false`. |
Example
The following command updates the taxonomies information explicitly.

<table>
<thead>
<tr>
<th>Environment</th>
<th>Command</th>
</tr>
</thead>
<tbody>
<tr>
<td>Linux, macOS</td>
<td>./taxonomymanager update</td>
</tr>
<tr>
<td>Windows</td>
<td>TaxonomyManager.exe update</td>
</tr>
</tbody>
</table>

7.5.10 upgrade

This command upgrades all eligible taxonomies to the latest available *patch* version. In other words, it performs only upgrades at patch level of a specific release. Running this command is meaningful only if there are upgradeable taxonomies available. You can identify upgradeable taxonomies by running the `list -u` command.

Syntax

```
<exec> upgrade [options]
```

Options

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>--help, --h</td>
<td>Display help about this command at the command line.</td>
</tr>
<tr>
<td>--silent, --s</td>
<td>Display only error messages. The default value is <em>false</em>.</td>
</tr>
<tr>
<td>--verbose, --v</td>
<td>Display additional information during execution. The default value is <em>false</em>.</td>
</tr>
</tbody>
</table>
8 Additional Information

This section contains the following additional information:

- Exit Codes 444
- Schema Location Hints 445
- XBRL Formula Parameters 446
8.1 Exit Codes

The following exit codes are available:

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Validation successful</td>
</tr>
<tr>
<td>1</td>
<td>Validation failed with error / Process interrupted by Ctrl+C/Break/terminal closed / License expired during execution</td>
</tr>
<tr>
<td>11</td>
<td>RaptorXML could not start; the reason is given in the log file</td>
</tr>
<tr>
<td>22</td>
<td>Could not load root catalog / Could not load list file</td>
</tr>
<tr>
<td>64</td>
<td>Invalid command/options</td>
</tr>
<tr>
<td>77</td>
<td>Failed to acquire license during startup</td>
</tr>
<tr>
<td>(128+n)</td>
<td>RaptorXML terminated because of signal number (n). All exit codes above 128 indicate termination as a result of a received external signal or an internally triggered signal. For example, if the exit code is 134, then the signal number is (134-128=6) (the number of SIGABRT).</td>
</tr>
</tbody>
</table>
8.2 Schema Location Hints

Instance documents can use hints to indicate the schema location. Two attributes are used for hints:

- `xsi:schemaLocation` for schema documents with target namespaces. The attribute's value is a pair of items, the first of which is a namespace, the second is a URL that locates a schema document. The namespace name must match the target namespace of the schema document.

  ```xml
  <document xmlns="http://www.altova.com/schemas/test03"
            xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
            xsi:schemaLocation="http://www.altova.com/schemas/test03 Test.xsd">
  ```

- `xsi:noNamespaceSchemaLocation` for schema documents without target namespaces. The attribute's value is the schema document's URL. The referenced schema document must have no target namespace.

  ```xml
  <document xmlns="http://www.altova.com/schemas/test03"
            xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
            xsi:noNamespaceSchemaLocation="Test.xsd">
  ```

The `--schemalocation-hints` option specifies how these two attributes are to be used as hints, especially how the `schemaLocation` attribute information is to be handled (see the option's description above). Note that RaptorXML+XBRL Server considers the namespace part of the `xsi:noNamespaceSchemaLocation` value to be the empty string.

Schema location hints can also be given in an `import` statement of an XML Schema document.

  ```xml
  <import namespace="someNS" schemalocation="someURL">
  ```

In the `import` statement, too, hints can be given via a namespace that can be mapped to a schema in a catalog file, or directly as a URL in the `schemaLocation` attribute. The `--schema-imports` option (for XBRL and XSD/XML) specifies how the schema location is to be selected.
8.3 XBRL Formula Parameters

This section contains the following topics:

- [Formula Parameter Formats](#), which gives examples of the XML and JSON formats of XBRL formula parameters.
- [Using Formula Parameters](#) contains listings in Java, VB.NET, C#, VBScript, and JScript that show formula parameters can be used using objects from the Java and COM/.NET API libraries.

8.3.1 Formula Parameter Formats

Formula parameters can be given in XML format or JSON format.

**XML format**

The listing below shows formula parameters in XML format.

```xml
<?xml version="1.0" encoding="utf-8"?>
<options:formula-parameters
   xmlns:options="http://www.altova.com/schemas/altova/raptorxml/options"
   xmlns:p="http://xbrl.org/formula/conformance/paramstuff"
   xmlns:xs="http://www.w3.org/2001/XMLSchema"
   xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
   xsi:schemaLocation="http://www.altova.com/schemas/altova/raptorxml/options
   http://www.altova.com/schemas/altova/raptorxml/options.xsd">
  <options:parameter name="p1">
    <options:value type="xs:string">hello world from new xml (without namespace)</options:value>
  </options:parameter>
  <options:parameter name="p:p1" type="xs:string" value="hello world from new xml"/>
</options:formula-parameters>
```

Note the following points:

- The `@type` attribute is optional and defaults to `xs:string`.
- Multiple `<options:value>` child elements can be specified in order to assign an XPath sequence to a parameter.
- `@value` and `<options:value>` cannot be used at the same time.

**JSON format**

The listing below shows formula parameters in JSON format.

```json
{
   "formula-parameters": {
      "name": "p1",
      "values": [?
```


Note the following points:

- The `type` key is optional and defaults to `xs:string`.
- The `xs` key is optional and defaults to `http://www.w3.org/2001/XMLSchema`.
- The type in the parameter map is used if a value is specified directly as a JSON string.
- Other ways of writing are currently also supported:

```json
{
    "name": "p2",
    "type": "xs:string",
    "value": "hello world from json new (without namespace)"
},
{
    "name": "p3",
    "type": "xs:int",
    "values": ["1", "2"]
},
{
    "name": "p4",
    "type": "xs:int",
    "values": ["1", {"type": "xs:string", "value": "abc"}, "2"]
}
```

### 8.3.2 Using Formula Parameters

The example listings below show how XBRL formula parameters can be used in various programming languages. For more information, see the description of the [Server API's XBRL interface](#).

**Java**

```java
RaptorXMLFactory rxml = RaptorXML.getFactory();
XBRL xbrl = rxml.getXBRL();
```
Additional Information

XBRL Formula Parameters

```vbnet
Dim objRaptor As New Server()
    Dim objXBRL As XBRL
    objXBRL = objRaptor.GetXBRL()
    objXBRL.AddFormulaParameter("ns1:string", "ns1:Param1", "ns1:theqname")
    objXBRL.AddFormulaParameterNamespace("ns1", "www.www.www")

    ' The parameter is an array of dates
    objXBRL.AddFormulaArrayParameter("", "startDates", New Object[]{
        New XBRLFormulaParam With{
            .ParamType = "xs:date", .ParamValue = "2010-01-01"}, 
        New XBRLFormulaParam With{
            .ParamType = "xs:date", .ParamValue = "2012-01-01"}
    })

    ' The parameter is an array of figs
    objXBRL.AddFormulaArrayParameter("ns1:figs", "startFigs", New Object[]{
        "fig1", "fig2", "fig3"})

    ' The parameter is an array of figs, dates and raisins (rather wild example)
    objXBRL.AddFormulaArrayParameter("ns1:figs", "startDryFruit", New Object[]{
        "fig1", "fig2", "fig3"}, 
        New XBRLFormulaParam With{
            .ParamType = "xs:date", .ParamValue = "2010-01-01"}, 
        New XBRLFormulaParam With{
            .ParamType = "ns1:raisin", .ParamValue = "dried grape"})
```

```c#
    Server app = new Server();
    XBRL objXBRL = app.GetXBRL();
    objXBRL.AddFormulaParameter("ns1:string", "ns1:Param1", "ns1:theqname");
    objXBRL.AddFormulaParameterNamespace("ns1", "www.www.www");

    // The parameter is an array of dates
```
objXBRL.AddFormulaArrayParameter("", "startDates", new object[] { new XBRLFormulaParam { ParamType = "xs:date", ParamValue = "2010-01-01" }, new XBRLFormulaParam { ParamType = "xs:date", ParamValue = "2012-01-01" }});

//The parameter is an array of figs
objXBRL.AddFormulaArrayParameter("ns1:figs", "startFigs", new object[] {"fig1", "fig2", "fig3"});

//The parameter is an array of figs, dates and raisins (rather wild example)
objXBRL.AddFormulaArrayParameter("ns1:figs", "startDryFruit", new object[] {"fig1", "fig2", new XBRLFormulaParam { ParamType = "xs:date", ParamValue = "2010-01-01" }, new XBRLFormulaParam { ParamType = "ns1:raisin", ParamValue = "dried grape" }, "fig3" });

VBScript

Since the Raptor type library cannot be loaded by scripting languages, and because the type XBRLFormulaParameters doesn't exist, the VBScript user, instead of using XBRL.FormulaParam objects, must declare a class in his/her program. The class must have two public properties, ParamName and ParamValue (just as the XBRL.FormulaParam has). The class should have a constructor that takes the type and value, since this simplifies usage; otherwise the object needs to be created and have its members set). For more information, see the description of the Server API's XBRL interface.

Class MyPair
Public ParamType
Public ParamValue
Public Default Function Init( inType, inValue )
ParamType = inType
ParamValue = inValue
set Init = Me
End Function
End Class

Sub Main
Dim objRaptor
Set objRaptor = WScript.GetObject( "", "RaptorXML.Server" )
Dim objXBRL
Set objXBRL = objRaptor.GetXBRL

Call objXBRL.AddFormulaParameter("ns1:string", "ns1:Param1", "ns1:theqname")
Call objXBRL.AddFormulaParameterNamespace("ns1", "www.nih.gov")

' The parameter is an array of dates
Call objXBRL.AddFormulaArrayParameter("", "startDates", Array( ( New MyPair)( "xs:date", "2010-01-01" ), ( New MyPair)( "xs:date", "2012-01-01" ) ) )

' The parameter is an array of figs
Call objXBRL.AddFormulaArrayParameter("ns1:figs", "startFigs", Array("fig1", "fig2", "fig3"))
The parameter is an array of figs, dates and raisins (rather wild example)
Call objXBRL.AddFormulaArrayParameter("ns1:figs", "startDryFruit", Array("fig1", "fig2", (New MyPair)("xs:date", "2010-01-01"), (New MyPair)("ns1:raisin", "dried grape"), "fig3")
End Sub

Call Main

JScript

Since the Raptor type library cannot be loaded by scripting languages, and because the type XBRLFormulaParameters doesn't exist, the JScript user, instead of using XBRL.FormulaParam objects, must declare function-classes in his/her program that holds the type-value pair. Names of members must be ParamType and ParamValue. For more information, see the description of the Server API's XBRL interface.

function FormulaParam( inType, inValue)
{
    this.ParamType = inType;
    this.ParamValue = inValue;
}

function main()
{
    var objRaptor = new ActiveXObject( "RaptorXML.Server" );
    var objXBRL = objRaptor.GetXBRL();

    objXBRL.addFormulaParameter( "ns1:string", "ns1:Param1", "ns1:theqname" );
    objXBRL.addFormulaParameter( "xs:string", "Param1", "bla", "www.www.www" );

    // The parameter is an array of dates
    objXBRL.addFormulaArrayParameter("", "startDates", [new FormulaParam("xs:date", "2010-01-01"), new FormulaParam("xs:date", "2012-01-01")]);

    // The parameter is an array of figs
    objXBRL.addFormulaArrayParameter("ns1:figs", "startFigs", ["fig1", "fig2", "fig3"]);

    // The parameter is an array of figs, dates and raisins (rather wild example)
    objXBRL.addFormulaArrayParameter("ns1:figs", "startDryFruit", ["fig1", "fig2", new FormulaParam("xs:date", "2010-01-01"), new FormulaParam("ns1:raisin", "dried grape"), "fig3")];
}
main()
9 Engine Information

This section contains information about the XSLT and XQuery engines contained in RaptorXML+XBRL Server. This information mostly concerns engine behavior in situations where the specifications leave the decision regarding behavior up to the implementation. This section also contains information about Altova extension functions for XPath/XQuery.
9.1  XSLT and XQuery Engine Information

The XSLT and XQuery engines of RaptorXML+XBRL Server follow the W3C specifications closely and are therefore stricter than previous Altova engines—such as those in previous versions of XMLSpy and those of AltovaXML, the predecessor of RaptorXML. As a result, minor errors that were ignored by previous engines are now flagged as errors by RaptorXML+XBRL Server.

For example:

- It is a type error (err:XPTY0018) if the result of a path operator contains both nodes and non-nodes.
- It is a type error (err:XPTY0019) if \( E_1 \) in a path expression \( E_1/E_2 \) does not evaluate to a sequence of nodes.

If you encounter this kind of error, modify either the XSLT/XQuery document or the instance document as appropriate.

This section describes implementation-specific features of the engines, organized by specification:

- XSLT 1.0
- XSLT 2.0
- XSLT 3.0
- XQuery 1.0
- XQuery 3.1

9.1.1  XSLT 1.0

The XSLT 1.0 Engine of RaptorXML+XBRL Server conforms to the World Wide Web Consortium’s (W3C’s) XSLT 1.0 Recommendation of 16 November 1999 and XPath 1.0 Recommendation of 16 November 1999. Note the following information about the implementation.

Notes about the implementation

When the `method` attribute of `xsl:output` is set to HTML, or if HTML output is selected by default, then special characters in the XML or XSLT file are inserted in the HTML document as HTML character references in the output. For instance, the character U+00A0 (the hexadecimal character reference for a non-breaking space) is inserted in the HTML code either as a character reference (`&nbsp;`) or as an entity reference (`&nbsp;`).

9.1.2  XSLT 2.0

This section:

- Engine conformance
- Backward compatibility
- Namespaces
- Schema awareness
Conformance

Backwards Compatibility
The XSLT 2.0 engine is backwards compatible. The only time the backwards compatibility of the XSLT 2.0 engine comes into effect is when using the XSLT 2.0 engine (CLI parameter --xslt=2) to process an XSLT 1.0 stylesheet. Note that there could be differences in the outputs produced by the XSLT 1.0 Engine and the backwards-compatible XSLT 2.0 engine.

Namespaces
Your XSLT 2.0 stylesheet should declare the following namespaces in order for you to be able to use the type constructors and functions available in XSLT 2.0. The prefixes given below are conventionally used; you could use alternative prefixes if you wish.

<table>
<thead>
<tr>
<th>Namespace Name</th>
<th>Prefix</th>
<th>Namespace URI</th>
</tr>
</thead>
<tbody>
<tr>
<td>XML Schema types</td>
<td>xs:</td>
<td><a href="http://www.w3.org/2001/XMLSchema">http://www.w3.org/2001/XMLSchema</a></td>
</tr>
<tr>
<td>XPath 2.0 functions</td>
<td>fn:</td>
<td><a href="http://www.w3.org/2005/xpath-functions">http://www.w3.org/2005/xpath-functions</a></td>
</tr>
</tbody>
</table>

Typically, these namespaces will be declared on the `xsl:stylesheet` or `xsl:transform` element, as shown in the following listing:

```xml
true
<xsl:stylesheet version="2.0"
    xmlns:xsl="http://www.w3.org/1999/XSL/Transform"
    xmlns:xs="http://www.w3.org/2001/XMLSchema"
    xmlns:fn="http://www.w3.org/2005/xpath-functions"
...
</xsl:stylesheet>
```

The following points should be noted:

- The XSLT 2.0 engine uses the XPath 2.0 and XQuery 1.0 Functions namespace (listed in the table above) as its default functions namespace. So you can use XPath 2.0 and XSLT 2.0 functions in your stylesheet without any prefix. If you declare the XPath 2.0 Functions namespace in your stylesheet with a prefix, then you can additionally use the prefix assigned in the declaration.
- When using type constructors and types from the XML Schema namespace, the prefix used in the namespace declaration must be used when calling the type constructor (for example, `xs:date`).
- Some XPath 2.0 functions have the same name as XML Schema datatypes. For example, for the XPath functions `fn:string` and `fn:boolean` there exist XML Schema datatypes with the same local names: `xs:string` and `xs:boolean`. So if you were to use the XPath expression `string('Hello')`, the expression evaluates as `fn:string('Hello')`—not as `xs:string('Hello')`.

Schema-awareness
The XSLT 2.0 engine is schema-aware. So you can use user-defined schema types and the `xsl:validate` instruction.
Implementation-specific behavior

Given below is a description of how the XSLT 2.0 engine handles implementation-specific aspects of the behavior of certain XSLT 2.0 functions.

`xsl:result-document`

Additionally supported encodings are (the Altova-specific): `x-base16tobinary` and `x-base64tobinary`.

`function-available`

The function tests for the availability of in-scope functions (XSLT, XPath, and extension functions).

`unparsed-text`

The `href` attribute accepts (i) relative paths for files in the base-uri folder, and (ii) absolute paths with or without the `file://` protocol. Additionally supported encodings are (the Altova-specific): `x-binarytobase16` and `x-binarytobase64`.

`unparsed-text-available`

The `href` attribute accepts (i) relative paths for files in the base-uri folder, and (ii) absolute paths with or without the `file://` protocol. Additionally supported encodings are (the Altova-specific): `x-binarytobase16` and `x-binarytobase64`.

**Note:** The following encoding values, which were implemented in earlier versions of RaptorXML’s predecessor product, AltovaXML, are now deprecated: `base16tobinary`, `base64tobinary`, `binarytobase16` and `binarytobase64`.

### 9.1.3 XSLT 3.0

The XSLT 3.0 Engine of RaptorXML+XBRL Server conforms to the World Wide Web Consortium’s (W3C’s) [XSLT 3.0 Recommendation of 8 June 2017](https://www.w3.org/TR/xslt30/) and [XPath 3.1 Recommendation of 21 March 2017](https://www.w3.org/TR/xpath31/).

The XSLT 3.0 engine has the same implementation-specific characteristics as the XSLT 2.0 engine. Additionally, it includes support for a number of new XSLT 3.0 features: XPath/XQuery 3.1 functions and operators, and the [XPath 3.1 specification](https://www.w3.org/TR/xpath31/).

**Note:** The optional streaming feature is not supported currently. The entire document will be loaded into memory regardless of the value of the `streamable` attribute, and will be processed if enough memory is available. In 64-bit apps this should not be a problem. If memory does turn out to be an issue, a solution would be to add more memory to the system.

### 9.1.4 XQuery 1.0

**This section:**

- [Engine conformance](#)
- [Schema awareness](#)
- [Encoding](#)
- [Namespaces](#)
Conformance
The XQuery 1.0 Engine of RaptorXML+XBRL Server conforms to the World Wide Web Consortium's (W3C's) XQuery 1.0 Recommendation of 14 December 2010. The XQuery standard gives implementations discretion about how to implement many features. Given below is a list explaining how the XQuery 1.0 Engine implements these features.

Schema awareness
The XQuery 1.0 Engine is schema-aware.

Encoding
The UTF-8 and UTF-16 character encodings are supported.

Namespaces
The following namespace URIs and their associated bindings are pre-defined.

<table>
<thead>
<tr>
<th>Namespace Name</th>
<th>Prefix</th>
<th>Namespace URI</th>
</tr>
</thead>
<tbody>
<tr>
<td>XML Schema types</td>
<td>xs:</td>
<td><a href="http://www.w3.org/2001/XMLSchema">http://www.w3.org/2001/XMLSchema</a></td>
</tr>
<tr>
<td>Schema instance</td>
<td>xsi:</td>
<td><a href="http://www.w3.org/2001/XMLSchema-instance">http://www.w3.org/2001/XMLSchema-instance</a></td>
</tr>
<tr>
<td>Built-in functions</td>
<td>fn:</td>
<td><a href="http://www.w3.org/2005/xpath-functions">http://www.w3.org/2005/xpath-functions</a></td>
</tr>
<tr>
<td>Local functions</td>
<td>local:</td>
<td><a href="http://www.w3.org/2005/xquery-local-functions">http://www.w3.org/2005/xquery-local-functions</a></td>
</tr>
</tbody>
</table>

The following points should be noted:

- The XQuery 1.0 Engine recognizes the prefixes listed above as being bound to the corresponding namespaces.
- Since the built-in functions namespace listed above is the default functions namespace in XQuery, the fn: prefix does not need to be used when built-in functions are invoked (for example, string("Hello") will call the fn:string function). However, the prefix fn: can be used to call a built-in function without having to declare the namespace in the query prolog (for example: fn:string("Hello").)
- You can change the default functions namespace by declaring the default function namespace expression in the query prolog.
- When using types from the XML Schema namespace, the prefix xs: may be used without having to explicitly declare the namespaces and bind these prefixes to them in the query prolog. (Example: xs:date and xs:yearMonthDuration.) If you wish to use some other prefix for the XML Schema namespace, this must be explicitly declared in the query prolog. (Example: declare namespace alt = "http://www.w3.org/2001/XMLSchema"; alt:date("2004-10-04").)
• Note that the untypedAtomic, dayTimeDuration, and yearMonthDuration datatypes have been moved, with the CRs of 23 January 2007, from the XPath Datatypes namespace to the XML Schema namespace, so: xs:yearMonthDuration.

If namespaces for functions, type constructors, node tests, etc are wrongly assigned, an error is reported. Note, however, that some functions have the same name as schema datatypes, e.g. fn:string and fn:boolean. (Both xs:string and xs:boolean are defined.) The namespace prefix determines whether the function or type constructor is used.

XML source document and validation
XML documents used in executing an XQuery document with the XQuery 1.0 Engine must be well-formed. However, they do not need to be valid according to an XML Schema. If the file is not valid, the invalid file is loaded without schema information. If the XML file is associated with an external schema and is valid according to it, then post-schema validation information is generated for the XML data and will be used for query evaluation.

Static and dynamic type checking
The static analysis phase checks aspects of the query such as syntax, whether external references (e.g. for modules) exist, whether invoked functions and variables are defined, and so on. If an error is detected in the static analysis phase, it is reported and the execution is stopped.

Dynamic type checking is carried out at run-time, when the query is actually executed. If a type is incompatible with the requirement of an operation, an error is reported. For example, the expression `xs:string("1") + 1` returns an error because the addition operation cannot be carried out on an operand of type `xs:string`.

Library Modules
Library modules store functions and variables so they can be reused. The XQuery 1.0 Engine supports modules that are stored in a single external XQuery file. Such a module file must contain a module declaration in its prolog, which associates a target namespace. Here is an example module:

```
module namespace libns="urn:module-library";
declare variable $libns:company := "Altova";
declare function libns:webaddress() { "http://www.altova.com" };
```

All functions and variables declared in the module belong to the namespace associated with the module. The module is used by importing it into an XQuery file with the import module statement in the query prolog. The import module statement only imports functions and variables declared directly in the library module file. As follows:

```
import module namespace modlib = "urn:module-library" at "modulefilename.xq";
if ($modlib:company = "Altova")
then    modlib:webaddress()
else   error("No match found.")
```

External functions
External functions are not supported, i.e. in those expressions using the external keyword, as in:

```
declare function hoo($param as xs:integer) as xs:string external;
```
Collations

The default collation is the Unicode-codepoint collation, which compares strings on the basis of their Unicode codepoint. Other supported collations are the ICU collations listed here. To use a specific collation, supply its URI as given in the list of supported collations. Any string comparisons, including for the fn:max and fn:min functions, will be made according to the specified collation. If the collation option is not specified, the default Unicode-codepoint collation is used.

Precision of numeric types

- The xs:integer datatype is arbitrary-precision, i.e. it can represent any number of digits.
- The xs:decimal datatype has a limit of 20 digits after the decimal point.
- The xs:float and xs:double datatypes have limited-precision of 15 digits.

XQuery Instructions Support

The Pragma instruction is not supported. If encountered, it is ignored and the fallback expression is evaluated.

9.1.5 XQuery 3.1

The XQuery 3.1 Engine of RaptorXML+XBRL Server conforms to the World Wide Web Consortium's (W3C's) XQuery 3.1 Recommendation of 21 March 2017 and includes support for XPath and XQuery Functions 3.1. The XQuery 3.1 specification is a superset of the 3.0 specification. The XQuery 3.1 engine therefore supports XQuery 3.0 features.

Implementation-specific characteristics are the same as for XQuery 1.0.
9.2 XSLT and XQuery Functions

This section lists Altova extension functions and other extension functions that can be used in XPath and/or XQuery expressions. Altova extension functions can be used with Altova's XSLT and XQuery engines, and provide functionality additional to that available in the function libraries defined in the W3C standards.

General points

The following general points should be noted:

- Functions from the core function libraries defined in the W3C specifications can be called without a prefix. That's because the XSLT and XQuery engines read non-prefixed functions as belonging to a default functions namespace which is that specified in the XPath/XQuery functions specifications http://www.w3.org/2005/xpath-functions. If this namespace is explicitly declared in an XSLT or XQuery document, the prefix used in the namespace declaration can also optionally be used on function names.
- In general, if a function expects a sequence of one item as an argument, and a sequence of more than one item is submitted, then an error is returned.
- All string comparisons are done using the Unicode codepoint collation.
- Results that are QNames are serialized in the form [prefix:]localname.

Precision of xs:decimal

The precision refers to the number of digits in the number, and a minimum of 18 digits is required by the specification. For division operations that produce a result of type xs:decimal, the precision is 19 digits after the decimal point with no rounding.

Implicit timezone

When two date, time, or dateTime values need to be compared, the timezones of the values being compared need to be known. When the timezone is not explicitly given in such a value, the implicit timezone is used. The implicit timezone is taken from the system clock, and its value can be checked with the implicit-timezone() function.

Collations

The default collation is the Unicode codepoint collation, which compares strings on the basis of their Unicode codepoint. The engine uses the Unicode Collation Algorithm. Other supported collations are the ICU collations listed below; to use one of these, supply its URI as given in the table below. Any string comparisons, including for the max and min functions, will be made according to the specified collation. If the collation option is not specified, the default Unicode-codepoint collation is used.

<table>
<thead>
<tr>
<th>Language (short)</th>
<th>Language (full)</th>
<th>URIs</th>
</tr>
</thead>
<tbody>
<tr>
<td>da: Danish</td>
<td>da_DK</td>
<td></td>
</tr>
<tr>
<td>de: German</td>
<td>de_AT, de_BE, de_CH, de_DE, de_LI, de_LU</td>
<td></td>
</tr>
</tbody>
</table>
Namespace axis

The namespace axis is deprecated in XPath 2.0. Use of the namespace axis is, however, supported. To access namespace information with XPath 2.0 mechanisms, use the `in-scope-prefixes()`, `namespace-uri()` and `namespace-uri-for-prefix()` functions.

9.2.1 Altova Extension Functions

Altova extension functions can be used in XPath/XQuery expressions. They provide additional functionality to the functionality that is available in the standard library of XPath, XQuery, and XSLT functions. Altova extension functions are in the Altova extension functions namespace, `http://www.altova.com/xslt-extensions`, and are indicated in this section with the prefix `altova:`, which is assumed to be bound to this namespace.

Note that, in future versions of your product, support for a function might be discontinued or the behavior of individual functions might change. Consult the documentation of future releases for information about support for Altova extension functions in that release.

Functions defined in the W3C's XPath/XQuery Functions specifications can be used in: (i) XPath expressions in an XSLT context, and (ii) in XQuery expressions in an XQuery document. In this documentation we indicate the functions that can be used in the former context (XPath in XSLT) with an `XP` symbol and call them XPath functions; those functions that can be used in the latter (XQuery) context are indicated with an `XQ` symbol; they work as XQuery functions. The W3C’s XSLT specifications—not XPath/XQuery Functions specifications—also define functions that can be used in XPath expressions in XSLT documents. These functions are marked with an `XSLT` symbol and are called XSLT functions. The XPath/XQuery and XSLT versions in which a function can be used are indicated in the description of the function (see symbols below). Functions from the XPath/XQuery and XSLT function libraries are listed without a prefix. Extension functions from other libraries, such as Altova extension functions, are listed with a prefix.
XSLT functions

XSLT functions can only be used in XPath expressions in an XSLT context (similarly to XSLT 2.0's `current-group()` or `key()` functions). These functions are not intended for, and will not work in, a non-XSLT context (for instance, in an XQuery context). Note that XSLT functions for XBRL can be used only with editions of Altova products that have XBRL support.

XPath/XQuery functions

XPath/XQuery functions can be used both in XPath expressions in XSLT contexts as well as in XQuery expressions:

- Date/Time
- Geolocation
- Image-related
- Numeric
- Sequence
- String
- Miscellaneous

Chart functions (Enterprise and Server Editions only)

Altova extension functions for charts are supported only in the Enterprise and Server Editions of Altova products and enable charts to be generated from XML data.

Barcode functions

Altova's barcode extension functions enable barcodes to be generated and placed in output generated via XSLT stylesheets.

9.2.1.1 XSLT Functions

XSLT extension functions can be used in XPath expressions in an XSLT context. They will not work in a non-XSLT context (for instance, in an XQuery context).

Note about naming of functions and language applicability

Altova extension functions can be used in XPath/XQuery expressions. They provide additional functionality to the functionality that is available in the standard library of XPath, XQuery, and XSLT functions. Altova extension functions are in the Altova extension functions namespace, http://www.altova.com/xslt-extensions, and are indicated in this section with the prefix `altova:`, which is assumed to be bound to this namespace. Note that, in future versions of your product, support for a function might be discontinued or the behavior of individual functions might change. Consult the documentation of future releases for information about support for Altova extension functions in that release.
### XPath functions (used in XPath expressions in XSLT):
- XP1
- XP2
- XP3.1

### XSLT functions (used in XPath expressions in XSLT):
- XSLT1
- XSLT2
- XSLT3

### XQuery functions (used in XQuery expressions in XQuery):
- XQ1
- XQ3.1

#### Standard functions

**distinct-nodes** [altova:]

```xml
altova:distinct-nodes(node(*) as node()*) XSLT1 XSLT2 XSLT3
```

Takes a set of one or more nodes as its input and returns the same set minus nodes with duplicate values. The comparison is done using the XPath/XQuery function `fn:deep-equal`.

- **Examples**
  - `altova:distinct-nodes(country)` returns all child `country` nodes less those having duplicate values.

**evaluate** [altova:]

```xml
altova:evaluate(XPathExpression as xs:string[, ValueOf$p1, ... ValueOf$pN]) XSLT1 XSLT2 XSLT3
```

Takes an XPath expression, passed as a string, as its mandatory argument. It returns the output of the evaluated expression. For example: `altova:evaluate('//Name[1]')` returns the contents of the first `Name` element in the document. Note that the expression `//Name[1]` is passed as a string by enclosing it in single quotes.

The `altova:evaluate` function can optionally take additional arguments. These arguments are the values of in-scope variables that have the names `p1`, `p2`, `p3`... `pN`. Note the following points about usage: (i) The variables must be defined with names of the form `px`, where `X` is an integer; (ii) the `altova:evaluate` function's arguments (see signature above), from the second argument onwards, provide the values of the variables, with the sequence of the arguments corresponding to the numerically ordered sequence of variables: `p1` to `pN`. The second argument will be the value of the variable `p1`, the third argument that of the variable `p2`, and so on; (iii) The variable values must be of type `item*`.

- **Example**

  ```xml
  <xsl:variable name="xpath" select="'$p3, $p2, $p1'" />
  <xsl:value-of select="altova:evaluate($xpath, 10, 20, 'hi')" />
  outputs "hi 20 10"
  ```

  In the listing above, notice the following:
  - The second argument of the `altova:evaluate` expression is the value assigned to the variable `$p1`, the third argument that assigned to the variable `$p2`, and so on.
  - Notice that the fourth argument of the function is a string value, indicated by its being enclosed in quotes.
  - The `select` attribute of the `xs:variable` element supplies the XPath expression. Since this expression must be of type `xs:string`, it is enclosed in single quotes.

- **Examples to further illustrate the use of variables**
The `altova:evaluate()` extension function is useful in situations where an XPath expression in the XSLT stylesheet contains one or more parts that must be evaluated dynamically. For example, consider a situation in which a user enters his request for the sorting criterion and this criterion is stored in the attribute `@sortkey` in the stylesheet, you could then have the expression: `<xsl:sort select="altova:evaluate(../UserReq/@sortkey)" order="ascending"/>`. The `altova:evaluate()` function reads the `sortkey` attribute of the `UserReq` child element of the parent of the context node. Say the value of the `sortkey` attribute is `Price`, then `Price` is returned by the `altova:evaluate()` function and becomes the value of the `select` attribute: `<xsl:sort select="Price" order="ascending"/>`. If this sort instruction occurs within the context of an element called `Order`, then the `Order` elements will be sorted according to the values of their `Price` children. Alternatively, if the value of `@sortkey` were, say, `Date`, then the `Order` elements would be sorted according to the values of their `Date` children. So the sort criterion for `Order` is selected from the `sortkey` attribute at runtime. This could not have been achieved with an expression like: `<xsl:sort select="../UserReq/@sortkey" order="ascending"/>`. In the case shown above, the sort criterion would be the `sortkey` attribute itself, not `Price` or `Date` (or any other current content of `sortkey`).

**Note:** The static context includes namespaces, types, and functions—but not variables—from the calling environment. The base URI and default namespace are inherited.

**More examples**

- Static variables: `<xsl:value-of select="$i3, $i2, $i1" />`  
  Outputs the values of three variables.

- Dynamic XPath expression with dynamic variables:
  `<xsl:variable name="xpath" select="$p3, $p2, $p1" />`  
  `<xsl:value-of select="altova:evaluate($xpath, 10, 20, 30)" />`  
  Outputs "30 20 10"

- Dynamic XPath expression with no dynamic variable:
  `<xsl:variable name="xpath" select="$p3, $p2, $p1" />`  
  `<xsl:value-of select="altova:evaluate($xpath)" />`  
  Outputs error: No variable defined for $p3.

**encode-for-rtf [altova:]**

`altova:encode-for-rtf(input as xs:string, preserveallwhitespace as xs:boolean, preservenewlines as xs:boolean) as xs:string XSLT2 XSLT3`  
Converts the input string into code for RTF. Whitespace and new lines will be preserved according to the boolean value specified for their respective arguments.
XBRL functions
Altova XBRL functions can be used only with editions of Altova products that have XBRL support.

- xbrl-footnotes [altova:]
  
  ```xml
  altova:xbrl-footnotes(node()) as node()*
  ```

  Takes a node as its input argument and returns the set of XBRL footnote nodes referenced by the input node.

- xbrl-labels [altova:]
  
  ```xml
  altova:xbrl-labels(xs:QName, xs:string) as node()*
  ```

  Takes two input arguments: a node name and the taxonomy file location containing the node. The function returns the XBRL label nodes associated with the input node.

9.2.1.2 XPath/XQuery Functions: Date and Time
Altova's date/time extension functions can be used in XPath and XQuery expressions and provide additional functionality for the processing of data held as XML Schema's various date and time datatypes. The functions in this section can be used with Altova's XPath 3.0 and XQuery 3.0 engines. They are available in XPath/XQuery contexts.

Note about naming of functions and language applicability
Altova extension functions can be used in XPath/XQuery expressions. They provide additional functionality to the functionality that is available in the standard library of XPath, XQuery, and XSLT functions. Altova extension functions are in the Altova extension functions namespace, `http://www.altova.com/xslt-extensions`, and are indicated in this section with the prefix `altova:`, which is assumed to be bound to this namespace. Note that, in future versions of your product, support for a function might be discontinued or the behavior of individual functions might change. Consult the documentation of future releases for information about support for Altova extension functions in that release.

<table>
<thead>
<tr>
<th>XPath functions (used in XPath expressions in XSLT):</th>
<th>XP1</th>
<th>XP2</th>
<th>XP3.1</th>
</tr>
</thead>
<tbody>
<tr>
<td>XSLT functions (used in XPath expressions in XSLT):</td>
<td>XSLT1</td>
<td>XSLT2</td>
<td>XSLT3</td>
</tr>
<tr>
<td>XQuery functions (used in XQuery expressions in XQuery):</td>
<td>XQ1</td>
<td>XQ3.1</td>
<td></td>
</tr>
</tbody>
</table>

Grouped by functionality
- Add a duration to xs:dateTime and return xs:dateTime
- Add a duration to xs:date and return xs:date
- Add a duration to xs:time and return xs:time
- Format and retrieve durations
- Remove timezone from functions that generate current date/time
Add a duration to xs:dateTime  XP3.1  XQ3.1

These functions add a duration to xs:dateTime and return xs:dateTime. The xs:dateTime type has a format of CCYY-MM-DDThh:mm:ss.sss. This is a concatenation of the xs:date and xs:time formats separated by the letter T. A timezone suffix +01:00 (for example) is optional.
add-years-to-dateTime [altova:]

```
altova:add-years-to-dateTime(DateTime as xs:dateTime, Years as xs:integer) as xs:dateTime
```

Adds a duration in years to an `xs:dateTime` (see examples below). The second argument is the number of years to be added to the `xs:dateTime` supplied as the first argument. The result is of type `xs:dateTime`.

**Examples**

- `altova:add-years-to-dateTime(xs:dateTime("2014-01-15T14:00:00"), 10)` returns `2024-01-15T14:00:00`
- `altova:add-years-to-dateTime(xs:dateTime("2014-01-15T14:00:00"), -4)` returns `2010-01-15T14:00:00`

add-months-to-dateTime [altova:]

```
altova:add-months-to-dateTime(DateTime as xs:dateTime, Months as xs:integer) as xs:dateTime
```

Adds a duration in months to an `xs:dateTime` (see examples below). The second argument is the number of months to be added to the `xs:dateTime` supplied as the first argument. The result is of type `xs:dateTime`.

**Examples**

- `altova:add-months-to-dateTime(xs:dateTime("2014-01-15T14:00:00"), 10)` returns `2014-11-15T14:00:00`
- `altova:add-months-to-dateTime(xs:dateTime("2014-01-15T14:00:00"), -2)` returns `2013-11-15T14:00:00`

add-days-to-dateTime [altova:]

```
altova:add-days-to-dateTime(DateTime as xs:dateTime, Days as xs:integer) as xs:dateTime
```

Adds a duration in days to an `xs:dateTime` (see examples below). The second argument is the number of days to be added to the `xs:dateTime` supplied as the first argument. The result is of type `xs:dateTime`.

**Examples**

- `altova:add-days-to-dateTime(xs:dateTime("2014-01-15T14:00:00"), 10)` returns `2014-01-25T14:00:00`
- `altova:add-days-to-dateTime(xs:dateTime("2014-01-15T14:00:00"), -8)` returns `2014-01-07T14:00:00`

add-hours-to-dateTime [altova:]

```
altova:add-hours-to-dateTime(DateTime as xs:dateTime, Hours as xs:integer) as xs:dateTime
```

Adds a duration in hours to an `xs:dateTime` (see examples below). The second argument is the number of hours to be added to the `xs:dateTime` supplied as the first argument. The result is of type `xs:dateTime`.

**Examples**

- `altova:add-hours-to-dateTime(xs:dateTime("2014-01-15T13:00:00"), 10)` returns `2014-01-15T23:00:00`
• `altova:add-hours-to-dateTime(xs:dateTime("2014-01-15T13:00:00"), -8)` returns `2014-01-15T05:00:00`

▼ add-minutes-to-dateTime [altova:]

`altova:add-minutes-to-dateTime(DateTime as xs:dateTime, Minutes as xs:integer) as xs:dateTime`  
Adds a duration in minutes to an `xs:dateTime` (see examples below). The second argument is the number of minutes to be added to the `xs:dateTime` supplied as the first argument. The result is of type `xs:dateTime`.  
**Examples**

• `altova:add-minutes-to-dateTime(xs:dateTime("2014-01-15T14:10:00"), 45)` returns `2014-01-15T14:55:00`
• `altova:add-minutes-to-dateTime(xs:dateTime("2014-01-15T14:10:00"), -5)` returns `2014-01-15T14:05:00`

▼ add-seconds-to-dateTime [altova:]

`altova:add-seconds-to-dateTime(DateTime as xs:dateTime, Seconds as xs:integer) as xs:dateTime`  
Adds a duration in seconds to an `xs:dateTime` (see examples below). The second argument is the number of seconds to be added to the `xs:dateTime` supplied as the first argument. The result is of type `xs:dateTime`.  
**Examples**

• `altova:add-seconds-to-dateTime(xs:dateTime("2014-01-15T14:00:10"), 20)` returns `2014-01-15T14:00:30`
• `altova:add-seconds-to-dateTime(xs:dateTime("2014-01-15T14:00:10"), -5)` returns `2014-01-15T14:00:05`

Add a duration to `xs:date`  
These functions add a duration to `xs:date` and return `xs:date`. The `xs:date` type has a format of `CCYY-MM-DD`.  

▼ add-years-to-date [altova:]

`altova:add-years-to-date(Date as xs:date, Years as xs:integer) as xs:date`  
Adds a duration in years to a date. The second argument is the number of years to be added to the `xs:date` supplied as the first argument. The result is of type `xs:date`.  
**Examples**

• `altova:add-years-to-date(xs:date("2014-01-15"), 10)` returns `2024-01-15`
• `altova:add-years-to-date(xs:date("2014-01-15"), -4)` returns `2010-01-15`
add-months-to-date [altova:]

```
altova:add-months-to-date(Date as xs:date, Months as xs:integer) as xs:date XP3.1 XQ3.1
```

Adds a duration in months to a date. The second argument is the number of months to be added to the `xs:date` supplied as the first argument. The result is of type `xs:date`.

**Examples**


add-days-to-date [altova:]

```
altova:add-days-to-date(Date as xs:date, Days as xs:integer) as xs:date XP3.1 XQ3.1
```

Adds a duration in days to a date. The second argument is the number of days to be added to the `xs:date` supplied as the first argument. The result is of type `xs:date`.

**Examples**


Format and retrieve durations XP3.1 XQ3.1

These functions parse an input `xs:duration` or `xs:string` and return, respectively, an `xs:string` or `xs:duration`.

format-duration [altova:]

```
altova:format-duration(Duration as xs:duration, Picture as xs:string) as xs:string XP3.1 XQ3.1
```

Formats a duration, which is submitted as the first argument, according to a picture string submitted as the second argument. The output is a text string formatted according to the picture string.

**Examples**

- `altova:format-duration(xs:duration("P2DT2H53M11.7S"), "Days:[D01] Hours:[H01] Minutes:[m01] Seconds:[s01] Fractions:[f0]")` returns "Days:02 Hours:02 Minutes:53 Seconds:11 Fractions:7"
- `altova:format-duration(xs:duration("P3M2DT2H53M11.7S"), "Months:[M01] Days:[D01] Hours:[H01] Minutes:[m01]")` returns "Months:03 Days:02 Hours:02 Minutes:53"

parse-duration [altova:]

```
altova:parse-duration(InputString as xs:string, Picture as xs:string) as xs:duration XP3.1 XQ3.1
```

Takes a patterned string as the first argument, and a picture string as the second argument. The input string is parsed on the basis of the picture string, and an `xs:duration` is returned.

**Examples**

- `altova:parse-duration("Days:02 Hours:02 Minutes:53 Seconds:11 Fractions:7"),"Days:02 Hours:02 Minutes:53"

---

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"Days:[D01] Hours:[H01] Minutes:[m01] Seconds:[s01] Fractions:[f0"] returns "P2DT2H53M11.7S"


## Add a duration to xs:time [XP3.1 XQ3.1]

These functions add a duration to `xs:time` and return `xs:time`. The `xs:time` type has a lexical form of `hh:mm:ss.sss`. An optional time zone may be suffixed. The letter Z indicates Coordinated Universal Time (UTC). All other time zones are represented by their difference from UTC in the format `+hh:mm` or `-hh:mm`. If no time zone value is present, it is considered unknown; it is not assumed to be UTC.

### add-hours-to-time [altova:]

```xslt
altova:add-hours-to-time(Time as xs:time, Hours as xs:integer) as xs:time
```

Add a duration in hours to a time. The second argument is the number of hours to be added to the `xs:time` supplied as the first argument. The result is of type `xs:time`.

**Examples**

- `altova:add-hours-to-time(xs:time("11:00:00"), 10)` returns `21:00:00`
- `altova:add-hours-to-time(xs:time("11:00:00"), -7)` returns `04:00:00`

### add-minutes-to-time [altova:]

```xslt
altova:add-minutes-to-time(Time as xs:time, Minutes as xs:integer) as xs:time
```

Add a duration in minutes to a time. The second argument is the number of minutes to be added to the `xs:time` supplied as the first argument. The result is of type `xs:time`.

**Examples**

- `altova:add-minutes-to-time(xs:time("14:10:00"), 45)` returns `14:55:00`
- `altova:add-minutes-to-time(xs:time("14:10:00"), -5)` returns `14:05:00`

### add-seconds-to-time [altova:]

```xslt
altova:add-seconds-to-time(Time as xs:time, Seconds as xs:integer) as xs:time
```

Add a duration in seconds to a time. The second argument is the number of seconds to be added to the `xs:time` supplied as the first argument. The result is of type `xs:time`. The Seconds component can be in the range of 0 to 59.999.

**Examples**

- `altova:add-seconds-to-time(xs:time("14:00:00"), 20)` returns `14:00:20`
- `altova:add-seconds-to-time(xs:time("14:00:00"), 20.895)` returns `14:00:20.895`
Remove the timezone part from date/time datatypes  

These functions remove the timezone from the current `xs:dateTime`, `xs:date`, or `xs:time` values, respectively. Note that the difference between `xs:dateTime` and `xs:dateTimeStamp` is that in the case of the latter the timezone part is required (while it is optional in the case of the former). So the format of an `xs:dateTimeStamp` value is: `CCYY-MM-DDThh:mm:ss.sss±hh:mm` or `CCYY-MM-DDThh:mm:ss.sssZ`. If the date and time is read from the system clock as `xs:dateTimeStamp`, the `current-dateTime-no-TZ()` function can be used to remove the timezone if so required.

### current-date-no-TZ [altova:]

`altova:current-date-no-TZ() as xs:date`  
This function takes no argument. It removes the timezone part of `current-date()` (which is the current date according to the system clock) and returns an `xs:date` value.

### Examples

If the current date is 2014-01-15+01:00:

- `altova:current-date-no-TZ()` returns 2014-01-15

### current-dateTime-no-TZ [altova:]

`altova:current-dateTime-no-TZ() as xs:dateTime`  
This function takes no argument. It removes the timezone part of `current-dateTime()` (which is the current date-and-time according to the system clock) and returns an `xs:dateTime` value.

### Examples

If the current dateTime is 2014-01-15T14:00:00+01:00:

- `altova:current-dateTime-no-TZ()` returns 2014-01-15T14:00:00

### current-time-no-TZ [altova:]

`altova:current-time-no-TZ() as xs:time`  
This function takes no argument. It removes the timezone part of `current-time()` (which is the current time according to the system clock) and returns an `xs:time` value.

### Examples

If the current time is 14:00:00+01:00:

- `altova:current-time-no-TZ()` returns 14:00:00

### date-no-TZ [altova:]

`altova:date-no-TZ(InputDate as xs:date) as xs:date`  
This function takes an `xs:date` argument, removes the timezone part from it, and returns an `xs:date` value. Note that the date is not modified.

### Examples
• altova:date-no-TZ(xs:date("2014-01-15+01:00")) returns 2014-01-15

dateTime-no-TZ [altova:]

altova:dateTime-no-TZ(InputDateTime as xs:dateTime) as xs:dateTime XP3.1 XQ3.1
This function takes an xs:dateTime argument, removes the timezone part from it, and returns an xs:dateTime value. Note that neither the date nor the time is modified.

Examples
• altova:dateTime-no-TZ(xs:date("2014-01-15T14:00:00+01:00")) returns 2014-01-15T14:00:00

time-no-TZ [altova:]

altova:time-no-TZ(InputTime as xs:time) as xs:time XP3.1 XQ3.1
This function takes an xs:time argument, removes the timezone part from it, and returns an xs:time value. Note that the time is not modified.

Examples
• altova:time-no-TZ(xs:time("14:00:00+01:00")) returns 14:00:00

Return the number of days, hours, minutes, seconds from durations XP3.1 XQ3.1
These functions return the number of days in a month, and the number of hours, minutes, and seconds, respectively, from durations.

days-in-month [altova:]

altova:days-in-month(Year as xs:integer, Month as xs:integer) as xs:integer XP3.1 XQ3.1
Returns the number of days in the specified month. The month is specified by means of the Year and Month arguments.

Examples
• altova:days-in-month(2018, 10) returns 31
• altova:days-in-month(2018, 2) returns 28
• altova:days-in-month(2020, 2) returns 29

hours-from-dayTimeDuration-accumulated

altova:hours-from-dayTimeDuration-accumulated(DayAndTime as xs:duration) as xs:integer XP3.1 XQ3.1
Returns the total number of hours in the duration submitted by the DayAndTime argument (which is of type xs:duration). The hours in the Day and Time components are added together to give a result that is an integer. A new hour is counted only for a full 60 minutes. Negative durations result in a negative hour value.

Examples
• altova:hours-from-dayTimeDuration-accumulated(xs:duration("P5D")) returns 120, which
is the total number of hours in 5 days.

- `altova:hours-from-dayTimeDuration-accumulated(xs:duration("P5DT2H"))` returns 122, which is the total number of hours in 5 days plus 2 hours.
- `altova:hours-from-dayTimeDuration-accumulated(xs:duration("P5DT2H60M"))` returns 123, which is the total number of hours in 5 days plus 2 hours and 60 mins.
- `altova:hours-from-dayTimeDuration-accumulated(xs:duration("P5DT2H119M"))` returns 123, which is the total number of hours in 5 days plus 2 hours and 119 mins.
- `altova:hours-from-dayTimeDuration-accumulated(xs:duration("P5DT2H120M"))` returns 124, which is the total number of hours in 5 days plus 2 hours and 120 mins.
- `altova:hours-from-dayTimeDuration-accumulated(xs:duration("-P5DT2H"))` returns -122

▼ minutes-from-dayTimeDuration-accumulated

`altova:minutes-from-dayTimeDuration-accumulated(DayAndTime as xs:duration) as xs:integer`<br>`XP3.1 XQ3.1`<br>Retuns the total number of minutes in the duration submitted by the `DayAndTime` argument (which is of type `xs:duration`). The minutes in the `Day` and `Time` components are added together to give a result that is an integer. Negative durations result in a negative minute value.

- `altova:minutes-from-dayTimeDuration-accumulated(xs:duration("PT60M"))` returns 60
- `altova:minutes-from-dayTimeDuration-accumulated(xs:duration("PT1H"))` returns 60, which is the total number of minutes in 1 hour.
- `altova:minutes-from-dayTimeDuration-accumulated(xs:duration("PT1H40M"))` returns 100
- `altova:minutes-from-dayTimeDuration-accumulated(xs:duration("P1D"))` returns 1440, which is the total number of minutes in 1 day.
- `altova:minutes-from-dayTimeDuration-accumulated(xs:duration("-P1DT60M"))` returns -1500

▼ seconds-from-dayTimeDuration-accumulated

`altova:seconds-from-dayTimeDuration-accumulated(DayAndTime as xs:duration) as xs:integer`<br>`XP3.1 XQ3.1`<br>Retuns the total number of seconds in the duration submitted by the `DayAndTime` argument (which is of type `xs:duration`). The seconds in the `Day` and `Time` components are added together to give a result that is an integer. Negative durations result in a negative seconds value.

- `altova:seconds-from-dayTimeDuration-accumulated(xs:duration("PT1M"))` returns 60, which is the total number of seconds in 1 minute.
- `altova:seconds-from-dayTimeDuration-accumulated(xs:duration("PT1H"))` returns 3600, which is the total number of seconds in 1 hour.
- `altova:seconds-from-dayTimeDuration-accumulated(xs:duration("PT1H2M"))` returns 3720
- `altova:seconds-from-dayTimeDuration-accumulated(xs:duration("P1D"))` returns 86400, which is the total number of seconds in 1 day.
- `altova:seconds-from-dayTimeDuration-accumulated(xs:duration("-P1DT1M"))` returns -86460
Return the weekday from `xs:dateTime` or `xs:date` [XP3.1 XQ3.1]

These functions return the weekday (as an integer) from `xs:dateTime` or `xs:date`. The days of the week are numbered (using the American format) from 1 to 7, with Sunday=1. In the European format, the week starts with Monday (=1). The American format, where Sunday=1, can be set by using the integer 0 where an integer is accepted to indicate the format.

**weekday-from-dateTime [altova:]**

`altova:weekday-from-dateTime(Date as xs:dateTime) as xs:integer XP3.1 XQ3.1`

Takes a date-with-time as its single argument and returns the day of the week of this date as an integer. The weekdays are numbered starting with Sunday=1. If the European format is required (where Monday=1), use the other signature of this function (see next signature below).

- **Examples**
  - `altova:weekday-from-dateTime(xs:dateTime("2014-02-03T09:00:00"))` returns 2, which would indicate a Monday.

`altova:weekday-from-dateTime(Date as xs:dateTime, Format as xs:integer) as xs:integer XP3.1 XQ3.1`

Takes a date-with-time as its first argument and returns the day of the week of this date as an integer. The weekdays are numbered starting with Monday=1. If the second (integer) argument is 0, then the weekdays are numbered 1 to 7 starting with Sunday=1. If the second argument is an integer other than 0, then Monday=1. If there is no second argument, the function is read as having the other signature of this function (see previous signature).

- **Examples**
  - `altova:weekday-from-dateTime(xs:dateTime("2014-02-03T09:00:00"), 1)` returns 1, which would indicate a Monday
  - `altova:weekday-from-dateTime(xs:dateTime("2014-02-03T09:00:00"), 4)` returns 1, which would indicate a Monday
  - `altova:weekday-from-dateTime(xs:dateTime("2014-02-03T09:00:00"), 0)` returns 2, which would indicate a Monday.

**weekday-from-date [altova:]**

`altova:weekday-from-date(Date as xs:date) as xs:integer XP3.1 XQ3.1`

Takes a date as its single argument and returns the day of the week of this date as an integer. The weekdays are numbered starting with Sunday=1. If the European format is required (where Monday=1), use the other signature of this function (see next signature below).

- **Examples**
  - `altova:weekday-from-date(xs:date("2014-02-03+01:00"))` returns 2, which would indicate a Monday.

`altova:weekday-from-date(Date as xs:date, Format as xs:integer) as xs:integer XP3.1 XQ3.1`

Takes a date as its first argument and returns the day of the week of this date as an integer. The weekdays are numbered starting with Monday=1. If the second (Format) argument is 0, then the weekdays are numbered 1 to 7 starting with Sunday=1. If the second argument is an integer other than 0, then Monday=1. If there is no second argument, the function is read as having the other signature of this function (see previous signature).

- **Examples**
• `altova:weekday-from-date(xs:date("2014-02-03"), 1)` returns 1, which would indicate a Monday.
• `altova:weekday-from-date(xs:date("2014-02-03"), 4)` returns 1, which would indicate a Monday.
• `altova:weekday-from-date(xs:date("2014-02-03"), 0)` returns 2, which would indicate a Monday.

Return the week number from `xs:dateTime` or `xs:date`

These functions return the week number (as an integer) from `xs:dateTime` or `xs:date`. Week-numbering is available in the US, ISO/European, and Islamic calendar formats. Week-numbering is different in these calendar formats because the week is considered to start on different days (on Sunday in the US format, Monday in the ISO/European format, and Saturday in the Islamic format).

▶ `weeknumber-from-date [altova:]`

```xml
altova:weeknumber-from-date(Date as xs:date, Calendar as xs:integer) as xs:integer
```

Returns the week number of the submitted `Date` argument as an integer. The second argument (Calendar) specifies the calendar system to follow.

Supported Calendar values are:

• 0 = US calendar (week starts Sunday)
• 1 = ISO standard, European calendar (week starts Monday)
• 2 = Islamic calendar (week starts Saturday)

Default is 0.

Example

• `altova:weeknumber-from-date(xs:date("2014-03-23"), 0)` returns 13
• `altova:weeknumber-from-date(xs:date("2014-03-23"), 1)` returns 12
• `altova:weeknumber-from-date(xs:date("2014-03-23"), 2)` returns 13
• `altova:weeknumber-from-date(xs:date("2014-03-23"))` returns 13

The day of the date in the examples above (2014-03-23) is Sunday. So the US and Islamic calendars are one week ahead of the European calendar on this day.

▶ `weeknumber-from-dateTime [altova:]`

```xml
altova:weeknumber-from-dateTime(DateTime as xs:dateTime, Calendar as xs:integer) as xs:integer
```

Returns the week number of the submitted `DateTime` argument as an integer. The second argument (Calendar) specifies the calendar system to follow.

Supported Calendar values are:
• 0 = US calendar (week starts Sunday)
• 1 = ISO standard, European calendar (week starts Monday)
• 2 = Islamic calendar (week starts Saturday)

Default is 0.

Examples

- `altova:weeknumber-from-dateTime(xs:dateTime("2014-03-23T00:00:00"), 0)` returns 13
- `altova:weeknumber-from-dateTime(xs:dateTime("2014-03-23T00:00:00"), 1)` returns 12
- `altova:weeknumber-from-dateTime(xs:dateTime("2014-03-23T00:00:00"), 2)` returns 13
- `altova:weeknumber-from-dateTime(xs:dateTime("2014-03-23T00:00:00"))` returns 13

The day of the dateTime in the examples above (2014-03-23T00:00:00) is Sunday. So the US and Islamic calendars are one week ahead of the European calendar on this day.
arguments are combined to build a value of xs:time type. The values of the integers must be within the correct range of that particular time part. For example, the second (Minutes) argument should not be greater than 59.

Examples
- `altova:build-time(23, 4, 57, '+1')` returns `23:04:57+01:00`

### build-duration [altova:]

`altova:build-duration(Years as xs:integer, Months as xs:integer)` as `xs:yearMonthDuration` XP3.1 XQ3.1

Takes two arguments to build a value of type `xs:yearMonthDuration`. The first argument provides the Years part of the duration value, while the second argument provides the Months part. If the second (Months) argument is greater than or equal to 12, then the integer is divided by 12; the quotient is added to the first argument to provide the Years part of the duration value while the remainder (of the division) provides the Months part. To build a duration of type `xs:dayTimeDuration`, see the next signature.

Examples
- `altova:build-duration(2, 10)` returns `P2Y10M`
- `altova:build-duration(14, 27)` returns `P16Y3M`
- `altova:build-duration(2, 24)` returns `P4Y`

`altova:build-duration(Days as xs:integer, Hours as xs:integer, Minutes as xs:integer, Seconds as xs:integer)` as `xs:dayTimeDuration` XP3.1 XQ3.1

Takes four arguments and combines them to build a value of type `xs:dayTimeDuration`. The first argument provides the Days part of the duration value, the second, third, and fourth arguments provide, respectively, the Hours, Minutes, and Seconds parts of the duration value. Each of the three Time arguments is converted to an equivalent value in terms of the next higher unit and the result is used for calculation of the total duration value. For example, 72 seconds is converted to `1M+12S` (1 minute and 12 seconds), and this value is used for calculation of the total duration value. To build a duration of type `xs:yearMonthDuration`, see the previous signature.

Examples
- `altova:build-duration(2, 10, 3, 56)` returns `P2DT10H3M56S`
- `altova:build-duration(1, 0, 100, 0)` returns `P1DT1H40M`
- `altova:build-duration(1, 0, 0, 3600)` returns `P1DT1H`

Construct date, dateTime, and time datatypes from string input XP2 XQ1 XP3.1 XQ3.1

These functions take strings as arguments and construct `xs:date`, `xs:dateTime`, or `xs:time` datatypes. The string is analyzed for components of the datatype based on a submitted pattern argument.

### parse-date [altova:]

`altova:parse-date(Date as xs:string, DatePattern as xs:string)` as `xs:date` XP2 XQ1 XP3.1 XQ3.1

Returns the input string `Date` as an `xs:date` value. The second argument `DatePattern` specifies the pattern (sequence of components) of the input string. `DatePattern` is described with the component specifiers listed below and with component separators that can be any character. See the examples...
The pattern in `DatePattern` must match the pattern in `Date`. Since the output is of type `xs:date`, the output will always have the lexical format `YYYY-MM-DD`.

**Examples**

- `altova:parse-date(xs:string("09-12-2014"), "[D]-[M]-[Y]")` returns `2014-12-09`
- `altova:parse-date(xs:string("09-12-2014"), "[M]-[D]-[Y]")` returns `2014-09-12`
- `altova:parse-date("06/03/2014", "[M]/[D]/[Y]")` returns `2014-06-03`
- `altova:parse-date("06 03 2014", "[M] [D] [Y]")` returns `2014-06-03`
- `altova:parse-date("6 3 2014", "[M] [D] [Y]")` returns `2014-06-03`

**parse-dateTime [altova:]**

`altova:parse-dateTime(DateTime as xs:string, DateTimePattern as xs:string) as xs:dateTime`

Returns the input string `DateTime` as an `xs:dateTime` value. The second argument `DateTimePattern` specifies the pattern (sequence of components) of the input string. `DateTimePattern` is described with the component specifiers listed below and with component separators that can be any character. See the examples below.

**Examples**

- `altova:parse-dateTime(xs:string("09-12-2014 13:56:24"), "[M]-[D]-[Y] [H]:[m]:[s]")` returns `2014-12-09T13:56:24`
- `altova:parse-dateTime("time=13:56:24; date=09-12-2014", "time=[H]:[m]:[s]; date=[D]-[M]-[Y]")` returns `2014-12-09T13:56:24`

**parse-time [altova:]**

`altova:parse-time(Time as xs:string, TimePattern as xs:string) as xs:time`

Returns the input string `Time` as an `xs:time` value. The second argument `TimePattern` specifies the pattern (sequence of components) of the input string. `TimePattern` is described with the component specifiers listed below and with component separators that can be any character. See the examples
below.

H Hour
m minutes
s seconds

The pattern in TimePattern must match the pattern in Time. Since the output is of type xs:time, the output will always have the lexical format HH:mm:ss.

Examples

- \texttt{altova:parse-time(xs:string("13:56:24"), "]H]:[m]:[s]")} returns 13:56:24
- \texttt{altova:parse-time("13-56-24", "]H]-[m]")} returns 13:56:00
- \texttt{altova:parse-time("time=13h56m24s", "]time=[H]h[m]m[s]s\") returns 13:56:24
- \texttt{altova:parse-time("time=24s56m13h", "]time=[s]s[m]m[H]h\") returns 13:56:24

Age-related functions \texttt{XP3.1 XQ3.1}

These functions return the age as calculated (i) between one input argument date and the current date, or (ii) between two input argument dates. The \texttt{altova:age} function returns the age in terms of years, the \texttt{altova:age-details} function returns the age as a sequence of three integers giving the years, months, and days of the age.

\begin{itemize}
  \item \texttt{age [altova:]}
  \begin{itemize}
    \item \texttt{altova:age(StartDate as xs:date) as xs:integer XP3.1 XQ3.1}
    \begin{itemize}
      \item Returns an integer that is the age in years of some object, counting from a start-date submitted as the argument and ending with the current date (taken from the system clock). If the input argument is a date anything greater than or equal to one year in the future, the return value will be negative.
      \item Examples
      \begin{itemize}
        \item If the current date is 2014-01-15:
        \begin{itemize}
          \item \texttt{altova:age(xs:date("2013-01-15")) returns 1}
          \item \texttt{altova:age(xs:date("2013-01-16")) returns 0}
          \item \texttt{altova:age(xs:date("2015-01-15")) returns -1}
          \item \texttt{altova:age(xs:date("2015-01-14")) returns 0}
        \end{itemize}
      \end{itemize}
    \end{itemize}
  \end{itemize}
\end{itemize}

\texttt{altova:age(StartDate as xs:date, EndDate as xs:date) as xs:integer XP3.1 XQ3.1}

Returns an integer that is the age in years of some object, counting from a start-date that is submitted as the first argument up to an end-date that is the second argument. The return value will be negative if the first argument is one year or more later than the second argument.

\begin{itemize}
  \item \texttt{Examples}
  \begin{itemize}
    \item If the current date is 2014-01-15:
    \begin{itemize}
      \item \texttt{altova:age(xs:date("2000-01-15"), xs:date("2010-01-15")) returns 10}
      \item \texttt{altova:age(xs:date("2000-01-15"), current-date()) returns 14 if the current date is 2014-01-15}
    \end{itemize}
  \end{itemize}
\end{itemize}
• \texttt{altova:age(xs:date("2014-01-15"), xs:date("2010-01-15"))} returns -4

\textbf{age-details \texttt{[altova:]}}

\begin{verbatim}
\texttt{altova:age-details(InputDate as xs:date) as (xs:integer)* XP3.1 XQ3.1}
\end{verbatim}

Returns three integers that are, respectively, the years, months, and days between the date that is submitted as the argument and the current date (taken from the system clock). The sum of the returned \texttt{years+months+days} together gives the total time difference between the two dates (the input date and the current date). The input date may have a value earlier or later than the current date, but whether the input date is earlier or later is not indicated by the sign of the return values; the return values are always positive.

\textbf{Examples}

If the current date is 2014-01-15:

• \texttt{altova:age-details(xs:date("2014-01-16"))} returns (0 0 1)
• \texttt{altova:age-details(xs:date("2014-01-14"))} returns (0 0 1)
• \texttt{altova:age-details(xs:date("2013-01-16"))} returns (1 0 1)
• \texttt{altova:age-details(current-date())} returns (0 0 0)

\begin{verbatim}
\texttt{altova:age-details(Date-1 as xs:date, Date-2 as xs:date) as (xs:integer)* XP3.1 XQ3.1}
\end{verbatim}

Returns three integers that are, respectively, the years, months, and days between the two argument dates. The sum of the returned \texttt{years+months+days} together gives the total time difference between the two input dates; it does not matter whether the earlier or later of the two dates is submitted as the first argument. The return values do not indicate whether the input date occurs earlier or later than the current date. Return values are always positive.

\textbf{Examples}

• \texttt{altova:age-details(xs:date("2014-01-16"), xs:date("2014-01-15"))} returns (0 0 1)
• \texttt{altova:age-details(xs:date("2014-01-15"), xs:date("2014-01-16"))} returns (0 0 1)

\section*{9.2.1.3 XPath/XQuery Functions: Geolocation}

The following geolocation XPath/XQuery extension functions are supported in the current version of RaptorXML+XBRL Server and can be used in (i) XPath expressions in an XSLT context, or (ii) XQuery expressions in an XQuery document.

\textbf{Note about naming of functions and language applicability}

Altova extension functions can be used in XPath/XQuery expressions. They provide additional functionality to the functionality that is available in the standard library of XPath, XQuery, and XSLT functions. Altova extension functions are in the \texttt{Altova extension functions namespace}, \texttt{http://www.altova.com/xslt-extensions}, and are indicated in this section with the prefix \texttt{altova:}, which is assumed to be bound to this namespace. Note that, in future versions of your product, support for a function might be discontinued or the behavior of individual functions might change. Consult the documentation of future releases for information.
about support for Altova extension functions in that release.

| XPath functions (used in XPath expressions in XSLT): | XP1 | XP2 | XP3.1 |
| XSLT functions (used in XPath expressions in XSLT): | XSLT1 | XSLT2 | XSLT3 |
| XQuery functions (used in XQuery expressions in XQuery): | XQ1 | XQ3.1 |

format-geolocation [altova:]

```xml
<xs:function name="format-geolocation" (
  Latitude as xs:decimal, Longitude as xs:decimal, 
  GeolocationOutputStringFormat as xs:integer"
) as xs:string XP3.1 XQ3.1
```

Takes the latitude and longitude as the first two arguments, and outputs the geolocation as a string. The third argument, GeolocationOutputStringFormat, is the format of the geolocation output string; it uses integer values from 1 to 4 to identify the output string format (see ‘Geolocation output string formats’ below). Latitude values range from +90 to -90 (N to S). Longitude values range from +180 to -180 (E to W).

**Note:** The `image-exif-data` function and the Exif metadata's attributes can be used to supply the input strings.

**Examples**

- `altova:format-geolocation(33.33, -22.22, 4)` returns the `xs:string` "33.33 -22.22"
- `altova:format-geolocation(33.33, -22.22, 2)` returns the `xs:string` "33.33N 22.22W"
- `altova:format-geolocation(-33.33, 22.22, 2)` returns the `xs:string` "33.33S 22.22E"
- `altova:format-geolocation(33.33, -22.22, 1)` returns the `xs:string` "33°19'48.00"S 22°13'12.00"E"

**Geolocation output string formats:**

The supplied latitude and longitude is formatted in one of the output formats given below. The desired format is identified by its integer ID (1 to 4). Latitude values range from +90 to -90 (N to S). Longitude values range from +180 to -180 (E to W).

<table>
<thead>
<tr>
<th>Format ID</th>
<th>Description</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Degrees, minutes, decimal seconds, with suffixed orientation (N/S, E/W)</td>
<td>D°M'SS&quot;N/S D°M'SS&quot;E/W</td>
</tr>
<tr>
<td>2</td>
<td>Decimal degrees, with suffixed orientation (N/S, E/W)</td>
<td>D.DDK/S D.DDE/W</td>
</tr>
<tr>
<td>3</td>
<td>Degrees, minutes, decimal seconds, with prefixed sign (+/-); plus sign for (N/E) is optional</td>
<td>+/-D°M'SS&quot; +/-D°M'SS&quot;</td>
</tr>
</tbody>
</table>
Decimal degrees, with prefixed sign (+/-); plus sign for (N/E) is optional

\[ +/\text{-D.DD} \quad +/-\text{D.DD} \]

Example: \(33.33 \quad -22.22\)

**Altova Exif Attribute: Geolocation**

The Altova XPath/XQuery Engine generates the custom attribute Geolocation from standard Exif metadata tags. Geolocation is a concatenation of four Exif tags: GPSLatitude, GPSLatitudeRef, GPSLongitude, GPSLongitudeRef, with units added (see table below).

<table>
<thead>
<tr>
<th>GPSLatitude</th>
<th>GPSLatitudeRef</th>
<th>GPSLongitude</th>
<th>GPSLongitudeRef</th>
<th>Geolocation</th>
</tr>
</thead>
<tbody>
<tr>
<td>33 51 21.91</td>
<td>S</td>
<td>151 13 11.73</td>
<td>E</td>
<td>33°51'21.91&quot;S 151°13'11.73&quot;E</td>
</tr>
</tbody>
</table>

Altova:parse-geolocation [altova:]

\[\text{altova:parse-geolocation(GeolocationInputString as xs:string) as xs:decimal+}\]

Parses the supplied GeolocationInputString argument and returns the geolocation's latitude and longitude (in that order) as a sequence two xs:decimal items. The formats in which the geolocation input string can be supplied are listed below.

**Note:** The image-exif-data \(\text{image-exif-data}^{490}\) function and the Exif metadata's \(\text{@Geolocation}^{480}\) attribute can be used to supply the geolocation input string (see example below).

**Examples**

- \[\text{altova:parse-geolocation("33.33 \quad -22.22")}\] returns the sequence of two \(\text{xs:decimals}\) (33.33, 22.22)
- \[\text{altova:parse-geolocation("48°51'29.6"N \quad 24°17'40.2"E")}\] returns the sequence of two \(\text{xs:decimals}\) (48.8582222222222, 24.2945)
- \[\text{altova:parse-geolocation("48°51'29.6"N \quad 24°17'40.2"E")}\] returns the sequence of two \(\text{xs:decimals}\) (48.8582222222222, 24.2945)
- \[\text{altova:parse-geolocation(image-exif-data(//MyImages/Image20141130.01)/@Geolocation)}\] returns a sequence of two \(\text{xs:decimals}\)

**Geolocation input string formats:**

The geolocation input string must contain latitude and longitude (in that order) separated by whitespace. Each can be in any of the following formats. Combinations are allowed. So latitude can be in one format and longitude can be in another. Latitude values range from \(+90\) to \(-90\) (N to S). Longitude values range from \(+180\) to \(-180\) (E to W).

**Note:** If single quotes or double quotes are used to delimit the input string argument, this will create
a mismatch with the single quotes or double quotes that are used, respectively, to indicate minute-values and second-values. In such cases, the quotes that are used for indicating minute-values and second-values must be escaped by doubling them. In the examples in this section, quotes used to delimit the input string are highlighted in yellow (") while unit indicators that are escaped are highlighted in blue ("").

- **Degrees, minutes, decimal seconds, with suffixed orientation (N/S, E/W)**
  \[D°M'.SS"N/S\]  \[D°M'.SS"W/E\]
  
  **Example:** 33°55'11.11"N  22°44'55.25"W

- **Degrees, minutes, decimal seconds, with prefixed sign (+/-); the plus sign for (N/E) is optional**
  \[+-D°M'.SS"\]  \[+-D°M'.SS"\]
  
  **Example:** 33°55'11.11"  -22°44'55.25"

- **Degrees, decimal minutes, with suffixed orientation (N/S, E/W)**
  \[D°.MM'M.\]  \[D°.MM'M.\]
  
  **Example:** 33°55.55'N  22°44.44'W

- **Degrees, decimal minutes, with prefixed sign (+/-); the plus sign for (N/E) is optional**
  \[+-D°.MM'M.\]  \[+-D°.MM'M.\]
  
  **Example:** +33°55.55'  -22°44.44'

- **Decimal degrees, with suffixed orientation (N/S, E/W)**
  \[D.DD\]  \[D.DD\]
  
  **Example:** 33.33N  22.22W

- **Decimal degrees, with prefixed sign (+/-); the plus sign for (N/S E/W) is optional**
  \[+-D.DD\]  \[+-D.DD\]
  
  **Example:** 33.33  -22.22

**Examples of format-combinations:**
33.33N  -22°44'55.25"
33.33  22°44'55.25"W
33.33  22.45

**Altova Exif Attribute: Geolocation**

The Altova XPath/XQuery Engine generates the custom attribute *Geolocation* from standard Exif metadata tags. *Geolocation* is a concatenation of four Exif tags: GPSLatitude, GPSLatitudeRef, GPSLongitude, GPSLongitudeRef, with units added (see table below).

<table>
<thead>
<tr>
<th>GPSLatitude</th>
<th>GPSLatitudeRef</th>
<th>GPSLongitude</th>
<th>GPSLongitudeRef</th>
<th>Geolocation</th>
</tr>
</thead>
<tbody>
<tr>
<td>33 51 21.91</td>
<td>S</td>
<td>151 13 11.73</td>
<td>E</td>
<td>33°51'21.91&quot;S 151°13'11.73&quot;E</td>
</tr>
</tbody>
</table>

geolocation-distance-km [altova:]
altova:geolocation-distance-km(GeolocationInputString-1 as xs:string, GeolocationInputString-2 as xs:string) as xs:decimal XP3.1 XQ3.1

Calculates the distance between two geolocations in kilometers. The formats in which the geolocation input string can be supplied are listed below. Latitude values range from +90 to −90 (N to S). Longitude values range from +180 to −180 (E to W).

**Note:** The `image-exif-data` function and the Exif metadata’s `@Geolocation` attribute can be used to supply geolocation input strings.

**Examples**

- `altova:geolocation-distance-km("33.33 -22.22", "48°51'29.6""N 24°17'40.2""W")`
  returns the `xs:decimal 4183.08132372392`

**Geolocation input string formats:**

The geolocation input string must contain latitude and longitude (in that order) separated by whitespace. Each can be in any of the following formats. Combinations are allowed. So latitude can be in one format and longitude can be in another. Latitude values range from +90 to −90 (N to S). Longitude values range from +180 to −180 (E to W).

**Note:** If single quotes or double quotes are used to delimit the input string argument, this will create a mismatch with the single quotes or double quotes that are used, respectively, to indicate minute-values and second-values. In such cases, the quotes that are used for indicating minute-values and second-values must be escaped by doubling them. In the examples in this section, quotes used to delimit the input string are highlighted in yellow (""), while unit indicators that are escaped are highlighted in blue (""").

- **Degrees, minutes, decimal seconds, with suffixed orientation (N/S, E/W)**
  
  \[D^\circ M'.SS"N/S \quad D^\circ M'.SS"W/E\]

  **Example:** 33°55′11.11″N 22°44′55.25″W

- **Degrees, minutes, decimal seconds, with prefixed sign (+/-); the plus sign for (N/E) is optional**
  
  \[+/-D^\circ M'.SS" \quad +/-D^\circ M'.SS"\]

  **Example:** 33°55′11.11″ -22°44′55.25″

- **Degrees, decimal minutes, with suffixed orientation (N/S, E/W)**
  
  \[D^\circ .MM'N/S \quad D^\circ .MM'W/E\]

  **Example:** 33°55.55′N 22°44.44′W

- **Degrees, decimal minutes, with prefixed sign (+/-); the plus sign for (N/E) is optional**
  
  \[+/-D^\circ .MM' \quad +/-D^\circ .MM'\]

  **Example:** +33°55.55′ -22°44.44′

- **Decimal degrees, with suffixed orientation (N/S, E/W)**
  
  \[D.DDN/S \quad D.DDW/E\]

  **Example:** 33.33N 22.22W

- **Decimal degrees, with prefixed sign (+/-); the plus sign for (N/S E/W) is optional**
  
  \[+/-D.DD \quad +/-D.DD\]

  **Example:** 33.33 -22.22
**Examples of format-combinations:**

<table>
<thead>
<tr>
<th>Format Example</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>33.33N -22°44'55.25&quot;</td>
<td>Degrees, minutes, decimal seconds, with suffixed orientation (N/S, E/W)</td>
</tr>
<tr>
<td>33.33 22°44'55.25&quot;W</td>
<td></td>
</tr>
<tr>
<td>33.33 22.45</td>
<td></td>
</tr>
</tbody>
</table>

**Altova Exif Attribute: Geolocation**

The Altova XPath/XQuery Engine generates the custom attribute `Geolocation` from standard Exif metadata tags. `Geolocation` is a concatenation of four Exif tags: `GPSLatitude`, `GPSLatitudeRef`, `GPSLongitude`, `GPSLongitudeRef`, with units added (see table below).

<table>
<thead>
<tr>
<th>GPSLatitude</th>
<th>GPSLatitudeRef</th>
<th>GPSLongitude</th>
<th>GPSLongitudeRef</th>
<th>Geolocation</th>
</tr>
</thead>
<tbody>
<tr>
<td>33 51 21.91</td>
<td>S</td>
<td>151 13 11.73</td>
<td>E</td>
<td>33°51'21.91&quot;S 151°13'11.73&quot;E</td>
</tr>
</tbody>
</table>

**geolocation-distance-mi [altova:]**

```xml
altova:geolocation-distance-mi(GeolocationInputString-1 as xs:string,
GeolocationInputString-2 as xs:string) as xs:decimal XP3.1 XQ3.1
```

Calculates the distance between two geolocations in miles. The formats in which a geolocation input string can be supplied are listed below. Latitude values range from +90 to -90 (N to S). Longitude values range from +180 to -180 (E to W).

**Note:** The `image-exif-data` function and the Exif metadata's `@Geolocation` attribute can be used to supply geolocation input strings.

**Examples**

- `altova:geolocation-distance-mi("33.33 -22.22", "48°51'29.6"N 24°17'40.2"W")`
  returns the `xs:decimal 2599.40652340653`

**Geolocation input string formats:**

The geolocation input string must contain latitude and longitude (in that order) separated by whitespace. Each can be in any of the following formats. Combinations are allowed. So latitude can be in one format and longitude can be in another. Latitude values range from +90 to -90 (N to S). Longitude values range from +180 to -180 (E to W).

**Note:** If single quotes or double quotes are used to delimit the input string argument, this will create a mismatch with the single quotes or double quotes that are used, respectively, to indicate minute-values and second-values. In such cases, the quotes that are used for indicating minute-values and second-values must be escaped by doubling them. In the examples in this section, quotes used to delimit the input string are highlighted in yellow (`"`) while unit indicators that are escaped are highlighted in blue (`"`).

- Degrees, minutes, decimal seconds, with suffixed orientation (N/S, E/W)
  ```
  D°M'S.SS"N/S  D°M'S.SS"W/E
  ```
Example: 33°55’11.11"N  22°44’55.25"W

- Degrees, minutes, decimal seconds, with prefixed sign (+/-); the plus sign for (N/E) is optional
  +/−D°M’.SS”  +/−D°M’.SS”
  Example: 33°55’11.11"  -22°44’55.25"

- Degrees, decimal minutes, with suffixed orientation (N/S, E/W)
  D°M.MM’N/S  D°M.MM’W/E
  Example: 33°55.55’N  22°44.44’W

- Degrees, decimal minutes, with prefixed sign (+/-); the plus sign for (N/E) is optional
  +/−D°M.MM’  +/−D°M.MM’
  Example: +33°55.55’  -22°44.44’

- Decimal degrees, with suffixed orientation (N/S, E/W)
  D.DD/N/S  D.DDW/E
  Example: 33.33N  22.22W

- Decimal degrees, with prefixed sign (+/-); the plus sign for (N/S E/W) is optional
  +/−D.DD  +/-D.DD
  Example: 33.33  -22.22

Examples of format-combinations:
33.33N  -22°44’55.25”
33.33  22°44’55.25”W
33.33  22.45

Altova Exif Attribute: Geolocation

The Altova XPath/XQuery Engine generates the custom attribute Geolocation from standard Exif metadata tags. Geolocation is a concatenation of four Exif tags: GPSLatitude, GPSLatitudeRef, GPSLongitude, GPSLongitudeRef, with units added (see table below).

<table>
<thead>
<tr>
<th>GPSLatitude</th>
<th>GPSLatitudeRef</th>
<th>GPSLongitude</th>
<th>GPSLongitudeRef</th>
<th>Geolocation</th>
</tr>
</thead>
<tbody>
<tr>
<td>33 51 21.91</td>
<td>S</td>
<td>151 13 11.73</td>
<td>E</td>
<td>33°51'21.91&quot;S  151°13'11.73&quot;E</td>
</tr>
</tbody>
</table>

geolocations-bounding-rectangle [altova:]
altova:geolocations-bounding-rectangle(Geolocations as xs:sequence,
GeolocationOutputStringFormat as xs:integer) as xs:string XP3.1 XQ3.1

Takes a sequence of strings as its first argument; each string in the sequence is a geolocation. The function returns a sequence of two strings which are, respectively, the top-left and bottom-right geolocation coordinates of a bounding rectangle that is optimally sized to enclose all the geolocations submitted in the first argument. The formats in which a geolocation input string can be supplied are listed below (see ‘Geolocation input string formats’). Latitude values range from +90 to −90 (N to S). Longitude values range...
from +180 to -180 (E to W).

The function's second argument specifies the format of the two geolocation strings in the output sequence. The argument takes an integer value from 1 to 4, where each value identifies a different geolocation string format (see 'Geolocation output string formats' below).

**Note:** The image-exif-data function and the Exif metadata's attributes can be used to supply the input strings.

**Examples**
- `altova:geolocations-bounding-rectangle(("48.2143531 16.3707266", "51.50939 - 0.11832"), 1)` returns the sequence (`"51°30'33.804"N 0°7'5.952"W"` , `"48°12'51.6716"N 16°22'14.61576"E"`)  
- `altova:geolocations-bounding-rectangle(("48.2143531 16.3707266", "51.50939 - 0.11832", "42.5584577 -70.8893334"), 4)` returns the sequence (`"51.50939 -70.8893334"`, `"42.5584577 16.3707266"`)  

**Geolocation input string formats:**

The geolocation input string must contain latitude and longitude (in that order) separated by whitespace. Each can be in any of the following formats. Combinations are allowed. So latitude can be in one format and longitude can be in another. Latitude values range from +90 to -90 (N to S). Longitude values range from +180 to -180 (E to W).

**Note:** If single quotes or double quotes are used to delimit the input string argument, this will create a mismatch with the single quotes or double quotes that are used, respectively, to indicate minute-values and second-values. In such cases, the quotes that are used for indicating minute-values and second-values must be escaped by doubling them. In the examples in this section, quotes used to delimit the input string are highlighted in yellow (") while unit indicators that are escaped are highlighted in blue (")

- Degrees, minutes, decimal seconds, with suffixed orientation (N/S, E/W)
  \[ D°M'S.SS"N/S  D°M'S.SS"W/E \]
  **Example:** `33°55′11.11"N  22°44′55.25"W`

- Degrees, minutes, decimal seconds, with prefixed sign (+/-); the plus sign for (N/E) is optional
  \[ +/-D°M'S.SS"  +/-D°M'S.SS" \]
  **Example:** `33°55′11.11"  -22°44′55.25"`

- Degrees, decimal minutes, with suffixed orientation (N/S, E/W)
  \[ D°M.MM'N/S  D°M.MM'W/E \]
  **Example:** `33°55.55°N  22°44.44°W`

- Degrees, decimal minutes, with prefixed sign (+/-); the plus sign for (N/E) is optional
  \[ +/-D°M.MM'  +/-D°M.MM' \]
  **Example:** `+33°55.55°  -22°44.44°`

- Decimal degrees, with suffixed orientation (N/S, E/W)
  \[ D.DDN/S  D.DDW/E \]
  **Example:** `33.33N  22.22W`
- Decimal degrees, with prefixed sign (+/-); the plus sign for E/W is optional
  
  $\pm$/D.DD $\pm$/D.DD

  Example: 33.33 -22.22

  **Examples of format-combinations:**
  
  33.33N  -22°44'55.25"
  33.33  22°44'55.25"W
  33.33  22.45

- Geolocation output string formats:

  The supplied latitude and longitude is formatted in one of the output formats given below. The desired format is identified by its integer ID (1 to 4). Latitude values range from +90 to -90 (N to S). Longitude values range from +180 to -180 (E to W).

  1

  **Degrees, minutes, decimal seconds, with suffixed orientation (N/S, E/W)**

  D°M'S.SS"N/S  D°M'S.SS"E/W

  Example: 33°55'11.11"N  22°44'66.66"W

  2

  **Decimal degrees, with suffixed orientation (N/S, E/W)**

  D.DDN/S  D.DDE/W

  Example: 33.33N  22.22W

  3

  **Degrees, minutes, decimal seconds, with prefixed sign (+/-); plus sign for (N/E) is optional**

  $\pm$/D°M'S.SS"  $\pm$/D°M'S.SS"

  Example: 33°55'11.11" -22°44'66.66"

  4

  **Decimal degrees, with prefixed sign (+/-); plus sign for (N/E) is optional**

  $\pm$/D.DD $\pm$/D.DD

  Example: 33.33 -22.22

- **Altova Exif Attribute: Geolocation**

  The Altova XPath/XQuery Engine generates the custom attribute **Geolocation** from standard Exif metadata tags. Geolocation is a concatenation of four Exif tags: GPSLatitude, GPSLatitudeRef, GPSLongitude, GPSLongitudeRef, with units added (see table below).

<table>
<thead>
<tr>
<th>GPSLatitude</th>
<th>GPSLatitudeRef</th>
<th>GPSLongitude</th>
<th>GPSLongitudeRef</th>
<th>Geolocation</th>
</tr>
</thead>
<tbody>
<tr>
<td>33 51 21.91</td>
<td>S</td>
<td>151 13 11.73</td>
<td>E</td>
<td>33°51'21.91&quot;S 151° 13'11.73&quot;E</td>
</tr>
</tbody>
</table>
altova:geolocation-within-polygon

Determines whether Geolocation (the first argument) is within the polygonal area described by the PolygonPoint arguments. If the PolygonPoint arguments do not form a closed figure (formed when the first point and the last point are the same), then the first point is implicitly added as the last point in order to close the figure. All the arguments (Geolocation and PolygonPoint+) are given by geolocation input strings (formats listed below). If the Geolocation argument is within the polygonal area, then the function returns true(); otherwise it returns false(). Latitude values range from +90 to -90 (N to S). Longitude values range from +180 to -180 (E to W).

Note: The image-exif-data function and the Exif metadata's @Geolocation attribute can be used to supply geolocation input strings.

Examples

- altova:geolocation-within-polygon("33 -22", ";58 -32", ";78 -55", "48°51'29.6""N 24°17'40.2""W") returns true()

Geolocation input string formats:

The geolocation input string must contain latitude and longitude (in that order) separated by whitespace. Each can be in any of the following formats. Combinations are allowed. So latitude can be in one format and longitude can be in another. Latitude values range from +90 to -90 (N to S). Longitude values range from +180 to -180 (E to W).

Note: If single quotes or double quotes are used to delimit the input string argument, this will create a mismatch with the single quotes or double quotes that are used, respectively, to indicate minute-values and second-values. In such cases, the quotes that are used for indicating minute-values and second-values must be escaped by doubling them. In the examples in this section, quotes used to delimit the input string are highlighted in yellow ("" while unit indicators that are escaped are highlighted in blue ("")

- Degrees, minutes, decimal seconds, with suffixed orientation (N/S, E/W)
  
  **Example:** 33°55.11.11"N  22°44.55.25"W

- Degrees, minutes, decimal seconds, with prefixed sign (+/-); the plus sign for (N/E) is optional

  **Example:** 33°55.11.11"  -22°44.55.25"
• **Degrees, decimal minutes, with suffixed orientation (N/S, E/W)**
  \[D°M.MM'N/S \text{ or } D°M.MM'W/E\]
  
  *Example:* 33° 55.55′ N  22° 44.44′ W

• **Degrees, decimal minutes, with prefixed sign (+/-); the plus sign for (N/E) is optional**
  \[+/-D°M.MM' \text{ or } +/-D°M.MM'\]
  
  *Example:* +33° 55.55′, -22° 44.44′

• **Decimal degrees, with suffixed orientation (N/S, E/W)**
  \[D.DD/N/S \text{ or } D.DD/W/E\]
  
  *Example:* 33.33°N  22.22°W

• **Decimal degrees, with prefixed sign (+/-); the plus sign for (N/S E/W) is optional**
  \[+/-D.DD \text{ or } +/-D.DD\]
  
  *Example:* 33.33°, -22.22°

**Examples of format-combinations:**

<table>
<thead>
<tr>
<th>Geolocation</th>
<th>33.33N</th>
<th>-22°44′55.25″</th>
</tr>
</thead>
<tbody>
<tr>
<td>33.33</td>
<td>22°44′55.25″W</td>
<td></td>
</tr>
<tr>
<td>33.33</td>
<td>22.45</td>
<td></td>
</tr>
</tbody>
</table>

**Altova Exif Attribute: Geolocation**

The Altova XPath/XQuery Engine generates the custom attribute `Geolocation` from standard Exif metadata tags. `Geolocation` is a concatenation of four Exif tags: `GPSLatitude`, `GPSLatitudeRef`, `GPSLongitude`, `GPSLongitudeRef`, with units added (see table below).

<table>
<thead>
<tr>
<th>GPSLatitude</th>
<th>GPSLatitudeRef</th>
<th>GPSLongitude</th>
<th>GPSLongitudeRef</th>
<th>Geolocation</th>
</tr>
</thead>
<tbody>
<tr>
<td>33</td>
<td>51</td>
<td>151</td>
<td>11.73</td>
<td>33°51′21.91″S 151°13′11.73″E</td>
</tr>
</tbody>
</table>

**geolocation-within-rectangle [altova:]**

```xquery
altova:geolocation-within-rectangle(Geolocation as xs:string, RectCorner-1 as xs:string, RectCorner-2 as xs:string) as xs:boolean
```

Determines whether Geolocation (the first argument) is within the rectangle defined by the second and third arguments, `RectCorner-1` and `RectCorner-2`, which specify opposite corners of the rectangle. All the arguments (Geolocation, RectCorner-1 and RectCorner-2) are given by geolocation input strings (formats listed below). If the Geolocation argument is within the rectangle, then the function returns `true()`; otherwise it returns `false()`. Latitude values range from +90 to -90 (N to S). Longitude values range from +180 to -180 (E to W).

**Note:** The `image-exif-data` function and the Exif metadata's `@Geolocation` attribute can be used to supply geolocation input strings.

**Examples**

• `altova:geolocation-within-rectangle("33 -22", "58 -32", "-48 24")` returns `true()`
• `altova:geolocation-within-rectangle("33 -22", "58 -32", "48 24")` returns `false()`
• `altova:geolocation-within-rectangle("33 -22", "58 -32", "48°51'29.6"S 24°
17'40.2")` returns `true()`

**Geolocation input string formats:**

The geolocation input string must contain latitude and longitude (in that order) separated by whitespace. Each can be in any of the following formats. Combinations are allowed. So latitude can be in one format and longitude can be in another. Latitude values range from +90 to −90 (N to S). Longitude values range from +180 to −180 (E to W).

**Note:** If single quotes or double quotes are used to delimit the input string argument, this will create a mismatch with the single quotes or double quotes that are used, respectively, to indicate minute values and second values. In such cases, the quotes that are used for indicating minute values and second values must be escaped by doubling them. In the examples in this section, quotes used to delimit the input string are highlighted in yellow ("), while unit indicators that are escaped are highlighted in blue (’).

- **Degrees, minutes, decimal seconds, with suffixed orientation (N/S, E/W)**
  \[D°M’S.SS”"N/S  D°M’S.SS”W/E\]
  \[Example: 33°55'11.11"N  22°44'55.25"W\]

- **Degrees, minutes, decimal seconds, with prefixed sign (+/-); the plus sign for (N/E) is optional**
  \[+/−D°M’S.SS”  +/−D°M’S.SS”\]
  \[Example: 33°55'11.11"  −22°44'55.25"\]

- **Degrees, decimal minutes, with suffixed orientation (N/S, E/W)**
  \[D°M.MM’N/S  D°M.MM’W/E\]
  \[Example: 33°55.55’N  22°44.44’W\]

- **Degrees, decimal minutes, with prefixed sign (+/-); the plus sign for (N/E) is optional**
  \[+/−D°M.MM’  +/−D°M.MM’\]
  \[Example: +33°55.55’  −22°44.44’\]

- **Decimal degrees, with suffixed orientation (N/S, E/W)**
  \[D.DD”N/S  D.DD”W/E\]
  \[Example: 33.33N  22.22W\]

- **Decimal degrees, with prefixed sign (+/-); the plus sign for (N/S E/W) is optional**
  \[+/−D.DD  +/−D.DD\]
  \[Example: 33.33  −22.22\]

**Examples of format-combinations:**

- \[33.33  −22°44’55.25”\]
- \[33.33  22°44’55.25”W\]
- \[33.33  22°44.5°W\]
- \[33.33  22°44.5°W\]

**Altova Exif Attribute: Geolocation**

The Altova XPath/XQuery Engine generates the custom attribute `Geolocation` from standard Exif metadata tags. `Geolocation` is a concatenation of four Exif tags: `GPSLatitude`, `GPSLatitudeRef`, `GPSLongitude`, and `GPSLongitudeRef`.
GPSLongitude, GPSLongitudeRef, with units added (see table below).

<table>
<thead>
<tr>
<th>GPSLatitude</th>
<th>GPSLatitudeRef</th>
<th>GPSLongitude</th>
<th>GPSLongitudeRef</th>
<th>Geolocation</th>
</tr>
</thead>
<tbody>
<tr>
<td>33 51 21.91</td>
<td>S</td>
<td>151 13 11.73</td>
<td>E</td>
<td>33°51'21.91&quot;S 151°13'11.73&quot;E</td>
</tr>
</tbody>
</table>

9.2.1.4 XPath/XQuery Functions: Image-Related

The following image-related XPath/XQuery extension functions are supported in the current version of RaptorXML+XBRL Server and can be used in (i) XPath expressions in an XSLT context, or (ii) XQuery expressions in an XQuery document.

Note about naming of functions and language applicability

Altova extension functions can be used in XPath/XQuery expressions. They provide additional functionality to the functionality that is available in the standard library of XPath, XQuery, and XSLT functions. Altova extension functions are in the Altova extension functions namespace, http://www.altova.com/xslt-extensions, and are indicated in this section with the prefix altova:, which is assumed to be bound to this namespace. Note that, in future versions of your product, support for a function might be discontinued or the behavior of individual functions might change. Consult the documentation of future releases for information about support for Altova extension functions in that release.

| XPath functions (used in XPath expressions in XSLT):       | XP1 XP2 XP3.1 |
| XSLT functions (used in XPath expressions in XSLT):       | XSLT1 XSLT2 XSLT3 |
| XQuery functions (used in XQuery expressions in XQuery):  | XQ1 XQ3.1 |

**suggested-image-file-extension [altova:]**

altova:suggested-image-file-extension(Base64String as string) as string? XP3.1 XQ3.1

Takes the Base64 encoding of an image file as its argument and returns the file extension of the image as recorded in the Base64-encoding of the image. The returned value is a suggestion based on the image type information available in the encoding. If this information is not available, then an empty string is returned. This function is useful if you wish to save a Base64 image as a file and wish to dynamically retrieve an appropriate file extension.

**Examples**

- altova:suggested-image-file-extension(/MyImages/MobilePhone/Image20141130.01) returns 'jpg'
- altova:suggested-image-file-extension($XML1/Staff/Person/@photo) returns ''
In the examples above, the nodes supplied as the argument of the function are assumed to contain a Base64-encoded image. The first example retrieves .jpg as the file's type and extension. In the second example, the submitted Base64 encoding does not provide usable file extension information.

altova:image-exif-data[altova:]

```xquery
altova:image-exif-data(Base64BinaryString as string) as element? XP3.1 XQ3.1
```

Takes a Base64-encoded JPEG image as its argument and returns an element called Exif that contains the Exif metadata of the image. The Exif metadata is created as attribute-value pairs of the Exif element. The attribute names are the Exif data tags found in the Base64 encoding. The list of Exif-specification tags is given below. If a vendor-specific tag is present in the Exif data, this tag and its value will also be returned as an attribute-value pair. Additional to the standard Exif metadata tags (see list below), Altova-specific attribute-value pairs are also generated. These Altova Exif attributes are listed below.

### Examples

- To access any one attribute, use the function like this:
  ```xquery
  image-exif-data(//MyImages/Image20141130.01)/@GPSLatitude
  image-exif-data(//MyImages/Image20141130.01)/@Geolocation
  ```
- To access all the attributes, use the function like this:
  ```xquery
  image-exif-data(//MyImages/Image20141130.01)/@
  ```
- To access the names of all the attributes, use the following expression:
  ```xquery
  for $i in image-exif-data(//MyImages/Image20141130.01)/@* return name($i)
  ```
  This is useful to find out the names of the attributes returned by the function.

### Altova Exif Attribute: Geolocation

The Altova XPath/XQuery Engine generates the custom attribute Geolocation from standard Exif metadata tags. Geolocation is a concatenation of four Exif tags: GPSLatitude, GPSLatitudeRef, GPSLongitude, GPSLongitudeRef, with units added (see table below).

<table>
<thead>
<tr>
<th>GPSLatitude</th>
<th>GPSLatitudeRef</th>
<th>GPSLongitude</th>
<th>GPSLongitudeRef</th>
<th>Geolocation</th>
</tr>
</thead>
<tbody>
<tr>
<td>33 51 21.91</td>
<td>S</td>
<td>151 13 11.73</td>
<td></td>
<td>33°51'21.91&quot;S 151°13'11.73&quot;E</td>
</tr>
</tbody>
</table>

### Altova Exif Attribute: OrientationDegree

The Altova XPath/XQuery Engine generates the custom attribute OrientationDegree from the Exif metadata tag Orientation.

OrientationDegree translates the standard Exif tag Orientation from an integer value (1, 8, 3, or 6) to the respective degree values of each (0, 90, 180, 270), as shown in the figure below. Note that there are no translations of the Orientation values of 2, 4, 5, 7. (These orientations are obtained by flipping image 1 across its vertical center axis to get the image with a value of 2, and then rotating this image in 90-degree jumps clockwise to get the values of 7, 4, and 5, respectively).
Listing of standard Exif meta tags

- ImageWidth
- ImageLength
- BitsPerSample
- Compression
- PhotometricInterpretation
- Orientation
- SamplesPerPixel
- PlanarConfiguration
- YCbCrSubSampling
- YCbCrPositioning
- XResolution
- YResolution
- ResolutionUnit
- StripOffsets
- RowsPerStrip
- StripByteCounts
- JPEGInterchangeFormat
- JPEGInterchangeFormatLength
- TransferFunction
- WhitePoint
- PrimaryChromaticities
- YCbCrCoefficients
- ReferenceBlackWhite
- DateTime
- ImageDescription
- Make
- Model
- Software
- Artist
- Copyright

------------------------------

- ExifVersion
- FlashpixVersion
- ColorSpace
- ComponentsConfiguration
- CompressedBitsPerPixel
- PixelXDimension
- PixelYDimension
- MakerNote
- UserComment
- RelatedSoundFile
- DateTimeOriginal
- DateTimeDigitized
- SubSecTime
- SubSecTimeOriginal
- SubSecTimeDigitized
- ExposureTime
- FNumber
- ExposureProgram
- SpectralSensitivity
- ISOSpeedRatings
- OECF
- ShutterSpeedValue
- ApertureValue
- BrightnessValue
- ExposureBiasValue
- MaxApertureValue
- SubjectDistance
- MeteringMode
- LightSource
- Flash
- FocalLength
- SubjectArea
- FlashEnergy
- SpatialFrequencyResponse
- FocalPlaneXResolution
- FocalPlaneYResolution
- FocalPlaneResolutionUnit
- SubjectLocation
- ExposureIndex
- SensingMethod
- FileSource
- SceneType
- CFAPattern
- CustomRendered
- ExposureMode
- WhiteBalance
- DigitalZoomRatio
- FocalLengthIn35mmFilm
- SceneCaptureType
9.2.1.5 XPath/XQuery Functions: Numeric

Altova's numeric extension functions can be used in XPath and XQuery expressions and provide additional functionality for the processing of data. The functions in this section can be used with Altova's XPath 3.0 and XQuery 3.0 engines. They are available in XPath/XQuery contexts.

Note about naming of functions and language applicability
Altova extension functions can be used in XPath/XQuery expressions. They provide additional functionality to the functionality that is available in the standard library of XPath, XQuery, and XSLT functions. Altova extension functions are in the **Altova extension functions namespace**, `http://www.altova.com/xslt-extensions`, and are indicated in this section with the prefix `altova:`, which is assumed to be bound to this namespace. Note that, in future versions of your product, support for a function might be discontinued or the behavior of individual functions might change. Consult the documentation of future releases for information about support for Altova extension functions in that release.

<table>
<thead>
<tr>
<th>XPath functions (used in XPath expressions in XSLT):</th>
<th>XP1 XP2 XP3.1</th>
</tr>
</thead>
<tbody>
<tr>
<td>XSLT functions (used in XPath expressions in XSLT):</td>
<td>XSLT1 XSLT2 XSLT3</td>
</tr>
<tr>
<td>XQuery functions (used in XQuery expressions in XQuery):</td>
<td>XQ1 XQ3.1</td>
</tr>
</tbody>
</table>

**Auto-numbering functions**

- **generate-auto-number [altova:]**

  ```xml
  altova:generate-auto-number(ID as xs:string, StartsWith as xs:double, Increment as xs:double, ResetOnChange as xs:string) as xs:integer
  ```

  Generates a number each time the function is called. The first number, which is generated the first time the function is called, is specified by the `StartsWith` argument. Each subsequent call to the function generates a new number, this number being incremented over the previously generated number by the value specified in the `Increment` argument. In effect, the `altova:generate-auto-number` function creates a counter having a name specified by the `ID` argument, with this counter being incremented each time the function is called. If the value of the `ResetOnChange` argument changes from that of the previous function call, then the value of the number to be generated is reset to the `StartsWith` value. Auto-numbering can also be reset by using the `altova:reset-auto-number` function.

  **Examples**
  - ```xml
      altova:generate-auto-number("ChapterNumber", 1, 1, "SomeString")
    ```
    will return one number each time the function is called, starting with 1, and incrementing by 1 with each call to the function. As long as the fourth argument remains "SomeString" in each subsequent call, the incrementing will continue. When the value of the fourth argument changes, the counter (called `ChapterNumber`) will reset to 1. The value of `ChapterNumber` can also be reset by a call to the `altova:reset-auto-number` function, like this: ```xml
      altova:reset-auto-number("ChapterNumber")
    ```.

- **reset-auto-number [altova:]**

  ```xml
  altova:reset-auto-number(ID as xs:string) XP1 XP2 XQ1 XP3.1 XQ3.1
  ```

  This function resets the number of the auto-numbering counter named in the `ID` argument. The number is reset to the number specified by the `StartsWith` argument of the `altova:generate-auto-number` function that created the counter named in the `ID` argument.

  **Examples**
  - ```xml
      altova:reset-auto-number("ChapterNumber")
    ```
    resets the number of the auto-numbering counter named `ChapterNumber` that was created by the `altova:generate-auto-number` function. The number is reset to the value of the `StartsWith` argument of the `altova:generate-auto-number` function that created `ChapterNumber`.
Numeric functions

hex-string-to-integer [altova:]

`altova:hex-string-to-integer(HexString as xs:string) as xs:integer XP3.1 XQ3.1`

Takes a string argument that is the Base-16 equivalent of an integer in the decimal system (Base-10), and returns the decimal integer.

**Examples**

- `altova:hex-string-to-integer('1')` returns 1
- `altova:hex-string-to-integer('9')` returns 9
- `altova:hex-string-to-integer('A')` returns 10
- `altova:hex-string-to-integer('B')` returns 11
- `altova:hex-string-to-integer('F')` returns 15
- `altova:hex-string-to-integer('G')` returns an error
- `altova:hex-string-to-integer('10')` returns 16
- `altova:hex-string-to-integer('01')` returns 1
- `altova:hex-string-to-integer('20')` returns 32
- `altova:hex-string-to-integer('21')` returns 33
- `altova:hex-string-to-integer('5A')` returns 90
- `altova:hex-string-to-integer('USA')` returns an error

integer-to-hex-string [altova:]

`altova:integer-to-hex-string(Integer as xs:integer) as xs:string XP3.1 XQ3.1`

Takes an integer argument and returns its Base-16 equivalent as a string.

**Examples**

- `altova:integer-to-hex-string(1)` returns '1'
- `altova:integer-to-hex-string(9)` returns '9'
- `altova:integer-to-hex-string(10)` returns 'A'
- `altova:integer-to-hex-string(11)` returns 'B'
- `altova:integer-to-hex-string(15)` returns 'F'
- `altova:integer-to-hex-string(16)` returns '10'
- `altova:integer-to-hex-string(32)` returns '20'
- `altova:integer-to-hex-string(33)` returns '21'
- `altova:integer-to-hex-string(90)` returns '5A'

Number-formatting functions
9.2.1.6 XPath/XQuery Functions: Schema

The Altova extension functions listed below return schema information. Given below are descriptions of the functions, together with (i) examples and (ii) a listing of schema components and their respective properties. They can be used with Altova’s XPath 3.0 and XQuery 3.0 engines and are available in XPath/XQuery contexts.

Schema information from schema documents
The function `altova:schema` has two arguments: one with zero arguments and the other with two arguments. The zero-argument function returns the whole schema. You can then, from this starting point, navigate into the schema to locate the schema components you want. The two-argument function returns a specific component kind that is identified by its QName. In both cases, the return value is a function. To navigate into the returned component, you must select a property of that specific component. If the property is a non-atomic item (that is, if it is a component), then you can navigate further by selecting a property of this component. If the selected property is an atomic item, then the value of the item is returned and you cannot navigate any further.

Note: In XQuery expressions, the schema must be explicitly imported. In XPath expressions, the schema must have been imported into the processing environment, for example, into XSLT with the `xslt:import` instruction.

Schema information from XML nodes
The function `altova:type` submits the node of an XML document and returns the node’s type information from the PSVI.

Note about naming of functions and language applicability
Altova extension functions can be used in XPath/XQuery expressions. They provide additional functionality to the functionality that is available in the standard library of XPath, XQuery, and XSLT functions. Altova extension functions are in the Altova extension functions namespace, `http://www.altova.com/xslt-extensions`, and are indicated in this section with the prefix `altova:`, which is assumed to be bound to this namespace. Note that, in future versions of your product, support for a function might be discontinued or the behavior of individual functions might change. Consult the documentation of future releases for information about support for Altova extension functions in that release.

| XPath functions (used in XPath expressions in XSLT): | XP1 XP2 XP3.1 |
| XSLT functions (used in XPath expressions in XSLT): | XSLT1 XSLT2 XSLT3 |
| XQuery functions (used in XQuery expressions in XQuery): | XQ1 XQ3.1 |

- **Schema (zero arguments)**

  ```
  altova:schema() as (function(xs:string) as item()*)? XP3.1 XQ3.1
  ```

  Returns the `schema` component as a whole. You can navigate further into the `schema` component by selecting one of the `schema` component’s properties.

  - If this property is a component, you can navigate another step deeper by selecting one of this component’s properties. This step can be repeated to navigate further into the schema.
  - If the component is an atomic value, the atomic value is returned and you cannot navigate any deeper.
The properties of the schema component are:

"type definitions"
"attribute declarations"
"element declarations"
"attribute group definitions"
"model group definitions"
"notation declarations"
"identity-constraint definitions"

The properties of all other component kinds (besides schema) are listed below.

Note: In XQuery expressions, the schema must be explicitly imported. In XPath expressions, the schema must have been imported into the processing environment, for example, into XSLT with the xslt:import instruction.

Examples

- import schema "" at "C:\Test\ExpReport.xsd"; for $typedef in altera:schema() ("type definitions")
  return $typedef ("name") returns the names of all simple types or complex types in the schema

- import schema "" at "C:\Test\ExpReport.xsd";
  altera:schema() ("type definitions")[1] ("name") returns the name of the first of all simple types or complex types in the schema

Components and their properties

Assertion

<table>
<thead>
<tr>
<th>Property name</th>
<th>Property type</th>
<th>Property value</th>
</tr>
</thead>
<tbody>
<tr>
<td>kind</td>
<td>string</td>
<td>&quot;Assertion&quot;</td>
</tr>
<tr>
<td>test</td>
<td>XPath Property Record</td>
<td></td>
</tr>
</tbody>
</table>

Attribute Declaration

<table>
<thead>
<tr>
<th>Property name</th>
<th>Property type</th>
<th>Property value</th>
</tr>
</thead>
<tbody>
<tr>
<td>kind</td>
<td>string</td>
<td>&quot;Attribute Declaration&quot;</td>
</tr>
<tr>
<td>name</td>
<td>string</td>
<td>Local name of the attribute</td>
</tr>
<tr>
<td>target namespace</td>
<td>string</td>
<td>Namespace URI of the attribute</td>
</tr>
<tr>
<td>type definition</td>
<td>Simple Type or Complex Type</td>
<td></td>
</tr>
<tr>
<td>scope</td>
<td>A function with properties</td>
<td>(&quot;class&quot;: &quot;Scope&quot;, &quot;variety&quot;: &quot;global&quot; or &quot;local&quot;, &quot;parent&quot;: the containing Complex Type or Attribute Group)</td>
</tr>
</tbody>
</table>
value constraint | If present, a function with properties 
("class": "Value Constraint", "variety":  
"fixed" or "default", "value": atomic 
value, "lexical form": string. Note that 
the "value" property is not available for 
namespace-sensitive types

inheritable | boolean

Attribute Group Declaration

<table>
<thead>
<tr>
<th>Property name</th>
<th>Property type</th>
<th>Property value</th>
</tr>
</thead>
<tbody>
<tr>
<td>kind</td>
<td>string</td>
<td>&quot;Attribute Group Definition&quot;</td>
</tr>
<tr>
<td>name</td>
<td>string</td>
<td>Local name of the attribute group</td>
</tr>
<tr>
<td>target namespace</td>
<td>string</td>
<td>Namespace URI of the attribute group</td>
</tr>
<tr>
<td>attribute uses</td>
<td>Sequence of (Attribute Use)</td>
<td></td>
</tr>
<tr>
<td>attribute wildcard</td>
<td>Optional Attribute Wildcard</td>
<td></td>
</tr>
</tbody>
</table>

Attribute Use

<table>
<thead>
<tr>
<th>Property name</th>
<th>Property type</th>
<th>Property value</th>
</tr>
</thead>
<tbody>
<tr>
<td>kind</td>
<td>string</td>
<td>&quot;Attribute Use&quot;</td>
</tr>
</tbody>
</table>
| required      | boolean       | true if the attribute is required,  
false if optional |
| value constraint | See Attribute Declaration |
| inheritable   | boolean       |               |

Attribute Wildcard

<table>
<thead>
<tr>
<th>Property name</th>
<th>Property type</th>
<th>Property value</th>
</tr>
</thead>
<tbody>
<tr>
<td>kind</td>
<td>string</td>
<td>&quot;Wildcard&quot;</td>
</tr>
</tbody>
</table>
| namespace constraint | function with properties 
("class": 
"Namespace Constraint", "variety":  
"any"|"enumeration"|"not",  
"namespaces": sequence of xs:anyURI,  
disallowed names": list containing  
QNames and/or the strings "defined"  
and "definedSiblings" |
| process contents | string ("strict"|"lax"|"skip") |

Complex Type

<table>
<thead>
<tr>
<th>Property name</th>
<th>Property type</th>
<th>Property value</th>
</tr>
</thead>
<tbody>
<tr>
<td>kind</td>
<td>string</td>
<td>&quot;Complex Type&quot;</td>
</tr>
<tr>
<td>Property name</td>
<td>Property type</td>
<td>Property value</td>
</tr>
<tr>
<td>------------------------</td>
<td>----------------------------------------------------</td>
<td>-------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>name</td>
<td>string</td>
<td>Local name of the type (empty if anonymous)</td>
</tr>
<tr>
<td>target namespace</td>
<td>string</td>
<td>Namespace URI of the type (empty if anonymous)</td>
</tr>
<tr>
<td>base type definition</td>
<td>Complex Type Definition</td>
<td></td>
</tr>
<tr>
<td>final</td>
<td>Sequence of strings</td>
<td>(&quot;restriction&quot;,&quot;extension&quot;)</td>
</tr>
<tr>
<td>context</td>
<td>Empty sequence (not implemented)</td>
<td></td>
</tr>
<tr>
<td>derivation method</td>
<td>string</td>
<td>(&quot;restriction&quot;,&quot;extension&quot;)</td>
</tr>
<tr>
<td>abstract</td>
<td>boolean</td>
<td></td>
</tr>
<tr>
<td>attribute uses</td>
<td>Sequence of Attribute Use</td>
<td></td>
</tr>
<tr>
<td>attribute wildcard</td>
<td>Optional Attribute Wildcard</td>
<td></td>
</tr>
<tr>
<td>content type</td>
<td>function with properties:</td>
<td>(&quot;class&quot;:&quot;Content Type&quot;, &quot;variety&quot;:string (&quot;element-only&quot;,&quot;empty&quot;,&quot;mixed&quot;,&quot;simple&quot;), particle: optional Particle, &quot;open content&quot;: function with properties (&quot;class&quot;:&quot;Open Content&quot;, &quot;mode&quot;: string (&quot;interleave&quot;,&quot;suffix&quot;), &quot;wildcard&quot;: Wildcard), &quot;simple type definition&quot;: Simple Type)</td>
</tr>
<tr>
<td>prohibited substitutions</td>
<td>Sequence of strings</td>
<td>(&quot;restriction&quot;,&quot;extension&quot;)</td>
</tr>
<tr>
<td>assertions</td>
<td>Sequence of Assertion</td>
<td></td>
</tr>
</tbody>
</table>

**Element Declaration**

<table>
<thead>
<tr>
<th>Property name</th>
<th>Property type</th>
<th>Property value</th>
</tr>
</thead>
<tbody>
<tr>
<td>kind</td>
<td>string</td>
<td>&quot;Complex Type&quot;</td>
</tr>
<tr>
<td>name</td>
<td>string</td>
<td>Local name of the type (empty if anonymous)</td>
</tr>
<tr>
<td>target namespace</td>
<td>string</td>
<td>Namespace URI of the type (empty if anonymous)</td>
</tr>
<tr>
<td>type definition</td>
<td>Simple Type or Complex Type</td>
<td></td>
</tr>
<tr>
<td>type table</td>
<td>function with properties (&quot;class&quot;:&quot;Type Table&quot;, &quot;alternatives&quot;: sequence of Type Alternative, &quot;default type definition&quot;: Simple Type or Complex Type)</td>
<td></td>
</tr>
<tr>
<td>scope</td>
<td>function with properties (&quot;class&quot;:&quot;Scope&quot;, &quot;variety&quot;: (&quot;global&quot;,&quot;local&quot;), &quot;parent&quot;: optional Complex Type)</td>
<td></td>
</tr>
<tr>
<td>value constraint</td>
<td>see Attribute Declaration</td>
<td></td>
</tr>
</tbody>
</table>
### Engine Information

<table>
<thead>
<tr>
<th>Property name</th>
<th>Property type</th>
</tr>
</thead>
<tbody>
<tr>
<td>nillable</td>
<td>boolean</td>
</tr>
<tr>
<td>identity-constraint definitions</td>
<td>Sequence of Identity Constraint</td>
</tr>
<tr>
<td>substitution group affiliations</td>
<td>Sequence of Element Declaration</td>
</tr>
<tr>
<td>substitution group exclusions</td>
<td>Sequence of strings</td>
</tr>
<tr>
<td></td>
<td>(&quot;restriction&quot;</td>
</tr>
<tr>
<td>disallowed substitutions</td>
<td>Sequence of strings</td>
</tr>
<tr>
<td></td>
<td>(&quot;restriction&quot;</td>
</tr>
<tr>
<td>abstract</td>
<td>boolean</td>
</tr>
</tbody>
</table>

#### Element Wildcard

<table>
<thead>
<tr>
<th>Property name</th>
<th>Property type</th>
<th>Property value</th>
</tr>
</thead>
<tbody>
<tr>
<td>kind</td>
<td>string</td>
<td>&quot;Wildcard&quot;</td>
</tr>
<tr>
<td>namespace constraint</td>
<td>function with properties (&quot;class&quot;: &quot;Namespace Constraint&quot;, &quot;variety&quot;: &quot;any&quot;</td>
<td>enumeration&quot;</td>
</tr>
<tr>
<td>process contents</td>
<td>string</td>
<td>(&quot;strict&quot;</td>
</tr>
</tbody>
</table>

#### Facet

<table>
<thead>
<tr>
<th>Property name</th>
<th>Property type</th>
<th>Property value</th>
</tr>
</thead>
<tbody>
<tr>
<td>kind</td>
<td>string</td>
<td>The name of the facet, for example &quot;minLength&quot; or &quot;enumeration&quot;</td>
</tr>
<tr>
<td>value</td>
<td>depends on facet</td>
<td>The value of the facet</td>
</tr>
<tr>
<td>fixed</td>
<td>boolean</td>
<td></td>
</tr>
<tr>
<td>typed-value</td>
<td>For the enumeration facet only, array(xs:anyAtomicType*)</td>
<td>An array containing the enumeration values, each of which may in general be a sequence of atomic values. (Note: for the enumeration facet, the &quot;value&quot; property is a sequence of strings, regardless of the actual type)</td>
</tr>
</tbody>
</table>

#### Identity Constraint

<table>
<thead>
<tr>
<th>Property name</th>
<th>Property type</th>
<th>Property value</th>
</tr>
</thead>
<tbody>
<tr>
<td>kind</td>
<td>string</td>
<td>&quot;Identity-Constraint Definition&quot;</td>
</tr>
<tr>
<td>name</td>
<td>string</td>
<td>Local name of the constraint</td>
</tr>
<tr>
<td>-----------------------</td>
<td>-------------------------</td>
<td>------------------------------</td>
</tr>
<tr>
<td>target namespace</td>
<td>string</td>
<td>Namespace URI of the constraint</td>
</tr>
<tr>
<td>identity-constraint category</td>
<td>string (&quot;key&quot;</td>
<td>&quot;unique&quot;</td>
</tr>
<tr>
<td>selector</td>
<td>XPath Property Record</td>
<td></td>
</tr>
<tr>
<td>fields</td>
<td>Sequence of XPath Property Record</td>
<td></td>
</tr>
<tr>
<td>referenced key</td>
<td>(For keyRef only): Identity Constraint</td>
<td>The corresponding key constraint</td>
</tr>
</tbody>
</table>

**Model Group**

<table>
<thead>
<tr>
<th>Property name</th>
<th>Property type</th>
<th>Property value</th>
</tr>
</thead>
<tbody>
<tr>
<td>kind</td>
<td>string</td>
<td>&quot;Model Group&quot;</td>
</tr>
<tr>
<td>compositor</td>
<td>string (&quot;sequence&quot;</td>
<td>&quot;choice&quot;</td>
</tr>
<tr>
<td>particles</td>
<td>Sequence of Particle</td>
<td></td>
</tr>
</tbody>
</table>

**Model Group Definition**

<table>
<thead>
<tr>
<th>Property name</th>
<th>Property type</th>
<th>Property value</th>
</tr>
</thead>
<tbody>
<tr>
<td>kind</td>
<td>string</td>
<td>&quot;Model Group Definition&quot;</td>
</tr>
<tr>
<td>name</td>
<td>string</td>
<td>Local name of the model group</td>
</tr>
<tr>
<td>target namespace</td>
<td>string</td>
<td>Namespace URI of the model group</td>
</tr>
<tr>
<td>model group</td>
<td>Model Group</td>
<td></td>
</tr>
</tbody>
</table>

**Notation**

<table>
<thead>
<tr>
<th>Property name</th>
<th>Property type</th>
<th>Property value</th>
</tr>
</thead>
<tbody>
<tr>
<td>kind</td>
<td>string</td>
<td>&quot;Notation Declaration&quot;</td>
</tr>
<tr>
<td>name</td>
<td>string</td>
<td>Local name of the notation</td>
</tr>
<tr>
<td>target namespace</td>
<td>string</td>
<td>Namespace URI of the notation</td>
</tr>
<tr>
<td>system identifier</td>
<td>anyURI</td>
<td></td>
</tr>
<tr>
<td>public identifier</td>
<td>string</td>
<td></td>
</tr>
</tbody>
</table>

**Particle**

<table>
<thead>
<tr>
<th>Property name</th>
<th>Property type</th>
<th>Property value</th>
</tr>
</thead>
<tbody>
<tr>
<td>kind</td>
<td>string</td>
<td>&quot;Particle&quot;</td>
</tr>
<tr>
<td>min occurs</td>
<td>integer</td>
<td></td>
</tr>
<tr>
<td>max occurs</td>
<td>integer, or string(&quot;unbounded&quot;)</td>
<td></td>
</tr>
<tr>
<td>term</td>
<td>Element Declaration, Element Wildcard, or ModelGroup</td>
<td></td>
</tr>
</tbody>
</table>
### Simple Type

<table>
<thead>
<tr>
<th>Property name</th>
<th>Property type</th>
<th>Property value</th>
</tr>
</thead>
<tbody>
<tr>
<td>kind</td>
<td>string</td>
<td>&quot;Simple Type Definition&quot;</td>
</tr>
<tr>
<td>name</td>
<td>string</td>
<td>Local name of the type (empty if anonymous)</td>
</tr>
<tr>
<td>target namespace</td>
<td>string</td>
<td>Namespace URI of the type (empty if anonymous)</td>
</tr>
<tr>
<td>final</td>
<td>Sequence of string(&quot;restriction&quot;</td>
<td>&quot;extension&quot;</td>
</tr>
<tr>
<td>context</td>
<td>containing component</td>
<td></td>
</tr>
<tr>
<td>base type definition</td>
<td>Simple Type</td>
<td></td>
</tr>
<tr>
<td>facets</td>
<td>Sequence of Facet</td>
<td></td>
</tr>
<tr>
<td>fundamental facets</td>
<td>Empty sequence (not implemented)</td>
<td></td>
</tr>
<tr>
<td>variety</td>
<td>string (&quot;atomic&quot;</td>
<td>&quot;list&quot;</td>
</tr>
<tr>
<td>primitive type definition</td>
<td>Simple Type</td>
<td></td>
</tr>
<tr>
<td>item type definition</td>
<td>(for list types only) Simple Type</td>
<td></td>
</tr>
<tr>
<td>member type definitions</td>
<td>(for union types only) Sequence of Simple Type</td>
<td></td>
</tr>
</tbody>
</table>

### Type Alternative

<table>
<thead>
<tr>
<th>Property name</th>
<th>Property type</th>
<th>Property value</th>
</tr>
</thead>
<tbody>
<tr>
<td>kind</td>
<td>string</td>
<td>&quot;Type Alternative&quot;</td>
</tr>
<tr>
<td>test</td>
<td>XPath Property Record</td>
<td></td>
</tr>
<tr>
<td>type definition</td>
<td>Simple Type or Complex Type</td>
<td></td>
</tr>
</tbody>
</table>

### XPath Property Record

<table>
<thead>
<tr>
<th>Property name</th>
<th>Property type</th>
<th>Property value</th>
</tr>
</thead>
<tbody>
<tr>
<td>namespace bindings</td>
<td>Sequence of functions with properties (&quot;prefix&quot;: string, &quot;namespace&quot;: anyURI)</td>
<td></td>
</tr>
<tr>
<td>default namespace</td>
<td>anyURI</td>
<td></td>
</tr>
<tr>
<td>base URI</td>
<td>anyURI</td>
<td>The static base URI of the XPath expression</td>
</tr>
<tr>
<td>expression</td>
<td>string</td>
<td>The XPath expression as a string</td>
</tr>
</tbody>
</table>
Returns the component kind that is specified in the first argument which has a name that is the same as the name supplied in the second argument. You can navigate further by selecting one of the component's properties.

- If this property is a component, you can navigate another step deeper by selecting one of this component's properties. This step can be repeated to navigate further into the schema.
- If the component is an atomic value, the atomic value is returned and you cannot navigate any deeper.

**Note:** In XQuery expressions, the schema must be explicitly imported. In XPath expressions, the schema must have been imported into the processing environment, for example, into XSLT with the `xslt:import` instruction.

**Examples**

- import schema "" at "C:\Test\ExpReport.xsd";
  altova:schema("element declaration", xs:QName("OrgChart"))("type definition")
  ("content type")("particles")![."term"]("kind")
  returns the `kind` property of the term of the third `particles` component. This particles component is a descendant of the element declaration having a QName of OrgChart

- import schema "" at "C:\Test\ExpReport.xsd";
  let $typedef := altova:schema("type definition", xs:QName("emailType"))
  for $facet in $typedef ("facets")
  return [DEFINE($facet ("kind"), $facet("value"))]
  returns, for each facet of each `emailType` component, an array containing that facet's kind and value

**Components and their properties**

**Assertion**

<table>
<thead>
<tr>
<th>Property name</th>
<th>Property type</th>
<th>Property value</th>
</tr>
</thead>
<tbody>
<tr>
<td>kind</td>
<td>string</td>
<td>&quot;Assertion&quot;</td>
</tr>
</tbody>
</table>

**Attribute Declaration**

<table>
<thead>
<tr>
<th>Property name</th>
<th>Property type</th>
<th>Property value</th>
</tr>
</thead>
<tbody>
<tr>
<td>kind</td>
<td>string</td>
<td>&quot;Attribute Declaration&quot;</td>
</tr>
<tr>
<td>name</td>
<td>string</td>
<td>Local name of the attribute</td>
</tr>
<tr>
<td>target namespace</td>
<td>string</td>
<td>Namespace URI of the attribute</td>
</tr>
<tr>
<td>type definition</td>
<td>Simple Type or Complex Type</td>
<td>A function with properties (&quot;class&quot;:&quot;Scope&quot;, &quot;variety&quot;: &quot;global&quot; or &quot;local&quot;, &quot;parent&quot;: the containing</td>
</tr>
<tr>
<td>scope</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Property name</td>
<td>Property type</td>
<td>Property value</td>
</tr>
<tr>
<td>---------------------</td>
<td>-------------------</td>
<td>-----------------------------------------------------</td>
</tr>
<tr>
<td>value constraint</td>
<td></td>
<td>If present, a function with properties</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(&quot;class&quot;: &quot;Value Constraint&quot;, &quot;variety&quot;:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&quot;fixed&quot; or &quot;default&quot;, &quot;value&quot;: atomic value,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&quot;lexical form&quot;: string. Note that the &quot;value&quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>property is not available for namespace-sensitive</td>
</tr>
<tr>
<td></td>
<td></td>
<td>types</td>
</tr>
<tr>
<td>inheritable</td>
<td>boolean</td>
<td></td>
</tr>
</tbody>
</table>

- **Attribute Group Declaration**

<table>
<thead>
<tr>
<th>Property name</th>
<th>Property type</th>
<th>Property value</th>
</tr>
</thead>
<tbody>
<tr>
<td>kind</td>
<td>string</td>
<td>&quot;Attribute Group Definition&quot;</td>
</tr>
<tr>
<td>name</td>
<td>string</td>
<td>Local name of the attribute group</td>
</tr>
<tr>
<td>target namespace</td>
<td>string</td>
<td>Namespace URI of the attribute group</td>
</tr>
<tr>
<td>attribute uses</td>
<td>Sequence of (Attribute Use)</td>
<td></td>
</tr>
<tr>
<td>attribute wildcard</td>
<td>Optional Attribute Wildcard</td>
<td></td>
</tr>
</tbody>
</table>

- **Attribute Use**

<table>
<thead>
<tr>
<th>Property name</th>
<th>Property type</th>
<th>Property value</th>
</tr>
</thead>
<tbody>
<tr>
<td>kind</td>
<td>string</td>
<td>&quot;Attribute Use&quot;</td>
</tr>
<tr>
<td>required</td>
<td>boolean</td>
<td>true if the attribute is required, false if optional</td>
</tr>
<tr>
<td>value constraint</td>
<td>See Attribute Declaration</td>
<td></td>
</tr>
<tr>
<td>inheritable</td>
<td>boolean</td>
<td></td>
</tr>
</tbody>
</table>

- **Attribute Wildcard**

<table>
<thead>
<tr>
<th>Property name</th>
<th>Property type</th>
<th>Property value</th>
</tr>
</thead>
<tbody>
<tr>
<td>kind</td>
<td>string</td>
<td>&quot;Wildcard&quot;</td>
</tr>
<tr>
<td>namespace constraint</td>
<td>function with</td>
<td></td>
</tr>
<tr>
<td></td>
<td>properties (&quot;class&quot;: &quot;Namespace Constraint&quot;, &quot;variety&quot;: &quot;any&quot;</td>
<td>“enumeration”</td>
</tr>
<tr>
<td></td>
<td>&quot;namespaces&quot;:</td>
<td>sequence of xs:anyURI, &quot;disallowed names&quot;: list</td>
</tr>
<tr>
<td></td>
<td>sequence of xs:QName and/or the strings &quot;defined&quot; and</td>
<td></td>
</tr>
<tr>
<td></td>
<td>process contents</td>
<td>&quot;definedSiblings&quot;</td>
</tr>
<tr>
<td></td>
<td>string (&quot;strict&quot;</td>
<td>“lax”</td>
</tr>
</tbody>
</table>

- **Complex Type**

<table>
<thead>
<tr>
<th>Property name</th>
<th>Property type</th>
<th>Property value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Property</td>
<td>Property type</td>
<td>Property value</td>
</tr>
<tr>
<td>--------------------------</td>
<td>-------------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>kind</td>
<td>string</td>
<td>&quot;Complex Type&quot;</td>
</tr>
<tr>
<td>name</td>
<td>string</td>
<td>Local name of the type (empty if anonymous)</td>
</tr>
<tr>
<td>target namespace</td>
<td>string</td>
<td>Namespace URI of the type (empty if anonymous)</td>
</tr>
<tr>
<td>base type definition</td>
<td></td>
<td>Complex Type Definition</td>
</tr>
<tr>
<td>final</td>
<td>Sequence of strings</td>
<td>(&quot;restriction&quot;</td>
</tr>
<tr>
<td>context</td>
<td>Empty sequence (not implemented)</td>
<td></td>
</tr>
<tr>
<td>derivation method</td>
<td>string</td>
<td>(&quot;restriction&quot;</td>
</tr>
<tr>
<td>abstract</td>
<td>boolean</td>
<td></td>
</tr>
<tr>
<td>attribute uses</td>
<td>Sequence of Attribute Use</td>
<td></td>
</tr>
<tr>
<td>attribute wildcard</td>
<td>Optional Attribute Wildcard</td>
<td></td>
</tr>
<tr>
<td>content type</td>
<td>function with properties:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(&quot;class&quot;:&quot;Content Type&quot;, &quot;variety&quot;:string</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(&quot;element-only&quot;</td>
<td>&quot;empty&quot;</td>
</tr>
<tr>
<td></td>
<td>(&quot;class&quot;:&quot;Open Content&quot;, &quot;mode&quot;: string</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(&quot;interleave&quot;</td>
<td>&quot;suffix&quot;), &quot;wildcard&quot;: Wildcard), &quot;simple type definition&quot;: Simple Type)</td>
</tr>
<tr>
<td>prohibited substitutions</td>
<td>Sequence of strings</td>
<td>(&quot;restriction&quot;</td>
</tr>
<tr>
<td>assertions</td>
<td>Sequence of Assertion</td>
<td></td>
</tr>
</tbody>
</table>

Element Declaration
<table>
<thead>
<tr>
<th>Property name</th>
<th>Property type</th>
<th>Property value</th>
</tr>
</thead>
<tbody>
<tr>
<td>value constraint</td>
<td>see Attribute Declaration</td>
<td></td>
</tr>
<tr>
<td>nullable</td>
<td>boolean</td>
<td></td>
</tr>
<tr>
<td>identity-constraint definitions</td>
<td>Sequence of Identity Constraint</td>
<td></td>
</tr>
<tr>
<td>substitution group affiliations</td>
<td>Sequence of Element Declaration</td>
<td></td>
</tr>
<tr>
<td>substitution group exclusions</td>
<td>Sequence of strings</td>
<td>(&quot;restriction&quot;</td>
</tr>
<tr>
<td>disallowed substitutions</td>
<td>Sequence of strings</td>
<td>(&quot;restriction&quot;</td>
</tr>
<tr>
<td>abstract</td>
<td>boolean</td>
<td></td>
</tr>
</tbody>
</table>

### Element Wildcard

<table>
<thead>
<tr>
<th>Property name</th>
<th>Property type</th>
<th>Property value</th>
</tr>
</thead>
<tbody>
<tr>
<td>kind</td>
<td>string</td>
<td>&quot;Wildcard&quot;</td>
</tr>
<tr>
<td>namespace constraint</td>
<td>function with properties</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(&quot;class&quot;: &quot;Namespace Constraint&quot;, &quot;variety&quot;: &quot;any&quot;</td>
<td>&quot;enumeration&quot;</td>
</tr>
<tr>
<td>process contents</td>
<td>string</td>
<td>(&quot;strict&quot;</td>
</tr>
</tbody>
</table>

### Facet

<table>
<thead>
<tr>
<th>Property name</th>
<th>Property type</th>
<th>Property value</th>
</tr>
</thead>
<tbody>
<tr>
<td>kind</td>
<td>string</td>
<td></td>
</tr>
<tr>
<td>value</td>
<td>depends on facet</td>
<td></td>
</tr>
<tr>
<td>fixed</td>
<td>boolean</td>
<td></td>
</tr>
<tr>
<td>typed-value</td>
<td>For the enumeration facet only, array(xs:anyAtomicType*)</td>
<td>An array containing the enumeration values, each of which may in general be a sequence of atomic values. (Note: for the enumeration facet, the &quot;value&quot; property is a sequence of strings, regardless of the actual type)</td>
</tr>
</tbody>
</table>

### Identity Constraint

<table>
<thead>
<tr>
<th>Property name</th>
<th>Property type</th>
<th>Property value</th>
</tr>
</thead>
<tbody>
<tr>
<td>kind</td>
<td>string</td>
<td>&quot;Identity-Constraint Definition&quot;</td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>name</td>
<td>string</td>
<td>Local name of the constraint</td>
</tr>
<tr>
<td>target namespace</td>
<td>string</td>
<td>Namespace URI of the constraint</td>
</tr>
<tr>
<td>identity-constraint category</td>
<td>string (&quot;key&quot;</td>
<td>&quot;unique&quot;</td>
</tr>
<tr>
<td>selector</td>
<td>XPath Property Record</td>
<td></td>
</tr>
<tr>
<td>fields</td>
<td>Sequence of XPath Property Record</td>
<td></td>
</tr>
<tr>
<td>referenced key</td>
<td>(For keyRef only): Identity Constraint</td>
<td>The corresponding key constraint</td>
</tr>
</tbody>
</table>

- **Model Group**

<table>
<thead>
<tr>
<th>Property name</th>
<th>Property type</th>
<th>Property value</th>
</tr>
</thead>
<tbody>
<tr>
<td>kind</td>
<td>string</td>
<td>&quot;Model Group&quot;</td>
</tr>
<tr>
<td>compositor</td>
<td>string (&quot;sequence&quot;</td>
<td>&quot;choice&quot;</td>
</tr>
<tr>
<td>particles</td>
<td>Sequence of Particle</td>
<td></td>
</tr>
</tbody>
</table>

- **Model Group Definition**

<table>
<thead>
<tr>
<th>Property name</th>
<th>Property type</th>
<th>Property value</th>
</tr>
</thead>
<tbody>
<tr>
<td>kind</td>
<td>string</td>
<td>&quot;Model Group Definition&quot;</td>
</tr>
<tr>
<td>name</td>
<td>string</td>
<td>Local name of the model group</td>
</tr>
<tr>
<td>target namespace</td>
<td>string</td>
<td>Namespace URI of the model group</td>
</tr>
<tr>
<td>model group</td>
<td>Model Group</td>
<td></td>
</tr>
</tbody>
</table>

- **Notation**

<table>
<thead>
<tr>
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<th>Property type</th>
<th>Property value</th>
</tr>
</thead>
<tbody>
<tr>
<td>kind</td>
<td>string</td>
<td>&quot;Notation Declaration&quot;</td>
</tr>
<tr>
<td>name</td>
<td>string</td>
<td>Local name of the notation</td>
</tr>
<tr>
<td>target namespace</td>
<td>string</td>
<td>Namespace URI of the notation</td>
</tr>
<tr>
<td>system identifier</td>
<td>anyURI</td>
<td></td>
</tr>
<tr>
<td>public identifier</td>
<td>string</td>
<td></td>
</tr>
</tbody>
</table>

- **Particle**

<table>
<thead>
<tr>
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<th>Property type</th>
<th>Property value</th>
</tr>
</thead>
<tbody>
<tr>
<td>kind</td>
<td>string</td>
<td>&quot;Particle&quot;</td>
</tr>
<tr>
<td>min occurs</td>
<td>integer</td>
<td></td>
</tr>
<tr>
<td>max occurs</td>
<td>integer, or string(&quot;unbounded&quot;)</td>
<td></td>
</tr>
</tbody>
</table>
Simple Type

<table>
<thead>
<tr>
<th>Property name</th>
<th>Property type</th>
<th>Property value</th>
</tr>
</thead>
<tbody>
<tr>
<td>kind</td>
<td>string</td>
<td>“Simple Type Definition”</td>
</tr>
<tr>
<td>name</td>
<td>string</td>
<td>Local name of the type (empty if anonymous)</td>
</tr>
<tr>
<td>target namespace</td>
<td>string</td>
<td>Namespace URI of the type (empty if anonymous)</td>
</tr>
<tr>
<td>final</td>
<td>Sequence of</td>
<td></td>
</tr>
<tr>
<td></td>
<td>string(&quot;restriction&quot;</td>
<td>extension&quot;</td>
</tr>
<tr>
<td>context</td>
<td>containing component</td>
<td></td>
</tr>
<tr>
<td>base type definition</td>
<td>Simple Type</td>
<td></td>
</tr>
<tr>
<td>facets</td>
<td>Sequence of Facet</td>
<td></td>
</tr>
<tr>
<td>fundamental facets</td>
<td>Empty sequence (not implemented)</td>
<td></td>
</tr>
<tr>
<td>variety</td>
<td>string (&quot;atomic&quot;</td>
<td>list&quot;</td>
</tr>
<tr>
<td>primitive type definition</td>
<td>Simple Type</td>
<td></td>
</tr>
<tr>
<td>item type definition</td>
<td>(for list types only) Simple Type</td>
<td></td>
</tr>
<tr>
<td>member type definitions</td>
<td>(for union types only) Sequence of Simple Type</td>
<td></td>
</tr>
</tbody>
</table>

Type Alternative

<table>
<thead>
<tr>
<th>Property name</th>
<th>Property type</th>
<th>Property value</th>
</tr>
</thead>
<tbody>
<tr>
<td>kind</td>
<td>string</td>
<td>“Type Alternative”</td>
</tr>
<tr>
<td>test</td>
<td>XPath Property Record</td>
<td></td>
</tr>
<tr>
<td>type definition</td>
<td>Simple Type or Complex Type</td>
<td></td>
</tr>
</tbody>
</table>

XPath Property Record

<table>
<thead>
<tr>
<th>Property name</th>
<th>Property type</th>
<th>Property value</th>
</tr>
</thead>
<tbody>
<tr>
<td>namespace bindings</td>
<td>Sequence of functions with properties (&quot;prefix&quot;: string, &quot;namespace&quot;: anyURI)</td>
<td></td>
</tr>
<tr>
<td>default namespace</td>
<td>anyURI</td>
<td></td>
</tr>
<tr>
<td>base URI</td>
<td>anyURI</td>
<td>The static base URI of the XPath expression</td>
</tr>
<tr>
<td>expression</td>
<td>string</td>
<td>The XPath expression as a string</td>
</tr>
</tbody>
</table>
Type

**altova:type(Node as item?) as (function(xs:string) as item()*)?** XP3.1 XQ3.1

The function `altova:type` submits an element or attribute node of an XML document and returns the node's type information from the PSVI.

**Note:** The XML document must have a schema declaration so that the schema can be referenced.

**Examples**

- for $element in //Email
  
  let $type := altova:type($element)
  
  return $type

  returns a function that contains the node's type information

- for $element in //Email
  
  let $type := altova:type($element)
  
  return $type ("kind")

  takes the node's type component (Simple Type or Complex Type) and returns the value of the component's **kind** property

**Components and their properties**

- Assertion

<table>
<thead>
<tr>
<th>Property name</th>
<th>Property type</th>
<th>Property value</th>
</tr>
</thead>
<tbody>
<tr>
<td>kind</td>
<td>string</td>
<td>&quot;Assertion&quot;</td>
</tr>
<tr>
<td>test</td>
<td>XPath Property Record</td>
<td></td>
</tr>
</tbody>
</table>

- Attribute Declaration

<table>
<thead>
<tr>
<th>Property name</th>
<th>Property type</th>
<th>Property value</th>
</tr>
</thead>
<tbody>
<tr>
<td>kind</td>
<td>string</td>
<td>&quot;Attribute Declaration&quot;</td>
</tr>
<tr>
<td>name</td>
<td>string</td>
<td>Local name of the attribute</td>
</tr>
<tr>
<td>target namespace</td>
<td>string</td>
<td>Namespace URI of the attribute</td>
</tr>
<tr>
<td>type definition</td>
<td>Simple Type or Complex Type</td>
<td></td>
</tr>
<tr>
<td>scope</td>
<td>A function with properties</td>
<td></td>
</tr>
<tr>
<td>value constraint</td>
<td>If present, a function with properties</td>
<td></td>
</tr>
</tbody>
</table>

  Note that the "value" property is not available for namespace-sensitive types
### Attribute Group Declaration

<table>
<thead>
<tr>
<th>Property name</th>
<th>Property type</th>
<th>Property value</th>
</tr>
</thead>
<tbody>
<tr>
<td>kind</td>
<td>string</td>
<td>&quot;Attribute Group Definition&quot;</td>
</tr>
<tr>
<td>name</td>
<td>string</td>
<td>Local name of the attribute group</td>
</tr>
<tr>
<td>target namespace</td>
<td>string</td>
<td>Namespace URI of the attribute group</td>
</tr>
<tr>
<td>attribute uses</td>
<td>Sequence of (Attribute Use)</td>
<td></td>
</tr>
<tr>
<td>attribute wildcard</td>
<td>Optional Attribute Wildcard</td>
<td></td>
</tr>
</tbody>
</table>

### Attribute Use

<table>
<thead>
<tr>
<th>Property name</th>
<th>Property type</th>
<th>Property value</th>
</tr>
</thead>
<tbody>
<tr>
<td>kind</td>
<td>string</td>
<td>&quot;Attribute Use&quot;</td>
</tr>
<tr>
<td>required</td>
<td>boolean</td>
<td>true if the attribute is required, false if optional</td>
</tr>
<tr>
<td>value constraint</td>
<td>See Attribute Declaration</td>
<td></td>
</tr>
<tr>
<td>inheritable</td>
<td>boolean</td>
<td></td>
</tr>
</tbody>
</table>

### Attribute Wildcard

<table>
<thead>
<tr>
<th>Property name</th>
<th>Property type</th>
<th>Property value</th>
</tr>
</thead>
<tbody>
<tr>
<td>kind</td>
<td>function with properties (&quot;class&quot;: &quot;Namespace Constraint&quot;, &quot;variety&quot;: &quot;any&quot;/&quot;enumeration&quot;/&quot;not&quot;, &quot;namespaces&quot;: sequence of xs:anyURI, &quot;disallowed names&quot;: list containing QNames and/or the strings &quot;defined&quot; and &quot;definedSiblings&quot;)</td>
<td>&quot;Wildcard&quot;</td>
</tr>
<tr>
<td>namespace constraint</td>
<td>string (&quot;strict&quot;/&quot;lax&quot;/&quot;skip&quot;)</td>
<td></td>
</tr>
</tbody>
</table>

### Complex Type

<table>
<thead>
<tr>
<th>Property name</th>
<th>Property type</th>
<th>Property value</th>
</tr>
</thead>
<tbody>
<tr>
<td>kind</td>
<td>string</td>
<td>&quot;Complex Type&quot;</td>
</tr>
<tr>
<td>name</td>
<td>string</td>
<td>Local name of the type (empty if anonymous)</td>
</tr>
<tr>
<td>target namespace</td>
<td>string</td>
<td>Namespace URI of the type (empty if anonymous)</td>
</tr>
<tr>
<td>base type definition</td>
<td>Complex Type Definition</td>
<td></td>
</tr>
<tr>
<td>final</td>
<td>Sequence of strings</td>
<td></td>
</tr>
<tr>
<td>-----------------------</td>
<td>-----------------------------------</td>
<td></td>
</tr>
<tr>
<td>context</td>
<td>Empty sequence (not implemented)</td>
<td></td>
</tr>
<tr>
<td>derivation method</td>
<td>string (&quot;restriction&quot;</td>
<td>&quot;extension&quot;)</td>
</tr>
<tr>
<td>abstract</td>
<td>boolean</td>
<td></td>
</tr>
<tr>
<td>attribute uses</td>
<td>Sequence of Attribute Use</td>
<td></td>
</tr>
<tr>
<td>attribute wildcard</td>
<td>Optional Attribute Wildcard</td>
<td></td>
</tr>
<tr>
<td>content type</td>
<td>function with properties:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(&quot;class&quot;:&quot;Content Type&quot;, &quot;variety&quot;:string</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(&quot;element-only&quot;</td>
<td>&quot;empty&quot;</td>
</tr>
<tr>
<td></td>
<td>optional Particle, &quot;open content&quot;:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>function with properties (&quot;class&quot;:&quot;Open</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Content&quot;, &quot;mode&quot;: string</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(&quot;interleave&quot;</td>
<td>&quot;suffix&quot;), &quot;wildcard&quot;:</td>
</tr>
<tr>
<td></td>
<td>Wildcard, &quot;simple type definition&quot;:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Simple Type)</td>
<td></td>
</tr>
<tr>
<td>prohibited substitutions</td>
<td>Sequence of strings</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(&quot;restriction&quot;</td>
<td>&quot;extension&quot;)</td>
</tr>
<tr>
<td>assertions</td>
<td>Sequence of Assertion</td>
<td></td>
</tr>
</tbody>
</table>

## Element Declaration

<table>
<thead>
<tr>
<th>Property name</th>
<th>Property type</th>
<th>Property value</th>
</tr>
</thead>
<tbody>
<tr>
<td>kind</td>
<td>string</td>
<td>&quot;Complex Type&quot;</td>
</tr>
<tr>
<td>name</td>
<td>string</td>
<td>Local name of the type (empty if anonymous)</td>
</tr>
<tr>
<td>target namespace</td>
<td>string</td>
<td>Namespace URI of the type (empty if anonymous)</td>
</tr>
<tr>
<td>type definition</td>
<td>Simple Type or Complex Type</td>
<td></td>
</tr>
<tr>
<td>type table</td>
<td>function with properties (&quot;class&quot;:&quot;Type Table&quot;, &quot;alternatives&quot;: sequence of Type Alternative, &quot;default type definition&quot;: Simple Type or Complex Type)</td>
<td></td>
</tr>
<tr>
<td>scope</td>
<td>function with properties (&quot;class&quot;:&quot;Scope&quot;, &quot;variety&quot;: (&quot;global&quot;</td>
<td>&quot;local&quot;), &quot;parent&quot;: optional Complex Type)</td>
</tr>
<tr>
<td>value constraint</td>
<td>see Attribute Declaration</td>
<td></td>
</tr>
<tr>
<td>nillable</td>
<td>boolean</td>
<td></td>
</tr>
<tr>
<td>identity-constraint definitions</td>
<td>Sequence of Identity Constraint</td>
<td></td>
</tr>
<tr>
<td>substitution group affiliations</td>
<td>Sequence of Element Declaration</td>
<td></td>
</tr>
<tr>
<td>Element Wildcard</td>
<td>Property name</td>
<td>Property type</td>
</tr>
<tr>
<td>------------------</td>
<td>---------------</td>
<td>---------------</td>
</tr>
<tr>
<td></td>
<td>kind</td>
<td>string</td>
</tr>
<tr>
<td></td>
<td>namespace constraint</td>
<td>function with properties</td>
</tr>
<tr>
<td></td>
<td>process contents</td>
<td>string (&quot;strict&quot;]&quot;lax&quot;[&quot;skip&quot;]</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Facet</th>
<th>Property name</th>
<th>Property type</th>
<th>Property value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>kind</td>
<td>string</td>
<td>The name of the facet, for example &quot;minLength&quot; or &quot;enumeration&quot;</td>
</tr>
<tr>
<td></td>
<td>value</td>
<td>depends on facet</td>
<td>The value of the facet</td>
</tr>
<tr>
<td></td>
<td>fixed</td>
<td>boolean</td>
<td></td>
</tr>
<tr>
<td></td>
<td>typed-value</td>
<td>For the enumeration facet only, array(xs:anyAtomicType*)</td>
<td>An array containing the enumeration values, each of which may in general be a sequence of atomic values. (Note: for the enumeration facet, the &quot;value&quot; property is a sequence of strings, regardless of the actual type)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Identity Constraint</th>
<th>Property name</th>
<th>Property type</th>
<th>Property value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>kind</td>
<td>string</td>
<td>&quot;Identity-Constraint Definition&quot;</td>
</tr>
<tr>
<td></td>
<td>name</td>
<td>string</td>
<td>Local name of the constraint</td>
</tr>
<tr>
<td></td>
<td>target namespace</td>
<td>string</td>
<td>Namespace URI of the constraint</td>
</tr>
<tr>
<td></td>
<td>identity-constraint category</td>
<td>string (&quot;key&quot;]&quot;unique&quot;[&quot;keyRef&quot;]</td>
<td></td>
</tr>
<tr>
<td></td>
<td>selector</td>
<td>XPath Property Record</td>
<td></td>
</tr>
<tr>
<td>fields</td>
<td>Sequence of XPath Property Record</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-------------</td>
<td>-----------------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>referenced key</td>
<td>(For keyRef only): Identity Constraint</td>
<td>The corresponding key constraint</td>
<td></td>
</tr>
</tbody>
</table>

**Model Group**

<table>
<thead>
<tr>
<th>Property name</th>
<th>Property type</th>
<th>Property value</th>
</tr>
</thead>
<tbody>
<tr>
<td>kind</td>
<td>string</td>
<td>&quot;Model Group&quot;</td>
</tr>
<tr>
<td>compositor</td>
<td>string (&quot;sequence&quot;,&quot;choice&quot;,&quot;all&quot;)</td>
<td></td>
</tr>
<tr>
<td>particles</td>
<td>Sequence of Particle</td>
<td></td>
</tr>
</tbody>
</table>

**Model Group Definition**

<table>
<thead>
<tr>
<th>Property name</th>
<th>Property type</th>
<th>Property value</th>
</tr>
</thead>
<tbody>
<tr>
<td>kind</td>
<td>string</td>
<td>&quot;Model Group Definition&quot;</td>
</tr>
<tr>
<td>name</td>
<td>string</td>
<td>Local name of the model group</td>
</tr>
<tr>
<td>target namespace</td>
<td>string</td>
<td>Namespace URI of the model group</td>
</tr>
<tr>
<td>model group</td>
<td>Model Group</td>
<td></td>
</tr>
</tbody>
</table>

**Notation**

<table>
<thead>
<tr>
<th>Property name</th>
<th>Property type</th>
<th>Property value</th>
</tr>
</thead>
<tbody>
<tr>
<td>kind</td>
<td>string</td>
<td>&quot;Notation Declaration&quot;</td>
</tr>
<tr>
<td>name</td>
<td>string</td>
<td>Local name of the notation</td>
</tr>
<tr>
<td>target namespace</td>
<td>string</td>
<td>Namespace URI of the notation</td>
</tr>
<tr>
<td>system identifier</td>
<td>anyURI</td>
<td></td>
</tr>
<tr>
<td>public identifier</td>
<td>string</td>
<td></td>
</tr>
</tbody>
</table>

**Particle**

<table>
<thead>
<tr>
<th>Property name</th>
<th>Property type</th>
<th>Property value</th>
</tr>
</thead>
<tbody>
<tr>
<td>kind</td>
<td>string</td>
<td>&quot;Particle&quot;</td>
</tr>
<tr>
<td>min occurs</td>
<td>integer</td>
<td></td>
</tr>
<tr>
<td>max occurs</td>
<td>integer, or string(&quot;unbounded&quot;)</td>
<td></td>
</tr>
<tr>
<td>term</td>
<td>Element Declaration, Element Wildcard, or ModelGroup</td>
<td></td>
</tr>
</tbody>
</table>

**Simple Type**

<table>
<thead>
<tr>
<th>Property name</th>
<th>Property type</th>
<th>Property value</th>
</tr>
</thead>
<tbody>
<tr>
<td>kind</td>
<td>string</td>
<td>&quot;Simple Type Definition&quot;</td>
</tr>
<tr>
<td>name</td>
<td>string</td>
<td>Local name of the type (empty if anonymous)</td>
</tr>
<tr>
<td>----------------------</td>
<td>--------</td>
<td>---------------------------------------------</td>
</tr>
<tr>
<td>target namespace</td>
<td>string</td>
<td>Namespace URI of the type (empty if anonymous)</td>
</tr>
<tr>
<td>final</td>
<td>Sequence of string(&quot;restriction&quot;</td>
<td>&quot;extension&quot;</td>
</tr>
<tr>
<td>context</td>
<td>containing component</td>
<td></td>
</tr>
<tr>
<td>base type definition</td>
<td>Simple Type</td>
<td></td>
</tr>
<tr>
<td>facets</td>
<td>Sequence of Facet</td>
<td></td>
</tr>
<tr>
<td>fundamental facets</td>
<td>Empty sequence (not implemented)</td>
<td></td>
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<tr>
<td>variety</td>
<td>string (&quot;atomic&quot;</td>
<td>&quot;list&quot;</td>
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<tr>
<td>primitive type definition</td>
<td>Simple Type</td>
<td></td>
</tr>
<tr>
<td>item type definition</td>
<td>(for list types only) Simple Type</td>
<td></td>
</tr>
<tr>
<td>member type definitions</td>
<td>(for union types only) Sequence of Simple Type</td>
<td></td>
</tr>
</tbody>
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**Type Alternative**

<table>
<thead>
<tr>
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<th>Property value</th>
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</thead>
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<td>kind</td>
<td>string</td>
<td>&quot;Type Alternative&quot;</td>
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<tr>
<td>test</td>
<td>XPath Property Record</td>
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<tr>
<td>type definition</td>
<td>Simple Type or Complex Type</td>
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**XPath Property Record**

<table>
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<th>Property value</th>
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<tr>
<td>namespace bindings</td>
<td>Sequence of functions with properties (&quot;prefix&quot;: string, &quot;namespace&quot;: anyURI)</td>
<td></td>
</tr>
<tr>
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<td></td>
</tr>
<tr>
<td>base URI</td>
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<td>The static base URI of the XPath expression</td>
</tr>
<tr>
<td>expression</td>
<td>string</td>
<td>The XPath expression as a string</td>
</tr>
</tbody>
</table>
9.2.1.7 XPath/XQuery Functions: Sequence

Altova's sequence extension functions can be used in XPath and XQuery expressions and provide additional functionality for the processing of data. The functions in this section can be used with Altova's XPath 3.0 and XQuery 3.0 engines. They are available in XPath/XQuery contexts.

Note about naming of functions and language applicability

Altova extension functions can be used in XPath/XQuery expressions. They provide additional functionality to the functionality that is available in the standard library of XPath, XQuery, and XSLT functions. Altova extension functions are in the Altova extension functions namespace, http://www.altova.com/xslt-extensions, and are indicated in this section with the prefix altova:, which is assumed to be bound to this namespace. Note that, in future versions of your product, support for a function might be discontinued or the behavior of individual functions might change. Consult the documentation of future releases for information about support for Altova extension functions in that release.

<table>
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<td>XQ3.1</td>
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▼ attributes [altova:]

altova:attributes (AttributeName as xs:string) as attribute()* XP3.1 XQ3.1

Returns all attributes that have a local name which is the same as the name supplied in the input argument, AttributeName. The search is case-sensitive and conducted along the attribute:: axis. This means that the context node must be the parent element node.

Examples

- altova:attributes("MyAttribute") returns MyAttribute()*

altova:attributes (AttributeName as xs:string, SearchOptions as xs:string) as attribute()* XP3.1 XQ3.1

Returns all attributes that have a local name which is the same as the name supplied in the input argument, AttributeName. The search is case-sensitive and conducted along the attribute:: axis. The context node must be the parent element node. The second argument is a string containing option flags. Available flags are:

- r = switches to a regular-expression search; AttributeName must then be a regular-expression search string;
- f = If this option is specified, then AttributeName provides a full match; otherwise AttributeName need only partially match an attribute name to return that attribute. For example: if f is not specified, then MyAtt will return MyAttribute;
- i = switches to a case-insensitive search;
- p = includes the namespace prefix in the search; AttributeName should then contain the namespace prefix, for example: altova:MyAttribute.

The flags can be written in any order. Invalid flags will generate warnings. One or more flags can be omitted. The empty string is allowed, and will produce the same effect as the function having only one argument (previous signature). However, an empty sequence is not allowed as the second argument.

Examples

- altova:attributes("MyAttribute", "rfip") returns MyAttribute()*
- `altova:attributes("MyAttribute", "pri")` returns `MyAttribute()*`
- `altova:attributes("MyAtt", "rip")` returns `MyAttribute()*`
- `altova:attributes("MyAttributes", "rfip")` returns no match
- `altova:attributes("MyAttribute", ") returns MyAttribute()`
- `altova:attributes("MyAttribute", "Rip")` returns an unrecognized-flag error.
- `altova:attributes("MyAttribute", )` returns a missing-second-argument error.

### elements [altova:]

#### `altova:elements(ElementName as xs:string) as element()* XP3.1 XQ3.1`

Returns all elements that have a local name which is the same as the name supplied in the input argument, `ElementName`. The search is case-sensitive and conducted along the `child::` axis. The context node must be the parent node of the element/s being searched for.

- **Examples**
  - `altova:elements("MyElement")` returns `MyElement()*`

#### `altova:elements(ElementName as xs:string, SearchOptions as xs:string) as element()* XP3.1 XQ3.1`

Returns all elements that have a local name which is the same as the name supplied in the input argument, `ElementName`. The search is case-sensitive and conducted along the `child::` axis. The context node must be the parent node of the element/s being searched for. The second argument is a string containing option flags. Available flags are:

- `r` = switches to a regular-expression search; `ElementName` must then be a regular-expression search string;
- `f` = if this option is specified, then `ElementName` provides a full match; otherwise `ElementName` need only partially match an element name to return that element. For example: if `f` is not specified, then `MyElem` will return `MyElement`; 
- `i` = switches to a case-insensitive search;
- `p` = includes the namespace prefix in the search; `ElementName` should then contain the namespace prefix, for example: `altova:MyElement`.

The flags can be written in any order. Invalid flags will generate errors. One or more flags can be omitted. The empty string is allowed, and will produce the same effect as the function having only one argument (previous signature). However, an empty sequence is not allowed.

- **Examples**
  - `altova:elements("MyElement", "rip")` returns `MyElement()*`
  - `altova:elements("MyElement", "pri")` returns `MyElement()*`
  - `altova:elements("MyElement", "")` returns `MyElement()*`
  - `altova:elements("MyElem", "rip")` returns `MyElement()*`
  - `altova:elements("MyElements", "rfip")` returns no match
  - `altova:elements("MyElement", "Rip")` returns an unrecognized-flag error.

### find-first [altova:]

#### `altova:find-first((Sequence as item()?*), (Condition( Sequence-Item as xs:boolean)) as item()? XP3.1 XQ3.1`

This function takes two arguments. The first argument is a sequence of one or more items of any
datatype. The second argument, Condition, is a reference to an XPath function that takes one argument (has an arity of 1) and returns a boolean. Each item of Sequence is submitted, in turn, to the function referenced in Condition. (Remember: This function takes a single argument.) The first Sequence item that causes the function in Condition to evaluate to true() is returned as the result of altova:find-first, and the iteration stops.

**Examples**

- **altova:find-first** *(5 to 10, function($a) {($a mod 2 = 0)})* returns xs:integer 6
  The Condition argument references the XPath 3.0 inline function, function(), which declares an inline function named $a and then defines it. Each item in the Sequence argument of altova:find-first is passed, in turn, to $a as its input value. The input value is tested on the condition in the function definition ($a mod 2 = 0). The first input value to satisfy this condition is returned as the result of altova:find-first (in this case 6).

- **altova:find-first** *((1 to 10), (function($a) {($a+3=7)})*) returns xs:integer 4

**Further examples**

If the file C:\Temp\Customers.xml exists:

- **altova:find-first** *( ("C:\Temp\Customers.xml", "http://www.altova.com/index.html"),
  (doc-available#1) )* returns xs:string C:\Temp\Customers.xml

If the file C:\Temp\Customers.xml does not exist, and http://www.altova.com/index.html exists:

- **altova:find-first** *( ("C:\Temp\Customers.xml", "http://www.altova.com/index.html"),
  (doc-available#1) )* returns xs:string http://www.altova.com/index.html

If the file C:\Temp\Customers.xml does not exist, and http://www.altova.com/index.html also does not exist:

- **altova:find-first** *( ("C:\Temp\Customers.xml", "http://www.altova.com/index.html"),
  (doc-available#1) )* returns no result

**Notes about the examples given above**

- The XPath 3.0 function, doc-available, takes a single string argument, which is used as a URI, and returns true if a document node is found at the submitted URI. (The document at the submitted URI must therefore be an XML document.)
- The doc-available function can be used for Condition, the second argument of altova:find-first, because it takes only one argument (arity=1), because it takes an item() as input (a string which is used as a URI), and returns a boolean value.
- Notice that the doc-available function is only referenced, not called. The #1 suffix that is attached to it indicates a function with an arity of 1. In its entirety doc-available#1 simply means: *Use the doc-available() function that has arity=1, passing to it as its single argument, in turn, each of the items in the first sequence.* As a result, each of the two strings will be passed to doc-available(), which uses the string as a URI and tests whether a document node exists at the URI. If one does, the doc-available() evaluates to true() and that string is returned as the result of the altova:find-first function.
paths are resolved relative to the current base URI, which is by default the URI of the XML document from which the function is loaded.

\[
\text{find-first-combination [altova:]} \\
\text{altova:find-first-combination}((\text{Seq-01 as item()}^*), (\text{Seq-02 as item()}^*), \\
(\text{Condition( Seq-01-Item, Seq-02-Item as xs:boolean)}) \text{ as item()}^* \text{ XP3.1 XQ3.1} \\
\text{This function takes three arguments:} \\
\begin{itemize}
  \item The first two arguments, \text{Seq-01} and \text{Seq-02}, are sequences of one or more items of any datatype.
  \item The third argument, \text{Condition}, is a reference to an XPath function that takes two arguments (has an arity of 2) and returns a boolean.
\end{itemize}
\]

The items of \text{Seq-01} and \text{Seq-02} are passed in ordered pairs (one item from each sequence making up a pair) as the arguments of the function in \text{Condition}. The pairs are ordered as follows.

If \text{Seq-01} = X_1, X_2, X_3 \ldots X_n  \\
And \text{Seq-02} = Y_1, Y_2, Y_3 \ldots Y_n  \\
Then (X_1 Y_1), (X_1 Y_2), (X_1 Y_3) \ldots (X_1 Y_n), (X_2 Y_1), (X_2 Y_2) \ldots (X_n Y_n)

The first ordered pair that causes the \text{Condition} function to evaluate to \text{true()} is returned as the result of \text{altova:find-first-combination}. Note that: (i) If the \text{Condition} function iterates through the submitted argument pairs and does not once evaluate to \text{true()}, then \text{altova:find-first-combination} returns \text{No results}; (ii) The result of \text{altova:find-first-combination} will always be a pair of items (of any datatype) or no item at all.

\begin{itemize}
  \item \text{Examples}
    \begin{itemize}
      \item \text{altova:find-first-combination}(11 to 20, 21 to 30, function($a, $b) {$a+$b = 32}) returns the sequence of \text{xs:integers} (11, 21)
      \item \text{altova:find-first-combination}(11 to 20, 21 to 30, function($a, $b) {$a+$b = 33}) returns the sequence of \text{xs:integers} (11, 22)
      \item \text{altova:find-first-combination}(11 to 20, 21 to 30, function($a, $b) {$a+$b = 34}) returns the sequence of \text{xs:integers} (11, 23)
    \end{itemize}
\end{itemize}

\[
\text{find-first-pair [altova:]} \\
\text{altova:find-first-pair}((\text{Seq-01 as item()}^*), (\text{Seq-02 as item()}^*), (\text{Condition( Seq-01-Item, Seq-02-Item as xs:boolean)}) \text{ as item()}^* \text{ XP3.1 XQ3.1} \\
\text{This function takes three arguments:} \\
\begin{itemize}
  \item The first two arguments, \text{Seq-01} and \text{Seq-02}, are sequences of one or more items of any datatype.
  \item The third argument, \text{Condition}, is a reference to an XPath function that takes two arguments (has an arity of 2) and returns a boolean.
\end{itemize}
\]

The items of \text{Seq-01} and \text{Seq-02} are passed in ordered pairs as the arguments of the function in \text{Condition}. The pairs are ordered as follows.
If Seq-01 = X1, X2, X3 ... Xn
And Seq-02 = Y1, Y2, Y3 ... Yn
Then (X1 Y1), (X2 Y2), (X3 Y3) ... (Xn Yn)

The first ordered pair that causes the Condition function to evaluate to true() is returned as the result of altova:find-first-pair. Note that: (i) If the Condition function iterates through the submitted argument pairs and does not once evaluate to true(), then altova:find-first-pair returns No results; (ii) The result of altova:find-first-pair will always be a pair of items (of any datatype) or no item at all.

**Examples**

- altova:find-first-pair(11 to 20, 21 to 30, function($a, $b) {$a+$b = 32}) returns the sequence of xs:integers (11, 21)
- altova:find-first-pair(11 to 20, 21 to 30, function($a, $b) {$a+$b = 33}) returns No results

Notice from the two examples above that the ordering of the pairs is: (11, 21) (12, 22) (13, 23)...(20, 30). This is why the second example returns No results (because no ordered pair gives a sum of 33).

**find-first-pair-pos [altova]**

```
altova:find-first-pair-pos((Seq-01 as item(*)*), (Seq-02 as item(*)*), (Condition( Seq-01-Item, Seq-02-Item as xs:boolean)) as xs:integer XP3.1 XQ3.1
```

This function takes three arguments:

- The first two arguments, Seq-01 and Seq-02, are sequences of one or more items of any datatype.
- The third argument, Condition, is a reference to an XPath function that takes two arguments (has an arity of 2) and returns a boolean.

The items of Seq-01 and Seq-02 are passed in ordered pairs as the arguments of the function in Condition. The pairs are ordered as follows.

If Seq-01 = X1, X2, X3 ... Xn
And Seq-02 = Y1, Y2, Y3 ... Yn
Then (X1 Y1), (X2 Y2), (X3 Y3) ... (Xn Yn)

The index position of the first ordered pair that causes the Condition function to evaluate to true() is returned as the result of altova:find-first-pair-pos. Note that if the Condition function iterates through the submitted argument pairs and does not once evaluate to true(), then altova:find-first-pair-pos returns No results.

**Examples**

- altova:find-first-pair-pos(11 to 20, 21 to 30, function($a, $b) {$a+$b = 32}) returns 1
- altova:find-first-pair-pos(11 to 20, 21 to 30, function($a, $b) {$a+$b = 33}) returns No results

Notice from the two examples above that the ordering of the pairs is: (11, 21) (12, 22) (13,
In the first example, the first pair causes the Condition function to evaluate to true(), and so its index position in the sequence, 1, is returned. The second example returns No results because no pair gives a sum of 33.

### find-first-pos [altova:]

```xml
<altova:find-first-pos((Sequence as item(*) ), (Condition( Sequence-Item as xs:boolean)) as xs:integer
```

This function takes two arguments. The first argument is a sequence of one or more items of any datatype. The second argument, Condition, is a reference to an XPath function that takes one argument (has an arity of 1) and returns a boolean. Each item of sequence is submitted, in turn, to the function referenced in Condition. (*Remember: This function takes a single argument.*) The first Sequence item that causes the function in Condition to evaluate to true() has its index position in Sequence returned as the result of altova:find-first-pos, and the iteration stops.

#### Examples

- `altova:find-first-pos(5 to 10, function($a) {$a mod 2 = 0})` returns `xs:integer 2`
  The Condition argument references the XPath 3.0 inline function, function(), which declares an inline function named $a and then defines it. Each item in the Sequence argument of altova:find-first-pos is passed, in turn, to $a as its input value. The input value is tested on the condition in the function definition ($a mod 2 = 0). The index position in the sequence of the first input value to satisfy this condition is returned as the result of altova:find-first-pos (in this case 2, since 6, the first value (in the sequence) to satisfy the condition, is at index position 2 in the sequence).

- `altova:find-first-pos((2 to 10), (function($a) {$a+3=7}))` returns `xs:integer 3`

#### Further examples

If the file `C:\Temp\Customers.xml` exists:

- `altova:find-first-pos( ("C:\Temp\Customers.xml", "http://www.altova.com/index.html"), (doc-available#1) )` returns 1

If the file `C:\Temp\Customers.xml` does not exist, and `http://www.altova.com/index.html` exists:

- `altova:find-first-pos( ("C:\Temp\Customers.xml", "http://www.altova.com/index.html"), (doc-available#1) )` returns 2

If the file `C:\Temp\Customers.xml` does not exist, and `http://www.altova.com/index.html` also does not exist:

- `altova:find-first-pos( ("C:\Temp\Customers.xml", "http://www.altova.com/index.html"), (doc-available#1) )` returns no result

#### Notes about the examples given above

- The XPath 3.0 function, doc-available, takes a single string argument, which is used as a URI, and returns true if a document node is found at the submitted URI. (The document at the
submitted URI must therefore be an XML document.)
- The `doc-available` function can be used for `condition`, the second argument of `altova:find-first-pos`, because it takes only one argument (arity=1), because it takes an `item()` as input (a string which is used as a URI), and returns a boolean value.
- Notice that the `doc-available` function is only referenced, not called. The `#1` suffix that is attached to it indicates a function with an arity of 1. In its entirety `doc-available#1` simply means: Use the `doc-available()` function that has arity=1, passing to it as its single argument, in turn, each of the two strings in the first sequence. As a result, each of the two strings will be passed to `doc-available()`, which uses the string as a URI and tests whether a document node exists at the URI. If one does, the `doc-available()` function evaluates to `true()` and the index position of that string in the sequence is returned as the result of the `altova:find-first-pos` function. Note about the `doc-available()` function: Relative paths are resolved relative to the current base URI, which is by default the URI of the XML document from which the function is loaded.

**for-each-attribute-pair [altova:]**

```xml
altova:for-each-attribute-pair(Seq1 as element()?, Seq2 as element()?, Function as function()) as item()* XP3.1 XQ3.1
```

The first two arguments identify two elements, the attributes of which are used to build attribute pairs, where one attribute of a pair is obtained from the first element and the other attribute is obtained from the second element. Attribute pairs are selected on the basis of having the same name, and the pairs are ordered alphabetically (on their names) into a set. If, for one attribute no corresponding attribute on the other element exists, then the pair is "disjoint", meaning that it consists of one member only. The function item (third argument `Function`) is applied separately to each pair in the sequence of pairs (joint and disjoint), resulting in an output that is a sequence of items.

**Examples**

- `altova:for-each-attribute-pair(/Example/Test-A, /Example/Test-B, function($a, $b) {$a+$b})` returns ...

  (2, 4, 6) if
  ```xml
  <Test-A att1="1" att2="2" att3="3"/>
  <Test-B att1="1" att2="2" att3="3"/>
  ```

  (2, 4, 6) if
  ```xml
  <Test-A att2="2" att1="1" att3="3"/>
  <Test-B att3="3" att2="2" att1="1"/>
  ```

  (2, 6) if
  ```xml
  <Test-A att4="4" att1="1" att3="3"/>
  <Test-B att3="3" att2="2" att1="1"/>
  ```

  Note: The result (2, 6) is obtained by way of the following action: (1+1, ()+2, 3+3, 4+()). If one of the operands is the empty sequence, as in the case of items 2 and 4, then the result of the addition is an empty sequence.

- `altova:for-each-attribute-pair(/Example/Test-A, /Example/Test-B, concat#2)` returns ...

...
(11, 22, 33) if
   <Test-A att1="1" att2="2" att3="3" />
   <Test-B att1="1" att2="2" att3="3" />

(11, 2, 33, 4) if
   <Test-A att4="4" att1="1" att3="3" />
   <Test-B att3="3" att2="2" att1="1" />

\[\text{for-each-combination [altova:]}\]

altova:for-each-combination(FirstSequence as item()*, SecondSequence as item()*,
Function($i,$j){$i || $j} as item()*) XP3.1 XQ3.1

The items of the two sequences in the first two arguments are combined so that each item of the first
sequence is combined, in order, once with each item of the second sequence. The function given as the
third argument is applied to each combination in the resulting sequence, resulting in an output that is a
sequence of items (see example).

\[\text{Examples}\]

- altova:for-each-combination( ('a', 'b', 'c'), ('1', '2', '3'), function($i, $j)
  {$i || $j} ) returns ('a1', 'a2', 'a3', 'b1', 'b2', 'b3', 'c1', 'c2', 'c3')

\[\text{for-each-matching-attribute-pair [altova:]}\]

altova:for-each-matching-attribute-pair(Seq1 as element()?, Seq2 as element()?,
Function as function()) as item()* XP3.1 XQ3.1

The first two arguments identify two elements, the attributes of which are used to build attribute pairs,
where one attribute of a pair is obtained from the first element and the other attribute is obtained from the
second element. Attribute pairs are selected on the basis of having the same name, and the pairs are
ordered alphabetically (on their names) into a set. If, for one attribute no corresponding attribute on the
other element exists, then no pair is built. The function item (third argument Function) is applied
separately to each pair in the sequence of pairs, resulting in an output that is a sequence of items.

\[\text{Examples}\]

- altova:for-each-matching-attribute-pair(/Example/Test-A, /Example/Test-B,
  function($a, $b){$a+$b}) returns ...

  (2, 4, 6) if
  <Test-A att1="1" att2="2" att3="3" />
  <Test-B att1="1" att2="2" att3="3" />

  (2, 4, 6) if
  <Test-A att2="2" att1="1" att3="3" />
  <Test-B att3="3" att2="2" att1="1" />

  (2, 6) if
  <Test-A att4="4" att1="1" att3="3" />
  <Test-B att3="3" att2="2" att3="1" />

- altova:for-each-matching-attribute-pair(/Example/Test-A, /Example/Test-B,
  concat#2) returns ...
(11, 22, 33) if
<!-- Test-A att1="1" att2="2" att3="3" /> -->
<!-- Test-B att1="1" att2="2" att3="3" /> -->

(11, 33) if
<!-- Test-A att4="4" att1="1" att3="3" /> -->
<!-- Test-B att3="3" att2="2" att1="1" /> -->

### substitute-empty [altova:]

```
altova:substitute-empty(FirstSequence as item()*, SecondSequence as item()) as item()*
```

If FirstSequence is empty, returns SecondSequence. If FirstSequence is not empty, returns FirstSequence.

#### Examples

- `altova:substitute-empty( (1,2,3), (4,5,6) )` returns `(1,2,3)`
- `altova:substitute-empty( (), (4,5,6) )` returns `(4,5,6)`

## 9.2.1.8 XPath/XQuery Functions: String

Altova's string extension functions can be used in XPath and XQuery expressions and provide additional functionality for the processing of data. The functions in this section can be used with Altova's XPath 3.0 and XQuery 3.0 engines. They are available in XPath/XQuery contexts.

### Note about naming of functions and language applicability

Altova extension functions can be used in XPath/XQuery expressions. They provide additional functionality to the functionality that is available in the standard library of XPath, XQuery, and XSLT functions. Altova extension functions are in the Altova extension functions namespace, [http://www.altova.com/xslt-extensions](http://www.altova.com/xslt-extensions), and are indicated in this section with the prefix `altova:`, which is assumed to be bound to this namespace. Note that, in future versions of your product, support for a function might be discontinued or the behavior of individual functions might change. Consult the documentation of future releases for information about support for Altova extension functions in that release.

<table>
<thead>
<tr>
<th>XPath functions (used in XPath expressions in XSLT):</th>
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<th>XP2</th>
<th>XP3.1</th>
</tr>
</thead>
<tbody>
<tr>
<td>XSLT functions (used in XPath expressions in XSLT):</td>
<td>XSLT1</td>
<td>XSLT2</td>
<td>XSLT3</td>
</tr>
<tr>
<td>XQuery functions (used in XQuery expressions in XQuery):</td>
<td>XQ1</td>
<td>XQ3.1</td>
<td></td>
</tr>
</tbody>
</table>

### camel-case [altova:]

```
altova:camel-case(InputString as xs:string) as xs:string XP3.1 XQ3.1
```

Returns the input string `InputString` in CamelCase. The string is analyzed using the regular expression
"\s" (which is a shortcut for the whitespace character). The first non-whitespace character after a whitespace or sequence of consecutive whitespaces is capitalized. The first character in the output string is capitalized.

**Examples**

- `altova:camel-case("max")` returns Max
- `altova:camel-case("max max")` returns Max Max
- `altova:camel-case("file01.xml")` returns File01.xml
- `altova:camel-case("file01.xml file02.xml")` returns File01.xml File02.xml
- `altova:camel-case("file01.xml file02.xml")` returns File01.xml File02.xml
- `altova:camel-case("file01.xml -file02.xml")` returns File01.xml -file02.xml

`altova:camel-case(InputString as xs:string, SplitChars as xs:string, IsRegex as xs:boolean) as xs:string`  
Converts the input string `InputString` to camel case by using `SplitChars` to determine the character/s that trigger the next capitalization. `SplitChars` is used as a regular expression when `IsRegex = true()`, or as plain characters when `IsRegex = false()`. The first character in the output string is capitalized.

**Examples**

- `altova:camel-case("setname getname", "set|get", true())` returns setName getName
- `altova:camel-case("altova\documents\testcases", ",", false())` returns Altova\Documents\Testcases

`altova:char(Position as xs:integer) as xs:string`  
Returns a string containing the character at the position specified by the `Position` argument, in the string obtained by converting the value of the context item to `xs:string`. The result string will be empty if no character exists at the index submitted by the `Position` argument.

**Examples**

- `altova:char(2)` returns 2
- `altova:char(5)` returns A
- `altova:char(9)` returns the empty string.
- `altova:char(-2)` returns the empty string.

`altova:char(InputString as xs:string, Position as xs:integer) as xs:string`  
Returns a string containing the character at the position specified by the `Position` argument, in the string submitted as the `InputString` argument. The result string will be empty if no character exists at the index submitted by the `Position` argument.

**Examples**

- `altova:char("2014-01-15", 5)` returns -
- `altova:char("USA", 1)` returns U
- `altova:char("USA", 10)` returns the empty string.
- `altova:char("USA", -2)` returns the empty string.

`create-hash-from-string[altova:]`
altova:create-hash-from-string(InputString as xs:string) as xs:string

Generates a hash string from InputString by using the hashing algorithm specified by the HashAlgo argument. The following hashing algorithms may be specified (in upper or lower case): MD5, SHA-1, SHA-224, SHA-256, SHA-384, SHA-512. If the second argument is not specified (see the first signature above), then the SHA-256 hashing algorithm is used.

**Examples**

- `altova:create-hash-from-string('abc')` returns a hash string generated by using the SHA-256 hashing algorithm.
- `altova:create-hash-from-string('abc', 'md5')` returns a hash string generated by using the MD5 hashing algorithm.
- `altova:create-hash-from-string('abc', 'MD5')` returns a hash string generated by using the MD5 hashing algorithm.

first-chars [altova:]  

altova:first-chars(X-Number as xs:integer) as xs:string

Returns a string containing the first X-Number of characters of the string obtained by converting the value of the context item to xs:string.

**Examples**

If the context item is 1234ABCD:

- `altova:first-chars(2)` returns 12
- `altova:first-chars(5)` returns 1234A
- `altova:first-chars(9)` returns 1234ABCD

altova:first-chars(InputString as xs:string, X-Number as xs:integer) as xs:string

Returns a string containing the first X-Number of characters of the string submitted as the InputString argument.

**Examples**

- `altova:first-chars("2014-01-15", 5)` returns 2014-
- `altova:first-chars("USA", 1)` returns U

format-string [altova:]  

altova:format-string(InputString as xs:string, FormatSequence as item()) as xs:string

The input string (first argument) contains positional parameters (%1, %2, etc). Each parameter is replaced by the string item that is located at the corresponding position in the format sequence (submitted as the second argument). So the first item in the format sequence replaces the positional parameter %1, the second item replaces %2, and so on. The function returns this formatted string that contains the replacements. If no string exists for a positional parameter, then the positional parameter itself is returned. This happens when the index of a positional parameter is greater than the number of items in the format sequence.

**Examples**

- `altova:format-string("%1 - %2", "USA", "2014")` returns 2014 - USA
• `altova:format-string('Hello %1, %2, %3', ('Jane', 'John', 'Joe'))` returns "Hello Jane, John, Joe"
• `altova:format-string('Hello %1, %2, %3', ('Jane', 'John', 'Joe', 'Tom'))` returns "Hello Jane, John, Joe, Tom"
• `altova:format-string('Hello %1, %2, %4', ('Jane', 'John', 'Joe', 'Tom'))` returns "Hello Jane, John, Tom"
• `altova:format-string('Hello %1, %2, %4', ('Jane', 'John', 'Joe'))` returns "Hello Jane, John, %4"

**last-chars [altova:]**

`altova:last-chars(X-Number as xs:integer) as xs:string` XP3.1 XQ3.1

Returns a string containing the last X-Number of characters of the string obtained by converting the value of the context item to `xs:string`.

**Examples**

If the context item is 1234ABCDE:

- `altova:last-chars(2)` returns CD
- `altova:last-chars(5)` returns 4ABCDE
- `altova:last-chars(9)` returns 1234ABCDE

`altova:last-chars(InputString as xs:string, X-Number as xs:integer) as xs:string` XP3.1 XQ3.1

Returns a string containing the last X-Number of characters of the string submitted as the InputString argument.

**Examples**

- `altova:last-chars("2014-01-15", 5)` returns 01-15
- `altova:last-chars("USA", 10)` returns USA

**pad-string-left [altova:]**

`altova:pad-string-left(StringToPad as xs:string, StringLength as xs:integer, PadCharacter as xs:string) as xs:string` XP3.1 XQ3.1

The PadCharacter argument is a single character. It is padded to the left of the string to increase the number of characters in StringToPad so that this number equals the integer value of the StringLength argument. The StringLength argument can have any integer value (positive or negative), but padding will occur only if the value of StringLength is greater than the number of characters in StringToPad. If StringToPad has more characters than the value of StringLength, then StringToPad is left unchanged.

**Examples**

- `altova:pad-string-left('AP', 1, 'Z')` returns 'AP'
- `altova:pad-string-left('AP', 2, 'Z')` returns 'AP'
- `altova:pad-string-left('AP', 3, 'Z')` returns 'ZAP'
- `altova:pad-string-left('AP', 4, 'Z')` returns 'ZZAP'
- `altova:pad-string-left('AP', -3, 'Z')` returns 'AP'
- `altova:pad-string-left('AP', 3, 'YZ')` returns a pad-character-too-long error
### pad-string-right [altova:]

```
altova:pad-string-right(StringToPad as xs:string, StringLength as xs:integer, PadCharacter as xs:string) as xs:string XP3.1 XQ3.1
```

The `PadCharacter` argument is a single character. It is padded to the right of the string to increase the number of characters in `StringToPad` so that this number equals the integer value of the `StringLength` argument. The `StringLength` argument can have any integer value (positive or negative), but padding will occur only if the value of `StringLength` is greater than the number of characters in `StringToPad`. If `StringToPad` has more characters than the value of `StringLength`, then `StringToPad` is left unchanged.

**Examples**

- `altova:pad-string-right('AP', 1, 'Z')` returns `'AP'
- `altova:pad-string-right('AP', 2, 'Z')` returns `'AP'
- `altova:pad-string-right('AP', 3, 'Z')` returns `'APZ'
- `altova:pad-string-right('AP', 4, 'Z')` returns `'APZZ'
- `altova:pad-string-right('AP', -3, 'Z')` returns `'AP'
- `altova:pad-string-right('AP', 3, 'YZ')` returns a pad-character-too-long error

### repeat-string [altova:]

```
altova:repeat-string(InputString as xs:string, Repeats as xs:integer) as xs:string XP2 XQ1 XP3.1 XQ3.1
```

Generates a string that is composed of the first `InputString` argument repeated `Repeats` number of times.

**Examples**

- `altova:repeat-string("Altova ", 3)` returns "Altova #Altova #Altova #"

### substring-after-last [altova:]

```
altova:substring-after-last(MainString as xs:string, CheckString as xs:string) as xs:string XP3.1 XQ3.1
```

If `CheckString` is found in `MainString`, then the substring that occurs after `CheckString` in `MainString` is returned. If `CheckString` is not found in `MainString`, then the empty string is returned. If `CheckString` is an empty string, then `MainString` is returned in its entirety. If there is more than one occurrence of `CheckString` in `MainString`, then the substring after the last occurrence of `CheckString` is returned.

**Examples**

- `altova:substring-after-last('ABCDEFGH', 'B')` returns `'CDEFGH'
- `altova:substring-after-last('ABCDEFGH', 'BC')` returns `'DEFGH'
- `altova:substring-after-last('ABCDEFGH', 'BD')` returns `''`
- `altova:substring-after-last('ABCDEFGH', 'Z')` returns `''`
- `altova:substring-after-last('ABCDEFGH', '')` returns `'ABCDEFGH'
- `altova:substring-after-last('ABCD-ABCD', 'B')` returns `'CD'
- `altova:substring-after-last('ABCD-ABCD-ABCD', 'BCD')` returns `''`

### substring-before-last [altova:]

```
altova:substring-before-last(MainString as xs:string, CheckString as xs:string) as xs:string XP3.1 XQ3.1
```

If `CheckString` is found in `MainString`, then the substring that occurs before `CheckString` in `MainString` is returned.

**Examples**

- `altova:substring-before-last('ABCD-ABCD-ABCD', 'BCD')` returns `''`
is returned. If CheckString is not found in MainString, or if CheckString is an empty string, then the empty string is returned. If there is more than one occurrence of CheckString in MainString, then the substring before the last occurrence of CheckString is returned.

**Examples**

- `altova:substring-before-last('ABCDEFGH', 'B')` returns 'A'
- `altova:substring-before-last('ABCDEFGH', 'BC')` returns 'A'
- `altova:substring-before-last('ABCDEFGH', 'BD')` returns ''
- `altova:substring-before-last('ABCDEFGH', 'Z')` returns ''
- `altova:substring-before-last('ABCDEFGH', '')` returns ''
- `altova:substring-before-last('ABCD-ABCD', 'B')` returns 'ABCD-A'
- `altova:substring-before-last('ABCD-ABCD-ABCD', 'ABCD')` returns 'ABCD-ABCD-

### substring-pos [altova:]

**altova:substring-pos(StringToCheck as xs:string, StringToFind as xs:string) as xs:integer**

XP3.1  XQ3.1

Returns the character position of the first occurrence of StringToFind in the string StringToCheck. The character position is returned as an integer. The first character of StringToCheck has the position 1. If StringToFind does not occur within StringToCheck, the integer 0 is returned. To check for the second or a later occurrence of StringToCheck, use the next signature of this function.

**Examples**

- `altova:substring-pos('Altova', 'to')` returns 3
- `altova:substring-pos('Altova', 'tov')` returns 3
- `altova:substring-pos('Altova', 'tv')` returns 0
- `altova:substring-pos('Altova-Altova', 'to')` returns 3
- `altova:substring-pos('Altova-Altova', 'to', 0)` returns 3
- `altova:substring-pos('Altova-Altova', 'to', 4)` returns 10

### trim-string [altova:]

**altova:trim-string(InputString as xs:string) as xs:string**

XP3.1  XQ3.1

This function takes an xs:string argument, removes any leading and trailing whitespace, and returns a "trimmed" xs:string.

**Examples**
9.2.1.9 XPath/XQuery Functions: Miscellaneous

The following general purpose XPath/XQuery extension functions are supported in the current version of RaptorXML+XBRL Server and can be used in (i) XPath expressions in an XSLT context, or (ii) XQuery expressions in an XQuery document.

Note about naming of functions and language applicability

Altova extension functions can be used in XPath/XQuery expressions. They provide additional functionality to the functionality that is available in the standard library of XPath, XQuery, and XSLT functions. Altova extension functions are in the Altova extension functions namespace, http://www.altova.com/xslt-extensions, and are indicated in this section with the prefix altova:, which is assumed to be bound to this namespace. Note that, in future versions of your product, support for a function might be discontinued or the
behavior of individual functions might change. Consult the documentation of future releases for information about support for Altova extension functions in that release.

### XPath functions (used in XPath expressions in XSLT):

<table>
<thead>
<tr>
<th>Function</th>
<th>Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>decode-string</td>
<td>XP1 XP2 XP3.1</td>
</tr>
<tr>
<td>altova:decode-string</td>
<td>XP1 XP2 XP3.1</td>
</tr>
<tr>
<td>altova:decode-string</td>
<td>XP3.1</td>
</tr>
</tbody>
</table>

Decodes the submitted base64Binary input to a string using the specified encoding. If no encoding is specified, then the UTF-8 encoding is used. The following encodings are supported: US-ASCII, ISO-8859-1, UTF-16, UTF-16LE, UTF-16BE, ISO-10646-UCS2, UTF-32, UTF-32LE, UTF-32BE, ISO-10646-UCS4

#### Examples

- `altova:decode-string($XML1/MailData/Meta/b64B)` returns the base64Binary input as a UTF-8 encoded string
- `altova:decode-string($XML1/MailData/Meta/b64B, "UTF-8")` returns the base64Binary input as a UTF-8-encoded string
- `altova:decode-string($XML1/MailData/Meta/b64B, "ISO-8859-1")` returns the base64Binary input as an ISO-8859-1-encoded string

### XSLT functions (used in XPath expressions in XSLT):

<table>
<thead>
<tr>
<th>Function</th>
<th>Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>encode-string</td>
<td>XP1 XP2 XP3.1</td>
</tr>
<tr>
<td>altova:encode-string</td>
<td>XP1 XP2 XP3.1</td>
</tr>
<tr>
<td>altova:encode-string</td>
<td>XQ3.1</td>
</tr>
</tbody>
</table>

Encodes the submitted string using, if one is given, the specified encoding. If no encoding is given, then the UTF-8 encoding is used. The encoded string is converted to base64Binary characters, and the converted base64Binary value is returned. Initially, UTF-8 encoding is supported, and support will be extended to the following encodings: US-ASCII, ISO-8859-1, UTF-16, UTF-16LE, UTF-16BE, ISO-10646-UCS2, UTF-32, UTF-32LE, UTF-32BE, ISO-10646-UCS4

#### Examples

- `altova:encode-string("Altova")` returns the base64Binary equivalent of the UTF-8 encoded string "Altova"
- `altova:encode-string("Altova", "UTF-8")` returns the base64Binary equivalent of the UTF-8 encoded string "Altova"

### XQuery functions (used in XQuery expressions in XQuery):

<table>
<thead>
<tr>
<th>Function</th>
<th>Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>get-temp-folder</td>
<td>XP1 XP2 XP3.1</td>
</tr>
<tr>
<td>altova:get-temp-folder</td>
<td>XP1 XP2 XP3.1</td>
</tr>
</tbody>
</table>

This function takes no argument. It returns the path to the temporary folder of the current user.
Examples

- `altova:get-temp-folder()` would return, on a Windows machine, something like `C:\Users\<UserName>\AppData\Local\Temp\` as an `xs:string`.

### generate-guid [altova:]

```
altova:generate-guid() as xs:string XP2 XQ1 XP3.1 XQ3.1
```
Generates a unique string GUID string.

Examples

- `altova:generate-guid()` returns (for example) `85F971DA-17F3-4E4E-994E-99137873ACCD`

### high-res-timer [altova:]

```
altova:high-res-timer() as xs:double XP3.1 XQ3.1
```
Returns a system high-resolution timer value in seconds. A high-resolution timer, when present on a system, enables high precision time measurements when these are required (for example, in animations and for determining precise code-execution time). This function provides the resolution of the system's high-res timer.

Examples

- `altova:high-res-timer()` returns something like `'1.16766146154566E6'`

### parse-html [altova:]

```
altova:parse-html(HTMLText as xs:string) as node() XP3.1 XQ3.1
```
The `HTMLText` argument is a string that contains the text of an HTML document. The function creates an HTML tree from the string. The submitted string may or may not contain the HTML element. In either case, the root element of the tree is an element named `HTML`. It is best to make sure that the HTML code in the submitted string is valid HTML.

Examples

- `altova:parse-html("<html><head/><body><h1>Header</h1></body></html>")` creates an HTML tree from the submitted string

### sleep[altova:]

```
altova:sleep(Millisecs as xs:integer) as empty-sequence() XP2 XQ1 XP3.1 XQ3.1
```
Suspends execution of the current operation for the number of milliseconds given by the `Millisecs` argument.

Examples

- `altova:sleep(1000)` suspends execution of the current operation for 1000 milliseconds.
9.2.1.10 Chart Functions

The chart functions listed below enable you to create, generate, and save charts as images. They are supported in the current version of your Altova product in the manner described below. However, note that in future versions of your product, support for one or more of these functions might be discontinued or the behavior of individual functions might change. Consult the documentation of future releases for information about support for Altova extension functions in that release.

The chart functions are XPath functions (not XSLT functions), and organized into two groups:

- Functions for generating and saving charts
- Functions for creating charts

Note: Chart functions are supported only in Altova's Server products and the Enterprise Editions of Altova products.

Note: Supported image formats for charts in server editions are jpg, png, and bmp. The best option is png because it is lossless and compressed. In Enterprise editions, the supported formats are jpg, png, bmp, and gif.

Functions for generating and saving charts

These functions take the chart object (obtained with the chart creation functions) and either generate an image or save an image to file.

altova:generate-chart-image ($chart, $width, $height, $encoding) as atomic

where

- $chart is the chart extension item obtained with the altova:create-chart function
- $width and $height must be specified with a length unit
- $encoding may be x-binarytobase64 or x-binarytobase16

The function returns the chart image in the specified encoding.

altova:generate-chart-image ($chart, $width, $height, $encoding, $imagetype) as atomic

where

- $chart is the chart extension item obtained with the altova:create-chart function
- $width and $height must be specified with a length unit
- $encoding may be x-binarytobase64 or x-binarytobase16
- $imagetype may be one of the following image formats: png, gif, bmp, jpg, jpeg. Note that gif is not supported on server products. Also see note at top of page.

The function returns the chart image in the specified encoding and image format.

altova:save-chart-image ($chart, $filename, $width, $height) as empty() (Windows only)
where

- $chart$ is the chart extension item obtained with the `altova:create-chart` function
- $filename$ is the path to and name of the file to which the chart image is to be saved
- $width$ and $height$ must be specified with a length unit

The function saves the chart image to the file specified in $filename$.

`altova:save-chart-image` ($chart$, $filename$, $width$, $height$, $imagetype$) as empty()

(Windows only)

where

- $chart$ is the chart extension item obtained with the `altova:create-chart` function
- $filename$ is the path to and name of the file to which the chart image is to be saved
- $width$ and $height$ must be specified with a length unit
- $imagetype$ may be one of the following image formats: png, gif, bmp, jpg, jpeg. Note that gif is not supported on server products. *Also see note at top of page.*

The function saves the chart image to the file specified in $filename$ in the image format specified.

**Functions for creating charts**

The following functions are used to create charts.

`altova:create-chart` ($chart-config$, $chart-data-series$*) as chart extension item

where

- $chart-config$ is the chart-config extension item obtained with the `altova:create-chart-config` function or via the `altova:create-chart-config-from-xml` function
- $chart-data-series$ is the chart-data-series extension item obtained with the `altova:create-chart-data-series` function or `altova:create-chart-data-series-from-rows` function

The function returns a chart extension item, which is created from the data supplied via the arguments.

`altova:chart` ($chart-config$, $chart-data-series$*) as chart extension item

where

- $chart-config$ is the chart-config extension item. It is an unordered series of four key: value pairs, where the four keys are "width", "height", "title", and "kind". The values of width and height are integers and specify the width and height of the chart in pixels. The value of kind is one of: Pie, Pie3d, BarChart, BarChart3d, BarChart3dGrouped, LineChart, ValueLineChart, RoundGauge, BarGauge.
- $chart-data-series$ is each an array of size 3, where each array defines a chart-data-series. Each array is composed of: (i) the name of the data series, (ii) the X-Axis values, (iii) the Y-Axis values. Multiple data series may be submitted; in the example below, for example, the two arrays respectively give data for monthly minimum and maximum temperatures.
The function returns a chart extension item, which is created from the data supplied via the arguments.

**Example:**
```
altova:chart( map('width':800, 'height':600, "kind":"LineChart", "title":"Monthly Temperatures"), ([\'Min\', $temps/Month, $temps/Month/@min], \[\'Max\', $temps/Month, $temps/Month/@max\]) )
```

**altova:create-chart-config**($type-name, $title) as chart-config extension item

where
- $type-name specifies the type of chart to be created: Pie, Pie3d, BarChart, BarChart3d, BarChart3dGrouped, LineChart, ValueLineChart, RoundGauge, BarGauge
- $title is the name of the chart

The function returns a chart-config extension item containing the configuration information of the chart.

**altova:create-chart-config-from-xml**($xml-struct) as chart-config extension item

where
- $xml-struct is the XML structure containing the configuration information of the chart

The function returns a chart-config extension item containing the configuration information of the chart. This information is supplied in an XML data fragment.

**altova:create-chart-data-series**($series-name?, $x-values*, $y-values*) as chart-data-series extension item

where
- $series-name specifies the name of the series
- $x-values gives the list of X-Axis values
- $y-values gives the list of Y-Axis values

The function returns a chart-data-series extension item containing the data for building the chart: that is, the names of the series and the Axes data.

**altova:create-chart-data-row**(x, y1, y2, y3, ...) as chart-data-x-Ny-row extension item

where
- x is the value of the X-Axis column of the chart data row
- yN are the values of the Y-Axis columns

The function returns a chart-data-x-Ny-row extension item, which contains the data for the X-Axis column and Y-Axis columns of a single series.

**altova:create-chart-data-series-from-rows**($series-names as xs:string*, $row*) as chart-data-series extension item
where

- $\$series-name$ is the name of the series to be created
- $\$row$ is the chart-data-x-Ny-row extension item that is to be created as a series

The function returns a chart-data-series extension item, which contains the data for the X-Axis and Y-Axes of the series.

`altova:create-chart-layer($chart-config, $chart-data-series*)` as chart-layer extension item

where

- $\$chart-config$ is the chart-config extension item obtained with the `altova:create-chart-config` function or via the `altova:create-chart-config-from-xml` function
- $\$chart-data-series$ is the chart-data-series extension item obtained with the `altova:create-chart-data-series` function or `altova:create-chart-data-series-from-rows` function

The function returns a chart-layer extension item, which contains chart-layer data.

`altova:create-multi-layer-chart($chart-config, $chart-data-series*, $chart-layer*)`

where

- $\$chart-config$ is the chart-config extension item obtained with the `altova:create-chart-config` function or or via the `altova:create-chart-config-from-xml` function
- $\$chart-data-series$ is the chart-data-series extension item obtained with the `altova:create-chart-data-series` function or `altova:create-chart-data-series-from-rows` function
- $\$chart-layer$ is the chart-layer extension item obtained with the `altova:create-chart-layer` function

The function returns a multi-layer-chart item.

`altova:create-multi-layer-chart($chart-config, $chart-data-series*, $chart-layer*, xs:boolean $mergecategoryvalues)`

where

- $\$chart-config$ is the chart-config extension item obtained with the `altova:create-chart-config` function or or via the `altova:create-chart-config-from-xml` function
- $\$chart-data-series$ is the chart-data-series extension item obtained with the `altova:create-chart-data-series` function or `altova:create-chart-data-series-from-rows` function
- $\$chart-layer$ is the chart-layer extension item obtained with the `altova:create-chart-layer` function
- $\$mergecategoryvalues$ merges the values of multiple data series if `true`, does not merge if `false`

The function returns a multi-layer-chart item.
9.2.1.10.1 Chart Data XML Structure

Given below is the XML structure of chart data, how it might appear for the Altova extension functions for charts. This affects the appearance of the specific chart. Not all elements are used for all chart kinds, e.g. the `<Pie>` element is ignored for bar charts.

**Note:** Chart functions are supported only in the Enterprise and Server Editions of Altova products.

```xml
<chart-config>
  <General
    SettingsVersion="1" must be provided
    ChartKind="BarChart" Pie, Pie3d, BarChart, StackedBarChart, BarChart3d, BarChart3dGrouped, LineChart, ValueLineChart, AreaChart, StackedAreaChart, RoundGauge, BarGauge, CandleStick
    BKColor="#ffffff" Color
    BKColorGradientEnd="#ffffff" Color. In case of a gradient, BKColor and BKColorGradientEnd define the gradient's colors
    BKMode="#ffffff" Solid, HorzGradient, VertGradient
    BKFile="Path+Filename" String. If file exists, its content is drawn over the background.
    PlotBorder="1" Bool
    PlotBorderColor="#000000" Color
    PlotBKColor="#ffffff" Color
    Title="" String
    ShowLegend="1" Bool
    OutsideMargin="3.3%" PercentOrPixel
    TitleToPlotMargin="3.3%" PercentOrPixel
    LegendToPlotMargin="3.3%" PercentOrPixel
    Orientation="vert" Enumeration: possible values are: vert, horz
  >
  <TitleFont
    Color="#000000" Color
    Name="Tahoma" String
    Bold="1" Bool
    Italic="0" Bool
    Underline="0" Bool
    MinFontHeight="10.pt" FontSize (only pt values)
    Size="8.%" FontSize />
  <LegendFont
    Color="#000000" Color
    Name="Tahoma"
    Bold="0"
    Italic="0"
    Underline="0"
    MinFontHeight="10.pt"
    Size="3.5%" />
  <AxisLabelFont
    Color="#000000" Color
    Name="Tahoma"
    Bold="1"
    Italic="0"
    Underline="0"
```
<Line>
  ConnectionShapeSize="1.\%"  PercentOrPixel
  DrawFilledConnectionShapes="1"  Bool
  DrawOutlineConnectionShapes="0"  Bool
  DrawSlashConnectionShapes="0"  Bool
  DrawBackslashConnectionShapes="0"  Bool
</Line>

<Bar>
  ShowShadow="1"  Bool
  ShadowColor="#a0a0a0"  Color
  OutlineColor="#000000"  Color
  ShowOutline="1"  Bool
</Bar>

<Area>
  Transparency="0"  UINT ( 0-255 ) 255 is fully transparent, 0 is opaque
  OutlineColor="#000000"  Color
  ShowOutline="1"  Bool
</Area>

<CandleStick>
  FillHighClose="0"  Bool. If 0, the body is left empty. If 1, FillColorHighClose is used for
  the candle body
  FillColorHighClose="#ffffff"  Color. For the candle body when close > open
  FillHighOpenWithSeriesColor="1"  Bool. If true, the series color is used to fill the
candlebody when open > close
  FillColorHighOpen="#000000"  Color. For the candle body when open > close and
  FillHighOpenWithSeriesColor is false
</CandleStick>

<Colors>
  User-defined color scheme: By default this element is empty except for the style and has no
  Color attributes
  UseSubsequentColors ="1"  Boolean. If 0, then color in overlay is used. If 1, then
  subsequent colors from previous chart layer is used
  Style="User"  Possible values are: "Default", "Grayscale", "Colorful", "Pastel", "User"
  Colors="#52aca0"  Color: only added for user defined color set
  Colors1="#d3c15d"  Color: only added for user defined color set
  Colors2="#8971d8"  Color: only added for user defined color set
  ...
  ColorsN=""  Up to ten colors are allowed in a set: from Colors to Colors9
</Colors>

<Pie>
  ShowLabels="1"  Bool
  OutlineColor="#404040"  Color
  ShowOutline="1"  Bool
  StartAngle="0."  Double
  Clockwise="1"  Bool
Draw2dHighlights="1"  Bool
Transparency="0"  Int (0 to 255: 0 is opaque, 255 is fully transparent)
DropShadowColor="#c0c0c0"  Color
DropShadowSize="5.%"  PercentOrPixel
PieHeight="10.%"  PercentOrPixel. Pixel values might be different in the result because of 3d tilting
Tilt="40.0"  Double (10 to 90: The 3d tilt in degrees of a 3d pie)
ShowDropShadow="1"  Bool
ChartToLabelMargin="10.%"  PercentOrPixel
AddValueToLabel="0"  Bool
AddPercentToLabel="0"  Bool
AddPercentToLabels_DecimalDigits="0"  UINT (0 – 2)
>
  <LabelFont
    Color="#000000"
    Name="Arial"
    Bold="0"
    Italic="0"
    Underline="0"
    MinFontHeight="10.pt"
    Size="4.%" />
</Pie>

<XY>
  <XAxis  Axis (same as for XAxis)
    AutoRange="1"  Bool
    AutoRangeIncludesZero="1"  Bool
    RangeFrom="0."  Double: manual range
    RangeTill="1."  Double: manual range
    LabelToAxisMargin="3.%"  PercentOrPixel
    AxisLabel=""  String
    AxisColor="#000000"  Color
    AxisGridColor="#e6e6e6"  Color
    ShowGrid="1"  Bool
    UseAutoTick="1"  Bool
    ManualTickInterval="1."  Double
    AxisToChartMargin="0.px"  PercentOrPixel
    TickSize="3.px"  PercentOrPixel
    ShowTicks="1"  Bool
    ShowValues="1"  Bool
    AxisPosition="LeftOrBottom"  Enums: "LeftOrBottom", "RightOrTop", "AtValue"
    AxisPositionAtValue = "0"  Double
  >
    <ValueFont
      Color="#000000"
      Name="Tahoma"
      Bold="0"
      Italic="0"
      Underline="0"
      MinFontHeight="10.pt"
      Size="3.%" />
</XAxis>
  <YAxis  Axis (same as for XAxis)
    AutoRange="1"  Bool
  >
</XY>
AutoRangeIncludesZero="1"
RangeFrom="0."
RangeTill="1."
LabelToAxisMargin="3."
AxisLabel=""
AxisColor="#000000"
AxisGridColor="#e6e6e6"
ShowGrid="1"
UseAutoTick="1"
ManualTickInterval="1."
AxisToChartMargin="0.px"
TickSize="3.px"
ShowTicks="1"  Bool
ShowValues="1"  Bool
AxisPosition="LeftOrBottom"  Enums: "LeftOrBottom", "RightOrTop", "AtValue"
AxisPositionAtValue = "0"  Double

</ValueFont>

</YAxis>

</XY>

<XY3d
AxisAutoSize="1"  Bool: If false, XSize and YSize define the aspect ratio of x and y axis. If true, aspect ratio is equal to chart window
XSize="100.%"  PercentOrPixel. Pixel values might be different in the result because of 3d tilting and zooming to fit chart
YSize="100.%"  PercentOrPixel. Pixel values might be different in the result because of 3d tilting and zooming to fit chart
SeriesMargin="30.%"  PercentOrPixel. Pixel values might be different in the result because of 3d tilting and zooming to fit chart
Tilt="20."
Rot="20."
FoV="50.">

</ZAxis>

AutoRangeIncludesZero="1"
RangeFrom="0."
RangeTill="1."
LabelToAxisMargin="3."
AxisLabel=""
AxisColor="#000000"
AxisGridColor="#e6e6e6"
ShowGrid="1"
UseAutoTick="1"
ManualTickInterval="1."
AxisToChartMargin="0.px"
TickSize="3.px" >
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```xml
<ValueFont
    Color="#000000"
    Name="Tahoma"
    Bold="0"
    Italic="0"
    Underline="0"
    MinFontHeight="10.pt"
    Size="3.8%"/>

</ZAxis>

</XY3d>

<Gauge
    MinVal="0."
    MaxVal="100."
    MinAngle="225" UINT: -359-359
    SweepAngle="270" UINT: 1-359
    BorderToTick="1.%" PercentOrPixel
    MajorTickWidth="3.px" PercentOrPixel
    MajorTickLength="4.%" PercentOrPixel
    MinorTickWidth="1.px" PercentOrPixel
    MinorTickLength="3.%" PercentOrPixel
    BorderColor="#a0a0a0"
    FillColor="#303535"
    MajorTickColor="#a0c0b0"
    MinorTickColor="#a0c0b0"
    BorderWidth="2.%" PercentOrPixel
    NeedleBaseWidth="1.5%" PercentOrPixel
    NeedleBaseRadius="5.%" PercentOrPixel
    NeedleColor="#f00000"
    NeedleBaseColor="#141414"
    TickToTickValueMargin="5.%" PercentOrPixel
    MajorTickStep="10." Double
    MinorTickStep="5." Double
    RoundGaugeBorderToColorRange="0.%" PercentOrPixel
    RoundGaugeColorRangeWidth="6.%" PercentOrPixel
    BarGaugeRadius="5.%" PercentOrPixel
    BarGaugeMaxHeight="20.%" PercentOrPixel
    RoundGaugeNeedleLength="45.%" PercentOrPixel
    BarGaugeNeedleLength="3.%" PercentOrPixel
>
    <TicksFont
        Color="#a0c0b0"
        Name="Tahoma"
        Bold="0"
        Italic="0"
        Underline="0"
        MinFontHeight="10.pt"
        Size="4.%"/>

</ColorRanges>

<User-defined color ranges. By default empty with no child element entries

<Entry
    From="50."
    FillWithColor="1" Bool
    Color="#00ff00" Color
```
9.2.1.10.2 Example: Chart Functions

The example XSLT document below shows how Altova extension functions for charts can be used. Given further below are an XML document and a screenshot of the output image generated when the XML document is processed with the XSLT document using the XSLT 2.0 or 3.0 Engine.

Note: Chart functions are supported only in the Enterprise and Server Editions of Altova products.

Note: For more information about how chart data tables are created, see the documentation of Altova's XMLSpy and StyleVision products.

XSLT document

This XSLT document (listing below) uses Altova chart extension functions to generate a pie chart. It can be used to process the XML document listed further below.

```xml
<?xml version="1.0" encoding="UTF-8"?>
<xsl:stylesheet version="2.0"
    xmlns:xsl="http://www.w3.org/1999/XSL/Transform"
    xmlns:xs="http://www.w3.org/2001/XMLSchema"
    xmlns:altovaext="http://www.altova.com/xslt-extensions"
    exclude-result-prefixes="#all">
    <xsl:output version="4.0" method="html" indent="yes" encoding="UTF-8"/>
    <xsl:template match="/">
        <html>
            <head>
                <xsl:text>HTML Page with Embedded Chart</xsl:text>
            </head>
            <body>
                <xsl:for-each select="/Data/Region[1]">
                    <xsl:variable name="extChartConfig" as="item()"><xsl:variable name="ext-chart-settings" as="item()">
                        <chart-config>
                            <General
                                SettingsVersion="1"
                                ChartKind="Pie3d"
                                BKColor="#ffffff"
                            />
                        </chart-config>
                    </xsl:variable>
                </xsl:for-each>
            </body>
        </html>
    </xsl:template>
</xsl:stylesheet>
```
XML document

This XML document can be processed with the XSLT document above. Data in the XML document is used to generate the pie chart shown in the screenshot below.
The pie chart show below is generated when the XML document listed above is processed with the XSLT document.
9.2.1.11 Barcode Functions

The XSLT Engine uses third-party Java libraries to create barcodes. Given below are the classes and the public methods used. The classes are packaged in AltovaBarcodeExtension.jar, which is located in the folder <ProgramFilesFolder>\Altova\Common2021\jar.

The Java libraries used are in sub-folders of the folder <ProgramFilesFolder>\Altova\Common2021\jar:

- barcode4j\barcode4j.jar (Website: http://barcode4j.sourceforge.net/)
- zxing\core.jar (Website: http://code.google.com/p/zxing/)

The license files are also located in the respective folders.

Java virtual machine

In order to be able to use the barcode functions, a Java virtual machine must be available on your machine. The path to the machine is found as noted below.

- If you are using an Altova desktop product, the Altova application attempts to detect the path to the
Java virtual machine automatically, by reading (in this order): (i) the Windows registry, and (ii) the 
JAVA_HOME environment variable. You can also add a custom path in the Options dialog of the application; this entry will take priority over any other Java VM path detected automatically.

- If you are running an Altova server product on a Windows machine, the path to the Java virtual machine will be read first from the Windows registry; if this is not successful the JAVA_HOME environment variable will be used.
- If you are running an Altova server product on a Linux or macOS machine, then make sure that the path to the Java virtual machine is stored in the JAVA_HOME environment variable. The path must point to the jvm.dll file in the \bin\server or \bin\client directory.

The com.altova.extensions.barcode package

The package, com.altova.extensions.barcode, is used to generate most of the barcode types.

The following classes are used:

```java
public class BarcodeWrapper
    static BarcodeWrapper newInstance( String name, String msg, int dpi, int orientation, BarcodePropertyWrapper[] arrProperties )
    double getHeightPlusQuiet()
    double getWidthPlusQuiet()
    org.w3c.dom.Document generateBarcodeSVG()
    byte[] generateBarcodePNG()
    String generateBarcodePngAsHexString()

public class BarcodePropertyWrapper  Used to store the barcode properties that will be dynamically set later
    BarcodePropertyWrapper( String methodName, String propertyValue )
    BarcodePropertyWrapper( String methodName, Integer propertyValue )
    BarcodePropertyWrapper( String methodName, Double propertyValue )
    BarcodePropertyWrapper( String methodName, Boolean propertyValue )
    BarcodePropertyWrapper( String methodName, Character propertyValue )
    String getMethodName()
    Object getPropertyValue()

public class AltovaBarcodeClassResolver Registers the class
com.altova.extensions.barcode.proxy.zxing.QRCodeBean for the qrcode bean, additionally to the classes registered by the org.krysalis.barcode4j.DefaultBarcodeClassResolver.
```

The com.altova.extensions.barcode.proxy.zxing package

The package, com.altova.extensions.barcode.proxy.zxing, is used to generate the QRCode barcode type.

The following classes are used:

```java
class QRCodeBean
    Extends org.krysalis.barcode4j.impl.AbstractBarcodeBean
    Creates an AbstractBarcodeBean interface for com.google.zxing.qrcode.encoder
    void generateBarcode(CanvasProvider canvasImp, String msg)
```
void setQRErrorCorrectionLevel(QRCodeErrorCorrectionLevel level)
BarcodeDimension calcDimensions(String msg)
double getVerticalQuietZone()
double getBarWidth()

class QRCodeErrorCorrectionLevel  
*Error correction level for the*  
QRCode

static QRCodeErrorCorrectionLevel byName(String name)

“L” = ~7% correction
“M” = ~15% correction
“H” = ~25% correction
“Q” = ~30% correction

### XSLT example

Given below is an XSLT example showing how barcode functions are used in an XSLT stylesheet.

```xml
<?xml version="1.0" encoding="UTF-8"?>
<xsl:stylesheet version="2.0" xmlns:xsl="http://www.w3.org/1999/XSL/Transform"
    xmlns:xs="http://www.w3.org/2001/XMLSchema"
    xmlns:fn="http://www.w3.org/2005/xpath-functions"
    xmlns:altova="http://www.altova.com"
    xmlns:altovaext="http://www.altova.com/xslt-extensions"
    xmlns:altovaext-barcode="java:com.altova.extensions.barcode.BarcodeWrapper"
    <xsl:output method="html" encoding="UTF-8" indent="yes"/>
    <xsl:template match="/">
        <html>
            <head><title/></head>
            <body>
                <img alt="barcode" src="{altovaext:get-temp-folder()}barcode.png"/>
            </body>
        </html>
    </xsl:template>
</xsl:stylesheet>
```

### 9.2.2 Miscellaneous Extension Functions

There are several ready-made functions in programming languages such as Java and C# that are not available as XQuery/XPath functions or as XSLT functions. A good example would be the math functions available in Java, such as `sin()` and `cos()`. If these functions were available to the designers of XSLT stylesheets and
XQuery queries, it would increase the application area of stylesheets and queries and greatly simplify the tasks of stylesheet creators. The XSLT and XQuery engines used in a number of Altova products support the use of extension functions in Java and .NET, as well as MSXSL scripts for XSLT. They also support XBRL functions for XSLT. This section describes how to use extension functions and MSXSL scripts in your XSLT stylesheets and XQuery documents. The available extension functions are organized into the following sections:

- Java Extension Functions
- .NET Extension Functions
- XBRL functions for XSLT
- MSXSL Scripts for XSLT

The two main issues considered in the descriptions are: (i) how functions in the respective libraries are called; and (ii) what rules are followed for converting arguments in a function call to the required input format of the function, and what rules are followed for the return conversion (function result to XSLT/XQuery data object).

Requirements

For extension functions support, a Java Runtime Environment (for access to Java functions) and .NET Framework 2.0 (minimum, for access to .NET functions) must be installed on the machine running the XSLT transformation or XQuery execution, or must be accessible for the transformations.

9.2.2.1 Java Extension Functions

A Java extension function can be used within an XPath or XQuery expression to invoke a Java constructor or call a Java method (static or instance).

A field in a Java class is considered to be a method without any argument. A field can be static or instance. How to access fields is described in the respective sub-sections, static and instance.

This section is organized into the following sub-sections:

- Java: Constructors
- Java: Static Methods and Static Fields
- Java: Instance Methods and Instance Fields
- Datatypes: XPath/XQuery to Java
- Datatypes: Java to XPath/XQuery

Note the following

- If you are using an Altova desktop product, the Altova application attempts to detect the path to the Java virtual machine automatically, by reading (in this order): (i) the Windows registry, and (ii) the JAVA_HOME environment variable. You can also add a custom path in the Options dialog of the application; this entry will take priority over any other Java VM path detected automatically.
- If you are running an Altova server product on a Windows machine, the path to the Java virtual machine will be read first from the Windows registry; if this is not successful the JAVA_HOME environment variable will be used.
- If you are running an Altova server product on a Linux or macOS machine, then make sure that the path to the Java virtual machine is stored in the JAVA_HOME environment variable. The path must point to the jvm.dll file in the \bin\server or \bin\client directory.
Form of the extension function

The extension function in the XPath/XQuery expression must have the form prefix:fname().

- The prefix: part identifies the extension function as a Java function. It does so by associating the extension function with an in-scope namespace declaration, the URI of which must begin with java: (see below for examples). The namespace declaration should identify a Java class, for example:
  xmlns:myns="java:java.lang.Math". However, it could also simply be:
  xmlns:myns="java" (without a colon), with the identification of the Java class being left to the fname() part of the extension function.
- The fname() part identifies the Java method being called, and supplies the arguments for the method (see below for examples). However, if the namespace URI identified by the prefix: part does not identify a Java class (see preceding point), then the Java class should be identified in the fname() part, before the class and separated from the class by a period (see the second XSLT example below).

Note: The class being called must be on the classpath of the machine.

XSLT example

Here are two examples of how a static method can be called. In the first example, the class name (java.lang.Math) is included in the namespace URI and, therefore, must not be in the fname() part. In the second example, the prefix: part supplies the prefix java: while the fname() part identifies the class as well as the method.

\[
\text{<xsl:value-of xmlns:jMath="java:java.lang.Math"}
\quad \text{select="jMath:cos(3.14)"} /
\]

\[
\text{<xsl:value-of xmlns:jmath="java"}
\quad \text{select="jmath:java.lang.Math.cos(3.14)"} />
\]

The method named in the extension function (cos() in the example above) must match the name of a public static method in the named Java class (java.lang.Math in the example above).

XQuery example

Here is an XQuery example similar to the XSLT example above:

\[
\text{<cosine xmlns:jMath="java:java.lang.Math"} >
\quad \{jMath:cos(3.14)}
\quad \text{</cosine>}
\]

User-defined Java classes

If you have created your own Java classes, methods in these classes are called differently according to: (i) whether the classes are accessed via a JAR file or a class file, and (ii) whether these files (JAR or class) are located in the current directory (the same directory as the XSLT or XQuery document) or not. How to locate these files is described in the sections User-Defined Class Files and User-Defined Jar Files. Note that paths to class files not in the current directory and to all JAR files must be specified.
9.2.2.1.1 User-Defined Class Files

If access is via a class file, then there are four possibilities:

- The class file is in a package. The XSLT or XQuery file is in the same folder as the Java package. (See example below.)
- The class file is not packaged. The XSLT or XQuery file is in the same folder as the class file. (See example below.)
- The class file is in a package. The XSLT or XQuery file is at some random location. (See example below.)
- The class file is not packaged. The XSLT or XQuery file is at some random location. (See example below.)

Consider the case where the class file is not packaged and is in the same folder as the XSLT or XQuery document. In this case, since all classes in the folder are found, the file location does not need to be specified.

The syntax to identify a class is:

```
java:classname
```

where

```
java: indicates that a user-defined Java function is being called; (Java classes in the current directory will be loaded by default)
classname is the name of the required method's class
```

The class is identified in a namespace URI, and the namespace is used to prefix a method call.

Class file packaged, XSLT/XQuery file in same folder as Java package

The example below calls the `getVehicleType()` method of the `Car` class of the `com.altova.extfunc` package. The `com.altova.extfunc` package is in the folder `JavaProject`. The XSLT file is also in the folder `JavaProject`.

```xml
<xsl:stylesheet version="2.0"
    xmlns:xsl="http://www.w3.org/1999/XSL/Transform"
    xmlns:xs="http://www.w3.org/2001/XMLSchema"
    xmlns:fn="http://www.w3.org/2005/xpath-functions"
    xmlns:car="java:com.altova.extfunc.Car" >
<xsl:output exclude-result-prefixes="fn car xsl fo xs"/>

<xsl:template match="/">
<a>
  <xsl:value-of select="car:getVehicleType()"/>
</a>
</xsl:template>
</xsl:stylesheet>
```
Class file referenced, XSLT/XQuery file in same folder as class file

The example below calls the `getVehicleType()` method of the `Car` class. Let us say that: (i) the `Car` class file is in the following folder: `JavaProject/com/altova/extfunc`, and (ii) that this folder is the current folder in the example below. The XSLT file is also in the folder `JavaProject/com/altova/extfunc`.

```xml
<xsl:stylesheet version="2.0"
    xmlns:xsl="http://www.w3.org/1999/XSL/Transform"
    xmlns:xs="http://www.w3.org/2001/XMLSchema"
    xmlns:fn="http://www.w3.org/2005/xpath-functions"
    xmlns:car="java:Car" >
    <xsl:output exclude-result-prefixes="fn car xsl fo xs"/>

    <xsl:template match="/">
        <a><xsl:value-of select="car:getVehicleType()"/></a>
    </xsl:template>
</xsl:stylesheet>
```

Class file packaged, XSLT/XQuery file at any location

The example below calls the `getCarColor()` method of the `Car` class of the `com.altova.extfunc` package. The `com.altova.extfunc` package is in the folder `JavaProject`. The XSLT file is at any location. In this case, the location of the package must be specified within the URI as a query string. The syntax is:

```java
java:classname[?path=uri-of-package]
```

where

- `java:` indicates that a user-defined Java function is being called
- `uri-of-package` is the URI of the Java package
- `classname` is the name of the required method's class

The class is identified in a namespace URI, and the namespace is used to prefix a method call. The example below shows how to access a class file that is located in another directory than the current directory.

```xml
<xsl:stylesheet version="2.0"
    xmlns:xsl="http://www.w3.org/1999/XSL/Transform"
    xmlns:xs="http://www.w3.org/2001/XMLSchema"
    xmlns:fn="http://www.w3.org/2005/xpath-functions"

    <xsl:output exclude-result-prefixes="fn car xsl xs"/>

    <xsl:template match="/">
        <xsl:variable name="myCar" select="car:new('red')" />
        <a><xsl:value-of select="car:getCarColor($myCar)"/></a>
    </xsl:template>
</xsl:stylesheet>
```
Class file referenced, XSLT/XQuery file at any location

The example below calls the `getCarColor()` method of the `Car` class. Let us say that the `Car` class file is in the folder `C:/JavaProject/com/altova/extfunc`, and the XSLT file is at any location. The location of the class file must then be specified within the namespace URI as a query string. The syntax is:

```xml
java:classname?[path=<uri-of-classfile>]
```

**where**

- `java:` indicates that a user-defined Java function is being called
- `uri-of-classfile` is the URI of the folder containing the class file
- `classname` is the name of the required method's class

The class is identified in a namespace URI, and the namespace is used to prefix a method call. The example below shows how to access a class file that is located in another directory than the current directory.

```xml
<xsl:stylesheet version="2.0"
  xmlns:xsl="http://www.w3.org/1999/XSL/Transform"
  xmlns:xs="http://www.w3.org/2001/XMLSchema"
  xmlns:fn="http://www.w3.org/2005/xpath-functions"
  xmlns:car="java:Car?path=file:///C:/JavaProject/com/altova/extfunc/" >

<xsl:output exclude-result-prefixes="fn car xsl xs"/>

<xsl:template match="/"
  
  
  <xsl:variable name="myCar" select="car:new('red')" />
  <a><xsl:value-of select="car:getCarColor($myCar)" /></a>

</xsl:template>

</xsl:stylesheet>
```

**Note:** When a path is supplied via the extension function, the path is added to the ClassLoader.

9.2.2.1.2 User-Defined Jar Files

If access is via a JAR file, the URI of the JAR file must be specified using the following syntax:

```xml
xmlns:classNS="java:classname?path=jar:uri-of-jarfile!/
```

The method is then called by using the prefix of the namespace URI that identifies the class:

```
classNS:method()
```

**In the above:**

- `java:` indicates that a Java function is being called
- `classname` is the name of the user-defined class
? is the separator between the classname and the path  
path=jar: indicates that a path to a JAR file is being given  
uri-of-jarfile is the URI of the jar file  
!/ is the end delimiter of the path  
classNS:method() is the call to the method

Alternatively, the classname can be given with the method call. Here are two examples of the syntax:

```xml
xmlns:ns1="java:docx.layout.pages?
path=jar:file:///c:/projects/docs/docx.jar!/"
ns1:main()

xmlns:ns2="java?path=jar:file:///c:/projects/docs/docx.jar!/"
ns2:docx.layout.pages.main()
```

Here is a complete XSLT example that uses a JAR file to call a Java extension function:

```xml
<xsl:stylesheet version="2.0"
    xmlns:xsl="http://www.w3.org/1999/XSL/Transform"
    xmlns:xs="http://www.w3.org/2001/XMLSchema"
    xmlns:fn="http://www.w3.org/2005/xpath-functions"
    xmlns:car="java?path=jar:file:///C:/test/Car1.jar!/" >
    <xsl:output exclude-result-prefixes="fn car xsl xs"/>
    <xsl:template match="/"
        <xsl:variable name="myCar" select="car:Car1.new('red')" />
        <a><xsl:value-of select="car:Car1.getCarColor($myCar)" /></a>
    </xsl:template>
    <xsl:template match="car"/>
</xsl:stylesheet>
```

**Note:** When a path is supplied via the extension function, the path is added to the ClassLoader.

### 9.2.2.1.3 Java: Constructors

An extension function can be used to call a Java constructor. All constructors are called with the pseudo-function `new()`.

If the result of a Java constructor call can be implicitly converted to XPath/XQuery datatypes, then the Java extension function will return a sequence that is an XPath/XQuery datatype. If the result of a Java constructor call cannot be converted to a suitable XPath/XQuery datatype, then the constructor creates a wrapped Java object with a type that is the name of the class returning that Java object. For example, if a constructor for the class `java.util.Date` is called (`java.util.Date.new()`), then an object having a type `java.util.Date` is returned. The lexical format of the returned object may not match the lexical format of an XPath datatype and the value would therefore need to be converted to the lexical format of the required XPath datatype and then to the required XPath datatype.

There are two things that can be done with a Java object created by a constructor:
• It can be assigned to a variable:
  
  ```xml
  <xsl:variable name="currentdate" select="date:new()"
xmlns:date="java:java.util.Date" />
  ```

• It can be passed to an extension function (see Instance Method and Instance Fields):
  
  ```xml
  <xsl:value-of select="date:toString(date:new())" xmlns:date="java:java.util.Date" />
  ```

### 9.2.2.1.4  Java: Static Methods and Static Fields

A static method is called directly by its Java name and by supplying the arguments for the method. Static fields (methods that take no arguments), such as the constant-value fields $E$ and $\pi$, are accessed without specifying any argument.

#### XSLT examples

Here are some examples of how static methods and fields can be called:

```xml
  select="jMath:cos(3.14)" />

  select="jMath:cos(jMath:PI())" />

  select="jMath:E() * jMath:cos(3.14)" />
```

Notice that the extension functions above have the form `prefix:fname()`. The prefix in all three cases is `jMath:`, which is associated with the namespace URI `java:java.lang.Math`. (The namespace URI must begin with `java:`. In the examples above it is extended to contain the class name (`java.lang.Math`).) The `fname()` part of the extension functions must match the name of a public class (e.g. `java.lang.Math`) followed by the name of a public static method with its argument/s (such as `cos(3.14)`) or a public static field (such as `PI()`).

In the examples above, the class name has been included in the namespace URI. If it were not contained in the namespace URI, then it would have to be included in the `fname()` part of the extension function. For example:

```xml
<xsl:value-of xmlns:java="java:"
  select="java:java.lang.Math.cos(3.14)" />
```

#### XQuery example

A similar example in XQuery would be:

```xml
<cosine xmlns:jMath="java:java.lang.Math">
  {jMath:cos(3.14)}
</cosine>
```
9.2.2.1.5 Java: Instance Methods and Instance Fields

An instance method has a Java object passed to it as the first argument of the method call. Such a Java object typically would be created by using an extension function (for example a constructor call) or a stylesheet parameter/variable. An XSLT example of this kind would be:

```
xsl:stylesheet version="1.0" exclude-result-prefixes="date"
  xmlns:xsl="http://www.w3.org/1999/XSL/Transform"
  xmlns:date="java:java.util.Date"
  xmlns:jlang="java:java.lang">
  <xsl:param name="CurrentDate" select="date:new()"/>
  <xsl:template match="/">
    <enrollment institution-id="Altova School"
      date="{date:toString($CurrentDate)}"
      type="{jlang:Object.toString(jlang:Object.getClass( date:new() ))}">
    </enrollment>
  </xsl:template>
</xsl:stylesheet>
```

In the example above, the value of the node `enrollment/@type` is created as follows:

1. An object is created with a constructor for the class `java.util.Date` (with the `date:new()` constructor).
2. This Java object is passed as the argument of the `jlang.Object.getClass` method.
3. The object obtained by the `getClass` method is passed as the argument to the `jlang.Object.toString` method.

The result (the value of `@type`) will be a string having the value: `java.util.Date`.

An instance field is theoretically different from an instance method in that it is not a Java object per se that is passed as an argument to the instance field. Instead, a parameter or variable is passed as the argument. However, the parameter/variable may itself contain the value returned by a Java object. For example, the parameter `CurrentDate` takes the value returned by a constructor for the class `java.util.Date`. This value is then passed as an argument to the instance method `date:toString` in order to supply the value of `/enrollment/@date`.

9.2.2.1.6 Datatypes: XPath/XQuery to Java

When a Java function is called from within an XPath/XQuery expression, the datatype of the function's arguments is important in determining which of multiple Java classes having the same name is called.

In Java, the following rules are followed:

- If there is more than one Java method with the same name, but each has a different number of arguments than the other/s, then the Java method that best matches the number of arguments in the function call is selected.
- The XPath/XQuery string, number, and boolean datatypes (see list below) are implicitly converted to a corresponding Java datatype. If the supplied XPath/XQuery type can be converted to more than one Java type (for example, `xs:integer`), then that Java type is selected which is declared for the selected
method. For example, if the Java method being called is \texttt{fx(decimal)} and the supplied XPath/XQuery datatype is \texttt{xs:integer}, then \texttt{xs:integer} will be converted to Java's \texttt{decimal} datatype.

The table below lists the implicit conversions of XPath/XQuery string, number, and boolean types to Java datatypes.

<table>
<thead>
<tr>
<th>XPath/XQuery Type</th>
<th>Java Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>\texttt{xs:string}</td>
<td>\texttt{java.lang.String}</td>
</tr>
<tr>
<td>\texttt{xs:boolean}</td>
<td>\texttt{boolean (primitive)}, \texttt{java.lang.Boolean}</td>
</tr>
<tr>
<td>\texttt{xs:integer}</td>
<td>\texttt{int}, \texttt{long}, \texttt{short}, \texttt{byte}, \texttt{float}, \texttt{double}, and the wrapper classes of these, such as \texttt{java.lang.Integer}</td>
</tr>
<tr>
<td>\texttt{xs:float}</td>
<td>\texttt{float (primitive)}, \texttt{java.lang.Float}, \texttt{double (primitive)}</td>
</tr>
<tr>
<td>\texttt{xs:double}</td>
<td>\texttt{double (primitive)}, \texttt{java.lang.Double}</td>
</tr>
<tr>
<td>\texttt{xs:decimal}</td>
<td>\texttt{float (primitive)}, \texttt{java.lang.Float}, \texttt{double (primitive)}, \texttt{java.lang.Double}</td>
</tr>
</tbody>
</table>

Subtypes of the XML Schema datatypes listed above (and which are used in XPath and XQuery) will also be converted to the Java type/s corresponding to that subtype's ancestor type.

In some cases, it might not be possible to select the correct Java method based on the supplied information. For example, consider the following case.

- The supplied argument is an \texttt{xs:untypedAtomic} value of 10 and it is intended for the method \texttt{mymethod(float)}.
- However, there is another method in the class which takes an argument of another datatype: \texttt{mymethod(double)}.
- Since the method names are the same and the supplied type (\texttt{xs:untypedAtomic}) could be converted correctly to either \texttt{float} or \texttt{double}, it is possible that \texttt{xs:untypedAtomic} is converted to \texttt{double} instead of \texttt{float}.
- Consequently the method selected will not be the required method and might not produce the expected result. To work around this, you can create a user-defined method with a different name and use this method.

Types that are not covered in the list above (for example \texttt{xs:date}) will not be converted and will generate an error. However, note that in some cases, it might be possible to create the required Java type by using a Java constructor.

9.2.2.1.7 Datatypes: Java to XPath/XQuery

When a Java method returns a value, the datatype of the value is a string, numeric or boolean type, then it is converted to the corresponding XPath/XQuery type. For example, Java's \texttt{java.lang.Boolean} and \texttt{boolean} datatypes are converted to \texttt{xsd:boolean}.

One-dimensional arrays returned by functions are expanded to a sequence. Multi-dimensional arrays will not be converted, and should therefore be wrapped.
When a wrapped Java object or a datatype other than string, numeric or boolean is returned, you can ensure conversion to the required XPath/XQuery type by first using a Java method (e.g. `toString`) to convert the Java object to a string. In XPath/XQuery, the string can be modified to fit the lexical representation of the required type and then converted to the required type (for example, by using the `cast as` expression).

### 9.2.2.2 .NET Extension Functions

If you are working on the .NET platform on a Windows machine, you can use extension functions written in any of the .NET languages (for example, C#). A .NET extension function can be used within an XPath or XQuery expression to invoke a constructor, property, or method (static or instance) within a .NET class.

A property of a .NET class is called using the syntax `get_PropertyName()`.

This section is organized into the following sub-sections:

- **.NET: Constructors**
- **.NET: Static Methods and Static Fields**
- **.NET: Instance Methods and Instance Fields**
- **Datatypes: XPath/XQuery to .NET**
- **Datatypes: .NET to XPath/XQuery**

#### Form of the extension function

The extension function in the XPath/XQuery expression must have the form `prefix:fname()`.

- The `prefix:` part is associated with a URI that identifies the .NET class being addressed.
- The `fname()` part identifies the constructor, property, or method (static or instance) within the .NET class, and supplies any argument/s, if required.
- The URI must begin with `clitype:` (which identifies the function as being a .NET extension function).
- The `prefix:fname()` form of the extension function can be used with system classes and with classes in a loaded assembly. However, if a class needs to be loaded, additional parameters containing the required information will have to be supplied.

#### Parameters

To load an assembly, the following parameters are used:

- `asm`: The name of the assembly to be loaded.
- `ver`: The version number (maximum of four integers separated by periods).
- `sn`: The key token of the assembly’s strong name (16 hex digits).
- `from`: A URI that gives the location of the assembly (DLL) to be loaded. If the URI is relative, it is relative to the XSLT or XQuery document. If this parameter is present, any other parameter is ignored.
- `partialname`: The partial name of the assembly. It is supplied to `Assembly.LoadWith.PartialName()`, which will attempt to load the assembly. If `partialname` is present, any other parameter is ignored.
The locale, for example, en-US. The default is neutral.

If the assembly is to be loaded from a DLL, use the from parameter and omit the sn parameter. If the assembly is to be loaded from the Global Assembly Cache (GAC), use the sn parameter and omit the from parameter.

A question mark must be inserted before the first parameter, and parameters must be separated by a semi-colon. The parameter name gives its value with an equals sign (see example below).

Examples of namespace declarations
An example of a namespace declaration in XSLT that identifies the system class System.Environment:

```xml
xmlns:myns="clitype:System.Environment"
```

An example of a namespace declaration in XSLT that identifies the class to be loaded as Trade.Forward.Scrip:

```xml
xmlns:myns="clitype:Trade.Forward.Scrip?asm=forward;version=10.6.2.1"
```

An example of a namespace declaration in XQuery that identifies the system class MyManagedDLL.testClass. Two cases are distinguished:

1. When the assembly is loaded from the GAC:
   ```xml
   declare namespace cs="clitype:MyManagedDLL.testClass?asm=MyManagedDLL;ver=1.2.3.4;loc=neutral;sn=b9f091b72dccfba8";
   ```

2. When the assembly is loaded from the DLL (complete and partial references below):
   ```xml
   declare namespace cs="clitype:MyManagedDLL.testClass?from=file:///C:/Altova Projects/extFunctions/MyManagedDLL.dll;
   declare namespace cs="clitype:MyManagedDLL.testClass?from=MyManagedDLL.dll;
   ```

XSLT example
Here is a complete XSLT example that calls functions in system class System.Math:

```xml
<xsl:stylesheet version="2.0" xmlns:xsl="http://www.w3.org/1999/XSL/Transform"
xmlns:xs="http://www.w3.org/2001/XMLSchema"
xmlns:fn="http://www.w3.org/2005/xpath-functions">
<xsl:output method="xml" omit-xml-declaration="yes" />
<xsl:template match="/">
  <math xmlns:math="clitype:System.Math">
    <sqrt><xsl:value-of select="math:Sqrt(9)" /></sqrt>
    <pi><xsl:value-of select="math:PI()" /></pi>
    <e><xsl:value-of select="math:E()" /></e>
    <pow><xsl:value-of select="math:Pow(math:PI(), math:E())" /></pow>
  </math>
</xsl:template>
</xsl:stylesheet>
```
The namespace declaration on the element `math` associates the prefix `math:` with the URI `clitype:System.Math`. The `clitype:` beginning of the URI indicates that what follows identifies either a system class or a loaded class. The `math:` prefix in the XPath expressions associates the extension functions with the URI (and, by extension, the class) `System.Math`. The extension functions identify methods in the class `System.Math` and supply arguments where required.

**XQuery example**

Here is an XQuery example fragment similar to the XSLT example above:

```xml
<math xmlns:math="clitype:System.Math">
  {math:Sqrt(9)}
</math>
```

As with the XSLT example above, the namespace declaration identifies the .NET class, in this case a system class. The XQuery expression identifies the method to be called and supplies the argument.

### 9.2.2.2.1 .NET: Constructors

An extension function can be used to call a .NET constructor. All constructors are called with the pseudo-function `new()`. If there is more than one constructor for a class, then the constructor that most closely matches the number of arguments supplied is selected. If no constructor is deemed to match the supplied argument/s, then a 'No constructor found' error is returned.

**Constructors that return XPath/XQuery datatypes**

If the result of a .NET constructor call can be [implicitly converted to XPath/XQuery datatypes](#), then the .NET extension function will return a sequence that is an XPath/XQuery datatype.

**Constructors that return .NET objects**

If the result of a .NET constructor call cannot be converted to a suitable XPath/XQuery datatype, then the constructor creates a wrapped .NET object with a type that is the name of the class returning that object. For example, if a constructor for the class `System.DateTime` is called (with `System.DateTime.new()`), then an object having a type `System.DateTime` is returned.

The lexical format of the returned object may not match the lexical format of a required XPath datatype. In such cases, the returned value would need to be: (i) converted to the lexical format of the required XPath datatype; and (ii) cast to the required XPath datatype.

There are three things that can be done with a .NET object created by a constructor:

- It can be used within a variable:

  ```xml
  <xsl:variable name="currentdate" select="date:new(2008, 4, 29)"
  xmlns:date="clitype:System.DateTime" />
  ```

- It can be passed to an extension function (see *Instance Method and Instance Fields*):

  ```xml
  <xsl:value-of select="date:ToString(date:new(2008, 4, 29))"
  xmlns:date="clitype:System.DateTime" />
  ```

- It can be converted to a string, number, or boolean:
9.2.2.2 .NET: Static Methods and Static Fields

A static method is called directly by its name and by supplying the arguments for the method. The name used in the call must exactly match a public static method in the class specified. If the method name and the number of arguments that were given in the function call matches more than one method in a class, then the types of the supplied arguments are evaluated for the best match. If a match cannot be found unambiguously, an error is reported.

Note: A field in a .NET class is considered to be a method without any argument. A property is called using the syntax get_PropertyName().

Examples

An XSLT example showing a call to a method with one argument (System.Math.Sin(arg)):
```xml
<xsl:value-of select="math:Sin(30)"
xmlns:math="clitype:System.Math"/>
```

An XSLT example showing a call to a field (considered a method with no argument) (System.Double.MaxValue()):
```xml
<xsl:value-of select="double:MaxValue()"
xmlns:double="clitype:System.Double"/>
```

An XSLT example showing a call to a property (syntax is get_PropertyName()) (System.String()):
```xml
<xsl:value-of select="string:get_Length('my string')"
xmlns:string="clitype:System.String"/>
```

An XQuery example showing a call to a method with one argument (System.Math.Sin(arg)):
```xml
<sin xmlns:math="clitype:System.Math">
  { math:Sin(30) }
</sin>
```

9.2.2.3 .NET: Instance Methods and Instance Fields

An instance method has a .NET object passed to it as the first argument of the method call. This .NET object typically would be created by using an extension function (for example a constructor call) or a stylesheet parameter/variable. An XSLT example of this kind would be:
```xml
<xsl:stylesheet version="2.0"
  xmlns:xsl="http://www.w3.org/1999/XSL/Transform"
  xmlns:xs="http://www.w3.org/2001/XMLSchema"
  xmlns:fn="http://www.w3.org/2005/xpath-functions">
  <xsl:output method="xml" omit-xml-declaration="yes"/>
  <xsl:template match="/"
    <xsl:variable name="releasedate"
      select="date:new(2008, 4, 29)"/>
```
In the example above, a `System.DateTime` constructor (`new(2008, 4, 29)`) is used to create a .NET object of type `System.DateTime`. This object is created twice, once as the value of the variable `releasedate`, a second time as the first and only argument of the `System.DateTime.ToString()` method. The instance method `System.DateTime.ToString()` is called twice, both times with the `System.DateTime` constructor (`new(2008, 4, 29)`) as its first and only argument. In one of these instances, the variable `releasedate` is used to get the .NET object.

### Instance methods and instance fields

The difference between an instance method and an instance field is theoretical. In an instance method, a .NET object is directly passed as an argument; in an instance field, a parameter or variable is passed instead—though the parameter or variable may itself contain a .NET object. For example, in the example above, the variable `releasedate` contains a .NET object, and it is this variable that is passed as the argument of `ToString()` in the second `date` element constructor. Therefore, the `ToString()` instance in the first `date` element is an instance method while the second is considered to be an instance field. The result produced in both instances, however, is the same.

### 9.2.2.2.4 Datatypes: XPath/XQuery to .NET

When a .NET extension function is used within an XPath/XQuery expression, the datatypes of the function's arguments are important for determining which one of multiple .NET methods having the same name is called.

In .NET, the following rules are followed:

- If there is more than one method with the same name in a class, then the methods available for selection are reduced to those that have the same number of arguments as the function call.
- The XPath/XQuery string, number, and boolean datatypes (see list below) are implicitly converted to a corresponding .NET datatype. If the supplied XPath/XQuery type can be converted to more than one .NET type (for example, `xs:integer`), then that .NET type is selected which is declared for the selected method. For example, if the .NET method being called is `fx(double)` and the supplied XPath/XQuery datatype is `xs:integer`, then `xs:integer` will be converted to .NET's `double` datatype.

The table below lists the implicit conversions of XPath/XQuery string, number, and boolean types to .NET datatypes.
<table>
<thead>
<tr>
<th>Datatype</th>
<th>.NET Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>xs:string</td>
<td>StringValue, string</td>
</tr>
<tr>
<td>xs:boolean</td>
<td>BooleanValue, bool</td>
</tr>
<tr>
<td>xs:integer</td>
<td>IntegerValue, decimal, long, integer, short, byte, double, float</td>
</tr>
<tr>
<td>xs:float</td>
<td>FloatValue, float, double</td>
</tr>
<tr>
<td>xs:double</td>
<td>DoubleValue, double</td>
</tr>
<tr>
<td>xs:decimal</td>
<td>DecimalValue, decimal, double, float</td>
</tr>
</tbody>
</table>

Subtypes of the XML Schema datatypes listed above (and which are used in XPath and XQuery) will also be converted to the .NET type/s corresponding to that subtype's ancestor type.

In some cases, it might not be possible to select the correct .NET method based on the supplied information. For example, consider the following case.

- The supplied argument is an `xs:untypedAtomic` value of 10 and it is intended for the method `mymethod(float)`.
- However, there is another method in the class which takes an argument of another datatype: `mymethod(double)`.
- Since the method names are the same and the supplied type (`xs:untypedAtomic`) could be converted correctly to either `float` or `double`, it is possible that `xs:untypedAtomic` is converted to `double` instead of `float`.
- Consequently the method selected will not be the required method and might not produce the expected result. To work around this, you can create a user-defined method with a different name and use this method.

Types that are not covered in the list above (for example `xs:date`) will not be converted and will generate an error.

### 9.2.2.2.5 Datatypes: .NET to XPath/XQuery

When a .NET method returns a value and the datatype of the value is a string, numeric or boolean type, then it is converted to the corresponding XPath/XQuery type. For example, .NET's `decimal` datatype is converted to `xsd:decimal`.

When a .NET object or a datatype other than string, numeric or boolean is returned, you can ensure conversion to the required XPath/XQuery type by first using a .NET method (for example `System.DateTime.ToString()`) to convert the .NET object to a string. In XPath/XQuery, the string can be modified to fit the lexical representation of the required type and then converted to the required type (for example, by using the `cast as` expression).
9.2.2.3 XBRL Functions for XSLT

Functions defined in the XBRL function registry can be called from within an XSLT context for transforming XBRL instance documents. These XBRL functions are defined in one of two namespaces:

- http://www.xbrl.org/2008/function/instance (usually used with the xfi: prefix)
- http://www.xbrl.org/2010/function/formula (usually used with the xff: prefix)

So the XBRL function `xfi:context`, for example, expands to http://www.xbrl.org/2008/function/instance:context (assuming this namespace has been bound to the xfi: prefix).

For a complete list of the functions, go to http://www.xbrl.org/functionregistry/functionregistry.xml.

9.2.2.4 MSXSL Scripts for XSLT

The `<msxsl:script>` element contains user-defined functions and variables that can be called from within XPath expressions in the XSLT stylesheet. The `<msxsl:script>` is a top-level element, that is, it must be a child element of `<xsl:stylesheet>` or `<xsl:transform>`.

The `<msxsl:script>` element must be in the namespace `urn:schemas-microsoft-com:xslt` (see example below).

Scripting language and namespace

The scripting language used within the block is specified in the `<msxsl:script>` element's `language` attribute and the namespace to be used for function calls from XPath expressions is identified with the `implements-prefix` attribute (see below).

```xml
<msxsl:script language="scripting-language" implements-prefix="user-namespace-prefix">
  function-1 or variable-1
  ...
  function-n or variable-n
</msxsl:script>
```

The `<msxsl:script>` element interacts with the Windows Scripting Runtime, so only languages that are installed on your machine may be used within the `<msxsl:script>` element. The .NET Framework 2.0 platform or higher must be installed for MSXSL scripts to be used. Consequently, the .NET scripting languages can be used within the `<msxsl:script>` element.

The `language` attribute accepts the same values as the `language` attribute on the HTML `<script>` element. If the `language` attribute is not specified, then Microsoft JScript is assumed as the default.

The `implements-prefix` attribute takes a value that is a prefix of a declared in-scope namespace. This namespace typically will be a user namespace that has been reserved for a function library. All functions and variables defined within the `<msxsl:script>` element will be in the namespace identified by the prefix specified...
in the `implements-prefix` attribute. When a function is called from within an XPath expression, the fully qualified function name must be in the same namespace as the function definition.

**Example**

Here is an example of a complete XSLT stylesheet that uses a function defined within a `<msxsl:script>` element.

```xml
<?xml version="1.0" encoding="UTF-8"?>
<xsl:stylesheet version="2.0" xmlns:xsl="http://www.w3.org/1999/XSL/Transform"
    xmlns:xs="http://www.w3.org/2001/XMLSchema"
    xmlns:fn="http://www.w3.org/2005/xpath-functions"
    xmlns:msxsl="urn:schemas-microsoft-com:xslt"
    xmlns:user="http://mycompany.com/mynamespace">

    <msxsl:script language="VBScript" implements-prefix="user">
        <![CDATA[
            ' Input: A currency value: the wholesale price
            ' Returns: The retail price: the input value plus 20% margin, rounded to the nearest cent
            dim a as integer  = 13
            Function AddMargin(WholesalePrice) as integer
                AddMargin = WholesalePrice * 1.2 + a
            End Function
        ]]>}
    </msxsl:script>

    <xsl:template match="/">
        <html>
            <body>
                <p>
                    <b>Total Retail Price =</b> $<xsl:value-of select="user:AddMargin(50)"/>
                </p>
                <br/>
                <b>Total Wholesale Price =</b> $<xsl:value-of select="50"/>
            </body>
        </html>
    </xsl:template>
</xsl:stylesheet>
```

**Datatypes**

The values of parameters passed into and out of the script block are limited to XPath datatypes. This restriction does not apply to data passed among functions and variables within the script block.
Assemblies
An assembly can be imported into the script by using the `msxsl:assembly` element. The assembly is identified via a name or a URI. The assembly is imported when the stylesheet is compiled. Here is a simple representation of how the `msxsl:assembly` element is to be used.

```xml
<msxsl:script>
  <msxsl:assembly name="myAssembly.assemblyName" />
  <msxsl:assembly href="pathToAssembly" />
  ...
</msxsl:script>
```

The assembly name can be a full name, such as:

"system.Math, Version=3.1.4500.1 Culture=neutral PublicKeyToken=a46b3f648229c514"

or a short name, such as "myAssembly.Draw".

Namespaces
Namespaces can be declared with the `msxsl:using` element. This enables assembly classes to be written in the script without their namespaces, thus saving you some tedious typing. Here is how the `msxsl:using` element is used so as to declare namespaces.

```xml
<msxsl:script>
  <msxsl:using namespace="myAssemblyNS.NamespaceName" />
  ...
</msxsl:script>
```

The value of the `namespace` attribute is the name of the namespace.
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