

webMethods EntireX

Release Notes

Version 10.1

October 2017

This document applies to webMethods EntireX Version 10.1 and all subsequent releases.

Specifications contained herein are subject to change and these changes will be reported in subsequent release notes or new editions.

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Increased Platform Support

EntireX now runs under Windows Server 2016. See [Platform Coverage](#) for full list of supported platforms.

COBOL Integration Enhancements

■ COBOL Server using Fixed-length Tables in Variable Manner

Support for COBOL server programs that process a variable number of array elements in a fixed-size COBOL table has been extended. This affects the *IDL Extractor for COBOL* together with the *RPC Server for CICS*, the *EntireX Adapter*, the *RPC Server for CICS ECI* and the *RPC Server for IMS Connect*.

In addition to the existing approach of using the COBOL interface length, which is transferred in a technical parameter (LL field in IMS Connect, FLENGTH CICS GET CONTAINER, etc. ...), the contents of a COBOL data item can now be used to calculate the current number of array elements. This COBOL data item can contain the message length, array length or the number of array elements directly.

For more information see *Set Arrays (Fixed <-> Unbounded)* for interface type DFHCOMMAREA (In same as Out, In different to Out) | Large Buffer (In same as Out, In different to Out) | Channel Container | IMS Connect | COBOL Converter (In same as Out, In different to Out).

■ Interface Type COBOL Converter

A new interface type *COBOL Converter* has been introduced in the *IDL Extractor for COBOL*. This interface type is used together with the COBOL Converter connection type of the *EntireX Adapter* to convert Integration Server data structures from/to a byte array representing COBOL binary data. See *Integration Server Wrapper* on how to generate adapter services for the COBOL Converter and *Converting IS Data Structures with the COBOL Converter* in the EntireX Adapter documentation for more information.

■ IBM i (AS/400) COBOL Extraction

COBOL computational data items extracted for AS/400 are mapped to IDL type P (packed decimal) instead of IDL type I (integer). See *COBOL Data Type to Software AG IDL Mapping*.

■ IBM Enterprise COBOL for z/OS Support

EntireX RPC client and server components now support IBM Enterprise COBOL for z/OS V6.1, in addition to the versions 4.2 and 5.1 supported in earlier versions of EntireX.

Command Central Enhancements

■ Installing EntireX using Command Central

EntireX can now also be installed using Command Central instead of the Software AG Installer. See *Installing EntireX using Command Central*.

■ Template-based Provisioning

EntireX now supports template-based provisioning with Command Central. Using templates within Command Central you can install EntireX and - at the same time - add instances such as EntireX Broker and multiple RPC servers on local and remote hosts. Sample templates are provided under *Template-based Provisioning* in the General Installation documentation.

■ Administering RPC Servers using Command Central

Multiple EntireX RPC servers can be administered using Command Central. See

- *Administering the EntireX RPC Server for C | .NET | IMS Connect | Java | IBM MQ | SOAP/XML using the Command Central GUI*

- *Administering the EntireX RPC Server for C | .NET | IMS Connect | Java | IBM MQ | SOAP/XML using the Command Central Command Line*

■ Administering EntireX Broker using Command Central

With this version the names of some parameters for configuring and administering EntireX Broker using the Command Central command line have changed. See *Administering EntireX Broker using the Command Central Command Line*.

Workbench Enhancements

■ Preferences

The structure of EntireX preference pages in the EntireX Workbench has been simplified. It is now more compact with the most commonly used target environments - COBOL, Integration Server, Natural, PL/I and Web Services - on the first level relative to **EntireX** preference page. From preference page **EntireX > Wrappers** you can navigate to all wrappers.

See newly designed preference pages for COBOL | Integration Server | Natural | PL/I | Web Services.

■ IDL Extractor for Integration Server and Integration Server Wrapper

When the Extractor or the Wizard either creates a new connection or updates an existing connection, both the list of connection types and connections are now filtered. Connection types that require a license are only shown if a corresponding license file is available. Reliable RPC connections are only shown if all IDL programs contain only IN parameters. Also, if a server mapping file is available, only those connection types that support the interface type specified in the server mapping file are shown.

■ CVM/SVM Handling

Client-side mapping files (CVM) are now default in the EntireX Workbench. As server-side mapping files (SVM) will be dropped in a future version, we strongly recommend using client-side mapping files. These are easier to use and do not require any deployment on your server. Support for CVM files for platforms z/VSE and BS2000 will be introduced in a future version.

EntireX RPC Server Enhancements

■ New RPC Server for AS/400

The new EntireX RPC Server for IBM® AS/400® enables you to remotely call server programs written in all ILE-based languages, for example C, COBOL, RPG.

This new RPC server replaces the existing RPC Server for IBM i of EntireX version 7.1.1 running under IBM i (AS/400), which will no longer be supported in the next version of EntireX.

■ RPC Server for CICS Abend Handling

As of version 10.1, the exit for the CICS RPC abend handling is no longer delivered in the LOAD module of the z/OS installation. The exit is assembled from the `CEEWUCHA` source delivered with the z/OS LE sample library `CEE.SCEESAMP`. The install job `EXPINSTA` delivered on `EXX1010.JOBS` has a step that assembles the `CEEWUCHA` exit.

■ User Exit for Additional HTTP Headers with RPC Server for XML/SOAP

A new user exit allows you to add HTTP headers before an RPC call, or to add an HTTP header to an optional retry call. See *User Exit to Set Additional HTTP Headers* under *Locating and Calling the Target Server* in the RPC Server for XML/SOAP documentation.

■ Configuration Parameter `entirex.server.verbose`

The configuration parameters `entirex.server.verbose` and `entirex.bridge.verbose` previously used by multiple servers and listeners are no longer available. Verbose logging is now enabled whenever the configuration parameter `entirex.trace` has a value greater than 0.

EntireX Adapter Enhancements

■ COBOL Server using Fixed-length Tables in Variable Manner

The *EntireX Adapter* - together with the *IDL Extractor for COBOL* - supports additional approaches of a COBOL server that process a variable number of array elements in a fixed-size COBOL table (array). See [Workbench Enhancements](#).

■ New Interface Type AS/400 Connection

The new interface type AS/400 connection enables you to remotely call server programs written in all ILE-based languages, for example C, COBOL, RPG. .

■ **Alternative Mapping of IDL Data Types to Integration Server Data Types**

IDL data types can now be mapped to non-string Integration Server data types. The main use case is to support JSON document types in Integration Server. See *Integration Server Data Types to IDL Mapping* in the EntireX Adapter documentation and *Mapping IDL Data Types to IS Data Types* in the Integration Server Wrapper documentation.

[Provided with Fix 1 for EntireX Adapter version 9.12]

■ **EntireX Adapter License File Handling**

The license file specified in the Adapter license administration is renamed by the Adapter to 'license.entirex.xml' and copied to the *IntegrationServer/instances/<instance_name>/config* directory. The name and location of this file can no longer be changed as in earlier EntireX Adapter versions. See *License Information* in the EntireX Adapter documentation.

Automatic Character Conversion

EntireX Broker has a reworked mechanism for character conversion. Incorrect configurations (e.g. RPC communication without character conversion configured) are detected. In these cases the configuration defined in the broker attribute file is not used and a warning message is written to the broker's log file. Adapt your broker attribute file to avoid the message. For details, see *Broker's Mechanism for Choosing the Character Conversion Approach* under *Introduction to Internationalization*.

The mechanism is active if the version of the RPC server component is the following (or later):

- EntireX RPC Server (z/OS CICS, z/OS Batch, z/OS IMS, Micro Focus, C, .NET) 9.10
- EntireX RPC Server (Java, CICS ECI, IMS Connect, XML/SOAP, RPC-ACI, IBM MQ) 9.9
- EntireX Adapter 9.9
- Natural RPC Server (Mainframe 8.2.7, Open Systems 8.4.1)

Microsoft Visual Studio 2017 Support

The C Wrapper and the DCOM Wrapper now support Microsoft Visual Studio 2017.

Documentation Enhancements

- The scenarios *Calling Integration Server from COBOL* and *Calling Integration Server from Natural* have been thoroughly reworked and expanded.

Other Changes and Enhancements

- **Unique Message ID**

With ACI version 11 and above, all messages sent to the broker are given a unique message ID. This message ID is useful for tracking individual messages in the trace and log files. See *Unique Message ID* under *Broker ACI Functions* in the EntireX Broker ACI Programming documentation.



Note: `PSTORE-VERSION=5` is required to save and restore message IDs of persistent data.

- **Postpone Units of Work**

Service-specific attributes `POSTPONE-ATTEMPTS` and `POSTPONE-DELAY` have been added to postpone processing of UOWs that have been cancelled by the receiver. The UOWs are moved to the postpone queue instead of being deleted. See *Postponing Units of Work* under *Using Persistence and Units of Work* in the Platform-independent Administration documentation.

- **New SSL Port Default for Broker Administration Service**

The default SSL port for the Broker Administration Service has changed from 57708 to 57808. See *Overview of Executables and Port Numbers* and *Configuring the Administration Service* in the UNIX and Windows Administration documentation.

- **Support of 64-bit Time Values on z/OS**

Broker attribute `PSTORE-VERSION` now has a new version 5 to support 64-bit time values on z/OS. See `PSTORE-VERSION`.

- **Improved Adabas PSTORE Handling**

Adabas persistent store handling has been enhanced on all platforms. The new `PSTORE` version 5 offers significant improvement in performance. See `PSTORE-VERSION`. We strongly recommend you use this version.

- **CIS Version 10**

The new object `UOW-STATISTICS` supplies important information on units of work per service.

The CIS command `SET-UOW-STATUS` has been added to control postponed units of work.

- **Consistent Handling of Duplicates in Broker Attribute File**

With this release, additional checks are performed on service-specific attributes in the broker attribute file. Duplicate entries are now detected and error message 00210035 is given. This applies to the default definitions and the individual definitions in all `DEFAULTS=SERVICES` sections. This behavior is now consistent for all sections of the attribute file.

■ License File Handling

Under UNIX and Windows, the license file specified during installation is renamed by the Software AG Installer to "license.xml" and copied to the *EntireX/config* directory. The name and location of this file can no longer be changed as in earlier EntireX versions. See also *EntireX Adapter Enhancements*.

■ Enhancement to the Broker Agent

You can now specify the address of the network interface on which the Broker Agent will listen. See *Using the Broker SSL Agent* under UNIX | Windows and *Using the TCP Agent* under UNIX | Windows.

■ Java API Class BrokerService

The obsolete methods `getEnvironment()`, `setEnvironment(String)`, `useCodePage()` and `useCodePage(Boolean)` of the Java class `BrokerService` have been deprecated. They will be removed with the next version of EntireX.

■ SSL/TLS Hostname Verification in Java Components

For all Java-based components that act as an SSL client, the hostname verification has been changed to conform to the RFC 2818 standard. If the server certificate contains a `subjectAltName` extension of type `dnsName`, this name is now used as the identity. Otherwise, the `Common Name` field in the `Subject` field of the certificate is used. If only the `Common Name` field should be used as before, the SSL parameter `ignore_rfc_2818=yes` must be set in the Broker ID.

■ Broker Installation Verification

The broker verification programs `bcoc` (client) and `bcos` (server) are delivered in executable form (binary, load module) only. For more information see *Sample Programs for Client (bcoc) and Server (bcos)* in the z/OS | UNIX | Windows installation documentation.

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Increased Platform Support

EntireX now also supports the following additional platform:

- AIX 7.2

Installation Changes

Under z/OS, the broker stub executables are distributed prelinked with unresolved references to z/OS components. To resolve these external references, relink them in your environment. See *Step 3: Install the Broker Stubs and Bind the Broker Stub Executables* in the z/OS installation documentation.

Workbench Enhancements

Enhanced COBOL MPO Support

The COBOL Mapping Editor of the IDL Extractor for COBOL - together with the EntireX Adapter or EntireX RPC servers - supports the COBOL MPO feature (multiple possible output). In previous EntireX versions, for MPO groups based on a `REDEFINE` declaration, the MPO selector definition had to be placed before the MPO group in a COBOL server program. Now the MPO selector definition can be anywhere in the `DATA DIVISION` of the COBOL source: before, inside or after the MPO group.

IMS MPP Message Interface (IMS Connect): You can now determine the position of an MPO selector using a fixed offset starting from the end of the message. You can also use an offset from the beginning of the message as in earlier versions.

For more information and an example of a COBOL server using the `DFHCOMMAREA` calling convention (the most commonly used interface type), see *Set Multiple Possible Output (MPO) Structures*. For other interface types, see *COBOL Mapping Editor*.

IDL Extractor for Natural Supports Arabic Shaping and Multibyte Character Sets

The IDL Extractor for Natural supports Arabic shaping as well as multibyte character sets. For those scenarios you need the correct setup in the EntireX Workbench, Natural RPC Server and EntireX Broker.

Example for arabic shaping:

- Natural RPC Server used for extraction is set up with the Arabic codepage `CRPC=IBM-420`.
- EntireX Workbench is set up with Arabic encoding: `file.encoding=windows-1256`.
- ICU conversion for RPC is used in the broker: `CONVERSION=SAGTRPC`. See also *Configuring ICU Conversion* under *Configuring Broker for Internationalization* in the platform-specific Administration documentation.

Prerequisites for Natural RPC Server:

- z/OS: Fix 02 (cumulative) for Natural Mainframe 8.2.6 or above.
- UNIX and Windows: Natural 8.3.8 or above.

Alternative Mapping of IDL Data Types to Integration Server Data Types

IDL data types can now be mapped to non-String Integration Server data types. See *Using the Integration Server Wrapper*.

[Provided with Fix 1 for EntireX Adapter version 9.12, requires Fix 1 of EntireX Workbench 9.12]

Brainstorm Ideas

Brainstorm is a one-stop portal for all Software AG customers to submit feature requests, vote on ideas that have been posted by other customers and get your voice heard. All product categories are moderated by product managers, and ideas get responded to and updated on a regular basis. The number in square brackets is the Brainstorm ID.

- Date and Time support for EntireX Adapter [02848]. The EntireX Adapter now supports user-defined formats for mapping the IDL data types Date and Time. See *Software AG IDL to Integration Server Mapping* in the Integration Server Wrapper documentation.
- Trace Utility enhancement [03277]. The EntireX Trace Utility has been enhanced: a date field has been added to the generated CSV file. See *Output Field Options* in the UNIX and Windows Administration documentation.

Command Central

Increased Scope

EntireX supports Command Central for EntireX Broker instances running under UNIX or Windows. This support has been enhanced. You can now perform the following operations on EntireX Broker in addition to the operations supported in EntireX version 9.10:

- Display Services
- Stop Service
- Display Server Instances of a Service
- Stop Server Instance
- Create new EntireX Brokers
- Delete existing EntireX Brokers

See *Administering EntireX Components with Command Central* for full list of operations supported by EntireX. General information for all supported products is provided in the separate Command Central documentation and the Command Central Online Help.

Command-line Mode

When using the Command Central command line to get information from or administer EntireX, the data representation for input and output of some commands has changed. See *Administering EntireX Broker using the Command Central Command Line*. General information for all supported products is provided in the separate Command Central documentation and Command Central Online Help.

Authorization Rules

Authorization rules for UNIX and Windows are no longer managed with System Management Hub. Instead, rules can be stored in an LDAP repository (as in earlier versions of EntireX) or in a new section of the Broker attribute file, `DEFAULTS=AUTHORIZATION-RULES`. See *Authorization Rules*.

EntireX RPC Server Enhancements

■ COBOL MPO Support

The COBOL RPC Server (CICS | Batch | IMS BMP | Micro Focus | CICS ECI | IMS Connect) - together with the IDL Extractor for COBOL - provides enhanced support of the COBOL MPO feature (multiple possible output). For details see [Workbench Enhancements](#).

EntireX Adapter Enhancements

■ User-defined Date and Time Formats

The EntireX Adapter now supports user-defined formats for mapping the IDL data types Date and Time. See *Software AG IDL to Integration Server Mapping*.

■ Mixed-case Passwords for CICS ECI Connections

You can now use mixed-case passwords for CICS ECI connections in EntireX Adapter. See *Connection Parameters for CICS ECI Connections*.

■ COBOL MPO Support

The EntireX Adapter - together with the IDL Extractor for COBOL - provides enhanced support of the COBOL MPO feature (multiple possible output). For details see *Workbench Enhancements* under *What was New in Version 9.12 in the EntireX Release Notes*.

■ Significant Change to Mapping of MPO Groups to IS Structures

The mapping of MPO groups to Integration Server data structures and to the signature has been changed with this version to simplify the usage of the MPO construct in the Integration Server.

Previously the alternatives of an MPO group (groups in the IDL file with the attribute `CHOICE`) were mapped to arrays with either zero array elements (unselected alternative) or one array element (selected alternative). This has been changed such that arrays are no longer used. Unselected alternatives are suppressed and thus not visible in the output pipeline. The selected alternative is directly represented in the output pipeline without the enclosing array.

However, this enhancement means the new output signature is not compatible with existing Adapter services. This also affects the runtime behavior. If you use MPO groups, regenerate these Adapter services from the Designer and adapt the services that are using the new Adapter service to the changed output signature.



Note: This change does not apply to the RPC Connection types if the server mapping data is created as an SVM file.

[Provided with Fix 3 for EntireX version 9.9 and Fix 2 of EntireX version 9.10]

■ **Alternative Mapping of IDL Data Types to Integration Server Data Types**

IDL data types can now be mapped to non-String Integration Server data types. The main use case is to support JSON document types in Integration Server. See *Integration Server Data Types to IDL Mapping* in the EntireX Adapter documentation and *Mapping IDL Data Types to IS Data Types* in the Integration Server Wrapper documentation.

[Provided with Fix 1 for EntireX Adapter version 9.12, requires Fix 1 of EntireX Workbench 9.12]

Documentation Enhancements

■ **Command Central**

The separate Command Central documentation has been reorganized; product-specific information is now provided with the product itself. See *Administering EntireX Components with Command Central* in this documentation set. The command-line documentation has been enhanced, and a new section describing the graphical user interface is provided.

■ **RPC Server Enhancements**

- New separate sections have been added for *RPC Server for C*, *RPC Server for .NET*.
- Documentation of the *RPC Server for Java*, *RPC Server for XML/SOAP* and *Listener for XML/SOAP* has been moved from the Administration documentation to separate sections.
- Documentation of the *EntireX RPC Server for IBM® MQ* and *EntireX Listener for IBM® MQ* has been separated into two new sections.
- All RPC server sections have been enhanced and streamlined.

■ **Extracting a Natural Server**

A new example has been added to the IDL Extractor for Natural documentation. See *Extracting a Natural Server with User-defined Mapping*. This example is also used in the Scenario *Calling Natural from Integration Server*.

■ **Application Monitoring MashApp**

As in earlier versions, a sample Application Monitoring MashApp is provided in Empower under **Products & Documentation > Download Components > EntireX - Application Monitoring MashApp**. This MashApp is no longer described in the main EntireX documentation. Separate documentation (PDF) and a readme file are also provided for download from Empower.

■ **IDL Extractor Messages**

IDL Extractor messages have been reworked. See error classes 2005 (generic), 2006 (COBOL), and 2007 (PL/I) in the Error Messages and Codes documentation.

Other Changes and Enhancements

■ **Broker Attribute File Validation**

The validation of the broker attribute file has been thoroughly reworked. Inconsistent definitions may result in an unexpected error when you start your broker. The individual attributes are described in detail under *Broker Attributes*.

■ **Microsoft Visual Studio**

The following EntireX components support Microsoft Visual Studio version 2015:

- C Wrapper
- DCOM Wrapper
- Microsoft Visual Studio Wizard for EntireX .NET Wrapper

Older versions of Microsoft Visual Studio (2010, 2012 or 2013) are no longer supported.

■ **Terminology Changes**

IBM's WebSphere MQ is now called "IBM® MQ". To reflect this rebranding, the following EntireX components have also been renamed:

- webSphere MQ RPC Server is now called "EntireX RPC Server for IBM® MQ"
- webSphere MQ RPC Listener is now called "EntireX Listener for IBM® MQ"

■ **Listener for XML/SOAP and High Availability**

The Listener for XML/SOAP now supports persistent sockets, socket reconnect and security handling. This means it can now be used in high-availability scenarios where the EntireX Broker is load-balanced. See *Matrix of Supported Features* under *Introduction to High Availability*.

■ **ICU Custom Conversion under z/OS**

Custom conversion using ICU is now available under z/OS in addition to the support already provided under UNIX and Windows. See *Installing the EntireX ICU Custom Converter Build Environment under z/OS UNIX* in the z/OS Installation documentation and *Building and Installing ICU Custom Converters* in the z/OS Administration documentation.

■ **DIV Persistent Store Parameter Handling**

Defining a DIV persistent store has been streamlined. New broker attributes have been introduced to replace format parameters. See *DIV-specific Attributes* under *Broker Attributes* in the platform-independent administration documentation.

■ **COBOL RPC Client and Server**

The sources generated by the EntireX Workbench component COBOL Wrapper can be compiled by any compiler supported by the COBOL Wrapper: standard COBOL compiler, for example IBM Enterprise COBOL for z/OS 4.2, 5.1 or 6.1.

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Increased Platform Support

EntireX now also supports the following additional platforms:

- z/OS version 2.2.
- Windows 10 Professional and Enterprise 64-bit editions.

Installation Packages

Installation packages have been streamlined and restructured:

- EntireX Broker can now stay running while runtime updates outside EntireX Broker are made.
- Administration and Monitoring functionality has been clearly separated from the runtime parts.
- The EntireX Mini Runtime is now a separate installation package that is compatible with the Software AG Installer. Files are installed in the standard EntireX directory. If you need the EntireX Mini Runtime with your application, you may have to extend the path variable before starting your application. See *EntireX Mini Runtime Considerations*. No other post-installation steps are required.
- Examples have been reworked and streamlined.

See the *Using the Software AG Installer* under <http://documentation.softwareag.com> > *Software AG Installer and Update Manager* and the respective EntireX documentation sections for z/OS | UNIX | Windows | BS2000 | z/VSE.

Workbench Enhancements

■ COBOL Mapping Editor

COBOL program ID and Channel name can now be modified after extraction, using the COBOL Mapping Editor. This means you can make adjustments to your COBOL interface without having to perform a new extraction.

See the new toolbar icon **Show dialog to modify COBOL Source Characteristics** under *COBOL Source View*, for example for interface type CICS with Channel Container Calling Convention.

■ New Eclipse Version

EntireX now uses Eclipse version 4.5.

EntireX Adapter Enhancements

A new connection type “COBOL Converter” has been introduced. Adapter services for this connection type can be used to convert Integration Server data structures from/to a byte array representing the COBOL binary data. See *Converting IS Data Structures with the COBOL Converter* for more information.

Command Central

EntireX supports Command Central for EntireX Broker instances running under UNIX or Windows. This support has been enhanced. You can now perform the following operations on EntireX Broker in addition to the operations supported in EntireX version 9.9:

- Configure Application Monitoring
- Configure EntireX Broker Persistent Store
- Configure EntireX Broker Security
- Enable and specify EntireX Broker Trace Level dynamically

See *Administering EntireX Components with Command Central* for full list of operations supported by EntireX. General information is provided in the separate Command Central documentation and the Command Central Online Help.

Brainstorm Ideas

Brainstorm is a one-stop portal for all Software AG customers to submit feature requests, vote on ideas that have been posted by other customers and get your voice heard. All product categories are moderated by product managers, and ideas get responded to and updated on a regular basis. The number in square brackets is the Brainstorm ID.

The CPU time can now also be shown in the Software AG product Optimize for Infrastructure. See the separate Optimize for Infrastructure documentation under <http://documentation.software-ag.com> > *webMethods Product Suite* > *Documentation by Product*.

- New KPIs for CPU time [02757]. These are available with the Command and Information Services interface. See [New CIS Interface Version 9](#) below.

New CIS Interface Version 9

Three new KPIs are provided by CIS Interface Version 9 for Information Reply Structure BROKER-OBJECT:

- Amount of CPU time in seconds used by Broker process since Broker start.
- Additional amount of CPU time in microseconds used by Broker process since Broker start.
- CPU time consumed by Broker process in relation to total CPU workload in percent.

See *ACI Fields CPU-USED-** under *Broker CIS Data Structures* in the ACI Programming documentation.

.NET Wrapper Wizard for Microsoft Visual Studio

The EntireX .NET Wrapper Wizard now supports Microsoft Visual Studio version 2012 and 2013 in addition to version 2010 already supported.



Note: With the next version of EntireX, the .NET Wrapper Wizard will support Visual Studio version 2015; older versions (2010, 2012 and 2013) will no longer be supported. See [Features to be Dropped in Future Versions](#).

Documentation Enhancements

■ Web Services Stack

Multiple sections of the EntireX documentation reference the separate Web Services Stack documentation. Since webMethods Suite 9.8, this documentation is part of the *Software AG Infrastructure Administrator's Guide*, also available under <http://documentation.softwareag.com> > *Guides for Tools Shared by Software AG Products*.

Other Changes and Enhancements

■ Publish and Subscribe

The EntireX Broker communication model Publish and Subscribe is no longer supported. You therefore need to remove the broker attribute PUBLISH-AND-SUBSCRIBE from your broker attribute file, otherwise error ETBE0023 Unknown attribute PUBLISH-AND-SUBSCRIBE is returned.

■ EntireX built with Visual Studio 2015

This version of EntireX was built with Microsoft Visual Studio 2015. When you install EntireX components, the necessary Microsoft Redistributable Files are also installed.

■ COBOL Wrapper

The generic RPC service modules for the following interface types need to be generated with the *EntireX Workbench*:

- COBSRVID for CICS with standard linkage calling convention
- COBSRVIB for Batch with standard linkage calling convention

This is described under *Generate Generic RPC Service Module COBSRVI* in the COBOL Wrapper documentation. The modules are no longer part of the *Delivered Modules for z/OS* of the COBOL Wrapper. This ensures you always have a generic RPC service module COBSRVI with the latest updates (the EntireX Workbench is updated much more frequently than the z/OS installation).

4 What was New in Version 9.9

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Workbench Enhancements

■ DCOM Wrapper

The DCOM Wrapper now supports Microsoft Visual Studio 2012 and 2013 in addition to the already supported Visual Studio versions.

■ Integration Server Wrapper

The wrapper no longer creates the `<IDL>_IS.properties` file. Existing property files are ignored.

■ Enhanced Null Value Suppression

A new button in the XML Mapping Editor **Overview Page** enables you to set the current null value suppression settings to all mappings. See *Overview Page* under *Using the XML Mapping Editor*.

[Provided with fix for EntireX version 9.7.]

■ COBOL MPO Support

The IDL Extractor for COBOL - together with the EntireX Adapter or EntireX RPC Servers - supports the concept of multiple possible output (MPO). This means that the output structure returned is decided by the COBOL server at runtime; the COBOL layout on output varies. For examples of such a COBOL server using the DFHCOMMAREA calling convention (the most commonly used interface type), see *Set Multiple Possible Output (MPO) Structures*. For other interface types, see *COBOL Mapping Editor*.

■ COBOL Server Using Fixed-length Table in Variable Manner

The IDL Extractor for COBOL - together with the RPC Server for CICS, the EntireX Adapter with IMS Connect connections, or the RPC Server for IMS Connect - supports COBOL server programs that use the data length of their interface to process a variable number of array elements in a fixed-size COBOL table.



Note: COBOL server programs use either the same data structure on input and output, or overlay the input data structure with a different output data structure. See *COBOL Mapping Editor*.

[Provided with fix for EntireX version 9.7.]

Increased Platform Support

EntireX and EntireX Adapter 9.9 now run under SUSE Linux Enterprise Server for x86-64 (64-bit) version 12 in addition to version 11.

Support of Java 8

- [Java Wrapper](#)
- [IDL Extractor for WSDL](#)

[Provided with fix for EntireX version 9.7.]

Java Wrapper

When generating Java RPC clients (Bean-compliant) with the Java Wrapper, the name generation rules have changed slightly to ensure greater consistency. This means a name used for more than one IDL group parameter with different content is always changed. See example below.

Sample IDL file:

```
LIBRARY 'example' is
  PROGRAM 'progA' is
    DEFINE DATA PARAMETER
      1 groupparm IN
      2 parm (A10)
    END-DEFINE

  PROGRAM 'progB' is
    DEFINE DATA PARAMETER
      1 groupparm OUT
      2 parm (I4)
    END-DEFINE
```

Generated Java sources with new generation rules:

- Example.java
- Progagroupparm.java
- Probgroupparm.java

Generated Java sources with old generation rules:

- | | | |
|----------------------|----|-----------------------|
| ■ Example.java | or | ■ Example.java |
| ■ Groupparm.java | | ■ Groupparm.java |
| ■ Probgroupparm.java | | ■ Progagroupparm.java |

➤ **To migrate an application that needs to be regenerated**

- If you have to migrate an application that needs to be regenerated because of a change to the IDL file, figure out the affected class name and rename the generated Java class to the old name

Or:

Adapt your application to the new name.

IDL Extractor for WSDL

Prefix name assigning has been enhanced to ensure consistent generation of XML mapping files. If more than one prefix is associated with a URL, the last prefix (in alphabetical order) is used. For example, the WSDL contains following namespace definition:

```
xml:sampleNamespace="http://sample.org"
```

and

```
xml:anotherNamespace="http://sample.org"
```

In this case, prefix `sampleNamespace` is used (comes after `anotherNamespace` in alphabetical order).

This has no influence on the namespace used in the XML/SOAP document. If your application has such a case and the receiving web service expects a specific prefix name (because it does not check the namespace), open the XML Mapping Editor and change the prefix on affected elements and attributes.

Encryption

For encrypted transport, instead of using the encryption/decryption mechanism provided by EntireX Security, we strongly recommend using the Secure Sockets Layer/Transport Layer Security protocol. See *SSL/TLS and Certificates with EntireX*.

SSL/TLS using AT-TLS on z/OS and ATLS on z/VSE

ATLS support has been added to EntireX version 9.6.0 for z/VSE. Prerequisites:

- EntireX Broker 9.6.0 for z/VSE
- EntireX Fix 11 for z/VSE
- BSI stack 256pre13 or newer

Various documentation sections dealing with SSL/TLS support have been reworked:

- for platform z/OS, sections have been added to set up AT-TLS (Application Transparent Transport Layer Security)
- for platform z/VSE, sections have been added to set up ATLS (Automatic Transport Layer Security)

For more information see

- **Certificates**
See *SSL/TLS and Certificates with EntireX*.
- **Broker**
See *Running Broker with SSL/TLS Transport* in the platform-specific Administration documentation (new).
- **RPC Clients**
See *Using SSL/TLS (C | COBOL | Java | PL/I)* of the wrapper in use.
- **RPC Servers**
See *Using SSL/TLS with the RPC Server* in the platform-specific administration or RPC server documentation (new).
- **ACI Clients and Servers**
See *Using the Broker ACI with SSL/TLS (Assembler | C | COBOL | Java | PL/I)* of the programming language in use.

Command Central

With the Software AG's Command Central you can configure, manage, and administer one or more installations of the webMethods product suite in your enterprise. EntireX supports Command Central for EntireX Broker instances running on Linux, UNIX or Windows. They must have been created with version EntireX 9.9 by

- System Management Hub (SMH)
- Command Central (CC)

- command line (SMH, CC, or Broker command-line utility `etbsrv`)

You can start, stop and configure EntireX Broker instances from a single location, using the Command Central user interface or from a command line. Basic monitoring KPIs for EntireX Broker instances can be seen from the UI.

Software AG Command Central Help is available as a PDF guide on the Empower website/Tech-Communities, and as online HTML help that you access from the product (**Administrator > Help** in the Command Central user interface).

EntireX Adapter Enhancements

■ Listeners Information

A new information screen provides statistics about the listeners of the EntireX Adapter. See *Listeners Information* in the EntireX Adapter documentation.

■ License Handling

License handling for EntireX Broker connections now better reflects the EntireX pricing model:

- A license status line has been introduced for EntireX Broker connections (ACI connections or normal RPC connections).
- A warning message is given in the case of a possible license coverage mismatch.

See *License Information*.

■ COBOL MPO Support

The EntireX Adapter - together with the IDL Extractor for COBOL - supports the concept of multiple possible output (MPO). See *Workbench Enhancements*.

■ COBOL Server Using Fixed-length Table in Variable Manner

The EntireX Adapter with IMS Connect connections - together with the IDL Extractor for COBOL - supports the concept of a COBOL server using data length to process a variable number of array elements. See *Workbench Enhancements*.

■ Services for Creating Document Types, Flows and IDL Files

Built-in services are available in the `WmEntireX` package that can be used to create document types, flows and IDL files from EntireX Adapter objects and/or IDL files. See *Built-in Services for Creating Document Types, Flows and IDL Files*

■ New Namespace of Service `putDocDataToPipeline`

The namespace of this service changed from `com.softwareag.entirex.wmadapter.Deployment` to `pub.wmentirex.listener`. The service is still available using the old namespace. For a description of its usage see *Remarks on Reliable RPC Listener Connections*.

- **New Advanced SSL/TLS Services for Direct RPC**
New services are available to change the enabled TLS protocols and cipher suites. See *Built-in Services for Direct RPC*.
- **EntireX Adapter Service** `pub.wmentirex.listener.generateIDLfromService`
The meaning of the parameter `fileName` has changed, see *Using the Service* `pub.wmentirex.listener.generateIDLfromService`.

EntireX RPC Server Enhancements

- **COBOL MPO Support**
The COBOL RPC Server (CICS | Batch | IMS BMP | Micro Focus | CICS ECI | IMS Connect) - together with the IDL Extractor for COBOL - supports the concept of multiple possible output (MPO). See *Workbench Enhancements*.
- **COBOL Server Using Fixed-length Table in Variable Manner**
The *RPC Server for CICS* - together with the IDL Extractor for COBOL - supports the concept of a COBOL server using data length to process a variable number of array elements. See *Workbench Enhancements*.
- **RPC Server for CICS User Exit**
The CICS RPC user exit COBUEx02 provides the maximum expected length of output data (reply) before calling the target CICS program. See fields CHAIN-COUNTER-OUT and CHAIN-POINTER-OUT of the user exit API under *User Exit COBUEx02*.

[Provided with fix for EntireX version 9.7.]

Brainstorm Ideas

Brainstorm is a one-stop portal for all Software AG customers to submit feature requests, vote on ideas that have been posted by other customers and get your voice heard. All product categories are moderated by product managers, and ideas get responded to and updated on a regular basis. The number in square brackets is the Brainstorm ID.

- Application Monitoring Data Collector [2280]. See *Application Monitoring Data Collector* below.
- Monitoring Scripts Enhancement [2227]. See *Logging Exit for EntireX Scripting Commands* below.
- EntireX Adapter Listeners Information [2394]. See *EntireX Adapter Enhancements* above.
- Preview of date/dateTime patterns in XML Mapping Editor [00396]. See *Preview of Date/Date-Time Pattern in XML Mapping Editor* below.

Documentation Enhancements

■ EntireX Adapter

Documentation for EntireX Adapter is now incorporated in the EntireX documentation for ease of use. See *EntireX Adapter*.

■ AT-TLS Application Transparent Transport Layer Security

Various sections dealing with SSL/TLS support have been reworked. See [SSL/TLS using AT-TLS on z/OS and ATLS on z/VSE](#) above.

■ IDL Extractor for COBOL

Relevant IDL interface mapping functions are now documented for each interface type. See for example *Mapping Editor IDL Interface Mapping Functions* under *CICS with DFHCOMMAREA Calling Convention - In same as Out* in the IDL Extractor for COBOL documentation. Examples have been enhanced.

■ COBOL Wrapper

Setting the Natural library when communicating with a non-secure Natural RPC Server is now documented. See *Using the COBOL Wrapper with Non-secure Natural RPC Server*.

Other Changes and Enhancements

- [Compatibility with webMethods Suite Naming Conventions](#)
- [Running the RPC Server for XML/SOAP in the Software AG Runtime](#)
- [Optimized Trace File Handling](#)
- [Application Monitoring Data Collector](#)
- [Logging Exit for EntireX Scripting Commands](#)
- [EntireX Mini Runtime](#)
- [Set Application Name with .NET Wrapper](#)
- [OpenSSL Support](#)
- [Preview of Date/DateTime Pattern in XML Mapping Editor](#)
- [Enhanced Error Messages](#)

Compatibility with webMethods Suite Naming Conventions

The name of the UNIX start/stop script for the EntireX Broker Administration Service has changed to comply with webMethods suite naming conventions:

where <n> is a sequential, installation-dependent number and

99 is the EntireX version (major and minor version number)

- in directory *etc/init.d*: from `sag<n>etbsrv` to `sag<n>exx99`

- in directory *EntireX/bin*: from `sag<n>etbsrv` to `sagexx`

See *Startup Daemon 'etbsrv'* under *Post-installation Steps under UNIX*

Running the RPC Server for XML/SOAP in the Software AG Runtime

After installation, the default RPC Server for XML/SOAP using Broker "localhost:1971" and server address "RPC/XMLSERVER/CALLNAT" is no longer started automatically. See *Running the RPC Server for XML/SOAP in the Software AG Runtime*.

Optimized Trace File Handling

Trace file handling has been enhanced to avoid a constantly growing ETB.LOG file. The trace is written to file ETB.LOG until `TRACE-FILE-SIZE` has been reached and a new file is opened. The number of files defined in `MAX-TRACE-FILES` is kept in addition to the current ETB.LOG file. See *Trace File Handling* in the UNIX and Windows Administration documentation and also `MAX-TRACE-FILES` and `TRACE-FILE-SIZE` under *Broker Attributes*.

Application Monitoring Data Collector

The Application Monitoring Data Collector has been enhanced to provide a callback functionality for the processing of incoming events. See *Callback User Exit*.

Logging Exit for EntireX Scripting Commands

Since version 9.7, EntireX has provided a set of command-line scripts with which, for example, you can monitor your environment and check that all components (broker, RPC servers) are up and running. See *Monitoring EntireX with Command-line Scripts*. With this version, an optional logging exit is provided. This is called every time a component in the environment is checked; results can be written to a CSV file. You can use the sample script `log_environment.bat` as a template. See *Logging Exit* under *Monitoring your Environment*.

EntireX Mini Runtime

The functionality provided by the *EntireX Mini Runtime* of EntireX version 9.7 and below is now delivered as a separate component under **Infrastructure > Libraries > EntireX Libraries** in the Software AG Installer. See Software AG documentation *Installing webMethods and Intelligent Business Operations Products*. After installation you will find the files at the following locations:

UNIX `<inst_root>/common/EntireX/lib`

Windows 32-bit `<inst_root>\common\EntireX\exx_32\bin`

Windows 64-bit `<inst_root>\common\EntireX\exx_32\bin` (for the 32-bit versions) and
`<inst_root>\common\EntireX\exx_64\bin` (for the 64-bit versions)

Set Application Name with .NET Wrapper

For accounting purposes, a new property `ApplicationName` has been introduced for the .NET Wrapper. Set this property before calling one of the Logon methods if you want to replace the default application name. See `ApplicationName` under class `Broker` in the .NET Wrapper documentation.

[Provided with fix for EntireX version 9.7.]

OpenSSL Support

The OpenSSL Project has announced it will no longer support version 0.9.8 from December 31, 2015. EntireX now supports OpenSSL version 1.0.1. The default configuration is now:

```
CIPHER-SUITE=FIPS+kRSA:!ADH:!NULL:!EXP:!DES:!MD5:!PSK:!RC4:@STRENGTH
```

See SSL-specific broker attribute `CIPHER-SUITE`.

[Provided with fix for EntireX version 9.7.]

Preview of Date/DateTime Pattern in XML Mapping Editor

The Preferences page of the XML Mapping Editor now shows a preview for date and dateTime patterns entered. See *Defining the XML Encoding* and *Time Pattern*.

Enhanced Error Messages

Multiple error messages have been enhanced. See in particular *Message Class 2001 - Software AG IDL Parser*.

5 What was New in Version 9.7

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Installation to C:\Program Files

Under Windows, Software AG Designer and plugins can now be installed to directory C:\Program Files.

Increased Platform Support

Red Hat Enterprise Linux AS 7 is now supported on 64-bit operating systems.

Support of Java 8

- [Java Wrapper](#)
- [IDL Extractor for WSDL](#)

[Provided with fix for EntireX version 9.7.]

Java Wrapper

When generating Java RPC clients (Bean-compliant) with the Java Wrapper, the name generation rules have changed slightly to ensure greater consistency. This means a name used for more than one IDL group parameter with different content is always changed. See example below.

Sample IDL file:

```
LIBRARY 'example' is
  PROGRAM 'progA' is
    DEFINE DATA PARAMETER
      1 groupparm IN
      2 parm (A10)
    END-DEFINE

  PROGRAM 'progB' is
    DEFINE DATA PARAMETER
      1 groupparm OUT
      2 parm (I4)
    END-DEFINE
```

Generated Java sources with new generation rules:

- Example.java
- Progagroupparm.java

- Progbgroupparm.java

Generated Java sources with old generation rules:

- Example.java or ■ Example.java
- Groupparm.java ■ Groupparm.java
- Progbgroup-
parm.java ■ Progagroup-
parm.java

➤ **To migrate an application that needs to be regenerated**

- If you have to migrate an application that needs to be regenerated because of a change to the IDL file, figure out the affected class name and rename the generated Java class to the old name

Or:

Adapt your application to the new name.

IDL Extractor for WSDL

Prefix name assigning has been enhanced to ensure consistent generation of XML mapping files. If more than one prefix is associated with a URL, the last prefix (in alphabetical order) is used. For example, the WSDL contains following namespace definition:

```
xml:sampleNamespace="http://sample.org"
```

and

```
xml:anotherNamespace="http://sample.org"
```

In this case, prefix `sampleNamespace` is used (comes after `anotherNamespace` in alphabetical order).

This has no influence on the namespace used in the XML/SOAP document. If your application has such a case and the receiving web service expects a specific prefix name (because it does not check the namespace), open the XML Mapping Editor and change the prefix on affected elements and attributes.

COBOL Support

COBOL Server Using Fixed-length Table in Variable Manner

The EntireX Workbench, together with the RPC Server for CICS, EntireX Adapter with IMS Connect connections and the RPC Server for IMS Connect support COBOL server programs that use the data length of its interface to process a variable number of array elements in a fixed-size COBOL table.



Note: COBOL server programs use either the same data structure on input and output, or overlay the input data structure with a different output data structure. See *COBOL Mapping Editor*.

[Provided with fix for EntireX version 9.7.]

Server Mapping Files for COBOL

If a COBOL server is wrapped with the COBOL Wrapper or extracted with the IDL Extractor for COBOL, a server mapping file is automatically created if required. Previous versions of EntireX support server-side mapping files (extension .svm) for COBOL only. These files need to be deployed to the target RPC server. This version supports client-side mapping files (extension .cvm) as an alternative. This simplifies the handling of server mapping files. This can be an important criterion, for example if the RPC server is hosted in a mainframe environment and you do not have access to mainframe development resources. The following tasks are not required:

- deploying the server mapping files to the RPC server
- setting up a server-side mapping container in the mainframe environment
- change management of server-side mapping files in the mainframe environment

Server-side mapping files can be migrated to client-side mapping files, see *Migrating Server Mapping Files*. Please note that client-side mapping files are not supported by RPC clients generated with the DCOM Wrapper and COBOL Wrapper. For more information on server mapping files, see *Server Mapping Files for COBOL*.

RPC Server/Listener Changes and Enhancements

■ RPC Server for CICS User Exit

The CICS RPC user exit COBUEx02 provides the maximum expected length of output data (reply) before calling the target CICS program. See fields `CHAIN-COUNTER-OUT` and `CHAIN-POINTER-OUT` of the user exit API under *User Exit COBUEx02*.

[Provided with fix for EntireX version 9.7.]

■ Listener for IBM MQ

MQ messages in text format are now supported. In addition to MQ messages in XML or SOAP format, the Listener for IBM MQ can now process MQ messages in text format. The message layout is described by an IDL file. See *EntireX Listener for IBM® MQ*.

The handling of the `correlationId` and the `messageId` in synchronous request/reply scenarios has been changed. See *Support for Request/Reply Scenarios* under *Advanced Listener for IBM MQ Functionality* in the Listener for IBM MQ documentation.

z/OS Broker in 64-bit Addressing Mode

EntireX Broker under z/OS now runs in 64-bit addressing mode (AMODE). Earlier versions ran in 31-bit mode, which meant you could address up to 2 GB of storage locations. This limit is referred to as "the bar". 64-bit mode takes EntireX Broker above the bar and means that up to 16 EB (exabytes) can be addressed. This increase in capacity makes it possible to send and receive an almost unlimited amount of messages. The maximum size of a single message is still limited to 2 GB.

The attribute file does not need to be changed for the 64-bit Broker. The one exception here is `PSTORE-VERSION`. See [PSTORE-VERSION for Persistent Store of Type DIV](#) under *Other Changes and Enhancements* below.

All user exits for conversion and translation run unchanged in 31-bit mode. However, if you have written your own security exits, these need to be 64-bit-enabled.

Application Monitoring

Application Monitoring is an EntireX feature that enables you to monitor the response times in your distributed applications, and it also enables you to monitor certain error situations. The EntireX Application Monitoring Data Collector collects the response time data of each involved software component of selected synchronous EntireX RPC services. The Application Monitoring Data Collector stores the KPI values in CSV (comma-separated values) files. The files can be processed by any tool that supports CSV files. A sample MashApp is also provided.

Application Monitoring was previously offered as part of the Software AG product Optimize for Infrastructure.

See *Application Monitoring*.

Support of Long N/NU/P/PU Data Types

The maximum number of digits for IDL data types N, NU, P and PU has been increased from 29 to 99, and the restriction of 7 digits after the decimal point no longer applies. See *IDL Data Types*.

Depending on your target programming language (endpoint) the supported number of digits is more restricted. If you connect two endpoints, the total number of digits used must be lower than or equal to the maxima of both endpoints. For the supported total number of digits for endpoints, see the notes under data types N, NU, P and PU under *Mapping Software AG IDL Data Types* in the respective Wrapper or language-specific documentation.

New .NET Wrapper class `BigNumeric` is provided. This is an implementation of decimal values without upper and lower limit and a default number of 99 digits after the decimal sign. See *BigNumeric* under *.NET Wrapper Reference*.

ETBINFO Enhancements

Command-line Enhancements

Multiple enhancements have been made to the command-line utility `etbinfo` under UNIX and Windows:

- If an error occurs, the long text of an error message is generated, corresponding to *Error Messages and Codes*. See command-line parameter `--longmsg` in the respective section of the documentation in the respective Administration documentation.
- Output of `SERVICE` objects can be limited to broker-internal or external services. See command-line parameter `--external` and `--internal` in the respective section of the documentation.
- You can execute an RPC ping to a specified RPC service. If the service is running, return code 0 and a corresponding text are returned. If the service is not running, a return code other than 0 is given. The RPC ping command is sent to the specified server via a specified broker, which can be either local or remote. See command-line parameter `--pingrpc` in the respective section of the documentation.

See also `etbinfo` in section *Broker Command-line Utilities* in the respective section of the Administration documentation.

Timestamp

With new profile parameters %DATE and %TIME you can put a timestamp on your etbinfo output. See *Profile* in section *Command-line Parameters* in the respective section of the documentation.

Monitoring EntireX with Command-line Scripts

EntireX provides a set of command-line scripts for common administration tasks:

- You can now show details of a specified or default broker and the active external services registered to it.
- You can now monitor - at a specified interval - your standard broker, registered services and clients that call your broker. Output is written to a CSV file.
- You can check easily whether all brokers and services of a defined environment are active. Checks are performed that a specified service is registered with the broker, and an RPC ping command is used to verify that a specified server can be called.

You can select the scripts from the EntireX Command-line Scripts Menu or call the individual scripts from the command line. See *Monitoring EntireX with Command-line Scripts*.

Workbench Enhancements

- [Mapping Arrays \(Fixed <-> Unbounded\) with the IDL Extractor for COBOL](#)
- [Enhanced Null Value Suppression](#)
- [COBOL Mapping Editor](#)
- [Context Menu for IDL Files](#)
- [IDL Extractor for Integration Server](#)

Mapping Arrays (Fixed <-> Unbounded) with the IDL Extractor for COBOL

With the context menu of the IDL Extractor for COBOL you can map a fixed-size COBOL table to a fixed-size or unbounded IDL array.

See for example *Set Arrays (Fixed <-> Unbounded)* under *CICS with DFHCOMMAREA Large Buffer Interface - In different to Out* in the IDL Extractor for COBOL documentation.

This is needed to support COBOL server programs that use the data length of their interface to process a variable number of array elements in a fixed-size COBOL table.

[Provided with fix for EntireX version 9.7]

Enhanced Null Value Suppression

A new button in the XML Mapping Editor **Overview Page** enables you to set the current null value suppression settings to all mappings. See *Overview Page* under *Using the XML Mapping Editor*.

[Provided with fix for EntireX version 9.7.]

COBOL Mapping Editor

The COBOL Mapping Editor has been redesigned with a workflow-oriented user interface and the look and feel of the Natural Mapping Editor. Extracting the COBOL interface and designing a single or multiple IDL interfaces is now on one screen. This means you keep control of both sides of the extraction (COBOL side and IDL side) at any time. With the new functions **COBOL > Modify Interface** and **COBOL > Extract further Interface** in the extended context menu of the IDL file you can refine the extractions any time, allowing you to pause your work and continue later. Many other details (e.g. combo-box to switch COBOL program, find text in COBOL source, set constants for level-88 fields, IDL name prefix for FILLER etc.) have been improved.

See *COBOL Mapping Editor* in the IDL Extractor for COBOL documentation.

Context Menu for IDL Files

The context menu for IDL files in the EntireX Workbench has been simplified. It is now more compact with the most commonly used target environments - COBOL, Integration Server, Natural and Web Services - on the first menu level. Under **Other** you can select additional supported targets such as C or Java, start the IDL Tester or refactor the IDL file.

See sample *Context Menu* in the IDL Editor documentation.

IDL Extractor for Integration Server

The data type mapping from Integration Server data types to IDL data types has been enhanced. This includes a changed handling of content types. See *IDL Extraction from Integration Server* in the webMethods EntireX Adapter for Integration Server documentation.

Extracting an IDL file for specific Integration Server services now possible. The IDL Extractor for Integration Server extracts an IDL file for all services of an Integration Server package. To extract an IDL file only for some specific Integration Server services, a new built-in service is available in the `WmEntireX` package. See *IDL Extraction from Integration Server* in the webMethods EntireX Adapter for Integration Server documentation.

Brainstorm Ideas

Brainstorm is a one-stop portal for all Software AG customers to submit feature requests, vote on ideas that have been posted by other customers and get your voice heard. All product categories are moderated by product managers, and ideas get responded to and updated on a regular basis. The number in square brackets is the Brainstorm ID.

- Support more decimal places [1046568]. See [Support of Long N/NU/P/PU Data Types](#).
- EntireX Broker ActiveX Control [1046615]. See [TOR Editor and Broker ActiveX Control](#) under *Other Changes and Enhancements* below.
- Allow user-written security exit to force new LOGON from broker application [1081689]. See the separate webMethods EntireX Adapter Release Notes.
- Extract IDL file from a specific Integration Server service [1085229]. See [IDL Extractor for Integration Server](#) above.

Documentation Enhancements

- **RPC Server for IMS**
New documentation section *Installing the RPC Server for IMS*.
- **Common Integration Scenarios**
Documentation of common integration scenarios has been enhanced, in particular the scenarios
 - "I have an Integration Server service and want to call this from a COBOL application." See *Calling Integration Server from COBOL*.
 - "I have a COBOL server program and want to call this from the Integration Server." See *Calling COBOL from Integration Server*.
- **Application Transparent Transport Layer Security (AT-TLS)**
Various sections dealing with SSL/TLS support have been reworked and also include sections on how to set up AT-TLS:
 - **RPC Servers**
See *Using SSL/TLS with the RPC Server* in the relevant sections of the documentation.
 - **Certificates**
See *SSL/TLS and Certificates with EntireX*.
- **IDL to XML Mapping**
New tables documenting IDL to WSDL and XSD mapping. See
 - *Software AG IDL to WSDL Mapping* in the Web Services Wrapper documentation.
 - *Mapping IDL Data Types to an XML Schema (XSD)* in the XML Mapping Editor documentation.

Other Changes and Enhancements

■ **OpenSSL Support**

The OpenSSL Project has announced it will no longer support version 0.9.8 from December 31, 2015. EntireX now supports OpenSSL version 1.0.1.

[Provided with fix for EntireX version 9.7.]

■ **Set Application Name with .NET Wrapper**

For accounting purposes, a new property `ApplicationName` has been introduced for the .NET Wrapper. Set this property before calling one of the Logon methods if you want to replace the default application name. See `ApplicationName` under class `Broker` in the .NET Wrapper documentation.

[Provided with fix for EntireX version 9.7.]

■ **License Key Layout**

The layout of the EntireX license keys has been changed. There are now fewer components and attributes. These changes were made to simplify the Software AG internal license key handling and have no impact on users.

■ **TOR Editor and Broker ActiveX Control**

The Transaction Object Editor and the Broker ActiveX Control are now supported on Windows 64-bit operating systems. The Broker ActiveX Control program, `ebx.dll`, must first be registered as a COM object. See *Broker ActiveX Control and TOR Editor* in the Windows Installation documentation.

■ **PSTORE-VERSION for Persistent Store of Type DIV**

z/OS only. If you are using a persistent store of type `DIV`, the parameter `PSTORE-VERSION` must be set to 4. If you were using a lower version, you need to perform a cold start of your persistent store. See *Implementing a DIV Persistent Store* under *Managing the Broker Persistent Store* in the *z/OS Administration* documentation and `PSTORE-VERSION` under *Broker Attributes*.

■ **Default for Broker Attribute `POLL`**

As announced in the EntireX 9.6 Release Notes, the default for this attribute under *z/OS* has changed from `YES` to `NO` in this release. This is also the default for *UNIX* and *z/VSE*. See `POLL` under *Broker Attributes*.

Setting this attribute to `YES` means you can use more than the maximum number of TCP/IP connections per communicator (see *Maximum TCP/IP Connections per Communicator* under *Broker Resource Allocation*). However, `POLL=YES` increases CPU consumption, so for performance reasons we recommend `POLL=NO` unless you really need the additional TCP/IP connections.

■ **natetb library on UNIX and Windows**

The load library *natetb.so* or *natetb32.dll* is no longer delivered with EntireX under UNIX and Windows. Starting with Natural 8.3.3 and NaturalONE 8.3.4, this load library is no longer needed by Natural. If you are using an earlier version of Natural or NaturalONE, you can use the *natetb* library distributed with an earlier version of EntireX.

6 Dropped Features

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This chapter lists the features dropped in recent EntireX versions and indicates which features are planned to be dropped in future versions.

Features to be Dropped in Future Versions

- Server-side mapping files (SVM) will be dropped in a future version. We strongly recommend using client-side server mapping files (CVM) for ease-of-use. Support for CVM files for platforms z/VSE and BS2000 will be introduced in a future version.
- The EntireX RPC Server for IBM i of EntireX version 7.1.1 running under IBM i (AS/400) will no longer be supported in the next version of EntireX. We strongly recommend using the new *RPC Server for AS/400* or the EntireX Adapter. See also *Connection Parameters for AS/400 Connections*.
- The obsolete and deprecated methods `getEnvironment()`, `setEnvironment(String)`, `useCodePage()` and `useCodePage(Boolean)` of the Java class `BrokerService` will be removed in the next version.

Features Dropped in Version 10.1

- **z/VM**
EntireX no longer supports the operating system z/VM.
- **ETBSRV**
The EntireX Broker command-line utility `ETBSRV` is no longer provided. You can use `ETBINFO` under *Broker Command-line Utilities* in the platform-specific Administration documentation or Command Central instead (see *Administering EntireX Broker using the Command Central Command Line*).
- **EntireX Broker Tutorial**
The Natural-based EntireX Broker Tutorial is no longer provided.

Features Dropped in Version 9.12

- **Direct SSL/TLS Support for Broker Stubs under z/OS**
Direct SSL/TLS support (using GSK) inside the broker stubs under z/OS has been dropped. We recommend using IBM's Application Transparent Transport Layer Security (AT-TLS) instead. For an overview of broker stubs and transport, see *Transport: Broker Stubs and APIs*. For information on how to configure SSL/TLS with EntireX, see *Using SSL/TLS with EntireX Components*.

■ Administration using System Management Hub

Administration with SMH is no longer supported. This also includes the batch interface `argbatch` and SNMP. The most important functionality is provided by Command Central. Minor features have been moved to the command line or were dropped.

The following type of EntireX installation cannot be administered with Command Central:

- EntireX installations not using SAG Installer
- EntireX installations lower than version 9.9
- EntireX installations on z/OS, z/VSE or BS2000

The following alternatives are provided for these installations:

- Use `ETBINFO` and/or `ETBCMD`
- Use System Management Hub version 9.10 for the time being

Authorization rules for UNIX and Windows are no longer managed with System Management Hub. Instead, rules can be stored in an LDAP repository (as in earlier versions of EntireX) or in a new section of the Broker attribute file, `DEFAULTS=AUTHORIZATION-RULES`. See *Authorization Rules*.

■ RPC Server and Listener for IBM® MQ

Dynamic IDL/RPC parameters are no longer supported.

■ Microsoft Visual Studio

The following EntireX components support Microsoft Visual Studio version 2015:

- C Wrapper
- DCOM Wrapper
- Microsoft Visual Studio Wizard for EntireX .NET Wrapper

Older versions of Microsoft Visual Studio (2010, 2012 or 2013) are no longer supported.

Features Dropped in Version 9.10

■ Windows 32-bit Operating Systems

Software AG no longer supports Windows 32-bit operating systems. However, the following EntireX components are supported for 32-bit applications on Windows 64-bit operating systems:

- EntireX Mini Runtime, see *Post-installation Steps under Windows*
- Transaction Object Editor of Broker ActiveX Control, see *Calling the Transaction Object Editor*
- .NET Wrapper Runtime, see note under *Assembly Versioning* in the .NET Wrapper documentation

■ Encryption

The encryption/decryption mechanism provided by EntireX Security is deprecated. We strongly recommend using the Secure Sockets Layer/Transport Layer Security protocol. See *SSL/TLS and Certificates with EntireX*.

Documentation and other appearances of EntireX Encryption (for example interfaces, configuration file) have been removed. Existing applications using EntireX Encryption are still be supported at runtime for compatibility reasons.

■ Java Message Service

EntireX Broker support for Java Message Service (JMS) has been dropped.

■ Publish and Subscribe

The EntireX Broker communication model Publish and Subscribe is no longer supported. You therefore need to remove the broker attribute `PUBLISH-AND-SUBSCRIBE` from your broker attribute file, otherwise error `ETBE0023 Unknown attribute PUBLISH-AND-SUBSCRIBE` is returned.

■ Swapping out New Units of Work

The ability to swap out new units of work that was provided in earlier EntireX versions is now no longer required. The corresponding broker attributes `SWAP-OUT-NEW-UOWS` and `MIN-UOW-CONVERSATIONS-IN-MEMORY` are no longer supported and will be ignored.

■ Library broker.so

Under UNIX, library *broker.so* has been replaced by library *libbroker.so*. Library *libbroker.so* was already delivered in earlier EntireX versions and is identical. Make sure you applications use only *libbroker.so*.

■ SMH Technical Information

The System Management Hub Technical Information Agent is no longer delivered.

■ SNMP

The SNMP (Simple Network Management Protocol) interface of the System Management Hub is no longer supported. SMH itself will no longer be supported in the next version.

Features Dropped in Version 9.9

■ EntireX Mini Runtime

The EntireX Mini Runtime is no longer delivered. The functionality is provided instead with EntireX libraries, which are installed using the Software AG Installer. See [EntireX Mini Runtime](#) under *Other Changes and Enhancements*.

■ IAF

EntireX support for Software AG's Integrated Authentication Framework (IAF) has been dropped from all interfaces.

- **EntireX Wrapper for Enterprise JavaBeans**

As announced in the EntireX 9.7 Release Notes, the Wrapper for EJB is no longer provided. It is no longer possible to enable Java-based components to access an EntireX RPC server using Enterprise JavaBeans.
- **Adapter Services Wrapper for Natural**

As announced in earlier Release Notes, the Adapter Services Wrapper for Natural is no longer provided. The functionality is already covered by using the IDL Extractor for Natural and the Integration Server Wrapper.
- **Partner Broker ID**

Partner Broker ID is no longer supported.
- **IBM Compiler PL/I for MVS & VM**

Support for IBM compiler PL/I for MVS & VM has been dropped. Support for Enterprise PL/I for z/OS compiler will continue. This affects PL/I Wrapper, *RPC Server for Batch* and *RPC Server for IMS*.
- **Microsoft Visual Studio Wizard for EntireX DCOM Wrapper**

The Microsoft Visual Studio Wizard for EntireX DCOM Wrapper as a Software AG plug-in is no longer provided. The functionality is provided by the EntireX Workbench.
- **Broker Control Block Definitions NATDEF12 and NATDEF21 of ACI for Natural**

The LDAs NATDEF12 and NATDEF21, which define API version 2 only, are consolidated into the LDA NATDEF. NATDEF12 and NATDEF21 are no longer provided. Use NATDEF in your application for Broker control block definition.

Features Dropped in Version 9.7

- **Broker Services**

Broker Services were partially retired with EntireX version 8.0; they are now fully retired. This affects in particular the following components:

 - **Broker Services WebSphere MQ Support**

Retired since version 8.0. There was no direct replacement for the Broker Services WebSphere MQ support. However, WebSphere MQ is supported with the *EntireX RPC Server for IBM® MQ* and the *EntireX Listener for IBM® MQ*. For scenarios using the Broker Services WebSphere MQ support, both of these might be a more modern and easier-to-use alternative.
 - **Broker Services APPC Adapter**

Retired since version 8.0. There was no replacement for the Broker Services APPC Adapter. We recommend using the standard EntireX functionality in the future. Possible migration paths can vary and should be determined based on your projects.

- **Broker Services Attach Service**

There is no replacement for the Broker Services Attach Service. Most of the RPC server implementations support multiple worker models for load balancing purposes. See for example Scenario *Worker Models* in the respective RPC server documentation. For Natural RPC servers, the Natural RPC Server front-end provides similar functionality.

- **Location Transparency**

Support for Location Transparency was dropped in EntireX version 9.5. Location Transparency has now been removed from all major interfaces.

Java sources generated with older versions of the EntireX Wrapper for Enterprise JavaBeans do not compile with this version and newer versions of EntireX. Please re-generate these source files. It is possible to run classes based on older versions of EntireX with this version and newer versions of EntireX, as long as Location Transparency is not used.

Features Dropped in Version 9.6

- **Operating System Support**

The following platforms are no longer supported: z/OS 1.12, z/VSE 4.3.

- **BKIMBTSO**

Broker stub BKIMBTSO is no longer provided. The functionality is covered by stub BROKER. The default transport method for BKIMBTSO was TCP; default for BROKER is NET. However, this can be changed to TCP if required. See *Default Transport Method for BROKER* for BROKER under *Administering Broker Stubs*.

- **IAF**

No new version of IAF is delivered with this release of the webMethods suite.

7 Platform Coverage

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Scope of EntireX Version 10.1

This version of EntireX has been released on the following platforms:

- z/OS
- SUSE Linux Enterprise Server for IBM System z (64-bit)
- Red Hat Enterprise Linux for IBM System z (64-bit)
- Red Hat Enterprise Linux for Amazon EC2 (64-bit)
- Solaris SPARC (64-bit)
- HP-UX for Itanium 2
- AIX Power (64-bit)
- SUSE Linux Enterprise Server for AMD64 and EM64T (x86-64)
- Red Hat Enterprise Server Linux for AMD64 and EM64T (x86-64)
- Windows (64-bit)

Detailed information regarding supported operating system versions, General Availability (GA), platform retirement, End of Maintenance (EOM), and End of Sustained Support (EOSS) dates for your products can be found under *Products & Documentation > Product Version Availability* on Software AG's Empower website <https://empower.softwareag.com>.



Note: Software AG provides EntireX support for the operating/teleprocessing system versions supported by their respective manufacturers. In general, when an operating/teleprocessing system provider stops supporting a version of an operating/teleprocessing system, Software AG will stop supporting that operating/teleprocessing system version.

List of Components per Platform

	z/OS	z/VSE	BS2000	SUSE Linux Enterprise Server for IBM System z (64-bit)	Red Hat Enterprise Linux for IBM System z (64-bit)	Solaris UltraSPARC (64-bit)	HP-UX for Itanium 2 (64-bit)	AIX Power (64-bit)	IBM i	Suse Linux Enterprise Server for x86-64 (64-bit)	Red Hat Enterprise Linux for x86-64 (64-bit) and Amazon EC2 (64-bit)	Windows (64-bit)
EntireX Broker	x ⁽³⁾	x ⁽⁵⁾	x	x	x	x	x	x		x	x	x
EntireX Workbench										x	x	x
EntireX RPC												
RPC Server for Batch	x	x	x									
RPC Server for CICS	x	x										
RPC Server for IMS	x											
COBOL Server/Client	x	x	x									
RPC Server/Client for Micro Focus				x	x	x	x	x		x	x	x
PL/I Server/Client	x											
RPC Server/Client for C			x ⁽⁴⁾	x	x	x	x	x	x	x	x	x
RPC Server/Client for Java	x ⁽²⁾			x	x	x	x	x		x	x	x
RPC Server/Client for XML/SOAP	x ⁽²⁾			x	x	x	x	x		x	x	x
RPC Server for IBM MQ	x ⁽²⁾			x	x	x	x	x		x	x	x
Listener for IBM MQ	x ⁽²⁾			x	x	x	x	x		x	x	x
DCOM RPC Client												x ⁽⁶⁾
RPC Server/Client for .NET ⁽¹⁾												x
RPC-ACI Bridge	x ⁽²⁾			x	x	x	x	x		x	x	x
RPC Server for CICS ECI	x ⁽²⁾			x	x	x	x	x		x	x	x
RPC Server for IMS Connect	x ⁽²⁾			x	x	x	x	x		x	x	x
RPC Server for AS/400				x	x	x	x	x		x	x	x
EntireX ACI												
Broker Stubs	x	x	x	x	x	x	x	x	x	x	x	x
Java ACI	x			x	x	x	x	x		x	x	x
ActiveX Control/TOR Editor												x
Command Central				x	x	x	x	x		x	x	x

	z/OS	z/VSE	BS2000	SUSE Linux Enterprise Server for IBM System z (64-bit)	Red Hat Enterprise Linux for IBM System z (64-bit)	Solaris UltraSPARC (64-bit)	HP-UX for Itanium 2 (64-bit)	AIX Power (64-bit)	IBM i	Suse Linux Enterprise Server for x86-64 (64-bit)	Red Hat Enterprise Linux for x86-64 (64-bit) and Amazon EC2 (64-bit)	Windows (64-bit)
Broker Agent	x			x	x	x	x	x		x	x	x
Attach Manager				x	x	x	x	x		x	x	x
Application Monitoring Data Collector				x	x	x	x	x		x	x	x

In accordance with the license agreement you concluded with Software AG, your EntireX license includes either full functionality or specific EntireX components.

Notes:

- ⁽¹⁾ Microsoft Visual Studio Wizard for EntireX .NET Wrapper is provided for 32 and 64-bit applications on Windows 64-bit operating systems.
- ⁽²⁾ Batch only. These components included as a TAR file in the z/OS installation kit and must be copied to your z/OS UNIX environment. See *Installing EntireX Java Components under z/OS UNIX*.
- ⁽³⁾ Batch only. "Broker" here refers to the broker kernel, also known as broker nucleus. In all versions of EntireX under z/OS, the EntireX broker kernel runs in batch mode only, either as a job or a started task. It does not run under TSO, CICS, Com-plete or any other online environment.
- ⁽⁴⁾ Only servers are supported; a server example is delivered.
- ⁽⁵⁾ Batch only. "Broker" here refers to the broker kernel, also known as broker nucleus. In all versions of EntireX under z/VSE, the EntireX broker kernel runs in batch mode only. It does not run in any online environment.
IPv6 is not supported on this platform. Establishing an SSL connection on z/VSE requires BSI's Automatic Transport Layer Security (ATLS).
- ⁽⁶⁾ 32-bit application that runs on 64-bit platforms.

Supported RPC Protocols

RPC Protocol ⁽¹⁾	Feature ⁽²⁾	EntireX	EntireX Adapter for Integration Server	PI Adapter for EntireX	Natural			More Information
					Main-frame	ONE	Open Systems	
2000	IDL unbounded arrays	5.4	7.1	4.1.0	4.1.3	8.1	6.1.1 PL13	Unbounded arrays are arrays with variable upper bounds, see <i>array-definition</i> under <i>Software AG IDL Grammar</i> in the IDL Editor documentation. For the programming language COBOL they can be defined with an upper maximum and mapped to COBOL data items with the <code>DEPENDING ON</code> clause. See <i>COBOL Tables with Variable Size - DEPENDING ON Clause</i> . If a COBOL server is wrapped with the COBOL Wrapper or extracted with the IDL Extractor for COBOL, a server mapping file (EntireX Workbench file with extension <code>.cvm</code> or <code>.svm</code>) ⁽³⁾ is automatically created for IDL unbounded arrays.
	IDL types PU, NU	5.4	7.1	4.1.0	4.1.3	8.1	6.1.1 PL13	The data types packed and unpacked decimal unsigned support the programming languages COBOL and PL/I. See <i>IDL Data Types</i> in the IDL Editor documentation.
	IDL structs	5.4	7.1	4.1.0	4.1.3	8.1	6.1.1 PL13	An IDL struct describes a user-defined type for reusability. For RPC server with a CICS channel container interface, it describes the layout of container. See <i>structure-definition</i> under <i>Software AG IDL Grammar</i> in the IDL Editor documentation.
	IDL aligned attribute	5.4	7.1	4.1.0	n/a	n/a	n/a	The aligned attribute is relevant for the programming languages COBOL and PL/I and the server side. For other languages it is not relevant. See <i>attribute-list</i> under <i>Software AG</i>

RPC Protocol ⁽¹⁾	Feature ⁽²⁾	EntireX	EntireX Adapter for Integration Server	PI Adapter for EntireX	Natural			More Information
					Main-frame	ONE	Open Systems	
								<i>IDL Grammar</i> in the IDL Editor documentation.
	IDL parameters with more than 3 indices (all indices up to the parent on level 1 counted)	5.4	7.1	4.1.0	n/a	n/a	n/a	See <i>array-definition</i> under <i>Software AG IDL Grammar</i> in the IDL Editor documentation.
	IDL library or IDL program longer than 8 characters	5.4	7.1	4.1.0	4.2.6	8.1	6.3.7	Long IDL library and program names are a challenge for languages such as COBOL and Natural, which restrict program names to 8 characters. These long IDL names are nevertheless supported by EntireX. If a Natural server is wrapped with Natural Wrapper or extracted with IDL Extractor for Natural with a long IDL program name, this forces a client-side mapping file (EntireX Workbench file with extension <i>.cvm</i>) ⁽⁴⁾ and protocol 2030. If a COBOL server is wrapped with COBOL Wrapper or extracted with IDL Extractor for COBOL with a long IDL program name, this forces a server mapping file (EntireX Workbench file with extension <i>.cvm</i> or <i>.svm</i>) ⁽³⁾ to be created.
	Reliable RPC	8.0	7.2	4.1.1	4.2.5	8.1	6.3.6	<i>Reliable RPC</i> .
	CICS Channel Container	8.2.2	7.1	4.1.0	n/a	n/a	n/a	If a COBOL server with interface type CICS with Channel Container Calling Convention is wrapped with the COBOL Wrapper or extracted with the IDL Extractor for COBOL, a server mapping file (EntireX

RPC Protocol ⁽¹⁾	Feature ⁽²⁾	EntireX	EntireX Adapter for Integration Server	PI Adapter for EntireX	Natural			More Information
					Main-frame	ONE	Open Systems	
								Workbench file with extension .cvm or .svm) ³ is automatically created. Natural RPC clients generated with the Natural Wrapper can call COBOL programs using CICS with Channel Container Calling Convention.
	Mixed case RPC passwords	8.2.2	8.2.2	no	4.1.4	8.1	6.1.1 PL21	Allow RPC passwords with lowercase characters. See <i>Natural Security</i> under <i>Common Features of Wrappers and RPC-based Components</i> in the RPC Programming documentation.
2010	Natural optional parameters	n/a	n/a	n/a	4.1.3	8.1	6.1.1 PL13	Optional parameters are a special Natural feature. See Natural documentation.
2020	IDL types U, UV	7.3	7.1	4.1.1	4.2.1	8.1	6.2.1	The Unicode data types support all programming languages with separate Unicode and character types such as COBOL, Natural and C. See <i>IDL Data Types</i> in the IDL Editor documentation.
	Up to 99 IDL Levels	7.3	7.1	4.1.1	4.2.1	8.1	6.2.1	IDL levels are used in conjunction with parameter grouping. Parameters are either scalar or a member of the immediately preceding group that has been assigned a lower level number. See <i>simple-parameter-definition</i> under <i>Software AG IDL Grammar</i> in the IDL Editor documentation.
2030	Natural Redefine, client-side mapping file for Natural, and other features	8.2	8.2	4.1.2	4.2.7 and 8.2.2	8.2.4	6.3.9	REDEFINES are supported by IDL Extractor for Natural on the server side and force a client-side mapping file (EntireX Workbench file with extension .cvm) ⁽⁴⁾ to be created. See <i>When is a Server Mapping File Required?</i> in the EntireX Workbench documentation for full list of features.
	Client-side mapping	9.7	9.7	4.1.2	n/a	n/a	n/a	If a COBOL server is wrapped with the COBOL Wrapper or extracted with the IDL Extractor for COBOL, a

RPC Protocol ⁽¹⁾	Feature ⁽²⁾	EntireX	EntireX Adapter for Integration Server	PI Adapter for EntireX	Natural			More Information
					Main-frame	ONE	Open Systems	
	file for COBOL							server mapping file (EntireX Workbench file with extension .cvm or .svm) ⁽³⁾ is automatically created if one is required. See <i>When is a Server Mapping File Required?</i> in the EntireX Workbench documentation. Natural RPC clients generated with the Natural Wrapper can send client-side mapping (containing COBOL mapping or Natural mapping) to the target RPC server.
2040	Increased precision for IDL types N, NU, P, PU	9.7	9.7	no	8.2.2	8.4.1	8.4.1	If more than 7 digits after the decimal point or more than 29 digits in total (before and after the decimal point) are used. For EntireX, the maximum number of supported digits depends on language and operating system. See notes for data types N, NU, P and PU in section <i>Mapping Software AG IDL Data Types</i> in the respective Wrapper or language-specific documentation.

n/a = not applicable
no = not supported

 **Notes:**

1. To enable communication it is not required that both partners (RPC client and RPC server) support the same level of RPC protocol. There is a handshake to negotiate the highest protocol level supported by both ends. The RPC protocols 1110 thru 1140 (which are not documented here) may occur in communications as well if older RPC components are used.
2. To enable communication the feature used must be supported by both partners (RPC client and RPC server), otherwise communication is not possible.
3. If a client-side mapping file (.cvm) is used, protocol 2030 is forced. If a server-side mapping file is used, the protocol level is not increased. For more information see *Server Mapping Files for COBOL* and *How to Set the Type of Server Mapping Files* in the EntireX Workbench documentation.

4. For more information see *Server Mapping Files for Natural* in the EntireX Workbench documentation.

8 Prerequisites

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General Prerequisites

- Java 8 for all Java-based components.
- For other Software AG products if not stated otherwise: the versions that are still supported and that were available when this version of EntireX was released.
- Software AG supports third-party technology, for example operating system versions, products or functionality, only for as long as this technology is officially supported by the third-party vendor.

z/OS Prerequisites



Note: The supported versions of CICS and IMS are listed under *Product Compatibility for IBM Platforms* on the Software AG Corporate Website.

Component	Prerequisites
COBOL RPC Client and Server	<ul style="list-style-type: none"> ■ To compile the sources generated by the EntireX Workbench component COBOL Wrapper: Compiler supported by the COBOL Wrapper: standard COBOL compiler, for example IBM Enterprise COBOL for z/OS 4.2, 5.1 or 6.1.
PL/I RPC Client and Server	<ul style="list-style-type: none"> ■ To compile the sources generated by the EntireX Workbench component PL/I Wrapper: Compiler supported by the PL/I Wrapper, for example Enterprise PL/I for z/OS.
RPC Server and Listener for IBM® MQ	<ul style="list-style-type: none"> ■ WebSphere MQ version 7.5, IBM® MQ 8.0 or 9.0.

UNIX Prerequisites

Component	Prerequisites
EntireX Broker under HP-UX	Atomic APIs. See HP-UX Atomic APIs .
Micro Focus COBOL	<ul style="list-style-type: none"> ■ Micro Focus Server Express 5.1 and Net Express 5.1 or compatible development environment.
RPC Server and Listener for IBM® MQ	<ul style="list-style-type: none"> ■ WebSphere MQ version 7.5, IBM® MQ 8.0 or 9.0.
IDL Extractor for Natural	<p>To support Arabic shaping and multibyte character sets, a Natural RPC server of the following version is required:</p> <ul style="list-style-type: none"> ■ z/OS: Fix 02 (cumulative) for Natural Mainframe 8.2.6 or above. ■ UNIX and Windows: Natural 8.3.8 or above.
RPC Server for AS/400	<ul style="list-style-type: none"> ■ The IBM ToolBox for Java (JTOpen) is required and has to be downloaded from https://sourceforge.net/projects/jt400/. We recommend using one of the latest available versions. For the list of supported IBM i versions, consult the readme of the JTOpen package. See also <i>Post-installation Steps</i>.

Windows Prerequisites

Component	Prerequisites
C Wrapper	<ul style="list-style-type: none"> ■ For target platform Windows, Microsoft Visual Studio 2015 and 2017.
DCOM Wrapper	<ul style="list-style-type: none"> ■ C++ Compiler from Microsoft Visual Studio 2015 and 2017. ■ For generated interface objects: corresponding Microsoft Visual Studio .NET C/C++ runtime environment.
.NET Wrapper	<ul style="list-style-type: none"> ■ Any .NET Framework supporting .NET Common Language Runtime (CLR) version 4.
Micro Focus COBOL	<ul style="list-style-type: none"> ■ Micro Focus Server Express 5.1 and Net Express 5.1 or compatible development environment.
Microsoft Visual Studio Wizard for .NET Wrapper	<ul style="list-style-type: none"> ■ Microsoft Visual Studio 2015.
RPC Server and Listener for IBM® MQ	<ul style="list-style-type: none"> ■ WebSphere MQ version 7.5, IBM® MQ 8.0 or 9.0.
IDL Extractor for Natural	<p>To support Arabic shaping and multibyte character sets, a Natural RPC server of the following version is required:</p> <ul style="list-style-type: none"> ■ z/OS: Fix 02 (cumulative) for Natural Mainframe 8.2.6 or above. ■ UNIX and Windows: Natural 8.3.8 or above.
RPC Server for AS/400	<ul style="list-style-type: none"> ■ The IBM ToolBox for Java (JTOpen) is required and has to be downloaded from https://sourceforge.net/projects/jt400/. We recommend using one of the latest available versions. For the list of supported IBM i versions, consult the readme of the JTOpen package. See also <i>Post-installation Steps</i>.

BS2000 Prerequisites

Component	Prerequisites
COBOL Wrapper	<ul style="list-style-type: none"> To compile the sources generated by the EntireX Workbench component COBOL Wrapper: the IDL types U or UV require a compiler that supports COBOL data type NATIONAL, for example COBOL2000 V01.4B00, otherwise any ILCS-enabled COBOL compiler on BS2000.
C Wrapper	<ul style="list-style-type: none"> To compile the applications generated by the EntireX Workbench component C Wrapper: any ILCS-enabled C/C++ compiler on BS2000.

z/VSE Prerequisites



Note: The supported versions of CICS are listed under *Product Compatibility for IBM Platforms* on the Software AG Corporate Website.

Component	Prerequisites
COBOL Wrapper	<ul style="list-style-type: none"> To compile the sources generated by the EntireX Workbench: component COBOL Wrapper: Compiler supported by the COBOL Wrapper: standard COBOL compiler, for example IBM COBOL for VSE/ESA 1.1.1.

Application Server Prerequisites

The Web application components of EntireX (Listener for XML/SOAP, XML/SOAP Runtime) are supported on the following platforms:

- Software AG Runtime of the same version
- Tomcat 8.5
- Tomcat 8.0

Supported LDAP Servers

The following LDAP servers are currently supported by EntireX:

- IBM Security Directory Server 6.4
- Microsoft Active Directory Domain Services Schema Version 47
- Novell eDirectory 8.8
- OpenLDAP 2.4
- Apache Directory Server 2.0

EntireX Adapter Prerequisites

Supported Versions of Integration Server and EntireX Workbench

The EntireX Adapter supports Integration Server version 9.10, 9.12 or 10.1. For operating systems supported by the Integration Server, see <https://empower.softwareag.com/Products/Documentation/default.asp> under "webMethods Product Suite" > "Integration Server" > "System Requirements" (pdf). For design time, Software AG Designer version 9.12 or 10.1 must be installed. This includes the latest version of the EntireX Workbench.

Supported Platforms

EntireX Adapter supports all platforms supported by the respective version of the Integration Server with the exception of the Mac OS platform. See <https://empower.softwareag.com/Products/Documentation/default.asp> under "webMethods Product Suite" > "Integration Server" > "System Requirements" (pdf).

Supported Versions of CICS and IMS

For the CICS ECI and IMS Connect connection types, the supported versions of CICS and IMS are listed under [Product Compatibility for IBM Platforms](#) on the Software AG Corporate Website.

Prerequisite for using the AS/400 Connection Type

The IBM ToolBox for Java (JTOpen) is required and has to be downloaded from <https://sourceforge.net/projects/jt400/>. We recommend using one of the latest available versions. For the list of supported IBM i versions, consult the readme of the JTOpen package. See also *Post-installation Steps for AS/400*.

9 What was New in Version 9.6

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Enhanced z/VSE Support

EntireX support for z/VSE was thoroughly reworked and is now at a level comparable with other EntireX platforms such as z/OS. Some restrictions apply. See [List of Components per Platform](#) for EntireX components supported under z/VSE.

For more information see:

- *Installing EntireX under z/VSE*
- *EntireX Administration under z/VSE*
- *RPC Server for CICS*
- *RPC Server for Batch*

Workbench Enhancements

Storing IDL Properties in an External File

When archiving an EntireX project with the export feature of Eclipse or the check-in feature of a revision control system such as Subversion or CVS, you can use an external properties file to store the properties of your IDL files. These properties are restored from this external file when the project is imported or checked out. See *Storing IDL Properties in an External File* under *EntireX Workbench*.

RPC Server Changes and Enhancements

RPC Server for CICS

- **Enhanced Impersonation**

For configuration parameter `IMPS`, value `YES` is now supported. The RPC Server for CICS then uses the RPC user ID and password supplied by the RPC client for authentication and impersonation of the client. This means that the RPC server validates the password. See *Impersonation* under *Introduction to the RPC Server for CICS* and `IMPS` under *Administering the RPC Server for CICS*.

Brainstorm Ideas

Brainstorm is a one-stop portal for all Software AG customers to submit feature requests, vote on ideas that have been posted by other customers and get your voice heard. All product categories are moderated by product managers, and ideas get responded to and updated on a regular basis.

- Brainstorm ID 1040629 "Properties lost after Export/Import". See [Storing IDL Properties in an External File](#) above.

Documentation Enhancements

- **Common Integration Scenarios**

Documentation of common integration scenarios has been enhanced with regard to navigation. High-level, illustrated scenario descriptions lead to more detailed sections below. See *Common Integration Scenarios*, for example *Calling COBOL DFHCOMMAREA on z/OS CICS from Integration Server*.

- **Fixed and Unbounded Arrays**

Documentation for mapping of fixed and unbounded arrays has been enhanced. See *Fixed and Unbounded Arrays* in the IDL Editor documentation and *Software AG IDL to COBOL Mapping* in the COBOL Wrapper documentation.

- **SSL/TLS**

Various sections dealing with SSL/TLS support have been reworked:

- **RPC Servers**

See *Using SSL/TLS with the RPC Server* in the relevant sections of the documentation.

- **Certificates**

See *SSL/TLS and Certificates with EntireX*.

- **LE Runtime Options**

A new section describes IBM Language Environment runtime options relevant for RPC servers. See *IBM LE Runtime Options* in the relevant sections of the documentation.

Other Changes and Enhancements

- **Improved Handling of Security Messages under z/OS**

With broker attribute `PRODUCT` you can specify the name of the installed security product (ACF2, RACF or TOP-SECRET). This attribute is used to analyze security-system-specific errors. This feature was available in earlier versions but was not documented.

10 jcaTest

COBOL Syntax	z/VSE 9.6.0	BS2000 8.1.1	IBM i 7.1.1
OCCURS DEPENDING ON	yes	yes	n/s
REDEFINE	yes	yes	n/s
PIC [S]9(<i>num1</i>) [V(<i>num2</i>)] PACKED-DECIMAL if <i>num2</i> is >7	no	?	no
PIC [S]9(<i>num1</i>) [V(<i>num2</i>)] if <i>num2</i> is >7	no	?	no
SYNC RIGHT clause	yes	yes	no
SIGN TRAILING clause	yes	yes	no
SIGN LEADING [SEPARATE] clause	yes	yes	no
PIC N(<i>number</i>) NATIONAL	yes	yes	no
More than 9 subordinated COBOL Group data items	yes	?	no
IDL Extractor for COBOL Functionality			
Set Constant	yes	yes	no
Suppress	yes	yes	no
Rename IDL program	yes	yes	no
Map to Multiple Interfaces	yes	yes	no
Set Arrays (Fixed ⇔ Unbounded)	no	n/a	n/a
Set Multiple Possible Output (MPO) Structures	no	n/a	n/a

n/a not applicable; relevant only for message-oriented environments CICS, IMS Connect

no not supported

yes supported

