ǝ software AG

webMethods EntireX

Release Notes

Version 9.7

October 2014

webMethods EntireX

Table of Contents

1   What's New

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 platforms.

Support of Java 8

- Java Wrapper
- IDL Extractor for WSDL

[Provided with EXX_9.7.0_Fix2.]

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 aplication 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 application has such a case and the receiving web service expected an 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

Using Data Length to Process a Variable Number of Array Elements

The EntireX Workbench, together with the CICS RPC Server, EntireX Adapter with IMS Connect connections and the IMS Connect RPC Server 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. For more information see the example *COBOL Server Using Data Length to Process a Variable Number of Array Elements* provided for the interface types

- CICS Large Buffer with Same | Different CICS Message Structure on Input and Output [1]

- CICS Channel Container

- IMS MPP (IMS Connect)

> **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 EXX_9.7.0_Fix3.]

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

▪ **CICS RPC Server 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` under Administering the CICS RPC Server of the user exit API under *User
Exit* `COBUEX02`.

[Provided with EXX_9.7.0_Fix3.]

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

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

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* under *Software AG IDL File* in the IDL Editor documentation.

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. See *Using Data Length to Process a Variable Number of Array Elements* under *COBOL Support*.

[Provided with EXX_9.7.0_Fix6]

Enhanced Null Value Suppression

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

[Provided with EXX_9.7.0_Fix2.]

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* under *Software AG IDL File* 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 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 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

■ **IMS RPC Server**
New documentation section *Installing EntireX RPC Servers under IMS* under *Installing the EntireX RPC Servers under z/OS*.

■ **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 or TLS support have been reworked and also include sections on how to set up AT-TLS:

  ■ **RPC Servers**
  See *Using SSL or TLS with the RPC Server* in the relevant sections of the documentation.

  ■ **Certificates**
  See *SSL or TLS and Certificates with EntireX*.

■ **IDL to XML Mapping**
New tables documenting IDL to WSDL and XSD mapping. See

  ■ *Mapping IDL Data Types to WSDL* 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 EXX_9.7.0_Fix4.]

■ **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 EXX_9.7.0_Fix4.]

■ **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 platforms. 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* in the general administration documentation). 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.

2 Dropped Features

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 WebSphere MQ RPC Server* and the *EntireX WebSphere MQ Listener*. 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* under *BROKER* for BROKER under *Administering Broker Stubs* in the z/OS administration documentation.

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

Features Dropped in Version 9.5

- **Location Transparency**
  Location transparency is no longer supported in this version.

- **Windows Server 2008 (32-bit)**
  Windows Server 2008 (32-bit) is no longer supported. We suggest you upgrade to the 64-bit or a more recent Windows version. See *List of Components per Platform* for full list.

- **JBoss**
  Application server JBoss is no longer supported.

Features Dropped in Version 9.0

- **Operating System Support**
  The following operating systems are no longer supported:

  - Linux 32-bit versions. We therefore recommend you migrate to the corresponding 64-bit OS version.

  - Windows XP, Windows Vista, Windows 2003.

  - HP-UX PA-Risc (64-bit). Applies to EntireX 9.0 only. EntireX will continue to be supported on this platform with version 8.2 until December 2016.

- **RPC Parameters**
  Configuration of RPC servers has been simplified, and the following parameters are now deprecated on some servers:

  - `runoption`
    For Batch RPC Server and IMS RPC Server the complex parameter `runoption` is replaced by the new parameter *marshalling*, which is set by default to `COBOL`. `marshalling` is used together with server-side mapping files.

  - `minworker`, `maxworker`, `endworker`
    For Batch RPC Server, parameters `minworker`, `maxworker` and `endworker` are replaced by new parameter *workermodel*.

  See examples under *RPC Parameters* in section *What was New in Version 9*.

- `kernelsecurity`
  The RPC server option `kernelsecurity` (`KSEC` under CICS) is deprecated. EntireX RPC servers now provide logic to detect the security setup of the broker kernel automatically. Applies to Batch, CICS, IMS, UNIX, Windows, Micro Focus and .NET RPC Servers.

Support for these parameters is currently still provided for compatibility reasons.

- **Broker Attributes**
  The Broker attributes `NET-RESTART`, `NET-RETRY-LIMIT` and `NET-RETRY-TIME` are no longer supported.

- **DCOM Wrapper Proxy Objects**
  The generation of DCOM Wrapper proxy objects is no longer supported.

- **ACI for .NET**
  The EntireX Broker ACI for .NET is no longer supported.

- **Broker Stubs**
  Entire Net-Work is no longer supported for Broker stubs used on UNIX or Windows.

Features to be Dropped in Future Versions

The following features and platforms are not planned to be supported in future versions.

- **IAF**
  EntireX support for Software AG's Integrated Authentication Framework (IAF) will be dropped from all interfaces in the next version. No replacement is planned.

- **Java Message Service**
  EntireX Broker support for Java Message Service (JMS) will be dropped in a future version. No replacement is planned.

- **Publish and Subscribe**
  Support for EntireX Broker communication model publish and subscribe will be dropped in a future version. No replacement is planned.

- **Partner Broker ID**
  Partner Broker ID will not be supported in the next version.

- **EntireX Wrapper for Enterprise JavaBeans**
  The possibility to enable Java-based components to access an EntireX RPC server using Enterprise JavaBeans will be removed with the EntireX Wrapper for Enterprise JavaBeans in the next version.

- **Adapter Services Wrapper for Natural**
  The Adapter Services Wrapper for Natural will be removed in a future version. This functionality is already covered by using the IDL Extractor for Natural and the Integration Server Wrapper.

■ **SSL or TLS Support for Broker Stubs under z/OS**
Direct SSL or TLS support (using GSK) inside the broker stubs under z/OS will be dropped in the future. 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*.

■ **Administration using System Management Hub and SNMP Support**
Administration with SMH (including the batch interface `argbatch`) is planned to be dropped in a future version of EntireX. The required SMH functionality will be replaced by other means. SNMP will no longer be supported when SMH is dropped.

■ **Broker Agents**
The Broker SSL Agent and Broker TCP Agent will be removed in a future version.

■ **ACI for Natural**
The LDAs NATDEF12 and NATDEF21 are deprecated and will no longer be delivered in the future.

The LDAs NATDEF12 and NATDEF21, which define API version 2 only, are consolidated into the LDA NATDEF in the Natural library SYSETB. If there were duplicate field names in NATDEF12 and NATDEF21, they are defined as REDEFINES in NATDEF. NATDEF12 and NATDEF21 are deprecated and will not be delivered in future releases. Use NATDEF in your application for Broker control block definition. Also, some of the fields in NATDEF are marked as deprecated. Do no use these in your application either.

■ **IDL Compiler Native Batch Interface**
The IDL Compiler native batch interface for the C Wrapper and .NET Wrapper is deprecated and will be dropped in the future. For the C Wrapper, use the Eclipse batch interface instead. See *Using the C Wrapper in Command-line Mode*.

Customer-written templates for the IDL Compiler are also deprecated, and support for these templates will be dropped in a future version.

■ **COBOL Wrapper**
The Generic RPC Services Module (see *Generic RPC Services Module*) COBSRVIB and COBSRVID delivered on mainframe will be removed. Instead, use the modules generated by the EntireX Workbench. The CICS module COBSRVIC in source as well as load format will stay.

■ **RPC Parameters**
Support for all RPC parameters listed as "deprecated" under *Features Dropped in Version 9.0* may be dropped in a future version. We recommend you use the alternatives provided.

■ **PL/I MVS Compiler**
Support for IBM compiler PL/I for MVS & VM will be dropped in a future version. Support for compiler Enterprise PL/I for z/OS will continue.

■ **Microsoft Visual Studio Wizard for EntireX DCOM Wrapper**
The Microsoft Visual Studio Wizard for EntireX DCOM Wrapper as a Software AG plug-in will be removed in a future version. This functionality will continue to be provided by the EntireX Workbench.

3 Platform Coverage

Scope of EntireX Version 9.7

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 (64-bit)
- SUSE Linux Enterprise Server for AMD64 and EM64T (x86-64)
- Red Hat Enterprise Server Linux for AMD64 and EM64T (x86-64)
- Windows (32-bit, 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

	zJOS	z/VSE	BS2000/OSD	z/VM	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)	OpenVMS for Itanium (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 32-bit	Windows 64-bit
EntireX Broker	x[4]	x[6]	x		x	x	x	x	x			x	x	x	x
EntireX Workbench												x	x	x	x
EntireX RPC															
Batch RPC Server	x	x	x												
CICS RPC Server	x	x													
IMS RPC Server	x														
COBOL Server/Client	x	x	x												
Micro Focus RPC Server					x	x	x	x	x			x	x	x	x
PL/I Server/Client	x														
C RPC Server/Client			x[5]		x	x	x	x	x		x	x	x	x	x
Java RPC Server/Client	x[3]				x	x	x	x	x			x	x	x	x
XML/SOAP RPC Server/Client	x[3]				x	x	x	x	x			x	x	x	x
WebSphere MQ RPC Server	x[3]				x	x	x	x	x			x	x	x	x
WebSphere MQ Listener	x[3]				x	x	x	x	x			x	x	x	x
DCOM RPC Client [1]														x	x
.NET RPC Server/Client [2]														x	x
RPC-ACI Bridge	x[3]				x	x	x	x	x			x	x	x	x
CICS ECI RPC Server	x[3]				x	x	x	x	x			x	x	x	x
IMS Connect RPC Server	x[3]				x	x	x	x	x			x	x	x	x
EntireX ACI															
Broker Stubs	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Java ACI	x				x	x	x	x	x			x	x	x	x
ActiveX Control/TOR Editor														x	x
System Management Hub					x	x	x	x	x			x	x	x	x
Broker Agent	x				x	x	x	x	x			x	x	x	x
JMS Support					x	x	x	x	x			x	x	x	x

	z/OS	z/VSE	BS2000/OSD	z/VM	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)	OpenVMS for Itanium (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 32-bit	Windows 64-bit
Attach Manager					x	x	x	x	x			x	x	x	x
Application Monitoring Data Collector					x	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] Application wizard for Visual Studio .NET also provided in installation kit for Windows 32-bit only.

[2] Application wizard for Visual Studio .NET also provided in installation kit for Windows 32-bit and Windows 64-bit.

[3] 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* in the z/OS installation documentation.

[4] 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.

[5] Only servers are supported; a server example is delivered.

[6] 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.
SSL and IPv6 are not supported on this platform.

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 `array-definition` under *Software AG IDL Grammar* 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 `DEPENDING ON` clause. See *Tables with Variable Size - `DEPENDING ON` Clause*. 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 .cvm or .svm)[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 *IDL Data Types* under *Software AG IDL File* 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 `structure-definition` under *Software AG IDL Grammar* 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 `attribute-list` under *Software AG*

RPC Protocol[1]	Feature[2]	EntireX	EntireX Adapter for Integration Server	PI Adapter for EntireX	Natural			More Information
					Main-frame	ONE	Open Systems	
								IDL Grammar 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 `array-definition` under *Software AG IDL Grammar* 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 .cvm) [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 .cvm or .svm) [3] to be created.
	Reliable RPC	8.0	7.2	4.1.1	4.2.5	8.1	6.3.6	*Reliable RPC*.
	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 Workbench file

RPC Protocol[1]	Feature[2]	EntireX	EntireX Adapter for Integration Server	PI Adapter for EntireX	Natural			More Information
					Main-frame	ONE	Open Systems	
								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 *Natural Security* under *Common Features of Wrappers and RPC-based Components*.
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 *IDL Data Types* under *Software AG IDL File* 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 `simple-parameter-definition` under *Software AG IDL Grammar* 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	`REDEFINE`s 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 *When is a Server Mapping File Required?* in the EntireX Workbench documentation for full list of features.
	Client-side mapping file for COBOL	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 server mapping file (EntireX Workbench file

| RPC Protocol[1] | Feature[2] | EntireX | EntireX Adapter for Integration Server | PI Adapter for EntireX | Natural | | | More Information |
					Main-frame	ONE	Open Systems	
								with extension .cvm or .svm) [3] is automatically created if one is required. See *When is a Server Mapping File Required?* 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	no	no	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 *Mapping Software AG IDL Data Types* 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 document-
    ation.

4   EntireX Prerequisites

This chapter covers the following topics:

General Prerequisites

- Java 7 or Java 8 for all Java-based components. See *Support of Java 8*.

- 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	■ 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.
PL/I RPC Client and Server	■ To compile the sources generated by the EntireX Workbench component PL/I Wrapper: Compiler supported by the PL/I Wrapper, for example PL/I for MVS & VM V1R1.1, or the newer Enterprise PL/I for z/OS V4.R3.
WebSphere MQ RPC Server and Listener	■ To run the WebSphere MQ RPC Server or WebSphere MQ Listener, you need either the base Java classes or a full installation of WebSphere MQ. For WebSphere MQ version 7.0, 7.1, 7.5 or 8.0 you need at least the JAR file `com.ibm.mq.jar`. Note that this file name is subject to change in a future version of WebSphere MQ. Check your IBM documentation for details.
Application Monitoring	■ As a general prerequisite: EntireX components of version 9.0 or above. ■ Natural RPC supports application monitoring with Natural Version 8.2.4 or above in all supported Natural environments. To enable application monitoring for Natural RPC with Natural Version 8.2.3, install the required load fix for the appropriate Natural version: Natural Version 8.2.3 for Mainframes with Zap NA93143 and with Natural RPC Version 8.2.3.2 as delivered with Natural Version 8.2.3 L002 for Mainframes.

UNIX Prerequisites

Component	Prerequisites
Wrapper for EJB	■ J2EE 1.5. See *Application Server Prerequisites*. ■ Ant 1.6.1. ■ XDoclet 1.2.1.
Micro Focus COBOL	■ Micro Focus Server Express 5.1 and Net Express 5.1 or compatible development environment.
WebSphere MQ RPC Server and Listener	■ To run the WebSphere MQ RPC Server or WebSphere MQ Listener, you need either the base Java classes or a full installation of WebSphere MQ. For WebSphere MQ version 7.0, 7.1, 7.5 or 8.0 you need at least the JAR file `com.ibm.mq.jar`. Note that this file name is subject to change in a future version of WebSphere MQ. Check your IBM documentation for details.
Application Monitoring	■ As a general prerequisite: EntireX components of version 9.0 or above. ■ Natural RPC supports application monitoring with Natural Version 6.3.14 or above. To enable application monitoring for Natural RPC, install the appropriate Natural version.

Windows Prerequisites

Component	Prerequisites
C Wrapper	■ For target platform Windows, Microsoft Visual Studio 2010.
DCOM Wrapper	■ C++ Compiler from Microsoft Visual Studio 2010. ■ For generated interface objects: Microsoft Visual Studio .NET 2010 C/C++ runtime environment.
.NET Wrapper	■ .NET Framework 4.0 or 4.5.x. ■ C# Compiler from Microsoft Visual Studio 2010.
Wrapper for EJB	■ J2EE 1.5. See *Application Server Prerequisites*. ■ Ant 1.6.1. ■ XDoclet 1.2.1.
Micro Focus COBOL	■ Micro Focus Server Express 5.1 and Net Express 5.1 or compatible development environment.
Microsoft Visual Studio Add-ins	■ DCOM Wrapper and .NET Wrapper add-ins for Microsoft Visual Studio: Microsoft Visual Studio 2010.
WebSphere MQ RPC Server and Listener	■ To run the WebSphere MQ RPC Server or WebSphere MQ Listener, you need either the base Java classes or a full installation of WebSphere MQ. For WebSphere MQ version 7.0, 7.1, 7.5 or 8.0 you need at least the JAR file `com.ibm.mq.jar`. Note that this file name is subject to change in a future version of WebSphere MQ. Check your IBM documentation for details.
Application Monitoring	■ As a general prerequisite: EntireX components of version 9.0 or above. ■ Natural RPC supports application monitoring with Natural Version 6.3.14 or above. To enable application monitoring for Natural RPC, install the appropriate Natural version.

BS2000/OSD Prerequisites

Component	Prerequisites
COBOL Wrapper	■ 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/OSD.
C Wrapper	■ To compile the applications generated by the EntireX Workbench component C Wrapper: any ILCS-enabled C/C++ compiler on BS2000/OSD.

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
Broker Kernel	■ The installation data sets require 60 MB on a 3390 disk. ■ CSI's TCP/IP for z/VSE Version 1.5F and/or BSI's TCP/IP for z/VSE Version 2.5.3 or above. ■ The minimum partition size for running EntireX Broker is approx. 45 MB, using the parameter values as supplied. By default, EntireX Broker uses `DYNAMIC-MEMORY-MANAGEMENT`, which means that the partition size corresponds to the load EntireX Broker can handle. When running with `ICU-CONVERSION`, an additional 16 MB are required above the 16 MB line. The recommended partition size is at least 100 MB.
Broker Stubs and RPC Servers	■ CSI's TCP/IP for z/VSE Version 1.5F and/or BSI's TCP/IP for z/VSE Version 2.5.3 or above. ■ IBM Language Environment 1.4.4 or above.
Security	■ IBM Basic Security Manager must be enabled.
COBOL Wrapper	■ 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 Monitoring	■ As a general prerequisite: EntireX components of version 9.0 or above. ■ Natural RPC supports application monitoring with Natural Version 8.2.4 or above in all supported Natural environments. To enable application monitoring for

Component	Prerequisites
	Natural RPC with Natural Version 8.2.3, install the required load fix for the appropriate Natural version: Natural Version 8.2.3 for Mainframes with Zap NA93143 and with Natural RPC Version 8.2.3.2 as delivered with Natural Version 8.2.3 L002 for Mainframes.

IBM i Prerequisites

Component	Prerequisites
Broker Stubs	■ Controller that supports TCP/IP protocol. ■ Any IBM i ILE-enabled programming language. ■ TCP/IP connection to an EntireX Broker kernel on a z/OS, UNIX or Windows platform. ■ About 16 MB of disk space for the Broker stub installation and about 50 MB for the RPC server installation. ■ Each process that includes the Broker stub occupies one additional MB of virtual memory.
COBOL Wrapper	■ To compile the applications generated by the EntireX Workbench component COBOL Wrapper: standard COBOL compiler defined by the operating system.

IDL Extractor for Natural	■ To extract from IBM i, the Natural RPC server must be prepared to work together with the IDL Extractor for Natural. See *Natural RPC Server Configuration for the IDL Extractor for Natural* in the IBM i administration documentation. If extracted from objects, there is no support of the IDL Extractor for Natural for the following features:
	
	 ■ Optional replacement of special characters ('#', '$', '&', '/','§') in parameter names by underscore for source or object extraction. See *Step 5: Select Natural Subprograms from RPC Environment* under *Using the Software AG IDL Extractor for Natural*
	
	 ■ Extracting an IDL from sources and objects for
	
	    ■ Natural V-arrays (Natural syntax: A100/1:V). They are mapped to IDL unbounded arrays.
	
	    ■ Combinations of Natural X-array dimensions together with Natural V-array dimensions (Natural syntax: A100/1:*,1:V) are now supported. They are mapped to IDL unbound end arrays.

OpenVMS Prerequisites

Component	Prerequisites
Broker Stubs	■ HP Integrity Server ■ OpenVMS 8.3-1H1, Update V8.0 ■ OpenVMS 8.4, Update V6.0 ■ HP TCP/IP Services for OpenVMS ■ HP SSL V1.4-334

z/VM Prerequisites

Component	Prerequisites
Broker Stubs	■ **Virtual Storage** The z/VM Broker stub runs within an IBM Language Environment enclave. This means that if the calling program is not an IBM Language Environment, program an enclave will be automatically created, invisible to the application. However, you must allow sufficient virtual storage to allow the Language Environment enclave to be created. A storage size of 16 MB is recommended. ■ **ESIZE** When using SYSETB under z/VM you must allow sufficient ESIZE. We recommend setting ESIZE=64 KB.

Application Server Prerequisites

The Web application components of EntireX (XML/SOAP Listener, XML/SOAP Runtime, Wrapper for EJB runtime) support J2EE 1.5. They should therefore run on any Java application server that supports J2EE 1.5.

The EntireX components have been tested on the application server provided with the Software AG Runtime.

Supported LDAP Servers

The following LDAP servers are currently supported by EntireX:

- IBM Tivoli Directory Server 6
- Microsoft Active Directory Domain Services
- Novell eDirectory 8
- OpenLDAP 2
- Apache Directory Server 1.5

5 What was New in Version 9.6

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*
- *CICS RPC Server*
- *Batch RPC Server*

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

CICS RPC Server

- **Enhanced Impersonation**
  For configuration parameter `IMPS`, value `YES` is now supported. The CICS RPC Server 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 CICS RPC Server* and `IMPS` under *Administering the CICS RPC Server* in the CICS RPC 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.

■ 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* under *Software AG IDL File* in the IDL Editor documentation and *Software AG IDL to COBOL Mapping* in the COBOL Wrapper documentation.

■ **SSL or TLS**
Various sections dealing with SSL or TLS support have been reworked:

  ■ **RPC Servers**
  See *Using SSL or TLS with the RPC Server* in the relevant sections of the documentation.

  ■ **Certificates**
  See *SSL or 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.

6 What was New in Version 9.5

Workbench Enhancements

Support of Eclipse 4.3

Eclipse version 4.3 is now supported.

IDL Extractor for COBOL

Before you use the IDL Extractor for COBOL, make sure you have installed all the available fixes for the EntireX Eclipse plug-ins.

RPC Server Changes and Enhancements

Automatic Syncpoint Handling

The CICS and IMS RPC servers automatically issue a `SYNCPOINT` under certain circumstances. See *Automatic Syncpoint Handling* in the respective RPC server documentation.

The configuration parameter `SYNCPOINT` is now deprecated.

Broker Enhancements

- Under z/OS, the new attribute `TRACE-DD` means you can write trace data for a broker that is up and running, using a GDG (generation data group) data set. See `TRACE-DD` and *Flushing Trace Data to a GDG Data Set*.

  This avoids a broker shutdown and restart during production.

  > **Note:** GDG is supported for deferred tracing only. See *Deferred Tracing* under *Tracing EntireX Broker*.

Internationalization

Simplified ICU Conversion

For *ICU Conversion* under *Introduction to Internationalization*, SAGTRPC detects single-byte codepages automatically and converts them quickly and efficiently in one step from source to target encoding. This means that for single-byte codepages, SAGTRPC is the same as SAGTCHA, which simplifies the internationalization approach ICU Conversion:

- For *ACI-based Programming* there is no change: configure SAGTCHA as in previous versions of EntireX.
- For *RPC-based Components* and *Reliable RPC*, always configure SAGTRPC: complex codepages such as multibyte, double-byte, EBCDIC stateful, Hebrew 803, as well as Arabic shaping are always handled correctly, and for single-byte scenarios, throughput has been enhanced.

There is no need to reconfigure ICU conversion in your existing environment; your settings for ICU conversion will continue to work. Moreover, if SAGTRPC is defined in your environment but not really needed because all your RPC components use single-byte codepages only, broker throughput should increase and you should get better response times.

For conversion, set the service-specific or topic-specific broker attribute `CONVERSION` in the attribute file.

See also *Configuring ICU Conversion* under *Configuring Broker for Internationalization* in the platform-specific administration documentation and *What is the Best Internationalization Approach to use?* under *Internationalization with EntireX*.

On-error Trace for ICU Conversion

For *ICU Conversion* under *Introduction to Internationalization*, both SAGTCHA and SAGTRPC provide an on-error trace. See `TRACE` option of the service-specific or topic-specific broker attribute `CONVERSION` in the attribute file.

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. Here is a selection of Brainstorm ideas that have been implemented in EntireX. The number in square brackets is the Brainstorm ID.

- Writing trace data for a running broker under z/OS, using a GDG (generation data group) data set. This avoids a broker shutdown and restart during production. See *Flushing Trace Data to a GDG Data Set*. [1035388]

- A new configuration property `entirex.wmqbridge.deadletterqueue` is provided for the WebSphere MQ Listener to specify the name of a queue that will receive messages that cannot be processed successfully. See *Configuring the WebSphere MQ Side* under *Administering the WebSphere MQ Listener*. [1072327]

Increased Platform Support

EntireX is now supported under the following additional platforms. See *List of Components per Platform* for full list.

- z/OS 2.1
- AIX Power 6.1 (64-bit)

Documentation Enhancements

- **SVM File Handling**
  Documentation of SVM file handling has been enhanced for all supported RPC servers. See *Server-side Mapping Files* in the respective sections of the documentation.

- **CVM File Handling**
  Documentation of CVM file handling has been enhanced. See *Server Mapping Files for Natural* in the EntireX Workbench documentation.

- **Supported RPC Protocols**
  New section lists the RPC protocols supported by the different EntireX and Natural versions. See *Supported RPC Protocols*.

- **Conversion Error Messages**
  All error messages of class 1003 have been reworked and several new messages have been added. See *Message Class 1003 - Conversion* under *Error Messages and Codes*.

- **Internationalization**
  The internationalization documentation has been reworked to reflect the changes described above. See *What is the Best Internationalization Approach to use?* under *Internationalization with EntireX*.

- **Software AG Update Manager**
  With the Software AG Update Manager under UNIX and Windows you can install fixes for components of EntireX Workbench and webMethods EntireX Adapter for Integration Server. See *Installing Fixes from the Software AG Update Manager*.

Other Changes and Enhancements

SSL Support with LDAP Server

SSL connections are now supported by the LDAP server. A new configuration parameter `protocol` is provided in the xds.ini file, and a new value `ldaps` is provided for security-specific broker attribute `AUTHENTICATION-TYPE`. See

- *Configuration of Authorization Rule Agent using System Management Hub* in the UNIX | Windows administration section of the documentation
- *Saving the Data of Administration Service in LDAP* in the UNIX | Windows administration section of the documentation
- `AUTHENTICATION-TYPE` under *Broker Attributes*
- *Support of Self-signed Certificates* under *SSL or TLS and Certificates with EntireX*

Encyrption Level for Java-based Components using URL-style Broker ID

You can now specify the encryption level for EntireX Java-based components using a URL-style broker ID. See *URL-style Broker ID* under *EntireX Broker ACI Programming*.

Error Messages from Java-based Components

In earlier releases, error messages issued by Java-based EntireX components were prefixed with "Broker Error" even if the error was not Broker-related. This has been changed to "Error".

New Configuration Parameters for WebSphere MQ

- **Message Priority**
  A new configuration property `entirex.wmqbridge.priority` is provided for the EntireX WebSphere MQ RPC Server and the WebSphere MQ Listener to specify a message priority that is different from the default. See *Configuring the WebSphere MQ Side* in the EntireX WebSphere MQ RPC Server and WebSphere MQ Listener documentation.

- **Dead-letter Queue Support**
  A new configuration property `entirex.wmqbridge.deadletterqueue` is provided for the WebSphere MQ Listener to specify the name of a queue that will receive messages that cannot be processed successfully. See *Configuring the WebSphere MQ Side* under *Administering the WebSphere MQ Listener*.

7 What was New in Version 9

High Availability

Under High Availability we understand an environment with engineered redundancy which, if any one component fails, guarantees the integrity of the system as a whole. To achieve high availability, EntireX uses existing third-party clustering technology.

See also *High Availability in EntireX*.

Configuration Enhancements

Multiple enhancements have been made to simplify configuration of many EntireX components:

- Simplified Configuration for DIV Persistent Store
- RPC Parameters
- Dynamic Memory Management
- Specifying poolsize using Java System Property
- RPC Security

Simplified Configuration for DIV Persistent Store

The persistent store handler for Data In Virtual (DIV) has been enhanced. Set `PSTORE-VERSION=4` to use the new handler, which requires much less configuration data. See `PSTORE-VERSION`.

RPC Parameters

New parameters are available to simplify configuration of RPC servers:

- `marshalling`
  For Batch RPC Server and IMS RPC Server, new parameter *marshalling* is used together with server-side mapping files and replaces the complex parameter `runoption`, which is now deprecated.

- `workermodel`
  For Batch RPC Server, new parameter *workermodel* replaces parameters `minworker`, `maxworker` and `endworker`, which are now deprecated.

  Examples:

```
Workermodel=(SCALE, 1,5,fastshrink) replaces MinWorker=1; MaxWorker=5;
                                             EndWorker=Immediately

Workermodel=(SCALE,                 replaces MinWorker=3; MaxWorker=10;
3,10,slowshrink)                             EndWorker=Timeout
```

```
Workermodel=(FIX, 4)                   replaces MinWorker=4; MaxWorker=4;
                                       EndWorker=Never
```

To reflect these new parameters, a new configuration file is provided. See member `CONFIG` in the source library EXP970.SRCE. All deprecated parameters are still supported, but may be dropped in a future version; there is currently no need to adapt your configuration file, although this is recommended.

Dynamic Memory Management

Dynamic memory management is a feature to handle changing Broker workload without any restart of the Broker task. It increases the availability of the Broker by using various memory pools for various Broker resources and by being able to use a variable number of pools for the resources. This feature was available in previous versions of EntireX but is now activated by default. See *Dynamic Memory Management* under *Broker Resource Allocation* in the general administration documentation and `DYNAMIC-MEMORY-MANAGEMENT` under *Broker Attributes*.

Specifying poolsize using Java System Property

Parameter `poolsize` for specifying the maximum number of socket connections with Java-based EntireX applications can now be set using the new Java property `entirex.socket.poolsize`. See *Socket Parameters for TCP and SSL Communication* under *Writing Advanced Applications - EntireX Java ACI*.

RPC Security

The Batch, CICS, IMS, UNIX, Windows, Micro Focus and .NET RPC Servers now provide logic to detect the security setup of the broker kernel automatically. This means the RPC server option `KERNELSECURITY` (`KSEC` under CICS) is now deprecated. The parameter is currently still supported for reasons of compatibility.

EntireX and the Cloud

Amazon Elastic Compute Cloud (Amazon EC2) is a web service that provides resizable compute capacity in the cloud. It is designed to make web-scale computing easier for developers. EntireX supports Amazon EC2 on the following platforms:

- Windows Server 2008 Standard and Enterprise editions (64-bit)

- Red Hat Enterprise Linux Server 6

See *Platform Coverage* for full list of supported platforms.

Security Enhancements

- Additional Authorization Call to EntireX Security
- Support of UsernameToken

Additional Authorization Call to EntireX Security

An additional authorization check is now performed for a user against a specified application in a RACF security environment. This prevents, for example, a password being revoked for a user who does not have access at all to a particular application. See `APPLICATION-NAME`.

Support of UsernameToken

The XML/SOAP RPC Server uses `UsernameToken` security for a Web service if the configuration contains the attribute `usernameToken` in <xmm>. The XML/SOAP RPC Server supports two kinds of `UsernameToken`:

- `PasswordText`
- `PasswordDigest`

See *XML/SOAP RPC Server with UsernameToken* in the UNIX and Windows administration documentation.

Workbench Enhancements

- IDL Tester
- COBOL Wrapper
- Natural Wrapper
- IDL Extractor for XML Document
- IDL Extractor for XML Schema
- IDL Extractor for WSDL
- IDL Extractor for Integration Server

- XML Mapping Editor

IDL Tester

In earlier versions, the IDL Tester cluttered up your projects with multiple Java assets. These assets are now generated into your temp directory and are removed automatically when the Designer is shut down. The Java Wrapper can still generate test classes into a Java project if required.

COBOL Wrapper

You can now customize the names for the generated COBOL client interface objects. See *Customize Automatically Generated Client Names* under *Generating COBOL Source Files from Software AG IDL Files*.

You can also customize the names for the generated COBOL server. See *Customize Automatically Generated Server Names* under *Generating COBOL Source Files from Software AG IDL Files*.

For IDL unbounded arrays (see `array-definition` under *Software AG IDL Grammar* in the *IDL Editor* documentation under *Software AG IDL Grammar* in the *IDL Editor* documentation) which are mapped to COBOL tables with the `DEPENDING ON` clause (see *Tables with Variable Size - DEPENDING ON Clause*), index variables in the `LINKAGE SECTION` of client interface objects and server skeletons are generated unsigned, that is, with the data format `PIC 9(8) BINARY` instead of `PIC 9 S(8) BINARY`. See `ODOTAB-A1-11` in the example below.

```
IDL:
1 ODOTAB-A1    (A1/V11)

Generated LINKAGE SECTION:
02 ODOTAB-A1-11                          PIC 9(8) BINARY.
02 ODOTAB-A1X OCCURS 1 TO 11 DEPENDING ON ODOTAB-A1-11.
 03 ODOTAB-A1                            PIC X(1).
```

Natural Wrapper

The Natural Wrapper allows you to customize the names for the generated Natural client interface objects and to enable/disable - for each IDL program - the generation of Natural client test programs. See *Step 2: Customize Natural Client Names* under *Using the Natural Wrapper for the Client Side within NaturalONE*

The Natural Wrapper also generates RPC servers; you can customize the names for these. See *Using the Natural Wrapper for the Server Side within NaturalONE*.

There are no longer any restrictions in IDL program names; these can be longer than eight characters or even contain characters not allowed in Natural names. The names are adapted during wrapping.

IDL Extractor for XML Document

The **Options for Target Programming Language** page has been redesigned. Generated names for IDL library and IDL programs depend on the selected target programming language and correspond to the customized name feature of the *Natural Wrapper* and *COBOL Wrapper*. Option combinations that do not match the selected target programming language are disabled and cannot be selected. See Step 5: Specify Options for Target Programming Language.

IDL Extractor for XML Schema

The **Options for Target Programming Language** page has been redesigned. Generated names for IDL library and IDL programs depend on the selected target programming language and correspond to the customized name feature of the *Natural Wrapper* and *COBOL Wrapper*. Option combinations that do not match the selected target programming language are disabled and cannot be selected. See Step 5: Specify Options for Target Programming Language.

IDL Extractor for WSDL

The **Options for Target Programming Language** page has been redesigned. Generated names for IDL library and IDL programs depend on the selected target programming language and correspond to the customized name feature of the *Natural Wrapper* and *COBOL Wrapper*. Option combinations that do not match the selected target programming language are disabled and cannot be selected. See *Step 6: Specify Options for Target Programming Language* in the IDL Extractor for WSDL documentation.

IDL Extractor for Integration Server

The **Select the Integration Server Package to Extract** page has been redesigned. Generated names for IDL library and IDL programs depend on the selected target programming language and correspond to the customized name feature of the *Natural Wrapper* and *COBOL Wrapper*. Option combinations that do not match the selected target programming language are disabled and cannot be selected. See *Step 3: Select the Integration Server Package to Extract*.

XML Mapping Editor

SOAP mapping with mapping parameter `Generate Array Envelope Element` has been changed: The generation for simple type arrays also respects the setting of this parameter. To enable the old behavior (arrays of type simple always get a wrapping element) add the following line to `eclipse.ini`:

```
-Dentirex.xmlmappingeditor.enableSimpleTypeWrapping=false
```

New ACI Version 10

With this new ACI version you can define a variable-size `BROKER-ID`, the so-called `LONG-BROKER-ID`. The ACI structure contains the new field `LONG-BROKER-ID-LENGTH`. If the value of this field is non-zero, specify the value of the `LONG-BROKER-ID` directly after the ACI control block. The `LONG-BROKER-ID` overrides any `BROKER-ID` value.

With the `LONG-BROKER-ID` you can now specify numeric IPv6 addresses. See *LONG-BROKER-ID-LENGTH* under *Broker ACI Fields*.

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. Here is a selection of Brainstorm ideas that have been implemented in EntireX. The number in square brackets is the Brainstorm ID.

- Fewer unwanted Java artifacts created when testing IDL files [1033097]. See *EntireX IDL Tester*.

- Job names and CICS transaction names in SMF records [10102119]. See `APPLICATION-NAME` under *Information Reply Structures* under *Broker CIS Data Structures* in the ACI Programming documentation.

- Improved default handling for preserving whitespace in XML and Web services scenarios [10382004]. See Whitespace Handling under *Writing Advanced Applications with the XML/SOAP Wrapper*.

- Re-architectured alias and short-name handling [1039561]. See, for example, *Step 2: Customize Natural Client Names* under *Using the Natural Wrapper for the Client Side within NaturalONE*.

- Arabic shaping with UTF-8 [1042468]. The conversion routines of EntireX now support Arabic shaping (based on code pages Windows-1256 and IBM420). See *Arabic Shaping* under *Introduction to Internationalization*.

- CICS RPC Server User Exits [1046480]. See *User Exit* `COBUEX02` under *Administering the EntireX RPC Server* in the CICS RPC Server documentation.

- Authorization call (align Top Secret and RACF handling) [1046522]. See `APPLICATION-NAME` and `FACILITY-CHECK` under *Broker Attributes*.

Documentation Enhancements

In addition to documentation for the new features listed on this page, the following topics have also been addressed:

- **Common Integration Scenarios**
  Common integration scenarios are described, with cookbooks and links to the relevant sections of the documentation. See, for example, *Calling COBOL from Integration Server*.

- **RPC Servers**
  The documentation for Batch, CICS and IMS RPC Servers has been thoroughly reworked; documentation for other RPC servers has also been enhanced.

- **High Availability**
  Under High Availability we understand an environment with engineered redundancy which, if any one component fails, guarantees the integrity of the system as a whole. To achieve high availability, EntireX uses existing third-party clustering technology. A new documentation section provides an introduction to clustering technology and describes how to set up in EntireX the redundant RPC servers and brokers you will need to achieve high availability. See *High Availability in EntireX*.

- **EntireX and Web Services**
  The introduction to EntireX support for Web services has been enhanced and provides links to the relevant sections of the documentation. See *EntireX and Web Services*.

Other Changes and Enhancements

- IDMSETB
- Support of IPv6
- New API RPC-CNTX
- Deploying Packages in Integration Server
- EXXMSG - Command-line tool for Displaying Error Messages
- Modified Codepage Handling with CICS ECI RPC Server and IMS Connect RPC Server
- CICS RPC Server
- Job Names and Transaction IDs in SMF Records
- Whitespace Handling in the XML/SOAP Runtime
- Administration Service Commands

- License Key Handling under z/OS

IDMSETB

A new broker stub is provided to support IDMS/DC. See *IDMSETB* under *Administering Broker Stubs* under *Administering Broker Stubs* in the z/OS administration documentation and *Using the COBOL Wrapper for IDMS/DC with Call Interfaces (z/OS)*.

Support of IPv6

SSL and TCP/IP transport is now supported in IPv4 and IPv6 networks. Mixed IPv4 and IPv6 scenarios are also supported. See `IPV6`.

New API RPC-CNTX

Using API RPC-CNTX you can provide a context for Natural RPC client applications without setting a STEPLIB or copying APIs from SYSEXT to user libraries. See *Interface `RPC-CNTX` for the Natural RPC Client Programmer*.

Deploying Packages in Integration Server

The deploying of packages in Integration Server has been enhanced in this release.

EXXMSG - Command-line tool for Displaying Error Messages

`EXXMSG` is a command-line tool that displays the text of an EntireX error message for a supplied error number. It is available on all platforms.

See *EXXMSG - Command-line Tool for Displaying Error Messages*.

Modified Codepage Handling with CICS ECI RPC Server and IMS Connect RPC Server

The CICS ECI RPC Server and IMS Connect RPC Server now use only the encoding specified with the parameter `entirex.bridge.targetencoding` when communicating with the EntireX Broker. This behavior is new in this version. Make sure you have enabled conversion in the Broker attribute file so the data can be converted correctly. This is typically achieved by setting service-specific attribute `CONVERSION` to "`SAGTCHA`".

See `entirex.bridge.targetencoding` under *Configuring the CICS ECI Side | Configuring the IMS Connect Side* in the IMS Connect RPC Server documentation in the respective RPC server documentation.

CICS RPC Server

A user exit is provided to influence/control the logic of the CICS RPC Server. See *User Exit COBUEX02* under *Administering the EntireX RPC Server* in the CICS RPC Server documentation.

Job Names and Transaction IDs in SMF Records

Broker ACI field APPLICATION-NAME has been enhanced to improve logging and accounting. If the program that issued the broker call is running on a mainframe system, the eight-byte job name is used as application name. If the job name is shorter than eight bytes, it is padded with underscore characters. If the z/OS program issuing the broker call is running in a TP monitor (except IDMS/DC), a dash sign is set as ninth byte. The following eight bytes from position 10-17 contain monitor-dependent data. See APPLICATION-NAME for details.

Whitespace Handling in the XML/SOAP Runtime

The default handling for preserving whitespace in XML and Web services scenarios has been enhanced. The XML/SOAP Runtime trims whitespace in values by default. The whitespace handling is also determined by defining attribute xml:space (see XML specification) on element(s). The attribute xml:space has the higher priority and is inherited from children of the element recursively. See Whitespace Handling under *Writing Advanced Applications with the XML/SOAP Wrapper*.

Administration Service Commands

The administration service monitors and controls all local brokers; remote brokers can also be monitored. The administration service is addressed via the System Management Hub or the administration service command-line utility etbsrv. To run the commands from utility etbsrv, System Management Hub is not required. This feature was designed to be used in a clustering environment, but can also be used in a standard environment.

See also *Administration Service Commands* in the UNIX|Windows administration section of the documentation.

License Key Handling under z/OS

Under z/OS, the EntireX Broker no longer starts up if the license key is invalid.