5 software AG

webMethods EntireX

Release Notes

Version 10.7

October 2020

WEBMETHODS

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1 About this Documentation

Document Conventions

Convention	Description
Bold	Identifies elements on a screen.
`Monospace font`	Identifies service names and locations in the format `folder.subfolder.service`, APIs, Java classes, methods, properties.
`Italic`	Identifies: Variables for which you must supply values specific to your own situation or environment. New terms the first time they occur in the text. References to other documentation sources.
`Monospace font`	Identifies: Text you must type in. Messages displayed by the system. Program code.
{ }	Indicates a set of choices from which you must choose one. Type only the information inside the curly braces. Do not type the { } symbols.
|	Separates two mutually exclusive choices in a syntax line. Type one of these choices. Do not type the | symbol.
[ ]	Indicates one or more options. Type only the information inside the square brackets. Do not type the [ ] symbols.
...	Indicates that you can type multiple options of the same type. Type only the information. Do not type the ellipsis (...).

Online Information and Support

Product Documentation

You can find the product documentation on our documentation website at **https://documenta-tion.softwareag.com**.

In addition, you can also access the cloud product documentation via **https://www.software-ag.cloud**. Navigate to the desired product and then, depending on your solution, go to "Developer Center", "User Center" or "Documentation".

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- Ask questions and find answers in our discussion forums.

- Get the latest Software AG news and announcements.

- Explore our communities.

- Go to our public GitHub and Docker repositories at **https://github.com/softwareag** and **https://hub.docker.com/publishers/softwareag** and discover additional Software AG resources.

Product Support

Support for Software AG products is provided to licensed customers via our Empower Portal at **https://empower.softwareag.com**. Many services on this portal require that you have an account. If you do not yet have one, you can request it at **https://empower.softwareag.com/register**. Once you have an account, you can, for example:

- Download products, updates and fixes.

- Search the Knowledge Center for technical information and tips.

- Subscribe to early warnings and critical alerts.

- Open and update support incidents.

- Add product feature requests.

Data Protection

Software AG products provide functionality with respect to processing of personal data according to the EU General Data Protection Regulation (GDPR). Where applicable, appropriate steps are documented in the respective administration documentation.

2 What's New

Increased Platform Support

■ **Intel Linux**
EntireX now supports SuSE Linux ES 15 and Red Hat 8 for Intel Linux platforms.

■ **zLinux**
EntireX now supports Red Hat 8 under zLinux.

> **Note:** For Linux platforms Red Hat 8 (Intel and zLinux) you need to install the package `libnsl`, which is not included in the default installation.
> Additionally, if you want to link your own C applications with EntireX libraries, you need to install package `glibc-devel`.
> See also *UNIX Prerequisites*.

REST Enhancements

■ **Generation of Adapter Assets via REST**
See *EntireX Adapter Enhancements* below.

■ **API Enablement**
Users of webMethods Integration Server version 10.7 will benefit from the following Integration Server enhancements:

■ For *outbound* mainframe REST scenarios *Calling REST from COBOL | Calling REST from Natural*:

■ you can select operations while importing a Swagger as a consumer when you create the REST Application Descriptor

■ additional `AUTH` support for Swagger consumers where you can now use `API_KEY`, `OAuth` etc.

■ For *inbound* mainframe REST scenarios *Calling COBOL from REST | Calling Natural from REST*:

■ support for additional HTTP methods such as `HEAD` in the created REST resource

■ support of OpenAPI 3.0 as provider when you create a REST Application Descriptor

For more information refer to your Integration Server 10.7 Release Notes and Documentation.

Enhanced CICS Support

■ **CICS Socket Listener User Transaction Support**
With User Transaction Support, RPC requests run in separate CICS tasks, the user transactions. This, together with a customized name of the user transaction, is useful for accounting purposes.

For more information on running CICS programs in a separate user transaction, see:

■ *EntireX CICS Socket Listener* (z/OS | z/VSE)

■ *Configuring the CICS Socket Listener Side* in the RPC Server for CICS Socket Listener documentation

■ *Connection Parameters for CICS Socket Listener Connections* in the EntireX Adapter documentation

EntireX Adapter Enhancements

■ **Generation of Adapter Assets via REST**
A REST API is now provided for the following actions:

■ Creating adapter connections, adapter services, and adapter listeners

■ Updating adapter connections, adapter services, and adapter listeners

■ Extracting IDL

■ Extracting IDL and creating a listener connection service

See *Extracting IDL using the REST API* and *Creating or Updating Connections using the REST API* in the EntireX Adapter documentation.

■ **FIPS-140 Compliant SSL Communication**
EntireX Adapter now supports FIPS-140 compliant SSL communication. See `FIPS Mode` under *Configuring Direct RPC*.

Designer Enhancements

■ In the **EntireX** perspective, the deprecated **Navigator** view has been replaced by the **Project Explorer** view.

EntireX RPC Server Enhancements

- **FIPS-140 Compliant SSL Communication**
  See *Security Enhancements* below.

Security Enhancements

- **Authentication using SSL Client Certificates**
  EntireX Broker on z/OS supports authentication of participants with their SSL certificate. See *Using SSL Certificates for Authentication* in the EntireX Security documentation for z/OS. See also *SSL/TLS Changes* under *Other Changes and Enhancements* below.

- **FIPS-140 Compliant SSL Communication for RPC Servers**
  Parameter `fips_mode` has been added to enable FIPS-140 compliant SSL communication. Available for:

  - EntireX RPC Server for CICS ECI | CICS Socket Listener | IBM MQ | IMS Connect | Java | XML/SOAP | AS/400

  - RPC-ACI Bridge

  - Listener for IBM MQ | Listener for XML/SOAP

  - EntireX Java clients

  See *SSL/TLS Parameters for SSL Clients* under *SSL/TLS, HTTP(S), and Certificates with EntireX* in the platform-independent Administration documentation.

  The following EntireX RPC servers can be administered using Command Central. Here you can specify parameter `FIPS-140 mode` under Broker Configuration:
  CICS Socket Listener | IBM MQ | IMS Connect | Java | XML/SOAP.

  The corresponding parameter `BrokerFipsMode` is also provided if you are using the Command Central command-line interface.

- **FIPS-140 Compliant SSL Communication for EntireX Adapter**
  EntireX Adapter now supports FIPS-140 compliant SSL communication. See `FIPS Mode` under *Configuring Direct RPC*.

- **FIPS-140 Compliant SSL Communication on z/OS**
  All commponents on z/OS can be FIPS-enabled, see *Achieving FIPS Compliance* in the z/OS Administration documentation.

EntireX Broker Enhancements

- **Authentication using SSL Client Certificates**
  EntireX Broker on z/OS supports authentication of participants with their SSL certificate. See new attribute `CERT-AUTHENTICATION` below and *Using SSL Certificates for Authentication* in the EntireX Security documentation for z/OS.

- **New Attributes**
  The following new attributes can be defined:

  - `CERT-AUTHENTICATION`. See also *Using SSL Certificates for Authentication* in the EntireX Security documentation for z/OS.

  - `POSTPONED-QUEUE`. Enable or disable the posponed queue. See also *Postponing Units of Work* under *Using Persistence and Units of Work* in the platform-independent Administration documentation.

- **New CIS Version 12**

  - The new CIS interface version 12 enables you to shut down participants by using process ID (`JOB-ID` on z/OS) and host name. See field descriptions for `HOST-NAME` and `PROCESS-ID` and also `PARTICPANT SHUTDOWN HOST-NAME` and `PROCESS-ID` under *Broker CIS Data Structures* in the ACI Programming documentation.

  - New field `CREATE-TIME-CL32` replaces deprecated field `CREATE-TIME`, which can only handle timestamps up to January 2038. See `CREATE-TIME-CL32` under *Information Reply Structures*.

  - New CIS Information Service field `VERIFIED-USER-ID` returns the `USER-ID` verified by the security system. Under z/OS and using SSL certificates for authentication, this is the `USER-ID` coresponding to SSL certificate of the participant. See `VERIFIED-USER-ID` under *Information Reply Structures*.

    > **Note:** `PROCESS-ID` and `THREAD-ID` are only available with Broker kernel and Broker stub of EntireX version 10.7 and above. Java clients and Java servers of EntireX version 10.7 do not support `PROCESS-ID` and `THREAD-ID`.

- **User Request Handling**
  With new operating commands `FREEZE` and `RUN` you can freeze and resume user request processing in Broker. See Participant-specific Commands under *Operator Commands* in the z/OS Administration documentation.

Documentation Enhancements

- **Monitoring**
  A new section introduces the various monitoring approaches provided by EntireX. It also shows common scenarios using these approaches. Links are provided to other sections of the EntireX documentation, where these approaches are described in greater detail. See *Monitoring EntireX*.

Other Changes and Enhancements

- **Enhanced Socket Pool Management for Broker Stubs**
  With new environment variables `ETB_POOLSIZE` and `ETB_POOLTIMEOUT` you can configure the size of the socket pool and define the maximum wait time for a free TCP/IP connection. See *Configuring the Socket Pool* under UNIX | Windows in the platform-specific *Administering Broker Stubs* documentation.

- **Additional Special Character Support**

  - The following special characters are now additionally supported in IDL group and parameter names: ø, Ø, å, Å. See *Rules for Coding Group and Parameter Names* under *Software AG IDL File* in the IDL Editor documentation in the IDL Editor documentation.

  - If you are extracting from a Natural RPC environment, you can additionally replace special characters ø, Ø, å, Å in Natural parameter names with underscores. See *Extracting IDL Parameter Names* in the IDL Extractor for Natural documentation.

- **SSL/TLS Changes**
  To make sure that each SSL participant (thread) presents a valid certificate for authentication using SSL client certificates, existing SSL functionality has changed as follows:

  - The ACI function `SETSSLPARMS` no longer applies to all threads. Instead, this function needs to be performed for each thread to create an SSL connection to the broker. This is relevant only if you are using native ACI programming in combination with threads.

  - When you use SSL transport, socket pooling (environment variable `ETB_SOCKETPOOL`) is ignored.

    > **Note:** These changes apply to all platforms where the broker stub directly supports SSL/TLS transport. See *Transport: Broker Stubs and APIs*.

- **Trace Utility**
  An additional column **Certuid** has been introduced between columns **Userid** and **Token**. It displays the user ID to which the SSL certificate is assigned. This applies only to RACF under z/OS.

3 Dropped Features

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

- **Deprecation of Solaris v.11.3**
  The original provider of the operating system Solaris (Oracle) strongly recommends to upgrade from version 11.3 to 11.4 as of now. In order to provide for enough time for Software AG customers to react to the upgrade policy of Oracle for Solaris versions after v.11.3, production environments based on Software AG products of this October 2020 release will in general continue to work without the immediate need to upgrade. However, Software AG customer support will only handle issues for Software AG products that can be reproduced in a Solaris v.11.4 environment. All newer versions of Software AG products AFTER the October 2020 release will no longer work with Solaris v.11.3.

  Software AG therefore strongly recommends to address necessary migration steps timely.

- **Support of AIX und Sun Solaris SPARC**
  The platforms AIX and Sun Solaris SPARC will no longer be supported in the next EntireX version.

- **SVM Files at Runtime in RPC Servers**
  Support for server-side mapping files (SVM) in the EntireX RPC Servers for CICS ECI, IMS Connect, CICS, Batch and IMS, together with the Deployment Wizard, will be dropped in a future version. We strongly recommend using client-side server mapping files (CVM). To migrate server-side mapping files (SVM) to client-side server mapping files (CVM), see *Migrating Server Mapping Files* under *Server Mapping Files for COBOL* in the Designer documentation for prerequisites and steps.

- **Persistent Store Version less than 5**
  Persistent Stores with `PSTORE-VERSION` less than 5 will no longer be supported in the next EntireX version.

- `PSTORE-LOAD/UNLOAD`
  The options `PSTORE-LOAD` and `PSTORE-UNLOAD` of Broker-specific attribute `RUN-MODE` will no longer be supported in the next EntireX version.

- **CentOS-7**
  CentOS-7 will no longer be supported in the next EntireX version.

Features Dropped in Version 10.7

- **Micro Focus COBOL**
  EntireX no longer supports Micro Focus COBOL.

- **EntireX Broker and RPC Servers under z/VSE**
  Support for the following EntireX components will end on 31 October 2020 for all EntireX versions (including version 9.6, the last released version on z/VSE):

  - **EntireX Broker under z/VSE**
    We strongly recommend using EntireX Broker on a Linux or Windows platform.

  - **EntireX RPC Server for z/VSE CICS®**
    We strongly recommend using the *EntireX RPC Server for CICS Socket Listener*. See also *Connection Parameters for CICS Socket Listener Connections* in the EntireX Adapter documentation.

  - **EntireX RPC Server for z/VSE Batch**
    No replacement.

- **SVM Files at Design Time in Software AG Designer**
  Server-side mapping files (SVM) in the Software AG Designer are no longer supported. SVM files can no longer be created by the IDL Extractor for COBOL and by the COBOL Wrapper.

  We strongly recommend using client-side server mapping files (CVM). To migrate server-side mapping files (SVM) to client-side server mapping files (CVM), see *Migrating Server Mapping Files* under *Server Mapping Files for COBOL* in the Designer documentation for prerequisites and steps.

- **Direct SSL/TLS Support for Broker under z/OS**
  Direct SSL/TLS support (using GSK) inside the Broker under z/OS is no longer supported. We strongly recommend using IBM's Application Transparent Transport Layer Security (AT-TLS) instead. See the following sections in the z/OS Administration documentation:

  - *Using IBM's Application Transparent Transport Layer Security (AT-TLS)*

  - *Migration from Broker's Direct SSL/TLS Support to AT-TLS*

- **AIX Support**
  AIX version 7.1 is no longer supported. EntireX still supports AIX version 7.2.

Features Dropped in Version 10.5

■ **Micro Focus COBOL**
Software AG is discontinuing the support of Micro Focus COBOL on the platforms Windows
and Linux because Micro Focus no longer supports Micro Focus Server Express and Net Express
on these platforms.

Micro Focus COBOL is still supported on Solaris and AIX, and EntireX still supports Micro Focus
COBOL on these platforms.

■ **HP-UX**
Software AG no longer supports HP-UX.

Features Dropped in Version 10.3

■ The EntireX RPC Server for IBM i of EntireX version 7.1.1 running under IBM i (AS/400) is no
longer supported. We strongly recommend using the new *RPC Server for AS/400* or the EntireX
Adapter. See also *Connection Parameters for AS/400 Connections*.

■ For EntireX Java ACI, the obsolete and deprecated methods `getEnvironment()`,
`setEnvironment(String)`, `useCodePage()` and `useCodePage(Boolean)` of the Java class
`BrokerService` have been removed.

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* GUI |
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, HTTP(S), 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.

■ **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 Designer.

■ **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 *RPC Server for IBM MQ* and the *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* under CICS | Batch. 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. 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 *Setting the Default Transport Method* 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.

4 Platform Coverage

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.

	z/OS	UNIX, Linux	Windows (64-bit)	z/VSE	BS2000	IBM i
EntireX Broker	x[3]	x	x		x	
Designer		x[6]	x			
EntireX Adapter		x[7]	x			
EntireX RPC						
RPC Server for Batch	x				x	
RPC Server for CICS	x					
RPC Server for IMS	x					
COBOL Server/Client	x			x	x	
PL/I Server/Client	x					
RPC Server/Client for C	x[8]	x	x		x[4]	x
RPC Server/Client for Java	x[2]	x	x			
RPC Server/Client for XML/SOAP	x[2]	x	x			
RPC Server for IBM MQ	x[2]	x	x			
Listener for IBM MQ	x[2]	x	x			
DCOM RPC Client			x[5]			

	z/OS	UNIX, Linux	Windows (64-bit)	z/VSE	BS2000	IBM i
RPC Server/Client for .NET			x[1]			
RPC-ACI Bridge	x[2]	x	x			
RPC Server for CICS ECI	x[2]	x	x			
RPC Server for CICS Socket Listener	x[2]	x	x			
RPC Server for IMS Connect	x[2]	x	x			
RPC Server for AS/400		x	x			
EntireX ACI						
Broker Stubs	x	x	x	x	x	x
Java ACI	x	x	x			
ActiveX Control/TOR Editor			x			
Command Central		x	x			
Broker Agent	x	x	x			
Attach Manager		x	x			
Application Monitoring Data Collector		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.

[5] 32-bit application that runs on 64-bit platforms.

[6] For list of supported UNIX and Linux platforms see *Software AG System Requirements* under *webMethods Product Family 10.7 > System Requirements, Installation, and Upgrade* on the Software AG Documentation Website.

[7] EntireX Adapter supports all platforms supported by the respective version of the Integration Server with the exception of the Mac OS platform.

[8] Only clients are supported.

5 Prerequisites

General Prerequisites

- Java 8 for all Java-based components.

- EntireX Java ACI and Java RPC clients support Java 8 and 11.

- 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 *IBM Supported Platforms by Software AG* on the Software AG Corporate Website.

Component	Prerequisites
EntireX Broker with Transport Method NET	■ Adabas SVC version of the highest Adabas/WAL version on this platform in your environment. If in doubt, see your Adabas documentation regarding SVC compatibility.
COBOL RPC Client and Server	■ To compile the sources generated by the Designer component COBOL Wrapper: IBM Enterprise COBOL for z/OS 4.2, 6.1, 6.2 or 6.3.
PL/I RPC Client and Server	■ To compile the sources generated by the Designer component PL/I Wrapper: Enterprise PL/I for z/OS.
RPC Server and Listener for IBM® MQ	■ IBM® MQ 9.0 or 9.1.
Software AG Licensing	■ MLC version 1.3.6 or above. See *Software AG Licensing Messages*.

UNIX Prerequisites

Note: As a general prerequisite on Linux platforms Red Hat 8 (Intel and zLinux) and CentOS-7, the package `libnsl` must be installed before you install EntireX. Additionally, if you want to link your own C applications with EntireX libraries, you need to install the package:`glibc-devel`.

Component	Prerequisites
RPC Server and Listener for IBM® MQ	■ IBM® MQ 9.0, 9.1 or 9.2.
RPC Server for AS/400	■ 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*.

Windows Prerequisites

Component	Prerequisites
C Wrapper	■ For target platform Windows: Microsoft Visual Studio 2015 and 2017.
DCOM Wrapper	■ C++ Compiler from Microsoft Visual Studio 2015 and 2017. ■ For generated interface objects: corresponding Microsoft Visual Studio .NET C/C++ runtime environment.
.NET Wrapper	■ Any .NET Framework supporting .NET Common Language Runtime (CLR) version 4.
Microsoft Visual Studio Wizard for .NET Wrapper	■ Microsoft Visual Studio 2017 or 2019.
RPC Server and Listener for IBM® MQ	■ IBM® MQ 9.0, 9.1 or 9.2.
RPC Server for AS/400	■ 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*.

BS2000 Prerequisites

Component/Feature	Prerequisites
COBOL Wrapper	■ To compile the sources generated by the Designer component COBOL Wrapper: the COBOL2000 compiler on BS2000.
C Wrapper	■ To compile the applications generated by the Designer component C Wrapper: any ILCS-enabled C/C++ compiler on BS2000.

z/VSE Prerequisites

📄 **Note:** The supported versions of CICS are listed under *IBM Supported Platforms by Software AG* on the Software AG Corporate Website.

Component	Prerequisites
EntireX Broker with Transport Method NET	■ Adabas SVC version of the highest Adabas/WAL version on this platform in your environment. If in doubt, see your Adabas documentation regarding SVC compatibility.
COBOL Wrapper	■ To compile the sources generated by the Designer component COBOL Wrapper: 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

- WebSphere 8.5.5 (Java 8 Extension required)

- Tomcat 9.0

- Tomcat 8.5

Supported LDAP Servers

For supported LDAP servers, see the *Software AG Security eXtensions Administrator's Guide*.

EntireX Adapter Prerequisites

Supported Versions of Integration Server and Designer

The EntireX Adapter supports Integration Server version 10.5 or 10.7. 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 10.7 must be installed.

Supported Versions of CICS and IMS

For the CICS ECI, CICS Socket Listener and IMS Connect connection types, the supported versions of CICS and IMS are listed under *IBM Supported Platforms by Software AG* 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://source-forge.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*.

6 What was New in Version 10.5

Increased Platform Support

■ EntireX now supports Microsoft Windows Server 2019.

■ EntireX Java ACI and Java RPC clients now support both Java 8 and Java 11.

REST Enhancements

EntireX now supports scenarios where you have a REST API and want to call this from a COBOL or Natural application:

■ *Calling REST from COBOL*

■ *Calling REST from Natural*

EntireX Adapter Enhancements

■ Extraction of REST Consumers (introduced with Integration Server 10.5) has been added. Additional object wrapper types and default values for service input parameters are now supported. See *Integration Server Data Types to IDL Mapping* in the EntireX Adapter documentation and also *REST Enhancements* below.

■ It is now possible to extract services with field names containing special characters such as ":" and "*". Extraction of Web Service Connectors is now supported.

■ The Application Monitoring Data Collector is now available as a component running inside an Integration Server using the EntireX Adapter. See the separate Application Monitoring documentation.

■ Parameters `messageID` and `correlationID` have been added for EntireX Adapter services. See *Using Adapter Services*.

■ The log files created by the Adapter (wmentirex*.log) are now written using the character set UTF-8 (instead of the default character set).

■ It is now possible to use both object wrapper types and string types with a content type in the same program. At runtime the listener inspects the input signature of the service to be called in order to determine the data type required by the Integration Server.

Application Monitoring Enhancements

- **Application Monitoring Data Collector**
  The Application Monitoring Data Collector is now available as a component running inside an Integration Server using the EntireX Adapter. See *Application Monitoring*.

- **Dynamic Configuration**
  Dynamic configuration of Application Monitoring is now possible while the EntireX Broker is running.

- **New KPIs**
  The message ID and correlation ID of a message are now available as Application Monitoring KPIs. See *KPI Definitions for Application Monitoring*.

- **New Command and Information Services (CIS) Version 11**

  - CIS version 11 provides commands to enable/disable the Application Monitoring feature and to define the collector Broker ID for Application Monitoring. See `APPMON-OFF`, `APPMON-ON` and `SET-COLLECTOR` under *Broker Command and Information Services* in the EntireX Broker documentation.

  - The information reply structure `BROKER` was enhanced to return the current status of Application Monitoring and the collector Broker ID. See `BROKER-OBJECT (Struct INFO_BKR)`.

- **New Operator Commands for Broker**
  Broker supports operator commands `DISPLAY APPMON`, `APPMON=NO|YES` and `COLLECTOR=host:port`. Currently for z/OS only.

- **Changing Data Collector Settings Dynamically**
  Using Command Central you can now change Data Collector settings dynamically. The change is effective immediately; there is no need to restart the broker. See *Changing the Application Monitoring Settings Dynamically* using the Command Central GUI | Command Line.

Command Central Enhancements

- **Setting the Margins and Max. Values of Monitoring KPIs**
  The setting of margins and max. values used for displaying EntireX Broker KPIs has been reworked. See *Monitoring KPIs* using the Command Central GUI | Command Line.

- **Displaying Broker Statistics**
  You can now display the current statistics of a running EntireX Broker. See *Displaying the Statistics* using the Command Central GUI | Command Line.

Administration Service Enhancements

The Broker Administration service (UNIX and Windows) has been replaced by a more lightweight implementation. The registration, name and usage of the service remains the same.

■ The new Broker Administration Service uses one port instead of a TCP and an SSL port.

   ■ You can specify the port during installation. Make sure the port is unique. See *Ensuring Unique Port Numbers* under *Port Numbers in EntireX* in the EntireX installation documentation.

   ■ Alternatively, you can change the port after installation. See *Configuring the Administration Service* under UNIX | Windows.

■ The former executables `defaultbroker[.exe]` and `etbsrv[.exe]` have been replaced by scripts with the same name, that is, `defaultbroker[.bat]` and `etbsrv[.bat]`. The usage is unchanged.

■ The broker autostart handling is now defined in the corresponding attribute file. See `AUTOSTART` under *Broker-specific Broker Attributes*.

■ The ports of the default broker are now also defined in the attribute file *ETB001.atr*, and not in the config file *entirex.config* as in previous versions.

Designer Enhancements

■ **IDL Extractor for Integration Server**

   ■ You can now extract a subset of services from the desired package. See *Step 3: Select the Integration Server Package to Extract* under *Using the IDL Extractor for Integration Server*.

   ■ It is now possible to extract services with field names containing special characters such as ":" and "*". Extraction of Web Service Connectors is now supported.

■ **Testing Tool for RPC Server for XML/SOAP**
A pop-up message is issued if the EntireX XML Tester is about to communicate with the RPC Server for XML/SOAP. In this case we recommend using the *EntireX IDL Tester* instead.

EntireX RPC Server Enhancements

■ **Additional `ping` Command for RPC Servers**
An additional `ping` command is now available for all EntireX RPC servers to test the server's availability. You do not need a running Broker to execute this command. For example, see *Pinging the RPC Server* in the RPC Server for Java documentation. This is particularly useful in a high availability cluster context.

> **Note:** The `ping` command via `ETBINFO` of earlier EntireX versions is still available.

Broker Stub Enhancements

- New broker stub `ARFETB` for exclusive use by Adabas Replication Services. This stub is zIIP-eligible.

- New broker stub `NATETBZ` for exclusive use by Natural RPC Server. This stub is zIIP-eligible.

- Broker stub `CICSETB` no longer needs module `EXAMEM`.

Documentation Enhancements

- **New Scenarios**
    - *Calling REST from COBOL*
    - *Calling REST from Natural*
- **Container Orchestration**
  In a high availability context, container orchestration allows automated deployment, scaling and management of EntireX Brokers and EntireX RPC Servers running in Docker containers. See *High Availability with Container Orchestration* in the High Availability documentation.

Other Changes and Enhancements

- **Broker Restart Behavior with Update Manager**
  If you install updates for EntireX Broker using the Software AG Update Manager, all brokers that were stopped by the Update Manager before the update will be restarted automatically; the broker's `AUTOSTART` setting is ignored in this context.

  > **Note:** In versions prior to 10.5, all brokers with `AUTOSTART=YES` were restarted, irrespective of whether they were running prior to the update or not.

- **c-tree-specific Broker Attributes** `COMPATIBILITY` **and** `FLUSH-DIR`
  These attributes have been introduced to be compatible with c-tree behavior prior to EntireX Broker version 10.5. See `COMPATIBILITY` and `FLUSH-DIR` under *ctree-specific Broker Attributes*.

■ **Service-specific Broker Attribute** `APPLICATION-MONITORING`
The default value for service-specific attribute `APPLICATION-MONITORING` has been changed from `NO` to `YES`.

■ **Trace Utility Default Output**
The EntireX Trace Utility now uses "Full" instead of "Standard" as the default output format.

■ **License Handling**
EntireX checks only the major number of the version number. This means that EntireX version 10.5 works with all 10.x license files. This applies to EntireX Broker and RPC servers at runtime and also to installation.

■ **Docker Healthcheck**
A script `healthcheck.sh` is now provided for the EntireX RPC servers that support Docker technology. (This was previously available only for EntireX Broker.) Execution of this script pings the component and returns the result of the ping command. See *<title>Healthcheck</title>*
for RPC Server for Java and RPC Server for XML/SOAP.

■ **Unique Message ID**
Message IDs and Correlation IDs available since ACI version 11 (EntireX 10.1) can now be accessed with the following EntireX components:

　■ COBOL Wrapper, see *The RPC Communication Area (Reference)* in the COBOL Wrapper documentation.

　■ .NET Wrapper, see Properties under *.NET Wrapper Reference*

See *Unique Message ID* under *Broker ACI Functions*.

■ **Long Broker Password Support**
You can use long Broker passwords with COBOL RPC clients built with the COBOL Wrapper. See *Copybook ERXVSTR* and *Logging on Using Long Broker Passwords (z/OS with Call Interface)* in the COBOL Wrapper documentation.

■ **Long RPC User ID/Password Support**
You can now use long RPC user IDs and passwords with COBOL RPC clients built with the COBOL Wrapper. See *Copybook ERXVSTR* and *Using RPC Authentication (Natural Security, Impersonation, Integration Server)*.

7 **What was New in Version 10.3**

> **Note:** This release of EntireX also contained a major rework for BS2000.

Increased Platform Support

EntireX now runs under the following additional platforms:

- CentOS Linux 7 for x86-64
- Microsoft Windows Server 2012 for Microsoft Azure
- Microsoft Windows Server 2016 for Microsoft Azure
- Red Hat Enterprise Linux 7 for Microsoft Azure

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

Installation

The installation package 'EntireX > Administration and Monitoring' under UNIX and Windows of earlier EntireX versions is now provided as a new installation node with the following three subpackages:

- Application Monitoring Data Collector
- Command-line Scripts
- Mainframe Broker Monitoring

See *EntireX Installation Packages* in the General Installation documentation.

Designer Enhancements

> **Note:** The Designer was referred to as EntireX Workbench in earler EntireX versions.

EntireX Adapter Enhancements

■ **REST Support**
The EntireX Adapter supports the generation of REST resources.

■ **Integration Server Data Type Mapping**
The mapping from Integration Server data types to IDL data types has been enhanced. There are no more restrictions on the data types used in the Integration Server service. Data types which cannot be mapped to an IDL data type are either mapped to a string type or, if this is not possible, the parameter is ignored. See *Integration Server Data Types to IDL Mapping*.

■ **CICS Socket Listener Connection**
The new connection type CICS Socket Listener Connection supports all CICS interface types: (DFHCOMMAREA, Channel Container and Large Buffer). CICS Socket Listener Connections use the CICS Socket Listener, a remote connector on z/OS and z/VSE to call CICS mainframe programs. See *Preparing for CICS Socket Listener*.

■ **Direct Reliable RPC Listener Connection**
The new Direct Reliable Listener Connection type supports inbound reliable connections using the Direct RPC component. See *Connection Parameters for Direct RPC and Direct Reliable RPC Listener Connections*.

■ **Listener enhancements**
When creating or updating a listener missing or necessary services are now generated automatically. See *Creating and Updating Listeners*.

■ **Service to generate a RACF PassTicket**
With the new built-in service `pub.wmentirex.RACFPassTicket:generate` you can generate a RACF PassTicket. See *Creating and Updating Listeners* and *Built-in Service to Generate a RACF PassTicket*.

■ **Support for the new product "Adabas Replication Service for webMethods Integration Server"**
The EntireX Adapter provides support for this product with two new connection types and additional screens in the Integration Server Administration Console. For details see the documentation of this product.

Security Enhancements

■ **Long Broker Password Support**
The new ACI version 12 of Broker supports long passwords and password phrases. The limitation to 32 bytes for password and new password in the ACI no longer applies.

The security sample exits have been updated to reflect the handling with variable sized passwords. If you have implemented your own security exits you may need to adjust your exits according to the updated data layout.

■ **Long RPC User ID/Password Support**
Long RPC user IDs and passwords are now supported.

■ **RACF Password Phrases**
RACF password phrases are supported by EntireX Broker and RPC servers under z/OS running with impersonation. See Impersonation under CICS | Batch | IMS in the respective RPC Server documentation.

■ **OpenSSL**
EntireX now uses OpenSSL 1.1.0 instead of OpenSSL 1.0.2. See changes to default values for SSL-specific broker attribute `CIPHER-SUITE`.

Licensing

■ **License Check for RPC Servers**
All EntireX RPC servers under UNIX and Windows now check for a valid license file (see *License Concept for webMethods EntireX*.) If the license check fails, the server terminates initialization. A running EntireX RPC server re-checks the license daily (at 6am local time). If such a re-check fails, the server continues but prints a warning message to the log file.

Application Monitoring

■ The following connection types of the EntireX Adapter now support application monitoring:

   ■ AS/400 Connection

   ■ CICS Socket Listener Connection

■ All EntireX RPC servers now support application monitoring.

EntireX RPC Server for CICS Socket Listener for z/OS and z/VSE

■ The EntireX RPC Server for CICS Socket Listener allows standard RPC clients to communicate with CICS programs running on IBM CICS®. All CICS interface types are supported: (DFHCOMMAREA, Channel Container and Large Buffer). See *RPC Server for CICS Socket Listener*. The RPC server uses the CICS Socket Listener, a remote connector on z/OS to call CICS mainframe programs. See *Preparing for CICS Socket Listener* in the RPC Server for CICS Socket Listener documentation.

Command Central Enhancements

EntireX supports Command Central for EntireX Brokers running on mainframe platforms. You can perform the following operations:

- monitor runtime status, KPIs (key performance indicators), and alerts of EntireX Broker instances
- display services and server instances of a service
- configure KPI monitoring

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.

COBOL Integration Enhancements

- IDL unbounded groups and arrays without maximum (no upper bound) can now be used with COBOL RPC clients with COBOL 6 on z/OS. They are mapped to the COBOL `OCCURS DEPENDING ON` clause with the `UNBOUNDED` keyword.
    - For extracting such an IDL from WSDL and XML used by the COBOL Wrapper (client side), see *Specify Options for Target Programming Language* (IDL Extractor for WSDL | XML Document | XML Schema).
    - For writing a COBOL RPC client for such an IDL see *Using IDL Unbounded Groups or Arrays without Maximum* in the COBOL Wrapper documentation.
- In the COBOL Mapping Editor you can now map COBOL data items to IDL binary data. This allows you to access, for example, image data provided by a COBOL server. See *Map to Binary and Revert Binary Mapping* under *CICS with `DFHCOMMAREA` Calling Convention - In same as Out* in the IDL Extractor for COBOL documentation.

REST Support

EntireX now offers REST enablement for any EntireX Adapter connection. For more details see *EntireX and REST*.

See also the following scenarios:

- *Calling COBOL from REST*
- *Calling Natural from REST*

Docker Support

EntireX provides two methods of building a Docker image and running the Docker container: using scripts provided by EntireX, or using Command Central. This functionality is available for the following components:

- EntireX Broker
- RPC Server for Java
- RPC Server for XML/SOAP

See *Building an EntireX Docker Image*.

Documentation Enhancements

- REST scenarios have been added. See *Calling COBOL from REST | Calling Natural from REST | Connecting Integration Server*.

- CICS Socket Listener scenarios have been added for multiple z/OS CICS COBOL interface types:

    - **Integration Server**
      DFHCOMMAREA | Channel Container | Large Buffer

    - **REST**
      DFHCOMMAREA | Channel Container | Large Buffer

- COBOL extraction has been refined. See how you can extract with quick results using the fast-track approach or modernize your COBOL server with a user-defined mapping. See *Calling COBOL from Integration Server*, choose a scenario (for example calling COBOL DFHCOMMAREA from Integration Server) and refer to *Task 1: Extract the Interface of a COBOL Server*

Other Changes and Enhancements

- **Enhanced USTATUS Handling**
  By default, ACI request and response strings of `USTATUS` are now converted with ICU.

  See `ACI-CONVERSION` under *Broker-specific Broker Attributes*

  > **Note:** This attribute was undocumented in earlier EntireX versions and had default value NO. This meant that a translation user exit was used instead; this is no longer recommended.

8 What was New in Version 10.1

Increased Platform Support

EntireX now runs under the following additional platforms:

- Windows Server 2016
- z/OS version 2.3

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 ele-
  ments. 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 | CICS Socket Listener | .NET | IMS Connect | Java | IBM MQ | XML/SOAP *using the Command Central GUI*

  - *Administering the EntireX RPC Server for* C | CICS Socket Listener | .NET | IMS Connect | Java | IBM MQ | XML/SOAP *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 Designer. 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 BS2000 and z/VSE 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 EXX107.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 also *COBOL Integration 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*.

  > **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* under UNIX | Windows.

- **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* in the UNIX | Windows Administration documentation and *Using the TCP Agent* in the UNIX | Windows Administration documentation.

■ **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 | BS2000 installation documentation.

■ **Warning of Connection Shortage**
Broker will issue a message if the defined percentage value of TCP/IP connections (available file descriptors) is exceeded. The default value is 90 percent of available file descriptors. This value can be changed with broker attribute `PERCENTAGE-FOR-CONNECTION-SHORTAGE-MESSAGE`.