software AG

webMethods EntireX

Release Notes

Version 9.10

April 2016

WEBMETHODS

This document applies to webMethods EntireX Version 9.10.

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

Table of Contents

1 What's New

Increased Platform Support

EntireX now also supports the following additional platforms:

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

Installation Packages

Installation packages have been streamlined and restructured:

- EntireX Broker can now stay running while runtime updates outside EntireX Broker are made.
- Administration and Monitoring functionality has been clearly separated from the runtime parts.
- Mini Runtime is now a separate installation package that is compatible with the Software AG Installer. Files are installed in the standard EntireX directory. No post-installation steps are required.
- Examples have been reworked and streamlined.

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

Workbench Enhancements

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

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

- **New Eclipse Version**
  EntireX now uses Eclipse version 4.5.

EntireX Adapter Enhancements

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

Command Central

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

- Configure Application Monitoring

- Configure EntireX Broker Persistent Store

- Configure EntireX Broker Security

- Enable and specify EntireX Broker Trace Level dynamically

See *Administering EntireX Broker using Command Central* for full list of supported operations. More information is provided in the separate Command Central documentation and the Command Central Online Help.

Brainstorm Ideas

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

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

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

New CIS Interface Version 9

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

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

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

.NET Wrapper Wizard for Microsoft Visual Studio

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

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

Documentation Enhancements

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

Other Changes and Enhancements

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

- **EntireX built with Visual Studio 2015**

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

- **COBOL Wrapper**

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

  - COBSRVID for CICS with standard linkage calling convention

  - COBSRVIB for Batch with standard linkage calling convention

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

2 **What was New in Version 9.9**

Workbench Enhancements

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

- **Integration Server Wrapper**
  The wrapper no longer creates the *<IDL>_IS.properties* file. Existing property files are ignored.

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

  [Provided with fix for EntireX version 9.7.]

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

- **COBOL Server Using Fixed-length Tables in Variable Manner**
  The *IDL Extractor for COBOL* - together with the CICS RPC Server, the EntireX Adapter with IMS Connect connections, or the IMS Connect RPC Server - supports COBOL server programs that use the data length of their interface to process a variable number of array elements in a fixed-size COBOL table. For more information see the example *COBOL Server Using Fixed-length Tables in Variable Manner* provided for the interface types

  - CICS Large Buffer with Same | Different CICS Message Structure on Input and Output (see Note)

  - 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 fix for EntireX version 9.7.]

Increased Platform Support

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

Support of Java 8

- Java Wrapper
- IDL Extractor for WSDL

[Provided with fix for EntireX version 9.7.]

Java Wrapper

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

Sample IDL file:

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

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

Generated Java sources with new generation rules:

- Example.java

- Progagroupparm.java

- Progbgroupparm.java

Generated Java sources with old generation rules:

- Example.java   or - Example.java

- Groupparm.java
- Progbgroup-
  parm.java

- Groupparm.java
- Progagroup-
  parm.java

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

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

    Or:

    Adapt your application to the new name.

IDL Extractor for WSDL

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

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

and

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

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

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

Encryption

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

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

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

- EntireX Broker 9.6.0 for z/VSE

- EntireX Fix 11 for z/VSE

- BSI stack 256pre13 or newer

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

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

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

For more information see

- **Certificates**
  See *SSL/TLS and Certificates with EntireX*.

- **Broker**
  See *Running Broker with SSL/TLS Transport* in the platform-specific Administration documentation (new).

- **RPC Clients**
  See *Using SSL/TLS* (C | COBOL | Java | PL/I) of the wrapper in use.

- **RPC Servers**
  See *Using SSL/TLS with the RPC Server* in the platform-specific administration or RPC server documentation (new).

- **ACI Clients and Servers**
  See *Using the Broker ACI with SSL/TLS* (Assembler | C | COBOL | Java | PL/I) of the programming language in use.

Command Central

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

- System Management Hub (SMH)

- Command Central (CC)

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

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

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

EntireX Adapter Enhancements

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

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

■ A license status line has been introduced for EntireX Broker connections (ACI connections or normal RPC connections).

■ A warning message is given in the case of a possible license coverage mismatch.

See *License Information*.

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

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

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

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

■ **New Advanced SSL/TLS Services for Direct RPC**
New services are available to change the enabled TLS protocols and cipher suites. See *Built-in Services for Direct RPC*.

■ **EntireX Adapter Service** `pub.wmentirex.listener:generateIDLfromService`
The meaning of the parameter `fileName` has changed, see *Using the Service* `pub.wmentirex.listener:generateIDLfromService`.

EntireX RPC Server Enhancements

■ **COBOL MPO Support**
The COBOL RPC Server (CICS | Batch | IMS BMP | Micro Focus | CICS ECI | IMS Connect) - together with the IDL Extractor for COBOL - supports the concept of multiple possible output (MPO). See *Workbench Enhancements*.

■ **COBOL Server Using Fixed-length Tables in Variable Manner**
The *CICS RPC Server* - together with the IDL Extractor for COBOL - supports the concept of a COBOL server using data length to process a variable number of array elements. See *Workbench Enhancements*.

■ **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* of the user exit API under *User Exit COBUEX02*.

[Provided with fix for EntireX version 9.7.]

Brainstorm Ideas

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

■ Application Monitoring Data Collector [2280]. See *Application Monitoring Data Collector* below.

■ Monitoring Scripts Enhancement [2227]. See *Logging Exit for EntireX Scripting Commands* below.

■ EntireX Adapter Listeners Information [2394]. See *EntireX Adapter Enhancements* above.

■ Preview of date/dateTime patterns in XML Mapping Editor [00396]. See *Preview of Date/Date-Time Pattern in XML Mapping Editor* below.

Documentation Enhancements

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

- **AT-TLS Application Transparent Transport Layer Security**
  Various sections dealing with SSL/TLS support have been reworked. See *SSL/TLS using AT-TLS on z/OS and ATLS on z/VSE* above.

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

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

Other Changes and Enhancements

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

Compatibility with webMethods Suite Naming Conventions

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

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

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

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

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

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

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

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

Optimized Trace File Handling

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

Application Monitoring Data Collector

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

Logging Exit for EntireX Scripting Commands

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

EntireX Mini Runtime

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

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

Set Application Name with .NET Wrapper

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

[Provided with fix for EntireX version 9.7.]

OpenSSL Support

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

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

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

[Provided with fix for EntireX version 9.7.]

Preview of Date/DateTime Pattern in XML Mapping Editor

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

Enhanced Error Messages

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

3 What was New in Version 9.7

Installation to C:\Program Files

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

Increased Platform Support

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

Support of Java 8

- Java Wrapper
- IDL Extractor for WSDL

[Provided with fix for EntireX version 9.7.]

Java Wrapper

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

Sample IDL file:

```
LIBRARY 'example' is
    PROGRAM 'progA' is
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          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-   ■ Progagroup-
  parm.java   parm.java

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

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

Or:

Adapt your application to the new name.

IDL Extractor for WSDL

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

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

and

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

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

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

COBOL Support

COBOL Server Using Fixed-length Tables in Variable Manner

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 Fixed-length Tables in Variable Manner* 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 fix for EntireX version 9.7.]

Server Mapping Files for COBOL

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

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

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

RPC Server/Listener Changes and Enhancements

■ **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* of the user exit API under *User Exit COBUEX02*.

[Provided with fix for EntireX version 9.7.]

■ **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 *COBOL Server Using Fixed-length Tables in Variable Manner* under *COBOL Support*.

[Provided with fix for EntireX version 9.7]

Enhanced Null Value Suppression

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

[Provided with fix for EntireX version 9.7.]

COBOL Mapping Editor

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

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

Context Menu for IDL Files

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

See sample *Context Menu* 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.

- 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*.

- **Common Integration Scenarios**
  Documentation of common integration scenarios has been enhanced, in particular the scenarios

  - "I have an Integration Server service and want to call this from a COBOL application." See *Calling Integration Server from COBOL*.

  - "I have a COBOL server program and want to call this from the Integration Server." See *Calling COBOL from Integration Server*.

- **Application Transparent Transport Layer Security (AT-TLS)**
  Various sections dealing with SSL/TLS support have been reworked and also include sections on how to set up AT-TLS:

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

  - **Certificates**
    See *SSL/TLS and Certificates with EntireX*.

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

  - *Software AG IDL to WSDL Mapping* in the Web Services Wrapper documentation.

  - *Mapping IDL Data Types to an XML Schema (XSD)* in the XML Mapping Editor documentation.

Other Changes and Enhancements

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

  [Provided with fix for EntireX version 9.7.]

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

  [Provided with fix for EntireX version 9.7.]

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

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

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

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

  Setting this attribute to `YES` means you can use more than the maximum number of TCP/IP connections per communicator (see *Maximum TCP/IP Connections per Communicator* under *Broker*

Resource Allocation). However, `POLL=YES` increases CPU consumption, so for performance reasons we recommend `POLL=NO` unless you really need the additional TCP/IP connections.

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

4 Dropped Features

Features Dropped in Version 9.10

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

  - EntireX Mini Runtime, see *Post-installation Steps under Windows*

  - Transaction Object Editor of Broker ActiveX Control, see *Calling the Transaction Object Editor*

  - .NET Wrapper Runtime, see note under *Assembly Versioning* in the .NET Wrapper documentation

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

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

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

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

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

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

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

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

Features Dropped in Version 9.9

- **Mini Runtime**

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

- **IAF**

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

- **EntireX Wrapper for Enterprise JavaBeans**

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

- **Adapter Services Wrapper for Natural**

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

- **Partner Broker ID**

  Partner Broker ID is no longer supported.

- **IBM Compiler PL/I for MVS & VM**

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

- **Microsoft Visual Studio Wizard for EntireX DCOM Wrapper**

  The Microsoft Visual Studio Wizard for EntireX DCOM Wrapper as a Software AG plug-in is no longer provided. The functionality is provided by the EntireX Workbench.

- **Broker Control Block Definitions NATDEF12 and NATDEF21 of ACI for Natural**

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

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* for BROKER under *Administering Broker Stubs*.

- **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.

- **Broker 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.

- **Direct SSL/TLS Support for Broker Stubs under z/OS**
  Direct SSL/TLS support (using GSK) inside the broker stubs under z/OS will be dropped in the next version. 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**
  Administration with SMH (including the batch interface `argbatch`) will be dropped in the next version of EntireX. The most important functionality will be provided by Command Central. Minor features will be moved to the command line (for example configuration of authorization rules) or have been dropped completely (SMH Technical Information agent and SNMP support).

  > **Note:** It is already possible with EntireX 9.10 to administrate with Command Central all brokers in the same or in a different Software AG Installer-based installation (UNIX and Windows); on other platforms you can already use the Broker Command and Information Services or Command-line Scripts.

- **WebSphere MQ RPC Server and Listener**
  Support for dynamic IDL/RPC parameters will be dropped in the next version. See *Dynamic IDL/RPC Parameters* for WebSphere MQ RPC Server | Listener. No replacement is planned.

■ **Microsoft Visual Studio**
   In the next version of EntireX, the following EntireX components will support Microsoft Visual Studio version 2015:

   ■ C Wrapper

   ■ DCOM Wrapper

   ■ Microsoft Visual Studio Wizard for .NET Wrapper

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

5 Platform Coverage

Scope of EntireX Version 9.10

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

- z/OS

- SUSE Linux Enterprise Server for IBM System z (64-bit)

- Red Hat Enterprise Linux for IBM System z (64-bit)

- Red Hat Enterprise Linux for Amazon EC2 (64-bit)

- Solaris SPARC (64-bit)

- HP-UX for Itanium 2

- AIX Power (64-bit)

- SUSE Linux Enterprise Server for AMD64 and EM64T (x86-64)

- Red Hat Enterprise Server Linux for AMD64 and EM64T (x86-64)

- Windows (64-bit)

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

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

List of Components per Platform

	zOS	zVSE	BS2000/OSD	zVM	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 (64-bit)
EntireX Broker	x[3]	x[5]	x		x	x	x	x	x			x	x	x
EntireX Workbench												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
PL/I Server/Client	x													
C RPC Server/Client			x[4]		x	x	x	x	x		x	x	x	x
Java RPC Server/Client	x[2]				x	x	x	x	x			x	x	x
XML/SOAP RPC Server/Client	x[2]				x	x	x	x	x			x	x	x
WebSphere MQ RPC Server	x[2]				x	x	x	x	x			x	x	x
WebSphere MQ Listener	x[2]				x	x	x	x	x			x	x	x
DCOM RPC Client														x
.NET RPC Server/Client [1]														x
RPC-ACI Bridge	x[2]				x	x	x	x	x			x	x	x
CICS ECI RPC Server	x[2]				x	x	x	x	x			x	x	x
IMS Connect RPC Server	x[2]				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
Java ACI	x				x	x	x	x	x			x	x	x
ActiveX Control/TOR Editor														x
System Management Hub					x	x	x	x	x			x	x	x
Broker Agent	x				x	x	x	x	x			x	x	x
Attach Manager					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 (64-bit)
Application Monitoring Data Collector					x	x	x	x	x			x	x	x

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

Notes:

[1] Microsoft Visual Studio Wizard for EntireX .NET Wrapper is provided for 32 and 64-bit applications on Windows 64-bit operating systems.

[2] Batch only. These components included as a TAR file in the z/OS installation kit and must be copied to your z/OS UNIX environment. See *Installing EntireX Java Components under z/OS UNIX*.

[3] Batch only. "Broker" here refers to the broker kernel, also known as broker nucleus. In all versions of EntireX under z/OS, the EntireX broker kernel runs in batch mode only, either as a job or a started task. It does not run under TSO, CICS, Com-plete or any other online environment.

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

[5] Batch only. "Broker" here refers to the broker kernel, also known as broker nucleus. In all versions of EntireX under z/VSE, the EntireX broker kernel runs in batch mode only. It does not run in any online environment.
IPv6 is not supported on this platform. Establishing an SSL connection on z/VSE requires BSI's Automatic Transport Layer Security (ATLS).

Supported RPC Protocols

RPC Protocol[1]	Feature[2]	EntireX	EntireX Adapter for Integrat-ion 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 *COBOL 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* in the RPC Programming documentation.
2010	Natural optional parameters	n/a	n/a	n/a	4.1.3	8.1	6.1.1 PL13	Optional parameters are a special Natural feature. See Natural documentation.
2020	IDL types U, UV	7.3	7.1	4.1.1	4.2.1	8.1	6.2.1	The Unicode data types support all programming languages with separate Unicode and character types such as COBOL, Natural and C. See *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	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

RPC Protocol[1]	Feature[2]	EntireX	EntireX Adapter for Integration Server	PI Adapter for EntireX	Natural			More Information
					Main-frame	ONE	Open Systems	
	file for COBOL							the *IDL Extractor for COBOL*, a server mapping file (EntireX Workbench file 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 documentation.

6 Prerequisites

General Prerequisites

- Java 8 for all Java-based components.

- For other Software AG products if not stated otherwise: the versions that are still supported and that were available when this version of EntireX was released.

- Software AG supports third-party technology, for example operating system versions, products or functionality, only for as long as this technology is officially supported by the third-party vendor.

z/OS Prerequisites

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

Component	Prerequisites
COBOL RPC Client and Server	■ 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 Enterprise PL/I for z/OS.
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 7.1, 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 9.5 or above. ■ Natural RPC supports application monitoring with Natural Version 8.2.4 or above in all supported Natural environments.

UNIX Prerequisites

Component	Prerequisites
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 7.1, 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 9.5 or above. ■ Natural RPC supports application monitoring with Natural Version 6.3.14 or above.

Windows Prerequisites

Component	Prerequisites
C Wrapper	■ For target platform Windows, Microsoft Visual Studio 2010, 2012, 2013 and 2015 [*].
DCOM Wrapper	■ C++ Compiler from Microsoft Visual Studio 2010, 2012, 2013 and 2015 [*]. ■ For generated interface objects: corresponding Microsoft Visual Studio .NET C/C++ runtime environment.
.NET Wrapper	■ .NET Framework 4.0 or 4.5.x.
Micro Focus COBOL	■ Micro Focus Server Express 5.1 and Net Express 5.1 or compatible development environment.
Microsoft Visual Studio Wizard for .NET Wrapper	■ Microsoft Visual Studio 2010, 2012, 2013 [*].
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 7.1, 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 9.5 or above. ■ Natural RPC supports application monitoring with Natural Version 6.3.14 or above.

[*] See important information regarding Visual Studio support in the next version of EntireX under *Features to be Dropped in Future Versions*.

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
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 9.5 or above. ■ Natural RPC supports application monitoring with Natural Version 8.2.4 or above in all supported Natural environments.

Application Server Prerequisites

The Web application components of EntireX (XML/SOAP Listener, XML/SOAP Runtime) support J2EE 1.8. They should therefore run on any Java application server that supports J2EE 1.8.

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

EntireX Adapter Prerequisites

Supported Versions of Integration Server and EntireX Workbench

The EntireX Adapter supports Integration Server version 9.8, 9.9 and 9.10. For operating systems supported by the Integration Server, see *https://empower.softwareag.com/Products/Documentation/default.asp* under "webMethods Product Suite" > "Integration Server" > "System Requirements" (pdf). For design time, Software AG Designer version 9.9 or 9.10 must be installed. This includes the latest version of the EntireX Workbench.

Supported Platforms

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

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

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

  - **Certificates**
    See *SSL/TLS and Certificates with EntireX*.

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

Other Changes and Enhancements

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

8 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*, 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 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*, both SAGTCHA and SAGTRPC provide an on-error trace. See `TRACE` option of the service-specific 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 Web-Sphere 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.

■ **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/TLS and Certificates with EntireX* in the EntireX Security documentation

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*.

9 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 EXP9100.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* 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/TLS 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 *COBOL 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-sized `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*.

- 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* 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* 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 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` 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.