

Crossvision EntireX

Version 7.3.3

Release Notes

This document applies to EntireX Communicator Version 7.3.3 and to all subsequent releases.

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

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What's New in System Maintenance Level 7.3.3

This chapter lists the major changes to EntireX Communicator since version 7.3.2 was released and covers the following topics:

- CICS TCP/IP Communication
 - WMQ Bridge - Support for Dynamic Queue Names
 - IAF Installation
 - New Broker Attributes
 - Fixes
-

CICS TCP/IP Communication

This feature enables webMethods customers to access EntireX Communicator using TCP/IP without needing a second started task for the Relay Manager. The new stub, CICSETB2, allows only TCP/IP but does not offer SSL or Location Transparency.

WMQ Bridge - Support for Dynamic Queue Names

In the properties file, only one input and one output queue can be specified. These are the default queues used by the WMQ Bridge. The queue name can also be specified on each call, using a dynamic parameter. Since different queue names can be specified on different calls, multiple input or output queues are supported. The default input and output queues can also be used with the dynamic parameter. Queues specified by a dynamic parameter are opened when they are used the first time and closed when the Bridge terminates.

See *Advanced Functionality* in the WMQ Bridge documentation.

IAF Installation

IAF is no longer installed automatically as it was in EntireX 7.3.2.

- **z/OS**
For z/OS this is no change since IAF already came in separate data sets.
- **UNIX**
On UNIX the IAF installation will reside at the same place on the CD as in the release version (`unix/platform/iaf/v22`) and has to be started manually from the CD root with the following command:

```
setup.ux iaf v22
```

IAF installation can be executed before or after EXX installation since there are no dependencies.

See *Installing Integrated Authentication Framework under UNIX*.

- **Windows**

On Windows, the IAF installation is callable from the DemoShield screen as a separate installation.

See *Installing Integrated Authentication Framework under Windows*.

New Broker Attributes

PAGESIZE

Determines how many bytes are available in each c-tree node. PSTORE COLD start is required after changing this value. See PAGESIZE in the c-tree-specific section of the *Broker Attribute File* section.

USERID-TO-UPPERCASE

Determines whether user ID is converted to uppercase before verification (z/OS only). See USERID-TO-UPPERCASE in the Broker-specific section of the *Broker Attribute File* section.

Note:

This was already available in EntireX version 7.3.2 but was undocumented.

Fixes

This system maintenance level contains many fixes. See readme file for details.

What's New in System Maintenance Level 7.3.2

This chapter lists the major changes to EntireX Communicator since version 7.3 was released and covers the following topics:

- EntireX Workbench
 - Stubs for z/VM
 - Java Version 1.6 Supported
 - WMQ Listener
 - Miscellaneous
-

EntireX Workbench

XML Tester

- Results are now available "prettyprinted" in XML style.
- All Broker and RPC error messages are now highlighted for fast error detection.
- Names of related entries are saved after modification.

See *XML Tester*.

DCOM Wrapper

The DCOM Wrapper now supports data types U and UV.

New Example

The Business_Demo has got a new example: c_server.

Stubs for z/VM

Stub BKIMBCMS is available under the z/VM operating system. This stub is for use with the programming languages Natural, COBOL, Assembler, PL/I and C.

The available transport methods depend on the operating system under which your Broker kernel is running:

- **z/OS, z/VSE**
If your Broker kernel is running on another mainframe operating system, such as z/OS or z/VSE, you can use Entire Net-Work or TCP transport to communicate with the Broker kernel from z/VM.

- **UNIX, Windows**

If your Broker kernel is running on UNIX or Windows, you can use TCP transport to communicate with the Broker kernel from z/VM.

See Installation and Administration under z/VM

Java Version 1.6 Supported

Java version 1.6 is supported with this version of EntireX. See UNIX and Windows prerequisites for full list of components that support this version.

WMQ Listener

The EntireX WMQ Bridge now has a component that acts as a listener on an MQ queue. Once a MQ message is available from the queue it will be converted to an RPC call and sent to an RPC server. Thus the WMQ Bridge acts as an RPC client. This feature is restricted to messages in MQ that are in XML/SOAP format.

See *EntireX WMQ Bridge*.

Miscellaneous

EntireX Mini Runtime

The EntireX Mini Runtime now supports SSL and Location Transparency. (This feature has been available since the first release of EntireX 7.3 but was undocumented.)

What's New in EntireX Release 7.3

This chapter covers the following topics:

- Installation Changes
 - EntireX Workbench Modernization
 - Broker Enhancements
 - Security Enhancements
 - Support of Additional TP Monitors
 - Enhanced Support for COBOL and PL/I
 - Support of New Features of Natural 4.2 and 6.2
 - .NET Integration
 - WebSphere MQ Integration
 - Command and Info Services IDLs
 - Miscellaneous
-

Installation Changes

Configuration File Migration Utility (All Platforms)

The administration of EntireX Broker v7.3 has been simplified to use one attribute file instead of multiple parameter files. In previous versions, EntireX Broker v7.2 used as many as four different configuration files.

To avoid unnecessary effort in creating a new EntireX Broker V7.3 attribute file, a special migration utility called ETBNATTR is provided. This program will help you to adjust existing configuration settings and will migrate all your existing data into the new EntireX Broker v7.3 format.



Warning:

Any comments you added in your old attribute files will be lost. Make sure you back up your old attribute file before running this utility.

See Configuration File Migration Utility.

Eclipse Installation (Windows and Linux)

Eclipse is an optional component of EntireX Communicator. For EntireX Workbench it is required. If you have not already installed Eclipse at your site, you can install Eclipse and the EntireX Workbench from the installation medium. If you wish to install the EntireX Workbench into an existing Eclipse environment, use the Eclipse update mechanism to deploy the EntireX Communicator feature.

CentraSite (UNIX and Windows)

During installation under Windows you are prompted for a CentraSite URL. If CentraSite is installed in your network, enter the URL under which CentraSite is accessible. The installation verifies the connection and stores the connection data for use by the Eclipse Preferences. See *CentraSite Configuration*.

JDK instead of JRE (UNIX and Windows)

Under Windows, JDK is installed automatically with all installation options (typical, runtime and custom).

Integrated Authentication Framework (IAF) Installation (UNIX and Windows)

Under Windows, IAF is installed automatically with all installation options (typical, runtime and custom).

Under UNIX, IAF is installed automatically with all installation options (typical, full and custom) if Broker or Developer's Kit Runtime is selected. See *Integrated Authentication Framework*.

EntireX Workbench Modernization

Functionality provided by the EntireX Workbench in earlier versions is now provided within Eclipse. All design-time development tools are provided within this one environment. Under Windows and Linux the new Eclipse-based Workbench is available as an installable preconfigured product, or can be loaded into a new or existing Eclipse environment. The new Workbench includes the following tools:

- Workbench Editors
- EntireX Wrappers
- Software AG IDL Extractors
- EntireX UDDI Registration
- EntireX CentraSite Integration

Workbench Editors

Software AG IDL Editor

The Software AG IDL Editor is a syntax-aware editor for Software AG IDL files. A content outline view enables operations on the IDL tree. Other features include syntax highlighting, content assist and a Problems view for resolving IDL syntax errors.

See *Software AG IDL Editor*.

EntireX XML Mapping Editor

The EntireX XML Mapping Editor allows you to map XML document structures to IDL libraries, programs and parameters. The mappings can be defined for the request and response to the server application, or from the server to the client. The input for the XML Mapping Editor can be a Software AG IDL file and/or an IDL-XML mapping file (perhaps produced by a previous XML Mapping Editor session or an import of WSDL or XML Schema). The output is an IDL-XML Mapping file, other XML structure

definitions (such as sample XML files), and perhaps a created or changed IDL file.

See *XML Mapping Editor*.

EntireX Wrappers

EntireX C Wrapper

EntireX C Wrapper provides access to RPC-based components from C applications. It enables you to develop both client and server applications.

See *EntireX C Wrapper*.

EntireX COBOL Wrapper

EntireX COBOL Wrapper provides access to RPC-based components from COBOL applications. It enables you to develop both client and server applications.

See *EntireX COBOL Wrapper*.

EntireX DCOM Wrapper

The EntireX DCOM Wrapper generates DCOM-enabled components using RPC technology. This so-called "wrapping" makes it possible to treat existing applications as ActiveX components.

See *EntireX DCOM Wrapper*.

EntireX .NET Wrapper

The EntireX .NET Wrapper provides access to RPC servers for .NET client applications and access to .NET servers for any RPC client. The .NET Wrapper generation tools of the Workbench take as input a Software AG IDL file, which describes the interface of the RPC, and generates C# classes that implement the methods and data types of the interface.

See *EntireX .NET Wrapper*.

EntireX Enterprise JavaBeans Wrapper

The EntireX Enterprise JavaBeans Wrapper enables Java components to access an EntireX RPC server using Enterprise JavaBeans. This is accomplished by mapping RPC server libraries to EJB stateful session beans. A remote procedure call will be mapped to a method of the corresponding Enterprise JavaBeans. The Java components can use the logic implemented in the libraries of the existing RPC servers, or they can implement new logic on the application server side, using parts of the old logic.

See *EntireX Enterprise JavaBeans Wrapper*.

EntireX Java Wrapper

The EntireX Java Wrapper provides access to EntireX RPC-based components from Java applications. EntireX Java RPC enables users to develop both client and server applications written in Java. Java applets can also be used as EntireX RPC clients.

See *EntireX Java Wrapper*.

EntireX PL/I Wrapper

The PL/I Wrapper provides access to RPC-based components from PL/I applications. It enables you to develop both client and server applications.

See *EntireX PL/I Wrapper*.

EntireX Web Services Wrapper

With the EntireX Web Services Wrapper you can generate a SOAP 1.1 mapping file (extension .xmm) and a WSDL file (extension .wsdl) from a Software AG IDL file. The XMM file is deployed in a servlet engine and is used by the EntireX XML Runtime (XML Servlet) to translate SOAP requests to EntireX RPC calls and RPC results into SOAP responses. The WSDL file is deployed to a web server.

The Web Services Wrapper provides access to EntireX services for web service clients. The generated web services can be registered in CentraSite or any UDDI v2 registry. With CentraSite, the web services can also be stored in the CentraSite repository and interdependencies between service artifacts (mapping, WSDL, IDL) registered. The Web Services Wrapper also supports searching and importing web services from UDDI registries to provide EntireX clients access to web services.

See *EntireX Web Services Wrapper* and *EntireX CentraSite Integration*.

EntireX XML Wrapper

The EntireX XML Wrapper enables XML-based communication to EntireX/Natural RPC servers and communication from EntireX/Natural RPC clients to XML-based servers.

See *EntireX XML Wrapper*.

Software AG IDL Extractors

Software AG IDL Extractor for COBOL

The Software AG IDL Extractor for COBOL extracts a Software AG IDL file from a COBOL source. The COBOL source can be located in the file system or accessed remotely within a COBOL RPC environment definition.

See *Software AG IDL Extractor for COBOL*.

Software AG IDL Extractor for Natural

The Software AG IDL Extractor for Natural extracts a Software AG IDL file definition from a Natural source or object within a Natural RPC environment definition.

See *Software AG IDL Extractor for Natural*.

Software AG IDL Extractor for PL/I

The Software AG IDL Extractor for PL/I extracts a Software AG IDL file from a PL/I source. The PL/I source can be located in the file system or accessed remotely within a PL/I RPC environment definition.

See *Software AG IDL Extractor for PL/I*.

Software AG IDL Extractor for XML Document

The Software AG IDL Extractor for XML Document generates a Software AG IDL file and a related XML mapping file (XMM) from a given XML document.

See *Software AG IDL Extractor for XML Document*.

Software AG IDL Extractor for XML Schema

The Software AG IDL Extractor for XML Schema generates a Software AG IDL file and a related XML mapping file (XMM) from given XML schema files.

See *Software AG IDL Extractor for XML Schema*.

Software AG IDL Extractor for WSDL

The Software AG IDL Extractor for WSDL is a wizard that reads a WSDL file from the file system, any valid URL, or a web service registry. From this WSDL file, the wizard creates a mapping file and an IDL file to make an external web service accessible to EntireX clients via the EntireX XML RPC Server.

See *Software AG IDL Extractor for WSDL*.

EntireX UDDI Registration

EntireX UDDI Registration is a tool with which you can register a web service with any UDDI registry for which you have an account.

See *EntireX UDDI Registration*.

EntireX CentraSite Integration

Web services created with EntireX can be registered in any UDDI registry, including CentraSite. CentraSite offers enhanced registry functionality, and also repository functionality that enables you to store web services artifacts and register interdependencies for impact analysis. With the Eclipse plug-in EntireX Web Services Wrapper you can define a new web services project or import an existing one, then publish a web service to CentraSite.

See *EntireX CentraSite Integration* and *EntireX Web Services Wrapper*.

Broker Enhancements

- Logging and Tracing Enhancements

- Administration Enhancements
- Persistence
- Transport Enhancements

Logging and Tracing Enhancements

Variable Length Error Text

In previous versions, error texts were always 40 bytes long (space-padded if necessary). The new ACI field `ERRTEXT-LENGTH` enables you to specify a length between 1 and 255 bytes), enabling you to receive either longer error texts for more error information, or shorter error texts.

Application Identification

The following new information: application node, application stub type, application stub version and application name is available for identifying the application and its environment. This information can be displayed using Broker Command and Info Services, kernel trace, command logging and conversational accounting.

Command Logging

You can request command log information in the kernel for a specific class/server/service, user ID, or topic.

The new ACI field `LOG-COMMAND` allows stub applications to turn on command logging.

Sequence Number

A new sequence number is provided to indicate the sequence of Broker commands. This field is displayed in the kernel command log, kernel trace, and the stub log.

Broker Trace Utility

The Broker Trace Utility can now be used to analyze Broker stub logs and command logs in addition to Broker kernel traces. Additional options have been introduced. See the Broker Trace Utility UNIX | Windows for details.

Administration Enhancements

Operator Commands under z/OS

The following operating commands are new:

| | |
|---------------------|--|
| DRES | Displays EntireX Broker's resource usage for conversations, message buffers, participants, services, topics, the timeout queue, units of work, and the work queue. Resource usage provides the total number, the number of free elements, and the number of used elements. |
| DSECSTAT | Displays the number of successful and failed Security authentications and Security authorizations. |
| DSTAT | Displays the total number of active elements, and an optional high watermark for services, clients, servers, conversations, message buffers, topics, publishers, subscribers, and publications. |
| ETBEND | Processing stops immediately. Current calls to the EntireX Broker are not allowed to finish. |
| ETBSTOP | Processing stops immediately. Current calls to the EntireX Broker are not allowed to finish. |
| RESET <i>userid</i> | Resets the Security context for the specified user ID. |
| XEND | Processing stops immediately. Current calls to the EntireX Broker are not allowed to finish. |
| XPARAM | Displays the values of Adabas SVC, database ID, number of CQEs, number of attached buffers, and the application name for the Adabas transport to the console. |

See also *Operator Commands* for full list of supported commands.

The following operating commands are no longer supported: TRACE, XCANCEL, XCOMM.

New Attribute Handling

The attribute file has been enhanced to simplify administration. Several new sections have been added for transports, security, and persistent store. Many new attributes have been added to handle the simplified configuration and to provide new functionality.

See Broker Attribute File.

Report Feature

EntireX Broker provides a configuration report to display which values were used for each attribute at startup.

The module report of the z/OS kernel has been reworked. It provides the data set names.

A PSTORE report can be activated to get information about records added to or removed from the persistent store.

See broker-specific attribute PSTORE-REPORT and *Persistent Store Report*.

Enhanced Exception Handling

Worker tasks of EntireX Broker will recover after detected program exceptions. If a user request caused an exception, the request is aborted and the user will receive error code 00780777 and error text "Request abended".

Request Dispatching

The dispatch of a free worker task on UNIX and Windows is no longer working in wrap-around mode. Based on the z/OS model, the dispatcher will test for a free worker task beginning with worker zero. It is therefore possible to determine unused worker tasks based on the statistics created during Broker shutdown.

Persistence

High Availability Persistent Store

The availability of EntireX Broker's persistent store can be increased by sharing a PSTORE between two Brokers. The first Broker manages all user requests, including persistent data, and the second Broker is started as a standby instance. If the first Broker is no longer operational, the second Broker takes over the shared PSTORE to restore all persistent data and handles all subsequent user requests.

See *Achieving High Availability of the Persistent Store*.

Unload/Load Facility

The contents of EntireX Broker's persistent store can be migrated to a new persistent store in order to change the PSTORE type or to use the same type of PSTORE with increased capacity. A PSTORE report can be requested.

See *Migrating the Persistent Store*.

Embedded File-based Store on UNIX and Windows

EntireX now provides a c-tree © persistent driver based on the c-tree© User API of the FairCom Corporation ®. This driver manages a fast and reliable embedded local database.

See *c-tree Database as Persistent Store* under UNIX | Windows.

PSTORE Version 3

An extended record format for the persistent data is available to save ICU message information and to support optional high availability requirements. However, this new version can be used without COLD start.

See Broker-specific attribute PSTORE-VERSION.

Wait on Active Persistent Store

Determines whether Broker should wait for the Adabas persistent store to become active.

See Broker-specific attribute WAIT-FOR-ACTIVE-PSTORE.

Transport Enhancements

SSL Support for z/OS Kernels

- EntireX Broker now supports SSL under z/OS. This support is based on the APIs of IBM's Global Secure ToolKit (GSKit).
- SSL error codes are now simplified, and error class 0216 is obsolete.

Multiple TCP/IP Communicators for UNIX and Windows Kernels

A maximum of five TCP/IP communicators can be activated in EntireX Broker by specifying up to five HOST/PORT pairs in the TCP/IP-specific Attributes section.

Lifted 32 KB Restriction with Adabas SVC/Entire Net-Work Transport under z/OS

The 32-KB limit that applied to Adabas SVC/Entire Net-Work transport has now been removed for many EntireX components/platforms. See Adabas SVC/Entire Net-Work-specific attributes EXTENDED-ACB-SUPPORT.

Restart of Adabas SVC/Entire Net-Work Transport under z/OS

Adabas SVC/Entire Net-Work Transport under z/OS is now controlled by the communication manager. Restart attributes RESTART, RETRY-LIMIT, RETRY-TIME are supported here. See Adabas SVC/Entire Net-Work-specific Attributes.

Connection Non-activity for SSL and TCP/IP Communicators

Non-activity of SSL or TCP/IP connection can be managed by specifying a maximum non-activity time per transport, after which a close is performed and the used connection resources are freed.

See *SSL-specific Attributes* and *TCP/IP-specific Attributes*.

Optimized Reply Buffer Allocation for SSL and TCP/IP Communicators

The reply buffer allocation is now performed at the time of composing the actual response with the necessary length. The former approach doing the allocation of the reply buffer at the time of receiving the request with the length specified by the user is dropped.

Performance Enhancements

The TCP/IP communicator on z/OS has been enhanced to better handle varying message sizes. Users may see a significant increase in throughput performance with small messages, less than 4 KB. Other users may see a reduction in CPU consumption when transmitting messages larger than 100 KB.

The Net-Work communicator on z/OS has been enhanced to improve performance. Some users may see a reduction in CPU consumption when transmitting messages.

Security Enhancements

Integrated Security Module on z/OS

EntireX Security is no longer a separate component (EXS), it is now integrated with the core components of EntireX (EXB, EXX). It will be installed with the core components and can be configured by means of the simplified attribute file.

Integrated Authentication Framework (IAF)

The Integrated Authentication Framework (IAF) is a token-based infrastructure that enables Software AG's enterprise single sign-on. In addition, it allows usage of a configurable authentication system (user database) with Software AG products across platforms.

See *Integrated Authentication Framework (IAF)*.

Software AG's Integrated Authentication Framework (IAF) is provided as an additional authentication method for Broker and RPC components. See also:

- security attribute AUTHENTICATION-TYPE
- section *Using the Integrated Authentication Framework (IAF) with Java-based EntireX Applications*
- C Wrapper API function ERXGetIAFToken.

Support of Additional TP Monitors

IMS/TM is now supported with the RPC servers and the broker stub. The EntireX RPC server for IMS executes servers on any RPC client requests. It enables you to call programs with standard IBM linkage convention as servers, for example C, COBOL, PL/I.

Enhanced Support for COBOL and PL/I

The PL/I Wrapper provides access to RPC-based components from P/LI applications. It enables the generation of client and server applications.

The IDL Extractor for COBOL and the IDL Extractor for PL/I offer the automatic generation of Software AG IDL file from a data definition section of COBOL and PL/I source file accessed remotely for the source platforms CICS, Batch and IMS, using an RPC environment definition or located in the file system. The remote access allows you to browse the list of data sets, select the appropriate data set and the related member from the list. From the member(s), a Software AG IDL file can be generated.

See COBOL Wrapper, IDL Extractor for COBOL, PL/I Wrapper, IDL Extractor for PL/I.

Support of New Features of Natural 4.2 and 6.2

- Unicode data types (U and UV) and up to 99 levels in structured data types are now supported by many Workbench components, including IDL Editor, Java Wrapper, XML Wrapper, C Wrapper, IDL Extractor for Natural and IDL Extractor for COBOL. Certain restrictions apply. See Release Notes for details.

- Natural Security password can now be changed in an RPC application.

.NET Integration

Native .NET ACI

The .NET ACI is a component of EntireX Communicator that allows programs written using the .NET Framework to use the ACI to communicate with programs that use the ACI on other platforms and in other operating environments. For example a program written in Visual Basic.NET can use the .NET ACI to communicate with a program written in Natural running under CICS on z/OS.

See *EntireX Broker ACI for .NET*.

.NET Wrapper

The .NET Wrapper (client and server generation) and DCOM Wrapper are provided as Plug-ins for Microsoft Visual Studio .NET.

WebSphere MQ Integration

EntireX WMQ Bridge runs as an RPC server and processes RPC client calls. It is used to send messages to and receive messages from a WebSphere MQ Queue. This means that existing EntireX wrappers can be used for communication with WebSphere MQ.

See EntireX WMQ Bridge.

Command and Info Services IDLs

An RPC interface, described by IDL files, to the Broker Command and Info Services (CIS) is provided. Using the CIS IDL files, custom interfaces can be generated with the EntireX Wrappers for any supported language to allow you to write custom management tools in a programming language of your choice. See Command and Info Services IDLs.

Miscellaneous

EntireX Mini Runtime

The EntireX Mini Runtime now supports SSL and Location Transparency.

IBM Language Environment

The z/OS components of EntireX support the IBM Language Environment. SASC Runtime is no longer supported.

Switch Tracing for RPC Servers

Using the System Management Hub you can now switch tracing on and off for RPC servers at runtime.

Under z/OS, you can switch tracing on and off using the operating command TRACELEVEL.

Application Error Code

A user-defined application error code can be returned from an RPC server application to any RPC client. It is supported for COBOL Wrapper in batch, IMS and CICS if not used in distributed CICS (DPL) environments.

Extractor Service

The platform-dependent service of the RPC Server is used by the Software AG IDL Extractors for 3GL. It provides remote access to COBOL and PL/I data sets and members under z/OS.

Modified Version Numbering Scheme

Main EntireX product versions are now identified by major version (1st number) and minor version (2nd number). Service packs are identified by the 3rd and hot-fixes by the 4th number in the version string.

Business Demo

On Windows and UNIX, in the examples directory, a new business demo is provided. This demo can be used as part of a larger Crossvision demo.

EntireX Platform Coverage

This chapter covers the following topics:

- List of Features per Platform
 - Platform and Version Support
 - Functionality Dropped in this Release / System Maintenance Level
 - Functionality to be Dropped in Future Releases
 - Features/Technology not Supported
 - Migration Strategy for Dropped / Modified Functionality
-

List of Features per Platform

| | z/OS V1.7, 1.8 | z/OS.e V1.7, 1.8 | z/OS.e Version 3.1 | BS2000/OSD 3.0, 4.0, 5.0, 6.0 | ZVM 5.1, 5.2 | Z/OS UNIX System Services | SUSE Linux Enterprise Server 9 for IBM zSeries (64-bit) | Red Hat Enterprise Linux 4 for IBM zSeries (64-bit) | Solaris 9 and 10 (64-bit) | HP-UX 11.11 (64-bit) HP-UX 11.23 (64-bit) for PA-RISC | HP-UX 11.23 for Itanium 2 | AIX 5.3 (64-bit) | i5/OS 5.3 - AS/400-RISC | SUSE Linux Enterprise Server 9 and 10 for x86 (32-bit) | Red Hat Enterprise Linux AS 3 and 4 for x86 (32-bit) | SUSE Linux Enterprise Server 9 for AMD64 and EM64T (x86_64) | Windows 2000, Server 2003 (Standard and Enterprise editions) Windows XP Professional |
|---|----------------|------------------|--------------------|-------------------------------|--------------|---------------------------|---|---|---------------------------|--|---------------------------|----------------------|-------------------------|--|--|---|---|
| EntireX Broker | | | | | | | | | | | | | | | | | |
| Broker Kernel | x | x | x | x ⁽¹⁾ | | | x ⁽¹⁾ | x ⁽¹⁾ | x | x | x ⁽¹⁾ | x | | x | x | x ⁽¹⁾ | x |
| SSL Transport | x | x | x ⁽²⁾ | | | | x ⁽¹⁾ | x ⁽¹⁾ | x | x | x ⁽¹⁾ | x | | x | x | x ⁽¹⁾ | x |
| Attach Manager | x | x | | | | | x ⁽¹⁾ | x ⁽¹⁾ | x | x | x ⁽¹⁾ | x | | x | x | x ⁽¹⁾ | x |
| Services (APPC, WebSphere MQ) | x | x | | | | | | | | | | | | | | | |
| EntireX Security | x | x | | | | | x ⁽¹⁾ | x ⁽¹⁾ | x | x | x ⁽¹⁾ | x | | x | x | x ⁽¹⁾ | x |
| Broker Agent ⁽⁴⁾ | | | | | | x | x ⁽¹⁾ | x ⁽¹⁾ | x | x | x ⁽¹⁾ | x | | x | x | x ⁽¹⁾ | x |
| JMS Support | | | | | | | x ⁽¹⁾ | x ⁽¹⁾ | x | x | x ⁽¹⁾ | x | | x | x | x ⁽¹⁾ | x |
| EntireX ACI | | | | | | | | | | | | | | | | | |
| Broker Stubs | x | x ⁽⁵⁾ | x | x ⁽¹⁾ | x | | x ⁽¹⁾ | x ⁽¹⁾ | x | x | x ⁽¹⁾ | x | x ⁽¹⁰⁾ | x | x | x ⁽¹⁾ | x |
| Java ACI | | | | | | x | x ⁽¹⁾ | x ⁽¹⁾ | x ⁽⁶⁾ | x | x ⁽¹⁾ | x | | x | x | x ⁽¹⁾ | x |
| CORBA ACI | | | | | | | | | x | x | x ⁽¹⁾ | x | | x | x | x ⁽¹⁾ | x |
| ActiveX Control | | | | | | | | | | | | | | | | | x |
| EntireX RPC | | | | | | | | | | | | | | | | | |
| C RPC Server, Runtime | x | x | x ⁽⁹⁾ | | | | x ⁽¹⁾ | x ⁽¹⁾ | x | x | x ⁽¹⁾ | x | x ⁽¹⁰⁾ | x | x | x ⁽¹⁾ | x |
| COBOL Wrapper Runtime, PL/I Wrapper Runtime | x | x | x ⁽⁹⁾ | x ⁽¹⁾ | | | | | | | | | | | | | |
| Java RPC Server, Runtime | | | | | | x ⁽⁷⁾ | x ⁽¹⁾ | x ⁽¹⁾ | x ⁽⁶⁾ | x | x ⁽¹⁾ | x | | x | x | x ⁽¹⁾ | x |
| XML Runtime, XML RPC Server | | | | | | x ⁽⁷⁾ | x ⁽¹⁾ | x ⁽¹⁾ | x ⁽⁶⁾ | x | x ⁽¹⁾ | x | | x | x | x ⁽¹⁾ | x |
| Generated Enterprise JavaBeans | | | | | | | x ⁽¹⁾ | x ⁽¹⁾ | x ⁽⁶⁾ | x | x ⁽¹⁾ | x | | x | x | x ⁽¹⁾ | x |
| CORBA RPC Gateway | | | | | | | x ⁽¹⁾ | x ⁽¹⁾ | x | x | x ⁽¹⁾ | x | | x | x | x ⁽¹⁾ | x |
| DCOM Wrapper Runtime | | | | | | | | | | | | | | | | | x |
| .NET Wrapper Runtime, .NET RPC Server | | | | | | | | | | | | | | | | | x |
| EntireX Workbench | | | | | | | | | | | | | | | | | |
| Java, XML and EJB Wrapper | | | | | | | x ⁽¹¹⁾ | x ⁽¹¹⁾ | x ⁽¹¹⁾ | x ⁽¹¹⁾ | x ⁽¹¹⁾ | x ⁽¹¹⁾ | | x | x | x ⁽¹⁾ | x |
| IDL Extractors (Nat,COB,PL/I,XML,XDS,WSDL) | | | | | | | x ⁽¹¹⁾ | x ⁽¹¹⁾ | x ⁽¹¹⁾ | x ⁽¹¹⁾ | x ⁽¹¹⁾ | x ⁽¹¹⁾ | | x | x | x ⁽¹⁾ | x |
| WSDL Generator, UDDI Registration | | | | | | | x ⁽¹¹⁾ | x ⁽¹¹⁾ | x ⁽¹¹⁾ | x ⁽¹¹⁾ | x ⁽¹¹⁾ | x ⁽¹¹⁾ | | x | x | x ⁽¹⁾ | x |
| DCOM Wrapper | | | | | | | | | | | | | | | | | x |
| .NET Wrapper | | | | | | | | | | | | | | | | | x |
| C Wrapper | | | | | | | x ⁽¹²⁾ | x ^(11,12) | x ^(11,12) | x ^(11,12) | x ^(11,12) | x ^(11,12) | | x ⁽¹²⁾ | x ⁽¹²⁾ | x ⁽¹⁾ | x ^(11,12) |
| COBOL, PL/I Wrapper | | | | | | | x ⁽¹¹⁾ | x ⁽¹¹⁾ | x ⁽¹¹⁾ | x ⁽¹¹⁾ | x ⁽¹¹⁾ | x ⁽¹¹⁾ | | x | x | x ⁽¹⁾ | x |
| Plug-ins for Visual Studio .NET 2005 | | | | | | | | | | | | | | | | | |
| .NET Wrapper, DCOM Wrapper | | | | | | | | | | | | | | | | | x |
| EntireX DCOM | | | | | | | | | | | | | | | | | |
| DCOM | | | | | | | | | x | | | | | x | x | x ⁽¹⁾ | x ⁽⁷⁾ |
| DCOM Security | | | | | | | | | x | | | | | x | x | x ⁽¹⁾ | x |
| SOAP Handler for DCOM | | | | | | | | | x | | | | | x | x | x ⁽¹⁾ | |
| Other Components | | | | | | | | | | | | | | | | | |
| CORBA Gateway | | | | | | | x | x | x | x | x | x | | x | x | x ⁽¹⁾ | x |
| System Management Hub Agents | | | | | | | x ⁽¹⁾ | x ⁽¹⁾ | x | x | x ⁽¹⁾ | x | | x | x | x ⁽¹⁾ | x |
| RPC ACI Bridge, RPC BMQ Bridge | | | | | | | x | x | x | x | x | x | x | x | x | x ⁽¹⁾ | x |
| WMQ Bridge | | | | | | | x | x | x | x | x | x | x | x | x | x ⁽¹⁾ | x |

Notes:

- (1) Planned for future release.
- (2) Supported by Relay Manager only (not supported by kernel); see Transport column in table of Available Stubs.
- (4) Broker Agent on UNIX runs with TCP/IP only.
- (5) Broker stubs not supported on z/OS.e.: CICSETB, CICSETB2, MPPETB.
- (6) The following JDKs are supported in addition to those listed in the prerequisites section: JDK 1.4 and JDK 5.0 (both 64-bit).
- (7) Runtime only.
- (8) Provided by operating system vendor.
- (9) We plan to deliver an RPC Server and SAGTRPC (conversion routine for RPC components) for VSE at a later date. Until then the RPC Server for VSE from version 5.2.1 can be used with this version.
- (10) No new release on this platform is currently planned. Please use EntireX Communicator version 7.1.1 on this platform.
- (11) Eclipse Workbench standalone package is available on distribution medium for use on Windows and Linux.
- (12) The Wrappers can be used in command-line mode with the Software AG IDL Compiler.

In accordance with the license agreement you concluded with Software AG, your EntireX license includes either full functionality or specific EntireX components (e.g. in the form of a special Legacy Integration bundle license).

Windows Terminal Services

Windows 2000 and Windows 2003 Server with Terminal Services are supported. These allow a server to host multiple, simultaneous client sessions. A user can connect to a terminal server by using Terminal Services client software.

Platform and Version Support

Software AG provides support for the operating system versions supported by their respective manufacturers. Generally, when an operating system provider stops supporting a version of an operating system, Software AG will stop supporting that operating system version as of the next system maintenance (SM) level delivered by Software AG. Although it may be technically possible to run a new version of EntireX on an old operating system, Software AG cannot continue to support operating system versions that are no longer supported by the system's provider.

Software AG plans to provide support for previous versions of EntireX and predecessor products of EntireX as follows:

End-of-Maintenance Dates for Previous Versions of EntireX

With this release of EntireX, product versions older than the ones listed below are no longer supported.

| Product Release | Platform | Release Date | End-of-Maintenance Date |
|--------------------------|---|---------------------|---|
| EntireX Communicator 6.1 | Windows 2000, Windows Me, Solaris, Linux Intel, OS/390 USS | August 2001 | March 31, 2003 |
| | OpenVMS VAX | August 2001 | September 30, 2001 |
| | OS/400, AIX 5 | August 2001 | May 31, 2003 |
| | Windows NT, Windows 98 | August 2001 | June 30, 2003 |
| | AIX 4.3, HP-UX | August 2001 | June 30, 2003 |
| | OpenVMS Alpha | August 2001 | EntireX 6.1 will continue to be supported on this platform for as long as this platform itself is supported by Software AG. |
| | OS/390, z/OS | August 2001 | June 30, 2003 |
| | SCO UnixWare | March 2002 | December 31, 2003 |
| | Tru64 | March 2002 | December 31, 2005 |
| | Open UNIX 8 | February 2003 | June 30, 2004 |
| EntireX Communicator 6.2 | Windows Me | June 2002 | December 31, 2003 |
| | Windows 2000, Windows XP, Solaris, Linux Intel, OS/400, OS/390 USS, AIX | June 2002 | March 31, 2004 |
| | OS/390, z/OS, HP-UX | June 2002 | June 30, 2004 |
| | VSE/ESA, zVSE | March 2003 | February 28, 2007 |
| EntireX Communicator 7.1 | Windows, Solaris, z/OS, Linux Intel, AIX, HP-UX | June 2003 | November 30, 2005 |
| | OS/390 | June 2003 | September 30, 2004 |
| | z/OS stubs EXAAPSB, EXAAPSC | June 2003 | June 30, 2006 |
| | Linux S/390 | October 2003 | April 30, 2006 |

| Product Release | Platform | Release Date | End-of-Maintenance Date |
|--------------------------|-------------------------------|---------------------|--------------------------------|
| EntireX Communicator 7.2 | Windows, Solaris, Linux Intel | November 2004 | November 30, 2007 |
| | z/OS | November 2004 | May 31, 2008 |

If you have access to ServLine24, you can also see the detailed and most recent information in the EntireX Roadmap.

Functionality Dropped in this Release / System Maintenance Level

The following functionality is no longer supported with this version of EntireX:

- EntireX DCOM on HP-UX.
- Visual Studio 6 plug-in for DCOM.
- EntireX Support Tool. The functionality is integrated into the System Management Hub.
- Stubs BKIMCICS, BKIMBTSO and BKIMRENT. These stubs provided compression functionality which is now handled one of two ways:
 - More than 32 KB of data can now be sent/received over Adabas SVC/Entire Net-Work transport.
 - Using the Relay Manager will cause the C-written batch stub to be loaded. This stub provides compression functionality for all transports if needed.
- SMARTS-based stubs EXAAPSB, EXAAPSC, EXAAPSE are no longer delivered. This functionality is provided by the Relay Manager, which has been available since version 7.2.1.15.
- On z/OS the SAS/C Runtime is no longer used for the Broker and RPC servers. The IBM LE Runtime is used instead.
- On z/OS the Broker Trace Classes are no longer supported. It is now possible to set separate trace-level values for Pstore, Security, and Conversion, in addition to setting master trace-level for Broker kernel. This feature replaces trace classes.
- Broker attribute UWSTATP will be delivered but is deprecated. We recommend using UWSTAT-LIFETIME instead.
- The generation of Tamino X-Tension (SXS) Mapping within the XML Mapping Editor is no longer supported.
- Loading XML DTD files to convert to an XML structure is no longer supported.

- In the XML Mapping Editor, the generation of XML Adapters is no longer supported. The XML Runtime will continue to support the XML Adapters (Version 6.x) as before.
- The generation of IDL files and related mapping files from DTD files is no longer supported for the EntireX XML to IDL Generator.
- Documenting your mapping information with an HTML page, using the XML Mapping Editor, is no longer supported.
- With Broker ActiveX Control it is no longer possible to save a Transaction Object Repository (TOR) as an IDL file. The style sheet *xmltoridl.xsl* to view a Transaction Object Repository as an IDL file is no longer delivered.
- The command `workbench64.bsh` on UNIX to call the EntireX Workbench in batch mode is no longer delivered. Use `workbench.bsh`.
- Java ACI: Some deprecated methods are no longer needed or have been replaced by an improved method:
 - `com.softwareag.entirex.aci.BrokerCommunication.dispose()`
 - `com.softwareag.entirex.aci.UnitOfWork.query(String, BrokerService)`
 - `com.softwareag.entirex.aci.UnitOfWork.queryLast(BrokerService)`
- The ECS (Entire Conversion Service) Conversion as internationalization approach is no longer supported. ICU Conversion is supported as internationalization approach and is the approach to be used. Migration may be needed, see *Internationalization Changes and Migration Hints*.
- The Software AG IDL compiler does not support environment variables as replacement for options and the following parameters (`-l`, `-u`, `-s`, `-I`). If you have your own templates, these will need to be updated, see `output_control_lower_upper`, `output_control_sanitize`. If you used the parameter `-Include-directory`, apply the following workaround: put all templates into the same directory.
- For the COBOL Wrapper, the following options are no longer supported
 - `SIGENDNUMERIC`. For a workaround, redefine the IDL with `N` and `NU` data types.
 - `USING`. For a workaround, change the IDL file and insert an additional level 1 parameter.
 - `SECURITY`. For a workaround, see *Using Natural Security*.
 - `BROKER`, `SERVER` and `MSGS`. For a workaround, see *Using the RPC Communication Area*.
 - `SRVI`. Generic RPC Service modules are delivered as sources. See *COBOL Wrapper Modules Delivered as Sources*.
 - `COMPRESS`. This feature is obsolete because the COBOL Wrapper adjusts this parameter automatically.

- Security component SAFMPM. The functionality of SAFMPM was combined with the Broker kernel, so this security component is no longer required for EntireX Communicator. All Natural subprograms in library SYSSAF that communicated with SAFMPM are no longer delivered (these include NA2NRES, NA2NREX, NA2NPAS and NA2NPAX).

If you still want to use the started task of SAFMPM, you can find it in the `WALvrs.LOAD` library.

Functionality to be Dropped in Future Releases

The following functionality will no longer be supported after version 7.3 of EntireX Communicator:

- Support of Entire Net-Work on Windows and UNIX.
- The EntireX CORBA Gateway and the EntireX Broker ACI for CORBA.
- Broker Services will be retired. This affects the following components:
 - WebSphere MQ is supported with the new WMQ Bridge. See *WebSphere MQ Integration* in this document and section *EntireX WMQ Bridge*
 - The Broker Services APPC Adapter for LU6.2 will be retired. We recommend using the standard EntireX functionality in the future. Possible migration paths can vary and should be determined based on your projects. See *Introduction to EntireX* for an overview of EntireX.
 - The attach services supplied with Broker Services will be replaced in the future with a new attach service that works with Broker.
- Generation of web services from EntireX DCOM type libraries and the Apache Axis module that exposes EntireX DCOM objects as web services.
- The TCP/IP-based transport interface using secure sockets based on Sun's Java™ Secure Socket Extension (JSSE) version 1.0.2 and on IBM's Java™ Secure Socket Extension (JSSE) version 1.0.2. SSL support is now part of Java.
- Broker Agent library *BrokerAgent.dll* for native communication to Broker 2.1.
- The Workbench starter *jwtiz.exe*. Please use the script *workbench.bat* or the EntireX Workbench startup command line instead of *jwtiz.exe*. See also *Using EntireX Workbench from a Command Line*.
- XML Wrapper: XML Adapters (version 6.x) will no longer be supported by XML Runtime.
- UDDI version 1 will no longer be supported.
- The *Brokervb.dll* will no longer be delivered.
- On Windows and UNIX, the persistent store B-tree will be retired. This functionality is provided by a production-safe embedded store, which is available with version 7.3. See *Migrating the Persistent Store* under UNIX | Windows.
- C Wrapper. The feature to redirect the generated output to standard out or any file will be retired. The AUTOCONV function which offers the mapping functionality is integrated into the C Wrapper of the EntireX Workbench, the *autconv* modules will be retired.

- The enhancement of the PATH variable to include the runtime modules of ...\\Common Files\\Software AG\\ for the RPC and ACI applications.
- For the COBOL Wrapper the deprecated options APOST and QUOTE for enclosing string literal will be retired.
- COBOL RPC clients will support only Natural RPC servers of Natural 4.1.2 (z/OS) or Natural 6.1 (Windows/UNIX) or above.
- IDL Extractor for Natural will support only the Natural RPC Servers of Natural 4.1.2 (Mainframe) or Natural 6.1 (Windows/UNIX) or above.
- The secondary subscriber store (SSTORE) will be dropped in the next release of EntireX. We recommend you use the primary persistent store (PSTORE) to store your subscriber data, by setting the Broker-specific parameter SUBSCRIBER-STORE=PSTORE.
- EntireX RPC BMQ Bridge will be dropped in the next release.

Features/Technology not Supported

- Entire Net-Work version 7 on Windows and UNIX will not be supported by EntireX. Once the Entire Net-Work version 2 goes out of support, EntireX will no longer support Entire Net-Work on Windows or UNIX. TCP/IP is the recommended transport for these platforms.

Migration Strategy for Dropped / Modified Functionality

The EntireX Workbench is replaced with a completely modernized Eclipse-based EntireX Workbench. The functionality provided in earlier versions is provided within the new EntireX Workbench. The existing GUI functionality is fully integrated and adapted to the Eclipse standards.

Migration of the EntireX Workbench to Eclipse

- The general settings of the **Tools > Options** dialog are now on the Eclipse preference pages **Software AG / EntireX Communicator**.
- The properties of a Software AG IDL file are now in the Eclipse property pages of the file.
- The Wrappers are started with the context-menu of the IDL file.
- The Extractors are started with New Wizards to create a new IDL file.
- Organize your files in the Eclipse Workspace in projects.

EntireX Prerequisites

This chapter describes the product prerequisites for the following EntireX platforms:

- z/OS Prerequisites
- UNIX Prerequisites
- Windows Prerequisites
- DCOM Supplementary Table
- OS/400 Prerequisites
- z/VM Prerequisites
- Application Server Prerequisites

Note:

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:

z/OS 1.7 or 1.8 is required for all components.

| Component | Prerequisites |
|------------------------------------|---|
| Broker Kernel | Transport options: <ul style="list-style-type: none"> ● TCP-based communications: IBM TCP Stack ● SSL-based communications: IBM GSK ● NET-based communications: Entire Net-Work. See note below. |
| Broker Services and Attach Manager | Transport options: <ul style="list-style-type: none"> ● TCP-based communications: IBM TCP Stack ● NET-based communications: Entire Net-Work. See note below. ● If the MQI interface is to be used, WebSphere MQ for z/OS V5.3.1 and above. ● Natural and Predict These products are not prerequisites for EntireX, but if you do use them, we recommend you use the most recent versions. |

| Component | Prerequisites |
|--------------------------------|---|
| Broker Stubs | <p>Transport options:</p> <ul style="list-style-type: none"> ● TCP-based communications: IBM TCP Stack ● SSL-based communications: IBM GSK ● NET-based communications: Entire Net-Work. See note below. <p>Lowest supported applications environment versions:</p> <ul style="list-style-type: none"> ● For CICS applications: CICS TS 2.2 ● For IMS-based applications: IMS 8 ● For Com-plete based applications: Com-plete 4.6 ● For Natural-based applications: NAT 4.1 |
| EntireX RPC Server under CICS | <ul style="list-style-type: none"> ● If you are using transport method NET: <ul style="list-style-type: none"> ○ Adabas Cross-Memory Services. See Installing (Adabas) Cross-Memory Services. ● If you are using transport method TCP, SSL: <ul style="list-style-type: none"> ○ Relay Manager installed, see Relay Manager in the Administration section. ● Optional: IBM LE compilers for z/OS. |
| EntireX RPC Server under Batch | <ul style="list-style-type: none"> ● If NET transport is to be used with the Broker stub used by the EntireX RPC Server under Batch, Adabas Cross-Memory Services are required. See Installing (Adabas) Cross-Memory Services. ● If you are using transport method TCP, SSL: Relay Manager installed, see Relay Manager in the Administration section. ● If you are using NET, see note below. ● Optional: IBM LE compilers for z/OS. |

| Component | Prerequisites |
|------------------------------|--|
| EntireX Security | <ul style="list-style-type: none"> ● SAF-compatible security system for host z/OS compatible Broker kernel: <ul style="list-style-type: none"> ○ Resource classes/types and profiles as required by the installed security system. This can require a machine IPL in the case of RACF. ○ Optional: Trusted User ID. See section <i>Trusted User ID</i>. With version 7.4.3 or higher of ADASVC module, all prerequisites are delivered with the EntireX Communicator installation kit. <p>Note: If you are using the trusted SAF user ID feature with the CICS TP monitor, set ADAGSET macro parameter SAF=YES when installing the Adabas/CICS link module.</p> |
| EntireX RPC Server under IMS | <ul style="list-style-type: none"> ● IMS version 8 and above. ● If NET transport is to be used with the Broker stub that is used by the EntireX RPC Server under IMS, Adabas Cross-Memory Services are required. See <i>Installing (Adabas) Cross-Memory Services</i>. ● If you are using transport method TCP, SSL: Relay Manager installed, see <i>Relay Manager</i> in the <i>Administration</i> section. ● If you are using NET transport, see note below. ● Optional: z/OS compilers. |
| Relay Manager | <p>Lowest supported applications environment versions:</p> <ul style="list-style-type: none"> ● For CICS applications: CICS TS 2.2 ● For IMS-based applications: IMS 8 |

Additional Notes for z/OS

- **Entire Net-Work**

- EntireX Communicator works with any supported version of Entire Net-Work. We recommend you use the latest version, which for z/OS is currently 6.1.
- Adabas Cross-Memory Services are required if you are using NET transport or using Adabas as your persistent store. See *Installing (Adabas) Cross-Memory Services*.

- **Natural RPC**

- If you are using the *Change RPC Password* feature, you need Natural 414 or Natural 413 SP5 or higher and Natural Security 414 or Natural Security 413 SP5 or higher.

UNIX Prerequisites

| Component | Prerequisites |
|----------------------|--|
| Broker Agent | <ul style="list-style-type: none"> ● Java 1.3, Java 1.4, Java 1.5 or Java 1.6. |
| Broker Kernel | <ul style="list-style-type: none"> ● Supported transports: Entire Net-Work, SSL and/or TCP/IP. If you are using Entire Net-Work, see note below. |
| Broker Stubs | <ul style="list-style-type: none"> ● For Location Transparency with LDAP, an LDAP server must be available. (This is not provided with EntireX.) See note below and <i>Configuration of an LDAP Server</i>. |
| Broker Trace Utility | <ul style="list-style-type: none"> ● Java 1.3, Java 1.4, Java 1.5 or Java 1.6. |
| C Wrapper | <ul style="list-style-type: none"> ● ANSI C Compiler |
| COBOL Wrapper | <ul style="list-style-type: none"> ● Compiler supported by the COBOL Wrapper: standard COBOL compiler e.g. IBM Enterprise COBOL for z/OS 3.3.1. |
| CORBA ACI | <ul style="list-style-type: none"> ● Java 1.3 |
| CORBA RPC Gateway | <ul style="list-style-type: none"> ● Java 1.3 ● DOM SDK |
| CORBA Wrapper | <ul style="list-style-type: none"> ● Java 1.3 ● DOM SDK |
| EntireX Workbench | <ul style="list-style-type: none"> ● Java 1.4.2, Java 1.5 or Java 1.6. ● Eclipse SDK 3.1 or 3.2. <p>Note: No Eclipse is delivered with EntireX Communicator for UNIX platforms other than Linux. The distribution medium contains a Workbench package for use on Windows or Linux. Alternatively, the Workbench can be used in command-line mode on some non-Linux UNIX platforms. See <i>Detailed Instructions for UNIX Platforms other than Linux</i> for more information.</p> |
| EJB Wrapper | <ul style="list-style-type: none"> ● Java 1.4, Java 1.5 or Java 1.6. ● J2EE 1.4 (JBoss, BEA WebLogic, Sun Java System, IBM WebSphere or others) ● Ant 1.6.1 ● XDoclet 1.2.1 |
| Java ACI | <ul style="list-style-type: none"> ● Java 1.3, Java 1.4, Java 1.5 or Java 1.6. ● If you are using SSL, see <i>SSL Support for Java</i> for details. ● If you are using Location Transparency, see note below. |

| Component | Prerequisites |
|-------------------------------------|---|
| Java RPC Runtime, Java RPC Server | <ul style="list-style-type: none"> ● Java 1.3, Java 1.4, Java 1.5 or Java 1.6. ● If you are using Location Transparency, see note below. ● If you are using SSL, see <i>SSL Support for Java</i> for details. |
| Java Wrapper | <ul style="list-style-type: none"> ● Java 1.3, Java 1.4, Java 1.5 or Java 1.6. |
| PL/I Wrapper | <ul style="list-style-type: none"> ● Compiler supported by the PL/I Wrapper: PL/I for MVS & VM V1R1.1, Enterprise PL/I for z/OS and OS/390 V3R3. |
| RPC ACI Bridge | <ul style="list-style-type: none"> ● If you are using a Natural client, the client needs Natural version 6.1.1 or higher (UNIX or Windows). If your client is running under z/OS, Natural version 4.2.1 or higher is required. ● If you generate stubs with SYSRPC, Natural 6.1.1.7 is required. |
| System Management Hub Agents | <ul style="list-style-type: none"> ● Java 1.4, Java 1.5 or Java 1.6. ● Apache web server (optional) |
| Tunnel Servlet | <ul style="list-style-type: none"> ● Java 1.3, Java 1.4, Java 1.5 or Java 1.6. |
| Web Services (DCOM) | <ul style="list-style-type: none"> ● Java 1.3.1 or above. ● Servlet Engine (e.g. Jakarta Tomcat) ● Apache Axis SOAP Toolkit <p>Note: Please use the versions of the above products which are delivered with the EntireX CD (Apache Tomcat 5.5, Apache Axis 1.1).</p> |
| XML Servlet, entirex.war | <ul style="list-style-type: none"> ● Java 1.3, Java 1.4, Java 1.5 or Java 1.6. ● Servlet Engine supporting Java Servlet API 2.2 or higher. ● JAXP-capable XML Parser (SAX). ● If you are using Location Transparency, see note below. ● If you are using SSL, see <i>SSL Support for Java</i> for details. |
| XML Wrapper, Web Services Wrapper | <ul style="list-style-type: none"> ● Java 1.3.1, Java 1.4, Java 1.5 or Java 1.6. ● JAXP-capable XML Parser (SAX). |
| XML Wrapper Runtime, XML RPC Server | <ul style="list-style-type: none"> ● Java 1.3, Java 1.4, Java 1.5 or Java 1.6. ● JAXP-capable XML Parser (SAX). ● If you are using Location Transparency, see note below. ● If you are using SSL, see <i>SSL Support for Java</i> for details. |

The products listed here have been thoroughly tested and are known to work. In most cases, more recent versions of the required components should also work.

Additional Notes for UNIX

- **Entire Net-Work**

We recommend you use TCP/IP as transport method. If you decide to use Entire Net-Work, you must use version 2. Entire Net-Work version 7 is not supported.

- **Location Transparency with Java Components**

- Java 1.3, Java 1.4, Java 1.5 or Java 1.6.
- LDAP server must be available (this is not provided with EntireX).

Under Solaris, LDAP version 11.8 or higher is prerequisite when using LDAP.

See Configuration of an LDAP Server.

- **Natural RPC**

- If you are using the *Change RPC Password* feature, you need Natural 611 PL14 or higher and Natural Security 611 PL14 or higher.

Additional Notes for Linux x86

Please note that IBM Java or the GCJ Java should not be used with our products for Linux x86 platforms. Use only Sun or Blackdown Java for our products on Linux x86. (Our products only support IBM Java on AIX and Linux for IBM zSeries).

Before you install EntireX Communicator, make sure you have a working `/usr/lib/libdb.so.2` installed. As this library is not installed by default, you may have to install either the `db1` package (SUSE Linux Enterprise Server), `gnome-libs` package (Red Hat Enterprise Linux 3) or the `compat-db` package (Red Hat Enterprise Linux 4).

We recommend you install the highest update packages available for Linux. On Red Hat Enterprise Linux 4 you must have a minimum of U3 (Update 3) installed, otherwise you will have serious problems during installation. On Red Hat Enterprise Linux 4, the package `compat-libstdc++-33-3.2.3-47.3` (or a higher version) must be installed.

This installation will fail if you choose `sudo` authentication while there is option `Defaults env_reset` in the `sudo` configuration file (`/etc/sudoers`). If you insist on `sudo` option `Defaults env_reset`, then you must either run this installation as user `root` or you choose `su` authentication during installation.

If the system is configured to run in parallel boot mode, the installed `rc` scripts will not work by default. To work around this problem on SuSE Enterprise Server, simply set `RUN_PARALLEL=no` in file `/etc/sysconfig/boot`.

Hardware and Storage Requirements

The following list represents the minimum hardware required to run EntireX Communicator. EntireX Communicator might also run on machines with smaller configurations, but performance issues may arise. Please contact your customer support organization to determine the exact hardware requirements for your specific installation.

- Single processor machine (recommended 2 or more processors) running at 1GHz or higher.
- 512 MB of RAM, 1024 recommended. Monitor running at a resolution of 1024 x 768 or higher.
- The full installation of EntireX Communicator and all necessary third party products, including backup directories created during a patch installation, requires a minimum of 800 MB (Linux). Under Solaris, where neither Eclipse nor JRE is installed, the minimum is 400 MB.
- 10/100 PCI Ethernet card on a 100 Mbps network.
- A CD-ROM drive to install the software.

Windows Prerequisites

| Component | Prerequisites |
|--|---|
| Broker ActiveX Control | To store Tamino or XML files: <ul style="list-style-type: none"> ● Internet Explorer 5 or higher ● Tamino 4.2.1 or higher. |
| Broker Agent | <ul style="list-style-type: none"> ● If you are using Entire Net-Work, see note below. ● Java 1.3, Java 1.4, Java 1.5 or Java 1.6. |
| Broker Kernel | <ul style="list-style-type: none"> ● Supported transport methods: Entire Net-Work, SSL or TCP/IP. If you are using Entire Net-Work, see note below. |
| Broker Stubs | <ul style="list-style-type: none"> ● Supported transport methods: Entire Net-Work, SSL or TCP/IP. If you are using Entire Net-Work, see note below. ● For Location Transparency with LDAP, an LDAP server must be available. (This is not provided with EntireX.) See <i>Configuration of an LDAP Server</i>. |
| Broker Trace Utility | <ul style="list-style-type: none"> ● Java 1.3, Java 1.4, Java 1.5 or Java 1.6. |
| C Wrapper | <ul style="list-style-type: none"> ● ANSI C Compiler. |
| COBOL Wrapper | <ul style="list-style-type: none"> ● Compiler supported by the COBOL Wrapper: standard COBOL compiler e.g. IBM Enterprise COBOL for z/OS 3.3.1. |
| CORBA ACI | <ul style="list-style-type: none"> ● Java 1.3. |
| CORBA RPC Gateway | <ul style="list-style-type: none"> ● Java 1.3. ● DOM SDK. |
| CORBA Wrapper | <ul style="list-style-type: none"> ● Java 1.3. ● DOM SDK. |
| DCOM Examples | <ul style="list-style-type: none"> ● C++ Compiler from Microsoft Visual Studio .NET 2003. |
| DCOM Wrapper | <ul style="list-style-type: none"> ● C++ Compiler from Microsoft Visual Studio .NET 2003 or Microsoft Visual Studio 2005. |
| DCOM Wrapper (generated objects) | <ul style="list-style-type: none"> ● Microsoft Visual Studio .Net 2003 or 2005 C/C++ runtime environment. |
| DCOM Wrapper and .NET Wrapper Plug-ins for Microsoft Visual Studio | <ul style="list-style-type: none"> ● Microsoft Visual Studio 2005 |

| Component | Prerequisites |
|--------------------------------------|--|
| EntireX Workbench | <ul style="list-style-type: none"> ● Java 1.4.2, Java 1.5 or Java 1.6. ● Eclipse SDK 3.1 or 3.2. |
| Java ACI | <ul style="list-style-type: none"> ● Java 1.3, Java 1.4, Java 1.5 or Java 1.6. ● If you are using Location Transparency, see note below: ● If you are using SSL, see <i>SSL Support for Java</i> for details. |
| Java RPC Runtime, Java RPC Server | <ul style="list-style-type: none"> ● Java 1.3, Java 1.4, Java 1.5 or Java 1.6. ● If you are using Location Transparency, see note below: ● If you are using SSL, see <i>SSL Support for Java</i> for details. |
| .NET ACI | <ul style="list-style-type: none"> ● .NET Framework version 2.0. |
| .NET Wrapper | <ul style="list-style-type: none"> ● .NET Framework 2.0. ● C# Compiler from Microsoft Visual Studio 2005. |
| EJB Wrapper | <ul style="list-style-type: none"> ● Java 1.4, Java 1.5 or Java 1.6. ● J2EE 1.4 (JBoss, BEA WebLogic, Sun Java System, IBM WebSphere or others). ● Ant 1.6.1. ● XDoclet 1.2.1. |

| Component | Prerequisites |
|------------------------------|---|
| IDL Extractor for Natural | <ul style="list-style-type: none"> ● If you are using a Natural RPC Server under Windows or UNIX, the following is required: <ul style="list-style-type: none"> ○ Any Natural RPC Server with Natural Version 6.1.1.13 or above. ○ Any Natural RPC Server with Natural Version 6.2.1 or above. ● If you are using a Natural RPC Server under z/OS, VSE or BS2000/OSD the following is required: <ul style="list-style-type: none"> ○ Any Natural RPC Server with Natural Version 4.1.4 SP4 or above. ○ Any Natural RPC Server with Natural Version 4.2.1 SP1 or above. ● If you are using a Natural RPC Server under OS/400 the following is required: <ul style="list-style-type: none"> ○ The Natural RPC Server must be prepared to work together with the IDL Extractor for Natural see <i>Natural RPC Server Configuration for the IDL Extractor for Natural</i>. |
| Java Wrapper | <ul style="list-style-type: none"> ● Java 1.3, Java 1.4, Java 1.5 or Java 1.6. |
| PL/I Wrapper | <ul style="list-style-type: none"> ● Compiler supported by the PL/I Wrapper: PL/I for MVS & VM V1R1.1, Enterprise PL/I for z/OS and OS/390 V3R3. |
| RPC ACI Bridge | <ul style="list-style-type: none"> ● If you are using a Natural client, the client needs Natural version 6.1.1 or higher (UNIX or Windows). If your client is running under z/OS, Natural version 4.2.1 or higher is required. ● If you generate stubs with SYSRPC, Natural 6.1.1.7 is required. |
| System Management Hub Agents | <ul style="list-style-type: none"> ● Java 1.4, Java 1.5 or Java 1.6. ● Internet Explorer 5.5 or above. |
| Tunnel Servlet | <ul style="list-style-type: none"> ● Java 1.3, Java 1.4, Java 1.5 or Java 1.6. |

| Component | Prerequisites |
|--|---|
| Web Services Examples | <ul style="list-style-type: none"> ● Microsoft .NET Framework 2.0. ● C# and Visual Basic Compilers from Microsoft Visual Studio 2005. ● Java 1.3 or higher. ● Apache Axis SOAP Toolkit. <p>Note: Please use the version delivered on the EntireX CD (Apache Axis 1.1).</p> |
| XML Servlet, entirex.war | <ul style="list-style-type: none"> ● Java 1.3, Java 1.4, Java 1.5 or Java 1.6. ● Servlet Engine supporting Java Servlet API 2.2 or higher. ● JAXP-capable XML Parser (SAX). ● If you are using Location Transparency, see note below. ● If you are using SSL, see <i>SSL Support for Java</i> for details. |
| XML Wrapper, Web Services Wrapper | <ul style="list-style-type: none"> ● Java 1.3, Java 1.4, Java 1.5 or Java 1.6. ● JAXP-capable XML Parser (SAX). |
| XML Wrapper Runtime, XML RPC Server | <ul style="list-style-type: none"> ● Java 1.3, Java 1.4, Java 1.5 or Java 1.6. ● JAXP-capable XML Parser (SAX). ● If you are using Location Transparency, see note below. ● If you are using SSL, see <i>SSL Support for Java</i> for details. |

The products listed above have been thoroughly tested and are known to work. In most cases, more recent versions of the required components should also work.

Additional Notes for Windows

- **Entire Net-Work**

We recommend you use TCP/IP as transport method. If you decide to use Entire Net-Work, you must use version 2. Entire Net-Work version 7 is not supported.

- **EntireX DCOM**

- To interoperate with DCOM under Windows, the prerequisite is Windows 2000, or Windows XP.
 - EntireX DCOM currently supports only one remote transport protocol, TCP/IP. Windows supports additional protocols. The order in which Windows initializes RPC transports is specified in the registry under the value HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Rpc\DCOM Protocols.
 - In order to prevent Windows wasting time trying to initialize RPC transports not supported by EntireX DCOM, you should specify TCP/IP as the first transport to try. To do this, use `regedt32` to place `ncacn_ip_tcp` at the first position in the string value for DCOM Protocols.
- **Location Transparency with Java Components**
 - Java 1.3, Java 1.4, Java 1.5 or Java 1.6.
 - LDAP server must be available (this is not provided with EntireX).

See Configuration of an LDAP Server for Windows.

- **Natural RPC**
 - If you are using the *Change RPC Password* feature, you need Natural 611 PL14 or higher and Natural Security 611 PL14 or higher.

Hardware and Storage Requirements

The following list represents the minimum hardware required to run EntireX Communicator. EntireX Communicator might also run on machines with smaller configurations, but performance issues may arise. Please contact your customer support organization to determine the exact hardware requirements for your specific installation.

- Single processor machine running at 500 MHz or higher, 1 GHz recommended.
- 512 MB of RAM, 1024 recommended.
- Monitor running at a resolution of 1024 x 768 or higher.
- The full installation of EntireX Communicator and all necessary third party products, including backup directories created during a patch installation, require a minimum of 800 MB. The Eclipse Workbench standalone package requires a minimum of 300 MB.
- A CD-ROM drive to install the software.

DCOM Supplementary Table

Software Requirements

| Platform | Runtime | Runtime + SDK |
|----------|---|--|
| Linux | <ul style="list-style-type: none"> • SuSE inux Enterprise Server 9 for x86 and 10 (32-bit) • Red Hat Enterprise Linux AS 3 and 4 for x86 (32-bit) | gcc 3.3, bunutils 2.14, glibc 2.3.2 or higher, or gcc 4.1 |
| Solaris | Sun Solaris 9 and 10 for SPARC-V9 (64-bit) | Sun WorkShop C Compiler 5.7, Sun WorkShop C++ Compiler 5.7 |

The table above lists configurations that have been thoroughly tested and are known to work. In most cases, more recent versions of the various components required should also work. Please check the platform vendors' internet pages for further information on versions and patches available.

OS/400 Prerequisites

- OS/400 with operating system V4R5M0 or above.
- Controller that supports TCP/IP protocol.
- Any OS/400 ILE-enabled programming language.
- TCP/IP connection to an EntireX Broker kernel on a Windows, z/OS or UNIX platform.
- About 16 MB of disk space for the Broker stub installation and about 50 MB for the RPC server installation.
- Each process that includes the Broker stub occupies one additional megabyte of virtual memory.

z/VM Prerequisites

| Component | Prerequisites |
|--------------|--|
| Broker Stubs | <ul style="list-style-type: none"> ● Supported z/VM Version z/VM version 5.1 or 5.2. ● Adabas Version Adabas/Entire Net-Work version 7.4.4 or above. Note: Maximum message size with NET transport when using the Broker stub under z/VM is 32 KB. ● Virtual Storage The z/VM Broker stub runs within an IBM Language Environment enclave. This means that if the calling program is not an IBM Language Environment, program an enclave will be automatically created, invisible to the application. However you must allow sufficient virtual storage to allow the Language Environment enclave to be created. A storage size of 16 MB is recommended. ● ESIZE When using SYSETB under z/VM you must allow sufficient ESIZE. We recommend setting ESIZE=64 KB. |

Application Server Prerequisites

The web application components of EntireX (XML Servlet, XML runtime, EJB Wrapper runtime) are J2EE 1.4.2 compliant. They should therefore run on any Java application server that is J2EE 1.4.2 compliant. The EntireX components have been tested and are supported on the following application servers:

| Application Server | Platform | | | | | |
|--------------------|----------|---------|-------|-----|-------|---------|
| | Windows | Solaris | Linux | AIX | HP-UX | z/Linux |
| BEA WebLogic 9.1 | x | x | x | | x | |
| IBM WebSphere 6.1 | x | | | x | x | x |
| JBoss 4.0.4 | x | | x | | | |
| Tomcat 5.5 | x | x | x | x | x | x |