Administering the WebSphere MQ Listener

EntireX WebSphere MQ Listener runs as a listener on a WebSphere MQ queue and passes messages to an RPC server. It is used to send messages received from a WebSphere MQ queue to an RPC server applications. This means that existing RPC servers can be used for communication with WebSphere MQ.

The WebSphere MQ Listener can process MQ messages that are in XML or SOAP format and that can be mapped to a Software AG IDL file, using XML Mapping Editor. The resulting XMM file has to be specified by the configuration property `entirex.bridge.xmm`.

The WebSphere MQ Listener can also process MQ messages that are in text format. An IDL file is used, which describes the message layout (see *Mapping IDL Data Types to the MQ Message Buffer*). The IDL file has to be specified by the configuration `property entirex.bridge.idl`. The program name is taken from the `applicationIdData` field of the incoming MQ message. If this field is empty and the IDL file has only one program this program will be called. A custom logic (e.g. using the first n bytes of the MQ message payload) can be implemented in the user exit.

Note:
EntireX WebSphere MQ ignores EntireX configuration parameters inside the XML/SOAP payload. See *XML/SOAP Listener* under *Writing Advanced Applications with the XML/SOAP Wrapper*.

This chapter covers the following topics:

- Customizing the EntireX WebSphere MQ Listener
- Configuring the RPC Server Side
- Configuring the WebSphere MQ Side
- Mapping IDL Data Types to the MQ Message Buffer
- Starting the WebSphere MQ Listener
- Stopping the WebSphere MQ Listener
- Tracing

See also *Introduction to the WebSphere MQ RPC Server and WebSphere MQ Listener | Advanced WebSphere MQ Listener Functionality*.

Customizing the EntireX WebSphere MQ Listener

To set up the WebSphere MQ Listener, there is a configuration file and there are scripts to start the WebSphere MQ Listener.

The WebSphere MQ Listener is contained in *entirex.jar*. There are two parts: the RPC side and the WebSphere MQ side.

The WebSphere MQ Listener uses the WebSphere MQ base Java classes from IBM. To run the WebSphere MQ Listener, you need either the base Java classes or a full installation of WebSphere. Prerequisites for all EntireX components are described centrally. See *Prerequisites for WebSphere MQ*

RPC Server and WebSphere MQ Listener under UNIX | Windows for the required JAR file(s). The WebSphere MQ environment variables `MQ_JAVA_LIB_PATH` and `MQ_JAVA_INSTALL_PATH` must be set.

Make sure that either the local WebSphere MQ installation or the WebSphere MQ Java classes are accessible.

The default name for the configuration file is *entirex.wmqbridgelistener.properties*. The WebSphere MQ Listener searches for this file in the current working directory. You can set the name of the configuration file with `-Dentirex.server.properties=` *`your file name`*. Use the slash "/" as file separator. The configuration file contains the configuration for both parts of the WebSphere MQ Listener.

Alternatively, use script `wmqbridgelistener.bsh` (UNIX) or `wmqbridgelistener.bin` in the *bin* directory to start the WebSphere MQ Listener. Both scripts use the configuration file *entirex.wmqbridgelistener.properties* in the folder *etc*, and both can be customized.

Configuring the RPC Server Side

The WebSphere MQ Listener converts an MQ message into an RPC request to an RPC server. The RPC server is defined using the following properties.

Name	Default Value	Explanation
`entirex.bridge.marshalling`		Define the type of marshalling (Natural or COBOL). Must be set only if the IDL file contains arrays of groups. See *Mapping IDL Data Types to the MQ Message Buffer*.
`entirex.bridge.xml.encoding`	`utf-8`	Encoding of the reply XML document.
`entirex.server.brokerid`	`localhost`	Broker ID
`entirex.server.serveraddress`	`RPC/SRV1/CALLNAT`	Server address
`entirex.server.userid`	`WMQListener`	The Broker user ID.
`entirex.server.libname`		The RPC library name (optional). The default value is the library name of the XMM/IDL file.
`entirex.server.naturallogon`	`no`	Enables or disables logon to Natural Security for Natural RPC Server.
`entirex.server.reliableRPC`	`no`	If set to "yes", use reliable RPC for the call to the RPC Server.
`entirex.server.rpcuser`		Optional. RPC user ID (if different from `entirex.server.brokerid`).
`entirex.server.rpcpassword`		Optional. RPC password (if different from `entirex.server.password`).
`entirex.server.retrycycles`	`15`	Number of retry attempts if the call to the RPC server is not successful. If all attempts fail, the MQ message will not be committed and the WebSphere MQ Listener will terminate. If a dead-letter queue has been specified, the message will be put to that queue and committed and the Listener will not stop.
`entirex.server.retryinterval`	`20`	Retry interval (in seconds) if the call to the RPC server is not successful.

`entirex.server.compresslevel`	`0 (no compression)`	Permitted values (you can enter the text or the numeric value):
		`BEST_COMPRESSION` `9`
		`BEST_SPEED` `1`
		`DEFAULT_COMPRESSION` `-1`, mapped to `6`
		`DEFLATED` `8`
		`NO_COMPRESSION` `0`
		`N` `0`
		`Y` `8`

`entirex.server.encryptionlevel`	`0`	Encryption level. Valid values: 0,1,2.
`entirex.server.logfile`		Name of the log file, the default is standard output.
`entirex.server.monitorport`	`0`	The port where the server listens for commands from the System Management Hub (SMH). If this port is 0, no port is used and management by the SMH is disabled.

Name	Default Value	Explanation
`entirex.server.password`		The password for secured access to the Broker. The password is encrypted and written to the property `entirex.server.password.e`. To change the password, set the new password in the properties file (default is *entirex.wmqbridge.properties*). To disable password encryption, set `entirex.server.passwordencrypt=no` (default for this property is yes).
`entirex.server.properties`	`entirex.wmqbridgelistener.properties`	The file name of the property file.
`entirex.server.security`	`no`	no/yes/auto/Name of BrokerSecurity object.
`entirex.server.logfile`		Name of the log file, the default is standard output.
`entirex.server.verbose`	`no`	Enable verbose output to the log file.
`entirex.server.waitserver`	`60S`	Wait time for the call to the RPC server.
`entirex.timeout`	`20`	TCP/IP transport timeout. See *Setting the Transport Timeout* under *Writing Advanced Applications - EntireX Java ACI*.
`entirex.trace`	`0`	Trace level (1,2,3).

Configuring the WebSphere MQ Side

These properties are used to configure the connection to the WebSphere MQ queue manager.

Name	Default Value	Explanation
`entirex.wmqbridge.host`		If host is not specified, bindings mode is used to connect to the local MQ Server. Otherwise specify the hostname or IP address of the MQ Server.
`entirex.wmqbridge.port`	`1414`	Port of the MQ Server. Not used in bindings mode.
`entirex.wmqbridge.channel`	`SYSTEM.DEF.SVRCONN`	Channel name used to the MQ Server. Not used in bindings mode.
`entirex.wmqbridge.queuemanager`		Name of the (local or remote) queue manager. If not specified, a connection is made to the default queue manager.
`entirex.wmqbridge.listenqueue`		Name of the queue from which messages are retrieved.
`entirex.wmqbridge.userid`		User ID for MQ Server.
`entirex.wmqbridge.password`		Password for MQ Server.

Name	Default Value	Explanation
`entirex.wmqbridge.userexit`		Class name for WMQBridge user exit.
`entirex.wmqbridge.userexit.classpath`		URL of the classpath for WMQBridge user exit (optional).
`entirex.wmqbridge.ccsid`	platform encoding	Coded Character Set Identification used by the WebSphere MQ Listener (which acts as an MQ client), unused in bindings mode.
`entirex.wmqbridge.mqtrace`	`0`	MQ tracing enabled if parameter > 0.
`entirex.bridge.idl`		Name of a Software AG IDL file; messages to/from MQ are in plain text.
`entirex.bridge.xmm`		Name of XMM (XML mapping) file; messages to/from MQ will be converted to XML.

Name	Default Value	Explanation
`entirex.bridge.names.file`		Name of a properties file generated with the *bridge.tpl* template, which contains names of the first level parameters in the IDL file (optional). Necessary if IDL file contains dynamic MQ parameters.
`entirex.bridge.verbose`	`no`	Verbose/trace mode of WebSphere MQ Listener
`entirex.wmqbridge.environment.sslCipherSuite`		Configuration for SSL connection to MQ Server. See the WebSphere MQ documentation for details.
`entirex.wmqbridge.environment.sslFipsRequired`		Configuration for SSL connection to MQ Server. See the WebSphere MQ documentation for details.
`entirex.wmqbridge.priority`		Message priority for messages sent to MQ (different from the default priority of the destination queue).

Name	Default Value	Explanation
`entirex.wmqbridge.deadletterqueue`		Name of the queue that will receive unprocessed messages.

Mapping IDL Data Types to the MQ Message Buffer

The WebSphere MQ Listener uses a predefined mapping of IDL data types to the MQ message buffer if the MQ message is in text format.

If your programs use arrays of groups, you have to set the property `entirex.bridge.marshalling` to "Natural" or "COBOL". If your programs do not use arrays of groups, you must not set `entirex.bridge.marshalling`.

Data Type	Description	Format	Note
A*number*	Alphanumeric	*number* bytes, encoding the characters.	
AV	Alphanumeric variable length	Bytes up to the end of the buffer.	1, 4
AV[*number*]	Alphanumeric variable length with maximum length	Bytes up to the end of the buffer, maximal length *number*.	1
K*number*	Kanji	Same as data type A.	
KV	Kanji variable length	Same as data type AV.	1, 4
KV[*number*]	Kanji variable length with maximum length	Same as data type AV[*number*].	1
I1	Integer (small)	*sign* (+, -) and 3 bytes (digits).	
I2	Integer (medium)	*sign* (+, -) and 5 bytes (digits).	
I4	Integer (large)	*sign* (+, -) and 10 bytes (digits).	
N*number1*[.*number2*]	Unpacked decimal	*sign* (+, -), *number1* bytes (digits) [*number2*] bytes (digits), no decimal point.	
P*number1*[.*number2*]	Packed decimal	*sign* (+, -), *number1* bytes (digits) [*number2*] bytes (digits), no decimal point.	
L	Logical	1 byte: X for true, all other false.	
D	Date	*YYYYMMDD*.	2
T	Time	*YYYYMMDDhhmmssS*.	3

Notes:

1. Only as last value.
2. *YYYY* year, *MM* month, *DD* day.
3. *YYYY* year, *MM* month, *DD* day, *hh* hour, *mm* minute, *ss* second, *S* tenth of a second.
4. Not possible when using COBOL.

Data types not supported:

- Binary (B[*n*],BV, BV[*n*])
- Floating point (F4, F8)

Starting the WebSphere MQ Listener

Use start script `wmqlistener.bsh` (UNIX) or `wmqlistener.bat` (Windows) in the folder *bin* to start the WebSphere MQ Listener. You may customize this file. See also *Prerequisites for WebSphere MQ RPC Server and WebSphere MQ Listener* under UNIX | Windows.

The start scripts contain references to JAR files in the WS-Stack directory. If you update these JAR files, you may need to customize the JAR file names in the script files.

Stopping the WebSphere MQ Listener

Use CTRL-C to stop the WebSphere MQ Listener.

On UNIX you can use `kill <pid of java process>` to stop the WebSphere MQ Listener.

Tracing

The trace level for the EntireX RPC part is controlled by the usual `entirex.trace` property. It can be set in the configuration file. Additional diagnostic output can be enabled by setting the property `entirex.server.verbose`.

The WebSphere MQ Listener-specific diagnostic output is enabled by setting the property `entirex.bridge.verbose`. In addition, tracing of the IBM WebSphere MQ classes can be influenced with the property `entirex.wmqbridge.mqtrace`.

Use the RPC server agent of the System Management Hub to dynamically change the level of the diagnostic output. You can specify a value of 0, 1, 2, or 3 which changes the value of `entirex.trace`. In addition, the value 0 will disable both `entirex.server.verbose` and `entirex.bridge.verbose`. A value greater than 0 will enable both `entirex.server.verbose` and `entirex.bridge.verbose`.

Redirect the trace to a file with the property `entirex.server.logfile`. Set this to the file name of the log file.