

Unit 14. SupportPacs, interfaces, and bridges

What this unit is about

This unit covers SupportPacs, interfaces to other WebSphere products, and various bridges to other software systems.

What you should be able to do

After completing this unit, you should be able to:

- List the names of several SupportPacs
- Locate SupportPacs on the WebSphere MQ website
- Describe the interfaces and bridges between WebSphere MQ and other software products

How you will check your progress

- Checkpoint Exercises
- Lab Exercises

References

WebSphere MQ V7 Information Center

Unit objectives

After completing this unit, you should be able to:

- List the names of several SupportPacs
- Locate SupportPacs on the WebSphere MQ Web site
- Describe the interfaces and bridges between WebSphere MQ and other software products

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Figure 14-1. Unit objectives

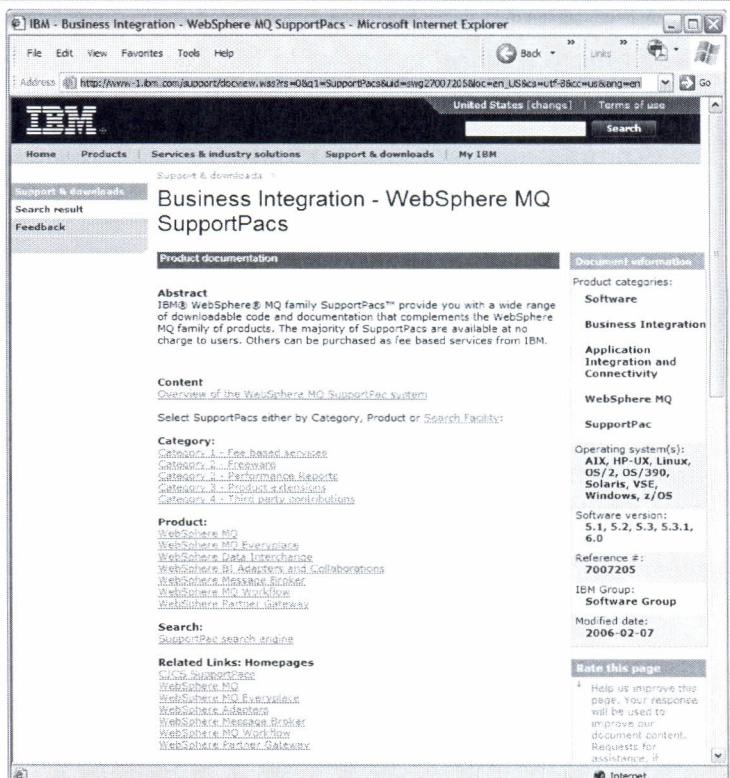
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Notes:

Overview of SupportPacs

- Transaction processing SupportPacs
 - Specific functions or services
 - Contributors throughout IBM
 - Available worldwide
 - Enhance CICS and WebSphere MQ products

- Available in four categories
 - Fee-based services (not available for download)
 - Freeware provided “as is” with no warranty or defect correction
 - Fully supported product extensions
 - Third party contributions provided “as is” with no warranty or defect correction



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Figure 14-3. Overview of SupportPacs

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Notes:

WebSphere MQ Family SupportPacs can be found at the following web address:

www.ibm.com/software/integration/support/supportpacs

The WebSphere MQ Family SupportPacs library consists of material that complements the family of CICS and WebSphere MQ products marketed by IBM. Each SupportPac supplies a particular function or service that can be used with one or more of the CICS and WebSphere MQ products. Many SupportPacs are freely available for download while others have to be purchased as fee-based services from IBM.

The SupportPacs are grouped into the following categories.

- **Category 1 - Fee-based services**

SupportPacs in this category provide material to be used by IBM Systems Specialists as the basis for fee earning services contracts with customers. They are advertised in the SupportPacs library but their content is only available to IBM personnel. Customers interested in obtaining services based on the material can contact their IBM representative.

- **Category 2 - Freeware**

SupportPacs in this category are provided free to all users of CICS and WebSphere MQ products. They typically provide material covering areas such as:

- Background education on CICS and WebSphere MQ products.
- Sample utilities to assist in the development of CICS and WebSphere MQ based applications.
- Sample utilities to assist in the operation and management of CICS and WebSphere MQ based systems.

The material is provided AS-IS and the license agreement under which these SupportPacs are made available does not provide for warranty or defect correction.

- **Category 3 - Product Extensions**

Product Extensions are provided free to all users of CICS and WebSphere MQ products. They are supplied under the standard terms and conditions provided by the IBM International Program License Agreement (IPLA) and thus provide for warranty and defect correction.

The terms and conditions under which a SupportPac is supplied are contained in a file which is delivered with the SupportPac.

Category 3 SupportPacs are available free from the web. Their quality and support are the same as the WebSphere MQ products they are used with.

The following comments refer mainly to category 1 and category 2 SupportPacs.

- **Quality**

- IBM strives for the highest quality but does rely primarily on the professionalism and experience of the authors.
- Every SupportPac is reviewed by a member of the WebSphere MQ Technical Support team.
- Users are asked for feedback.

- **Support**

- Most SupportPacs are provided in good faith and on an AS-IS basis. No warranty or support is implied or committed.
- Some are fully supported product extensions for example, current (V6 and V7) IBM supplied clients.
- The sample code is not supported by the IBM Service organization.

- **Price**

- No charge for a category 2 (or category 3 or 4) SupportPac.
- The charge for a category 1 SupportPac depends on its use.

- **Suggestions and criticism**

- Use the SupportPacs forum.
 - Comments are forwarded promptly to the author.
- **Availability**
 - Most are now available for download on the web.
 - Category 1 SupportPacs can only be obtained by IBM personnel using an internal delivery mechanism.

MS03 example

WebSphere MQ saves queue manager object definitions using PCFs

- Interrogates the attributes of all the objects defined to a queue manager (either local or remote) and saves them to a file
 - Suitable for use with `RUNMQSC`
 - Can be used with any of the WebSphere MQ family that supports PCFs
- Always use the most current version

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Figure 14-4. MS03 example

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Figure 14-5

Notes:

This SupportPac provides a utility that allows you to save current queue manager and object definitions in a file, which can be used to re-create the objects.

All objects (queue manager, queue, process, channel, listener, service, authentication information objects, and namelist) are supported.

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MSOP example

WebSphere MQ events and statistics plug-in

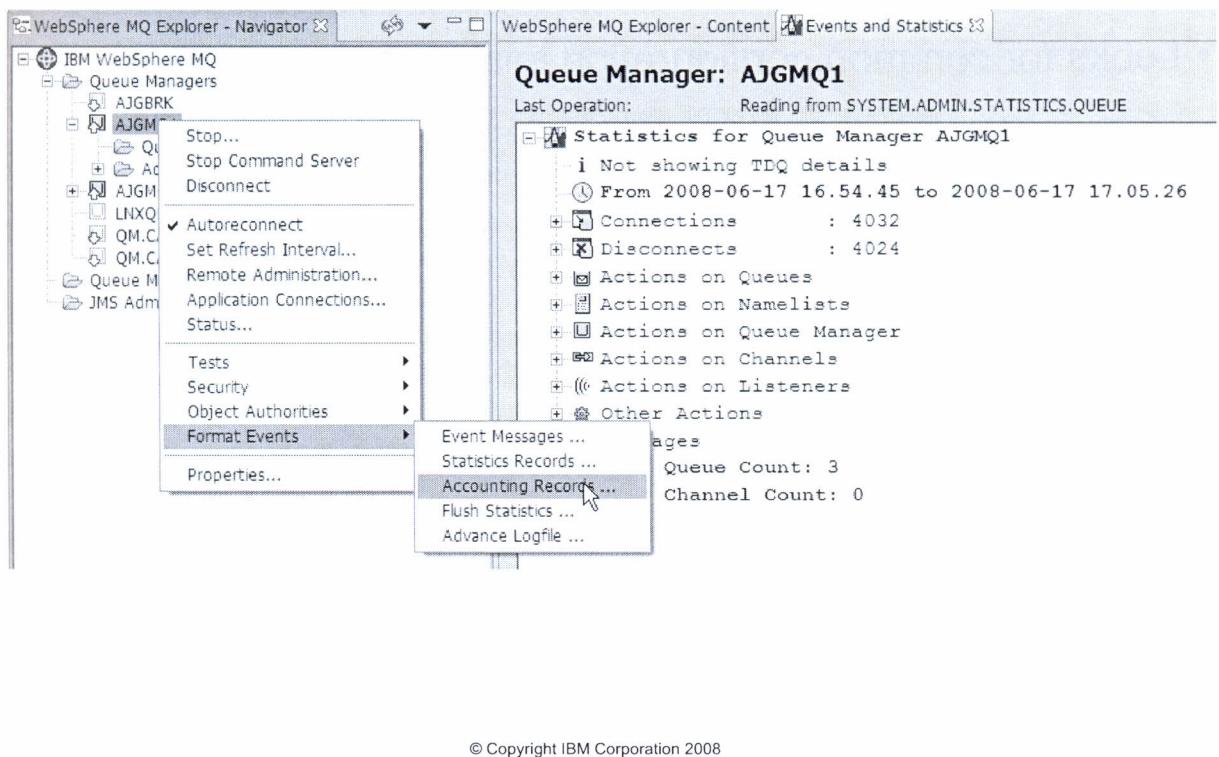


Figure 14-5. MSOP example

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Notes:

MSOP can be used to display event, statistics, and accounting data inside the WebSphere MQ Explorer.

MH03 example

WebSphere MQ SSL configuration checker

- Looks for common configuration mistakes
- Provides recommendations
- Can simulate a client connection to qmgr for diagnostics
- Checks for a wide variety of common errors

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Figure 14-6. MH03 example

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Notes:

This SupportPac provides a test tool to look for common configuration mistakes in WebSphere MQ SSL configurations and provides recommendations for resolving problems. It is intended to be run from the command line on Windows and UNIX platforms where GSKit is used to provide WebSphere MQ SSL support.

The tool can check an individual queue manager to confirm that SSL has been correctly configured. Alternatively, if also provided with a copy of SSL files used by a WebSphere MQ client, it simulates a connection between the queue manager and client which it can then examine and provide diagnostic feedback.

SSLcheck currently checks for

- Missing SSL files
- Incorrect SSLKEYR queue manager attribute
- Problems with key repository stash files (and creates stash files again if needed)
- Password settings

- SSL
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 - Valid
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- Intende
- SSL
 - More

- SSL file permissions (UNIX systems only)
- Certificate labels
- Certificate expiry dates
- Valid chain of trust for certificates
- Common environment problems for GSkit
- JRE configuration
- Validate queue manager and client certificates against each other
- Verifies SSLCAUTH/SSLPEER settings with queue manager key repository
- Use of SSL CRLs

Intended future development:

- SSL file permissions (Windows systems)
- More detailed SSLPEER checking

Example - Clients

- Official IBM supplied clients available as MQCx
- Many unofficial clients: MACx for other platforms

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Figure 14-7. Example - Clients

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Notes:

The official fully supported WebSphere MQ clients:

- MQC6: WebSphere MQ V6 clients
- MQC7: WebSphere MQ V7 clients (when available)

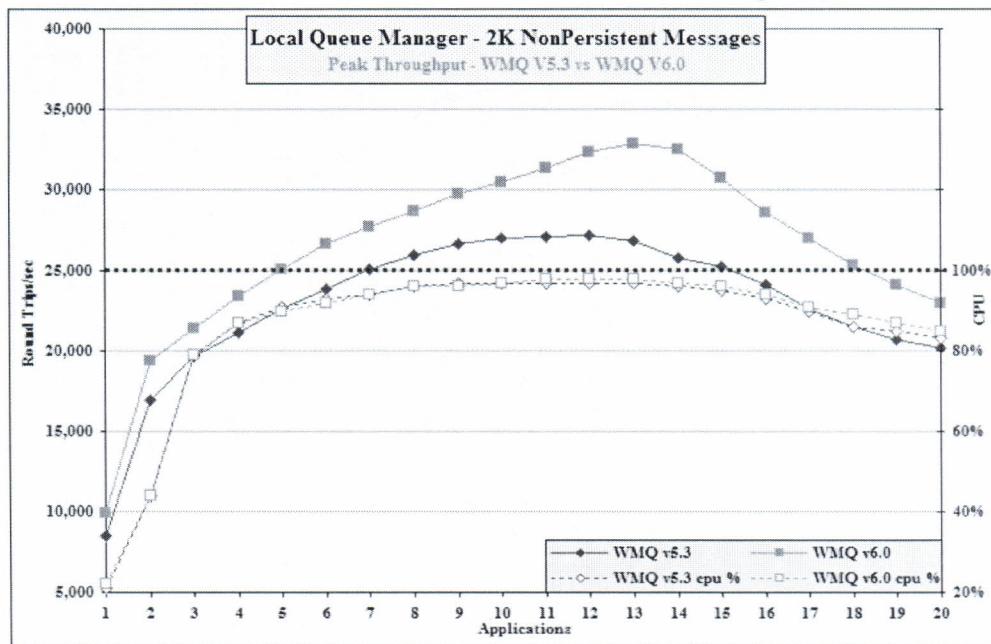
Many other platforms have client SupportPacs. These are provided on a use as-is basis.

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Example of MPnn performance reports

- Report performance capabilities
- Provide interpretation and implications of results
- Sizing information
- Provide application design direction
- Describe tuning opportunities



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Figure 14-8. Example of MPnn performance reports

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Notes:

The performance reports includes performance charts showing Performance measurements to present the performance capabilities of WebSphere MQ V6.0 and allow capacity planning.

These reports include performance measurements with figures and tables to present the performance capabilities of WebSphere MQ and provide interpretation of the results and their implications for designing or sizing WebSphere MQ configurations.

These SupportPacs are designed for people who:

- Will be designing and implementing solutions using WebSphere MQ
- Want to understand the performance limits of WebSphere on this platform
- Want to understand how to tune WebSphere MQ.

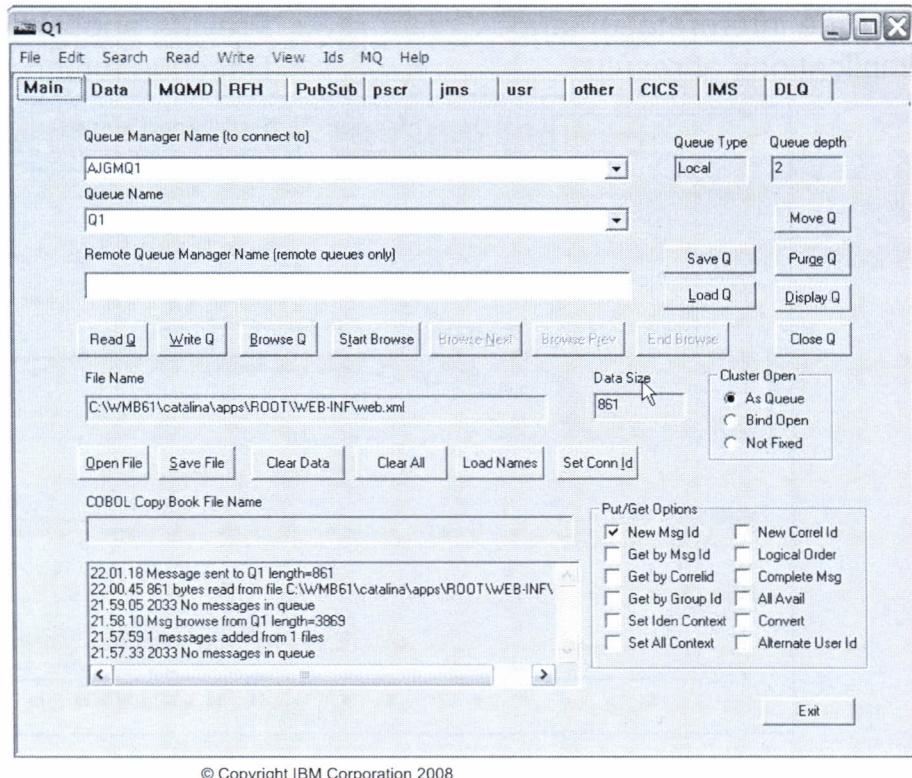
-is basis.

IH03 example

Message Broker Display, Test and Performance utilities

Provides:

- RFHUTIL
- + others



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Figure 14-9. IH03 example

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Notes:

The RFHUtil utility program provided with this SupportPac reads data from files and queues; write data to files and queues and display data in various formats. The user data portion of the message can be displayed in various formats but cannot be changed.

Another program must be used to create or change the user data. The utility program can add Rules and Formatting headers (RFH) to messages or files it writes and formats these headers when found in messages or files it reads. The headers can include “publish” and “subscribe” commands.

In addition to the test and display utility, several command-line utilities are provided to do performance measurement and testing:

- MQPUT2.exe is a performance driver utility. It reads message data from one or more files and then uses the data to create a test messaging workload based on the file data and a separate parameters file.
- MQTIMES.exe and MQTIMES2.exe read messages from an output queue and report the messages processed per second. The last two programs are special versions of the

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- MQTest However ignored it is ready
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driver program. The first one writes all the test messages at once, without attempting to balance the input rate to the throughput of the test workload. The final version is a client version of the simplified workload driver.

- MQCapture.exe and MQCapone.exe utilities read messages from queues and store them in files. The MQCapone.exe utility reads a single message and writes it to a file. The MQCapture.exe utility reads multiple messages from a queue and stores them in a file, with a delimiter string separating each message. Use a local driver program if possible. Two other programs have been provided the other two programs for cases where this is not possible. Source for these utilities is provided in the *source* subdirectory. The performance utilities should also be placed in an executable directory and program icons created if required.
- MQTest.exe is similar to the MQPut2 utility and uses the same parameter file format. However, it writes each message once. Parameters such as message count are ignored. Furthermore it does not read all the files into memory but writes each file after it is read and then releases the storage before reading the next file.
- MQReply.exe is provided to supply replies to request messages. It is intended to be used when a request and reply scenario is being tested. It stands in for a back-end application that would normally create the reply.
- MQPUTS.exe
- MQPUTSC.exe



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SupportPacs topic summary

Having completed this topic, you should be able to:

- Locate SupportPacs on the WebSphere MQ Web site
- List several SupportPacs

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Figure 14-10. SupportPacs topic summary

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Notes:

Interfaces and bridges to other software products topic objectives

After completing this topic, you should be able to:

- Describe the function and use of the WebSphere MQ Transport for SOAP
- Describe the function and use of the WebSphere MQ Bridge for HTTP

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Figure 14-11. Interfaces and bridges to other software products topic objectives

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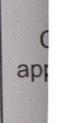


Figure 14-12.

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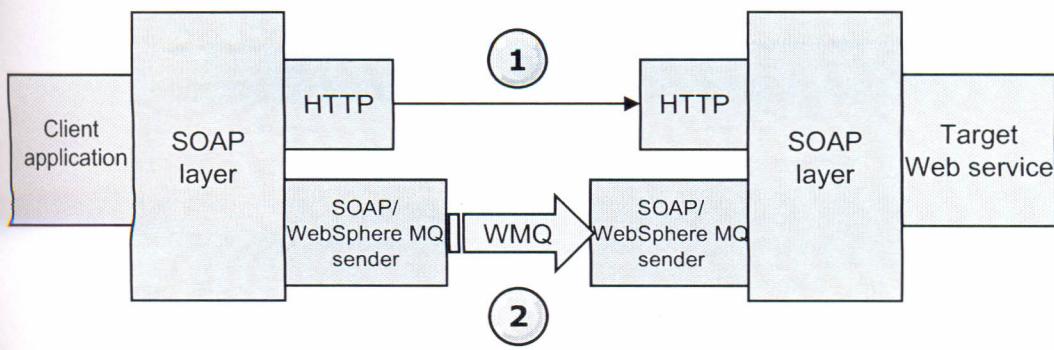
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topic

WebSphere MQ transport for SOAP (1 of 2)

- What is SOAP?
 - An XML based protocol
 - Used in exchange of data in a distributed environment
 - Has three parts: Envelope, encoding rules, RPC call conventions
- What is a Web service?
 - A self contained, modular application
 - Can be described, published, located and invoked over a network
 - Invoked using a URI
- WebSphere MQ Transport for SOAP:



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Figure 14-12. WebSphere MQ transport for SOAP (1 of 2)

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Notes:

A web service is formally defined as “*a software system designed to support interoperable machine to machine interaction over a network. It has an interface described in a machine processible form (specifically WSDL). Other systems interact with the web services in a manner prescribed by its description using SOAP messages, typically conveyed using HTTP.*”

WebSphere MQ can provide many advantages over HTTP as a transport:

- Assured delivery.
- Integration with, and reuse of, existing WebSphere MQ infrastructure.
- Use of existing WebSphere MQ security.
- Use of WebSphere MQ clustering, for load balancing and enhanced reliability and availability

WebSphere MQ transport for SOAP (2 of 2)

- Transport only provided for:
 - Apache Axis client applications written in Java
 - Microsoft .NET client applications written in a support language
- A deployment process is required to complete configuration
- Senders and listeners

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Figure 14-13. WebSphere MQ transport for SOAP (2 of 2)

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Notes:

- Senders

A sender is called by the infrastructure (Axis or .NET) and writes a SOAP request for invocation of a service. In WebSphere MQ transport for SOAP the sender causes the request to be put to a WebSphere MQ request queue, setting up any specific expiry, persistence, and priority options.

- Listeners

A SOAP/WebSphere MQ listener process waits for incoming messages and then invokes the target web service through the web services infrastructure and waits for the response. The term listener is used here in its standard web services sense: these listeners listen on request queues for WebSphere MQ messages and are distinct from the standard WebSphere MQ listener invoked by the runmqslr command.

Deployment is the process of configuring the host web services infrastructure (Axis or Microsoft .NET) to recognize the prepared web service.

The deployment process automatically creates wrapper scripts in the generated/server directory that set up and invoke the listener. Scripts are generated to start the listener as a WebSphere MQ service or by triggering. You can also start a listener manually.

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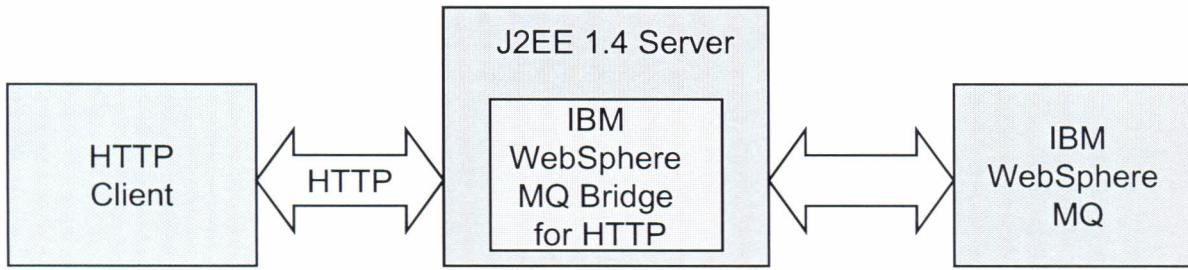
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WebSphere MQ Bridge for HTTP

- What is it?
- How does it work?



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Figure 14-14. WebSphere MQ Bridge for HTTP

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Notes:

This facility enables client applications to exchange messages with WebSphere MQ from any platform or language with HTTP capabilities without the need for a WebSphere MQ client. The WebSphere MQ Bridge for HTTP is not suitable for use with messages where guaranteed delivery is required.

This facility is of benefit to you if you:

- Have environments that you want to connect to WebSphere MQ that are not supported but that can build HTTP requests and handle responses.
- Have environments that you want to connect to WebSphere MQ, but that have insufficient storage space to install a WebSphere MQ client.
- Have multiple systems that you want to connect to WebSphere MQ but it would take too long to install the WebSphere MQ client on all of those systems.
- Want to access a WebSphere MQ infrastructure from a Web-based application.
- Want to enhance existing Web-based applications, using asynchronous techniques such as Ajax to enhance interactivity.

HTTP support can be used with both point-to-point and publish/subscribe messaging topologies.

Only WebSphere Application Server V7 is officially supported as a J2EE server, any other certified J2EE server can be used.

Also, SupportPac MA94 which is a stand-alone HTTP Listener is available for Windows, AIX, and Linux

Example one

- HTTP request to put a message on a queue:

```

POST /msg/queue/myQueue/ HTTP/1.1
Host: www.mqhttpsample.com
Content-Type: text/plain
x-msg-correlID: 1234567890
Content-Length: 50
Here's my message body that will appear on the queue.
  
```

- HTTP response:

```

HTTP/1.1 200 OK
Date: Wed, 2 Jan 2007 22:38:34 GMT
Server: Apache-Coyote/1.1 WMQ-HTTP/1.1 JEE-Bridge/1.1
Content-Length: 0
  
```

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Figure 14-15. Example one

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Example

- HTTP re

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DELETE
Host: v
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- HTTP r

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```

Figure 14-16. Exam

Notes:

Here is an example of an HTTP request to put a message to a queue. The HTTP POST request is mapped to an MQPUT by the bridge.

Example two

- HTTP request to MQGET the same message back:

```
DELETE /msg/queue/myQueue/ HTTP/1.1  
Host: www.mqhttpsample.com  
x-msg-wait: 10  
x-msg-require-headers: correlID
```

- HTTP response:

```
HTTP/1.1 200 OK  
Date: Wed, 2 Jan 2007 22:38:34 GMT  
Server: Apache-Coyote/1.1 WMQ-HTTP/1.1 JEE-Bridge/1.1  
Content-Length: 50  
Content-Type: text/plain; charset=utf-8  
x-msg-correlId: 1234567890  
Here's my message body that will appear on the queue.
```

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Figure 14-16. Example two

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Notes:

Using an HTTP DELETE request to perform an MQGET (destructive) of the same message. correlID is requested and returned in the HTTP response.

WebSphere MQ bridge for HTTP verbs

- POST
 - Puts a message on a queue or topic.
- GET
 - Browses the first message on a queue. In line with the HTTP protocol this does not delete the message from the queue. This verb cannot be used with publish/subscribe messaging.
- DELETE
 - Browses and deletes a message from a queue or topic.

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Figure 14-17. WebSphere MQ bridge for HTTP verbs

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Figure 14-18. Ch

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Checkpoint questions

1. Which are correct?
 - a. SOAP is a protocol
 - b. SOAP is a Web service
 - c. SOAP is XML based
 - d. SOAP can be used to clean data
2. True or false: A Web service client written in Java must use Apache Axis to access a Web service using WebSphere MQ as the transport.
3. True or false: An WebSphere MQ client is required to be installed to use the WebSphere MQ Bridge for HTTP.
4. True or false: A HTTP GET is the equivalent of an MQGET.

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Figure 14-18. Checkpoint questions

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Notes:

Interfaces and bridges to other software products topic summary

Having completed this topic, you should be able to:

- Describe the function and use of the WebSphere MQ Transport for SOAP
- Describe the function and use of the WebSphere MQ Bridge for HTTP

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Figure 14-19. Interfaces and bridges to other software products topic summary

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Unit summary

Having completed this unit, you should be able to:

- List the names of several SupportPacs
- Locate SupportPacs on the WebSphere MQ Web site
- Describe the interfaces and bridges between WebSphere MQ and other software products

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Figure 14-20. Unit summary

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Notes: