Get the message: how WebSphere MQ can connect your business

*Providing the information you need, when and where you need it*

Highlights

- Achieve Managed File Transfer
- Strengthen security
- Extend transactions
- Support transactional exchange of data
- Use IBM WebSphere MQ as a JMS provider
- Support automatic failover
- Connect assets and mobile devices
- Use WebSphere MQ on IBM z/OS
- Extend messaging beyond connectivity
- WebSphere MQ in cloud environments

Today's business environment is proliferated with thousands of millions of customer endpoints. This large number of endpoints can cause unpredictable usage spikes when you offer special promotions or when you attempt to extend the global reach of your business through market expansion. Back-end transaction processing systems must support business integrity—secure, reliable and synchronized customer experience over multiple transaction channels—and must sustain accessibility with infrastructure that can support bursts of activity. HTTP, web services and open-source solutions are insufficient.

IBM® WebSphere® MQ messaging-based middleware is designed to provide you with the most-complete solution for connecting applications, systems and services. Move data and files more reliably, more securely and more rapidly. This IBM solution is available for the widest possible set of platforms and programming environments to help you manage application complexity. Free your business teams to focus on core functions. Achieve critical connectivity infrastructure for virtually every part of your business, from the mainframe to mobile. Support integrity and accessibility for back-end systems.

Achieving Managed File Transfer over an IBM WebSphere MQ network

Applications write critical data to a file, and then File Transfer Protocol (FTP) is used to copy the file to another system, to make it possible for the data to be used in the other system, typically by another application.
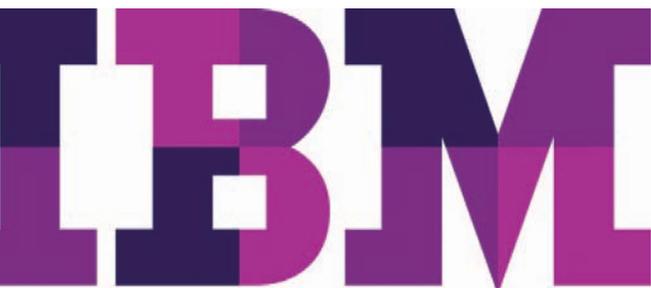
This approach can be unreliable and unsecure—and unmanaged, even if you write additional layers to support the FTP scripting. With the release of WebSphere MQ V7.5, the Managed File Transfer function is available as a part of the WebSphere MQ package as WebSphere MQ Managed File Transfer, subject to separate entitlement.

Securing WebSphere MQ and securing message contents

Given that WebSphere MQ moves lots of critical business data from system to system, WebSphere MQ itself must be designed for security. WebSphere MQ offers authentication to connect to the system, which helps ensure that unauthorized users cannot gain access and change the configuration. WebSphere MQ has an additional component available in the WebSphere MQ V7.5 package, subject to entitlement, that enables the message contents to be encrypted throughout the process—even when the message is persisted in a queue.

Extending transactions with messaging clients

WebSphere MQ clients can be remote from the server or WebSphere MQ clients can be co-located. Message persistence is supported from the moment when a message is written to a queue on the server, so depending on the nature of the data being moved, either clients or servers may be deployed through the infrastructure. Data from the client is being moved from a managed resource such as a database on the client, and is being moved through the WebSphere MQ Transaction Manager. For this type of solution, an extended transactional client can be deployed in place of the standard client. This enables coordination with an external resource manager to permit the client connection to move data as part of a transactional unit of work. This capability provides excellent protection for the data movement and for the business that is driving the data movement.

Supporting transactional exchange of data

One of the fundamental capabilities of WebSphere MQ is how it acts as a transaction manager. WebSphere MQ is used to send and receive data between applications. It is critical that 1) information moves and both sides of the exchange are updated with the new state, or 2) nothing happens.

Assuring your customer data with technology that is highly persistent

Persistence is fundamental to the ability of WebSphere MQ to assure once-and-once-only delivery of messages without burdening the application with complex error-handling code. As part of the transactional support provided by WebSphere MQ, each message can, if required, be "persisted," or written to disk, as a way to maintain the integrity of the information during the movement of the message. This preserves the message and completes the transaction without losing data if a failure occurs at either end during the transaction.

Gaining efficiencies with publish/ subscribe and multicast

The publish/subscribe capability completely disengages the links between the sending and receiving applications. When you use this approach, an application that is sending a message does not send it to a specific receiving application, but rather publishes the message with a topic description, and any interested applications can then subscribe to that message topic. Any number of applications from virtually anywhere in your enterprise can then receive and use the data, with no effect on the originating application. The publish/subscribe capability can significantly reduce required maintenance updates to support new applications and can increase the potential for reuse still further.
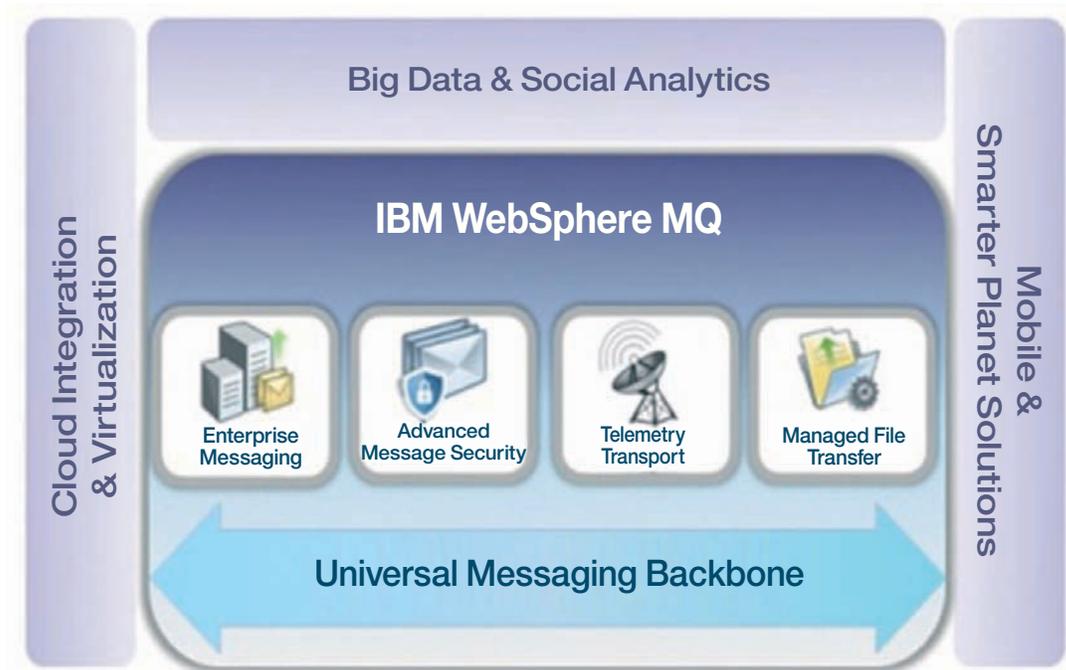
IBM WebSphere MQ provides you with a universal messaging backbone

Using WebSphere MQ as a JMS provider

Many businesses use code applications in Java, running in an application server. Using Java Message Service (JMS) is therefore a natural way for such applications to move data into the application and out of the application, and many application servers include a JMS provider to "listen" for JMS requests and to execute them. However, this process will work only if the sending and the receiving applications are running a common JMS provider. WebSphere MQ can act as a JMS provider in virtually any environment which makes it possible for Java programmers to use JMS anywhere. Programmers can send and receive messages with any other WebSphere MQ application, whether the programmers are using JMS or not, and whether the Java programs are running in the same type of application server or not. This helps to ensure that programmers are free to gain the benefits of messaging without the complexity of interoperability concerns.

Supporting automatic failover for high availability with WebSphere MQ

Keeping production environments running and connected is critical for many businesses. A failure of connectivity is just as important as an application failure, if connectivity failure prevents work from being done. WebSphere MQ offers a software-based solution to provide automatic failover for WebSphere MQ Queue Managers, providing high availability without hardware dependency. In the case of a Queue Manager failure, another Queue Manager takes over the work and the transactions of the failed system, with no intervention needed.

WebSphere MQ Hypervisor Edition is pre-configured and can be deployed in minutes.

Connecting physical assets and mobile devices

WebSphere MQ offers a specific solution for connections to physical assets and mobile devices—a transport protocol called MQ Telemetry Transport. This solution makes it possible for small, "lightweight" clients to be written, and these light-weight clients can run in a very small footprint on a mobile device or on a remote physical device. The MQ Telemetry Transport protocol is designed to operate over an unreliable low-bandwidth connection, and therefore is very concise, which helps to ensure that little power is consumed on the device as a result of running the client or as a result of sending the message. This protocol also helps ensure that the message takes up very few transmission bytes, and that the message is only active when it is needed. Applications using MQ Telemetry

Transport then connect to a WebSphere MQ Queue Manager that is using the WebSphere MQ Telemetry component. The telemetry component is included in the WebSphere MQ V7.5 package but requires separate entitlement if used.

Using WebSphere MQ on IBM z/OS

Many critical business applications clearly need to connect to other parts of the business, and WebSphere MQ exists on the IBM z/OS® platform and on other platforms to help to provide this capability. WebSphere MQ on z/OS is written natively for the z/OS platform, which means that it can run extremely efficiently, and helps to ensure that WebSphere MQ can exploit the many key features native to the z/OS platform. The latest release of WebSphere MQ on z/OS is capable to scale to one million messages per second (2KB non-shared) on a single Queue Manager on a 30-way IBM zEnterprise® z196 server.[1]

Extending messaging beyond connectivity

WebSphere MQ moves data and files without reading, under-standing or changing the contents of the message that is being moved. However, as the business environment becomes more dynamic, messages need to be transformed, understood and acted upon, and not just simply connected. As messages or files get moved throughout a business, it is useful or necessary to do additional work on the data before it reaches the receiving application or system. This work could involve reformatting, enriching or truncating the data. Having a flexible, configurable integration environment working as an enterprise service bus (ESB) that can perform these types of integration functions is an essential part of the integration solution for business leaders who wish to gain the benefits from the integration, and who wish to realize the value of the data being moved.

Discovering your choices: deploy WebSphere MQ in cloud environments

In recent years, leaders have seen a huge growth of interest in virtualization and the cloud. For many business leaders, *cloud* means a publicly hosted environment, paid for when used. For many other business leaders, cloud can refer to a form of virtualization to maximize use of existing hardware and software on-premise. The reality is a blend of both.

Accessing the applications, services and data on any of these environments requires a reliable, secure connectivity mechanism. WebSphere MQ is purposely designed for use in these scenarios, since it is in the nature of cloud deployments, especially in externally hosted environments, to be subject to events beyond the control of any individual user. WebSphere MQ can help you to manage service interruptions and failures. The messaging-based middleware is also available as WebSphere MQ Hypervisor Edition to be deployed into virtual machines within the business environment used as private clouds. One example of this is in providing WebSphere MQ messaging as a system pattern for the IBM PureApplication™ System.

Next steps

Read the whitepaper "WebSphere MQ: The right information in the right place and time."

Ask for a demonstration of WebSphere MQ to learn how quickly this messaging-based middleware can make a difference at your organization.

View the video "What exactly is WebSphere MQ Messaging?" to learn how to reduce costs and manage process disruptions from data loss.

View the WebSphere MQ demo to see how this IBM solution delivers the messaging backbone that can integrate your various IT systems, technologies and resources. This demonstration includes two examples.

Why IBM?

Take action to join the emerging mobile economy. IBM offers services and guidance that help you to build a vision and to create a roadmap for messaging-oriented technologies within your specific organization. The IBM team helps you to create a foundation for new business strategy to help your systems manage usage spikes. Establish stronger security with IBM, and further strengthen your ability to manage change.

For more information

To learn more about IBM WebSphere MQ please contact your IBM representative or IBM Business Partner, or visit the following website:
http://www-01.ibm.com/software/integration/wmqfamily/

Additionally, IBM Global Financing can help you acquire the software capabilities that your business needs in the most cost-effective and strategic way possible. We'll partner with credit-qualified clients to customize a financing solution to suit your business and development goals, enable effective cash management, and improve your total cost of ownership. Fund your critical IT investment and propel your business forward with IBM Global Financing. For more information, visit:
ibm.com/financing

Please Recycle

[1] Peter Toghill and Tony Ford, *IBM WebSphere MQ on z/OS*, November 15, 2011