

IBM WebSphere MQ **for Integrated Messaging** to Connect your Enterprises

Connectivity that closes the gap between smart devices and intelligent decision makers and business processes



Connect Your Business Starting Simple

- Connect Your Business Starting Simple
- Increasingly Complex
- The problems of complexity
- Accelerating change and potential solutions
- Connecting Your Business Systems and Applications
 - File Transfer
 - HTTP
 - Embedded JMS
 - Enterprise Messaging Middleware
- Managed File Transfer over a IBM MQ network
- What is IBM MQ? Messaging-oriented middleware

The history of information technology has been the history of connecting things together. Whether IT is connecting people, applications, systems, or data. As years have passed, the number of connections between every aspect of the business and the infrastructure has increased beyond measure.

The key driver of the growth in connectivity has been the increase in the quantity of information being generated and ensuing use of that information. Many of today's back-office systems are likely to have been running for a number of years. The systems which drive those enterprise applications and databases are likely to be far more recent. This is due not just to the transformation of new technology, but also by a rapidly increasing number of new business opportunities, which tends to be the primary driver of change for infrastructure. The massive change and growth in new applications—whether new sources of data, or new ways to interact with new or existing employees, customers or partners—has produced a growth in workload for many systems. Some of that growth is seen in peak-time spikes of work, driven perhaps by external events or social media. Other growth is in a widening of the peak load of applications. In the past, some applications would have been only busy for a few periods in the day. Now, with mobile connectivity and with connected devices, more data might be coming through at a more continuous rate.

This constant usage is one reason that the batch-processing approach is ending, with the other reason being the desire for instant processing of all transactions—something that is not possible with batch. When business infrastructure, including applications and systems, was less driven by the need to change, modifications, and migrations; updates were done with long advance planning. Stability was the watchword. However, being ever more responsive, in every sense, is now essential. Both the business and its infrastructure must now be able to be targeted at a new opportunity and must be capable of going to market with the opportunity without delay.

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This means that there is no chance to build an entirely new set of applications, and that there is no way to interrupt existing applications to make disruptive changes to them. Everything must be capable of being seamlessly modified to handle new ways of running, in order to allow the business to respond to new opportunities. This demands that the applications must be written and connected together to support success in this area.

The problems of complexity

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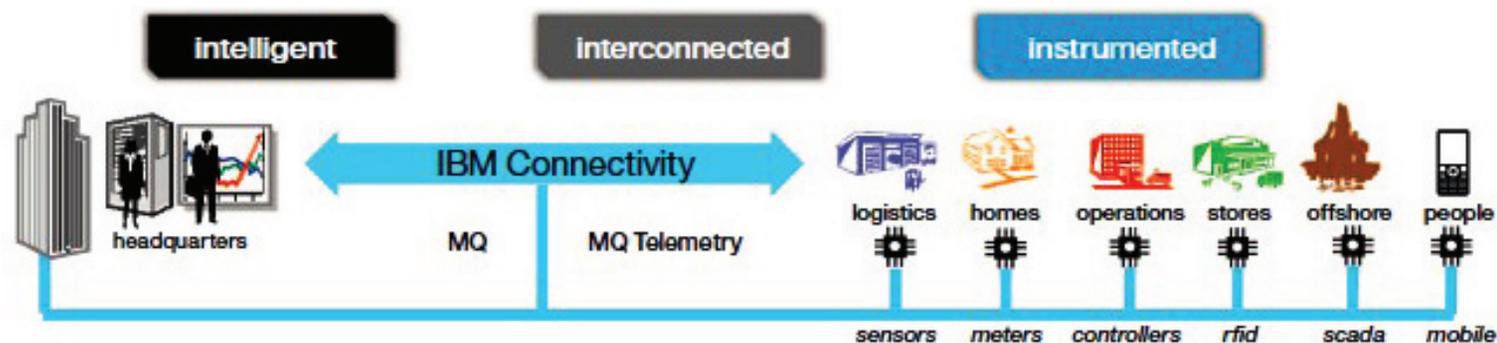
Why is connecting so many different endpoints and users so complex, given that a single connection could be described as relatively straightforward? Obviously the scale of connections is an issue, but the other part of the problem is the risks of failure. Connecting systems and applications is easy if everything works. The complexity comes when there is either failure, or the possibility of failure. And it is this possibility that causes the problem. If everything was understood, and all failure modes were well-defined, then again things become relatively easy. However, every program and every connection in an infrastructure needs to cater for the possibility of any type of failure mode, which means that the programmers must be far more creative in imagining failure than they have generally been in the definition of programmatic success. There are just so many different possible causes of failure, and the greater the number of connections, the possible failure modes increase almost exponentially.

Accelerating change and potential solutions

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1. Accelerating change with mobile connectivity
2. Accelerating change with the “internet of things”
3. Accelerating change by deploying into the cloud
4. Accelerating change driven by Big Data

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Connecting your business systems and applications

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Every business already has dozens, if not hundreds or even thousands of applications. These applications are deployed on many different IT environments—whether predominantly deployed in a data center, or scattered through many branch offices, warehouses or throughout multiple countries. Some of these systems will be connected together. Others will run in isolation, or will be connected to some subset of other applications. Business leaders are likely to be evaluating not just how to connect new applications to address new business opportunities, but also whether the connections between existing applications and systems are meeting today's challenges and are ready for tomorrow's.

○ **File Transfer**

One approach that is used to connect many business applications today is one that has been used for years—even decades: file transfer. File transfer is typically seen as straightforward, as the applications write data to the file system, and then a file transfer routine moves the file to another system to make it possible for another application to use the data. This approach moves the data without requiring the applications themselves to be connected in any way. Also, for virtually all systems, the generic file transfer protocol (FTP) capability is always there, and it can be very simple and quick to write a script to move the data. However, although this process is seen as straightforward, there are many points of failure.

○ **HTTP**

Another approach that has grown up along with the browser-based front ends to web-server based applications is to use HTTP as a standardized and general connectivity solution. Again, this approach is used because it is widely available on virtually any platform, is familiar to most developers and therefore can provide a way to move data between systems quickly to meet development-project goals. Both users and developers are familiar with HTTP and people feel secure if it is protected by Secure Socket Layer (SSL).

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- **Embedded JMS**

Another approach is to use Java Message Service (JMS) application programming interfaces (APIs) and make use of the Java Message Service that is embedded in many application engines. This approach will be simple and straight-forward for Java programmers who are comfortable using their preferred Java application server, and when all applications involved are running within that specific Java engine.

- **Enterprise Messaging Middleware**

One final way to move data between applications is to use a dedicated middleware layer for enterprise messaging. This is a similar approach to the embedded JMS messaging mentioned above, but avoids the limitations of being Java only and connecting to other instances running in the same application server environment. The enterprise messaging approach also avoids some of the limitations of HTTP, since you are able to use more loosely coupled requests, including both time- independence and transactional integrity.

Managed file transfer over a IBM MQ network

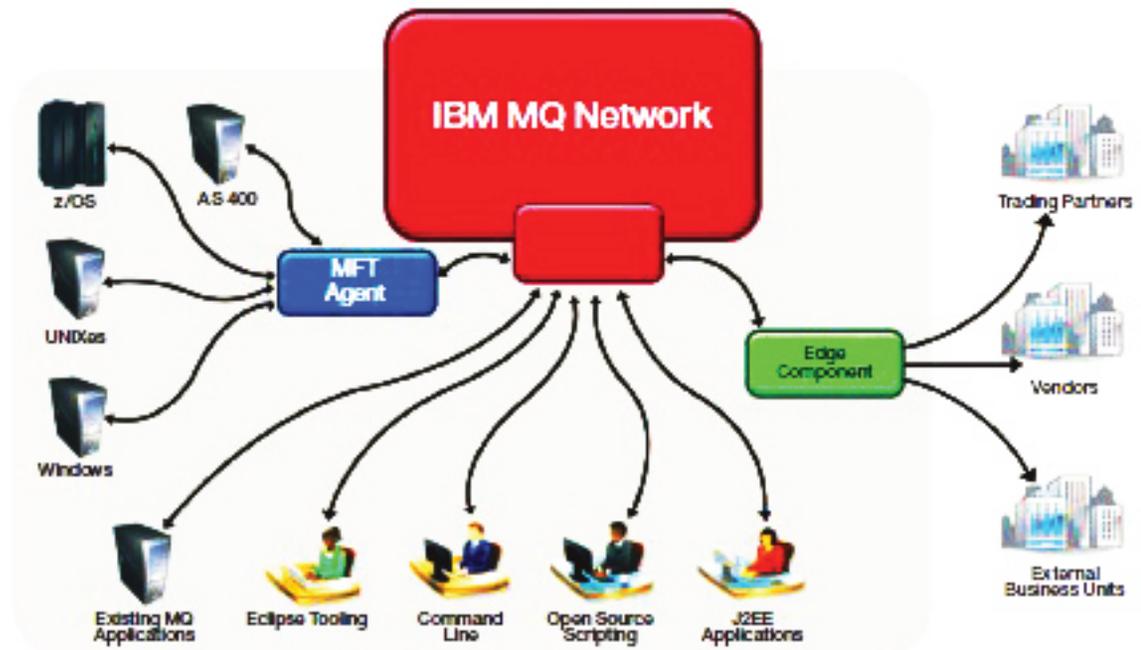
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Many files, as described above, contain critical business data. Applications write the data to a file, and then File Transfer Protocol (FTP) is used to copy the file to another system, to allow the data to be used in the other system, typically by another application. However, as described earlier in this white-paper, this approach can be unreliable, unsecure, and unmanaged even if additional layers are written to support the FTP scripting. IBM MQ enables files to be sent as messages over the IBM MQ infrastructure. Not only does this increase the reliability of delivery by taking advantage of the inherent robustness of IBM MQ, but all the other capabilities of IBM MQ are also available, along with the security aspects and all the management, tracking and logging aspects are able to be used. This can transform file transfer into a fully capable method of moving large amounts of data, without any requirement to change the existing business applications that continue to write to files and read from files.

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A comprehensive MFT solution with IBM MQ



By providing Managed File Transfer capability running over IBM MQ, your message traffic, whether application messages or files packaged as messages, can be tracked to completion using the single control dashboard that is provided as a part of IBM MQ. This approach provides real benefits for users, especially administrators. These individuals can review what is moving through their business with a single glance, whether the contents are a file or an application message. All types can be treated and managed in the same way.

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MQ provides messaging-based middleware, enabling integration between applications, systems, and services. The principle behind it is that, instead of connecting and directly exchanging information with each other applications send information over an indirect middleware layer. This layer packages the information that is to be exchanged as a message and moves the message through a queuing system to the receiving application.

Key Differentiators:

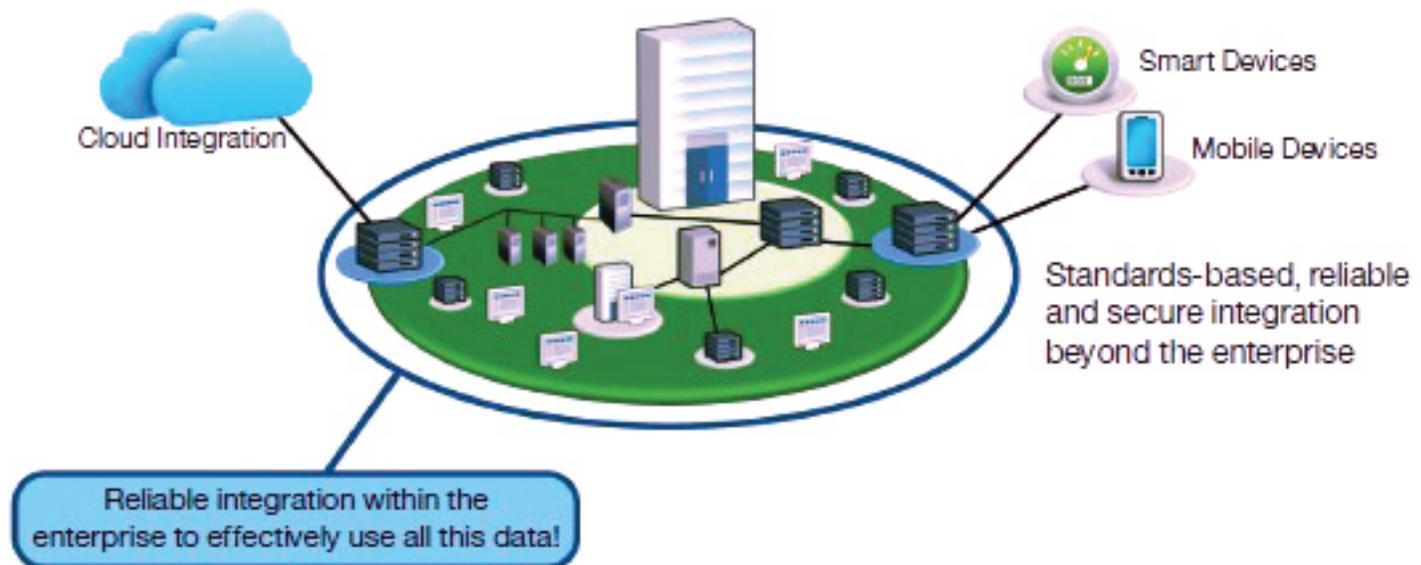
- Robust, security-rich and more reliable messaging for your enterprise
- Connect almost everything, available for the widest possible set of platforms and programming environments to help you manage application complexity
- Provides a comprehensive, secure and reliable messaging solution to support conventional and emerging messaging needs
- Assures delivery of information—once and only once—with the highest quality of service

Business Value:

With IBM MQ and IBM MQ Advanced, a market leader in messaging middleware, you can help support scalable enterprise-class connectivity that is designed to scale with your increasing integration challenges and needs. IBM MQ Advanced is designed to provide you with the most complete solution for connecting applications, systems, and services to move data and files more reliably, securely, rapidly and simply.

What is IBM MQ? Messaging-oriented middleware

What does a smartly interconnected enterprise look like?



Available for the widest possible set of platforms and programming environments, this IBM solution helps to remove the complexity from applications and enables business teams to focus on core business functions. IBM MQ has been connecting applications in companies for nearly 20 years. Start to discover what Royal Cyber with IBM MQ can do for your business today!

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Royal Cyber Inc. Headquartered in Naperville, IL is a leading software organization that provides services ranging from application development and deployment to training and consultancy. We commenced the operations in the year 2002 as a specialized Technology provider striding in as a software deployment service provider, assisting clients to meet the standards and demands of doing business in the rapidly changing marketplace.

Today we stand tall as a **One Stop Shop for all your IT needs.**