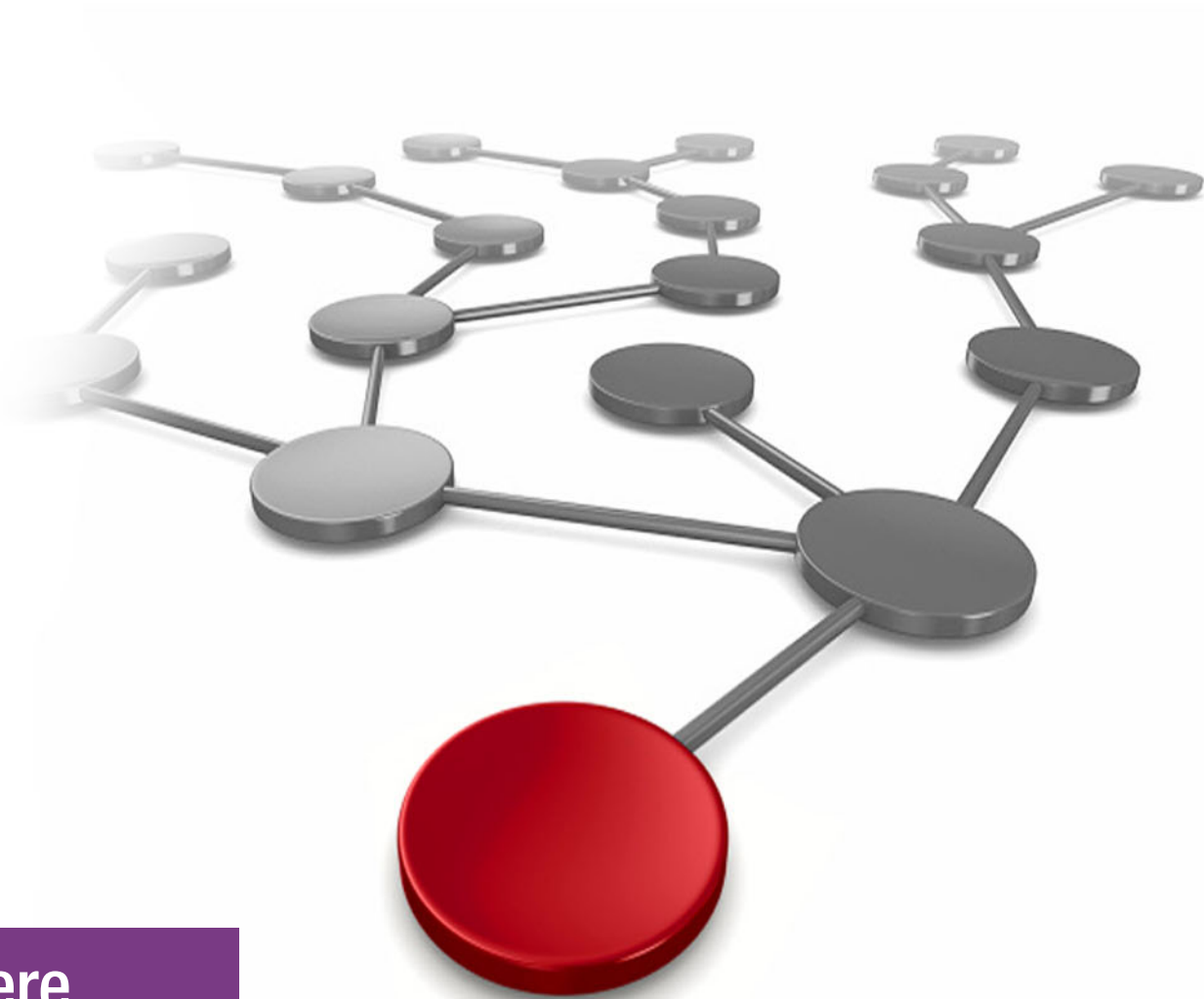


Enabling IBM MQ Messaging with the IBM MQ Appliance

Neil Casey

Andy Emmett

Rufus Russell



WebSphere

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This IBM® Redbooks® Solution Guide describes the IBM MQ Appliance M2000, an application connectivity option that combines secure, reliable IBM MQ messaging with the simplicity and low overall costs of a hardware appliance.

The concept behind the IBM MQ Appliance M2000 is simple: Combine the customer-proven scalability and security of IBM MQ messaging software with the simplicity, ease-of-use, and low total costs of a hardware appliance. Enterprises have long used IBM MQ messaging to integrate applications, systems, and services reliably and securely. Now, with the IBM MQ Appliance M2000, IBM adds a state-of-the-art hardware option that is fast to deploy and uses fewer administrative and infrastructure resources than running multiple messaging servers.

Messaging servers are only part of the cost of messaging integration. There also is the expense of configuring and maintaining the servers and software, and for many enterprises, the challenge of extending the infrastructure to multiple, far-flung geographic locations. Also, by its nature, messaging infrastructure must be highly available and responsive to enormous fluctuations in demand.

Therefore, the industry needs a new approach to application connectivity, one that is fast and easy to deploy, simple to maintain, reliably secure, and cost-effective. With the IBM MQ Appliance M2000 (see Figure 1), IBM offers the messaging performance of IBM MQ with the convenience and costs savings of a robust physical component.



Figure 1 IBM MQ Appliance M2000

Did you know?

Hardware appliance support is a distinct advantage of the IBM MQ Appliance. Because IBM packages everything within the appliance, IBM can provide support for the entire product, including the hardware platform and firmware. This support is far different from the classic virtualized messaging infrastructure model in which separate support must be obtained for each distinct component and stack.

Even within an organization, to configure a queue manager on a server, support might be needed from teams that are responsible for Storage, Virtualization, operating system, Security, and IBM MQ. With the appliance deployment model, most queue managers can be built by the IBM MQ team alone.

Business value

The IBM MQ Appliance M2000 has multiple advantages over a solution that is built on messaging software alone. It saves enterprises from having to build their own messaging servers and allows them to implement an IBM MQ-based solution with less in-house IBM MQ expertise.

The top use cases for using the IBM MQ Appliance in four distinct business situations are listed in Table 1.

Table 1 Business use cases for the IBM MQ Appliance M2000

Business need	Advantages of the IBM MQ Appliance M2000
High availability	<ul style="list-style-type: none">▶ IBM MQ is known for high availability, but an appliance design enhances it▶ Availability is more component-based and less configuration-dependent▶ Failover is more assured with appliance <i>pairs</i> and mirrored messages
Consolidate an IBM MQ infrastructure	<ul style="list-style-type: none">▶ With fewer resource-intensive servers running IBM MQ, costs are reduced▶ It is easier to deploy queue managers from an appliance-based hub▶ Downtime can be reduced by using multiple appliances
Deploy messaging to remote locations	<ul style="list-style-type: none">▶ Connectivity at remote locations can improve with an appliance there▶ An appliance allows a simpler infrastructure set-up compared to servers▶ Failover support is more assured because of the appliance's HA features
Deploy messaging to business partners	<ul style="list-style-type: none">▶ Partners can be brought onboard quickly, regardless of their IBM MQ expertise▶ Partners are now more likely to meet industry standards for messaging▶ Customized administrative controls allow tight control of partner access

Solution overview

The foundation of the IBM MQ Appliance M2000 is in its predecessor products, including IBM MQ version 8.0, which is the most recent update to the messaging middleware offering. Yet, whereas IBM MQ version 8.0 and IBM WebSphere® MQ 7.5 are software solutions, the IBM MQ Appliance M2000 is a hardware platform that is purpose-built for messaging.

Compared to the software, the appliance performs the same universal messaging functions that enable applications, systems, and services to connect and exchange information securely, reliably, and rapidly.

However, as hardware, the appliance enables the following features and can help reduce messaging overhead:

- ▶ Queue managers that behave the same whether they are deployed on the appliance or are running as software on other servers. They can participate in clusters and exchange messages with other queue managers or IBM MQ clients.
- ▶ A new, high availability configuration that consists of a pair of appliances that mirror messages, therefore, if the primary appliance fails, the other can take over seamlessly.
- ▶ Lock-down features that aid in appliance security and maintenance. No extra software can be installed, including user applications and user exits.

The appliance is used and managed as a messaging hub (see Figure 2), with applications relying on client connections to the appliance (or other IBM MQ queue managers).

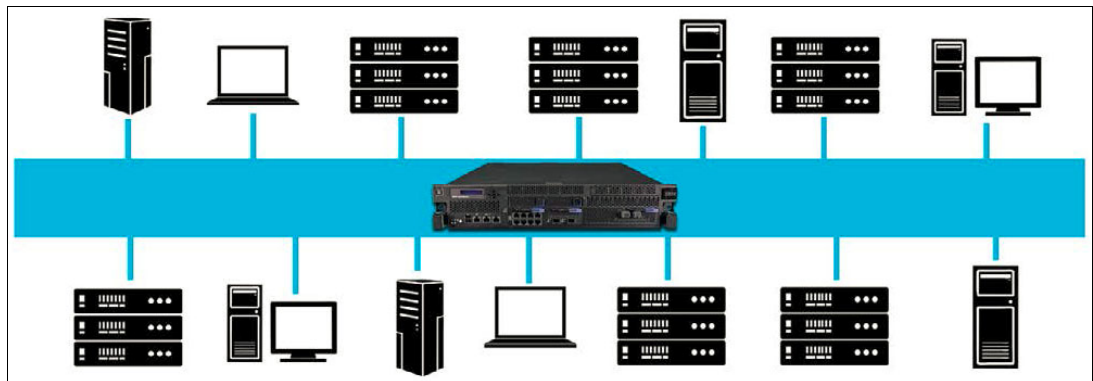


Figure 2 IBM MQ Appliance M2000 as a messaging hub

Solution architecture

The solution architecture includes the following features:

- ▶ High availability

High availability (HA) is easy with the IBM MQ Appliance M2000, or rather, with two appliances that are deployed together as an HA Group.

The IBM MQ Appliance M2000 takes a new approach to high availability. The original IBM MQ product has built-in high availability features that are widely embraced by IBM customers. However, the IBM MQ Appliance M2000 improves on this high availability by trading configuration-based HA for component-based HA in which appliances are paired, and persistent messages mirrored to ensure seamless delivery if there is a failover event. If a queue manager fails on one appliance, a queue manager on the paired appliance takes over and delivers the mirrored messages that it has in storage.

- ▶ Easy administration

The IBM MQ Appliance M2000 strives to make messaging administration as easy as possible by combining a powerful new web user interface with traditional command-line interface (CLI) interactions, where appropriate.

- ▶ The IBM MQ Console is intuitive, which making it easy to complete numerous routine administrative chores and allows new users to get up to speed quickly. The CLI is ideal for advanced users and is the only administrative option for some advanced functions.

- ▶ Appliance options and upgrades

The IBM MQ Appliance M2000 is a flexible solution not only for the deployment and configuration options it provides, but also in terms of processing capacity.

Depending on your needs, the following appliances are available:

- IBM MQ Appliance M2000A

A high-end solution for enterprise messaging consolidation. The M2000A offers the following features:

- Access to all of the CPU cores in the appliance
- Handles large IBM MQ workloads for persistent and non-persistent messaging
- Can host multiple queue managers to act as a messaging hub
- Potentially replaces multiple, separate IBM MQ servers
- Supports IBM MQ Advanced Message Security (AMS) and Managed File Transfer

- IBM MQ Appliance M2000B

A lower-cost solution for off-premise use, such as in a branch office or factory location. The M2000B offers the following features:

- Access to a subset of the CPU cores in the appliance (but with the same software and hardware as M2000A)
- Ideal for environments with less stringent messaging throughput requirements
- Supports all major features of M2000A, including HA and IBM MQ AMS
- Trade-up part adds easy, cost-effective option to upgrade to M2000A capacity, if needs change

- ▶ Support for hardware and software

With the IBM MQ Appliance M2000, support for the hardware platform and firmware (including the IBM MQ software on the appliance) is provided through a single support infrastructure. Therefore, all support is provided by IBM.

► Security

IBM Advanced Message Security is built into the IBM MQ Appliance M2000. This feature brings multiple benefits to the enterprise, including end-to-end protection, administrative logging, and, more generally, easier compliance with today's more stringent messaging security standards.

Usage scenarios

The application flow when the IBM MQ Appliance is in place in a configuration is shown in Figure 3.

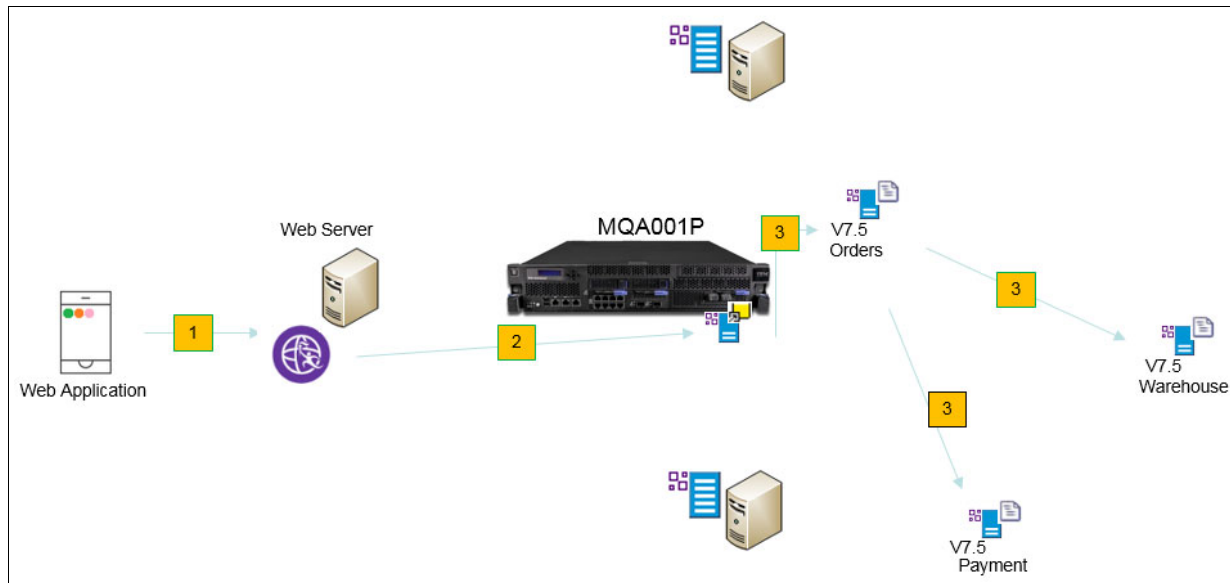


Figure 3 Application flow

The flow that is shown in Figure 3 features the following steps:

1. A customer (or many customers simultaneously) uses a smartphone to begin an order. However, the customer cannot make a phone call; instead, they use the web browser or mobile application to see all that Company B offers. The required items are found and an order is placed by using a provided web application of the website.
2. The web application that is running in this scenario on a WebSphere Application Server (Liberty Profile) passes the request to the IBM MQ Appliance.
3. The IBM MQ Appliance connects to the orders, payment, and warehouse services.

Supported platforms

For more information about support platforms, see this website:

<http://www-969.ibm.com/software/reports/compatibility/clarity-reports/report/html/softwareReqsForProduct?deliverableId=1399995952788>

Ordering information

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Ordering information for IBM MQ M2000A is listed in Table 2.

Table 2 IBM MQ Appliance M2000A ordering part numbers

Description	Part number
Appliance installation	
Appliance Install, maintenance + S&S 12 Months	D17B6LL
Appliance maintenance + S&S renewal 12 Months	E0K2XLL
Appliance maintenance + S&S reinstatement 12 Months	D17B7LL
Business critical service upgrade per appliance installation	
Initial upgrade 12 Months	D17B8LL
Subsequent upgrade 12 Months	E0K2YLL

Ordering information for IBM MQ M2000B is listed in Table 3.

Table 3 IBM MQ Appliance M2000B ordering part numbers

Description	Part number
Appliance installation	
Appliance Install, maintenance + S&S 12 Months	D1BUYLL
Appliance maintenance + S&S renewal 12 Months	E0KM9LL
Appliance maintenance + S&S reinstatement 12 Months	D1BUZLL
IBM MQ Appliance M2000B additional capacity per installation	
License + S&S 12 Months	D1D6ALL
Annual S&S renewal	E0KU6LL
S&S reinstatement 12 Months	D1D6BLL
Business critical service upgrade per appliance installation	
Initial upgrade 12 Months	D1C0TLL
Subsequent upgrade 12 Months	E0KPXLL

Related information

For more information about the IBM MQ Appliance, see the following resources:

- ▶ *Integrating the IBM MQ Appliance into your IBM MQ Infrastructure*, SG24-8283, which is available at this website:
<http://www.redbooks.ibm.com/abstracts/sg248283.html>
- ▶ IBM DataPower® Gateway Knowledge Center:
http://www.ibm.com/support/knowledgecenter/SS9H2Y_7.1.0/com.ibm.dp.doc/welcome.html
- ▶ DataPower XML Integration Appliance XI50DP Command Reference:
ftp://ftp.software.ibm.com/software/integration/datapower/library/prod_docs/4Q2008/XI-3.7.2-CommandReference.pdf

For more information about earlier versions of IBM MQ and IBM WebSphere MQ, see the following resources:

- ▶ *WebSphere MQ V6 Fundamentals*, SG24-7128:
<http://www.redbooks.ibm.com/abstracts/sg247128.html>
- ▶ *WebSphere MQ V7.0 Features and Enhancements*, SG24-7583:
<http://www.redbooks.ibm.com/abstracts/sg247583.html>
- ▶ *IBM MQ V8.0 Feature and Enhancements*, SG24-8218:
<http://www.redbooks.ibm.com/abstracts/sg248218.html>
- ▶ *Secure Messaging Scenarios with WebSphere MQ*, SG24-8069:
<http://www.redbooks.ibm.com/abstracts/sg248069.html>

Authors

This Solution Guide was produced by a team of specialists from around the world working at the International Technical Support Organization, Raleigh Center.

Neil Casey is a Senior Consultant with Syntegrity Solutions, based in Melbourne, Australia. He has a Bachelor of Applied Science in Computer Science from the Royal Melbourne Institute of Technology. He primarily works with customers to help them use IBM MQ and IBM WebSphere DataPower systems efficiently and effectively. In 2012, co-wrote the IBM RedBooks publication *Secure Messaging Scenarios with WebSphere MQ*, which was based on WebSphere MQ v7.5.

Andy Emmett is a Software Engineer at the IBM Hursley Laboratory in the UK. He has been with IBM for over 15 years, working with MQ products as far back as WebSphere MQ 5.1. Primarily working in the L3 support organization, Andy is the recognized subject matter expert for the Queue Manager Clusters feature of the product. After leaving education, Andy became a senior programmer, writing programs for machining and manufacture of complex 3, 4, and 5 dimensional geometrical components. Before joining IBM, Andy worked as a consultant who developed in various fields, including Computer Aided Design and Computer Aided Manufacture (CAD/CAM). Currently, Andy is working with the MQ development team for the MQ Appliance.

Rufus Russell is a Software Engineer working for IBM in Hursley, UK. He holds a masters degree in Physics from Durham University. Since starting with IBM in January 2014, he has worked as an MQ developer, primarily in the IBM MQ Appliance team.

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