B2B Enabled Managed File Transfer using WebSphere DataPower B2B Appliance XB60 and WebSphere MQ File Transfer Edition

Redguides
for Business Leaders

Richard Kinard
Adrian Preston
Jeremy Shapiro

- The value of using the XB60 B2B Appliance with MQ FTE
- XB60 and MQ FTE software overview
- Customer deployment scenarios

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Executive summary

Many organizations devote valuable IT resources to building and maintaining systems in-house for moving files between applications. Most of these solutions are based on FTP because of its simplicity and free availability. While FTP offers a basic mechanism for file sharing, where several applications access an occasionally updated, centrally managed source file, some enterprises are seeking alternatives for files that are moved between applications as part of business transactions. As volumes of transfers rapidly grow, and with increased consequences for errors in business data when it is incorrectly transferred, having a reliable, flexible, cost-effective solution for managed file transfer is increasingly critical for organizations of all sizes. Additionally, these organizations need to enable transfers across boundaries with their trading partners and need to support a wide range of B2B and non-B2B protocols with the ability to ensure data security and partner identity while the files traverse the Internet.

Business processes extend across the supply chain and value chains on a global basis and companies depend upon trading partners to run their businesses smoothly. Processes and rules change constantly and you must quickly disseminate these changes to your trading partners. To keep pace, it is crucial that you strengthen your trading partner relationships through tighter automated integration, so that you can make your trading partners an extension of your enterprise.

The appliance model coupled with IBM® WebSphere® MQ File Transfer Edition (FTE) provides strong business value by accelerating the pace of innovative value-creating process and strategic initiatives allowing customers to utilize B2B services to quickly and securely connect to their external partners and integrating the partner connections to your internal MFT solution.

To take advantage of the improved file transfer processes, flexibility, and IT efficiency that come with moving to a B2B for MFT solution, organizations require pervasive, scalable services and controls, robust security, and transaction auditability in their infrastructures. Today, enterprises often find themselves struggling to deliver these critical requirements without having to handle prohibitive cost, complexity, and hard-to-manage infrastructures. Addressing these challenges requires a pragmatic approach, one that simultaneously recognizes the evolution of standards, the value of existing infrastructure investments, your organizational challenges, and how performance can be affected across applications.

In this IBM Redguide™ publication we discuss how the IBM WebSphere DataPower® B2B Appliance redefines the boundaries of managed file transfer by extending WebSphere MQ

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File Transfer Edition with a consumable, dedicated SOA appliance that combines B2B standards, simplified integration, exceptional performance, and hardened security for SOA implementations. Meticulously designed to augment all phases of the SOA life cycle and implementation, these devices combine a host of essential SOA functions in a specialized appliance that provides easy consumption, deployment, and service delivery.

About DataPower B2B Appliance XB60

Overview

The IBM WebSphere DataPower B2B Appliance XB60 is a unique B2B appliance that delivers secure trading partner data integration tracking, routing, and security functions in a network device, while reducing operational costs and improving performance. The XB60 is a nondisruptive technology that allows organizations to extend their existing B2B implementations and internal integration infrastructure, thus delivering rapid return on investment and reduced total cost of ownership. Key features of the XB60 are as follows:

- Trading partner management for B2B governance; B2B protocol policy enforcement, access control, message filtering, and data security
- Application integration with standalone B2B gateway capabilities supporting B2B patterns using a variety of B2B messaging protocols and file transfer protocols
- Full featured user interface for B2B configuration and transaction viewing, and to correlate documents and acknowledgments displaying all associated events
- Simplified deployment, configuration, and management, thus providing a quicker time to value by establishing rapid connectivity to trading partners
- Full hardware ESB capability, including:
  - Acceleration of existing integration hubs
  - Mainframe modernization and Web services
  - Any-to-any transformation
  - Integrated message level security
  - Sophisticated multi-step message routing, filtering, and processing
  - Multiple synchronous and asynchronous transport protocols
  - Configurable quality of service
  - Detailed logging and audit trail
  - Standards-based interfaces
  - Agile, highly flexible underlying scripting and configuration support
  - XML enablement and wirespeed application integration
  - Metadata-based integration

WebSphere DataPower B2B Appliance XB60 benefits

This section describes the benefits provided by the XB60.

- **Simplified deployment and ongoing management**
  Reduces need for in-house skills that are typically needed to deploy and manage a B2B solution. The XB60 is a hardened drop-in B2B appliance that is suitable for DMZ deployments. The XB60 uses dedicated, tightly optimized hardware and firmware, and has no software to install.

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- **High security assurance**
  Higher levels of security assurance certification available only with hardware, including Common Criteria Evaluation Assurance Level 4+ certification. Exceptional data security and certificate management built into the appliance. Robust Authentication, Authorization, and Auditing (AAA) capabilities with built-in integration to external repositories.
- **High reliability and assured delivery**
  Swappable redundant components, whole-box VRRP-style failover, RAID 1 for HDD options, automated B2B data resends when using industry standard EDIINT protocols. Manual B2B resends that can be initiated by your trading partners.
- **Auditability/monitoring**
  Robust logging and support for saving logs to a large variety of log targets utilizing a broad range of log formats. Real-time transaction monitoring of B2B transactions utilizing a simple to use B2B Transaction Viewer, which can be configured to allow trading partners to view their own transactions.
- **Flexibility**
  Support for a wide range of protocols to allow flexibility to connect to as many trading partners as possible. Many back-side protocols are supported to provide more options for integrating to back-end applications. Supported connection protocols include http(s), ftp(s), sftp, POP3, SMTP, MQ, JMS, AS1, AS2, AS3, NFS, IMS™ Connect, TIBCO EMS, and ODBC (DB2®, Oracle, MS SQL).
- **Low total cost of ownership**
  Dedicated B2B appliances have been shown to reduce deployment and operational costs by as much as 50%. Dramatically decreases the testing time and amount of development required to upgrade your environment; most policies are configuration-driven as opposed to development-driven.

Architecture of the WebSphere DataPower B2B Appliance

The XB60 builds on top of the DataPower Application Integration appliance by adding trading partner profile management, B2B transaction viewing capabilities, and industry standards-based B2B messaging protocols to the already robust integration capabilities of the core appliance. These three key capabilities are at the heart of the B2B Appliance. They are designed in such a way that the B2B Appliance is positioned extremely well to handle simple partner connections with data passing through directly to end applications for further processing. If more complex data flows are required, the application integration capabilities of the XB60 can be used to perform data validation, transformation, rules-based enforcement, and content-based routing.

- **B2B Gateway Service**
  The B2B Gateway Service is a configuration object that is responsible for processing and routing B2B data.
- **Partner profiles**
  Partner profiles are configuration objects that are capable of supporting multiple destinations; the profiles are associated with any number of B2B Gateway Services.
- **B2B Transaction Viewer**
  The B2B Transaction Viewer is used to view all transactions that pass through a B2B Gateway Service.

The components that make up the B2B functionality in the XB60 are depicted in Figure 1 on page 4.

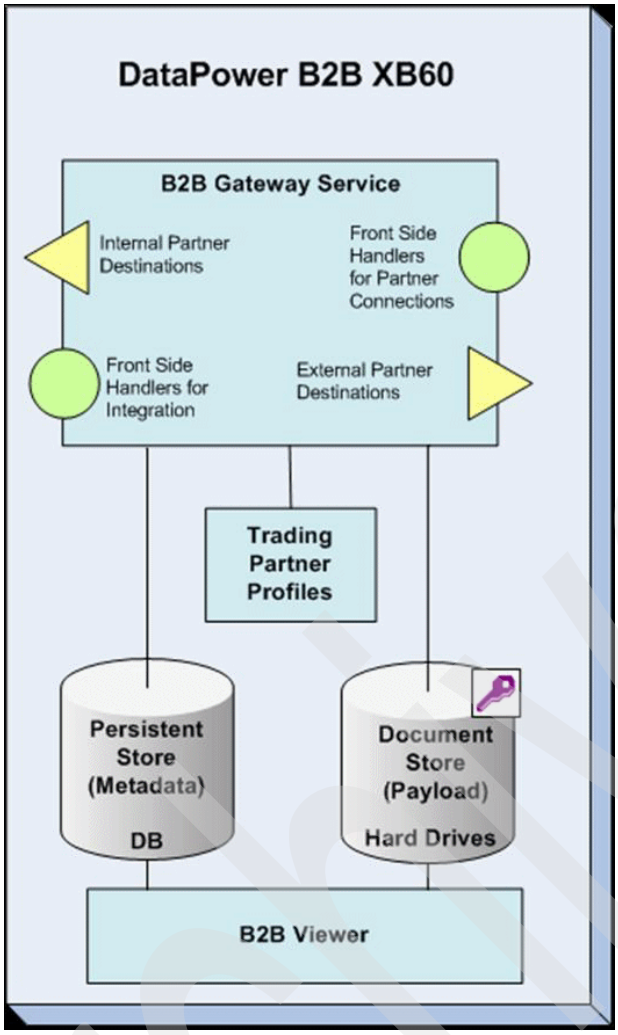

Figure 1 WebSphere DataPower B2B Appliance architecture

About MQ File Transfer Edition

Overview

IBM WebSphere MQ File Transfer Edition provides a reliable, managed file transfer solution for moving files—regardless of size—between IT systems. It enables files and documents to be transferred across a dual-purpose backbone that also handles messages. Key features of WebSphere MQ File Transfer Edition are as follows:

- Provides reliable managed file transfer (MFT) using WebSphere MQ
- Enables consolidation of messaging and file transfers into single backbone
- Provides bulk transfer of files, regardless of size
- Records log of transfer activity for audit purposes to queues and external databases
- Automates and controls file movement between IT systems with scheduling, triggering, and directory monitoring
- Extends MQ Explorer graphical interface for remotely configuring transfers and monitoring progress

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- Provides command line interface for programmatic control of transfers
- Provides scripting interface for XML definition of transfers using Apache Ant

WebSphere MQ File Transfer Edition provides an enterprise-ready managed file transfer capability that is both robust and easy to use. WebSphere MQ File Transfer Edition exploits the proven reliability and connectivity of WebSphere MQ to transfer files across a wide range of platforms and networks. In addition to leveraging existing WebSphere MQ networks, WebSphere MQ File Transfer Edition can be easily integrated with existing file transfer systems, as illustrated in Figure 2.

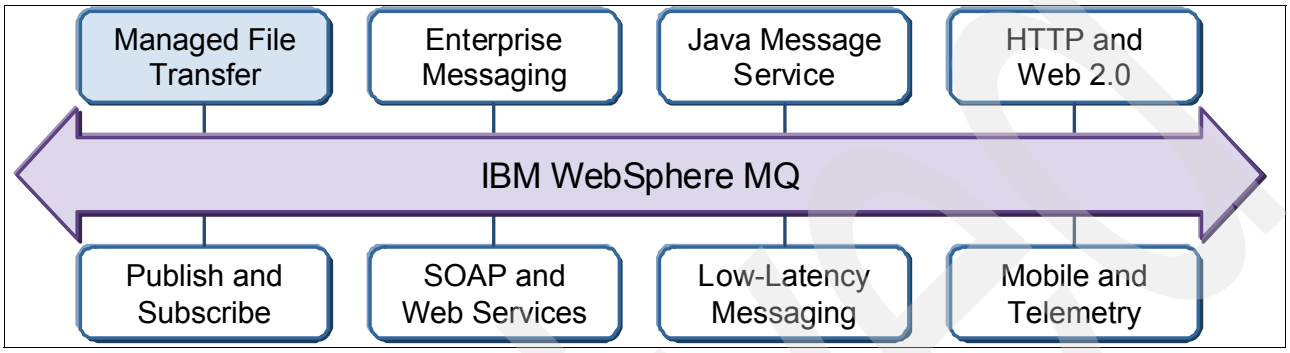

Figure 2 WebSphere MQ File Transfer Edition and the MQ Family

WebSphere MQ File Transfer Edition benefits

The benefits provided by WebSphere MQ File Transfer Edition are described in this section.

- **Auditability**
  WebSphere MQ File Transfer Edition provides full logging of transfers at both the source and destination systems. File transfer audit logs are stored in WebSphere MQ queues and optionally in a relational database (SQL).
- **Ease-of-use**
  Using WebSphere MQ File Transfer Edition, file transfers can be initiated using the graphical user interface in WebSphere MQ Explorer, via command-line commands, and using scripts.
- **Simplicity**
  WebSphere MQ File Transfer Edition has a low resource footprint, and apart from WebSphere MQ, has no other pre-requisite software.
- **Security**
  Access to files is controlled by file system permissions. File transfers can be protected using SSL encryption and authentication.
- **Automation**
  File transfers can be set up to occur at specified times or dates, or repeated at specified intervals. File transfers can also be triggered by a range of system events, such as new files or updated files.

Architecture of WebSphere MQ File Transfer Edition

WebSphere MQ File Transfer Edition comprises four components, all supported by one or more WebSphere MQ queue managers in the network. These components are:

- **Agents**
  FTE Agents are programs that perform the fundamental file transfer function; for example, they send and receive files from the local system.

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- **Configuration commands**
  These are commands that are used to control FTE from a command line. Configuration commands perform tasks such as creating and deleting agents.
- **Administration commands**
  Administration commands perform tasks such as creating new file transfers.
- **Graphical user interface**
  This is a point-and-click interface used to configure and administer FTE.

The components of WebSphere MQ File Transfer Edition use WebSphere MQ to communicate with each other, and the Agents in particular use WebSphere MQ to transport the contents of files across the network to other Agents (Figure 3).

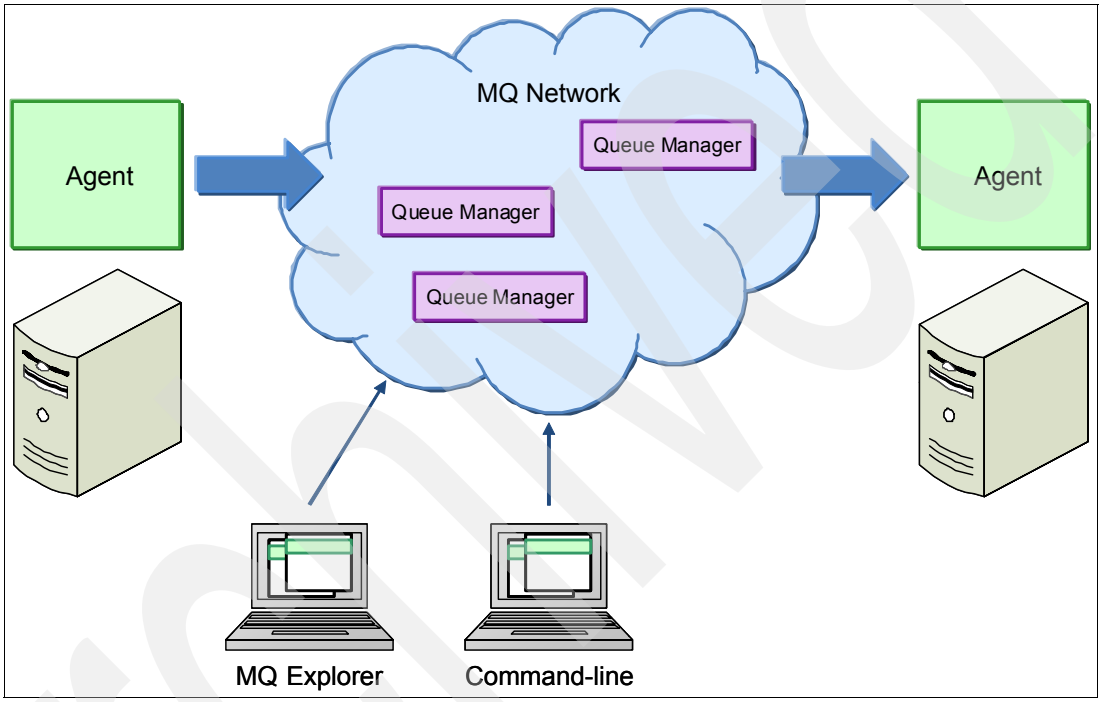

Figure 3 WebSphere MQ File Transfer Edition Architecture

Sample deployment scenarios

In this section we outline a common business scenario for multi-enterprise file transfers. The deployment scenario can support the use of any transport and B2B protocol that the DataPower B2B Appliance XB60 has available; however, for the purpose of the two trading scenarios demonstrated in this guide (Inbound and Outbound) we are utilizing the most predominate B2B Messaging protocol: AS2. This allows us to demonstrate how the XB60 can use profile management to verify and validate the trading partners, B2B messaging to protect the payload data that is transferred between you and your partners, and provide non-repudiation of origin and receipt for the public side of the connection (Assured Delivery). It also demonstrates how the XB60 integrates with WebSphere MQ File Transfer Edition to facilitate an intra-enterprise file transfer to any location inside your enterprise.

Scenario #1: File transfer inbound from an AS2 trading partner

In this scenario, illustrated in Figure 4, the trading partner sends an AS2 message containing the secured payload to the HubOwner's B2B Gateway (XB60). The file is then routed to a file system shared between the XB60 and AGENT01 and an XML command file is sent from the XB60 to MQ FTE instructing MQ FTE to pick up the file and send it to AGENT02.

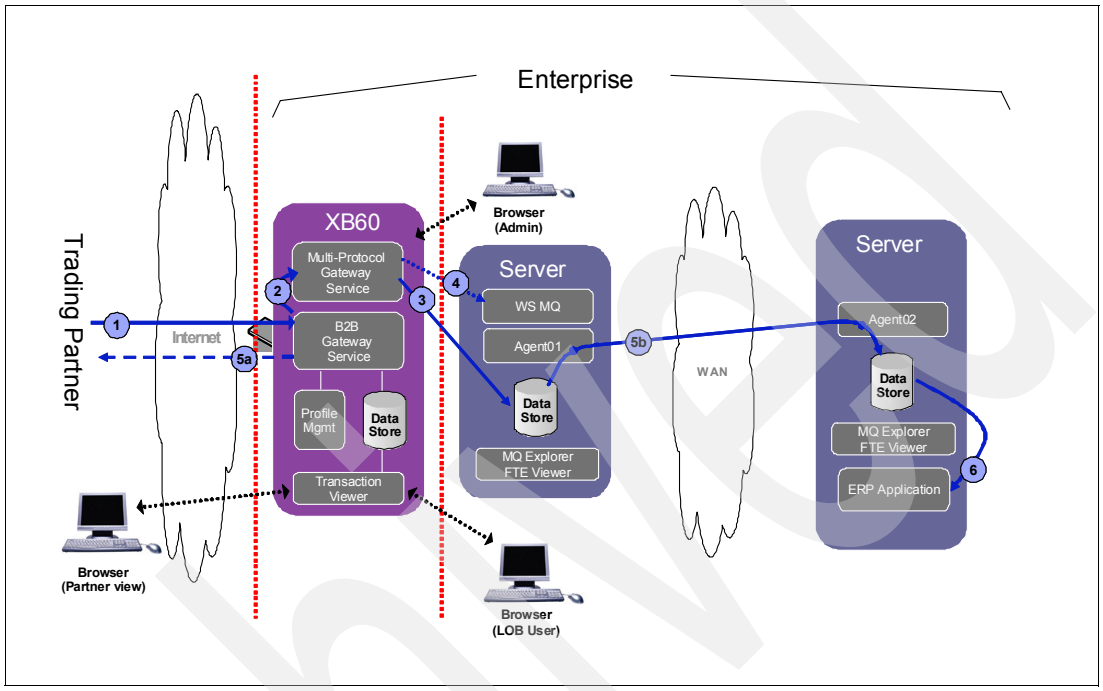

Figure 4 Inbound AS2 message routed to the back-end application using MQ FTE

1. The trading partner sends an AS2 document into the B2B Gateway over any supported protocol. The B2B Gateway Service will use profile management to verify/validate the partner. If a supported B2B Messaging protocol (AS1, AS2, AS3) is used, the B2B Gateway Service ensures that the message adheres to the B2B standard, that data security is appropriately applied, and then removes the B2B protocol packaging.
2. The payload is routed into a Multi-protocol Gateway Service, where we use a Multi-protocol Gateway policy to facilitate integration to WebSphere MQ File Transfer Edition.
3. The Multi-Protocol Gateway policy sends the payload to an NFS mount point that is shared between the XB60 and MQFTE AGENT01.
4. The Multi-protocol Gateway policy sends an MQ FTE Command XML file to the MQ FTE Command Queue; this file triggers the MQFTE transfer and tells AGENT01 where to find the file on the file system and where to send it to over the MQ Network.
5. **a:** If using a B2B Messaging protocol, once the file has been written to the NFS mount point and the XML command file has been delivered to the queue, the B2B Gateway Service will generate a Message Disposition Notification (MDN) advising the successful transfer of the file and send that MDN back to the trading partner.
   b: AGENT01 will consume the XML command file and route the payload to the receiving agent; AGENT02. AGENT02 will then write the file to the destination directory.
6. The back-end application will consume the payload that MQ FTE has transferred.

Scenario #2: File transfer outbound to an AS2 trading partner

In this scenario, shown in Figure 5, the HubOwner is the originator of the file. The back-end application places the file on the file system where AGENT02 can pick up the file when instructed to do so via the mechanisms available in MQFTE. AGENT02 sends the file over the WAN to AGENT01, which writes the file to a file location shared between AGENT01 and the XB60. The XB60 polls the directory on a scheduled polling cycle and picks up the file for processing. It parses the file for sender and receiver information and routes the file securely to the receiving trading partner based on information in the partner profile.

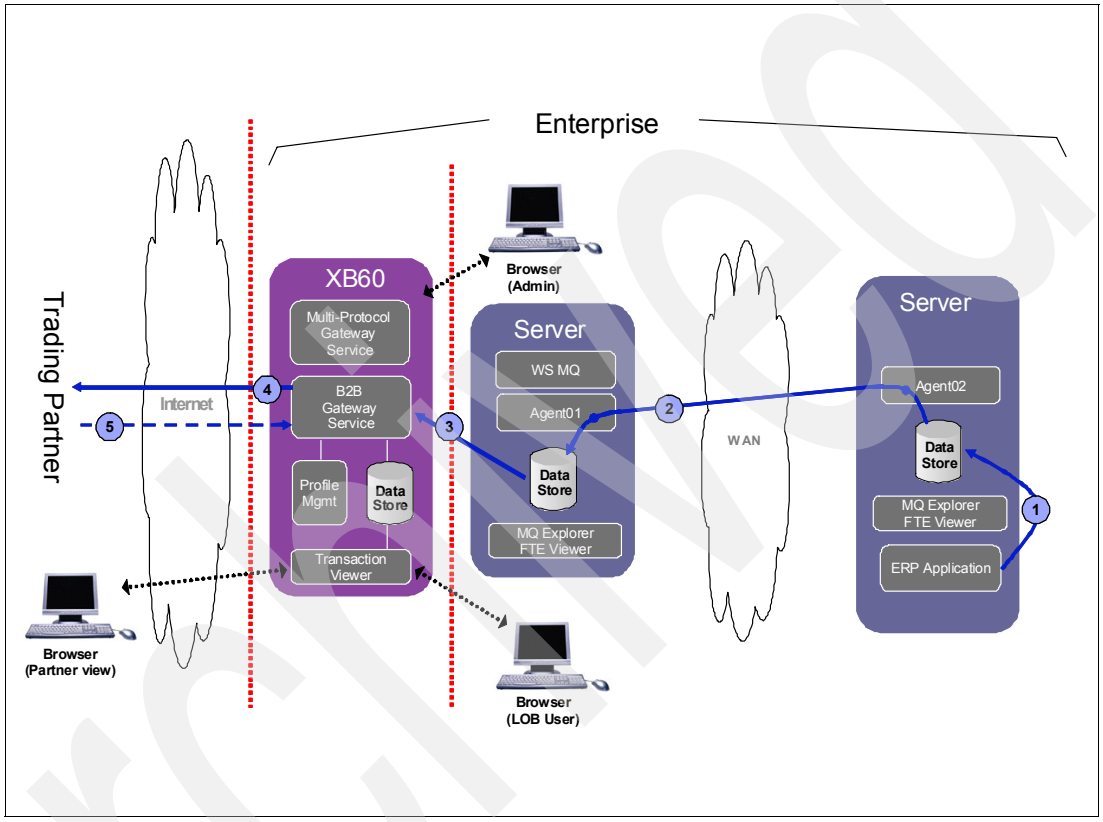

Figure 5 File Transfer Outbound to an AS2 Trading Partner

1. The back-end application sends a file to a directory shared by AGENT02 and the file is routed to AGENT01.
2. AGENT02 sends the file across the WAN to AGENT01, which writes the file to an NFS mount point that is shared between the XB60 and MQ FTE.
3. The B2B Gateway Service picks up the file from the shared NFS mount point, parses the file for sender and receiver information, and wraps the payload in an AS2 envelope using the attributes set up in the recipient's Trading Partner Profile.
4. The B2B Gateway Service sends the file to the trading partner using the AS2 B2B Messaging Protocol.
5. The Trading Partner receives the AS2 message, processes it, and sends back an MDN to the XB60.

Note: If you would like to implement these scenarios please contact your local IBM Account Representative to arrange a proof of technology demonstration.

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Summary

As a core part of the IBM SOA Foundation, the WebSphere DataPower B2B appliance and WebSphere MQ FTE offer easy configuration and operation to help reduce operational complexity and to decrease the time required to connect to your trading partners and integrate to your internal applications. With the WebSphere DataPower B2B appliance, and WebSphere MQ FTE, IBM can help you simplify, accelerate, and secure your B2B for MFT deployments to increase your flexibility and extend your file transfer processes beyond the enterprise.

The team who wrote this paper

Rich Kinard is a Product Line Manager for IBM Software Group, Application and Integration Middleware Software and is a B2B Subject Matter Expert.

Adrian Preston is a lead MQ FTE Developer for IBM Software Group, Application and Integration Middleware Software and is a WebSphere MQ File Transfer Technologies Subject Matter Expert.

Jeremy Shapiro is a lead DataPower Developer for IBM Software Group, Application and Integration Middleware Software and is a DataPower Security Subject Matter Expert.

Thanks to the following people for their contributions to this Redguide publication:

Andre Manriquez, IBM Software Group, Worldwide Sales, B2B Application Integration Specialist

Ben Mann, IBM Software Group, Application and Integration Middleware Software Product Line Manager for WebSphere MQ and MQ File Transfer Edition

Ben Wen, IBM Software Group, Application and Integration Middleware Software DataPower SOA Appliance Product Management

Chris Rayns, IBM Sales and Distribution, ITSO Project Leader CICS® and Security

Dominic Evans, IBM Software Group, Application and Integration Middleware Software, WebSphere MQ Managed File Transfer - Developer

Humayun (Honda) Bhyat, IBM Sales and Distribution, Software Sales, WebSphere File Transfer Edition (FTE), WebSphere MQ (WMQ), WebSphere Message Broker (WMB)

Matt McLarty, IBM Sales and Distribution, Software Sales, Worldwide Technical Sales Manager - WebSphere Connectivity and Datapower

Neal Alewine, IBM Software Group, Application and Integration Middleware Software STSM, WebSphere DataPower Architect

Niall Clifford, IBM Software Group, Application and Integration Middleware Software, Project Manager, WebSphere MQ File Transfer Edition

Patrick Verdugo, IBM Sales and Distribution, Software Sales Global WebSphere Tiger Team - Competency Leader

Richard Cumbers, IBM Software Group, Application and Integration Middleware Software, WebSphere MQ Managed File Transfer Developer

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