WebSphere software

MQ Telemetry Transport solves telemetry integration problems
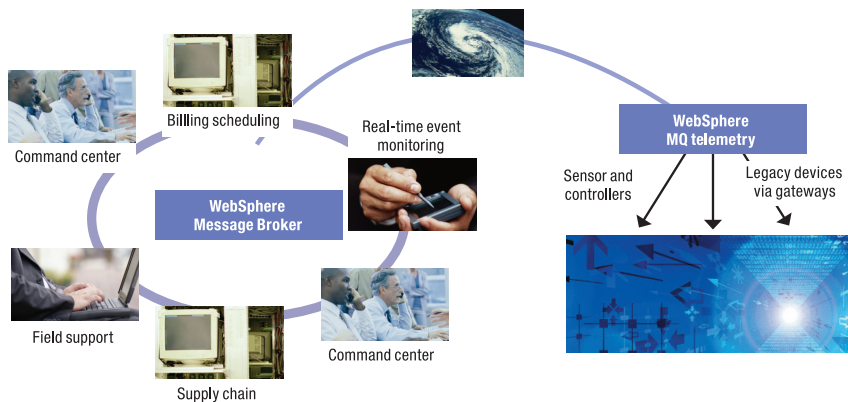

Highlights

■ *Lightweight publish-and-subscribe transport integrates valuable field data into key enterprise systems, treating it exactly the same as other enterprise data*

■ *Improves supply chain integration with transactional assured delivery*

■ *Allows messages to be transformed and routed in WebSphere® Message Broker*

■ *Enables many applications to gain access to remote telemetry data*

Real-time event monitoring with WebSphere MQ Telemetry Transport and WebSphere Message Broker

The business challenge

Today's successful enterprises strive for end-to-end business integration in their infrastructures. Those responsible for information technology (IT) systems, or who depend on the service that they provide, know that connecting data and applications throughout the enterprise is important. Enterprise integration means automating processes, reducing cycle times and getting more from your resources.

In many industries, data from remote monitoring and telemetry devices is becoming increasingly valuable throughout the enterprise as a whole, and not just as raw data for front-end applications. This technology is widespread and useful for tracking everything from oil flow rates to energy consumption, weather and environmental monitoring, the location of trucks

and railroad cars, monitoring patient's blood pressure readings and so on. In fact, companies can use telemetry integration technology to monitor anything that moves, whether it's oil through a pipeline, wind through a weather vane or money into a slot machine.

So if telemetry is so widespread and vital, what's the problem? It's that this valuable data is qualitatively different from the data that's generated within the enterprise—because of the physical constraints on collecting it and delivering it for processing. The result is that the data tends to remain at the edges of the enterprise, processed by dedicated applications that act as a data barrier to the rest of the IT systems.

Data from remote locations is proving increasingly important as organizations face stronger competitive pressures to closely monitor and control aspects of their business. However, this crucial data is rarely integrated with enterprise applications. That's where the telemetry integration capability provided by WebSphere MQ Telemetry Transport comes in. This solution, available in IBM WebSphere Message Broker and microbroker software, enables the integration of remote telemetry data into enterprise applications and the control of remote devices from the enterprise.

The telemetry solution

WebSphere MQ Telemetry Transport is one means of access to the enterprise service bus (ESB). It enables intercommunication between enterprise applications, applications based on service oriented architecture (SOA) (including Web services) and remote sensor and actuator devices. This enterprise integration of remote monitoring and control devices using the MQ Telemetry Transport is called telemetry integration. The telemetry integration capability in MQ Telemetry Transport means that your enterprise can integrate remote telemetry data into enterprise applications—and control remote devices from the enterprise.

WebSphere MQ Telemetry Transport allows valuable field data to be integrated along with other enterprise data, using an open protocol designed specifically for remote telemetry applications. The solution is optimal for communication over low-bandwidth, high-cost networks. It uses the publish-and-subscribe messaging model, meaning that these messages can be transformed and routed in IBM WebSphere Message Broker. This enables many applications within the enterprise to gain access to remote telemetry data.

What is MQ Telemetry Transport? It's a lightweight TCP/IP wire transport built into IBM WebSphere Message Broker and IBM Lotus® Expeditor for communications with sensors, actuators and other devices. There are several advantages to using this solution. For one, the tiny two-byte fixed header means that it uses minimal network bandwidth—which means that it can save you money compared to other transport possibilities. It also enables real-time data to be supplied to any application within the business, reducing the time and cost of manual monitoring.

WebSphere Message Broker uses the SCADAInput node to receive messages from WebSphere MQ Telemetry Transport client applications. The node interacts with a TCP/IP socket to receive the messages.

Output is typically returned to the client application using a Publication node, which embeds a SCADAOutput node. The Publication node filters and sends output from a message flow to subscribers who have registered an interest in a particular set of topics. If a client application is using WebSphere MQ, the Publication node puts the message to the WebSphere MQ queue on the queue manager. For WebSphere MQ Telemetry Transport applications, the

embedded SCADAOutput node routes the message to a subscribing WebSphere MQ Telemetry Transport client application using a TCP/IP socket.

Integration at remote locations using microbroker

Integration of applications, sensors and actuators is also possible at remote locations, such as retail stores, vehicles, homes or factories. This is made possible by IBM Lotus® Expeditor microbroker, which provides a message integration capability using MQ Telemetry Transport, and which is specifically designed to run on a small server, such as an appliance, at remote locations. Remote administration and a small memory footprint are key features of microbroker that make it ideal for extending the reach of enterprise messaging out to the edges of your organization.

Features of MQ Telemetry Transport

IBM has championed open standards for years, and the MQ Telemetry Transport features open, published application programming interfaces (APIs) that are already built into a number of vendors' sensor devices. And if they are not built in, it's easy to implement them on virtually any embedded system.

MQ Telemetry Transport provides fast and reliable delivery of data, with several qualities of service. These include:

- *At most once delivery (known as "fire and forget")*
- *At least once delivery with simple message acknowledgement*
- *Exactly once delivery, which is equivalent to WebSphere MQ persistent messaging*

Other important features of the MQ Telemetry Transport include the KeepAlive and connection loss notification features. KeepAlive assures that constant communications are maintained with the WebSphere Message Broker. However, if the Message Broker fails to receive a response within a specified time interval, it closes the client connection and publishes a specific Will message on the client's behalf. Because of this connection loss notification, MQTT can respond immediately to device failures.

Summary of benefits

We have already covered some of the features and strengths of MQ Telemetry Transport. Now, let's look at some of the benefits for you and your enterprise. MQ Telemetry Transport can help your business because it:

- *Integrates valuable field data into key enterprise systems, treating it exactly the same as other enterprise data*
- *Improves supply chain integration*
- *Lessens or eliminates the risk of human error*
- *Reduces the time and cost of manual monitoring*
- *Creates a competitive advantage for your business*
- *Enables rapid response to new business opportunities*
- *Enhances the scalability of data acquisition applications*
- *Extends the value of your existing investments*
- *Improves business vitality and effectiveness*
- *Enables the ability to improve your return on investment (ROI)*
- *Integrates with other products in the WebSphere MQ family*

About IBM

International Business Machines Corporation (IBM) provides computer solutions using advanced information technology. The company's solutions include technologies, systems, products, services, software and financing. IBM offers its products through its global sales and distribution organization, as well as through a variety of third-party distributors and resellers.

For more information

For more information about MQ Telemetry Transport, visit:
ibm.com/mqseries/telemetrytransport.

For more information about telemetry integration in general, visit:
ibm.com/mqseries/integrator/telemetry.

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