



IBM Software Group

WebSphere® Enterprise Service Bus

ESB Integration Model in Practice and ESB Scenario



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This presentation covers the ESB integration model in practice and provides a simple scenario that highlights the ESB function.

Agenda

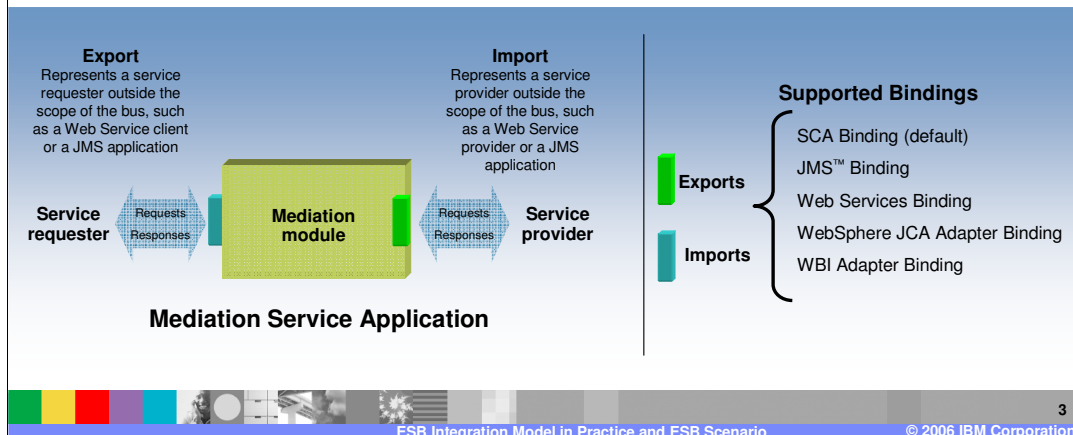
- **WebSphere ESB in Practice: Integration Model**
- ESB Scenario



The agenda starts with two approaches to the ESB Integration model in practice, then shows a simple scenario that highlights the ESB function.

Integration model: Approach 1

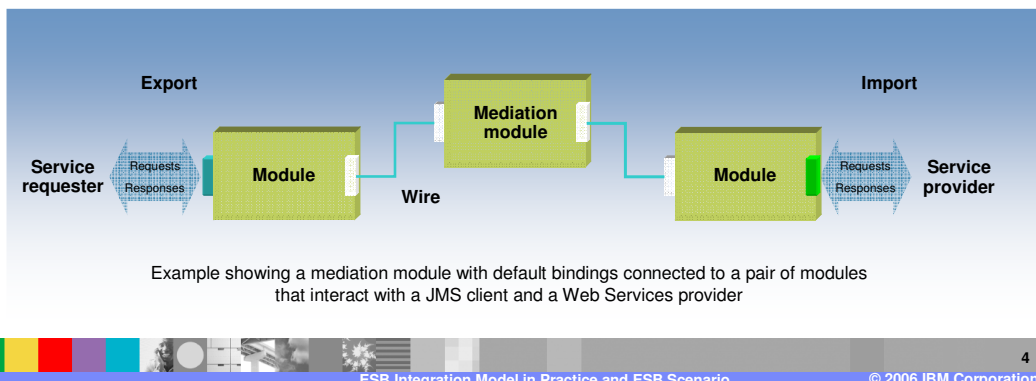
- **Mediation module is interposed between a service requester and the ultimate service provider**
 - ▶ It operates on all service interactions (both requests and responses)
 - ▶ Service interfaces are defined using the Web Services Description Language (WSDL)
- **Mediation module also encompasses interactions with external service endpoints**
 - ▶ Used when the Integration Specialist needs fine control over external interactions



In this approach, there is only one mediation module between the service requester and the provider. The wiring from the requestor to the mediation module, and from the module to the service provider is done by the integration developer. In this approach, the integration developer needs to understand the external interfaces. The system administrator uses the mediation module as is, in the runtime.

Integration model: Approach 2

- In this approach, the Mediation module uses only default bindings
- Communication with service requesters and providers is moved to separate modules
- This enables the solution administrator to 'rewire' to different requesters/provider
- This approach is used when the solution administrator needs more control over which service providers and mediation modules are used



In this approach, the mediation module uses only default bindings.

This means that the mediation module can be rewired by the administrator to different other modules.

In the diagram shown, the other modules do not (need to) contain any components, just imports and exports.

The administrator can specify which 'requester' modules (this is an informal term, and in this case refers to the left-hand module) connect to the mediation module.

More than one 'requester' module can be connected to the mediation module.

The solution administrator can also change which (single) 'provider module' (again, an informal term, this time identifying the right hand module) is used.

[For experts: Note that, for asynchronous, one-way operations only, it is possible to connect multiple providers to a single (one-way) import.

Each provider will be sent a copy of the message; since the interaction is one-way, no response will be sent back.

Note that, in ESB 6.0.1, This advanced option requires WebSphere messaging skills]

Section

- WebSphere ESB in Practice: Integration Model
- **ESB Scenario**

The next section covers a simple ESB scenario that highlights the ESB function.

Stock quote scenario

A financial services company is planning a phased rollout of an interactive web-based stock market service to its customers.

This service will include a simple stock quote service built using an Enterprise Service Bus (ESB) infrastructure. The company wants to differentiate itself from its competition by offering tiered levels of service and by proactively offering real-time stocks to their “gold” customers (customers who pay a subscription).

An ESB is used as the basis for deployment of these capabilities so as to allow the company to respond in a flexible and non-disruptive way to the changing requirements which are expected to arise.



The simple Stock Quote scenario is used to highlight the ESB functions.

The scenario includes a simple stock quote service. The service company wants to differentiate itself from its competition by offering tiered levels of service and by proactively offering real-time stocks to their “gold” customers (customers who pay a subscription).

The scenario described in the next page will show how they can use the ESB function to respond in a flexible and non-disruptive way to the changing requirements which are expected to arise.

Stock quote scenario (cont.)

This scenario is implemented in following phases:

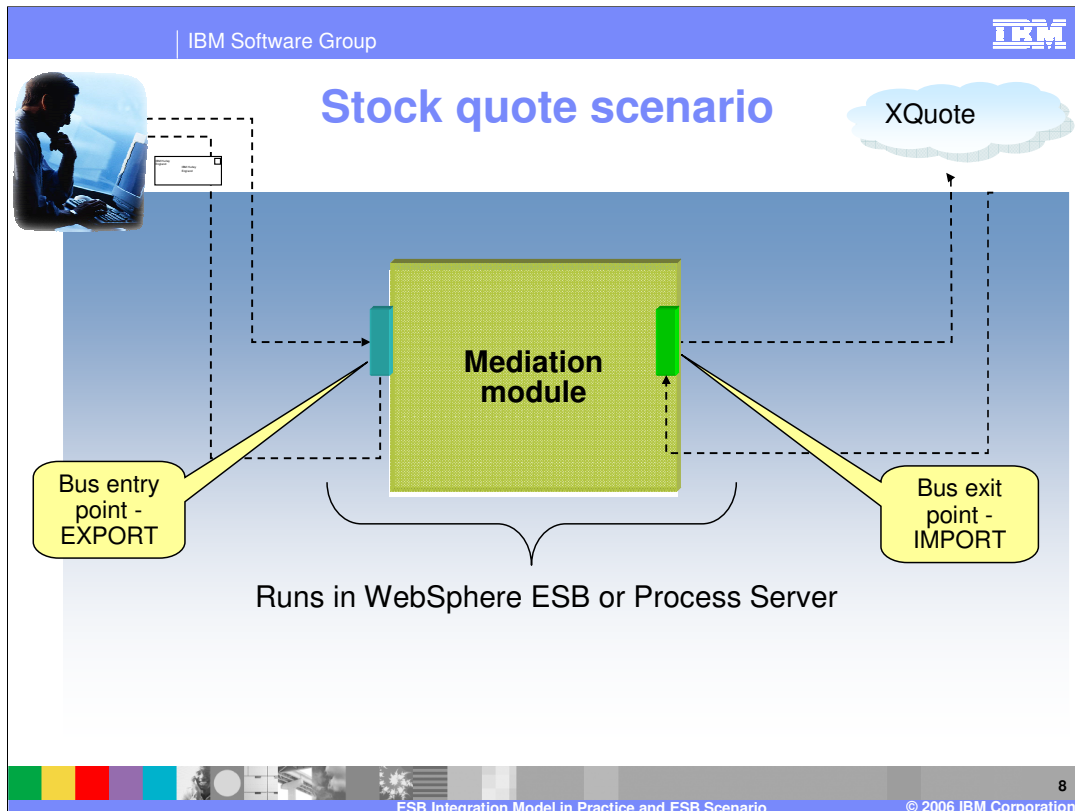
1. The basic quote service is made available to customers by invoking an XQuote Web Service to retrieve 20 minute delayed quotes.
2. Once the service is up and running the company will start logging all requests to the service to satisfy audit requirements.
3. A new subscription service is added for gold customers. The Xignite stock quote service is used to retrieve real-time quotes for these gold customers.
4. More error handling is added to the solution so that failures in the flow are reported to a business dashboard using a CEI event (the dashboard application itself is out of scope of this scenario).



The simple Stock Quote scenario is used is implemented in several phases:

In the first phase, the service provider uses an external slow stock quote provider, called XQuote in this example, using Web Service, to get delayed stock quotes, rather than real time stock quotes. This may be fine for regular customers, but now the service provider wants to add better real time service for their premium gold customers. The real time quote is provided by another external stock quote provider, called Xignite in this example. The service provider wants a way to know the type of customer and call Xignite for premium customers. The mediation services in ESB allow the ability to call different external service providers based on certain criteria, like customer type, that can be determined by mediation services in the ESB.

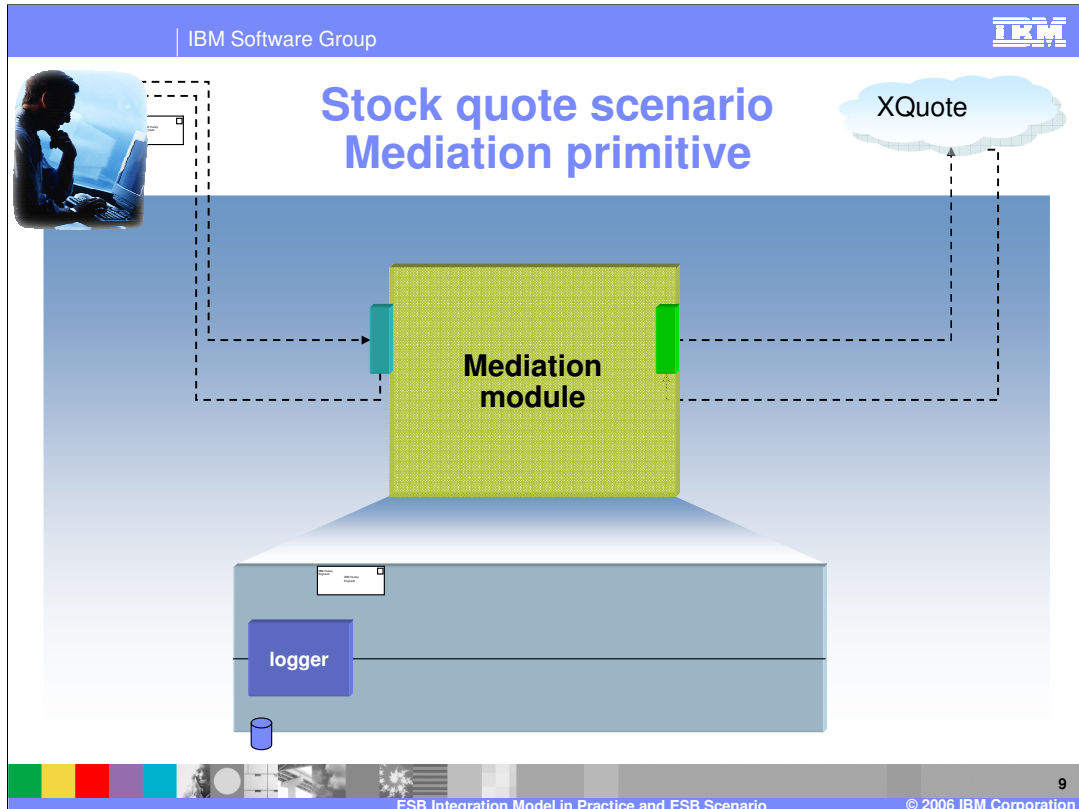
Additionally, error handling logic can be added to the mediation services for a given request so that the failures can be reported to some business monitoring system, like the WebSphere Monitor.



The first phase of the scenario is shown here, where there is only one external stock quote service provider, namely, XQuote.

The request for a stock quote comes to the service provider into the Bus. The bus in turn makes a call to the external service provider XQuote. The reply is passed back through the bus to the requestor.

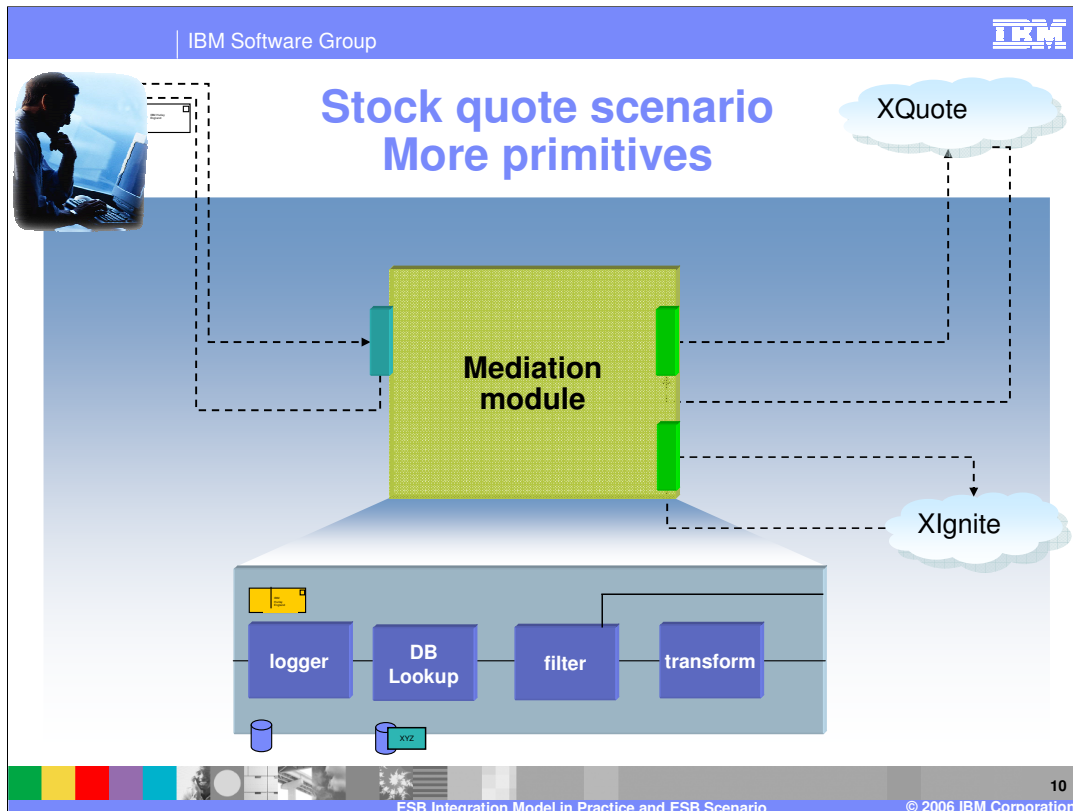
[1] As seen from the animation, the request flows through the bus to the external XQuote service provider and the response returns back the same route.



This time, the request when passed through the Mediation Module goes through a mediation primitive that provides the service of logging the request. The primitives are building blocks that process of the service message as it passes through the bus. The primitive used in the scenario is the Message Logger Mediation Primitive to log the message to a database.

The Request continues on its way as before.

[1] As seen from the animation, the request flows through the bus through the mediation module, the message is processed by the Message Logger primitive, where the message is logged into a database. The message than is sent to the external XQuote service provider. The response returns back through the module. In the return path, there are no primitives defined in the module, and therefore the response is sent back to the requestor



In this phase, a premium real time stock quote service, called Xignite, is provided to the premium gold customers. The ESB mediation module will handle all the logic of incorporating the new service provider. This time, when the request passes through the Mediation Module, a DataBaseLookup Primitive is used to look up the user id in a table of "gold" users, then a Filter primitive is applied to choose between the two paths.

[1] The requestor sends the request to the Bus. The mediation module in the bus receives the service message.

[2] Now a regular non-premium service customer sends a request. The request passes through the Mediation Module and the DataBaseLookup Primitive. Because the customer is not a gold customer, the filter routes the message to XQuote, which is the delayed stock quote provider. The response comes back through the module and is sent back to the non-gold requestor.

[3] Next, a request comes in from a gold customer. The request passes through the Mediation Module and the DataBaseLookup Primitive. The customer is now identified as a gold customer. The message needs to be send to the real time stock quote provider, Xignite. However, since the Xignite message format is not the same as what the requestor had sent for XQuote, and since the message format coming from the requestor interface has not been modified for the new service, the bus has to do some transformation to match the interface for Xignite. This is achieved by the Transform mediation primitive, shown here. The transformed message is then sent to Xignite.

Section

Summary

The next section covers the summary of this presentation.

Summary

- This presentation covered some ESB practices for the integration model and a simple scenario of ESB usage



In summary, this presentation covered some of the ESB practices for the integration model, and a simple scenario of ESB usage.

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