IBM Software Group

IBM® WebSphere® Application Server V7

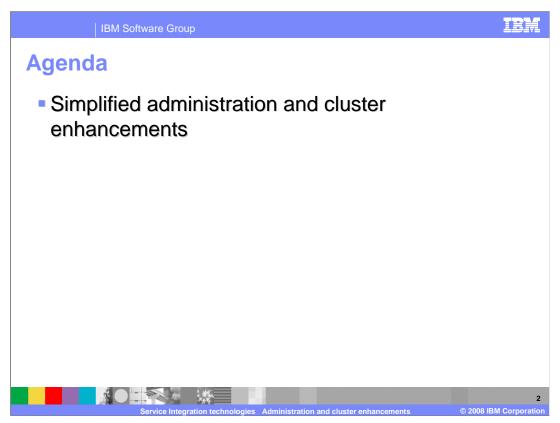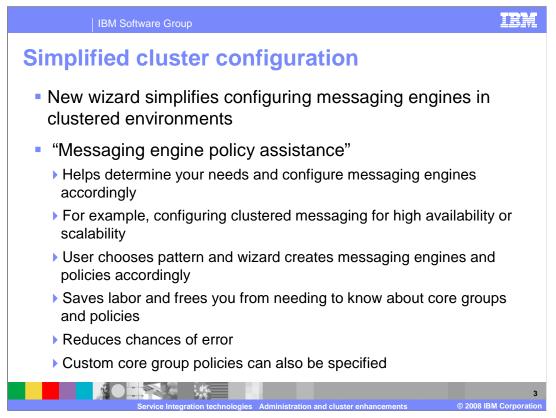## *Service Integration technologies - Administration and cluster enhancements*

This presentation will discuss the WebSphere Application Server IBM Service Integration technologies administration and cluster enhancements for WebSphere Application Server version 7.

Agenda

- Simplified administration and cluster enhancements

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This presentation will begin by discussing the simplified administration and cluster enhancements

Simplified cluster configuration

- New wizard simplifies configuring messaging engines in clustered environments

- "Messaging engine policy assistance"
  - ▸ Helps determine your needs and configure messaging engines accordingly
  - ▸ For example, configuring clustered messaging for high availability or scalability
  - ▸ User chooses pattern and wizard creates messaging engines and policies accordingly
  - ▸ Saves labor and frees you from needing to know about core groups and policies
  - ▸ Reduces chances of error
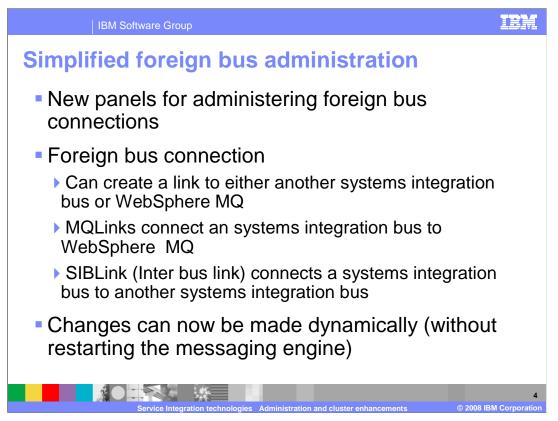 - ▸ Custom core group policies can also be specified

There is a new wizard included in WebSphere Application Server version 7 that simplifies the setup of messaging in a clustered environment.

The new wizard allows you to select a pattern for messaging that you want to implement in your cluster to support your messaging needs, to help configure messaging engines in your cluster for high availability or scalability.

This new wizard greatly reduces the amount of setup required to configure your cluster for your needs, and helps to reduce the chances of error during setup of the messaging in the cluster. Users no longer need to know about core groups and policies during setup.

You can still specify core group policies if you want to set up your messaging cluster manually.

Simplified foreign bus administration

- New panels for administering foreign bus connections

- Foreign bus connection
  - ▸ Can create a link to either another systems integration bus or WebSphere MQ
  - ▸ MQLinks connect an systems integration bus to WebSphere MQ
  - ▸ SIBLink (Inter bus link) connects a systems integration bus to another systems integration bus

- Changes can now be made dynamically (without restarting the messaging engine)
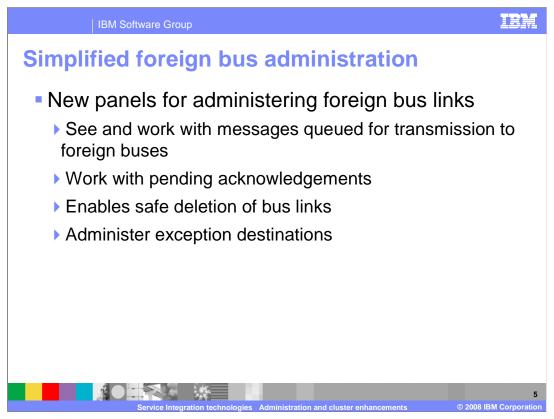
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Previously there has been some confusion creating links to foreign busses. It was unclear how many objects needed to be created to allow inter-bus communication, and which steps to follow to create inter-bus communication.

Improvements have been made to help simplify this. There are new panels and options in the wizard for creating new foreign bus connections, making the process much more straight forward.

Whether you are creating a foreign bus connection using a direct or indirect connection to another service integration bus or WebSphere MQ; the options and wizard help to guide you in a more organized manner.

Where applicable, new drop down menus exist and pre-filled entry options are now used to avoid typing errors that contribute to an incorrect configuration of inter-bus connections.

Simplified foreign bus administration

- New panels for administering foreign bus links
  - See and work with messages queued for transmission to foreign buses
  - Work with pending acknowledgements
  - Enables safe deletion of bus links
  - Administer exception destinations

The foreign bus link transmission queues have been externalized to allow for management, control, and monitoring of message transmission to a foreign bus.

Panels have been added to work with pending acknowledgments and to help manage exception destinations related to a service integration bus link.

Save deletion of a link now allows pending messages to be examined and either discarded or moved to the link exception destination.

Panels have also been added to allow browsing, viewing, moving, and deleting messages that are queued on a foreign bus link transmission queue.

Configuring role-based authorization

- New administrative console panels enable configuring role-based access control for bus resources
  - ▶ Could previously only be configured using wsadmin
- Available roles for users and groups:
  - ▶ Sender
  - ▶ Receiver
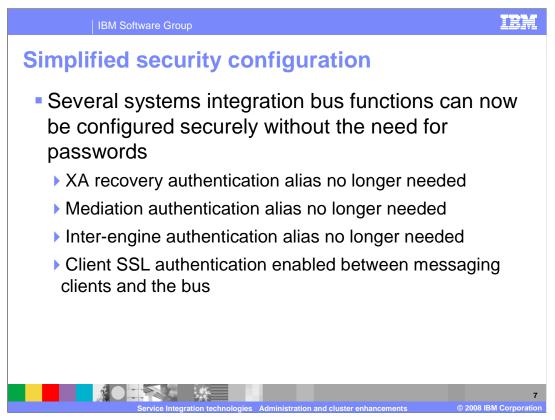 - ▶ Browser
  - ▶ Creator

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Several new security panels are provided to now help configure role based access to bus resources.

Previously, the only way to administer the role based authorization mechanism was through several commands invoked in wsadmin.

There are 52 separate commands that the administrators had to know about, including their syntax and underlying configuration model to know how to use them.

Complexity is now reduced and understanding the configuration of resources should be much easier.

Simplified security configuration

- Several systems integration bus functions can now be configured securely without the need for passwords
  - ▶ XA recovery authentication alias no longer needed
  - ▶ Mediation authentication alias no longer needed
  - ▶ Inter-engine authentication alias no longer needed
  - ▶ Client SSL authentication enabled between messaging clients and the bus

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The systems integration bus has a very comprehensive but also very complex security model.
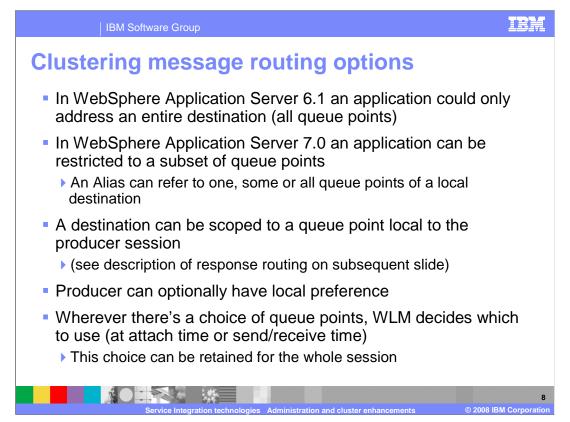
Improvements have been made to further simplify the administration of security for the systems integration bus with the aim of improving the usability of the security of the bus.

This has been achieved by simplifying and in many cases removing the use of user ID and password authentication for the systems integration bus.

Some examples include XA recovery mediation, and inter engine authentication aliases where user ID and passwords are no longer required.

Client SSL authentication has been enabled for client connections to the bus.

Several benefits are realized by this simplification, including making it easier and faster to configure security. Customers using client SSL authentication also do not need to specify user ID and password credentials.

Clustering message routing options

- In WebSphere Application Server 6.1 an application could only address an entire destination (all queue points)
- In WebSphere Application Server 7.0 an application can be restricted to a subset of queue points
  ‣ An Alias can refer to one, some or all queue points of a local destination
- A destination can be scoped to a queue point local to the producer session
  ‣ (see description of response routing on subsequent slide)
- Producer can optionally have local preference
- Wherever there's a choice of queue points, WLM decides which to use (at attach time or send/receive time)
  ‣ This choice can be retained for the whole session

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For scalability purposes in WebSphere Application Server version 7, a cluster bus member can support multiple Messaging engines.
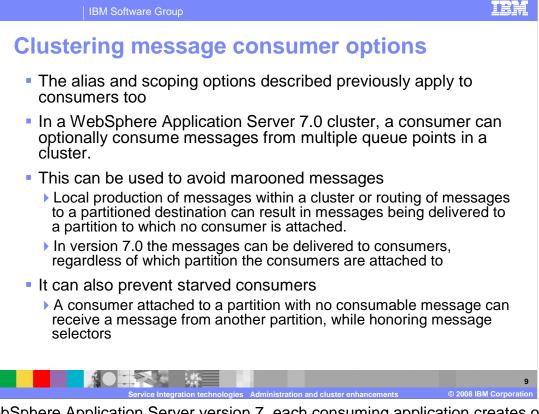
A destination assigned to a cluster bus member is partitioned across the messaging engines in the cluster; each messaging engine owns one partition of the destination.

Arriving messages are distributed across the partitions of the queue, so that each partition gets some of the messages. Each message is only sent to one partition.

A producer session may need to send its messages to a particular queue point. In WebSphere Application Server version 6.1, an application could only address an entire destination.

In WebSphere Application Server version 7, an application can be restricted to a subset of queue points. An Alias can refer to one, some, or all queue points of a local destination.

A destination can be scoped to a queue point local to the producer session.

Clustering message consumer options

- The alias and scoping options described previously apply to consumers too

- In a WebSphere Application Server 7.0 cluster, a consumer can optionally consume messages from multiple queue points in a cluster.

- This can be used to avoid marooned messages
  - Local production of messages within a cluster or routing of messages to a partitioned destination can result in messages being delivered to a partition to which no consumer is attached.
  - In version 7.0 the messages can be delivered to consumers, regardless of which partition the consumers are attached to

- It can also prevent starved consumers
  - A consumer attached to a partition with no consumable message can receive a message from another partition, while honoring message selectors

In WebSphere Application Server version 7, each consuming application creates one connection to the bus, which is routed to a messaging engine chosen by WLM for load balancing. Consumers may not spread out evenly across all messaging engines, or there may be fewer consumers than messaging engines. With WebSphere Application Server 6.1, each application can only consume from one partition. A poor distribution of consumers might mean that a partition does not get a consumer and its messages are therefore not read. Also if a consumer exhausted the partition it was consuming from, it could not receive messages from other partitions. Despite having messages on partitions and willing consumers, WebSphere Application Server 6.1 sometimes could not deliver the messages. WebSphere Application Server 7.0 provides the ability to configure visibility across multiple queue points – which resolves both problems.
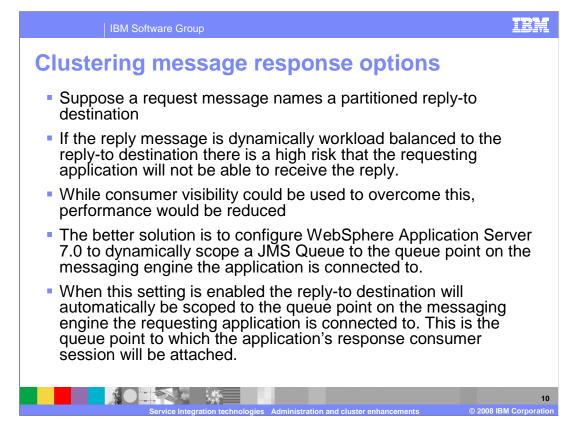
WebSphere Application Server version 7 helps to avoid marooned messages in several ways.

Messages from other bus members arriving at a destination in a cluster bus member are now workload balanced across the partitions of the destination.
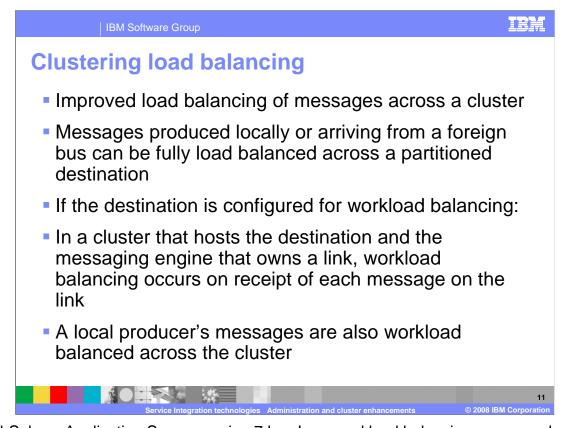
Also, messages from a producer connected locally to the cluster bus member are routed to the local partition of the destination.

In each case, messages may be delivered to a partition to which no consumer is attached. In WebSphere Application Server version 6.1, those messages would be stuck unless a consumer was attached. In WebSphere Application Server version 7, the messages can be delivered to consumers, regardless of which partitions the consumers are attached to.
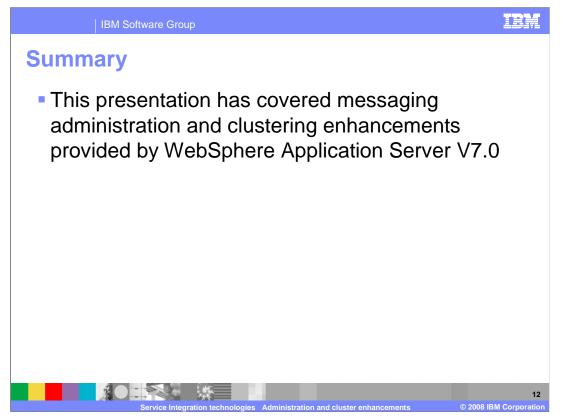
WebSphere Application Server version 7 also helps to avoid starved consumers. A consumer attached to one partition can receive a message from another partition. This prevents a consumer from being idle if there are no consumable messages on its attached partition.

Clustering message response options

- Suppose a request message names a partitioned reply-to destination

- If the reply message is dynamically workload balanced to the reply-to destination there is a high risk that the requesting application will not be able to receive the reply.

- While consumer visibility could be used to overcome this, performance would be reduced

- The better solution is to configure WebSphere Application Server 7.0 to dynamically scope a JMS Queue to the queue point on the messaging engine the application is connected to.

- When this setting is enabled the reply-to destination will automatically be scoped to the queue point on the messaging engine the requesting application is connected to. This is the queue point to which the application's response consumer session will be attached.
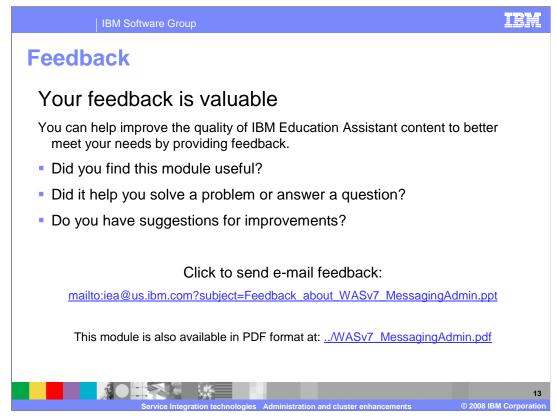
When using a partitioned reply-to destination, routing of the reply message is critical. If a reply message is routed to a dynamically chosen queue point then there's no guarantee it will be seen by the requester which is waiting for the reply message. Using consumer visibility across all queue points would help – but it is more efficient if the reply is deterministically routed if possible. WebSphere Application Server 7.0 introduces the ability to assign the reply-to messaging engine when routing the request message.

Clustering load balancing

- Improved load balancing of messages across a cluster

- Messages produced locally or arriving from a foreign bus can be fully load balanced across a partitioned destination

- If the destination is configured for workload balancing:

- In a cluster that hosts the destination and the messaging engine that owns a link, workload balancing occurs on receipt of each message on the link

- A local producer's messages are also workload balanced across the cluster

WebSphere Application Server version 7 has Improved load balancing across a cluster of messages arriving from a foreign bus. Messages produced outside the cluster are always load balanced when routed. In WebSphere Application Server version 6.1, this did not apply to messages produced locally to the cluster that hosts the destination or messages from a foreign bus connection terminating at a messaging engine in a cluster. In these cases messages preferred the local partition. In WebSphere Application Server version 7 the administrator can configure the destination to either prefer a local queue point or not.

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Summary

- This presentation has covered messaging administration and clustering enhancements provided by WebSphere Application Server V7.0

This presentation has reviewed the administration and cluster enhancements of IBM Service Integration technologies components available in WebSphere Application Server version 7.

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