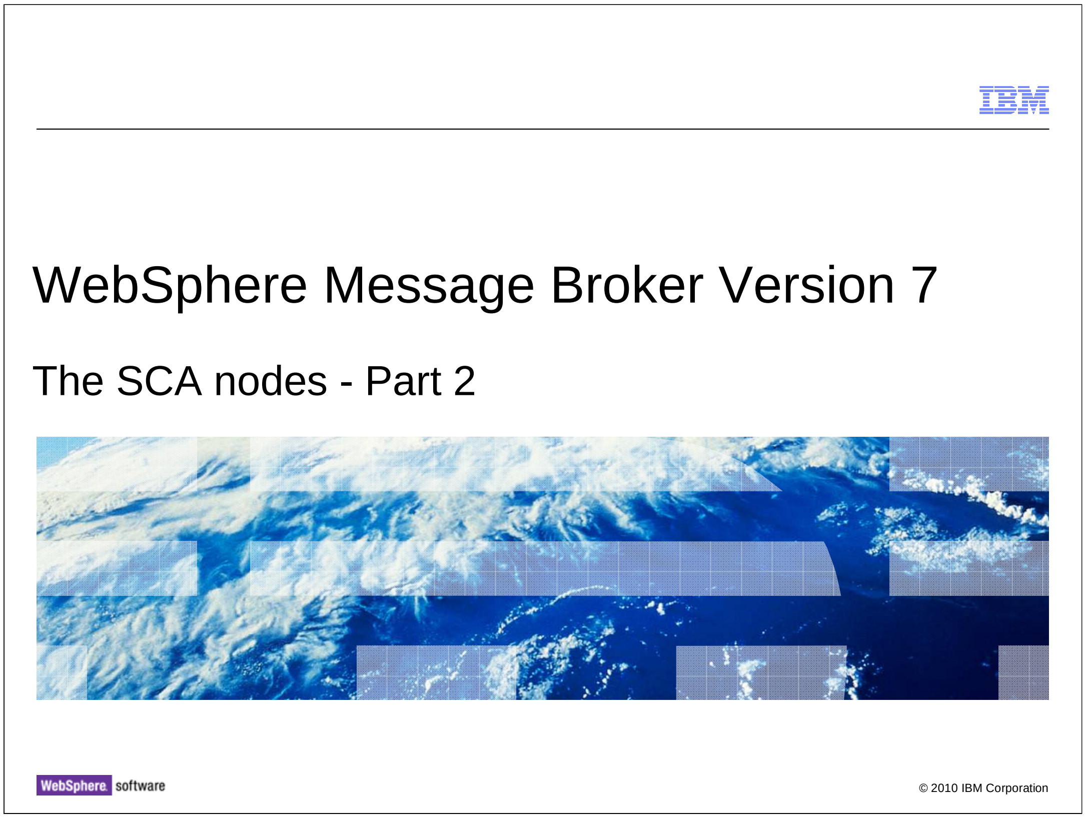
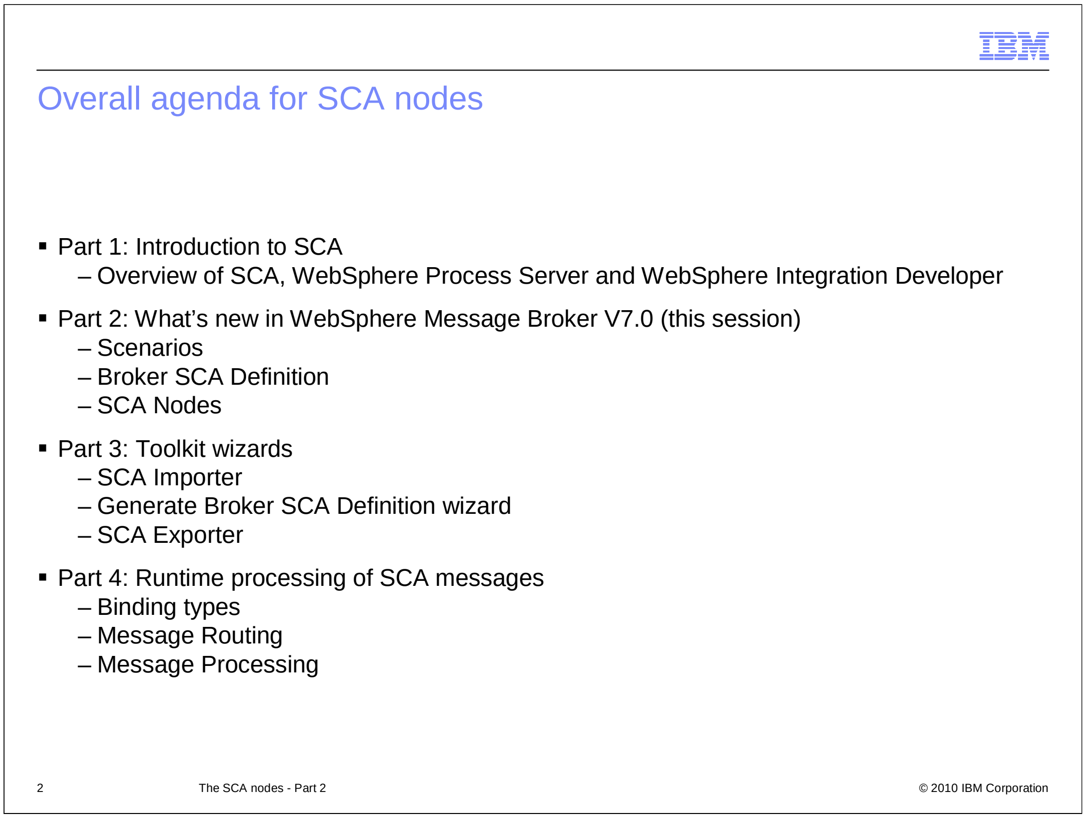


WebSphere Message Broker Version 7

The SCA nodes - Part 2

This is the second of four sessions looking a the new SCA nodes in Message Broker version 7. This session will describe the new nodes themselves and show how the SCA definitions are represented in the Message Broker Toolkit.



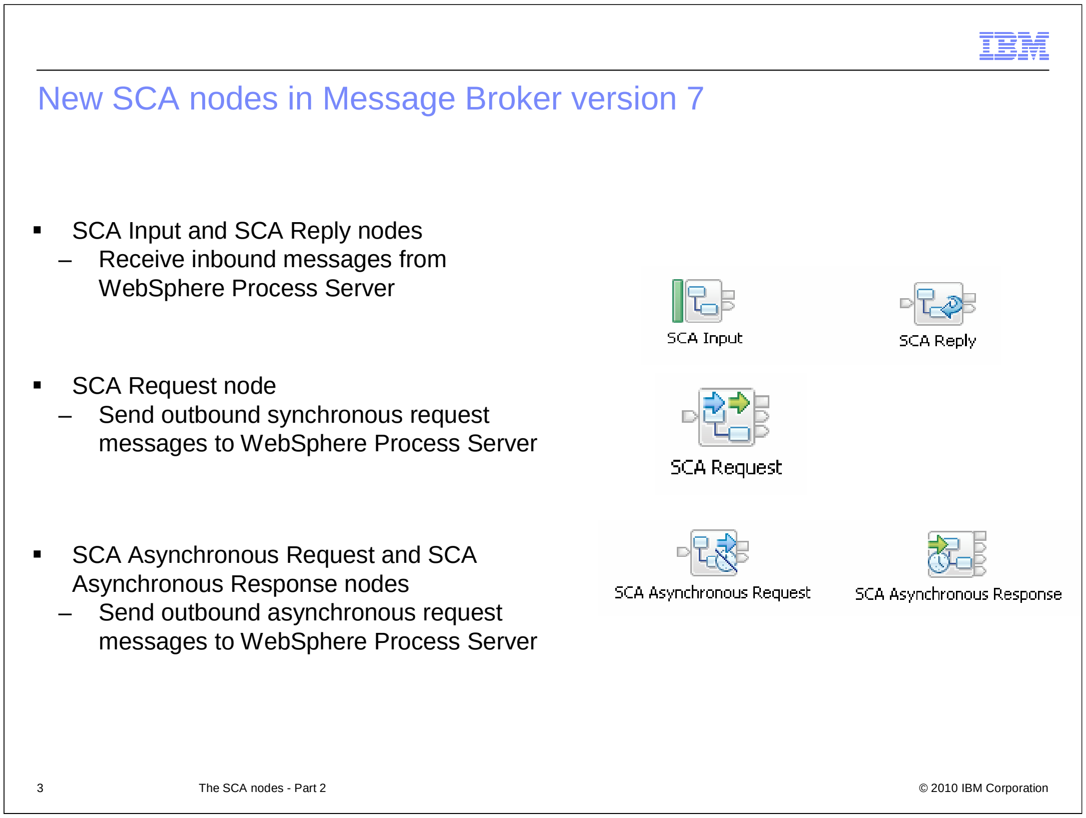
Overall agenda for SCA nodes

- Part 1: Introduction to SCA
  - Overview of SCA, WebSphere Process Server and WebSphere Integration Developer
- Part 2: What’s new in WebSphere Message Broker V7.0 (this session)
  - Scenarios
  - Broker SCA Definition
  - SCA Nodes
- Part 3: Toolkit wizards
  - SCA Importer
  - Generate Broker SCA Definition wizard
  - SCA Exporter
- Part 4: Runtime processing of SCA messages
  - Binding types
  - Message Routing
  - Message Processing

2 The SCA nodes - Part 2

The first session gave an introduction to SCA, and showed how this is provided with the WebSphere Process Server product. This session shows how the new nodes in Message Broker version 7 are used to define SCA connections.

Sessions 3 and 4 will describe the SCA wizards in the Message Broker Toolkit, and how SCA messages are processed at runtime.



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New SCA nodes in Message Broker version 7

- SCA Input and SCA Reply nodes
  - Receive inbound messages from WebSphere Process Server
- SCA Request node
  - Send outbound synchronous request messages to WebSphere Process Server
- SCA Asynchronous Request and SCA Asynchronous Response nodes
  - Send outbound asynchronous request messages to WebSphere Process Server

3 The SCA nodes - Part 2 © 2010 IBM Corporation

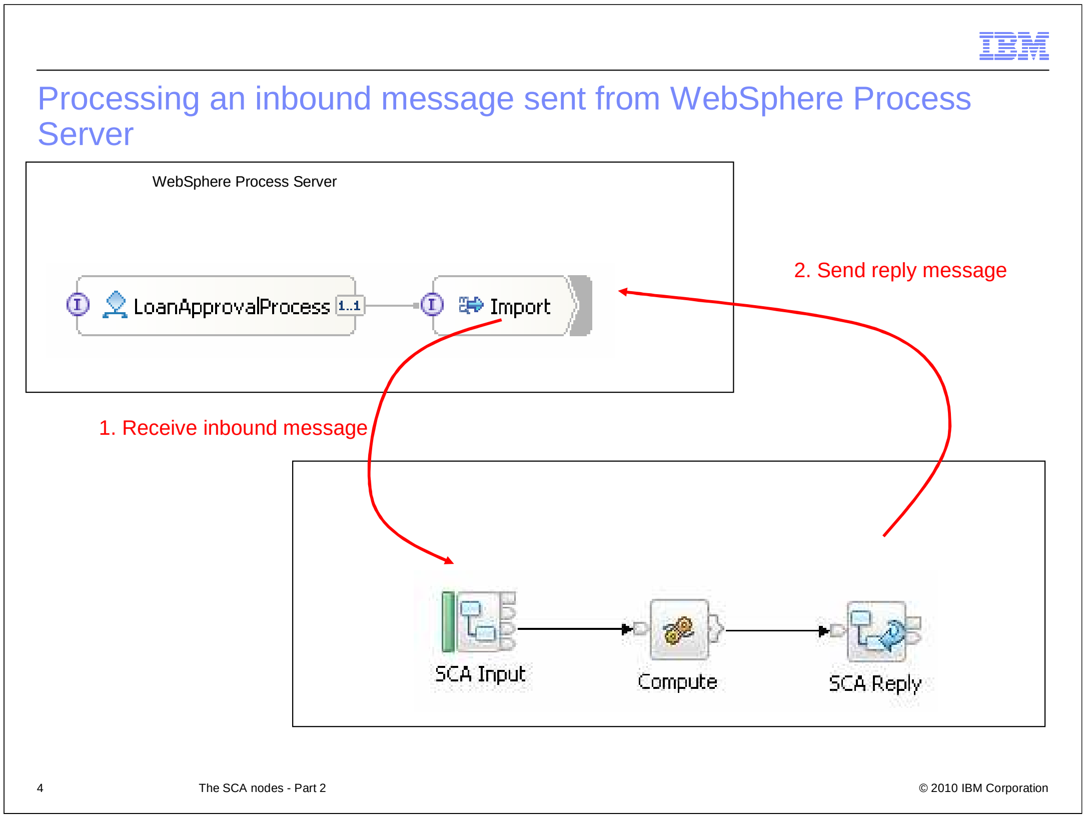
Message Broker version 7 has introduced five new nodes for connectivity to WebSphere Process Server using SCA.

First, the SCA Input Node: A WebSphere Process Server SCA Import component can use Message Broker as an SCA endpoint. The message received by the broker can be a SOAP over HTTP message or an MQ message on a queue, depending on the binding used by the node.

Second, the SCA Reply Node. This allows a response message to be sent from the broker back to the originating Process Server SCA client, in response to a prior message received by an SCA Input Node.

Third, the SCA Request Node. This allows synchronous requests to be made from the broker, allowing the broker to participate in synchronous message exchange patterns with a Process Server SCA export component. The message sent by the broker can be a SOAP message over HTTP, or an MQ message, depending on the binding used by the node. The node will perform a blocked wait for a specified time period until a response is received.

Finally, there are two nodes for asynchronous connections. The SCA asynchronous request node allows asynchronous requests to be made from the broker, allowing the broker to participate in asynchronous message exchange patterns with a Process Server SCA export component. As before, the message sent by the broker can be a SOAP message over HTTP or MQ, depending on the binding used by the node. The SCA asynchronous response node allows the broker to receive the response to a earlier asynchronous request made from an SCA asynchronous request node.



Processing an inbound message sent from WebSphere Process Server

4 The SCA nodes - Part 2 © 2010 IBM Corporation

This slide shows how a process running in WebSphere Process Server can invoke a service that is defined in Message Broker.

The message flow uses an **SCA Input** node to receive a request from SCA components running on Process Server.

The SCA Input node can route the message dependent upon the operation that was specified in the service request. This is currently only available for Web services bindings.

In Message Broker version 7, the SCA Input node supports the Web services and MQ binding types. Only one binding can be used at a time by the SCA Input node.

When the message flow completes, a reply is sent back to the Process Server business process using an **SCA Reply** node**.**

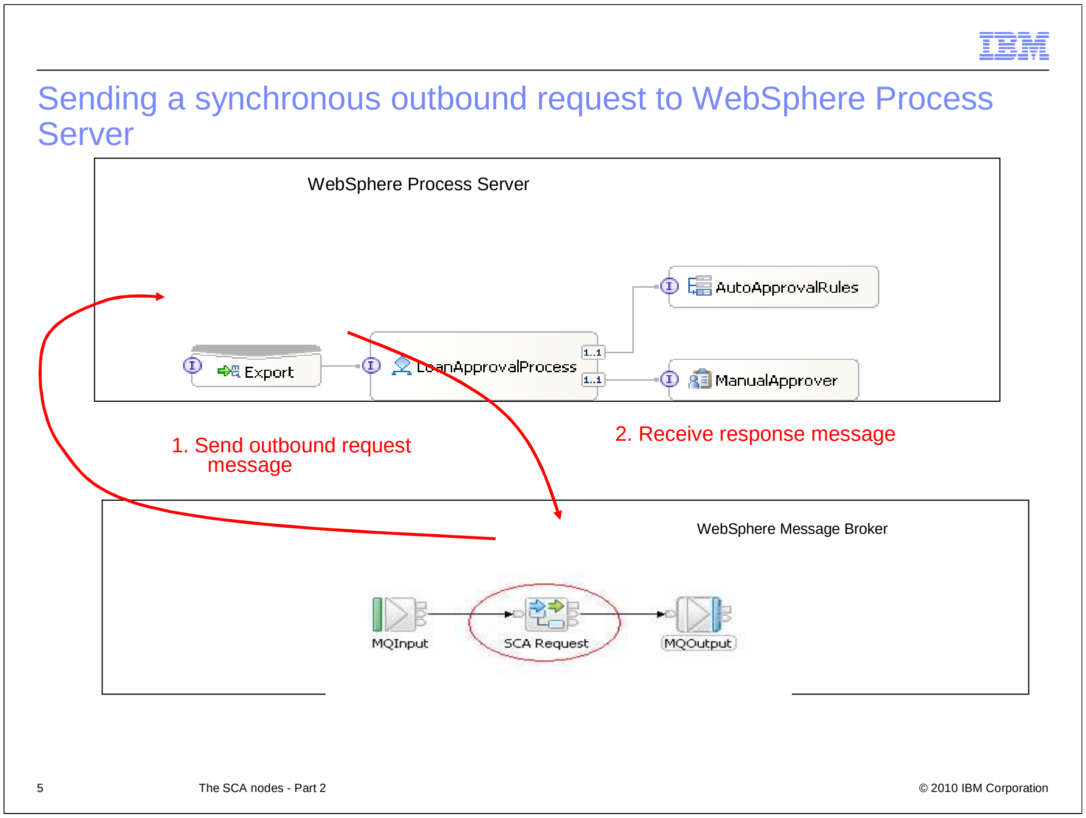
The SCA Input node can only be configured from a Message Broker SCA Definition.

The SCA Import component in WebSphere Process Server is used to send the inbound requests to Message Broker.

The SCA Input node uses dynamic terminals to process the message body. These terminals are determined by operations contained in the WSDL interface file. An incoming message is routed to the appropriate terminal dependent on the target operation. This facility is only supported for the Web services binding.

A reply identifier is created on the SCA Input node and is set in the message context and the local environment. The value needs to be preserved throughout the flow. This is especially important if the SCA Input and SCA Reply nodes are in different flows, in order for the reply to be returned to the originating Process Server client.

The message flow can access the operation that is being called on an inbound request in the local environment. The operation is contained in



Sending a synchronous outbound request to WebSphere Process Server

WebSphere Process Server

1. Send outbound request message

2. Receive response message

WebSphere Message Broker

5 The SCA nodes - Part 2 © 2010 IBM Corporation

This slide shows that a message flow can use the **SCA Request** node to send a request synchronously to an SCA component on WebSphere Process Server. The Message Broker thread will perform a blocked wait until a response is received within the specified timeout period.

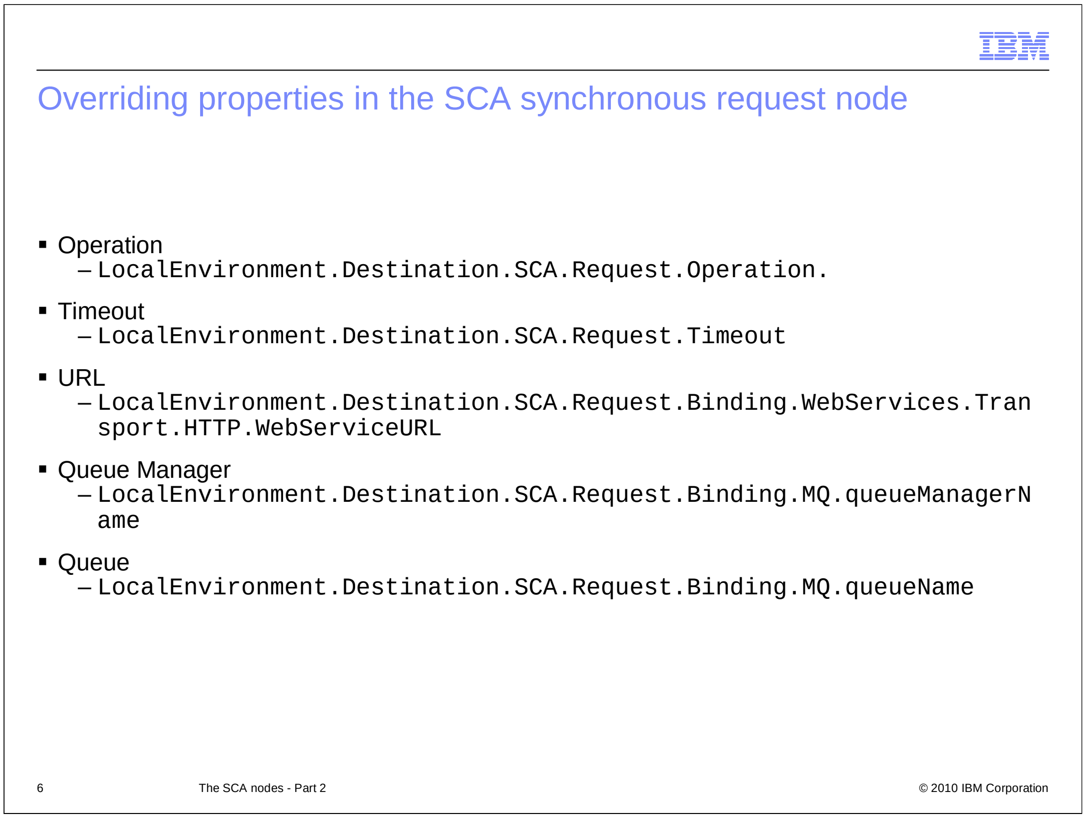
In Message Broker version 7, the SCA Input node supports the Web services and MQ binding types. Only one binding can be used at a time by the SCA Input node.

The SCA Export component in Process Server is used to receive an outbound request from the message flow.

The message flow will wait until a response is received. If no response is received within the specified timeout period, the input message is propagated to the failure terminal with the exception list.

The fault terminal is only used when the binding type is Web services. SOAP fault messages are routed to the Fault terminal. The fault terminal is not used by the MQ binding.

The SCA Request node cannot be used if you do not have a Broker SCA Definition to configure the node with.

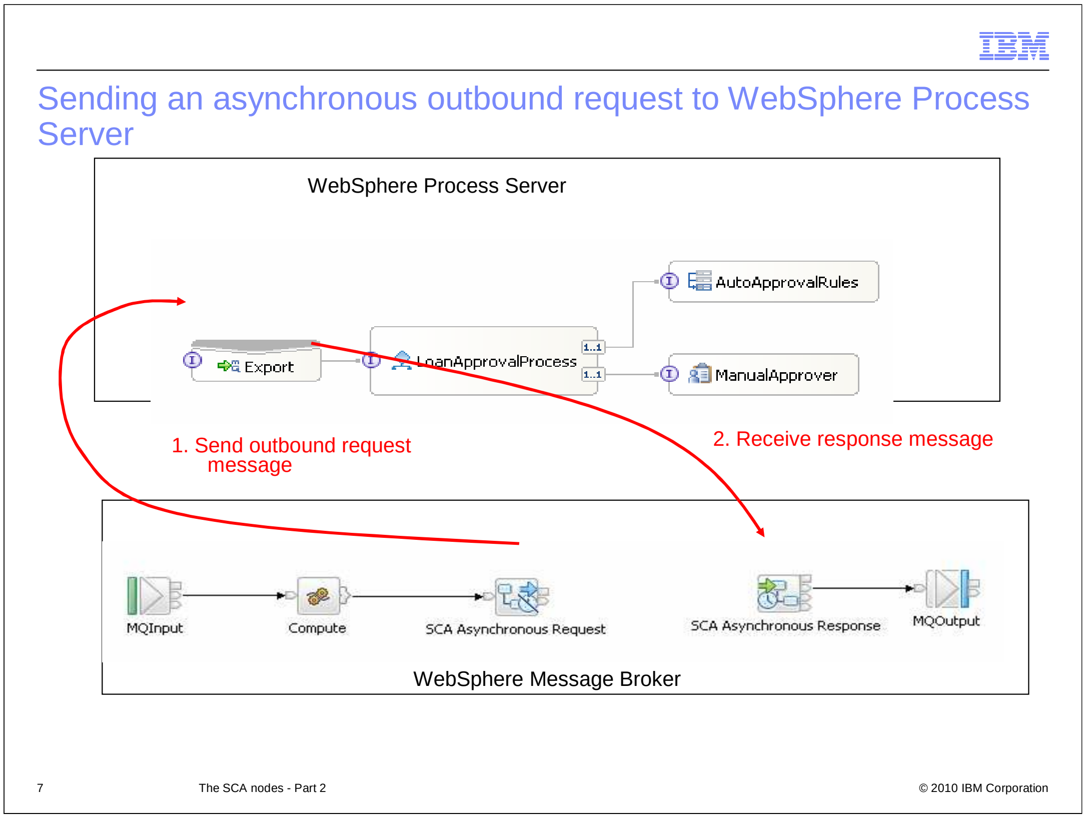


Overriding properties in the SCA synchronous request node

- Operation
  - `LocalEnvironment.Destination.SCA.Request.Operation.`
- Timeout
  - `LocalEnvironment.Destination.SCA.Request.Timeout`
- URL
  - `LocalEnvironment.Destination.SCA.Request.Binding.WebServices.Transport.HTTP.WebServiceURL`
- Queue Manager
  - `LocalEnvironment.Destination.SCA.Request.Binding.MQ.queueManagerName`
- Queue
  - `LocalEnvironment.Destination.SCA.Request.Binding.MQ.queueName`

6 The SCA nodes - Part 2 © 2010 IBM Corporation

You can override several parameters when invoking an SCA service using the request node. This is done by setting the appropriate property in the message flow’s local environment. Some of the properties that can be set in this way are shown on this slide.



Sending an asynchronous outbound request to WebSphere Process Server

7 The SCA nodes - Part 2

The message flow can use the **SCA Asynchronous Request** node to send a request asynchronously to an SCA component on WebSphere Process Server. The Message Broker thread does not wait for the Process Server process to respond before continuing. The response is handled by an **SCA Asynchronous Response** node in the same message flow, or another flow in the same execution group. The asynchronous request node and asynchronous response nodes must be configured from the same Broker SCA Definition.

The asynchronous request and response nodes support multiple bindings. Only one binding can be used at a time by a node. These nodes support both the Web services and MQ bindings.

The SCA Export component in WebSphere Process Server is used to receive an outbound request from the message flow.

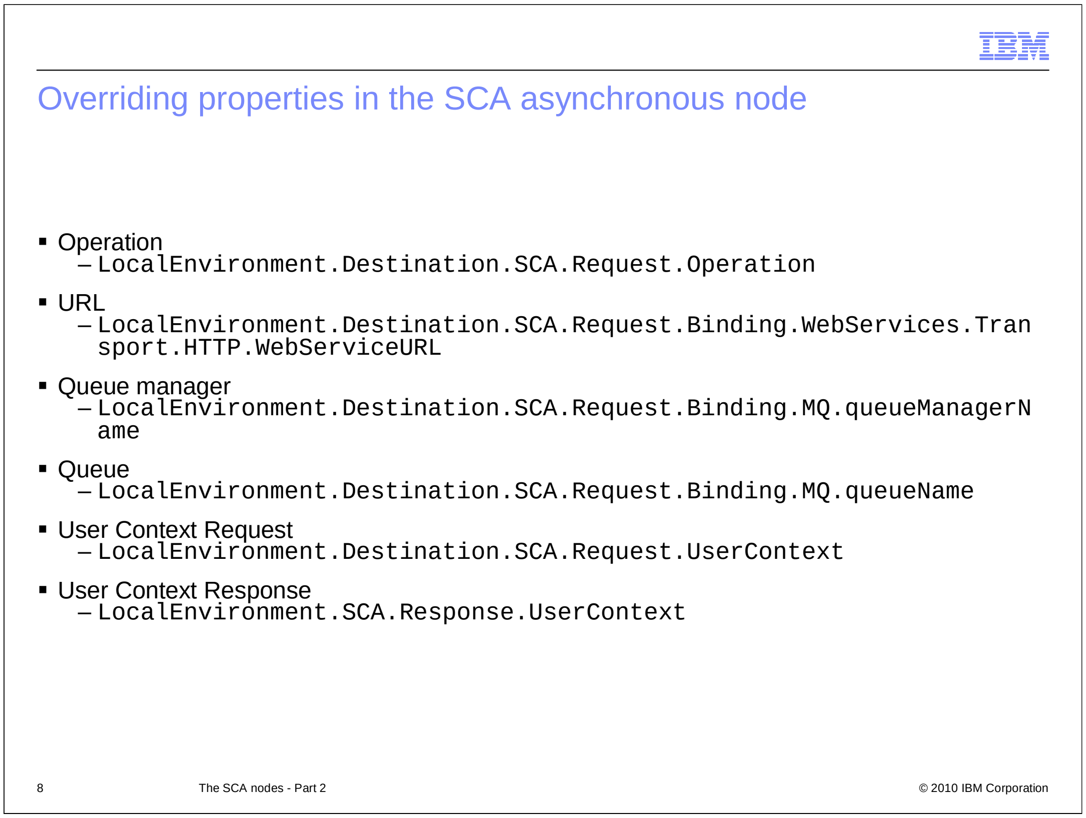
Nodes are ‘paired’ through a correlation ID, or shared key.

The SCA asynchronous response node can be regarded as an Input node, since it starts a new thread in Message Broker.

The asynchronous response node starts a new transaction. Any updates performed by this message flow are committed separately from any updates in the flow containing the request node.

The fault terminal is only used when the binding type is Web services. SOAP fault messages are routed to the fault terminal. The fault terminal is not used by the MQ binding.

As with the synchronous request node, the asynchronous request and response nodes cannot be used if you do not have a Broker SCA Definition to configure the node with.



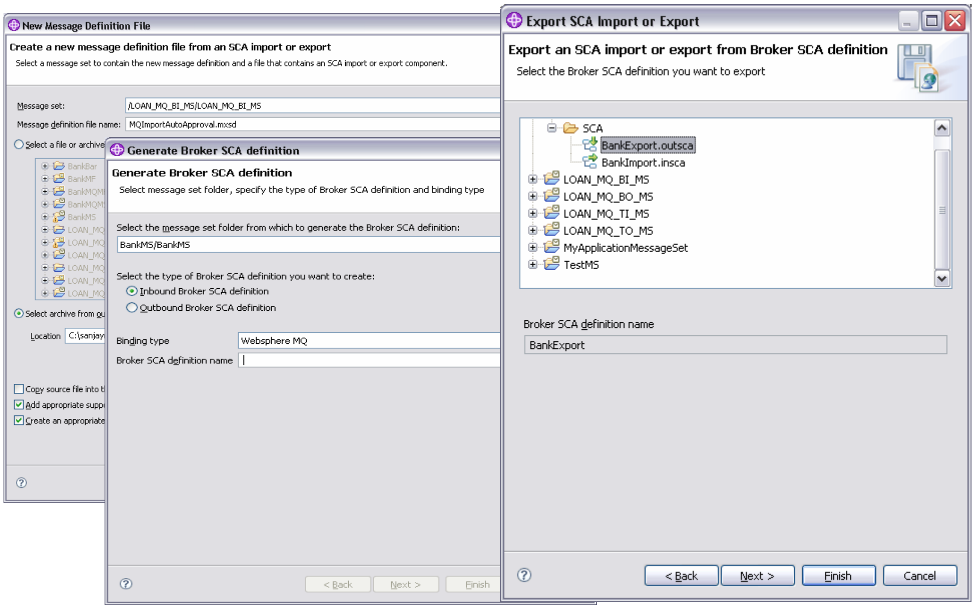
Overriding properties in the SCA asynchronous node

- Operation
  - `LocalEnvironment.Destination.SCA.Request.Operation`
- URL
  - `LocalEnvironment.Destination.SCA.Request.Binding.WebServices.Transport.HTTP.WebServiceURL`
- Queue manager
  - `LocalEnvironment.Destination.SCA.Request.Binding.MQ.queueManagerName`
- Queue
  - `LocalEnvironment.Destination.SCA.Request.Binding.MQ.queueName`
- User Context Request
  - `LocalEnvironment.Destination.SCA.Request.UserContext`
- User Context Response
  - `LocalEnvironment.SCA.Response.UserContext`

8 The SCA nodes - Part 2 © 2010 IBM Corporation

As in the synchronous case, you can override various parameters when invoking an SCA service using the asynchronous request node. Some of the properties that can be set in this way are shown on this slide.

New wizards in WebSphere Message Broker version 7.0



New Message Definition File

Create a new message definition file from an SCA import or export

Select a message set to contain the new message definition and a file that contains an SCA import or export component.

Message set: /LOAN_MQ_BI_MS/LOAN_MQ_BI_MS

Message definition file name: MQImportAutoApproval.mxsd

○ Select a file or archive

● Select archive from ou

Location C:\sanjay

□ Copy source file into t

☑ Add appropriate supp

☑ Create an appropriate

Generate Broker SCA definition

Generate Broker SCA definition

Select message set folder, specify the type of Broker SCA definition and binding type

Select the message set folder from which to generate the Broker SCA definition:

BankMS/BankMS

Select the type of Broker SCA definition you want to create:

● Inbound Broker SCA definition

○ Outbound Broker SCA definition

Binding type: Websphere MQ

Broker SCA definition name:

Export SCA Import or Export

Export an SCA import or export from Broker SCA definition

Select the Broker SCA definition you want to export

Broker SCA definition name: BankExport

New wizards are supplied in Message Broker version 7 which allow SCA components to be imported and exported from and to WebSphere Integration Developer.

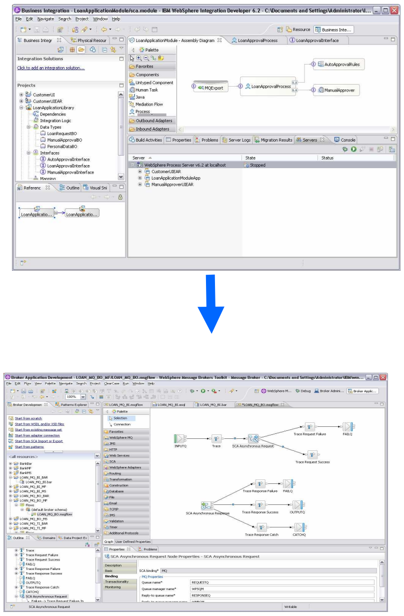
The SCA importer allows you to import an SCA import or SCA export from a WebSphere Integration Developer project interchange file.

The SCA generator creates a Broker SCA definition from a message set. The Broker SCA definition is used to configure SCA nodes.

The SCA exporter allows you to export an SCA import or SCA export from a Broker SCA definition, which you can then import into WebSphere Integration Developer.

To build this, you can start from WebSphere Integration Developer

1. Develop business process application in WebSphere Integration Developer
2. Export project interchange file



3. Import project interchange file into Message Broker Toolkit to create message model and broker SCA definition
4. Create message flow using the broker SCA definition

A skeleton message flow can be created by importing an SCA import or SCA export component into a Message Broker message set project.

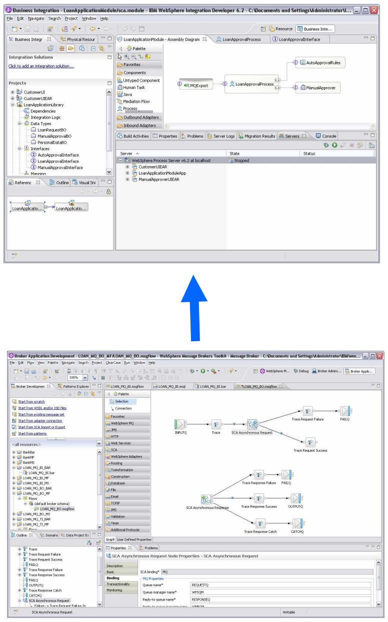
Importing the SCA import or SCA export component into a message set project will create a broker SCA Definition.

The skeleton flow is created by dragging and dropping the Message Broker SCA definition onto the message flow canvas.

If an SCA import was imported, the skeleton message flow will contain an SCA Input and an SCA Reply node, which will enable the message flow to receive inbound requests from WebSphere Process Server.

If an SCA export was imported, the skeleton message flow will contain either an SCA Request node or a pair of Asynchronous Request and Response nodes. These will enable the message flow to send an outbound request to Process Server.

Or you can start from WebSphere Message Broker



1. Generate Broker SCA definition from message set in Message Broker
2. Develop message flow using broker SCA definition
3. Export SCA components, XSDs and WSDL from Broker SCA Definition
4. Import SCA components, XSDs and WSDL into WebSphere Integration Developer
5. SCA components are automatically created in the assembly diagram. Data types and interfaces are automatically added to the module

A Broker SCA definition can be created in a message set using the “Generate Broker SCA Definition” wizard.

An SCA import or SCA export can be exported from a Broker SCA definition using an export wizard.

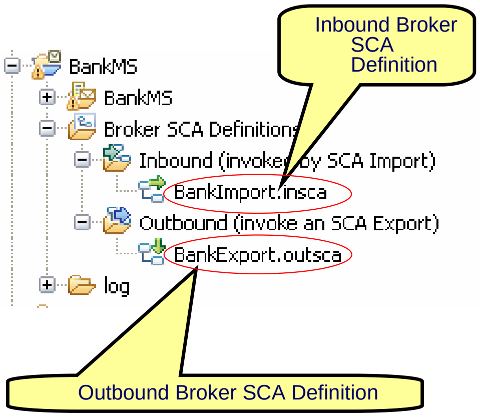
The SCA import or SCA export component can be imported into WebSphere Integration developer and then connected to other SCA components.

The business process can use the SCA import module that was added to the WebSphere Integration Developer Toolkit to send a service request to the message flow. This will contain the SCA Input and SCA Reply nodes.

In WebSphere Integration Developer, you can use the SCA export module that was added to the Integration Developer Toolkit to expose the SCA component. This can then be invoked by a message flow with either a request node or a pair of asynchronous request and response nodes.

Message Broker SCA definition

- Message Broker artifact to create and configure SCA Nodes in a message flow
- .insca or .outsca extension
- Contains
  - SCA Import or SCA Export component which contain binding and interface information
  - WSDL which defines the interface
  - XSD files which describe the message format
- .insca used in conjunction with SCA Import for processing inbound requests
- .outsca used in conjunction with SCA Export for sending outbound requests.
- Drag and drop onto message flow to configure nodes
- Used to configure properties for Web services or MQ binding


Inbound Broker SCA Definition
BankMS
BankMS
Broker SCA Definitions
Inbound (invoked by SCA Import)
BankImport.insca
Outbound (invoke an SCA Export)
BankExport.outsca
log
Outbound Broker SCA Definition

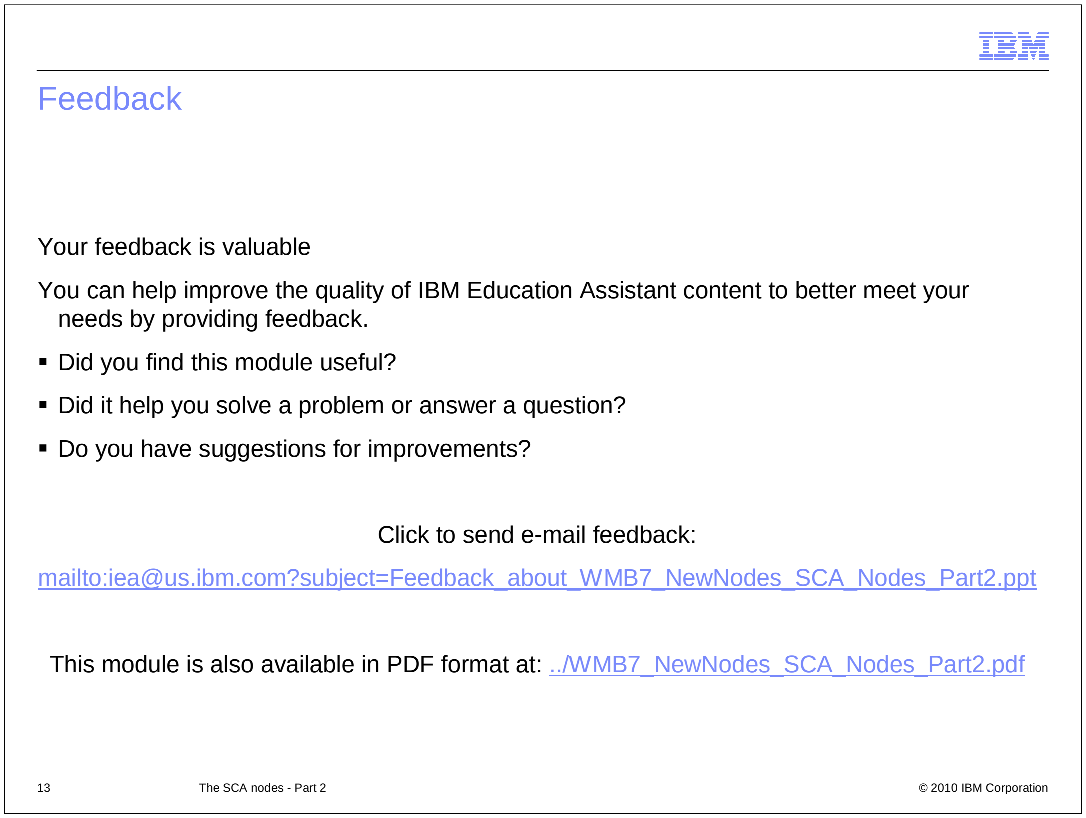
The Broker SCA definition is a new artifact that resides in the message set project.

The Broker SCA Definition contains Service Component Definition Language, WSDL and XSD information. This is used to configure the SCA nodes.

A Broker SCA definition can either be created when an SCA import or SCA export is imported from an Integration Developer project interchange file, or it can be generated from an existing message set.

When a Broker SCA definition is generated, you must choose whether you are generating an inbound or outbound broker SCA definition.

If an SCA import was imported, then a .insca Broker SCA Definition is created. If an SCA export was imported, then a .outsca Broker SCA Definition is created.



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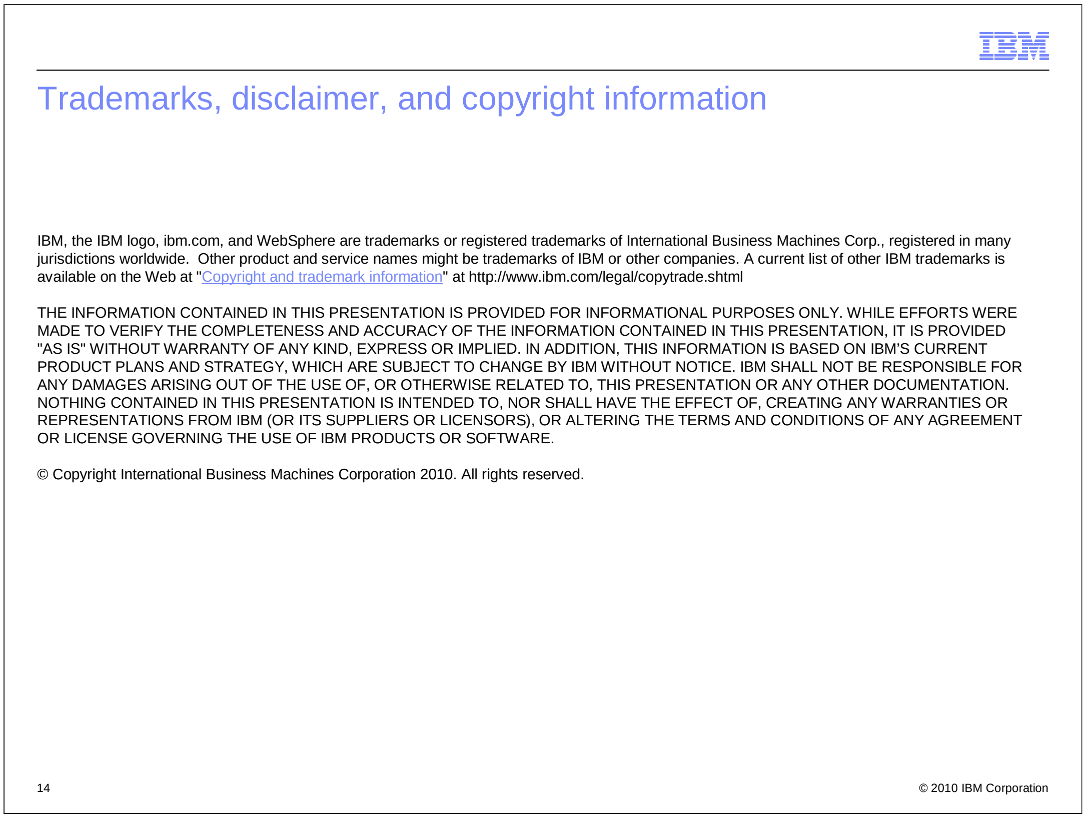

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