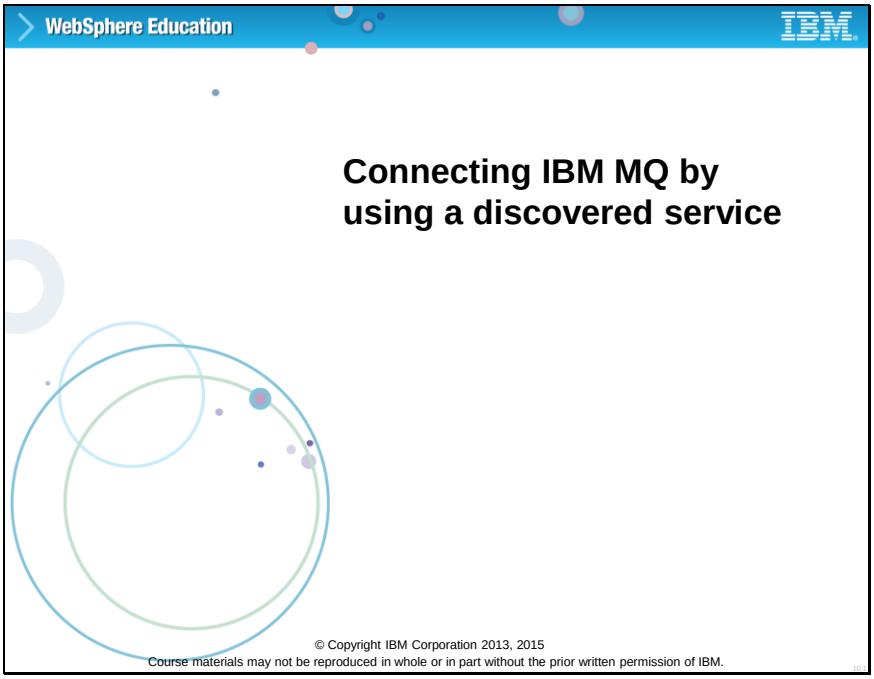
Slide 1


WebSphere Education
IBM
Connecting IBM MQ by using a discovered service
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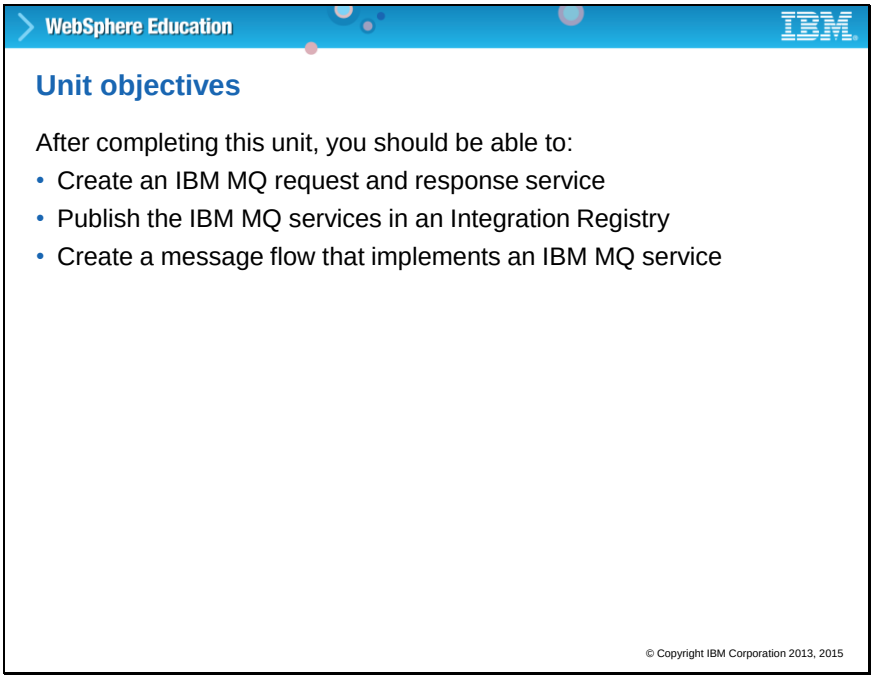
Slide 2

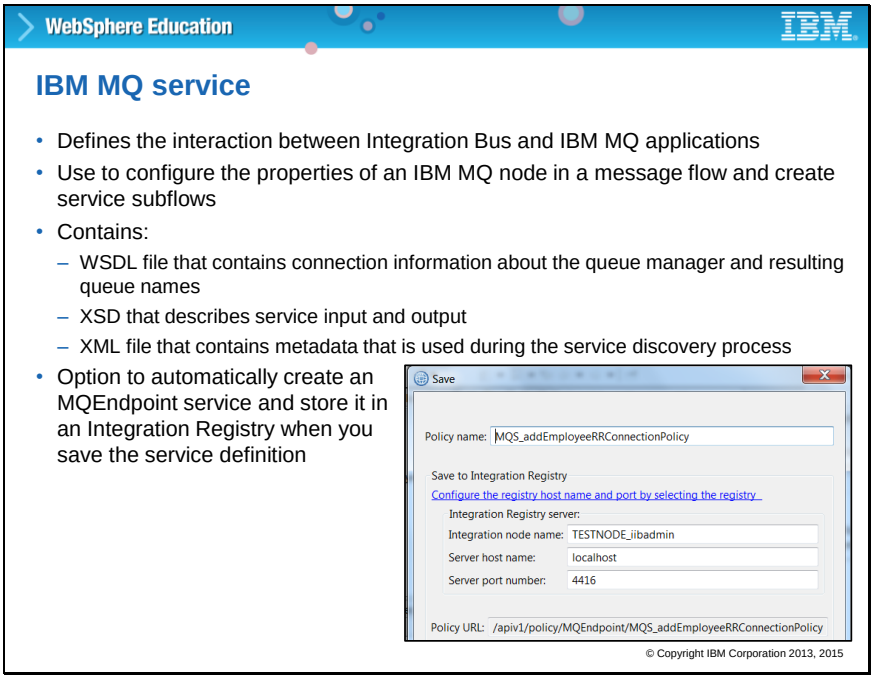


Unit objectives

An IBM MQ service defines the interaction between IBM Integration Bus and IBM MQ applications. In this unit, you learn how to define an IBM MQ service. You also learn how to publish the IBM MQ service in the IBM Integration Bus Integration Registry and implement the service in a message flow.

After completing this unit, you should be able to:
- Create an IBM MQ request and response service
- Publish the IBM MQ services in an Integration Registry
- Create a message flow that implements an IBM MQ service

Slide 3



IBM MQ service

An MQ service defines the interaction between Integration Bus and MQ applications. You can use an MQ service to discover artifacts from MQ queue managers. As an option, you can also create an MQEndpoint policy that contains the connection property values for the specified queue manager. You can then use these artifacts in a message flow.

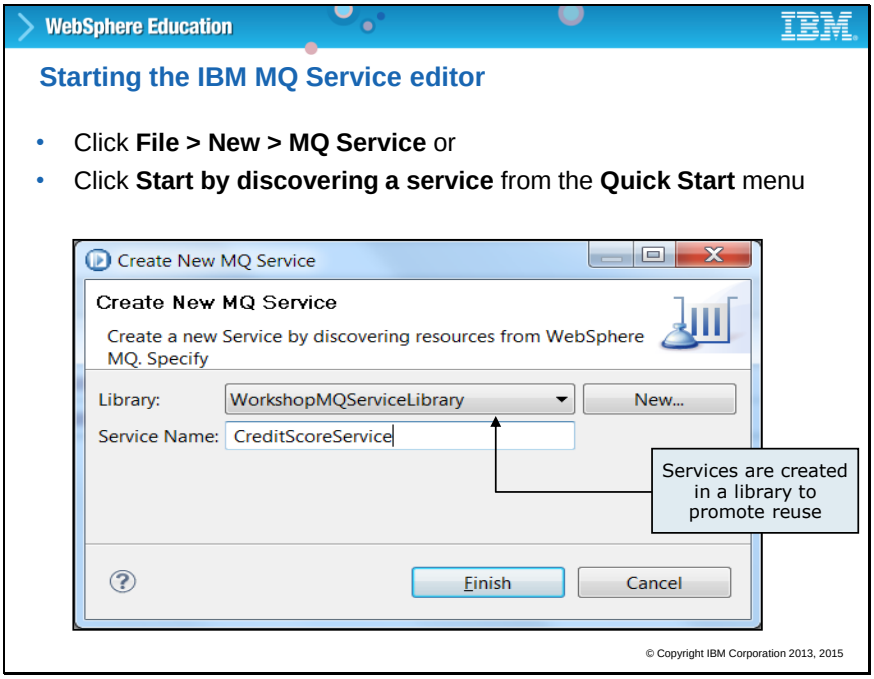
The MQ Service definition specification describes the resources that you discover. An MQ service contains:

- A WSDL file that contains connection information about the queue manager and resulting queues.
- An XSD file for the input message and an XSD file for the output message, if any are specified in the MQ Service editor. The XSD files contain XML structures that describe service input and output.
- An XML file that contains metadata that is used during the discovery process. The IBM Integration Toolkit uses this file to store state information from the MQ Service editor, and iteratively discover previously discovered artifacts.

To define an MQ service, you must have either an MQ client or an MQ server on the same computer as the Integration Toolkit.

The process for defining an MQ service is similar to the process for defining a database service.

Slide 4



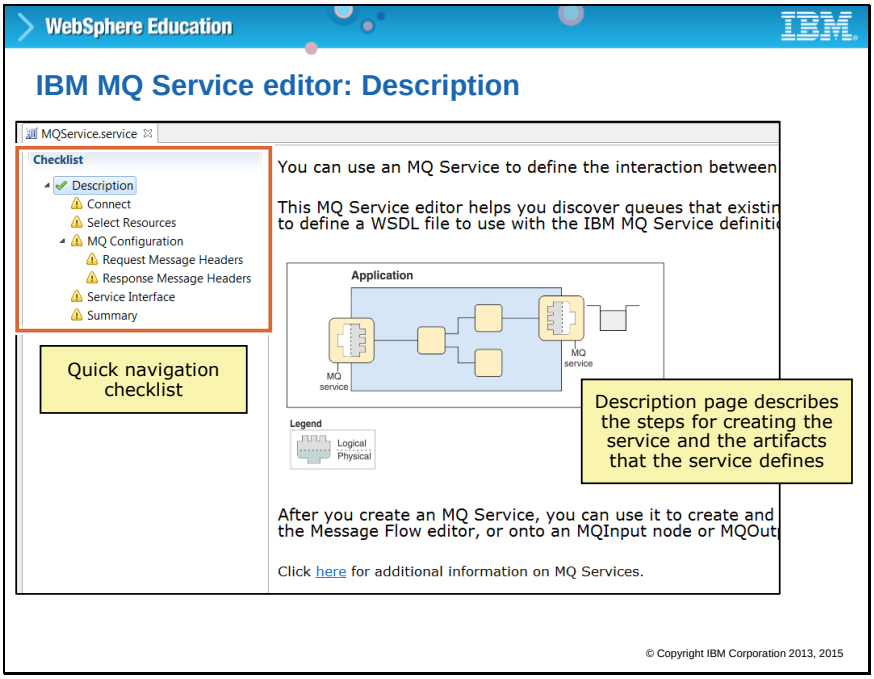
Starting the IBM MQ Service editor

You can create an MQ service definition in the Integration Toolkit by clicking **File > New > MQ Service** or by clicking **Start by discovering a service** from the **Quick Start** menu.

By default the MQ service is created in a library for reuse. When you create a service, you must specify a library name and a service name.

An MQ service definition file is created for each MQ service that you discover. An MQ service definition file has an extension of .service.

Slide 5



IBM MQ Service editor: Description

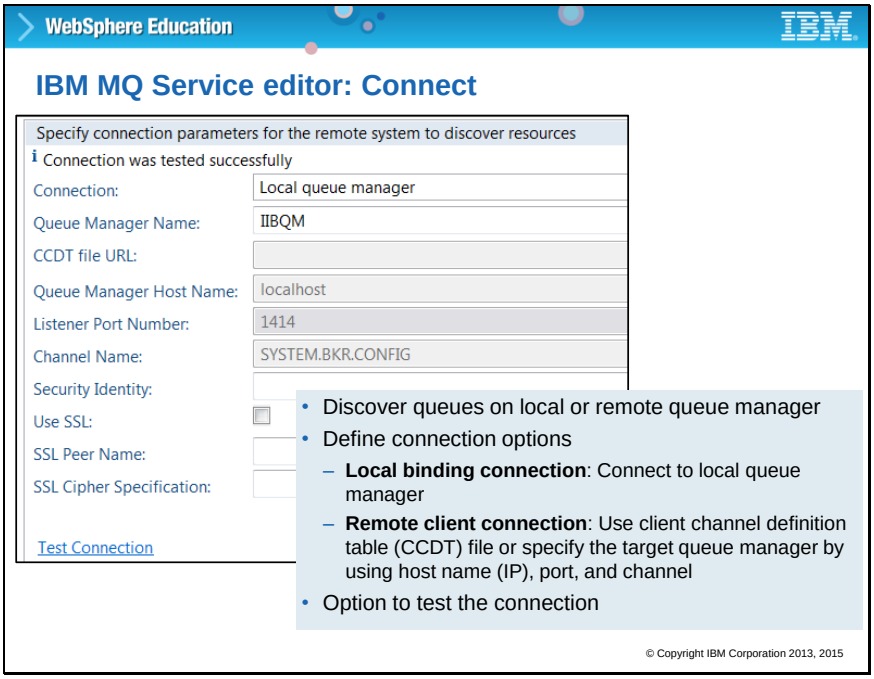
The MQ Service editor contains six main pages. You can click the page name in the Checklist in the MQ Service editor to go directly to any page.

The MQ Service editor opens on the **Description** page. The Description page contains the steps for defining an MQ service and a description of the artifacts that the MQ Service editor generates.

To create an MQ Service, complete the following actions in the MQ Service editor:

1. Connect to a queue manager. The MQ Service editor connects to the specified queue manager to discover all the existing queues that belong to it.
2. Define whether the MQ Service is one way or request-response.
3. Identify the queue or queues that you need, depending on whether the MQ Service is one way or request-response.
4. Optionally, create an MQEndpoint policy.

Slide 6



IBM MQ Service editor: Connect

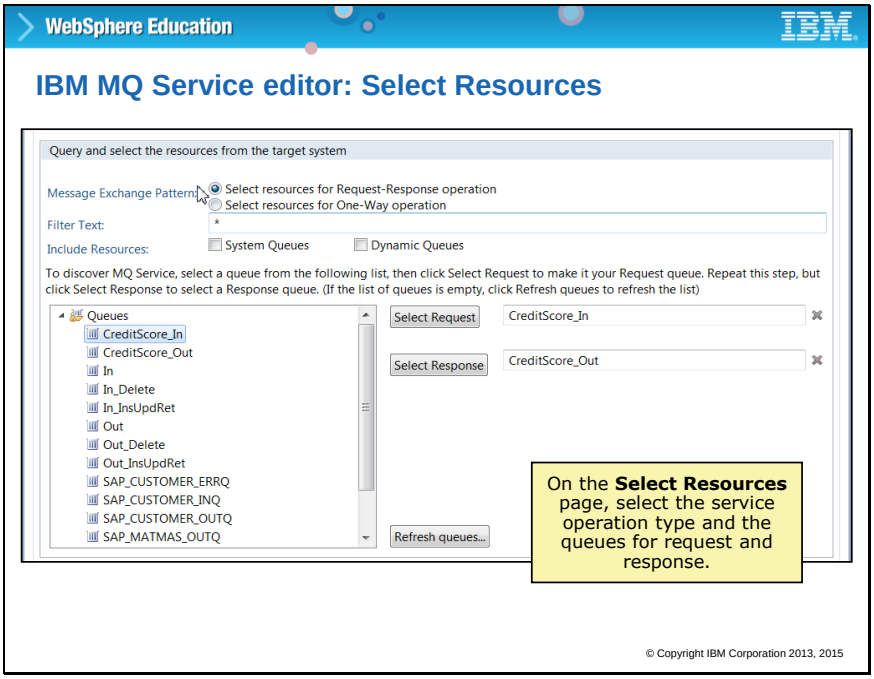
You define the local or remote queue manager on the **Connect** page. The MQ Service editor connects to the specified queue manager, either locally or remotely, to discover all the existing queues on the queue manager.

If you specify **Remote client connection** in the **Type of connection** field, the options for identifying the remote queue manager are available. You can identify the remote queue manager by selecting a client channel definition table or by specifying an IP address or host name.

Similar to the MQ Connection properties for MQ message processing nodes in a message flow, you can also configure the security settings for connecting to the queue manager.

Click the **Test Connection** link after you identify the queue manager to ensure that the Integration Toolkit can connect to the queue manager.

Slide 7



IBM MQ Service editor: Select Resources

On the **Select Resources** page, you can define a request-response operation, or a one-way operation. If you click **Select resources for request-response operation**, you select a request queue and response queue.

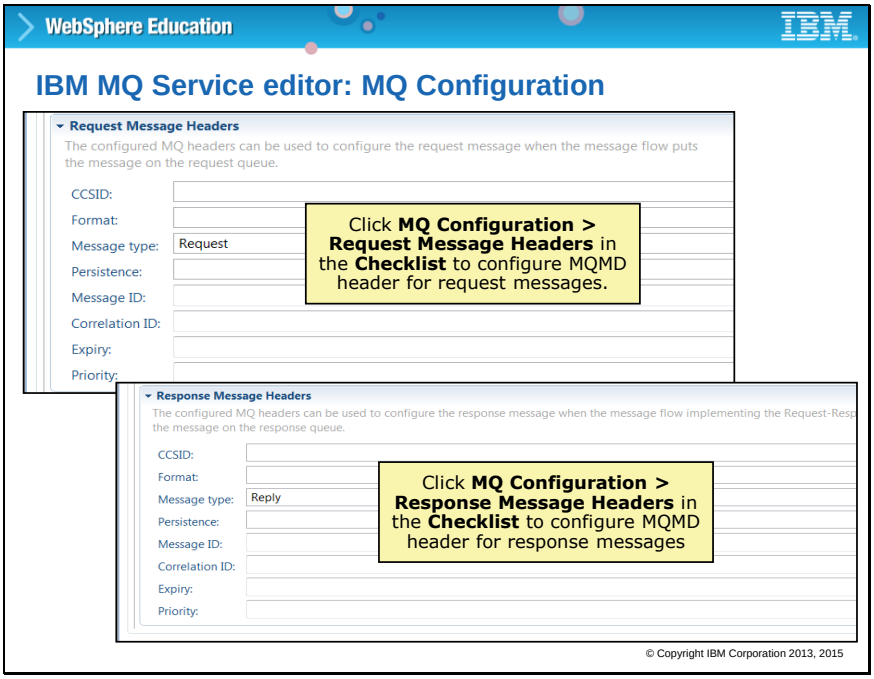
To reduce the number of queues in the **Queues** list, you can specify the filter text and decide whether to include system queues, dynamic queues, or both.

Optionally, you can click **Refresh queues** to view any queues that you added after you set the parameters on the Connect page. All existing queues are shown.

You create a request-response service in the lab exercise that follows this unit.

Next, you can modify the message headers.

Slide 8



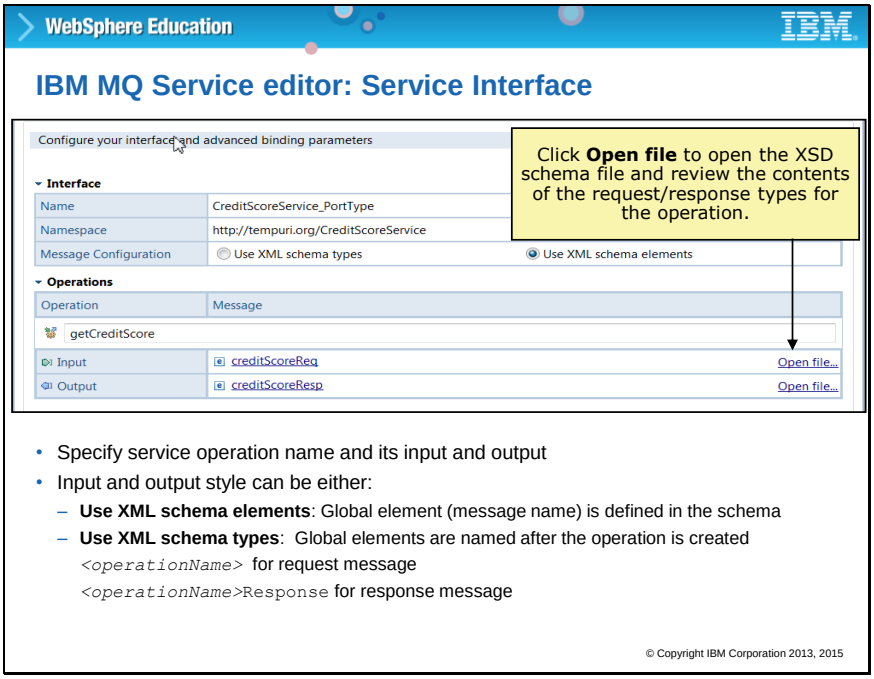
IBM MQ Service editor: MQ Configuration

On the **MQ Configuration** page, you can optionally configure the MQ message descriptor (MQMD) in the request and response message headers.

If you are creating a request-response service, expand the **Request Message Headers** and **Response Message Headers** sections and complete the fields.

Next, you define the service interface.

Slide 9



IBM MQ Service editor: Service Interface

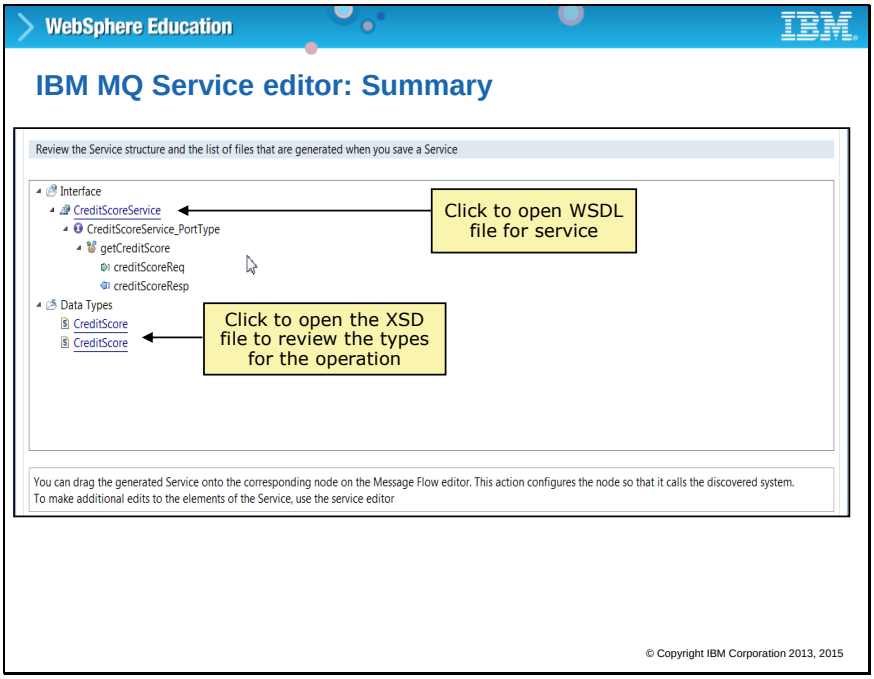
On the **Service Interface** page, you configure the interface and advanced binding parameters.

Input and output style can use XML schema elements or XML schema types.

- If you select XML schema elements, the global element (message name) is defined in the schema.
- If you select XML schema types, global elements are named after the operation is created.

If the service is not saved, clicking **Open file** opens a dialog that prompts you to save the service file. Saving the service file generates the WSDL and XSD files for the service.

Slide 10



IBM MQ Service editor: Summary

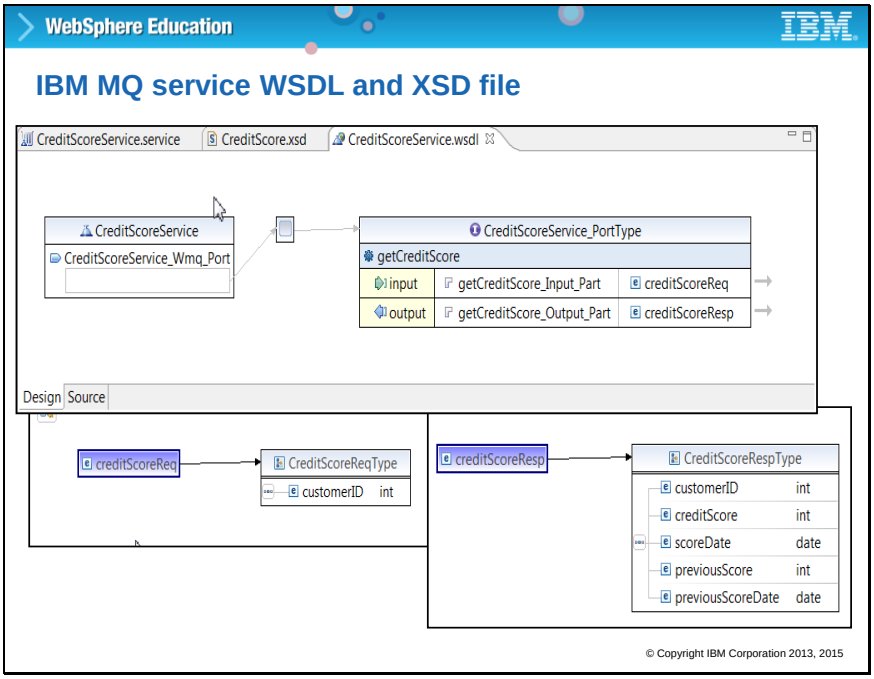
The MQ Service editor **Summary** page includes the summary information about the operations and input and output message types.

Review the service structure and the list of files that are created when the service is saved. You can preview the WSDL by clicking the service link. You can preview the XSD file created for the service by clicking the link under **Data Types**.

Be sure to click **Save**.

The MQ Service editor generates a WSDL and an XSD file.

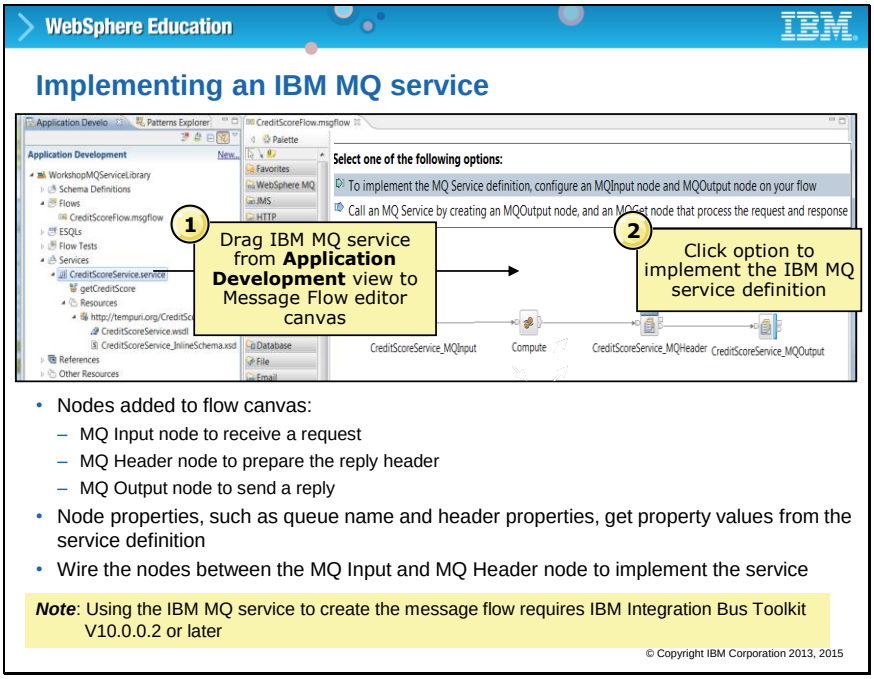
Slide 11



IBM MQ service WSDL and XSD file

This slide shows examples of the design view of the WSDL and the XSD that the MQ Service editor generates.

Slide 12



Implementing an IBM MQ service

You can use your MQ service to configure an MQ node in several different ways.

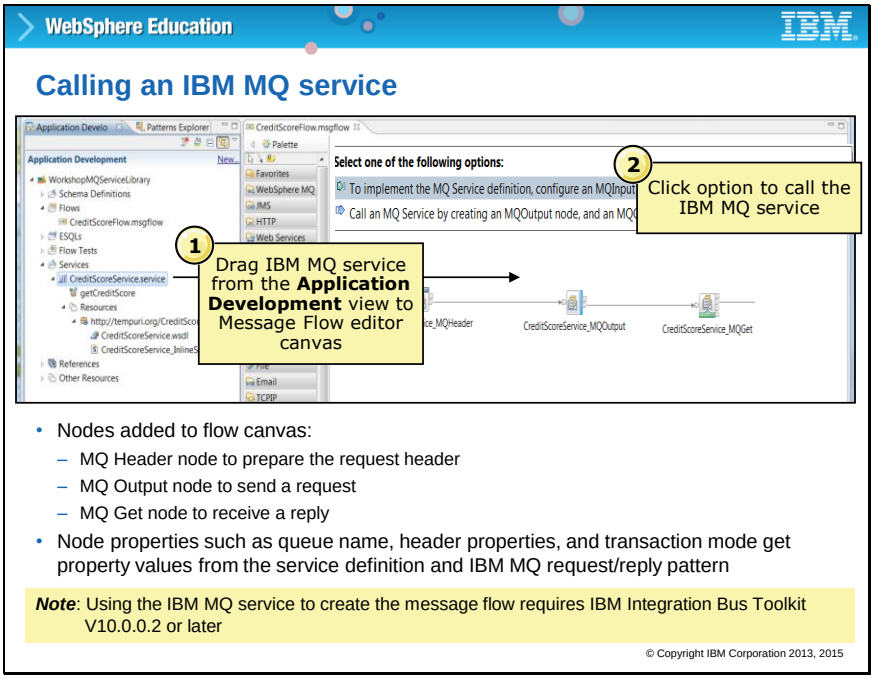
- Create an MQ node in the Message Flow editor, and drag an MQ service onto the MQ node. The MQ node is configured according to the connection details that are defined in the MQ service.
- Drag an MQ service onto the Message Flow editor to create an MQ node that is configured according to the MQ service.
- Create an MQ node in the Message Flow editor and then use the **Properties** view select the MQ service.

You can also drag an MQ service onto the Message Flow editor to create a message flow that implements or calls an MQ service. Using the MQ service to create the message flow requires Integration Toolkit V10.0.0.2 or later.

Implementing an MQ service creates three nodes in the message flow:

- An MQ Input node that receives the request
- An MQ Header node to prepare the reply header
- An MQ Output node to send the reply

Slide 13



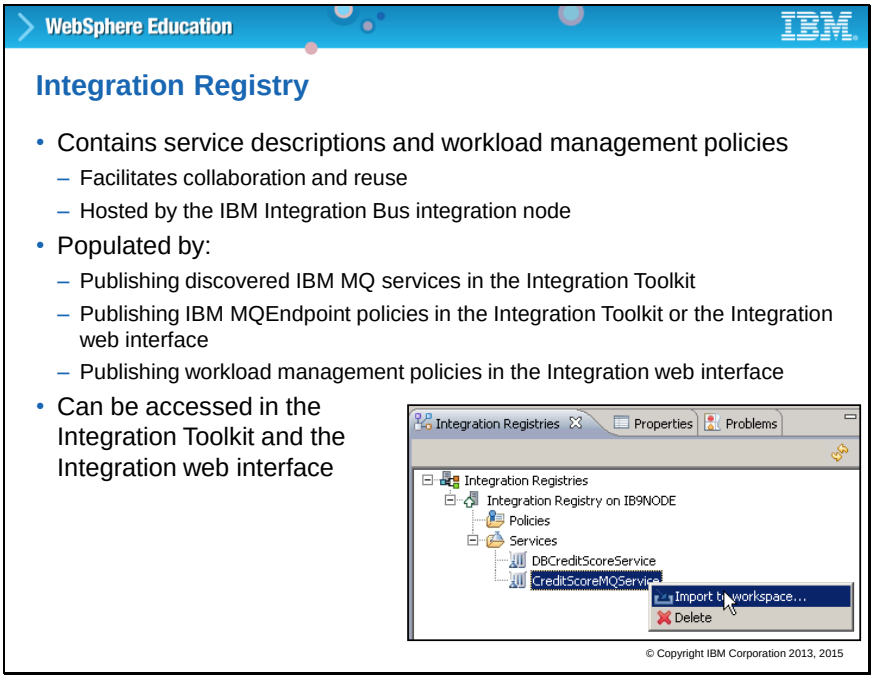
Calling an IBM MQ service

To create a message flow that calls an MQ service, drag the MQ service from the **Application Development** view to the Message Flow editor and then click the option to call the MQ service.

When you select the option to call a service, three nodes are created:

- An MQ Header that prepares the request header
- An MQ Output node that sends the request
- An MQ Get node that receives the reply

Slide 14



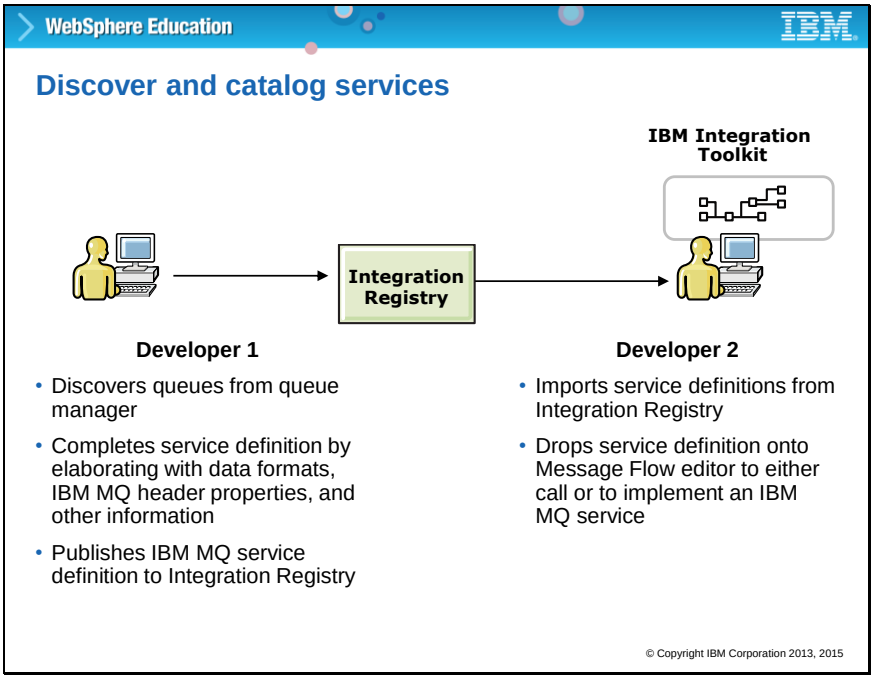
Integration Registry

MQ services can be stored in integration node's Integration Registry.

The Integration Registry is hosted inside a runtime integration node. Every runtime integration node can host one Integration Registry. All integration nodes that are created in Integration Bus have an Integration Registry available (enabled) by default.

A URL uniquely identifies all artifacts that are created in the Integration Registry.

Slide 15

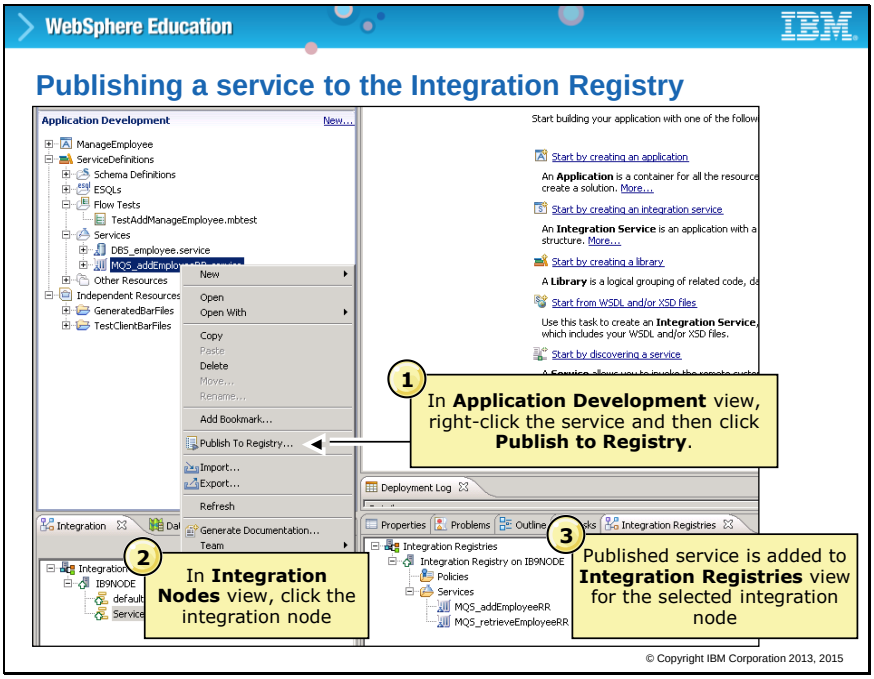


Discover and catalog services

As illustrated in the figure, the Integration Registry allows the services that one developer creates to be used by another developer.

In the example, Integration Developer 1 develops and publishes the MQ service definition to the Integration Registry. Then, Integration Developer 2, imports the service definition from the Integration Registry and uses the service to create a message flow.

Slide 16

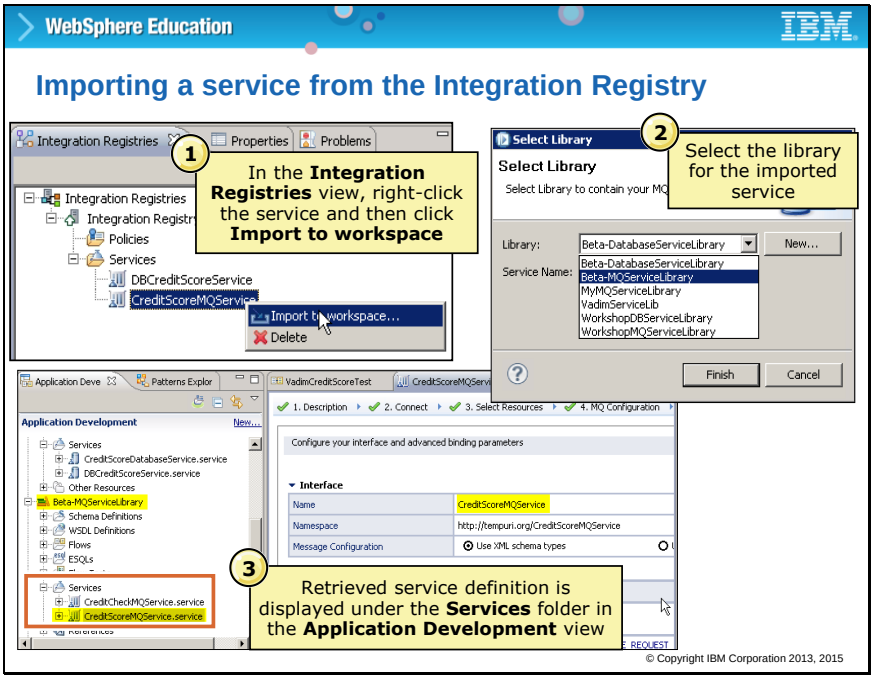


Publishing a service to the Integration Registry

To publish your locally stored MQ Services to the Integration Registry, right-click the MQ Service in the **Application Development** view in the Integration Toolkit and then click **Publish to Registry**. Click the target integration node and then click **Finish**.

In the **Integration Registries** view, click **Refresh** on the integration node to update the list of MQ services.

Slide 17

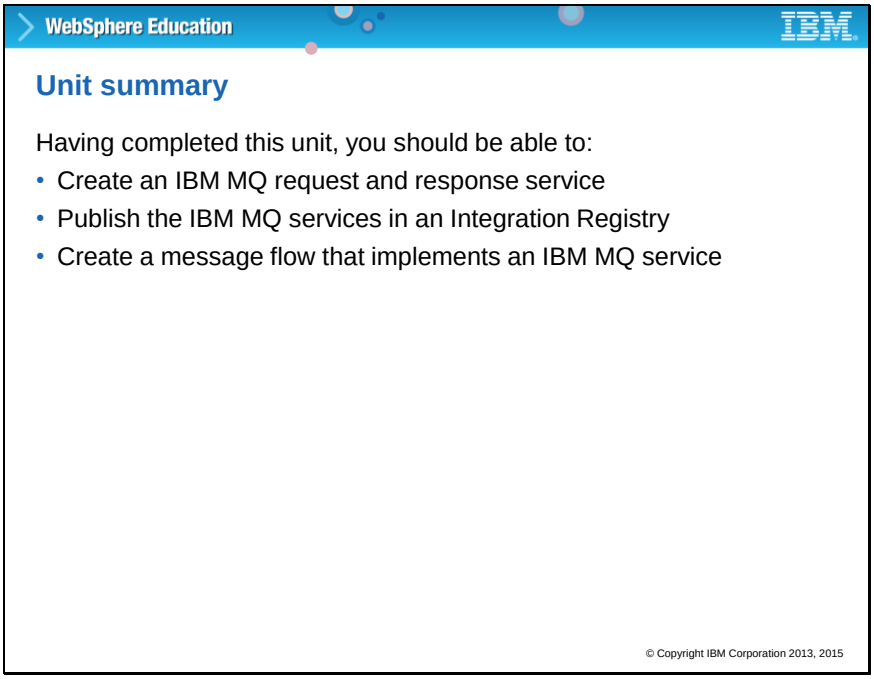


Importing a service from the Integration Registry

To import an MQ Service into a new or existing library, right-click the MQ Service that you want to import in the Integration Toolkit **Integration Registries** view and then click **Import To Workspace**.

Select an existing library or click **New** to create a library.

Slide 18



Unit summary

An IBM MQ service defines the interaction between IBM Integration Bus and IBM MQ applications. In this unit, you learned how to define an IBM MQ service. You also learned how to publish the IBM MQ service in the IBM Integration Bus Integration Registry and implement the service in a message flow.

Having completed this unit, you should be able to:
- Create an IBM MQ request and response service
- Publish the IBM MQ services in an Integration Registry
- Create a message flow that implements an IBM MQ service