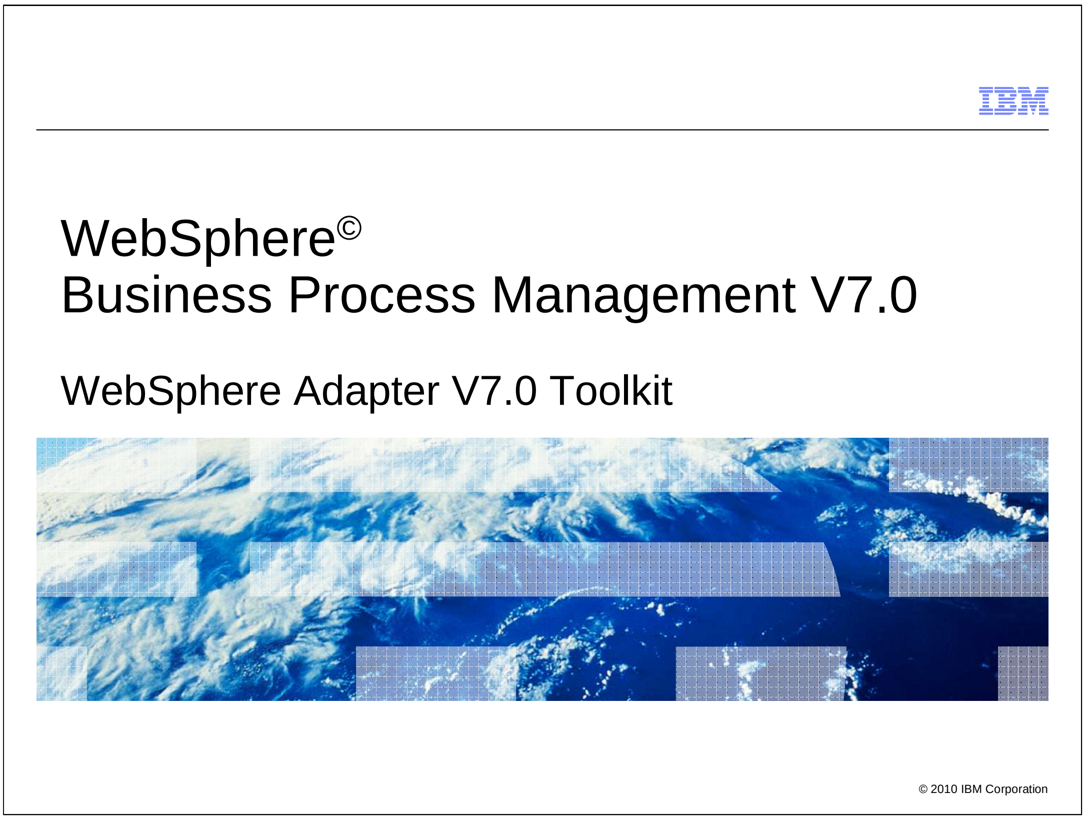
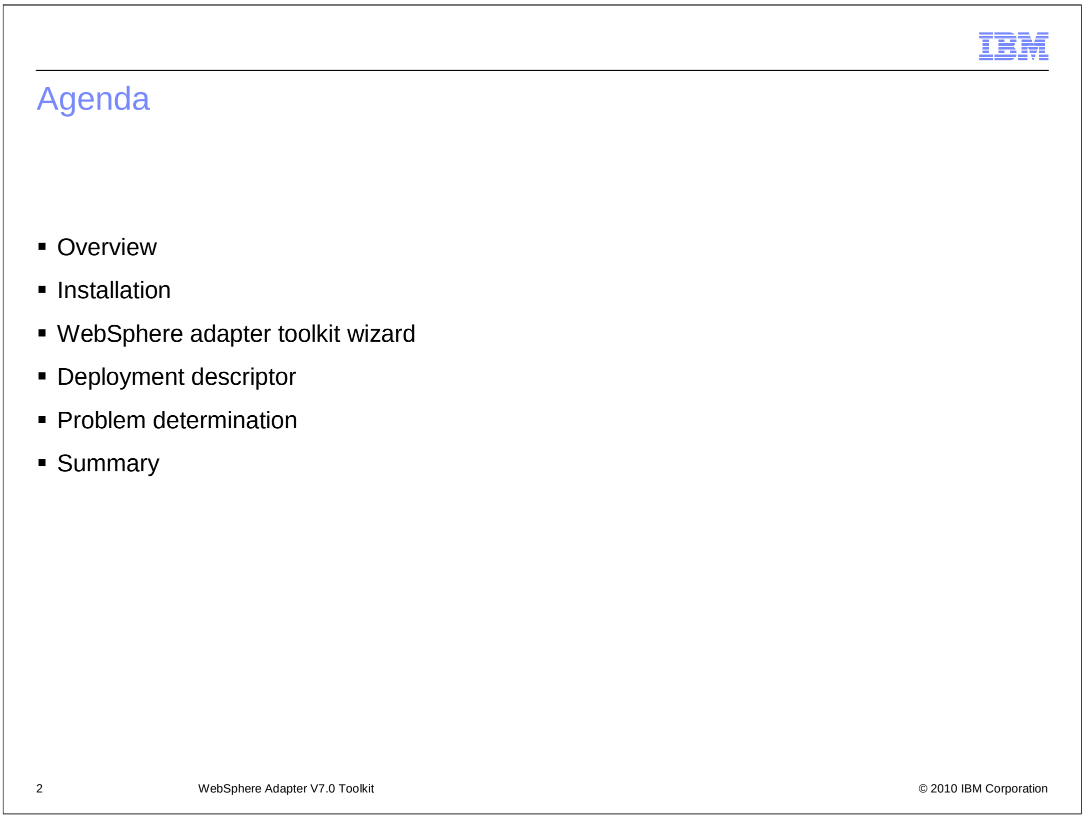


WebSphere© Business Process Management V7.0

WebSphere Adapter V7.0 Toolkit

This presentation covers the high level details on how to use the Adapter Toolkit to develop custom WebSphere JCA adapters. The goal of the presentation is to provide a brief overview of the adapter toolkit and foundation classes and how they can be used in developing a custom WebSphere JCA adapter.



Agenda

- Overview
- Installation
- WebSphere adapter toolkit wizard
- Deployment descriptor
- Problem determination
- Summary

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This slide shows the agenda of this presentation. The presentation starts with an overview of WebSphere adapter toolkit, introduces the features provided by the toolkit which include the wizard and base class support.

Section

Overview

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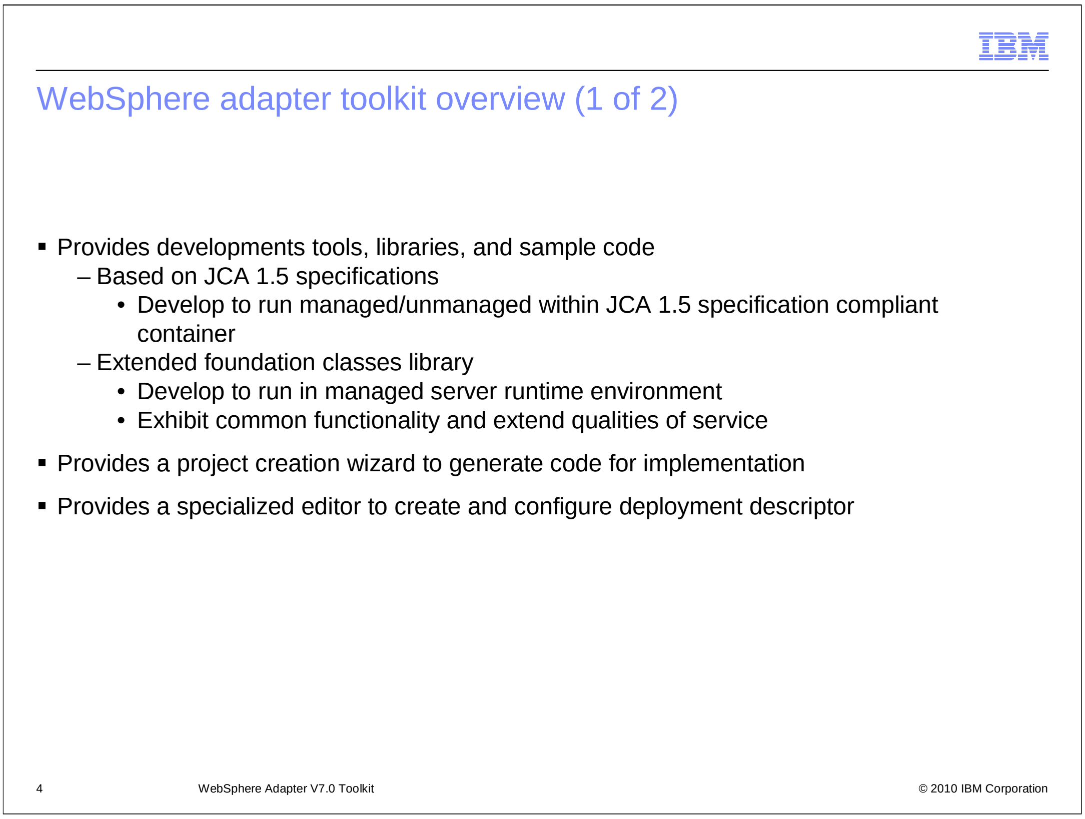
The next section covers the general overview of WebSphere adapter toolkit V7.0



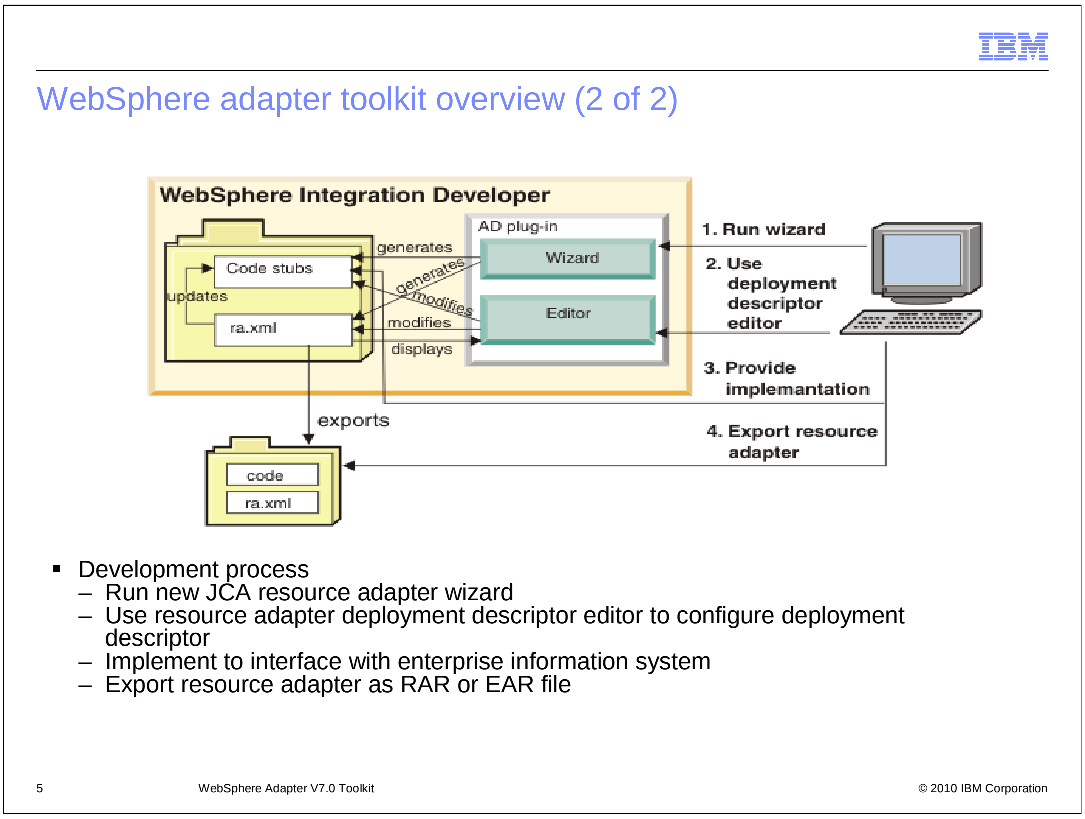
WebSphere adapter toolkit overview (1 of 2)

- Provides developments tools, libraries, and sample code
  - Based on JCA 1.5 specifications
    - Develop to run managed/unmanaged within JCA 1.5 specification compliant container
  - Extended foundation classes library
    - Develop to run in managed server runtime environment
    - Exhibit common functionality and extend qualities of service
- Provides a project creation wizard to generate code for implementation
- Provides a specialized editor to create and configure deployment descriptor

The IBM WebSphere adapter toolkit provides the development tools, libraries, and sample code to assist you in creating JCA resource adapters. With the toolkit, you can create either create a resource adapter based on JCA 1.5 specifications, or a resource adapter that extends WebSphere adapter foundation classes (AFC) library. The first type allows you to develop a resource adapter that can run either unmanaged or managed within any JCA 1.5 compliant container. The second type allows you to create a resource adapter implementation that can run in a managed server run time environment like WebSphere Process Server which exhibits the common functionality and extended qualities of service offered specifically by WebSphere adapters. WebSphere Adapters are based on the JCA 1.5 specification.

The toolkit provides a project creation wizard that generates the code that you then implement. In addition, the toolkit provides a specialized editor that facilitates the task of creating and configuring a resource adapter deployment descriptor.

This presentation is primarily on development of resource adapters and artifacts that extend the WebSphere adapter foundation class library.



WebSphere adapter toolkit overview (2 of 2)

WebSphere Integration Developer
AD plug-in
Wizard
Editor
Code stubs
ra.xml
updates
generates
generates
modifies
modifies
displays
1. Run wizard
2. Use deployment descriptor editor
3. Provide implemantation
exports
4. Export resource adapter
code
ra.xml

- Development process
  - Run new JCA resource adapter wizard
  - Use resource adapter deployment descriptor editor to configure deployment descriptor
  - Implement to interface with enterprise information system
  - Export resource adapter as RAR or EAR file

This figure illustrates the process of developing a JCA resource adapter using the WebSphere adapter toolkit. First, run the new JCA Resource Adapter Project wizard which generate a resource adapter deployment descriptor and code. The code can include sequence of calls, log and trace messages and comments. Upon completing the wizard, you can use the resource adapter deployment descriptor editor to configure your deployment descriptor. Then you can implement the code to correctly interface with your enterprise information system (EIS). Last but not least, export the resource adapter as a resource adapter archive (RAR) or enterprise application archive (EAR) file.

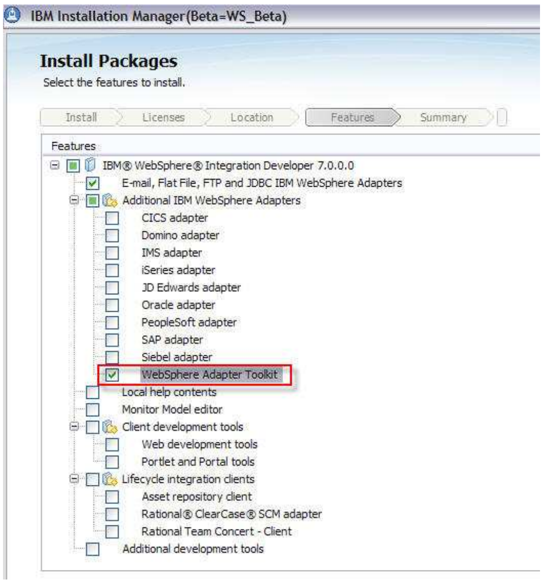
Section

Installation

This section provides the instructions on how to install the WebSphere adapter toolkit.

WebSphere adapter toolkit installation

- Part of WebSphere Integration Developer installation
  - Select WebSphere adapter toolkit in additional IBM WebSphere adapters
- The toolkit includes
  - New connector project wizard
  - Resource adapter deployment descriptor editor
  - Adapter Foundation Classes
  - WebSphere adapter samples for Enterprise Information System Simulator



IBM Installation Manager(Beta=WS_Beta)

Install Packages

Select the features to install.

Features

- ▣ IBM® WebSphere® Integration Developer 7.0.0.0
  - ☑ E-mail, Flat File, FTP and JDBC IBM WebSphere Adapters
  - ▣ Additional IBM WebSphere Adapters
    - □ CICS adapter
    - □ Domino adapter
    - □ IMS adapter
    - □ iSeries adapter
    - □ JD Edwards adapter
    - □ Oracle adapter
    - □ PeopleSoft adapter
    - □ SAP adapter
    - □ Siebel adapter
    - ☑ WebSphere Adapter Toolkit
  - □ Local help contents
  - □ Monitor Model editor
  - □ Client development tools
    - □ Web development tools
    - □ Portlet and Portal tools
  - □ Lifecycle integration clients
    - □ Asset repository client
    - □ Rational® ClearCase® SCM adapter
    - □ Rational Team Concert - Client
  - □ Additional development tools

Adapter toolkit is now delivered as a product along with WebSphere Integration Developer V7.0. You can select WebSphere adapter toolkit option under additional IBM WebSphere Adapters section. By selecting the toolkit, it includes an adapter development wizard and editor. Both are Eclipse plug-ins targeted to be used with WebSphere Integration Developer V7.0. The new connector project wizard requests you to specify information about the resource adapter you want to develop, and then generates code and a deployment descriptor. The resource adapter deployment descriptor editor allows you to display and configure your deployment descriptor. As changes are made to configuration properties using the editor, the appropriate Java bean properties are added to your code.

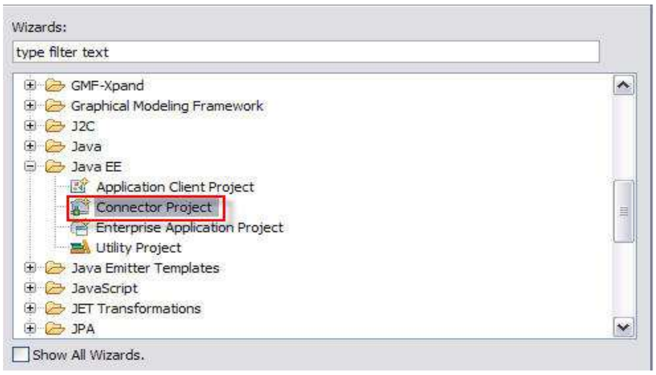
The toolkit also includes a common set of adapter foundation classes for all IBM WebSphere resource adapters and samples for EIS Simulator.

Section

WebSphere adapter toolkit wizard

This section provides the wizard to develop a resource adapter using WebSphere adapter toolkit V7.0

WebSphere adapter toolkit wizard (1 of 6)

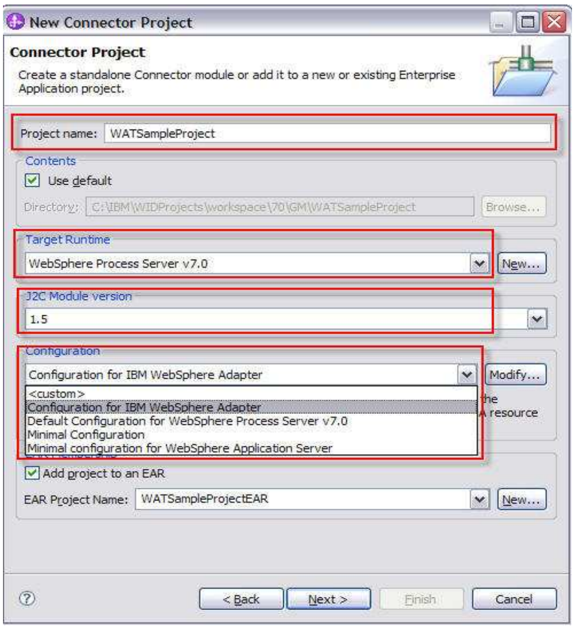


- Start with Java EE connector project
  - File → New → Java EE → Connector Project
  - Eclipse plug-ins for use with WebSphere Integration Developer 7.0
    - Generate implementation of JCA 1.5 interface specification
    - Generate a resource adapter deployment descriptor
    - Generate sequence of calls, log, and trace messages and comments

You can launch the wizard by selecting connector project from Java EE folder. This wizard is an eclipse plug-in which will generate implementation of JCA 1.5 interface specification. As mentioned in previous slide, this wizard also generates code and a resource adapter deployment descriptor. The code can include sequence of calls, log, trace messages and comments.

WebSphere adapter toolkit wizard (2 of 6)

- New connector project wizard
  - Provide project name
  - Target runtime
  - J2C module version
  - Configuration
    - Configuration for IBM WebSphere Adapter
  - EAR project name as optional



New Connector Project

Connector Project

Create a standalone Connector module or add it to a new or existing Enterprise Application project.

Project name: WATSampleProject

Contents

☑ Use default

Directory: C:\IBM\WIDProjects\workspace\70\GM\WATSampleProject

Target Runtime: WebSphere Process Server v7.0

J2C Module version: 1.5

Configuration: Configuration for IBM WebSphere Adapter

- <custom>
- Configuration for IBM WebSphere Adapter
- Default Configuration for WebSphere Process Server v7.0
- Minimal Configuration
- Minimal configuration for WebSphere Application Server

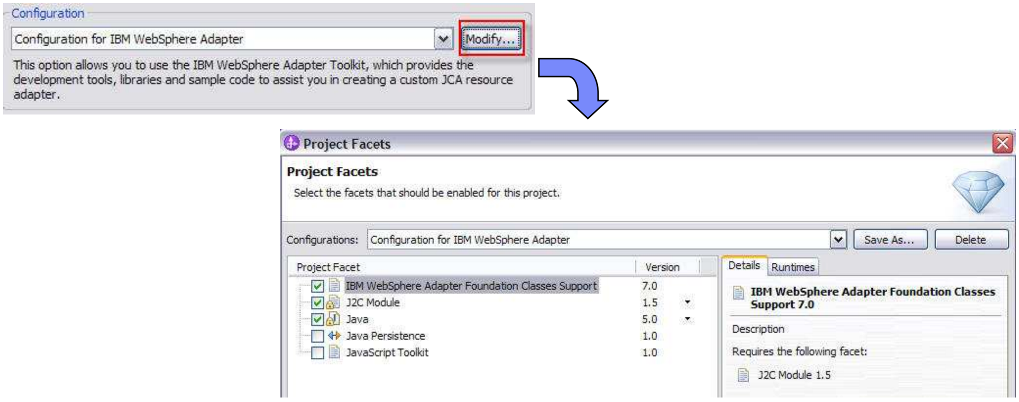
☑ Add project to an EAR

EAR Project Name: WATSampleProjectEAR

From the connector project dialog, provide a project name and set target runtime to WebSphere Process Server V7.0. Accept the default value for J2C Module version, and select Configuration for IBM WebSphere Adapter. It contains the IBM WebSphere Adapter Foundation Classes 7.0, J2C Module 1.5, and Java 5.0 Project Facets. Optionally, you can specify an EAR project name for this.

WebSphere adapter toolkit wizard (3 of 6)

- Specify project facets
  - IBM WebSphere Adapter Foundation Classes 7.0
  - J2C Module 1.5
  - Java 5.0 project facet



Configuration

Configuration for IBM WebSphere Adapter

This option allows you to use the IBM WebSphere Adapter Toolkit, which provides the development tools, libraries and sample code to assist you in creating a custom JCA resource adapter.

Project Facets

Project Facets

Select the facets that should be enabled for this project.

Configurations: Configuration for IBM WebSphere Adapter

Project Facet	Version
☑ IBM WebSphere Adapter Foundation Classes Support	7.0
☑ J2C Module	1.5
☑ Java	5.0
□ Java Persistence	1.0
□ JavaScript Toolkit	1.0

IBM WebSphere Adapter Foundation Classes Support 7.0

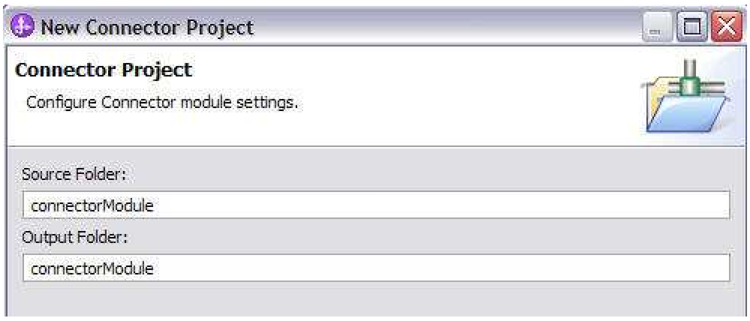
Description

Requires the following facet:

J2C Module 1.5

As part of the process of creating a project, you can modify project facets by selecting Modify for configuration. The project facets are the facets you need to run the WebSphere Adapter Toolkit, thus it is not recommended to change the configuration or deselect any of the project facets. A project facet represents a unit of functionality in the project. Project facets define characteristics and requirements for projects. When you add a facet to a project, that project is configured to perform a certain task, fulfill certain requirements, or have certain characteristics.

WebSphere adapter toolkit wizard (4 of 6)


New Connector Project

Connector Project

Configure Connector module settings.

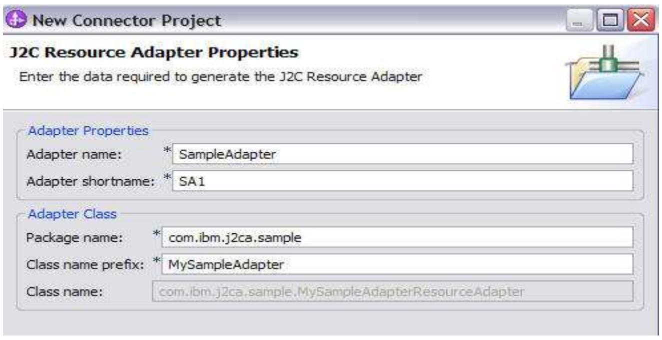
Source Folder: connectorModule

Output Folder: connectorModule

- Specify connector project module settings
  - Accept the name assigned to the connector project
  - Location where the generated stubs are created

From the Configure Connector Module settings page, accept the name assigned to the connector project. This setting determines the location where the generated stubs are created.

WebSphere adapter toolkit wizard (5 of 6)



New Connector Project

J2C Resource Adapter Properties

Enter the data required to generate the J2C Resource Adapter

Adapter Properties

Adapter name: * SampleAdapter

Adapter shortname: * SA1

Adapter Class

Package name: * com.ibm.j2ca.sample

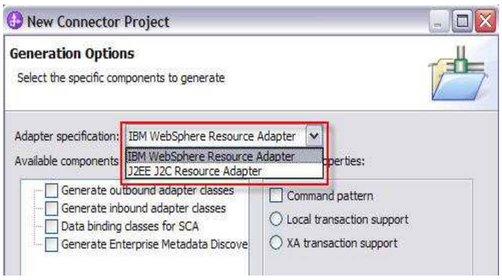
Class name prefix: * MySampleAdapter

Class name: com.ibm.j2ca.sample.MySampleAdapterResourceAdapter

- Specify resource adapter properties
  - Adapter name
  - Adapter short name
    - Used in log and traces – short name + “RA” + value of adapter ID property
  - Package name
  - Prefix to be used in adapter class names

In this resource adapter properties dialog, the descriptive properties that you assign to both the adapter and the adapter class are shown. The adapter short name is used to create the component name that is used in the log and trace files. It is in the format of short name plus the characters ‘RA’ plus value of adapter ID property. For adapter class, you name the adapter’s Java class with a package name and class prefix.

WebSphere adapter toolkit wizard (6 of 6)



New Connector Project

Generation Options

Select the specific components to generate

Adapter specification: IBM WebSphere Resource Adapter

- IBM WebSphere Resource Adapter
- J2EE J2C Resource Adapter

Available components: ...perties:

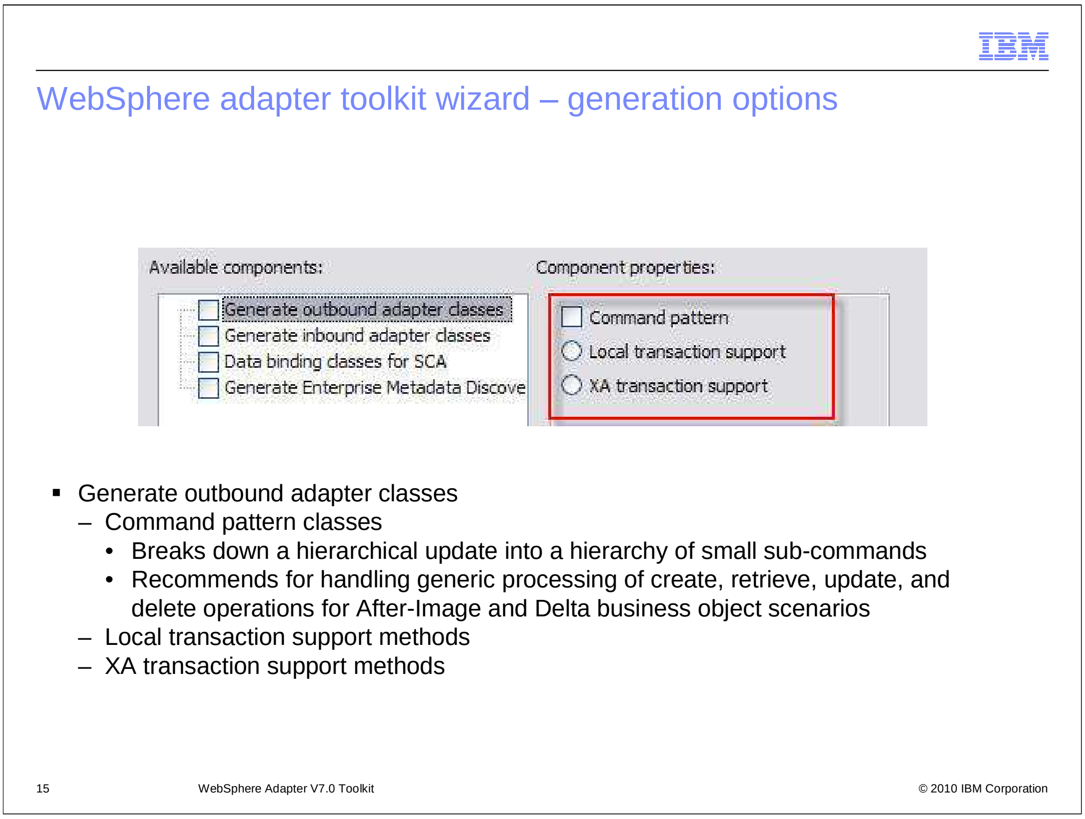
- □ Generate outbound adapter classes
- □ Generate inbound adapter classes
- □ Data binding classes for SCA
- □ Generate Enterprise Metadata Discove

- □ Command pattern
- ○ Local transaction support
- ○ XA transaction support

- Specify generation options
  - IBM WebSphere resource adapter
    - List to generate code that extends adapter foundation classes
  - Java EE J2C resource adapter
    - List to generate code that implements the JCA 1.5 interface specification

You can specify adapter components in the Generation Options dialog. In this dialog, you must select which type of adapter specification you want to implement: an IBM WebSphere Resource Adapter, or a J2EE J2CA Resource Adapter. The adapter specification that you choose determines the generation options available. For IBM WebSphere Resource Adapter in the Adapter specification list, the wizard generates code that extends the Adapter Foundation Classes. And for J2EE J2CA Resource Adapter in the Adapter specification list, the wizard generates code that implements the JCA 1.5 interface specification. The wizard displays the generation options that correspond to your adapter.

For this presentation, you select IBM WebSphere Resource Adapter. This involves choosing the types of adapter classes (outbound, inbound, data binding, or enterprise metadata discovery) you want to generate and then choosing the component properties associated with the adapter classes.



WebSphere adapter toolkit wizard – generation options

Available components:

- □ Generate outbound adapter classes
- □ Generate inbound adapter classes
- □ Data binding classes for SCA
- □ Generate Enterprise Metadata Discove

Component properties:

- □ Command pattern
- ○ Local transaction support
- ○ XA transaction support

- Generate outbound adapter classes
  - Command pattern classes
    - Breaks down a hierarchical update into a hierarchy of small sub-commands
    - Recommends for handling generic processing of create, retrieve, update, and delete operations for After-Image and Delta business object scenarios
  - Local transaction support methods
  - XA transaction support methods

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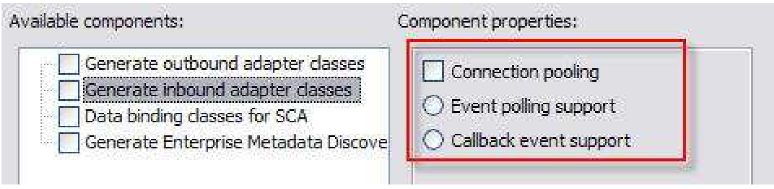
When you select to generate outbound adapter classes , the wizard creates code (and in some cases sequence of calls, log and trace messages, and comments) for the methods that must be implemented to produce a resource adapter that can send business events to an EIS.

In available component properties, the command pattern classes allow you to break down a hierarchical update into a series of nodes and then generate a collection of sub-commands to manage the nodes. An interpreter processes the sub-commands, retrieving and executing the corresponding code. It is recommended for handling generic processing of create, retrieve, update, and delete operations for After-Image and Delta business object scenarios. With local transaction support, the transaction is managed and performed by the EIS. Local transaction indicates the IBM WebSphere adapter supports local transactions. Local transaction support methods provide a local transaction implementation and return the wrapper. Before you begin this step, consider your strategy for implementing transaction behavior in the adapter before generating outbound classes. You are not allowed to regenerate code to add XA transactional behavior to the adapter if you click Finish to generate the code for this task. With XA transaction support, the transaction spans multiple heterogeneous systems. It uses global or two-phase-commit protocol. If a transaction manager coordinates a transaction, that transaction is considered a global transaction.

WebSphere adapter toolkit wizard – generation options



Available components:

- □ Generate outbound adapter classes
- □ Generate inbound adapter classes
- □ Data binding classes for SCA
- □ Generate Enterprise Metadata Discove

Component properties:

- □ Connection pooling
- ○ Event polling support
- ○ Callback event support

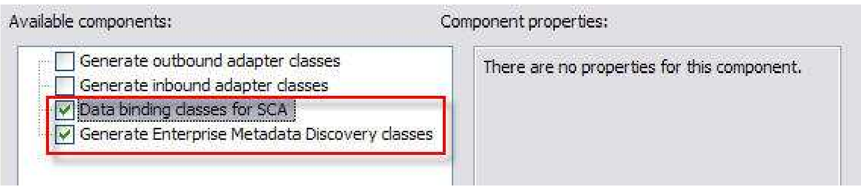
- Generate inbound adapter classes
  - Connection pooling
    - Create ActivationSpecWithXid class
  - Event polling support
    - Poll event records from the event store at regular intervals
  - Callback event support
    - Alert business processes of changes or new information about EIS

When you select to generate inbound adapter classes, the wizard creates code for the methods that must be implemented to produce a resource adapter that can send events from an EIS to a business process. In available component properties, the connection pooling component property will create] the ActivationSpecWithXid class that extends WBIActivationSpecForPooling. Connection pooling is not supported for Callback Events.

Event polling refers to the capability of an adapter to poll the event records from the event store at regular intervals. In each poll call, multiple events are processed by the adapter. When you choose to generate inbound adapter classes for event polling support, the wizard creates code for the methods that must be implemented to produce a resource adapter that can send polling events from an EIS to a business process. If the EIS does not have a way to publish events to the adapter, this is the preferred mechanism

Inbound callback event support alerts business processes to changes in, or new information about, an EIS. The phrase callback refers to the ability of the EIS to directly notify the adapter or business processes of a change, as opposed to the polling mechanism used in event notification. If the EIS can be configured to publish events to the adapter, this mechanism can be used.

WebSphere adapter toolkit wizard – generation options


Available components:

- □ Generate outbound adapter classes
- □ Generate inbound adapter classes
- ☑ Data binding classes for SCA
- ☑ Generate Enterprise Metadata Discovery classes

Component properties:

There are no properties for this component.

- Generate data binding
  - Convert data from SDO to CCI records and from CCI record to SDO
- Generate enterprise metadata discovery
  - Provide functionality to introspect EIS
  - Create business objects and other SCA artifacts

When you choose to generate data binding classes, the wizard generates code for the methods needed to convert data from SDO to CCI record and from CCI record to SDO. And when you choose to generate enterprise metadata discovery classes, the wizard generates code for the methods needed to produce a service that you can use to glean business object structure and other data from an EIS.

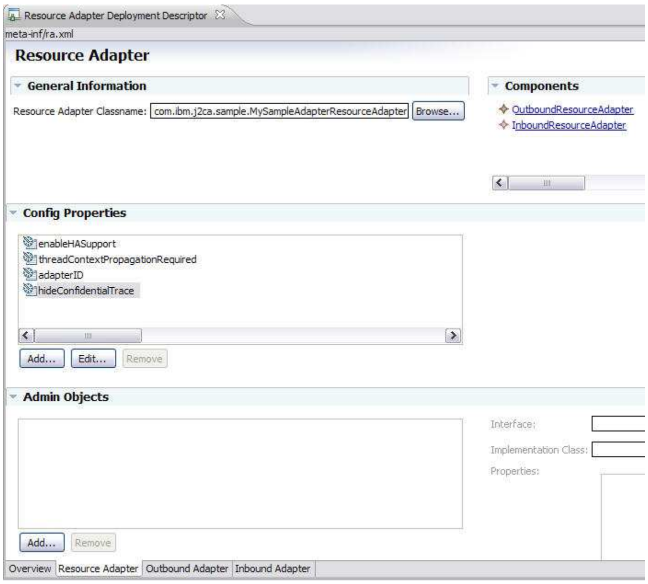
Section

Deployment descriptor

The next section covers the deployment descriptor of the WebSphere adapter after completing the wizard

Deployment descriptor

- Deployment descriptor editor
  - Eclipse multi-page form editor
  - Display and configure the deployment descriptor
    - Resource adapter
    - Outbound adapter
    - Inbound adapter
  - Modify
    - Perform automatic source code updates



Resource Adapter Classname: com.ibm.j2ca.sample.MySampleAdapterResourceAdapter

Components:
- OutboundResourceAdapter
- InboundResourceAdapter

Config Properties:
- enableHASupport
- threadContextPropagationRequired
- adapterID
- hideConfidentialTrace

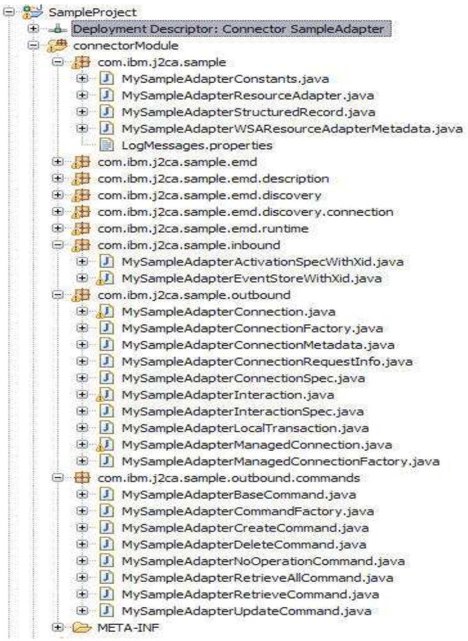
Once you complete the New Connector Project wizard your workspace is switched to the J2EE perspective and your deployment descriptor displays using the Resource Adapter Deployment Descriptor editor. It provides an easy and convenient way to configure your resource adapter. Alternatively, you can view the deployment descriptor in the editor by highlighting the file in the Project Explorer by selecting Open With Deployment Descriptor Editor.

You can display and configure each of the four views of deployment descriptor by using the tabs at the bottom of the Overview pane, which is the default view. They are resource adapter, outbound adapter, and inbound adapter.

When you modify configuration properties, the Resource Adapter Deployment Descriptor automatically updates source code with corresponding JavaBeans properties. When you add a property using the editor, the editor adds the appropriate field and accessory methods to the Java code for you. When you delete a property, the editor removes the field and accessory methods for you. And when you modify the type of a property, the editor adjusts the field and accessory methods accordingly.

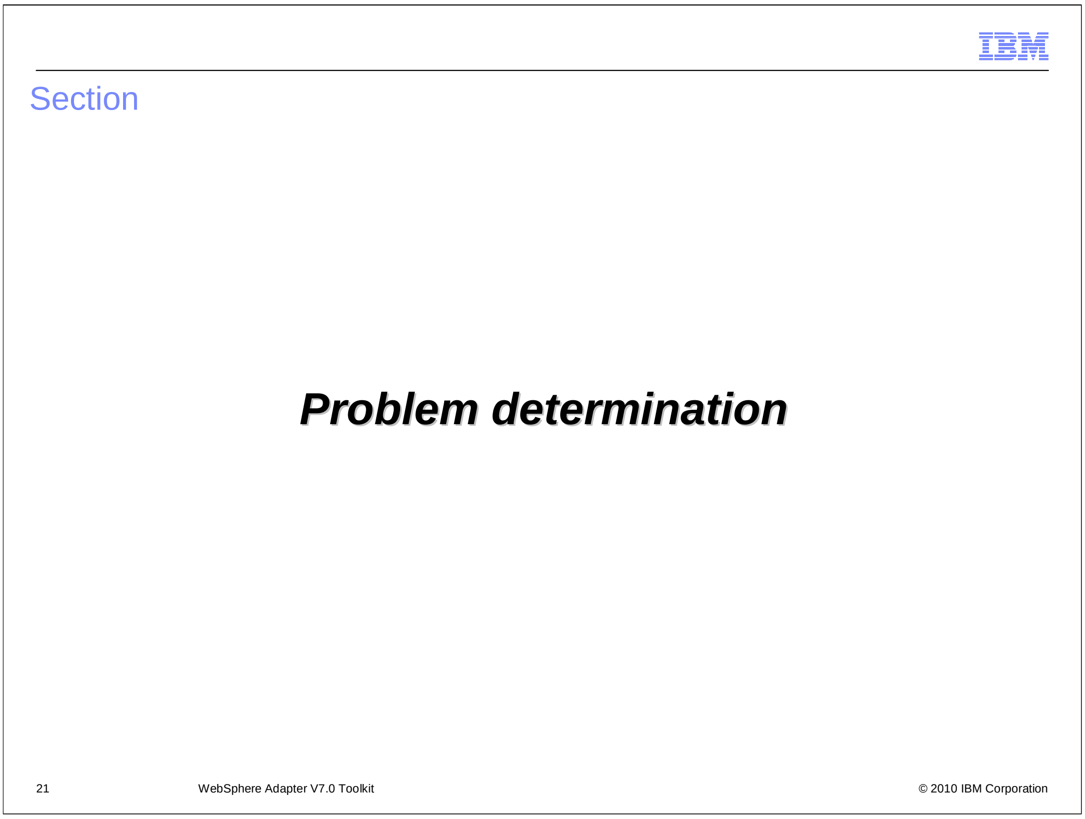
Deployment descriptor

- Generated artifacts
  - Resource adapter specific classes
  - Outbound classes
  - Inbound classes
  - Command pattern classes
  - Enterprise metadata discovery classes
  - Databinding classes
- Implementing code
- Validating code
- Export a resource adapter



```
SampleProject
  Deployment Descriptor: Connector SampleAdapter
  connectorModule
    com.ibm.j2ca.sample
      MySampleAdapterConstants.java
      MySampleAdapterResourceAdapter.java
      MySampleAdapterStructuredRecord.java
      MySampleAdapterWSAResourceAdapterMetadata.java
      LogMessages.properties
    com.ibm.j2ca.sample.emd
    com.ibm.j2ca.sample.emd.description
    com.ibm.j2ca.sample.emd.discovery
    com.ibm.j2ca.sample.emd.discovery.connection
    com.ibm.j2ca.sample.emd.runtime
    com.ibm.j2ca.sample.inbound
      MySampleAdapterActivationSpecWithXid.java
      MySampleAdapterEventStoreWithXid.java
    com.ibm.j2ca.sample.outbound
      MySampleAdapterConnection.java
      MySampleAdapterConnectionFactory.java
      MySampleAdapterConnectionMetadata.java
      MySampleAdapterConnectionRequestInfo.java
      MySampleAdapterConnectionSpec.java
      MySampleAdapterInteraction.java
      MySampleAdapterInteractionSpec.java
      MySampleAdapterLocalTransaction.java
      MySampleAdapterManagedConnection.java
      MySampleAdapterManagedConnectionFactory.java
    com.ibm.j2ca.sample.outbound.commands
      MySampleAdapterBaseCommand.java
      MySampleAdapterCommandFactory.java
      MySampleAdapterCreateCommand.java
      MySampleAdapterDeleteCommand.java
      MySampleAdapterNoOperationCommand.java
      MySampleAdapterRetrieveAllCommand.java
      MySampleAdapterRetrieveCommand.java
      MySampleAdapterUpdateCommand.java
    META-INF
```

Based on the selection you make in the wizard, the generated artifacts can be different. This shows a screen capture of the generated artifacts when you select all the options available. They are, list of all the generated code stubs, list of classes generated for outbound and inbound, list of classes for command pattern support, and list of classes for data binding and enterprise metadata discovery.



Section

Problem determination

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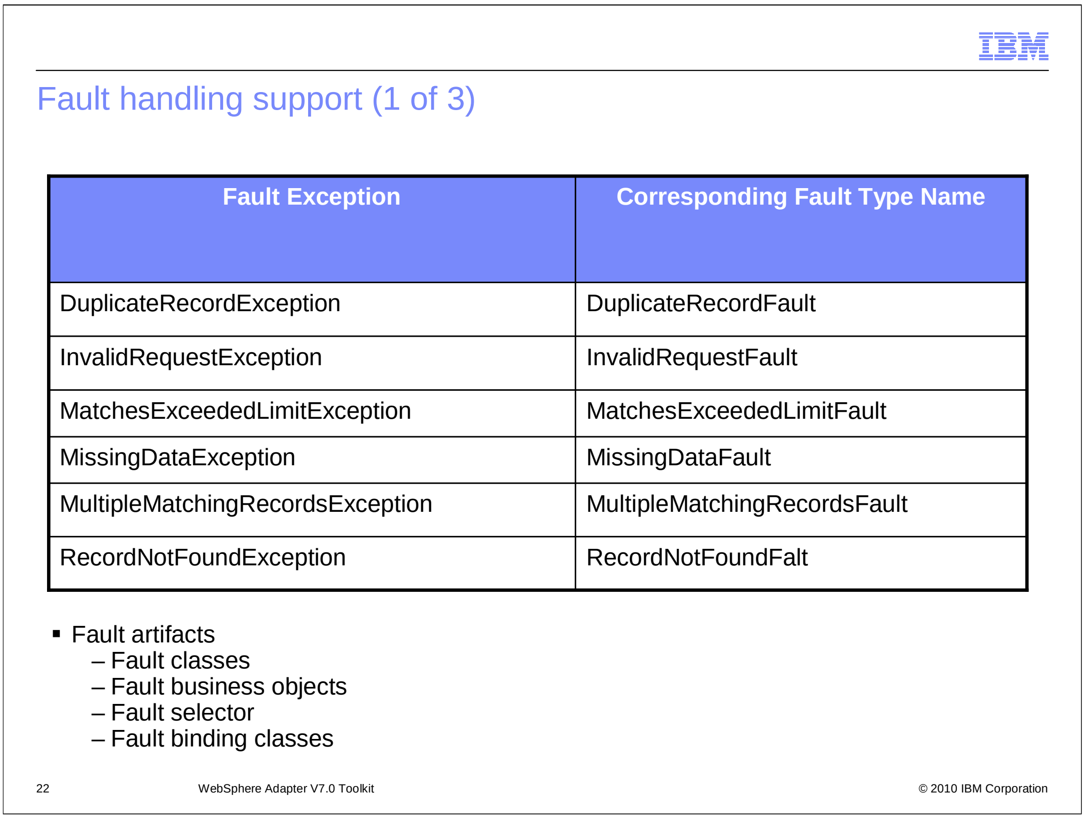
The next section covers the problem determination of WebSphere adapter toolkit V7.0



Fault handling support (1 of 3)

Fault Exception	Corresponding Fault Type Name
DuplicateRecordException	DuplicateRecordFault
InvalidRequestException	InvalidRequestFault
MatchesExceededLimitException	MatchesExceededLimitFault
MissingDataException	MissingDataFault
MultipleMatchingRecordsException	MultipleMatchingRecordsFault
RecordNotFoundException	RecordNotFoundFalt

- Fault artifacts
  - Fault classes
  - Fault business objects
  - Fault selector
  - Fault binding classes

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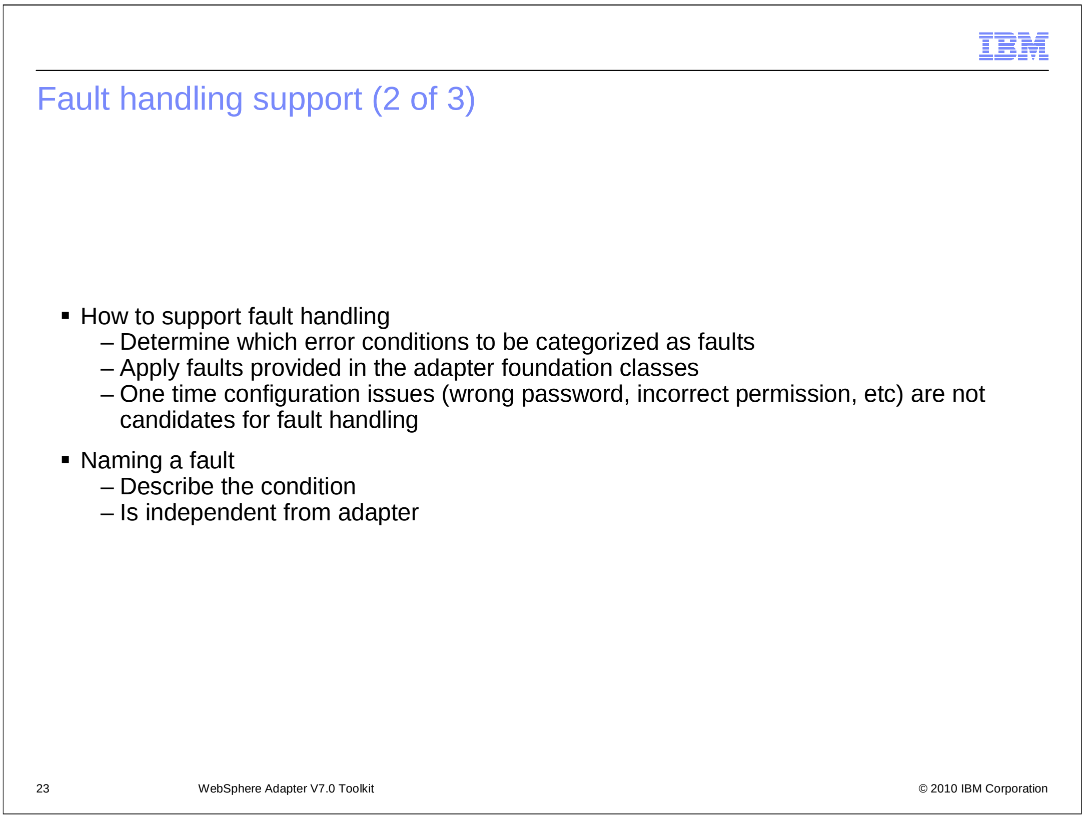
With adapter toolkit, you can implement messages to accompany a range events. Through enhancements to the SCA and AFC, the WebSphere adapter toolkit provides fault handling support. Fault handling allows you to differentiate information technology exceptions from business processing exceptions during outbound processing. A fault is an exception condition that alters the normal flow of a business process. Typically, a fault represents a predictable error that has a well-defined action. Presenting errors as faults instead of exceptions makes it easier for you to configure recovery processing, because fault handling does not require you to write Java code to catch and handle an exception. Adapters created with the WebSphere Adapter Toolkit generate several faults.

To facilitate fault handling support, WebSphere adapter toolkit provides artifacts that include fault classes, fault business objects, a fault selector, and a fault binding class.

This table shows AFC fault classes and fault type names.

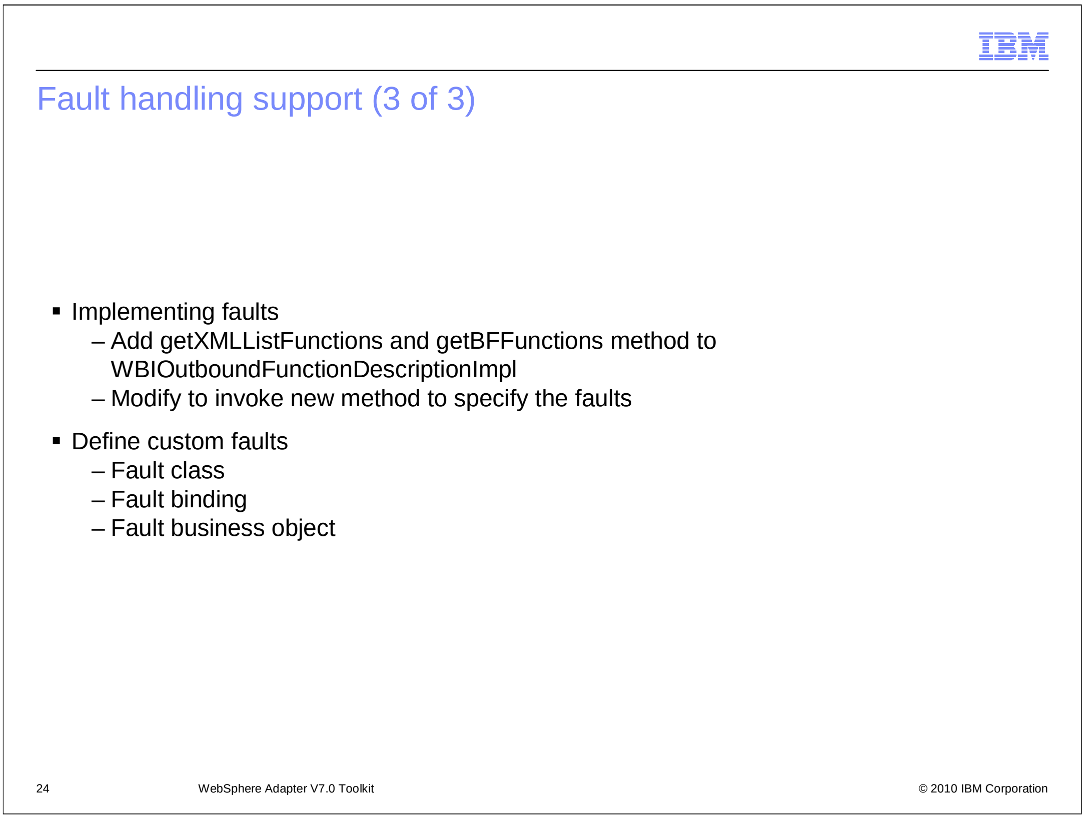


Fault handling support (2 of 3)

- How to support fault handling
  - Determine which error conditions to be categorized as faults
  - Apply faults provided in the adapter foundation classes
  - One time configuration issues (wrong password, incorrect permission, etc) are not candidates for fault handling
- Naming a fault
  - Describe the condition
  - Is independent from adapter

Before you define faults, review adapter processing to determine which error conditions can be categorized as faults, rather than as exceptions. You will likely be able to apply at least one of the faults provided in the Adapter Foundation Classes. Some unique conditions might be categorized as faults, but fault classes in the Adapter Foundation Classes might not be provided for the conditions. Error conditions from which you can recover might be candidates for fault handling. IT exceptions, such as one time configuration issues (wrong password, incorrect directory permissions, and so on) are not candidates for fault handling.

When naming a fault, ensure that the name describes the condition and is independent of the technology or adapter you are using. For example, the fault class name for an SAP IDoc record not found condition should be RecordNotFoundFault, not SAPIDOCRecordNotfoundFault. Additionally, you might not need to define new faults if the same semantic meaning can be applied to multiple conditions (for example, RecordNotFoundFault, FileNotFoundFault, and ObjectNotfoundFault).



Fault handling support (3 of 3)

- Implementing faults
  - – Add getXMLListFunctions and getBFFunctions method to WBIOutboundFunctionDescriptionImpl
  - – Modify to invoke new method to specify the faults
- Define custom faults
  - – Fault class
  - – Fault binding
  - – Fault business object

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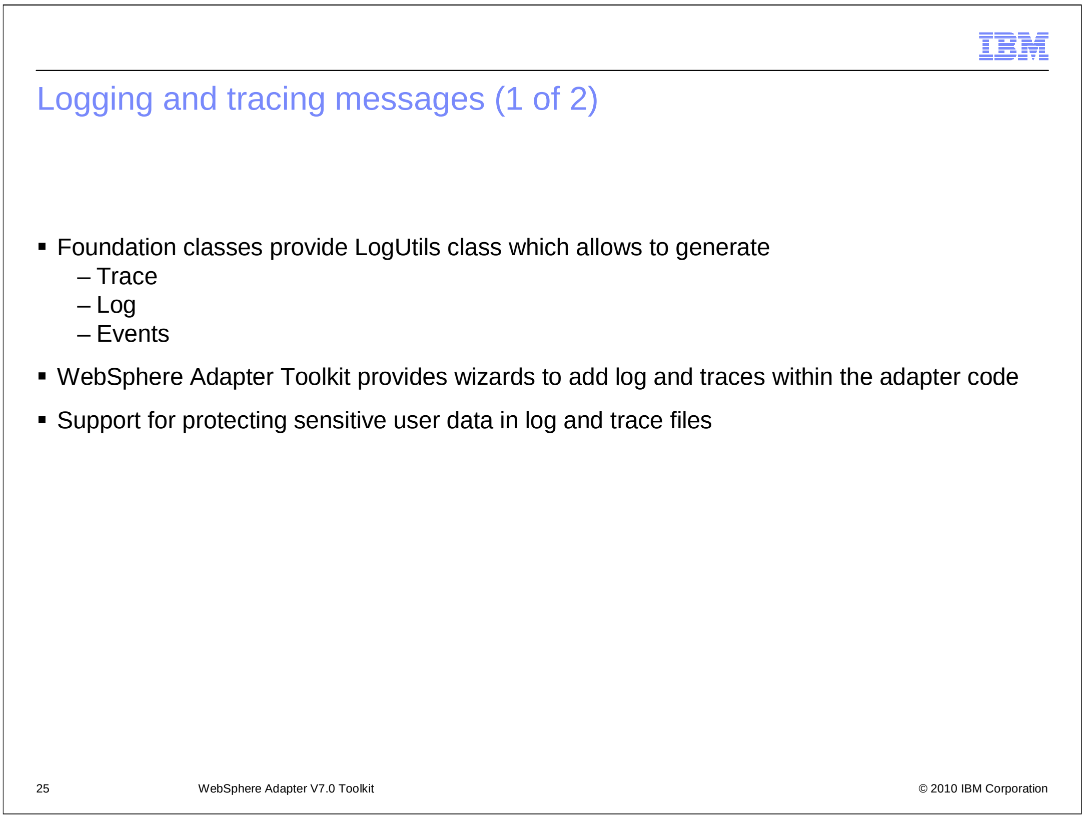
To implement fault handling in the adapter, add getXMLListFunctions method and getBFFunctions method in the extension to WBIOutboundFunctionDescriptionImpl. Modify both these methods to create new method to specify the faults. Refer to IBM Websphere adapter information center for more details on description of each fault.

You can also define custom faults for fault handling. Define the fault class implements BaseFaultException and define additional attributes if necessary. In defining the fault binding, it is only required if you have defined additional attributes for your fault. Last, you can use the FaultBOUtil to define the fault business object, as long as either no attributes or only simple attributes are added.



Logging and tracing messages (1 of 2)

- Foundation classes provide LogUtils class which allows to generate
  - Trace
  - Log
  - Events
- WebSphere Adapter Toolkit provides wizards to add log and traces within the adapter code
- Support for protecting sensitive user data in log and trace files

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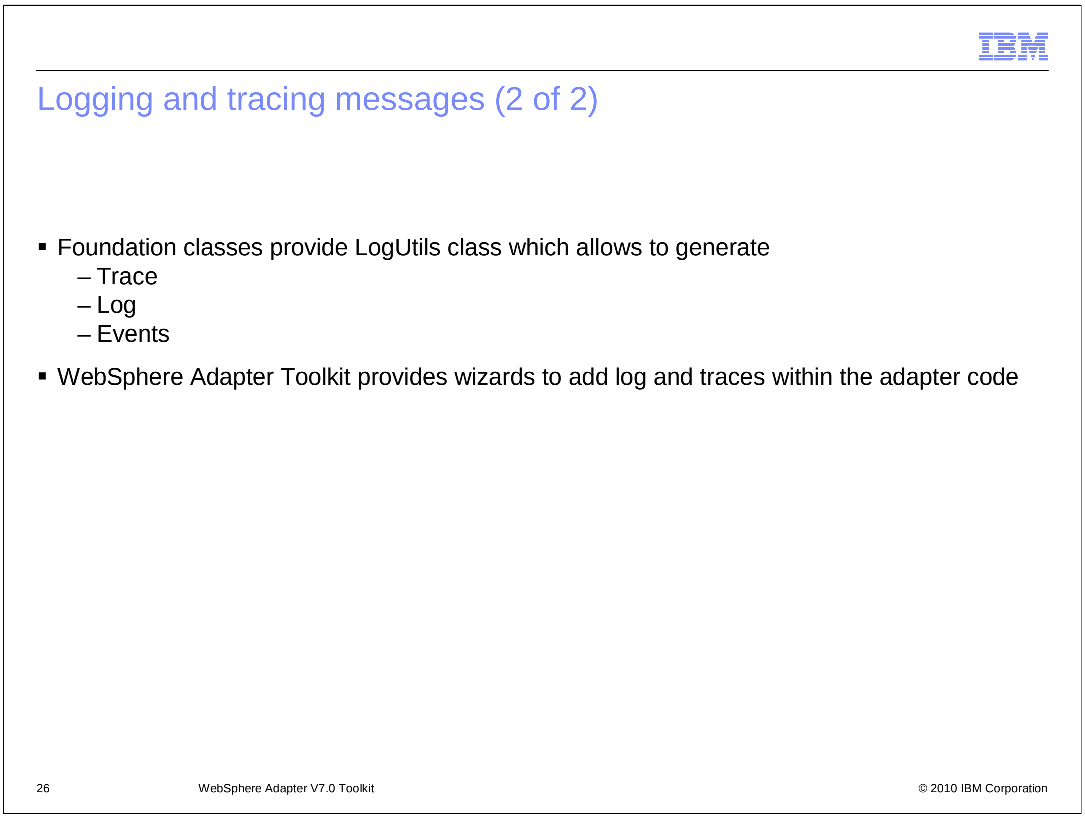
The new adapter wizard generates code skeleton using AFC to provide you with a consistent method to get the LogUtils object in your own implementation. This is very useful when an adapter wants to record business information or needs to track execution flow. The LogUtils class allows you to direct information usefully to a variety of users by generating three types of "messages": trace, log, and event messages. Each has a distinct purpose and conveys different information.

WebSphere adapter toolkit provides support for confidential tracing of properties. This means that when you decide whether a property might contain potentially sensitive data then use a special interface to record that information in a log or trace message. Data recorded with the special interface is displayed in the logs by an "XXXX". This functionality is most useful to customers who mainly deal with a lot of confidential information such as banks, healthcare companies and defense.



Logging and tracing messages (2 of 2)

- Foundation classes provide LogUtils class which allows to generate
  - Trace
  - Log
  - Events
- WebSphere Adapter Toolkit provides wizards to add log and traces within the adapter code

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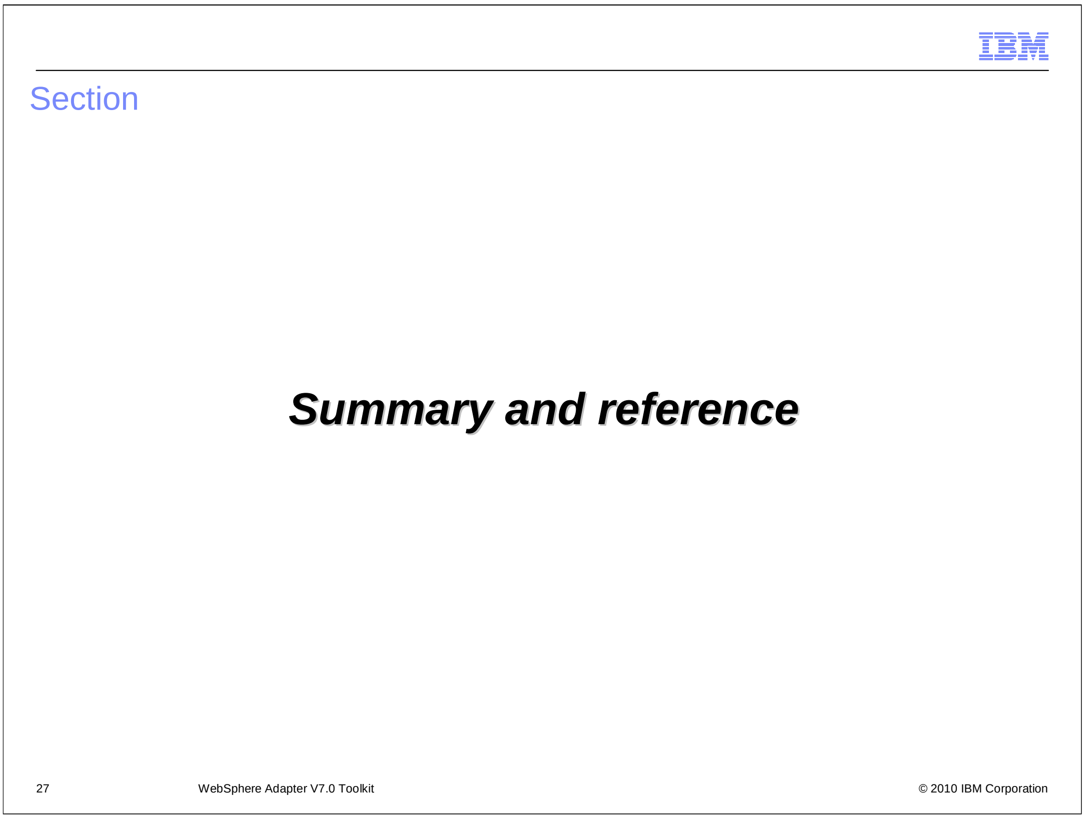
The New Adapter wizard generates a code skeleton using Adapter Foundation Classes to provide you with a consistent method to get the LogUtils object in your own implementation. This is very useful when an adapter wants to record business information or needs to track execution flow. The LogUtils class allows you to direct information usefully to a variety of users by generating three types of "messages": trace, log, and event messages. Each has a distinct purpose and conveys different information.

Trace messages convey information that is intended for support teams and developers. Such information includes stack dumps for exceptions and operation logic for debugging purposes. Because trace messages are directed at the teams that wrote or support the adapter rather than customers, trace messages need not be translated and can, in fact, be hard-coded in the adapter. Log messages convey timely information intended for consumption by customers: warnings about potential problems, errors that have occurred, suggested fixes for those errors, and information that is necessary or helpful to understanding how the adapter operates.



Section

Summary and reference

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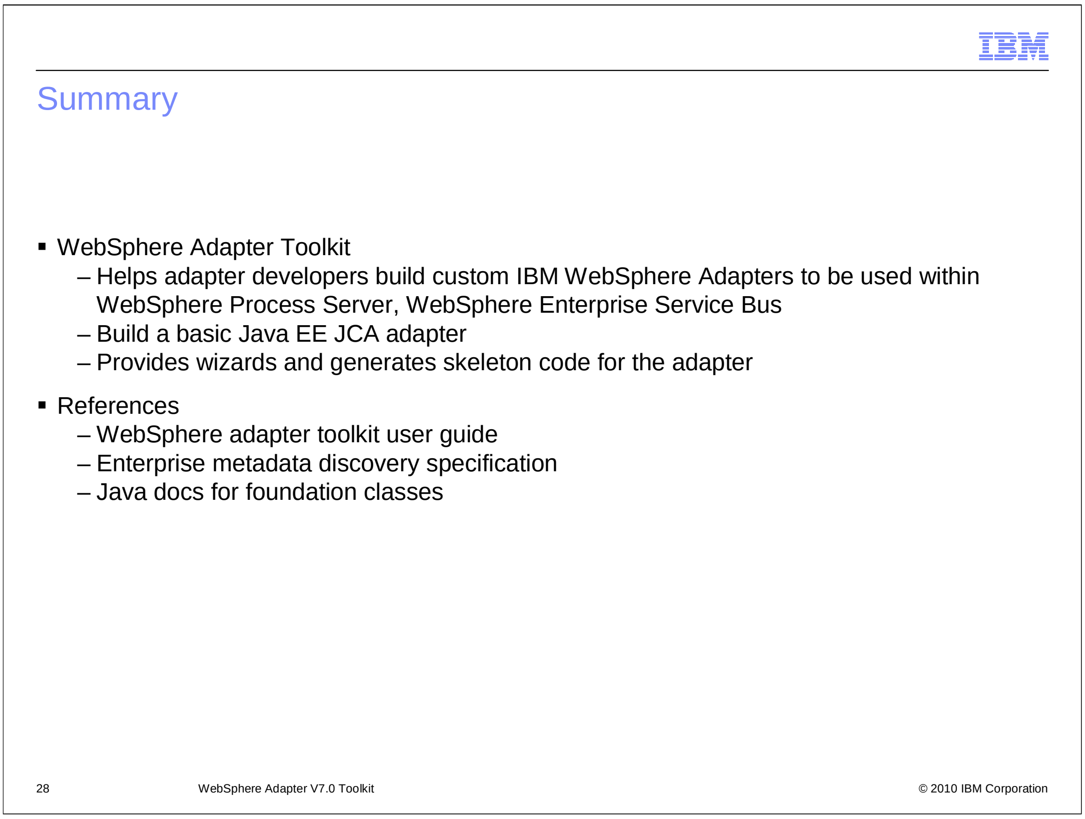
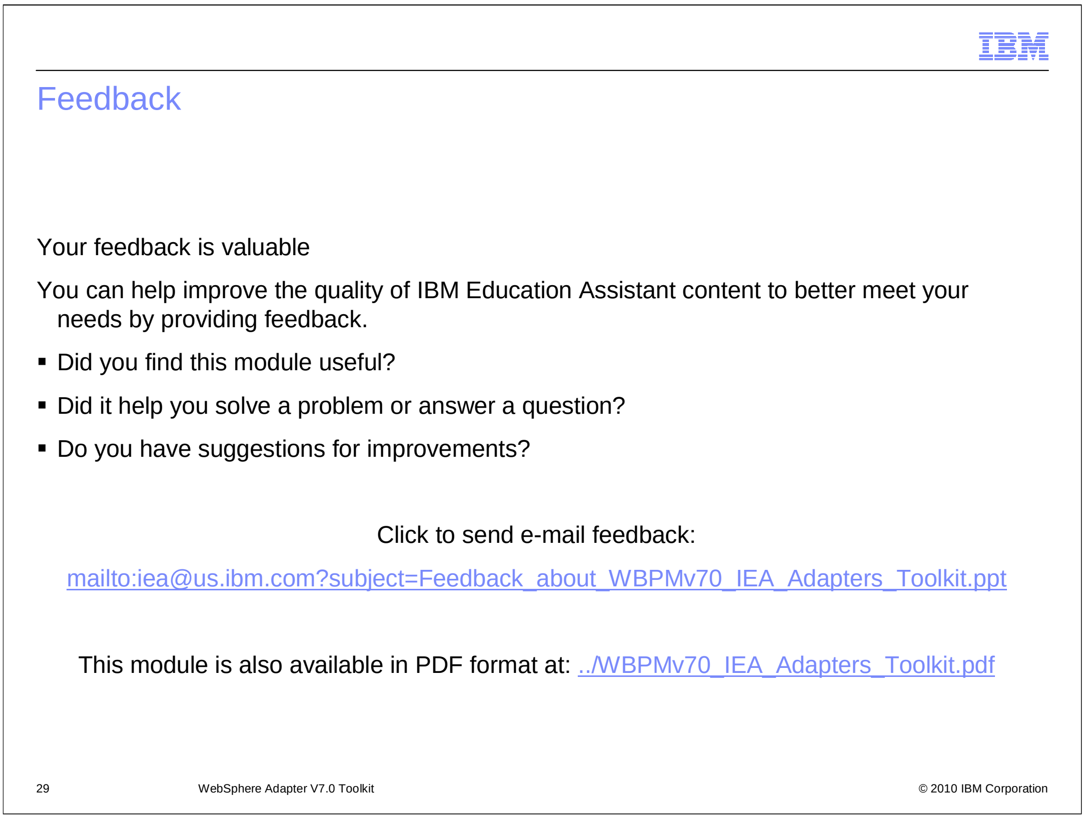
The next section provides summary and references for WebSphere adapter toolkit V7.0



Summary

- WebSphere Adapter Toolkit
  - Helps adapter developers build custom IBM WebSphere Adapters to be used within WebSphere Process Server, WebSphere Enterprise Service Bus
  - Build a basic Java EE JCA adapter
  - Provides wizards and generates skeleton code for the adapter
- References
  - WebSphere adapter toolkit user guide
  - Enterprise metadata discovery specification
  - Java docs for foundation classes

WebSphere Adapter Toolkit helps adapter developers build custom IBM WebSphere Adapters to be used within WebSphere Process Server,WebSphere Enterprise Service Bus or build a basic Java EE JCA adapter. The underlying adapter foundation classes used by the toolkit simplify the process of adapter development by providing implementation for most generic contracts so you only provide the implementation based on the backend you are connecting to.



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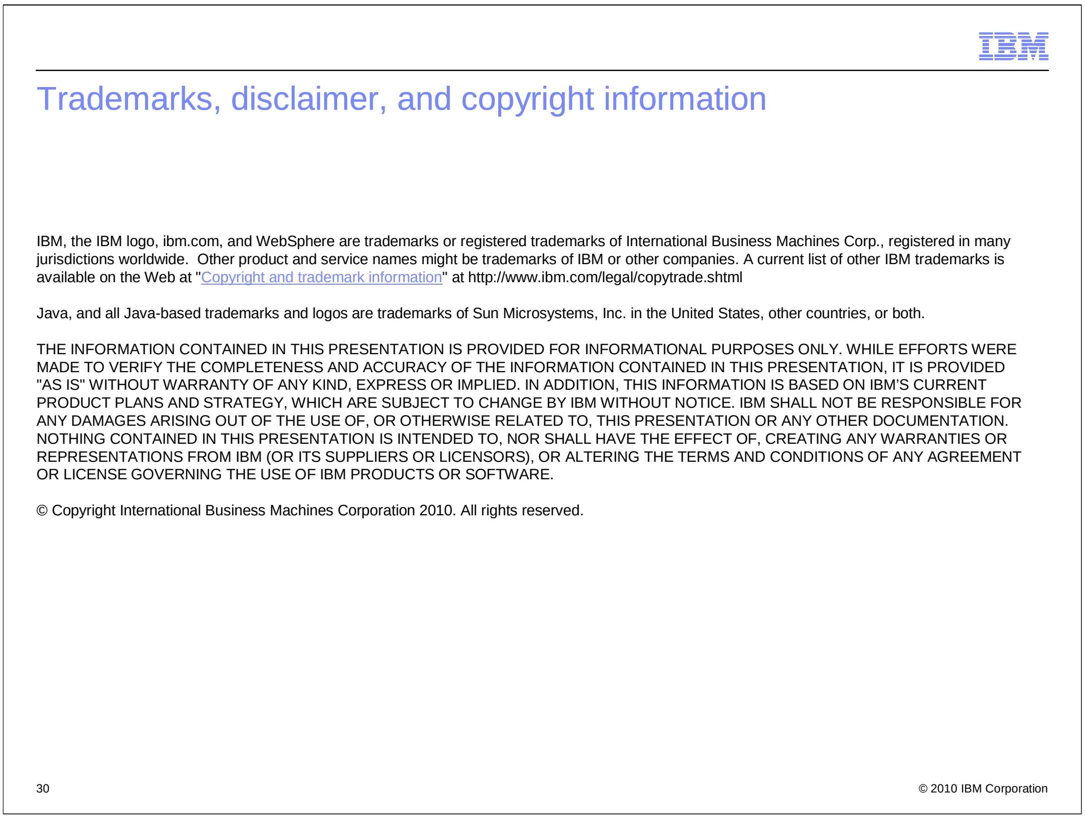

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