



IBM Software Group

WebSphere Adapters V6.2

IBM WebSphere Adapter for IBM i V6.2



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This presentation covers the WebSphere® Adapter for IBM i, which is added to the WebSphere JCA adapters portfolio in V6.2.

Agenda

- Overview
- Enterprise metadata discovery
- Outbound
- Inbound
- Business object structure
- Problem determination
- Summary



This section provides an overview of the WebSphere Adapter for IBM i V6.2

Overview: WebSphere Adapter for IBM i



- IBM WebSphere Adapter for IBM i
 - ▶ Implements the Java™ 2 Enterprise Edition (J2EE) Connector Architecture (JCA), version 1.5 specification
 - ▶ Enables bi-directional connectivity
 - ▶ Read, write and monitor queues
 - ▶ Run report program generator (RPG) program calls



With WebSphere Adapter for IBM i, you can create modules that include the exchange of information with an IBM i system. By using the adapter, a module can send requests to read from or write to an IBM i data queue or run report program generator (RPG) programs without the need for special coding. It supports bi-directional connectivity, both inbound and outbound. You can make calls to the IBM i system and monitor any events happening on the IBM i system.

Configuration steps

- **Discovery:** Discovering EIS metadata and automatic creation of components to access the EIS
- **Development:** Create application which make use of the discovered components
- **Enablement:** Configuring the runtime with the location of the EIS provider jars/native libraries
- **Administration:** Deploy all required components to runtime, and administer them



This slide summarizes the steps involved in using adapter as part of your application and how to administer them. At a high level the interaction steps can be broken down into four steps. The first step is the Discovery phase where you use the external service wizard to configure the adapter and generate the necessary artifacts. The next step is the development phase where you use the generated artifacts to create your application. The third step is Enablement, where you specify the necessary dependency files required at runtime by the adapter. For example the SAP adapter uses the sapjco.jar file to communicate with the SAP system. The last step is to create the Enterprise Broker Archive (EAR) file, deploy it to the runtime, and administer the application. For the IBM i adapter, there is no enablement step as it requires no dependencies.

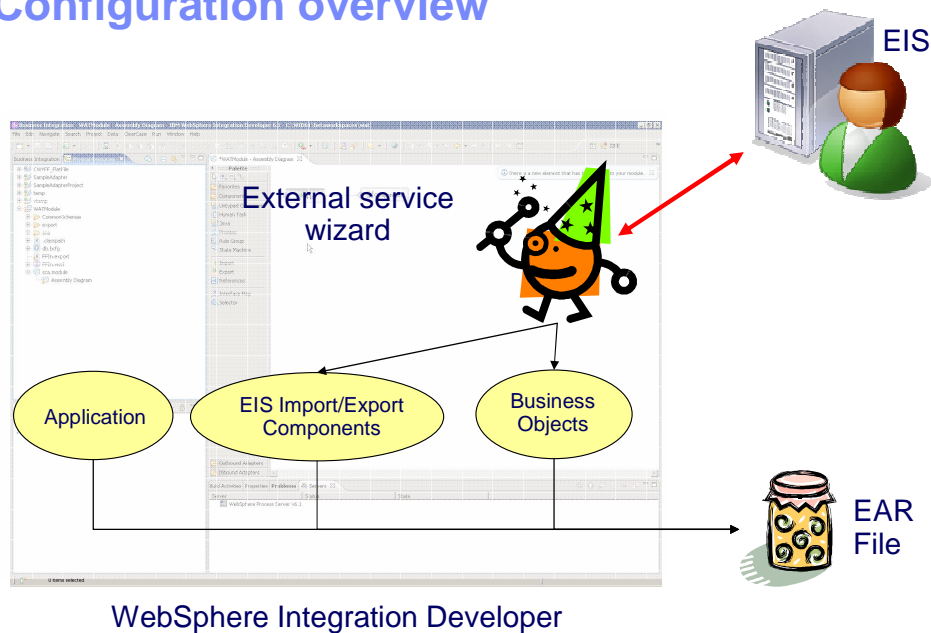
Section

Enterprise metadata discovery



This section provides an overview of the discovery process for WebSphere Adapter for IBM i.

Configuration overview



WebSphere Integration Developer

This slide depicts the steps involved in configuring the adapters and creating a deployable application. WebSphere Integration Developer provides an external service wizard that connects to the EIS, introspects and imports the metadata information and creates the necessary artifacts. The artifacts generated by the wizard are the import or export components and the business object definitions. The interaction style you choose when configuring using the wizard defines the generation of either an import or an export component. The supported interaction styles are inbound and outbound. Once the artifacts are created, you can use these generated artifacts as part of your application flow. The finished application project is exported as an ear file that you deploy to the runtime.

Section

Outbound support



This section provides an overview of outbound operations and interfaces supported by WebSphere Adapter for IBM i.

Outbound support

- Outbound
 - ▶ Support for retrieve and placing data on queues
 - Queues can be first in first out (FIFO), last in first out (LIFO) or keyed data queues
 - Operations supported getqueue and putqueue
 - Support for bidirectional character set
 - ▶ Support for calling report program generation (RPG) programs



The adapter supports two different interfaces for outbound. One is the data queue interface which is used to interact with the data queues in the IBM i system. The queues can either be first in first out, last in last out or a keyed data queue. With a keyed data queue, there is a key associated with the data that is being stored in the queue. You must provide the key to retrieve the data associated with that key. With the V6.2 release the adapter just supports placing and retrieving only string type data from the queues. The supported operations are getqueue and putqueue. The second interface is the report program generation (RPG) interface, which allows you to call RPG programs.

Report program generation call support

- Support for calling report program generation (RPG) programs
 - ▶ External service wizard requires the location of Program Call Markup Language (PCML) to generate business objects
 - ▶ Pre-requisite: To get the PCML, you need to compile RPG program and create PCML and save it in IBM i system.
 - Can use Rational® Developer for System i® or use CRTBN DL command in the terminal
 - ▶ Limitations:
 - No support for arrays or structures

For the adapter to be able to generate appropriate business objects that represent your report generation program (RPG), you must satisfy some prerequisites. The RPG program should be compiled with an option to generate a PCML definition. You can either use the Rational Developer for System i or the command CRTBN DL. Once you generate the PCML, you can copy the file to your IBM i system. In the external service wizard, you are prompted to provide a path to the location to find the PCML file for the RPG program. Adapter will look up all the programs under the location and display them in the tree format. You can select the programs you are interested in and add to the import list. The external service wizard creates a business object modeling each RPG that is selected for import. PCML treats all attributes as input attributes. You can change them by manually editing the PCML or use the properties view for the attributes in the business object in WebSphere Integration Developer to achieve this.

Section

Inbound support



This section provides an overview of inbound support provided by WebSphere Adapter for IBM i.

Inbound support

- Inbound
 - ▶ Support for polling data queues
 - Data queues – Last in first out, first in first out (LIFO, FIFO)
 - Keyed data queues



For inbound, the adapter supports monitoring activity on data queues. The queues can be either first in first out, last in first out, or keyed data queues.

Inbound data queue support

- Support for polling data queues
 - ▶ Data queues – Last in first out, first in first out (LIFO, FIFO)
 - ▶ You need to create a staging which is a keyed data queue – “*PayloadStagingQueue*”
 - Key length of 18 characters
 - Used to transfer data from data queue
 - Script provided in adapter samples to move data from the polled queue to staging queue
 - Key value for the staging queue used as event id



Adapters poll a data queue continuously for new messages. If it is FIFO queue, the adapter will fetch the oldest message from the queue. If it is a LIFO queue, the adapter will fetch the latest message from the queue. The adapter will use a temporary staging queue to store the messages retrieved from the queue. The staging queue is a keyed data queue and stores the messages that were read from the polled queue. Once the message has been read from the poll queue, it will get deleted, so the staging queue is used to store the message until the adapter delivers the event to the end point. Adapter will not create the staging queue, you have to create the temporary queue before you can configure the adapter for inbound. You are prompted to enter the full path to the staging queue in the activation specification property called `StagingPayloadQueue`. The key length of the staging queue should be 18 characters. Adapter provides a sample program which must be copied and compiled in the IBM i system. The program is used to move the messages from the poll queue to the staging queue. As the staging queue is a keyed queue, the program also generates a unique key to write to the keyed data queue. Adapter assigns a unique identification number to each message polled. The same key is also used in the event table as event ID. Adapter polls the poll queue specified during configuration and then moves the data to the staging queue and assigns a unique key to the data being placed in the staging queue. The same unique identifier is used as event ID in the event table used to provide assured once and only once delivery.

Inbound data queue support

- External Service Wizard

The screenshot shows the 'Service Generation and Deployment Configuration' wizard. The 'Connection properties' section is expanded to show 'IBM i Connection Properties'. The fields are as follows:

- Host name: jchan.in.ibm.com
- User name: beta
- Password: *****
- Poll Queue Path: /QSYS.LIB/RAJA.L.LIB/FIFOQ.DTAQ
- Payload Staging Queue Path: /QSYS.LIB/RAJA.L.LIB/STAGINGQ.DTAQ
- Control Language Program Path: /QSYS.LIB/SWAMY1.L.LIB/MSGQCLZ.PGM

Two red arrows point to the 'Payload Staging Queue Path' and 'Control Language Program Path' fields. Two yellow callout boxes provide instructions:

- Provide path to the staging queue that you created. This queue is used to store the data polled from the queue
- Provide path to the program that is provided as part of the adapter samples to move the data to the staging queue

Shown here is a screen capture of the panel from the external service wizard. You are prompted to provide a path to the staging queue and the control language program used to move data from the poll queue to the staging queue.

Inbound data queue support

- External Service wizard panel for Keyed Data Queue

Provide path to the staging queue that you created. This queue is used to store the data polled from the queue

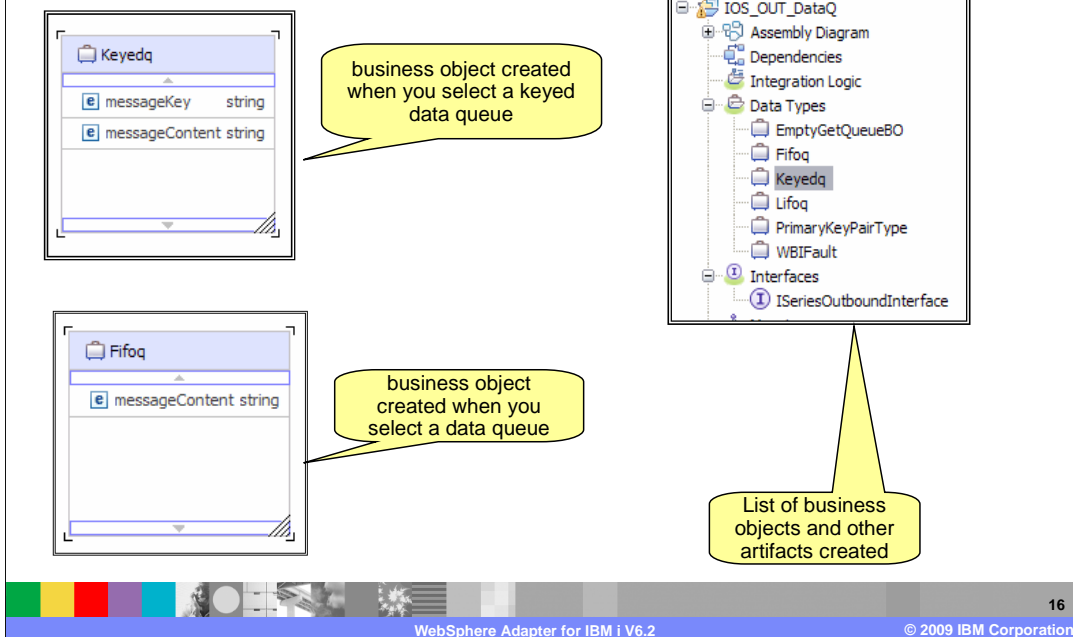
Provide path to the program that is provided as part of the adapter samples to move the data to the staging queue

Provide a key value that the adapter needs to look for

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If you have chosen a keyed data queue to be monitored, you are prompted to enter the key value for the queue you are interested in monitoring.

Business object structure



Shown here is a screen capture of the business objects created and the business object structure for both keyed and non keyed data queues.

Section

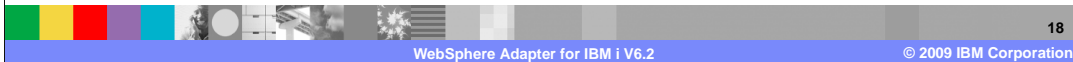
Problem determination



This section provides an overview of the problem determination for WebSphere Adapter for IBM i

Problem determination

- Covered in the Adapters Overview presentation – Recap:
 - ▶ WebSphere Process Server log files
 - SystemOut.log and SystemErr.log
 - ▶ Adapter Log and Trace files configured in WebSphere Integration Developer External service wizard
 - Also can set RAR custom properties in the Administrative console of the Process Server
 - ▶ Different logging level levels can be set
- Enabling trace for Adapters in WebSphere Process Server :
 - ▶ Set the tracing level string as `"com.ibm.j2ca.*=finest"`



Listed here are the log files for WebSphere Process Server. The adapter logs the entries in the SystemOut.log and SystemErr.log files. You can also enable tracing for more detailed information.

Section

Summary



This section provides a summary of the topics covered in this presentation

Summary

- With WebSphere Adapter for IBM i, you can create modules that include the exchange of information with an IBM i system
 - ▶ Inbound and outbound support
- Provides support for enterprise service discovery for discovering services



In this presentation, you learned that the WebSphere Adapter for IBM i enables SCA business integration applications to exchange information with an IBM i system . The adapter supports both inbound and outbound interaction. Enterprise service discovery is used to create the service description and to provide the managed connection factory, activation specification properties and any specific custom adapter properties. It also covered the data queue and the remote program generation interfaces supported by the adapter to interact with the IBM i system.

Reference information

- WebSphere Adapter for IBM i User Guide
- Java Connector Architecture
 - ▶ <http://java.sun.com/j2ee/connector/index.jsp>
- Enterprise metadata discovery
 - ▶ <http://www.ibm.com/developerworks/java/library/j-emd/>
- WebSphere Adapters information center
 - ▶ <http://www-01.ibm.com/software/integration/wbiadapters/library/infocenter/>
- WebSphere Business Process Management information center
 - ▶ <http://publib.boulder.ibm.com/infocenter/dmndhelp/v6r2mx/index.jsp>



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