

webMethods Adapter for IBM Power Installation and User's Guide

Version 10.11

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This document applies to webMethods Adapter for IBM Power 10.11 and to all subsequent releases.

Specifications contained herein are subject to change and these changes will be reported in subsequent release notes or new editions.

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This guide describes how to configure and use webMethods Adapter for IBM Power. It contains information for administrators and application developers who want to exchange data with IBM Power systems.

To use this guide effectively, you must be familiar with:

- Basic concepts and tasks for working with relational databases.
- Creating flow or Java services.
- Terminology and basic operations of your operating system .
- Setup and operation of webMethods Integration Server.
- How to perform basic tasks with Software AG Designer.

Document Conventions

Convention	Description
Bold	Identifies elements on a screen.
Narrowfont	Identifies service names and locations in the format <i>folder.subfolder.service</i> , APIs, Java classes, methods, properties.
<i>Italic</i>	Identifies: Variables for which you must supply values specific to your own situation or environment. New terms the first time they occur in the text. References to other documentation sources.
Monospace font	Identifies: Text you must type in. Messages displayed by the system. Program code.
{ }	Indicates a set of choices from which you must choose one. Type only the information inside the curly braces. Do not type the { } symbols.
	Separates two mutually exclusive choices in a syntax line. Type one of these choices. Do not type the symbol.
[]	Indicates one or more options. Type only the information inside the square brackets. Do not type the [] symbols.
...	Indicates that you can type multiple options of the same type. Type only the information. Do not type the ellipsis (...).

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- Search the Knowledge Center for technical information and tips.
- Subscribe to early warnings and critical alerts.
- Open and update support incidents.
- Add product feature requests.

Data Protection

Software AG products provide functionality with respect to processing of personal data according to the EU General Data Protection Regulation (GDPR). Where applicable, appropriate steps are documented in the respective administration documentation.

1 Overview of the Adapter

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About webMethods Adapter for IBM Power

webMethods Adapter for IBM Power is an add-on to webMethods Integration Server that enables you to exchange data with IBM Power systems through the use of IBM ToolBox for Java. The adapter provides seamless and real-time communication with IBM Power systems without requiring changes to your existing application infrastructure.

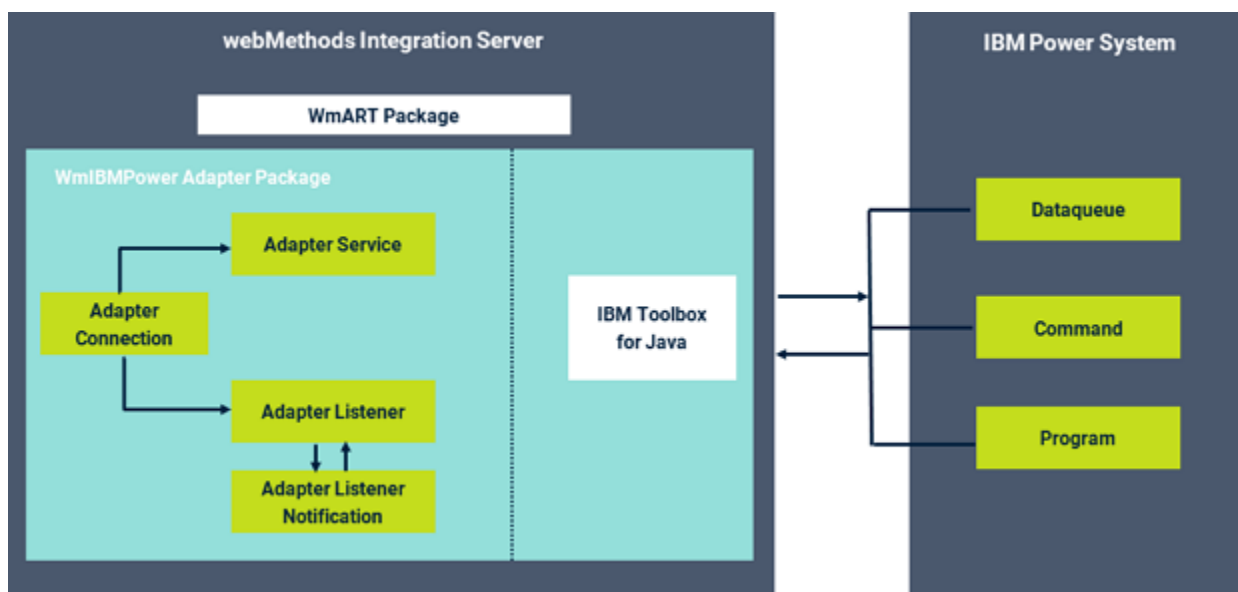
Using webMethods Adapter for IBM Power, Integration Server clients can create and run services that retrieve data from dataqueues or insert data into the dataqueues or run commands and programs in IBM Power systems. webMethods Adapter for IBM Power also provides builtin services such as `pub.ibmmp:createDataQueue` to create dataqueues in the IBM Power systems.

For example, you can use webMethods Adapter for IBM Power to listen to a dataqueue in IBM Power system for a new message that is added, and to send that message to Integration Server to be added into another resource.

For a list of the IBM Power systems versions, drivers, and platforms that webMethods Adapter for IBM Power supports, see *webMethods Adapters System Requirements*.

Architecture Overview

webMethods Adapter for IBM Power provides a set of user interfaces, services, and templates that enable you to create integrations with IBM Power systems using IBM ToolBox for Java. Ensure that the supporting drivers are installed and loaded in the packages directory of Integration Server. For more details, see [“Installing webMethods Adapter for IBM Power” on page 22](#). The adapter is provided as a single package that must be installed on Integration Server. For detailed installation instructions, see [“Overview of Installing, Upgrading, and Uninstalling webMethods Adapter for IBM Power” on page 22](#). Because , the For software requirements, see *webMethods Adapters System Requirements*. The following diagram describes the different architectural pieces involved in the integration process:



webMethods Adapter for IBM Power enables you to configure the following components:

- **Adapter connections:** Enable Integration Server to connect to IBM Power systems at run time. You must configure an adapter connection before you can configure adapter services or adapter listener and notifications. For a detailed description of adapter connections, see [“Adapter Connections” on page 14](#).
- **Adapter services:** Enable Integration Server to initiate and perform operations on IBM Power system. For example, an adapter service could enable a trading partner to check the dataqueue to determine whether a particular message is published. You configure adapter services using adapter services templates, which are provided with webMethods Adapter for IBM Power. For a detailed description of adapter services, see [“Adapter Services” on page 15](#).
- **Adapter listeners:** Monitor a dataqueue, notify Integration Server when an action (not initiated by Integration Server) occurs on a particular dataqueue, and pass data to Integration Server. You must configure adapter listeners before you configure adapter notifications. For example, an adapter listener can listen to write operations performed on a dataqueue and notify Integration Server when the event occurs. For a detailed description of adapter listeners, see [“Listeners” on page 19](#).
- **Adapter listener notifications:** Enable the adapter to consume data sent by the adapter listener. Listener notifications are initiated by events that occur on the dataqueues, not by actions that occur on Integration Server. With listener and listener notifications, you can capture event data from the dataqueues and use it to initiate another action within Integration Server. For example,
 - Create a listener to monitor the dataqueue.
 - Create a listener notification.
 - Trigger a service to publish the data received by the listener notification to Universal Messaging.
 - Universal Messaging clients could then subscribe to that data.
 - Whenever a new message is posted on the dataqueue:
 - Listener sends an event data to the listener notification.
 - Listener notification captures the event data in the publishable document.
 - Listener notification publishes the document to Universal Messaging.
 - Universal Messaging clients receive the data.
- For more information, see [“Listener Notifications” on page 19](#).

Package Management

webMethods Adapter for IBM Power is provided as a package called WmIBMPowerAdapter that you manage like any package on Integration Server.

There are several considerations regarding how you set up and effectively manage your packages on Integration Server:

- You must create user-defined packages for your connections, adapter services, listeners, and notifications. For details, see [“Adapter Package Management” on page 28](#).
- You must understand how package dependencies work so you make the best decisions regarding how you manage your adapter services and notifications. For details, see [“Package Dependency Requirements and Guidelines” on page 29](#).
- You control which development groups have access to which adapter services and notifications. For details, see [“Group Access Control” on page 31](#).

Adapter Connections

webMethods Adapter for IBM Power connects to IBM Power systems through IBM Toolbox for Java at run time. You create one or more connections at design time to use in integrations. The number of connections you create, and the types of those connections, depend on the types of operations you are performing and your integration needs. For example, if you are connecting to an IBM Power system for dataqueue and command operations, you must create connections that are unique to those two operations. Additionally, if you have multiple installations of the IBM Power systems, you access each using different connections. For example, if you have a data warehouse system and an ERP system that uses your IBM Power system, you create a connection for each system.

webMethods Adapter for IBM Power connections contain parameters that Integration Server uses to manage connections to IBM Power system so that they can be used by the adapter to provide services. You configure connections using Integration Server Administrator. You must have Integration Server Administrator privileges to access webMethods Adapter for IBM Power's administrative screens.

For instructions on configuring, viewing, editing, enabling, and disabling webMethods Adapter for IBM Power connections, see [“Overview of Adapter Connections” on page 34](#). For information about setting user privileges, see the *webMethods Integration Server Administrator's Guide* for your release.

Connection Pools

Integration Server includes a connection management service that dynamically manages connections and connection pools based on configuration settings that you specify for the connection. All adapter services use connection pooling.

A connection pool is a collection of connections with the same set of attributes. Integration Server maintains connection pools in memory. Connection pools improve performance by enabling adapter services to re-use open connections instead of opening new connections.

Run-Time Behavior of Connection Pools

When you enable a connection, Integration Server initializes the connection pool, creating the number of connection instances you specified in the connection's **Minimum Pool Size** field when

you configured the connection. Whenever an adapter service needs a connection, Integration Server provides a connection from the pool. If no connections are available in the pool, and the maximum pool size has not been reached, the server creates one or more new connections (according to the number specified in the **Pool Increment Size** field) and adds them to the connection pool. If the pool is full (as specified in **Maximum Pool Size** field), the requesting service will wait for Integration Server to obtain a connection, up to the length of time specified in the **Block Timeout** field, until a connection becomes available. Periodically, Integration Server inspects the pool and removes inactive connections that have exceeded the expiration period that you specified in the **Expire Timeout** field.

If initialization of the connection pool fails because of a network connection failure or some other type of exception, you can enable the system to retry the initialization any number of times, at specified intervals. For information about configuring connections, see [“Configuring webMethods Adapter for IBM Power Connections” on page 34](#).

Built-In Services for Connections

Integration Server provides built-in services that enable you to programmatically control connections. You can use them to enable and disable a connection, and to return usage statistics and the current state (enabled or disabled) and error status for a connection. These services are located in the WmART package, in the `pub.art.connection` folder.

The `pub.art.service:setAdapterServiceNodeConnection` and `pub.art.listener:setListenerNodeConnection` built-in services enable you to change the connection associated with an adapter service and adapter listener respectively. For more information, see [“Changing the Connection Associated with an Adapter Service or Notification at Design Time” on page 17](#).

For details, see the *webMethods Integration Server Built-In Services Reference* for your release.

Adapter Services

Adapter services allow you to connect to the IBM Power's resource and initiate an operation on the resource from Integration Server.

You call adapter services from flow or Java services to interact with IBM Power systems. The adapter services perform operations by calling IBM ToolBox for Java. Integration Server then uses adapter connections that you defined earlier to run the adapter services. For details, see [“Adapter Service Transaction Processing” on page 18](#).

Adapter services are based on templates provided with webMethods Adapter for IBM Power. Each template represents a specific operation performed on a resource, such as using the Read DataQueue template to retrieve records from dataqueues in the IBM Power systems.

An adapter service template contains all the code necessary for interacting with the resource but without the data specifications. You provide these specifications when you create a new adapter service.

Creating a new service from an adapter service template is straightforward. You assign a default adapter connection when creating an adapter service. The default adapter connection associated with the adapter service at design time is used to run the service unless specified at runtime.

After you select the connection for the adapter service, you select the adapter service template and supply the data specifications using Designer. Some familiarity with using Designer is required. For more information, see the *webMethods Service Development Help* for your release.

webMethods Adapter for IBM Power provides the following adapter service templates:

Adapter Service Template	Description
Call Command	Runs a command in the IBM Power system. For instructions about configuring the service, see “Configuring Call Command Services” on page 46 .
Call Program	Runs a program in the IBM Power system. For instructions about configuring the service, see “Configuring Call Program Services” on page 48 .
Read DataQueue	Retrieves records from the specified dataqueue. For instructions about configuring the service, see “Configuring Read DataQueue Services” on page 51 .
Write DataQueue	Writes records into the specified dataqueue. For instructions about configuring the service, see “Configuring Write DataQueue Services” on page 53 .

Using Adapter Services

The tasks required to use adapter services are:

1. Create an adapter connection using Integration Server Administrator. For more information, see [“Overview of Adapter Connections” on page 34](#).
2. Select the appropriate adapter service template and configure the adapter service using Designer. Depending on the type of adapter service, you specify:
 - Adapter connection
 - IBM Power system resource (dataqueue, command, program)
 - Operation to perform that uses a connection object from the webMethods Adapter for IBM Power connection pool
 - Input fields and types as needed
 - Output fields and types as needed

For more information about configuring adapter services, see [“Overview of Adapter Services” on page 46](#).

3. If you plan to use an Integration Server flow or Java service to invoke the adapter service, design the flow or Java service to use this adapter service using Designer.
4. Manage the adapter service using Designer and Integration Server Administrator. For more information, see [“Overview of Package Management” on page 28](#), [“Overview of Adapter Services” on page 46](#), and [“Logging Messages Overview” on page 90](#).

Using a Connection from the Connection Pool Within a Java or Flow Service

Typically, adapter services use connections from the adapter's connection pool. However, you can also have any custom Java or flow services that perform operations using webMethods Adapter for IBM Power connections from the connection pools.

Changing the Connection Associated with an Adapter Service or Listener at Design Time

Integration Server provides built-in services that you can use at design time to change the connection associated with an adapter service or notification. The built-in services, `pub.art.service:setAdapterServiceNodeConnection` and `pub.art.listener:setListenerNodeConnection`, are provided in the WmART package. Using this function, you can change the specific connection associated with an adapter service or an adapter listener at design time so that you do not need to create and maintain multiple adapter services and adapter listener.

Note:

The `setAdapterServiceNodeConnection` and `setListenerNodeConnection` services can be run at design time only. Do not use them within an Integration Server flow or Java service. You must run the services directly from Designer by selecting a service and running it.

For details, see the *webMethods Integration Server Built-In Services Reference* for your release.

Other built-in services enable you to control connections. For more information, see [“Built-In Services for Connections” on page 15](#).

Changing the Connection Associated with an Adapter Service at Run Time

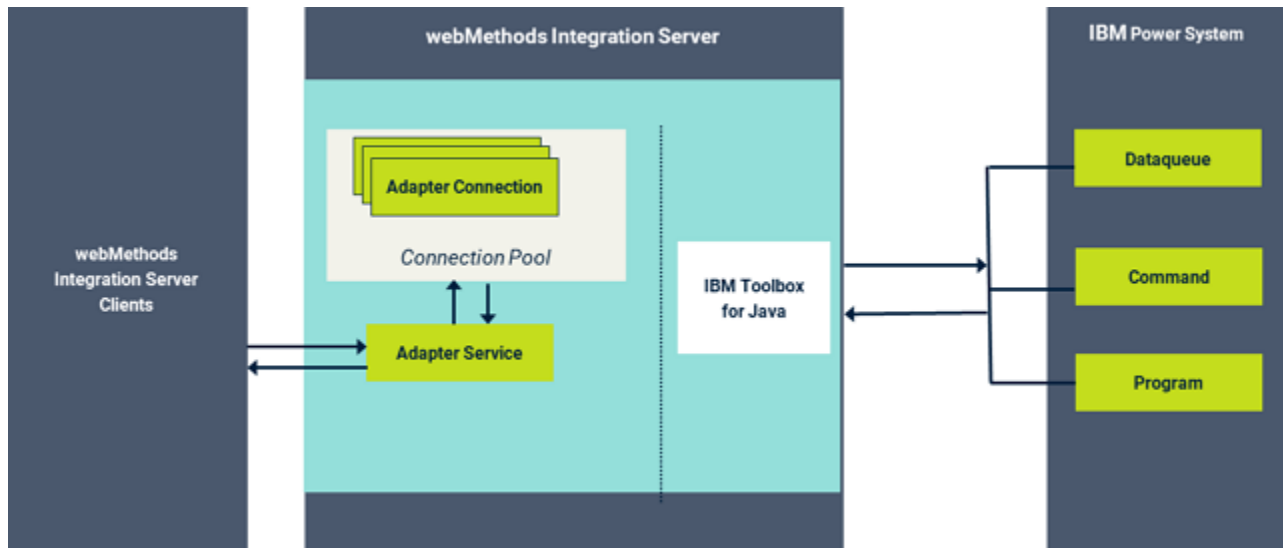
Integration Server enables you to dynamically select the connection a service uses to interact with IBM Power resources. This feature enables one service to interact with multiple, similar backend resources.

For example, a service can be defined to use a default adapter connection that interacts with your company's test dataqueue. However, at run time you can override the default connection and instead use another connection to interact with the company's production dataqueue.

For more information about overriding a service's default connection at run time, see [“Dynamically Changing a Service's Connection at Run Time”](#) on page 39.

Adapter Service Transaction Processing

The following diagram illustrates how webMethods Adapter for IBM Power processes adapter services at run time.



1. An Integration Server client, typically using a flow or Java service, invokes webMethods Adapter for IBM Power service on Integration Server to perform an operation on the IBM Power system resource.

You configured the adapter service earlier using Designer.

2. The adapter service gets a connection from the service's connection pool. Adapter connections contain connection information for the IBM Power system.
3. The adapter service uses the IBM Toolbox for Java to connect to the IBM Power system.

You created and enabled the adapter connection earlier using Integration Server Administrator.

4. Adapter services perform various operations such as reading from and writing to dataqueues, calling a command or program.
5. Depending on the adapter service type, such as a Read DataQueue service, the adapter service may return data to Integration Server.
 - If the operation is successful, the service returns the output from the service's operation, if applicable.
 - If the operation is unsuccessful, the service returns an error such as an AdapterException. If IBM Power system throws an exception while performing the adapter service's operation, the adapter passes the exception to the Integration Server logs.

For more information about how the adapter handles exceptions, see [“Logging Messages Overview” on page 90](#).

Listeners and Notifications

webMethods Adapter for IBM Power provides listeners and listener notifications to listen for write operations on dataqueues in IBM Power system, notify Integration Server, and process data.

Listeners

webMethods Adapter for IBM Power listener continually monitors a IBM Power system's dataqueue. When a new record is written to the dataqueue, the listener fetches the record based on the filter criteria that you select when you configure the listener. The listener passes the record to the listener notification. You cannot invoke a listener directly from a service or client. Instead, a listener is a real-time process that you configure, enable, and disable using the Integration Server Administrator.

- All the listeners will stop functioning when the package containing the listener node is disabled or when Integration Server shuts down.
- All the enabled listeners will start functioning when the package containing the listener node is enabled or when Integration Server restarts.

For information about how to configure listeners, see [“Configuring Listeners” on page 64](#).

Listener Notifications

A listener notification works in conjunction with a listener to process data in webMethods Adapter for IBM Power. When a listener receives data from IBM Power system's dataqueue, then the data is passed to an enabled listener notification that is associated with the listener.

Important:

The data is lost if you do not configure any listener notifications with the listener, or if you do not enable any listener notifications which are already configured.

You can configure one or more listener notifications for each listener. If you configure multiple listener notifications with the same listener, the listener passes the data to the listener notifications created first. For more information, see [“Listener Notifications Overview” on page 72](#).

Using Version Control Systems to Manage Adapter Elements

The adapter supports the Version Control System (VCS) Integration feature provided by Designer. When you enable the feature in Integration Server, you can check adapter packages or elements into and out of your version control system from Designer. For more information about the VCS Integration feature, see *Administering the VCS Integration Feature*.

Beginning with Integration Server 8.2 SP3, the adapter supports the local service development feature in Designer. This feature extends the functionality of the VCS Integration feature to check package elements and their supporting files into and out of a VCS directly from Designer. For

more information about local service development and how it compares to the VCS Integration feature, see the *webMethods Service Development Help*.

Infrastructure Data Collector Support for webMethods Adapter for IBM Power

Optimize Infrastructure Data Collector monitors the system and operational data associated with webMethods run-time components such as Integration Servers, Universal Messaging and adapters, and reports the status of these components on Optimize Infrastructure Data Collector or other external tools. When you start monitoring an Integration Server, Infrastructure Data Collector automatically starts monitoring all webMethods Adapter Runtime-based adapters that are installed on the Integration Server.

For information about monitored key performance indicators (KPIs) collected for the monitored adapter components, see the Optimize documentation for your release.

Viewing the Adapter's Update Level

You can view the list of updates that have been applied to the adapter. The list of updates appears in the **Updates** field on the adapter's About page in Integration Server Administrator.

Controlling Pagination

You can control the number of items that are displayed on the adapter Connections page and Notifications page. By default, 10 items are displayed per page. Click **Next** and **Previous** to move through the pages, or click a page number to go directly to a page.

To change the number of items displayed per page, set the `watt.art.page.size` property and specify a different number of items.

➤ **Perform the following steps to set the number of items per page:**

1. From Integration Server Administrator, click **Settings > Extended**.
2. Click **Edit Extended Settings**. In the Extended Settings editor, add or update the `watt.art.page.size` property to specify the preferred number of items to display per page. For example, to display 50 items per page, specify:

```
watt.art.page.size=50
```

3. Click **Save Changes**. The property appears in the Extended Settings list.

For more information about working with extended configuration settings, see the *webMethods Integration Server Administrator's Guide* for your release.

2 Installing, Upgrading, and Uninstalling the Adapter

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Overview of Installing, Upgrading, and Uninstalling webMethods Adapter for IBM Power

This chapter explains how to install, upgrade, and uninstall webMethods Adapter for IBM Power. The instructions use the Software AG Installer and the Software AG Uninstaller wizards. For complete information about the wizards or other installation methods, or to install other webMethods products, see *Installing webMethods Products On Premises* for your release.

Requirements

For a list of operating systems, drivers, and webMethods products supported by webMethods Adapter for IBM Power, see *webMethods Adapters System Requirements*.

webMethods Adapter for IBM Power has no hardware requirements beyond those of its host Integration Server.

The Integration Server Home Directory

You can create and run multiple Integration Server instances under a single installation directory. Each Integration Server instance has a home directory under *Integration Server_directory\instances\instance_name* that contains the packages, configuration files, log files, and updates for the instance.

For more information about running multiple Integration Server instances, see the *webMethods Integration Server Administrator's Guide* for your release.

This guide uses the *packages_directory* as the home directory in Integration Server classpaths. The *packages_directory* is *Integration Server_directory\instances\instance_name\packages* directory.

Installing webMethods Adapter for IBM Power

➤ Perform the following steps to install webMethods Adapter for IBM Power:

1. Download Installer from the [Empower Product Support website](#).
2. If you are installing the adapter on an existing Integration Server, shut down the Integration Server.
3. Start the Installer wizard.
4. Choose the webMethods release that includes the Integration Server on which you want to install the adapter. For example, if you want to install the adapter on Integration Server 10.11, choose the 10.11 release.
5. Specify the installation directory as follows:

- If you are installing on an existing Integration Server, specify the webMethods installation directory that contains the host Integration Server.
 - If you are installing both the host Integration Server and the adapter, specify the installation directory to use.
6. In the product selection list, select **Adapters > webMethods Adapter 10.11 for IBM Power**.

From the Software AG Installer dialogue box, select the Integration Server > **Server 10.11** or newer.

You can choose to install the package in the default instance. In this case, Software AG Installer installs the adapter in both locations, *Integration Server_directory\packages* and the default instance packages directory located in *Integration Server_directory\instances\instance_name\packages*.
 7. After the installation completes, close the Installer.
 8. Copy the following library files to
Integration Server_directory\instances\instance_name\packages\WmIBMPowerAdapter\code\jars
as webMethods Adapter for IBM Power uses IBM ToolBox for Java to connect to IBM Power systems:
 - jt400.jar
 - util400.jar
 9. Start Integration Server.
 10. Download the documentation for the adapter, go to [Software AG Documentation website](#).
 11. After the installation completes, close the Installer and start the host Integration Server.

Installing webMethods Adapter for IBM Power for Microservices Runtime

➤ **Perform the following steps to install webMethods Adapter for IBM Power in Microservices Runtime:**

1. Download Installer from the [Empower Product Support website](#).
2. If you are installing the adapter on an existing Integration Server, shut down the Integration Server.
3. Start the Installer wizard.
4. Specify the installation directory as follows:

- If you are installing on an existing Microservices Runtime, specify the webMethods installation directory that contains the host Microservices Runtime.
 - If you are installing both the host Microservices Runtime and the adapter, specify the installation directory to use.
5. In the product selection list, select **Adapters > webMethods Adapter 10.11 for IBM Power**.

From the Software AG Installer dialogue box, select the **Microservices Runtime 10.11** or newer.
 6. After the installation completes, close the Installer.
 7. Copy the following library files to `Integration Server_directory\instances\instance_name\packages\WmIBMPowerAdapter\code\jars` as webMethods Adapter for IBM Power uses IBM ToolBox for Java to connect to IBM Power systems:
 - `jt400.jar`
 - `util400.jar`
 8. Start Microservices Runtime.
 9. For more information, see *Developing Microservices with webMethods Microservices Runtime*.
 10. Download the documentation for the adapter from [Software AG Documentation website](#).


Upgrading the Adapter

You can upgrade to a newer version of webMethods Adapter for IBM Power.

Before upgrading you can choose to archive the existing adapter package. Archiving creates a copy of the adapter package which enables you to revert to the earlier adapter package later if necessary.

Archiving the Adapter Package

➤ **Perform the following steps to archive the existing adapter:**

1. Navigate to **Packages > Management** in Integration Server Administrator.
2. Locate WmIBMPowerAdapter and click the icon  in the Archive column.

The Archive page is displayed in Integration Server Administrator with the list of all files to be archived.

By default, **Full** Archive Type is selected.

3. Click **Create Archive**.

Integration Server creates a copy of the adapter package in the *Integration Server_directory\replicate\outbound* directory.

Upgrading the Adapter

➤ **Perform the following steps to upgrade the adapter:**

1. Uninstall the existing adapter and delete the package using the instructions in [“Uninstalling webMethods Adapter for IBM Power” on page 26](#).
2. Install webMethods Adapter for IBM Power using the instructions in [“Installing webMethods Adapter for IBM Power” on page 22](#).

Reverting the Adapter to Earlier Versions

➤ **Perform the following steps to revert to the earlier version of the adapter:**

1. Uninstall the existing adapter and delete the package using the instructions in [“Uninstalling webMethods Adapter for IBM Power” on page 26](#).
2. Copy the `packages_directory\replicate\outbound\WmIBMPowerAdapter` to `packages_directory\replicate\inbound` directory.
3. Navigate to **Packages > Management** in Integration Server Administrator.
4. Click **Install Inbound Releases**.

The Inbound Releases page is displayed in Integration Server Administrator.

5. Select the release file name from the drop-down list and click **Install Release**.
6. Copy the following library files to *Integration Server_directory\instances\instance_name\packages\WmIBMPowerAdapter\code\jars* as webMethods Adapter for IBM Power uses IBM ToolBox for Java to connect to IBM Power systems:
 - `jt400.jar`
 - `util400.jar`
7. Restart Integration Server.

Uninstalling webMethods Adapter for IBM Power

➤ Perform the following steps to uninstall webMethods Adapter for IBM Power:

1. Shut down the host Integration Server. You do not need to shut down any other webMethods products or applications that are running on your machine.
2. Start Software AG Uninstaller, selecting the webMethods installation directory that contains the host Integration Server.
3. In the product selection list, select **Adapters > > webMethods Adapter for IBM Power** . You can also choose to uninstall documentation.
4. After Uninstaller completes, restart the host Integration Server.

Uninstaller removes WmIBMPowerAdapter package installed in both *Integration Server_directory\packages* directory and *Integration Server_directory\instances\default\packages* directory. Uninstaller does not delete other packages you have created after you installed the adapter including the files and folders in those packages.

3 Package Management

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Overview of Package Management

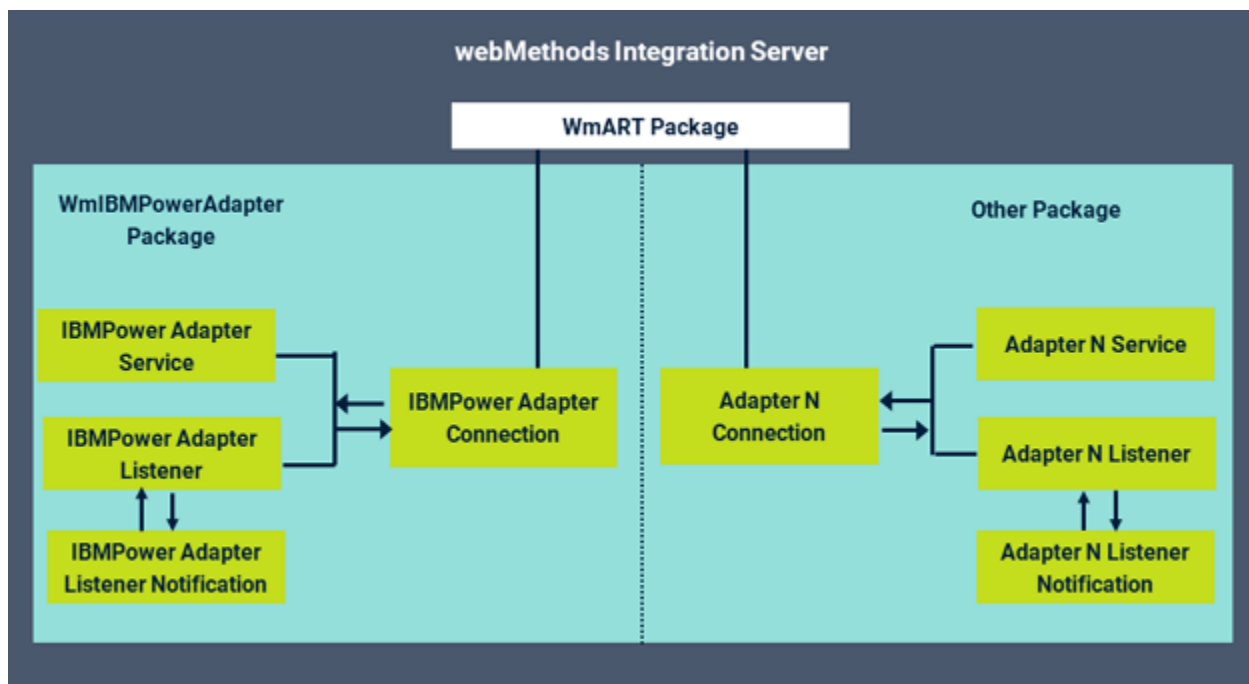
The following sections describe how to set up and manage your webMethods Adapter for IBM Power packages, and set up Access Control Lists (ACLs).

Adapter Package Management

webMethods Adapter for IBM Power is provided as a package called WmIBMPowerAdapter. You manage the WmIBMPowerAdapter package as you would manage any package on webMethods Integration Server.

When you create connections, services, listeners, and listeners notifications for webMethods Adapter for IBM Power, define them in user-defined packages rather than in the WmIBMPowerAdapter package. Doing so will allow you to manage the package more easily.

As you create user-defined packages in which to store connections, services, listeners, and listeners notifications, use the package management functionality provided in Software AG Designer and set the user-defined packages to have a dependency on the WmIBMPowerAdapter package. That way, when the WmIBMPowerAdapter package loads or reloads, the user-defined packages load automatically. See the following diagram:



Package management tasks include:

- Setting package dependencies (see [“Package Dependency Requirements and Guidelines”](#) on page 29)
- [“Enabling Packages”](#) on page 29
- [“Importing and Exporting Packages”](#) on page 30

- [“Group Access Control” on page 31](#)

Package Dependency Requirements and Guidelines

This section contains a list of dependency requirements and guidelines for user-defined packages. For instructions for setting package dependencies, see the *webMethods Service Development Help* for your release.

- A user-defined package must have a dependency on its associated adapter package, WmIBMPowerAdapter. The WmIBMPowerAdapter package has a dependency on the WmART package.
- Package dependencies ensure that at startup the Integration Server automatically loads or reloads all packages in the proper order: the WmART package first, the adapter package next, and the user-defined packages last. The WmART package is automatically installed when you install Integration Server. You must not manually reload the WmART package.
- If the connections and adapter services of an adapter are defined in different packages, then:
 - A package that contains the connections must have a dependency on the adapter package.
 - Packages that contain adapter services must have a dependency on their associated connection package.
- Keep connections for different adapters in separate packages so that you do not create interdependencies between adapters. If a package contains connections for two different adapters, and you reload one of the adapter packages, the connections for both adapters will reload automatically.
- Integration Server will not allow you to enable a package if it has a dependency on another package that is disabled. That is, before you can enable your package, you must enable all packages on which your package depends. For information about enabling packages, see [“Enabling Packages” on page 29](#).
- Integration Server will allow you to disable a package even if another package that is enabled has a dependency on it. Therefore, you must manually disable any user-defined packages that have a dependency on the adapter package before you disable the adapter package. For information about disabling packages, see [“Disabling Packages” on page 30](#).
- You can name connections, adapter services, and notifications the same name provided that they are in different folders and packages.

Enabling Packages

When you want to provide access to the elements in a package, you must ensure the package is enabled. Before the server can access an element in a package, the package must be enabled and the element must be loaded. All packages are automatically enabled by default. When you enable a disabled package, the server loads the elements in the package into memory.

Note:

- Enabling an adapter package will not cause its associated user-defined packages to be reloaded. For information about reloading packages, see the *webMethods Service Development Help* for your release.
- Before you manually enable a user-defined package, you must first enable its associated adapter package (WmIBMPowerAdapter).

➤ **Perform the following steps to enable a disabled package:**

1. Open Integration Server Administrator if it is not already open.
2. Go to **Packages > Management**.
3. Click **No** in the **Enabled** column for the package you want to enable. The server issues a prompt to verify that you want to enable the package. Click **OK** to enable the package.

When the package is enabled, the server displays a ✓ and **Yes** in the **Enabled** column.

Disabling Packages

When you want to temporarily prohibit access to the elements in a package, disable the package. When you disable a package, the server unloads all of its elements from memory. Disabling a package prevents Integration Server from loading that package at startup.

Note:

A disabled adapter will:

- Remain disabled until you explicitly enable it using Integration Server Administrator.
- Not be listed in Designer.

➤ **Perform the following steps to disable a package:**

1. Open Integration Server Administrator if it is not already open.
2. Go to **Packages > Management**.
3. Click **Yes** in the **Enabled** column for the package you want to disable. The server issues a prompt to verify that you want to disable the package. Click **OK** to disable the package.

When the package is disabled, the server displays a **No** in the **Enabled** column.

Importing and Exporting Packages

You import and export packages using Designer. Exporting allows you to export the package to a .zip file and save it to your hard drive. The ZIP file can then be imported for use by another package.

Do not rename packages you export; the rename function is comparable to moving a package, and when you import the renamed package, you lose any triggers, connections, listeners and listener notifications associated with this package.

For details about importing and exporting packages, see the *webMethods Service Development Help* for your release.

Group Access Control

To control which groups have access to which adapter services, use access control lists (ACLs). For example, you can use ACLs to prevent one development group from inadvertently updating the work of another group, or to allow or deny access to services that are restricted to one group but not to others.

For information about assigning and managing ACLs, see the *webMethods Service Development Help* for your release.

4 Adapter for IBM Power Connections

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Overview of Adapter Connections

This chapter describes how to configure and manage webMethods Adapter for IBM Power connections. For more information about how adapter connections work, see [“Adapter Connections” on page 14](#).

Before Configuring or Managing Adapter Connections

Perform the following steps before configuring or managing adapter connections:

1. Install webMethods Integration Server and webMethods Adapter for IBM Power on the same machine. For details, see [“Overview of Installing, Upgrading, and Uninstalling webMethods Adapter for IBM Power” on page 22](#).
2. Make sure you have Integration Server administrator privileges so that you can access webMethods Adapter for IBM Power's administrative screens. For information about setting user privileges, see the *webMethods Integration Server Administrator's Guide* for your release.
3. Start your Integration Server and Integration Server Administrator, if they are not already running.
4. Using Integration Server Administrator, make sure the WmIBMPowerAdapter package is enabled. For instructions, see [“Enabling Packages” on page 29](#).
5. Using Designer, create a user-defined package to contain the connection, if you have not already done so. For more information about managing packages for the adapter, see [“Adapter Package Management” on page 28](#).
6. Copy the following library files to
Integration Server_directory\instances\instance_name\packages\WmIBMPowerAdapter\code\jars
as webMethods Adapter for IBM Power uses IBM ToolBox for Java to connect to IBM Power systems:
 - jt400.jar
 - util400.jar
7. Restart Integration Server.

Configuring webMethods Adapter for IBM Power Connections

When you configure webMethods Adapter for IBM Power connections, you specify information that Integration Server uses to connect to the IBM Power system. You can configure webMethods Adapter for IBM Power connections manually using the Integration Server Administrator page.

➤ **Perform the following steps to configure an adapter connection:**

1. In the **Adapters** menu in Integration Server Administrator's navigation area, click **webMethods Adapter for IBM Power**.
2. In the Connections page, click **Configure New Connection**.
3. In the Connection Types page, click **webMethods Adapter for IBM Power Connection**.
4. In the **Configure Connection Type > webMethods Adapter for IBM Power** section, configure the following fields:

Field	Description/Action
Package	Package in which to create the connection. Use Designer to create the package before specifying the value in this field. For general information about creating packages, see the <i>webMethods Service Development Help</i> for your release. Note: Configure the connection in a user-defined package rather than in the adapter's package. For other important considerations when creating packages for webMethods Adapter for IBM Power, see “Adapter Package Management” on page 28 .
Folder Name	Folder in which to create the connection.
Connection Name	Name you want to give to the connection. Connection names cannot have spaces or use special characters reserved by Integration Server and Designer. For more information about the use of special characters in package, folder, and element names, see the <i>webMethods Service Development Help</i> for your release.

5. In the **Connection Properties** section, use the following fields:

Note:
The following table shows suggested values for these parameters as guidance only. For more information about what values to assign to these parameters, see your IBM Power documentation.

Field	Description/Action
Service Type	Type of service representing various ways to interact with and utilize an IBM Power system's capabilities, such as for data management, system administration, or other tasks. The specific usage and functionality can vary depending on the context and the software or tools being used to establish the connections. Possible values are:

Field	Description/Action
	<ul style="list-style-type: none"> ■ COMMAND. Run non-interactive Control Language (CL) commands or Report Program Generator (RPG) programs. You can perform system administration and automation tasks. ■ DATAQUEUE. Perform read or write operations on dataqueues. Dataqueues are used for asynchronous communication between programs on the system.
System Name	Hostname or IP address of the IBM Power system.
Default System User	Select <code>true</code> to use the default user for the system name specified in the System Name field and <code>false</code> to specify the username.
User ID	Username of the IBM Power system.
Password	Password for the user.
Retype Password	Retype the password for the user.
Secure Connection	<p>Use SSL to connect to the IBM Power system. Possible values are:</p> <ul style="list-style-type: none"> ■ <code>true.</code> If you have configured SSL connections between webMethods Adapter for IBM Power and IBM Power system, set the truststore alias name in the <code>watt.server.ssl.trustStoreAlias</code> server configuration parameter. <ul style="list-style-type: none"> ■ In Integration Server Administrator, select Settings > Extended. ■ Set the <code>watt.server.ssl.trustStoreAlias</code> server configuration parameter to the truststore alias name created in Integration Server. <p>For information on creating truststore aliases, see <i>webMethods Integration Server Administrator's Guide.</i></p> ■ <code>false.</code> Default.

Field	Description/Action
Proxy	Indicates if the connection is established through a proxy. Set to <code>true</code> to use the proxy to connect to the IBM Power system. Default value is <code>false</code> .
Proxy Endpoint	Hostname or the IP address and port of the proxy server in the format <code>serverName[:port]</code> . If no port is specified, the default port number is used.
Proxy Encryption Mode	<p>Encrypt data path. Possible values:</p> <ul style="list-style-type: none"> ■ <code>CLIENT_TO_SERVER</code>. Encrypt data in both, the connection between the client and the proxy server, and the connection between the proxy server and the system. ■ <code>CLIENT_TO_PROXY_SERVER</code>. Encrypt data on the connection between the client and the proxy server. ■ <code>PROXY_SERVER_TO_SERVER</code>. Encrypt data on the connection between the proxy server and the system.
Current Library	Optional. Library that you want to use for accessing the IBM Power system resources. The library specified in the Current Library field is available as <code>%CONN_CURLIB%</code> environment variable in your service.
Socket Properties	Optional. Socket properties which the IBM Toolbox for Java sets on its client-side sockets. Use <code>;</code> (semi-colons) to delimit multiple property settings.
Other Properties	Optional. Property specific to the IBM Power system resources. Use <code>;</code> (semi-colons) to delimit multiple property settings.

Note:

Create a connection with `COMMAND` service type if you want to use services like **Call Command** or **Call Program**, and a connection with `DATAQUEUE` service type if you want to use services like **Read DataQueue** or **Write DataQueue**.

6. In the **Connection Management Properties** section, use the following fields:

Field	Description/Action
Enable Connection Pooling	Enables the connection to use connection pooling. For more information about connection pooling, see “Adapter Connections” on page 14 .
Minimum Pool Size	If connection pooling is enabled, this field specifies the number of connections to create when the connection is enabled. The adapter will keep open the number of connections you configure here regardless of whether these connections become idle.
Maximum Pool Size	If connection pooling is enabled, this field specifies the maximum number of connections that can exist at one time in the connection pool.
Pool Increment Size	If connection pooling is enabled, this field specifies the number of connections by which the pool will be incremented if connections are needed, up to the maximum pool size.
Block Timeout	<p>If connection pooling is enabled, this field specifies the number of milliseconds that Integration Server will wait to obtain a connection with the database before it times out and returns an error. For example, you have a pool with Maximum Pool Size of 20. If you receive 30 simultaneous requests for a connection, 10 requests will be waiting for a connection from the pool. If you set the Block Timeout to 5000, the 10 requests will wait for a connection for 5 seconds before they time out and return an error. If the services using the connections require 10 seconds to complete and return connections to the pool, the pending requests will fail and return an error message stating that no connections are available. If you set the Block Timeout value too high, you may encounter problems during error conditions. If a request contains errors that delay the response, other requests will not be sent. This setting must be tuned in conjunction with the Maximum Pool Size to accommodate such bursts in processing.</p>
Expire Timeout	<p>If connection pooling is enabled, this field specifies the number of milliseconds that an inactive connection can remain in the pool before it is closed and removed from the pool. The connection pool will remove inactive connections until the number of connections in the pool is equal to the Minimum Pool Size. The inactivity timer for a connection is reset when the connection is used by the adapter.</p> <p>If you set the Expire Timeout value too high, you may have a number of unused inactive connections in the pool. This consumes local memory and a connection on your backend resource. This could have an adverse effect if your resource has a limited number of connections.</p> <p>If you set the Expire Timeout value too low, performance could degrade because of the increased activity of creating and closing connections. This setting must be tuned in conjunction with the Minimum Pool Size to avoid excessive opening/closing of connections during normal processing.</p>

Field	Description/Action
Startup Retry Count	Number of times that the system must attempt to initialize the connection pool at startup if the initial attempt fails. The default is 0.
Startup Backoff Timeout	Number of seconds that the system must wait between attempts to initialize the connection pool.
Heart Beat Interval	If the connection pooling is enabled and the minimum pool size is more than zero, the Heart Beat Interval is applicable. The connection pool checks the connectivity of the connections that are idle for the value of Heart Beat Interval . The default value for Heart Beat Interval is zero and it is mentioned in seconds. For example, if the value of Heart Beat Interval is 25 seconds, connection pool looks for connections that are idle for 25 seconds. If a connection is broken, then the connection pool is reset.

7. Click **Save Connection**.

The connection you created appears on the adapter's Connections page and in Designer.

You can enable a connection only if the parameters for the connection are valid.

Dynamically Changing a Service's Connection at Run Time

You can run a service using a connection other than the default connection that was associated with the service when the service was created.

To override the default connection, you must code your flow to pass a value through the pipeline into a service's *\$connectionName* field.

For example, you have a flow whose primary purpose is to update a production dataqueue. However, you want the flow to have the capability to update a test dataqueue, with the decision of which dataqueue to update to be made programmatically at runtime. The output signature of the flow's first service contains a field called Target. The flow could branch based on the value in Target. If Target contains the value Production, the second service in the flow would ignore *\$connectionName*, thus using its default connection to connect to (and then update) the production dataqueue. However, if Target contains the value Test, the second service in the flow would use the value in the *\$connectionName* from the pipeline and connect to (and then update) the test dataqueue.

Keep in mind these restrictions when using dynamic connections:

- Both connections, the default and override, must use the same dataqueue structure.
- The connection with which you override the default (that is, the value provided for *\$connectionName*) must be configured to use the same service type as the default connection.

For more information, see [“Changing the Connection Associated with an Adapter Service at Run Time” on page 17](#).

Enabling Adapter Connections

An webMethods Adapter for IBM Power connection must be enabled before you can configure any adapter service using the connection, or before an adapter service can use the connection at run time. You enable adapter connections using Integration Server Administrator.

Note:

When you reload a package that contains enabled connections, the connections will automatically be enabled when the package reloads. If the package contains connections that are disabled, they will remain disabled when the package reloads.

➤ **Perform the following steps to enable a connection:**

1. In the **Adapters** menu in the Integration Server Administrator navigation area, click **webMethods Adapter for IBM Power**.
2. In the Connections page, click **No** in the **Enabled** column for the connection you want to enable.

Integration Server Administrator enables the adapter connection and displays a ✓ and **Yes** in the **Enabled** column.

Disabling Adapter Connections

webMethods Adapter for IBM Power connections must be disabled before you can edit or delete them. You disable adapter connections using Integration Server Administrator.

➤ **Perform the following steps to disable a connection:**


1. In the **Adapters** menu in the Integration Server Administrator navigation area, click **webMethods Adapter for IBM Power**.
2. In the Connections page, click **Yes** in the **Enabled** column for the connection you want to disable.

The adapter connection is disabled, and you see a **No** in the **Enabled** column.

Editing Adapter Connections

If the login information for the IBM Power system changes, or if you want to redefine parameters that a connection uses when connecting, you can update a connection's parameters using Integration Server Administrator.

➤ **Perform the following steps to edit a connection:**

1. In the **Adapters** menu in Integration Server Administrator's navigation area, click **webMethods Adapter for IBM Power**.
2. Make sure that the connection is disabled before editing it. For instructions, see [“Disabling Adapter Connections” on page 40](#).
3. In the Connections page, click the  icon for the connection you want to edit.

The Edit Connection page displays the current parameters for the connection. Update the connection's parameters by typing or selecting the values you want to specify.

For descriptions of the connection parameters, see [“Configuring webMethods Adapter for IBM Power Connections” on page 34](#).

4. Click **Save Changes** to save the connection and return to the Connections page.

Viewing Adapter Connection Parameters


You can view a connection's parameters from Integration Server Administrator and Designer.

Viewing Adapter Connection Parameters Using Integration Server Administrator

Perform the following steps to view adapter connection parameters in Integration Server Administrator:

1. In the **Adapters** menu in Integration Server Administrator's navigation area, click **webMethods Adapter for IBM Power**.

The Connections page appears, listing all the adapter connections. You can sort and filter the list of connections that appears in the Connections page. For more information, see [“Sorting and Filtering Connections” on page 41](#). You can control the number of connections that are displayed. For more information, see [“Controlling Pagination” on page 20](#).

2. Click the  icon for the connection you want to see.

The View Connection page displays the parameters for the connection. For descriptions of the connection parameters, see [“Configuring webMethods Adapter for IBM Power Connections” on page 34](#).

3. Click **Return to webMethods Adapter for IBM Power Connections** to return to the main connections page.

Sorting and Filtering Connections

You can sort and filter connections that appear in the Connections page in Integration Server Administrator. Perform the following steps to sort and filter connections:

1. In Integration Server Administrator, select **Adapters > webMethods Adapter for IBM Power > Connections**.
2. Perform the following to sort the connections:
 - a. Click the **Up** and **Down** arrows on the field you want to sort.
3. Perform the following to filter the connections:
 - a. Click **Filter Connections**.
 - b. Type the criterion by which you want to filter into the **Filter criteria** box. Filtering is based on the connection name. To locate all connections containing specific alphanumeric characters, use asterisks (*) as wildcards. For example, if you want to display all connections containing the string "abc", type *abc* in the **Filter criteria** box.
 - c. Click **Submit**. The Connections page displays the connections that match the filter criteria.
 - d. Click **Show All Connections** to re-display all connections.

Viewing Adapter Connection Parameters Using Designer

Perform the following steps to view adapter connection parameters in Designer:


1. From the Designer navigation area, open the package and folder in which the connection is located.
2. Double-click the connection you want to view.

The parameters for the connection appear in the **Connection Information**. For descriptions of the connection parameters, see [“Configuring webMethods Adapter for IBM Power Connections” on page 34](#).

Copying Adapter Connections

You can copy an existing webMethods Adapter for IBM Power connection to configure a new connection with the same or similar connection properties without having to re-type all of the properties for the connection. You copy adapter connections using Integration Server Administrator.

➤ **Perform the following steps to copy a connection:**

1. In the **Adapters** menu in Integration Server Administrator's navigation area, click **webMethods Adapter for IBM Power**.
2. In the Connections page, click the  icon for the connection you want to copy.

The Copy Connection page displays the current parameters for the connection you want to copy. Name the new connection, specify a package name and folder name, and edit any connection parameters as needed by typing or selecting the values you want to specify.

Note:

When you copy a connection, the new connection does not save the password of the original connection. You must enter and then retype the password before you can save the new connection.

For descriptions of the connection parameters, see [“Configuring webMethods Adapter for IBM Power Connections” on page 34](#).


3. Click **Save Connection Copy** to save the connection and return to the Connections page.

Deleting Adapter Connections

If you no longer want to use a particular webMethods Adapter for IBM Power connection, you can delete it. You delete adapter connections using Integration Server Administrator.

If you delete an webMethods Adapter for IBM Power connection, the adapter services or notifications that are defined to use the connection will no longer work. However, you can assign a different connection to an adapter service and re-use the service.

➤ **Perform the following steps to delete a connection:**

1. In the **Adapters** menu in the Integration Server Administrator navigation area, click **webMethods Adapter for IBM Power**.
2. Make sure that the connection is disabled before deleting. To disable the connection, click **Yes** in the **Enabled** column and click **OK** to confirm. The **Enabled** column now shows **No (Disabled)** for the connection.
3. On the Connections page, click  for the connection you want to delete.

Integration Server deletes the adapter connection.

5 Adapter Services

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Overview of Adapter Services

This chapter describes how to configure and manage webMethods Adapter for IBM Power services. For detailed descriptions of the available webMethods Adapter for IBM Power services, see [“Adapter Services” on page 15](#).

Before Configuring or Managing Adapter Services

Perform the following steps before configuring or managing adapter services:

1. Start your Integration Server and Integration Server Administrator, if they are not already running.
2. Make sure you have Integration Server Administrator privileges so that you can access webMethods Adapter for IBM Power's administrative pages. For information about setting user privileges, see the *webMethods Integration Server Administrator's Guide* for your release.
3. If you have made changes to the dataqueue structure or to the program you are calling, then be sure to update the adapter service accordingly.
4. Using Integration Server Administrator, make sure the WmIBMPowerAdapter package is enabled. For instructions, see [“Enabling Packages” on page 29](#).
5. Start Software AG Designer if it is not already running.
6. Using Designer, create a user-defined package to contain the service, if you have not already done so. When you configure adapter services, you must always define them in user-defined packages rather than in the WmIBMPowerAdapter package. For more information about managing packages for the adapter, see [“Overview of Package Management” on page 28](#).
7. Using Integration Server Administrator, configure an adapter connection to use with the adapter service. For instructions, see [“Configuring webMethods Adapter for IBM Power Connections” on page 34](#).

Configuring Call Command Services

A Call Command service runs a non-interactive batch command in an IBM Power system. You can use Call Command service to run commands that do not require user interaction and are often used for automating administrative tasks or running batch processes in the IBM Power systems. You can pass parameters or specify the settings required for the batch command. You configure webMethods Adapter for IBM Power services using Designer. For more information about adapter services, see [“Adapter Services” on page 15](#).

Be sure to review the section [“Before Configuring or Managing Adapter Services” on page 46](#) before you configure adapter services.

➤ **Perform the following steps to configure a Call Command service:**



1. In Designer, right-click the package in which the service must be created and select **New > Adapter Service**.
2. Select the parent namespace, type a name for the adapter service, and click **Next**.
3. Select **webMethods Adapter for IBM Power** as the adapter type and click **Next**.
4. Select the appropriate **Adapter Connection Name** and click **Next**.
5. From the list of available templates, select the **Call Command** template and click **Finish**.

The adapter service editor for the adapter service appears. You can select the **Adapter Settings** tab at any time to confirm adapter service properties such as the **Adapter Name**, **Adapter Connection Name**, and **Adapter Service Template**, as necessary.

6. Select the **Command** tab to configure the command using the fields as follows:



Field	Description/Action
Library Name	Optional. Name of the library where the command exists. Type the library name or select from the library list (containing user, system, and other libraries added). Default is *LIBL.
Command Name	Name of the command to call. For more information, see the official website for IBM Power commands.
Command Description	Description for the command is populated when you select a command to call.


The parameters are auto-populated. You can specify the parameter values required for the command.

- a. Use the  icon to create new rows as needed. You can use the  icon to fill in all rows to the table.
- b. As you insert rows, the following fields are displayed for each parameter:

Field	Description/Action
Parameter Names	Name of the parameter to pass when the command is called.

Field	Description/Action
Parameter Values	Value associated with the parameter. You can specify the parameter value either in the field or during runtime. If you want to provide the value at runtime, then include a ? in the Parameter Values field.

c. Use the  or  icons to change the order of the parameters to ensure that they are parsed in the correct order.

d. Use the  icon to delete a parameter.

7. From the **File** menu, select **Save**.

Configuring Call Program Services

A Call Program service runs an IBM Power program in the IBM Power system. You can pass input parameters to the program and specify output parameters to capture data returned by the program after it runs. Call Program services are typically used for invoking server programs written in languages such as RPG or COBOL. You configure webMethods Adapter for IBM Power services using Designer. For more information about adapter services, see [“Adapter Services” on page 15](#).

Be sure to review the section [“Before Configuring or Managing Adapter Services” on page 46](#) before you configure adapter services.

➤ **Perform the following steps to configure a Call Program service:**


1. In Designer, right-click the package in which the service must be created and select **New > Adapter Service**.
2. Select the parent namespace, type a name for the adapter service, and click **Next**.
3. Select **webMethods Adapter for IBM Power** as the adapter type and click **Next**.
4. Select the appropriate **Adapter Connection Name** and click **Next**.
5. From the list of available templates, select the **Call Program** template and click **Finish**.

The adapter service editor for the adapter service appears. You can select the **Adapter Settings** tab at any time to confirm adapter service properties such as the **Adapter Name**, **Adapter Connection Name**, and **Adapter Service Template**, as necessary.

6. Select the **Program** tab to configure the program using the fields as follows:

Field	Description/Action
Library Name	Name of the library where the program exists. Type the library name or select from the library list (containing user, system, and other libraries added).
Program Name	Name of the program to call.
Inquiry Message Reply	<p>Option to indicate how the program must respond to inquiry messages. Possible values are:</p> <ul style="list-style-type: none"> ■ INQUIRY_MESSAGE_REPLY_DEFAULT. Sends the default reply message to respond to any inquiry received while the program is running. The default reply is either defined in the message description or is the default system reply. ■ INQUIRY_MESSAGE_REPLY_SYSTEM_REPLY_LIST. Checks system reply list to see if there is an entry for an inquiry message issued while the program is running. If a match occurs, the system sends the reply value for that entry. If no entry exists for that message, the system sends an inquiry message.

7. Select the **Parameters** tab to configure the parameters as follows:

- a. Use the  icon to create new rows as needed.
- b. As you insert rows, the following fields are displayed for each input parameter:

Field	Description/Action
Input Parameter Name	Name of the input parameter to pass when the program is called.
Native Data Type	List of IBM Power native data types for the parameter.
Byte Length	Length in bytes of the input parameter value.
Is Array	Flag to indicate if the parameter value is an array.

Field	Description/Action
Input Data Type	List of possible Java data types depending on the Native Data Type and the Is Array field selection.
Parameter Value	Value associated with the parameter. You can specify the parameter value either in the field or during runtime. If you want to provide the value at runtime, then include a ? in the Parameter Value field.

You can pass input parameters to the program.



- c. As you insert rows, the following fields are displayed for each output parameter:


Field	Description/Action
Output Parameter Name	Name of the output parameter returned when the program is called.
Native Data Type	List of IBM Power native data types for the parameter.
Is Array	Flag to indicate if the parameter value is an array.
Data Occurrence	Number of elements in the array if Is Array is selected. Default value is 1.
Output Data Type	List of possible Java data types depending on the Native Data Type and the Is Array field selection.
Output Data Length	Length in bytes of the output data value.

You can capture data returned by the program in the output parameters after it runs.

Note:

If you want to specify a parameter as both input and output, add the parameter in the input section as well as in the output section with the same parameter name.

- d. If necessary, use the  or  icons to change the order of the parameters to ensure that they are parsed in the correct order.

- e. Use the  icon to delete a parameter.

8. From the **File** menu, select **Save**.

Configuring Read DataQueue Services

A Read DataQueue service retrieves specified information from an IBM Power dataqueue. You configure webMethods Adapter for IBM Power services using Designer. For more information about adapter services, see [“Adapter Services” on page 15](#).

Be sure to review the section [“Before Configuring or Managing Adapter Services” on page 46](#) before you configure adapter services.

➤ **Perform the following steps to configure a Read DataQueue service:**


1. In Designer, right-click the package in which the service must be created and select **New > Adapter Service**.
2. Select the parent namespace, type a name for the adapter service, and click **Next**.
3. Select **webMethods Adapter for IBM Power** as the adapter type and click **Next**.
4. Select the appropriate **Adapter Connection Name** and click **Next**.
5. From the list of available templates, select the **Read DataQueue** template and click **Finish**.

The adapter service editor appears. You can select the **Adapter Settings** tab at any time to confirm adapter service properties such as the **Adapter Name**, **Adapter Connection Name**, and **Adapter Service Template**, as necessary.



6. Select the **Read DataQueue** tab to configure the dataqueue using the fields as follows:

Field	Description/Action
Library Name	Name of the library where the dataqueue exists. Type the library name or select from the library list (containing user, system, and other libraries added).
Queue Name	Name of the dataqueue from where the adapter service reads.
Operation Type	Type of read operation. Possible values are: <ul style="list-style-type: none"> ■ Read. Read a record from the dataqueue and remove it from the dataqueue. If no record exists in the dataqueue, then return. ■ Peek. Read a record from the dataqueue without removing it from the dataqueue. If no record exists in the dataqueue, then return.

Field	Description/Action
Read Timeout (sec)	Time in seconds to wait if the dataqueue is empty. Specify -1 to wait until a record becomes available.
Queue Type	Type of dataqueue. Possible values are: <ul style="list-style-type: none">■ Sequential. Dataqueue organized in a linear or sequential (FIFO or LIFO) order.■ Keyed. Dataqueue organized as key-value pair. The key-value pair allows direct access to messages based on the specific identifier (key).
Key Type	List of the IBM Power native data types in which the key is stored in the dataqueue if the Queue Type is Keyed.
Key Input Type	List of the possible Java data types corresponding to the Key Type selected, if the Queue Type is Keyed.
Key Length	Length of the key in bytes if the Queue Type is Keyed.
Key Value	Value of the key if the Queue Type is Keyed.
Key Compare Type	Type of comparisons to perform on the Key Value if the Queue Type is Keyed. Possible values are: <ul style="list-style-type: none">■ EQ. Equal.■ NE. Not equal.■ LT. Less than.■ LE. Less than or equal.■ GT. Greater than.■ GE. Greater than or equal.

7. Use the **Record Metadata** tab to define the metadata and fields to be selected as follows:
 - a. Use the  icon to create new rows as needed.
 - b. As you insert rows, the following fields are displayed for each **Data Name**:

Field	Description/Action
Data Name	Name of the record.
Native Data Type	List of IBM Power native data types for the record.
Byte Length	Length in bytes of the data value.
Is Array	Flag to indicate if the data value is an array.
Data Occurrence	Number of elements in the array if Is Array is selected. Default value is 1.
Output Data Type	List the possible Java data types depending on the Native Data Type and the Is Array fields selection.

c. If necessary, use the  or  icons to change the order.

d. Use the  icon to delete the row.

8. From the **File** menu, select **Save**.

Configuring Write DataQueue Services

A Write DataQueue service inserts new information into an IBM Power dataqueue. You configure webMethods Adapter for IBM Power services using Designer. For more information about adapter services, see [“Adapter Services” on page 15](#).

Be sure to review the section [“Before Configuring or Managing Adapter Services” on page 46](#) before you configure adapter services.

➤ **Perform the following steps to configure a Write DataQueue service:**


1. In Designer, right-click the package in which the service must be created and select **New > Adapter Service**.
2. Select the parent namespace, type a name for the adapter service, and click **Next**.
3. Select **webMethods Adapter for IBM Power** as the adapter type and click **Next**.
4. Select the appropriate **Adapter Connection Name** and click **Next**.
5. From the list of available templates, select the **Write DataQueue** template and click **Finish**.

The adapter service editor for the adapter service appears. You can select the **Adapter Settings** tab at any time to confirm adapter service properties such as the **Adapter Name**, **Adapter Connection Name**, and **Adapter Service Template**, as necessary.

6. Select the **Write DataQueue** tab to configure the dataqueue using the fields as follows:

Field	Description/Action
Library Name	Name of the library where the dataqueue exists. Type the library name or select from the library list (containing user, system, and other libraries added).
Queue Name	Name of the dataqueue to which the adapter service writes.
Queue Type	Type of dataqueue. Possible values are: <ul style="list-style-type: none">■ Sequential. Dataqueue organized in a linear or sequential (FIFO or LIFO) order.■ Keyed. Dataqueue organized as key-value pair. The key-value pair allows direct access to messages based on the specific identifier (key).
Key Type	List of the IBM Power native data types in which the key is stored in the dataqueue, if the Queue Type is Keyed .
Key Input Type	List of the possible Java data types corresponding to the Key Type selected, if the Queue Type is Keyed .
Key Length	Length of the key in bytes if the Queue Type is Keyed .
Key Value	Value of the key if the Queue Type is Keyed .


7. Use the **Record Data** tab to define the record as follows:

- Use the  icon to create new rows as needed.
- As you insert rows, the following fields are displayed for each **Data Name**:

Field	Description/Action
Data Name	Name of the record.

Field	Description/Action
Native Data Type	List of IBM Power native data types for the record.
Byte Length	Length in bytes of the data value.
Is Array	Flag to indicate if the data value is an array.
Input Data Type	List of possible Java data type corresponding to the Native Data Type and Is Array fields selection.
Data Value	Value of the record to store in the dataqueue. You can specify the data value either in the field or during runtime. If the intention is to provide the value at runtime, then include a ? in the Data Value field.

c. If necessary, use the  or  icons to change the order.

d. Use the  icon to delete the row.

8. From the **File** menu, select **Save**.

Testing Adapter Services

You use Designer to test adapter services.

For more information about testing and debugging services, see the *webMethods Service Development Help* for your release.

➤ Perform the following steps to test adapter services:

1. In Designer, expand the package and folder that contain the service you want to test.
2. Double-click the service you want to test.

Designer displays the configured service in the service template's Adapter Service Editor.

3. Select **Run > Run As > Run Service**.
4. Specify how you want to connect to the IBM Power system. If you want to connect to an IBM Power system using a connection that is different than the connection specified during design time, specify the connection name here:

Parameter	Description
\$connectionName	Name of connection to use to connect to the IBM Power system.

Note:

The service type of the overridden connection must be the same as that of the default connection. For more information, see [“Changing the Connection Associated with an Adapter Service at Run Time” on page 17](#).

5. If you have defined any other input fields, you will be prompted to type their input values. Type the values for each input field and then click **OK**.
6. Click the **Service Result** tab to view the output from the service.

Viewing Adapter Services

You can view adapter service using Designer.

Perform the following steps to view adapter service:

1. In Designer, expand the package and folder that contains the service you want to view.
2. Double-click the service you want to view.

Designer displays the configured service in the service template's Adapter Service Editor.

Editing Adapter Services

You can edit adapter services using Designer.

Perform the following steps to edit an adapter service:

1. In Designer, expand the package and folder that contains the service you want to edit.
2. Double-click the service you want to edit.

Designer displays the adapter service in the service template's Adapter Service Editor.

3. Do one of the following:
 - If you have the VCS Integration feature enabled, right-click the service and select **Check Out**.
 - If you do not have the VCS Integration feature enabled, right-click the service and select **Lock for Edit**.

- If you are using the local service development feature, from the **Team** menu in Designer, select the appropriate option to check out the service. The options available in the **Team** menu depend on the VCS client that you use.
4. Modify the values for the adapter service's parameters as needed. For detailed descriptions of the service's parameters, see the section on configuring a service for the specific type of service you want to edit.
 5. After you complete your modifications, save the service, and do one of the following:
 - If you have the VCS Integration feature enabled, right-click the service and select **Check In**. Enter a check-in comment and click **OK**.
 - If you do not have the VCS Integration feature enabled, right-click the service and select **Unlock**.
 - If you are using the local service development feature, from the **Team** menu in Designer, select the appropriate option to check in the service. The options available in the **Team** menu depend on the VCS client that you use.
 6. Save the service.

Deleting Adapter Services

You use Designer to delete adapter services.

➤ **Perform the following steps to delete a service:**

1. In Designer, expand the package and folder that contains the service you want to delete.
2. Right-click the adapter service and click **Delete**.
3. Click **OK** in the Delete Confirmation screen.

Validating Adapter Service Values

Designer enables webMethods Adapter for IBM Power to validate user-defined data for adapter services at design time. You can validate the values for a single adapter service, or you can configure Designer to always validate the values for adapter services. Both options could potentially slow your design-time operations.

If you select the option to always validate values for adapter services, it will do so for all webMethods WmART-based adapters installed on Integration Server.


For more information about the **Adapter Service/Notification Editor** and other Designer menu options and toolbar icons, see the *webMethods Service Development Help* for your release.

Validate Data for a Single Adapter Service

Perform the following procedure to validate data for a single adapter service:

1. In Designer, expand the package and folder that contain the service for which you want to enable automatic validation.
2. Double-click the service for which you want to validate the data.

Designer displays the configured adapter service in the service template's Adapter Service Editor.

3. Click the  icon.

Validating Data for All Adapter Services

Perform the following procedure to enable Designer to always validate data for all adapter services:

1. In Designer, select the **Window > Preferences > Software AG > Service Development > Adapter Service/Notification Editor** item.
2. Enable the **Automatic data validation** option.
3. Click **OK**.

Reloading Adapter Values

Designer enables webMethods Adapter for IBM Power to reload and validate user-defined data for adapter services at design time. You can reload values for a single adapter service, or you can configure Designer, so it automatically reloads the values for adapter services. Both options could potentially slow your design-time operations.

When you reload adapter values for a single adapter service, Designer compares the service values against the resource data that has already been fetched from the selected adapter.

If you select the option to always reload values for adapter services, it will do so for all webMethods WmART-based adapters installed on Integration Server.

For more information about the **Adapter Service/Notification Editor**, other menu options, and toolbar icons, see the *webMethods Service Development Help* for your release.


Reloading the Values for a Single Adapter Service

Perform the following procedure to reload the adapter values for a single adapter service:

1. In Designer, expand the package and folder that contain the service for which you want to enable automatic validation.

2. Double-click the service for which you want to validate the data.

Designer displays the configured adapter service in the service template's Adapter Service Editor.

3. Click the  icon.

Reloading the Values for All Adapter Services

Perform the following procedure to reload the adapter values for all adapter services:

1. In Designer, select the **Window > Preferences > Software AG > Service Development > Adapter Service/Notification Editor** item.
2. Enable the **Automatic polling of adapter metadata** option.
3. Click **OK**.

6 Adapter Listeners and Notifications

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Listeners Overview

webMethods Adapter for IBM Power provides only one type of listener, which is a dataqueue listener. A dataqueue listener monitors a specified dataqueue and notifies the application when a write operation is performed on the dataqueue. This chapter provides instructions for managing dataqueue listener. You must have webMethods Integration Server administrator privileges to access the webMethods Adapter for IBM Power's administrative screens.

When you configure a dataqueue listener, you must provide information about the IBM Power dataqueue to monitor.

webMethods Integration Server invokes the listener node every time an entry is written to the dataqueue and places the dataqueue entry in the pipeline. Listeners are used in conjunction with listener notifications. For more details about listener notification, see [“Listener Notifications Overview” on page 72](#).

Before You Configure Listener

➤ **Perform the following before configuring a listener:**

1. Install webMethods Integration Server and webMethods Adapter for IBM Power on the same machine. For details, see [“Installing webMethods Adapter for IBM Power” on page 22](#).
2. Make sure that you have webMethods administrator privileges so that you can access webMethods Adapter for IBM Power's administrative pages. For information about setting user privileges, see the *webMethods Integration Server Administrator's Guide* for your release.
3. Start Integration Server and Integration Server Administrator, if they are not already running.
4. Using Integration Server Administrator, make sure that the WmIBMPowerAdapter package is enabled. To verify the status, see [“Enabling Packages” on page 29](#).
5. Start Software AG Designer if it is not already running.
6. Using Designer, create a user-defined package to contain the listener, if you have not already done so. When you configure listeners, you must always define them in user-defined packages rather than in the WmIBMPowerAdapter package. For more information about managing packages for the adapter, see [“Package Management” on page 13](#).
7. Using Integration Server Administrator, configure an adapter connection to use with the listener. For instructions, see [“Configuring webMethods Adapter for IBM Power Connections” on page 34](#).

Configuring Listeners

When you configure a dataqueue listener, you specify information that the Integration Server uses to read data from IBM Power dataqueue.

Before you configure the dataqueue listeners, you must configure an adapter connection. You create webMethods Adapter for IBM Power connections using the Integration Server Administrator.

➤ **Perform the following steps to configure a dataqueue listener:**

1. In the **Adapters** menu in Integration Server Administrator's navigation area, click **webMethods Adapter for IBM Power**.
2. Click **Listeners**.
3. In the Listeners page, click **Configure New Listener**.
4. In the Listener Types page, select **DataQueue Listener**.
5. In the Configure Listener Type page, provide values to the following fields:

Field	Description
Package	Package in which to create the listener. Use Designer to create the package before specifying the value in this field. For general information about creating packages, see the <i>webMethods Service Development Help</i> for your release. Note: Configure the listener in a user-defined package rather than in the adapter's package. For other important considerations when creating packages for webMethods Adapter for IBM Power, see “Adapter Package Management” on page 28.
Folder Name	Folder in which to create the listener.
Listener Name	Name of the listener.
Connection Name	Name of the webMethods Adapter for IBM Power connection that the listener must use to connect to the IBM Power system. Note:

Field	Description
	Use a connection with Service Type as DATAQUEUE to access dataqueues.
Retry Limit	Number of times the adapter tries to reconnect, if the adapter fails to connect to or loses connection with the IBM Power system.
Retry Backoff Timeout	Time in seconds that must elapse between each of the retries specified in the Retry Limit .
Library Name	Name of the library where the dataqueue exists.
Queue Name	Name of the dataqueue which must be monitored.
Queue Type	Type of dataqueue. Possible values are: <ul style="list-style-type: none"> ■ Sequential. Dataqueue organized in a linear or sequential (FIFO or LIFO) order. ■ Keyed. Dataqueue organized as key-value pair. The key-value pair allows direct access to messages based on the specific identifier (key).
Key Type	List of the IBM Power native data types in which the key is stored in the dataqueue if the Queue Type is Keyed.
Key Length	Length of the key in bytes if the Queue Type is Keyed. Specify the Key Length as 0 if the Queue Type is Sequential.
Key Value	Value of the key if the Queue Type is Keyed.
Key Compare Type	Type of comparisons to perform on the Key Value if the Queue Type is Keyed. Possible values are: <ul style="list-style-type: none"> ■ EQ. Equal. ■ NE. Not equal. ■ LT. Less than. ■ LE. Less than or equal. ■ GT. Greater than. ■ GE. Greater than or equal.

Note:

The listener name is prefixed by the folder name and is separated by a colon. For example, if the folder name is `Folder1` and the listener name is `Listener1`, then the listener name in the Listeners page will be `Folder1:Listener1`.

6. Click **Save Listener**. If the parameters are valid, the listener you created appears on the page.
7. To monitor the dataqueue, enable the listener. For more information on enabling listeners, see [“Enabling Listeners” on page 66](#).

Enabling Listeners

The listener must be enabled to monitor the dataqueue for write operations. When you create a listener, it is not automatically enabled.

Before you enable a listener, you must configure one or more listener notifications to associate with the listener. If no notifications are configured when you enable the listener, then Integration Server Administrator displays a warning message. After you have configured your listener notifications, you must enable the listener so that the associated listener notifications will communicate appropriately with the listener at runtime. You enable the listeners using Integration Server Administrator. For more information on configuring listeners and listener notifications, see the sections on [“Configuring Listeners” on page 64](#) and [“Configuring a Listener Notification” on page 74](#).

Note:

- You cannot enable a listener if the connection used by the listener is disabled.
- When you reload a package that contains enabled listeners, the listeners will automatically be enabled when the package reloads. If the package contains listeners that are disabled, they will remain disabled when the package reloads.

➤ **Perform the following steps to enable a listener:**

1. In the **Adapters** menu in Integration Server Administrator's navigation area, click **webMethods Adapter for IBM Power**.
2. Click **Listeners**.
3. In the Listeners page, select **Enabled** in the **State** column for the listener you want to enable.
Integration Server enables the listener.
4. Click **Enable all suspended** to quickly enable multiple suspended listeners.

Suspending Listeners

You must be running Integration Server to suspend an enabled listener.

Note:

A suspended listener acts in the same way as a disabled listener.

Perform the following steps to suspend a listener:

1. In the **Adapters** menu in Integration Server Administrator's navigation area, click **webMethods Adapter for IBM Power**.
2. Click **Listeners**.
3. In the Listeners page, select **Suspended** in the **State** column for the listener you want to suspend.

Integration Server suspends the listener.

4. Click **Suspend all enabled** to change the state quickly for multiple enabled listeners.

When you suspend a listener, the action may not take effect right away. You may have to wait. If one or more records are written to the dataqueue within that time interval, the adapter may receive and process the first record.

Disabling Listeners

The listeners must be disabled before you can edit or delete them.

Note:

When you disable a connection alias, Integration Server also disables any listener associated with the connection.

➤ **Perform the following steps to disable a listener:**

1. In the **Adapters** menu in Integration Server Administrator's navigation area, click **webMethods Adapter for IBM Power**.
2. Click **Listeners**.
3. In the Listeners page, select **Disabled** in the **State** column for the listener you want to disable.

Integration Server disables the listener.


Editing Listeners

You can redefine the parameters that a listener uses when connecting to an IBM Power system using the Integration Server Administrator.

Note:

You can edit a listener only if it is disabled. For instructions on disabling a listener, see [“Disabling Listeners” on page 67](#).

➤ **Perform the following steps to edit a listener:**

1. In the **Adapters** menu in Integration Server Administrator's navigation area, click **webMethods Adapter for IBM Power**.
2. Click **Listeners**.
3. In the Listeners page, click the  icon for the listener you want to edit.
4. The Edit Listener page displays the parameters for the listener. Update the listener parameters by typing or selecting the values you want to specify.

The Edit Listener page displays the parameters for the listener. For descriptions of the listener parameters, see [“Configuring Listeners” on page 64](#).

5. Click **Save Changes** to save the listener parameters. You will return to the listener page.


Editing Listener Notification Order

You can update the webMethods Adapter for IBM Power listener notification order from the Integration Server Administrator.

➤ **Perform the following to update listener notification order:**

1. In the **Adapters** menu in Integration Server Administrator's navigation area, click **webMethods Adapter for IBM Power**.
2. Click **Listeners**.

The View Listener page appears, listing all the listeners.

3. Click the  icon for the listener for which you want to update listener notification order.

Note:

Disable the listener before editing.

4. Click **Edit Notification Order**.

The listener notifications associated with the listener appear.

5. Select the listener notification and click the **Up** and **Down** buttons to change the order.
6. Click **Save Changes**.

7. Enable the listener.

Viewing Adapter Listeners Parameters

You can view a listener's parameters from Integration Server Administrator and Designer. You can also view the listener notification order of a listener.

Viewing Adapter Listener Parameters Using Integration Server Administrator

You can view the webMethods Adapter for IBM Power listener from the Integration Server Administrator.

➤ **Perform the following steps to view the parameters of a listener:**

1. In the **Adapters** menu in Integration Server Administrator's navigation area, click **webMethods Adapter for IBM Power**.
2. Click **Listeners**.

The Listener page appears, listing all the listeners. You can perform the following:

- Control the number of listener notifications that are displayed. For more information, see [“Controlling Pagination” on page 20](#).
- Sort and filter the listeners. For more information, see [“Sorting and Filtering Listeners” on page 69](#).
- Enable and disable the listeners. For more information, see [“Enabling Listeners” on page 66](#) and [“Disabling Listeners” on page 67](#).
- View listener notification order. For more information, see [“Viewing Listener Notification Order” on page 70](#).

3. In the Listeners page, click the  icon for the listener you want to see.

The View Listener page displays the parameters for the listener. For descriptions of the listener parameters, see [“Configuring Listeners” on page 64](#).

4. Click **Return to webMethods Adapter for IBM Power Listeners** to return to the main connections page.

Sorting and Filtering Listeners

You can sort and filter the list of listener that appear on the Listeners page in Integration Server Administrator.

Perform the following to sort and filter listener:

1. In Integration Server Administrator, select **Adapters > webMethods Adapter for IBM Power > Listeners**.
2. Perform the following to sort the listener:
 - a. Click the **Up** and **Down** arrows on the field you want to sort.
3. Perform the following to filter the listeners:
 - a. Click **Filter Listener**.
 - b. Type the criterion by which you want to filter into the **Filter criteria** box. Filtering is based on the listener name. To locate all listeners containing specific alphanumeric characters, use asterisks (*) as wildcards. For example, if you want to display all listeners containing the string "abc", type *abc* in the **Filter criteria** box.
 - c. Click **Submit**. The Listeners page displays the listeners that match the filter criteria.
 - d. Click **Show All Listeners** to re-display all listeners.


Viewing Listener Notification Order

You can view the webMethods Adapter for IBM Power listener notification order from the Integration Server Administrator.

➤ **Perform the following to view the order in which listener notifications receive data from a listener:**

1. In the **Adapters** menu in Integration Server Administrator's navigation area, click **webMethods Adapter for IBM Power**.
2. Click **Listeners**.

The View Listener page appears, listing all the listeners.

3. Click the  icon for the listener for which you want to view listener notification order.
4. Click **View Notification Order**.

The listener notifications associated with the listener appear.

5. Click **Return to View Listener** to return to the View Listener page.

Viewing Listener Parameters Using Designer

Perform the following steps to view listener parameters in Designer:


1. From the Designer navigation area, open the package and folder in which the listener is located.
2. Double-click the listener you want to view.

The parameters for the listener appear in the **Listener Information**. For descriptions of the listener parameters, see [“Configuring Listeners” on page 64](#).

Copying Listeners

You can copy an existing listener to configure a new listener with the same or similar listener properties without having to re-type all of the properties for the listener. You copy adapter listener using Integration Server Administrator.

➤ **Perform the following steps to copy a listener:**

1. In the **Adapters** menu in Integration Server Administrator's navigation area, click **webMethods Adapter for IBM Power**.
2. Click **Listeners**.
3. In the Listeners page, click the  icon for the listener you want to copy.
4. The Copy Listener page displays the parameters for the listener. Update the listener name and parameters by typing or selecting the values you want to change.

The Copy Listener page displays the parameters for the listener. For descriptions of the listener parameters, see [“Configuring Listeners” on page 64](#).

5. Click **Save Listener Copy** to save the listener parameters. You will return to the listener page.

Deleting Listeners

If you no longer want to use a particular listener, you can delete it. You delete adapter listeners using Integration Server Administrator.

Note:

You can delete a listener only if the listener is disabled. For instructions on disabling a listener, see [“Disabling Listeners” on page 67](#).

➤ **Perform the following steps to delete a listener:**

1. In the **Adapters** menu in Integration Server Administrator's navigation area, click **webMethods Adapter for IBM Power**.
2. Click **Listeners**.

3. In the Listeners page, click the  icon for the listener you want to delete.

Integration Server deletes the listener and redirects to the listener page.

Listener Notifications Overview

The following sections provide instructions for creating, configuring and managing the listener notifications. webMethods Adapter for IBM Power provides one type of listener notification, which is a DataQueue Listener Notification. A listener notification works in conjunction with a listener to process data in webMethods Adapter for IBM Power. When a listener receives data from IBM Power dataqueue, then it passes the data to an enabled listener notification that is associated with the listener.

Important:

The data is lost if you do not configure any listener notifications with the listener, or if you do not enable any listener notifications which are already configured. Software AG recommends that you enable a listener notification before you enable the listener.

Ideally, you must configure only one notification per listener. If you configure multiple listener notifications with the same listener, the listener passes the data to the listener notifications created first. You can view and edit the order in which the listener notifications receive the data from the listener. For more information, see [“Editing Listener Notification Order” on page 68](#) and [“Viewing Listener Notification Order” on page 70](#). If you have configured multiple notifications with a listener, Software AG recommends that you enable only the notification that needs to be executed.

Before You Configure Listener Notifications

➤ Perform the following steps before configuring a listener notification:

1. Install webMethods Integration Server and webMethods Adapter for IBM Power on the same machine. For details, see [“Installing webMethods Adapter for IBM Power” on page 22](#).
2. Make sure that you have webMethods administrator privileges so that you can access webMethods Adapter for IBM Power's administrative screens. For more information about setting user privileges, see *webMethods Integration Server Administrator's Guide* for your release.
3. Start Integration Server and Integration Server Administrator, if they are not already running.
4. Using Integration Server Administrator, make sure that the WmIBMPowerAdapter package is enabled. To verify the status, see [“Enabling Packages” on page 29](#).
5. Start Software AG Designer if it is not already running.
6. Using Designer, create a user-defined package to contain the listener and listener notification, if you have not already done so. For more information about managing packages, see [“Package Management” on page 13](#).

7. Using Integration Server Administrator, configure an adapter connection to use with the listener. For instructions, see [“Configuring webMethods Adapter for IBM Power Connections” on page 34](#).
8. Configure a listener using Integration Server Administrator. For more information on how to configure a new listener, see [“Configuring Listeners” on page 64](#).

Dependencies for Listener Notifications

The following is a list of other objects you must configure or tasks you must complete to use listener notifications:

1. Configure an adapter connection using Integration Server Administrator. For more information, see [“Configuring webMethods Adapter for IBM Power Connections” on page 34](#).
2. Configure a listener using Integration Server Administrator. For more information, [“Configuring Listeners” on page 64](#).
3. Select the appropriate notification template and create the listener notification using Designer. For more information, see [“Creating a Listener Notification” on page 73](#) and [“Configuring a Listener Notification” on page 74](#).
4. Create an Integration Server trigger that subscribes to the document type that webMethods Adapter for IBM Power created with the notification using Designer. For more information about using triggers, see *webMethods Service Development Help*.
5. Enable the listener using Integration Server Administrator. For more information, see [“Enabling Listeners” on page 66](#).
6. Enable the listener notifications using Integration Server Administrator. For more information, see [“Enabling Listener Notifications” on page 77](#).

Creating a Listener Notification

➤ Perform the following steps to create a listener notification:

1. In Software AG Designer, select the parent namespace.
2. Select **New > Adapter Notification** and type a name for the adapter notification. Click **Next**.
3. Select **webMethods Adapter for IBM Power** as the adapter type and click **Next**.
4. From the list of available templates, select **DataQueue Listener Notification** and click **Next**.
5. Select the appropriate **Notification Listener Name** and click **Next**.

Note:

You must select an enabled listener to create a listener notification.


6. Select the Publish Document Name and click **Finish**.

The Adapter Notification template creates the following items:




- A listener notification.
- A document type to publish.

Configuring a Listener Notification

➤ Perform the following steps to configure a listener notification:

1. Start Software AG Designer.
2. In the adapter notification service editor for the notification you just created, select the **Adapter Settings** tab.
3. Use the **DataQueue Listener Notification** tab to define the metadata and fields to receive as follows:
 - a. Use the  icon to create new rows as needed.
 - b. As you insert rows, the following fields are displayed for each **Data Name**:

Field	Description/Action
Data Name	Name of the record.
Native Data Type	List of IBM Power native data types for the record.
Byte Length	Length in bytes of the data value.
Is Array	Flag to indicate if the data value is an array.
Data Occurrence	Number of elements in the array if Is Array is selected. Default value is 1.
Output Data Type	List the possible Java data types depending on the Native Data Type and the Is Array fields selection.

- c. If necessary, use the  or  icons to change the order.
 - d. Use the  icon to delete the row.
4. Review the **Publish Document Name** and click **Finish**.

5. In the Adapter Settings tab, confirm the adapter name, adapter listener name, and adapter notification template.

The following items are created:

- A listener notification
- A publishable document

6. Perform one of the following procedures:

- In the Publish Document to area, select **webMethods Messaging Provider**.

- To publish document to the Universal Messaging connected to the local Integration Server:

1. Select **IS_UM_CONNECTION**.

This option publishes documents to Universal Messaging connected to local Integration Server, if one is configured. For more information about publishing to Universal Messaging, see the *webMethods Integration Server Administrator's Guide* for your release.

- To publish document to local Integration Server:

1. Select **IS_LOCAL_CONNECTION**.

2. Create a matching local **webMethods Messaging Trigger** trigger to process the request document locally or at a remote Integration Server connected to this Integration Server by way of a Universal Messaging. Configure the trigger to ensure that the matching reply document is returned to this adapter notification. For more information about this step, see the *webMethods Service Development Help* for your release.

- In the Publish Document to area, select **JMS Provider** to publish the document to internal/external JMS provider in the form of messages:

1. Click the **Browse** button next to **Connection alias name** to select the name of the connection alias as it is configured in Integration Server and then click **OK**.
2. Type the destination name defined in the JMS provider to specify the target of messages the client produces and the source of messages it consumes.
3. Specify whether the destination is a **Queue** or a **Topic**. The default is Queue.

For more information about configuring JMS Provider, see *webMethods Integration Server Administrator's Guide* for your release.

7. Select the **Permissions** tab to manage the access control list (ACL) information. Use the drop-down menu to select each of the ACL types. For general information about assigning and managing ACLs, see the *webMethods Service Development Help* for your release.

8. From the **File** menu, select **Save** (or **Save All**).

Viewing Adapter Listener Notifications

You can view a listener notification's parameters from Designer. In Integration Server Administrator you can list, enable, disable and publish events for the listener notifications.

Viewing Listener Notifications Using Integration Server Administrator

➤ **Perform the following steps to view listener notifications using Integration Server Administrator:**

1. In the **Adapters** menu in the navigation area of Integration Server Administrator, click **webMethods Adapter for IBM Power**.
2. Click **Listener Notifications**.

The Listener Notifications page appears, listing all the listener notifications. You can perform the following:

- Control the number of listener notifications that are displayed. For more information, see [“Controlling Pagination” on page 20](#).
- Sort and filter the listener notifications. For more information, see [“Sorting and Filtering Listener Notifications” on page 76](#).
- Enable and disable the listener notifications. For more information, see [“Enabling Listener Notifications” on page 77](#) and [“Disabling Listener Notifications” on page 78](#).

Note:

You cannot publish events. For more information, see [“Publishing Listener Notifications Using Integration Server Administrator” on page 78](#).

3. Click **Return to webMethods Adapter for IBM Power Connections** to return to the main connections screen.

Sorting and Filtering Listener Notifications

You can sort and filter the list of listener notifications that appear on the Listener Notifications screen in Integration Server Administrator.

Perform the following steps to sort and filter listener notifications:

1. In Integration Server Administrator, select **Adapters > webMethods Adapter for IBM Power > Listener Notifications**.
2. Perform the following steps to sort the listener notifications:

- a. Click the **Up** and **Down** arrows on the field you want to sort.
3. Perform the following steps to filter the listener notifications:
 - a. Click **Filter Listener Notifications**.
 - b. Type the criterion by which you want to filter into the **Filter criteria** box. Filtering is based on the listener notification name. To locate all listener notifications containing specific alphanumeric characters, use asterisks (*) as wildcards. For example, if you want to display all listener notifications containing the string "abc", type *abc* in the **Filter criteria** box.
 - c. Click **Submit**. The Listener Notifications page displays the listener notifications that match the filter criteria.
 - d. Click **Show All Listener Notifications** to re-display all listener notifications.

Viewing Listener Notifications Using Designer

➤ Perform the following steps to view listener notifications using Designer:

1. In Designer, expand the package and folder that contains the listener notification you want to view.
2. Select the listener notification that you want to view.

The adapter's Adapter Notification Editor displays details about the configured listener notification. You can also view the publishable document associated with the listener notification using Designer.

Enabling Listener Notifications

After you configure a listener notification, you need to enable it using Integration Server Administrator.

➤ Perform the following steps to enable a listener notification:

1. In the **Adapters** menu in the Integration Server Administrator navigation area, click **webMethods Adapter for IBM Power**.
2. Select **Listener Notifications**.
3. In the Listener Notifications page, click **No** in the **Enabled** column for the listener notification you want to enable.

The listener notification is enabled and a  and **Yes** is displayed in the **Enabled** column.

Disabling Listener Notifications

You disable listener notifications using Integration Server Administrator.

➤ **Perform the following steps to disable a listener notification:**

1. In the **Adapters** menu in the Integration Server Administrator navigation area, click **webMethods Adapter for IBM Power**.
2. In **webMethods Adapter for IBM Power** menu, select **Listener Notifications**.
3. On the Listener Notifications page, click **Yes** in the **Enabled** column for the listener notification you want to disable.

The listener notification is disabled and **No** is displayed in the **Enabled** column.

Publishing Listener Notifications Using Integration Server Administrator

Publish events is not supported in webMethods Adapter for IBM Power. An error is displayed if you click on **No** in the **Publish Events** column for the listener notification you want to publish event.

Testing Listener Notifications

You can test listener notifications to ensure that you have configured them correctly.

➤ **Perform the following steps to test listener notifications:**

1. Configure a listener using Integration Server Administrator. For instructions to configure a listener, see [“Before You Configure Listener” on page 63](#).
2. Configure a listener notification using Designer. For instructions to configure a notification, see [“Configuring a Listener Notification” on page 74](#).
3. Enable the listener notification using Integration Server Administrator. For instructions to enable a listener notification, see [“Enabling Listener Notifications” on page 77](#).
4. Enable the listener using Integration Server Administrator. For instructions to enable a listener, see [“Enabling Listeners” on page 66](#).
5. From your Designer, invoke an adapter service to write to dataqueue which is being monitored. The listener will receive a request and will forward the request to the matching notification.


Editing Listener Notifications

You use Designer to edit listener notifications. When editing the listener notification, you can also edit the publishable document type associated with the listener notifications. Listener notifications must be disabled before you can edit or delete them.




➤ **Perform the following steps to edit a listener notification:**

1. In Designer, expand the package and folder that contains the listener notification you want to edit.
2. Select the listener notification you want to edit.

The adapter's Adapter Notification Editor displays details about the configured listener notification.

3. Use the **DataQueue Listener Notification** tab to define the metadata and fields to be selected as follows:
 - a. Use the  icon to create new rows as needed.
 - b. As you insert rows, the following fields are displayed for each **Data Name**:

Field	Description/Action
Data Name	Name of the record.
Native Data Type	List of IBM Power native data types for the record.
Byte Length	Length in bytes of the data value.
Is Array	Flag to indicate if the data value is an array.
Data Occurrence	Number of elements in the array if Is Array is selected. Default value is 1.
Output Data Type	List the possible Java data types depending on the Native Data Type and the Is Array fields selection.

- c. If necessary, use the  or  icons to change the order.
 - d. Use the  icon to delete the row.
4. In the Adapter Settings tab, you can update the destination to publish the document. For more information, see [“Configuring a Listener Notification” on page 74](#).

Note:

You can change a listener for a listener notification after you configure it using `pub.art.notification:setListenerNotificationNodeListener` built-in service provided by WmART package.

5. From the **File** menu, select **Save** (or **Save All**).

Deleting Listener Notifications

If you no longer want to use a particular webMethods Adapter for IBM Power listener notification, you can delete it by following the instructions in this section. You delete listener notifications using Designer. Listener notifications must be disabled before you can edit or delete them.

Important:

- If you delete a listener notification, the associated publishable document type is deleted automatically.
- You cannot solely delete the document types associated with the listener notifications.

➤ **Perform the following steps to delete a listener notification:**

1. In Designer, expand the package and folder that contain the listener notification you want to delete.
2. Right-click the listener notification and click **Delete**.

Validating Adapter Listener Notification Values

Designer enables webMethods Adapter for IBM Power to validate user-defined data for adapter listener notifications at design time. You can validate the values for a single listener notification, or you can configure Designer to always validate the values for listener notifications. Both options could potentially slow your design-time operations.

When you enable data validation for a single listener notification, Designer compares the listener notification values against the resource data that has already been fetched from the selected adapter.

If you select the option to always validate values for listener notifications, it will do so for all webMethods WmART based adapters installed on Integration Server.

For more information about the **Adapter Service/Notification Editor** and other Designer menu options and toolbar icons, see the *webMethods Service Development Help* for your release.


Validate Data for a Single Listener Notification

Perform the following procedure to validate data for a single listener notification:

1. In Designer, expand the package and folder that contain the listener notification for which you want to enable automatic validation.

2. Double-click the listener notification for which you want to validate the data.

Designer displays the configured listener notification in the service template's Adapter Notification Editor.

3. Click the  icon.

Validating Data for All Listener Notifications

Perform the following steps to enable Designer to always validate data for all listener notifications:

1. In Designer, select the **Window > Preferences > Software AG > Service Development > Adapter Service/Notification Editor** item.
2. Enable the **Automatic data validation** option.
3. Click **OK**.

Reloading Adapter Values

Designer enables webMethods Adapter for IBM Power to reload and validate user-defined data for listener notifications at design time in . You can reload values for a single listener notification, or you can configure Designer to automatically reload the values for listener notifications. Both options could potentially slow your design-time operations.

When you reload adapter values for a single listener notification, Designer compares the listener notification values against the resource data that has already been fetched from the selected adapter.

If you select the option to always reload values for listener notifications, it will do so for all webMethods WmART-based adapters installed on Integration Server.


For more information about the **Adapter Service/Notification Editor**, other menu options, and toolbar icons, see the *webMethods Service Development Help* for your release.

Reloading the Values for a Single Listener Notification

Perform the following procedure to reload the adapter values for a single listener notification:

1. In Designer, expand the package and folder that contain the listener notification for which you want to enable automatic validation.
2. Double-click the listener notification for which you want to validate the data.

Designer displays the configured listener notification in the service template's Adapter Notification Editor.

3. Click the  icon.

7 Predefined Health Indicator

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Predefined Health Indicator

Microservices Runtime includes predefined health indicators for some of its basic components. The health indicator captures the connection details for all the WmART-based adapters at runtime. For more information, see *webMethods Adapter Runtime User's Guide*.

8 Administrator APIs

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Administrator APIs

The Administrator APIs are available for webMethods Adapter for IBM Power. For more information about Administrator APIs and samples, see *webMethods Adapter Runtime User's Guide*.

9 Configuration Variables Templates for Adapter Assets in Microservices

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Configuration Variables Templates for Adapter Assets in Microservices Runtime

The webMethods Adapter Runtime (ART) asset properties that can be configured from Integration Server Administrator are available in the configuration variables template (`application.properties` file) generated by Microservices Runtime. For more information, see *webMethods Adapter Runtime User's Guide* and *Developing Microservices with webMethods Microservices Runtime*.

10 Adapter Logging

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Logging Messages Overview

This chapter describes the logging information, exception handling, and monitoring of webMethods Adapter for IBM Power connection statistic and performance.

Logging Messages

The webMethods Adapter for IBM Power uses the Integration Server's logging mechanism to log messages. You can configure and view the Integration Server's logs to monitor and troubleshoot the webMethods Adapter for IBM Power. For detailed information about logging in the Integration Server, including instructions for configuring and viewing the different kinds of logs supported by the server, see the *webMethods Audit Logging Guide* for your release.

Adapter Message Logging

Integration Server maintains several types of logs; however, webMethods Adapter for IBM Power only logs messages to the audit, error and server logs. Because webMethods Adapter for IBM Power works in conjunction with the WmART package, the adapter's messages and exceptions typically appear within log messages for the WmART package.

The logging levels for webMethods Adapter for IBM Power are given in the following table.

Log	Description
Audit Log	You can monitor individual adapter services using the audit log as you would audit any service in Integration Server. The audit properties for an adapter service are available in each webMethods Adapter for IBM Power service template on the Audit tab.
Error Log	webMethods Adapter for IBM Power automatically posts fatal-level and error-level log messages to the server's error log. These log messages will appear as adapter run-time messages.
Server Log	webMethods Adapter for IBM Power posts messages to the server log, depending on how the server log is configured. Fatal-level through debug-level log messages appear as adapter run-time log messages. Trace-level log messages appear as webMethods Adapter for IBM Power log messages.

The adapters log messages appear in either of the following formats:

- ADA.512.nnnnc

■ ADA.0512.*nnnn*c

where the facility code ADA indicates that the message is from an adapter, 0512 or 512 indicates that it is webMethods Adapter for IBM Power, *nnnn* represents the error's minor code, and (optionally) *c* represents the message's severity level.

To monitor webMethods Adapter for IBM Power's log messages in the server log, ensure that your server log's logging settings are configured to monitor the following facilities:

- 0113 Adapter Run time (Managed Object)
- 0114 Adapter Run time
- 0115 Adapter Run time (Listener)
- 0116 Adapter Run time (Notification)
- 0117 Adapter Run time (Adapter Service)
- 0118 Adapter Run time (Connection)
- 0121 Adapter Run time (SCC Transaction Manager)
- 0126 Adapter Run time (SCC Connection Manager)

Accessing Adapter Logging Levels

You can configure different logging levels for webMethods Adapter for IBM Power in Integration Server using Integration Server Administrator.

➤ Perform the following steps to access the adapter's logging information:

1. In Integration Server Administrator page, do the following: .
 - Select **Settings > Logging** in the old Integration Server Administrator UI.
 - Select **Logs > Logging configuration** in the new Integration Server Administrator UI.

The Logger List appears.
2. Select **Server Logger**. The **View server logger details** page appears displaying the facility and the logging level for that facility.
3. In **View server logger details** page, expand the **Adapters** tree to see a list of all installed adapters with their code number, adapter description, along with the logging level for the adapter.

Changing Logging Levels

You can change the logging levels for webMethods Adapter for IBM Power in Integration Server using Integration Server Administrator.

➤ **Perform the following steps to change logging levels for the adapter:**

1. In Integration Server Administrator page, do the following:
 - Select **Settings > Logging**.
 - Select **Logs > Logging configuration**.

The Logger List appears.
2. Select **Server Logger**. The **View server logger details** page appears displaying the facility and the logging level for that facility.
3. In **View server logger details** page, expand the **Adapters** tree to see a list of all installed adapters with their code number, adapter description, along with the logging level for the adapter.
4. Click **Edit Server Logger**.
5. Expand the **Adapters** tree.
6. Select the required **Logging Level** for webMethods Adapter for IBM Power.
7. Update the **Log Timestamp Format** as per your requirement.
8. After making your changes, click **Save Changes**.
9. For complete information about the log levels and type of information to include in the log, see the *webMethods Audit Logging Guide* for your release.

pub.ibmp:createDataQueue

Creates a sequential or keyed dataqueue in the IBM Power system.

Input Parameters

Parameter Name	Description
<i>\$connectionAlias</i>	String. Required. Fully qualified connection name of the IBM Power system.
<i>queueName</i>	String. Required. Name of the dataqueue. The dataqueue name must be 1 to 10 characters. For example, MYQUEUE.
<i>libraryName</i>	String. Required. Library in which the dataqueue must be created. The <i>libraryName</i> must be 1 to 10 characters.
<i>queueType</i>	String. Required. Dataqueue type. Possible values are: <ul style="list-style-type: none">■ FIFO. Processes records in a sequential order of First In, First Out (FIFO) in the dataqueue.■ LIFO. Processes records in a sequential order of Last In, First Out (LIFO) in the dataqueue.■ Keyed. Processes records as a key-value pair in the dataqueue.
<i>keyLength</i>	String. Optional. Length of the key in bytes if the <i>queueType</i> is Keyed. Valid values are 1 to 256.
<i>maxEntryLength</i>	String. Required. Maximum number of bytes per dataqueue entry. Valid values are 1 to 64512.
<i>authority</i>	String. Required. Public authority for the dataqueue. Valid values are *ALL, *CHANGE, *EXCLUDE, *USE, *LIBCRTAUT.
<i>saveSenderInformation</i>	String. Optional. Default value is <code>false</code> . Set to <code>true</code> if the sender (origin) information of the records must be saved.
<i>forceToAuxiliaryStorage</i>	String. Optional. Default value is <code>false</code> . Set the value to <code>true</code> to immediately write the records to a permanent storage. Set the value to <code>false</code> to

Parameter Name	Description
	keep the records to write in memory, which could be lost in the case of a power outage.
<i>description</i>	String. Required. Text description of the dataqueue. String must be 50 characters or less.

Output Parameters

Parameter Name	Description
<i>success</i>	String. Status of the service execution. Returns true if the dataqueue is successfully created, else returns false.
<i>error</i>	String. Error message if the dataqueue creation fails.

pub.ibmp:getDefaultUser

Returns the default user ID for the system name specified in *\$connectionAlias*.

Input Parameters

Parameter Name	Description
<i>\$connectionAlias</i>	String. Required. Fully qualified connection name of the IBM Power system.

Output Parameters

Parameter Name	Description
<i>userId</i>	String. Default user ID for the system name specified in <i>\$connectionAlias</i> .
<i>error</i>	String. Error message if the service fails.

pub.ibmp:removeDefaultUser

Removes the default user for the system name specified in *\$connectionAlias*.

Input Parameters

Parameter Name	Description
<i>\$connectionAlias</i>	String. Required. Fully qualified connection name of the IBM Power system.

Output Parameters

Parameter Name	Description
<i>success</i>	String. Status of the service execution. Returns true if the service runs successfully, else returns false.
<i>error</i>	String. Error message if the service fails.

pub.ibmp:setDefaultUser

Sets the default user for the system name specified in *\$connectionAlias*.

Input Parameters

Parameter Name	Description
<i>\$connectionAlias</i>	String. Required. Fully qualified connection name of the IBM Power system.
<i>userId</i>	String. User ID to set as the default user for the system name specified in <i>\$connectionAlias</i> .

Output Parameters

Parameter Name	Description
<i>success</i>	String. Status of the service execution. Returns true if the service runs successfully, else returns false.
<i>error</i>	String. Error message if the service fails.

