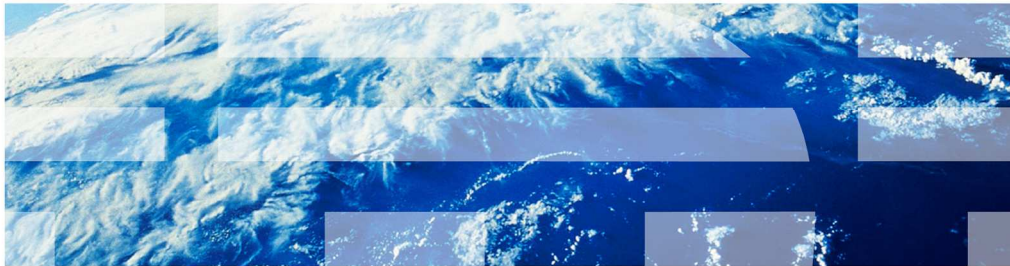


IBM Business Process Manager V8.5

What is new in web services



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This presentation provides an overview of the new web service-related features in IBM Business Process Manager V8.5.

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- Background
 - Overview of web services functions supported by IBM Business Process Manager
- The web services-related features introduced in the V8.5 release of IBM Business Process Manager
 - [new] Web service server configuration – share common configuration information among multiple web service integrations
 - [new] Policy sets and bindings – associate re-usable sets of configuration information with your web service integrations
 - [enhanced] Implicit SOAP headers – configure additional context information that flows with your requests and responses
- Summary

First is a brief look at the web services capabilities in prior releases of the IBM Business Process Manager product. This will provide some background for discussing the new features introduced in V8.5.

The new features include a new server configuration type for defining web service server connection details, the ability to configure policy sets and bindings for web service integrations, and enhanced support for SOAP headers.

Overview of web services support

- IBM Business Process Manager enables you to define both providers and consumers of web services within your IBM Business Process Manager application
 - A provider ("inbound") allows you to expose one or more General System services within IBM Business Process Manager application as a web service endpoint
 - Consumers can be within or outside the IBM Business Process Manager environment
 - Any standards-compliant web service consumer can invoke your IBM Business Process Manager-defined endpoints
 - A consumer ("outbound") enables you to invoke a web service endpoint (provider) from within your IBM Business Process Manager application
 - Providers can be within or outside the IBM Business Process Manager environment
 - Any standards-compliant web service endpoint can be invoked by your consumer
- **Benefits**
 - Web service integrations enable you to integrate your IBM Business Process Manager applications with other applications in order to:
 - Exchange information (for example, retrieve stock quotes or update the status of an external event)
 - Trigger activity in an external system (for example, log an audit event in your company's governance system)

You can define web service providers and consumers within your IBM Business Process Manager application.

An inbound web service integration enables you to expose one or more General System services as a web service endpoint, where each General System service is mapped to a web service operation. Any standards-compliant web service consumer can invoke the endpoint, including an outbound web service integration defined within IBM Business Process Manager.

An outbound web service integration enables you to invoke a web service endpoint from within your Business Process Manager application. The endpoint can be any standards-compliant web service provider, including an inbound web service integration defined within IBM Business Process Manager.

Together, these features provide powerful capabilities for integrating your IBM Business Process Manager applications with other applications to exchange information or trigger external activities.



Section

Web service server configuration

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This section briefly describes the new web service server configuration in IBM Business Process Manager V8.5.

Overview

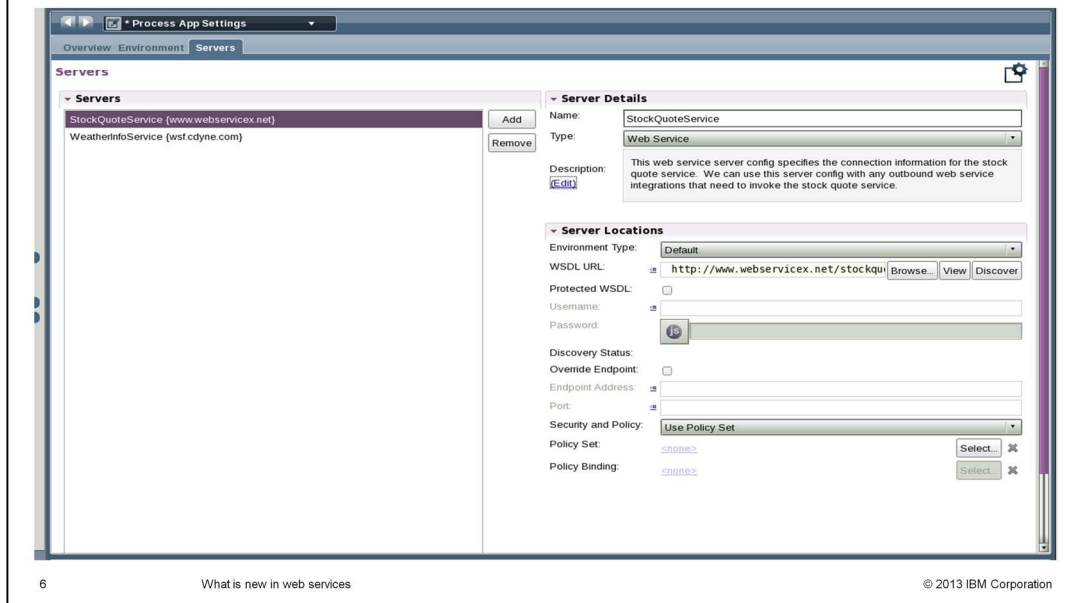
- **What does this enhancement do?**
 - A new type of server configuration (web service) has been added within the Process App Settings of Process Designer
 - You can configure web service endpoint connection details and then reference the configuration when you define outbound web service integrations
- **Benefits**
 - Web service endpoint connection details can be defined once and re-used, reducing the time required to develop a web service integration
 - Updates can be made in one place and reflected in multiple integrations immediately

One of the new web service features in IBM Business Process Manager V8.5 is the introduction of a new server configuration type for defining web service server connection details.

Within IBM Process Designer, you can now define a server configuration which includes the connection details of a particular web service endpoint. You can then reference that server configuration when defining one or more outbound web service integrations.

This allows you to capture the connection details of a web service endpoint once and then re-use that configuration multiple times, thereby reducing the time and effort required to define web service integrations. This feature also allows you to update the connection details in one place. All web service integrations that reference that server configuration will reflect the changes immediately.

Example – defining a web service server configuration



On this slide is an example of a web service server configuration that is defined within the Process App Settings view of IBM Process Designer. In this example, the server configuration contains the connection details of a provider named StockQuoteService.

Example – using a web service server configuration

The screenshot displays the IBM Process Designer interface for a task named 'Call Weather Service'. The main diagram area shows a flow from a 'Start' event to the 'Call Weather Service' task, which then leads to an 'End' event. The 'Properties' pane is open, showing the configuration for the task. The 'Discovery' section is expanded, and the 'Discovery Scheme' is set to 'From process application settings'. The 'Process Application Selection' section is also expanded, showing the 'Web Service' set to 'WeatherInfoService'. The 'Operations' section is set to 'GetCityWeatherByZIP(string)'. A red box highlights the 'Discovery Scheme' and 'Process Application Selection' sections. The 'Properties' pane also includes sections for 'Implementation', 'Header', 'Data Mapping', and 'Pre & Post'. The bottom of the window shows the page number '7', the text 'What is new in web services', and the copyright notice '© 2013 IBM Corporation'.

This example shows how to use a web service server configuration when defining an outbound web service integration. Within Process Designer, you can choose "From process application settings" for the "Discovery Scheme" option, then select the required server configuration.



Section

Policy sets and bindings

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What is new in web services

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This section briefly describes the new policy sets and bindings in IBM Business Process Manager V8.5.

Overview

▪ Background

- A policy set is a named, re-usable collection of configuration parameters, such as policies
 - Enables you to configure web service qualities of service: WS-Security, WS-Addressing, HTTP Transport, and so on
 - Policy sets and associated bindings are administered using the administrative console

▪ What does this enhancement do?

- [new] You can now associate a policy set and corresponding binding with your IBM Business Process Manager web service integrations (both inbound and outbound)

▪ Benefits

- Common configuration can be re-used with multiple web service integrations
- Additional capabilities are provided for securing your web services

WebSphere® Application Server allows you to configure web service applications with policy sets and bindings. These are re-usable collections of configuration parameters, such as "policies". They are used to configure various web service qualities of service, such as WS-Security, WS-Addressing, and HTTP transport. Policy sets and bindings are administered using the administrative console and can be shared among multiple web service applications. IBM Business Process Manager V8.5 has extended the use of policy sets and bindings to allow you to also configure your inbound and outbound web service integrations with them. One of the main benefits of this feature is the ability to configure common policies in one place and then re-use them, as needed, within multiple web service integrations. Another benefit is that you now have access to additional capabilities for securing your web services. This feature provides very powerful configuration capabilities which allow you to reduce the time and effort required to configure and maintain your web service integrations.

Example – associating a policy set with a web service server configuration

The screenshot displays the 'Process App Settings' interface, specifically the 'Servers' tab. On the left, a list of servers includes 'WeatherInfoService (wsf.cdyne.com)'. The right pane shows the 'Server Details' for this service. The 'Name' is 'WeatherInfoService' and the 'Type' is 'Web Service'. The 'Server Locations' section shows the 'WSDL URL' as 'http://wsf.cdyne.com/WeatherWS/Wea'. The 'Security and Policy' section is highlighted with a red box, showing 'Use Policy Set' selected. Below this, 'Policy Set' is set to 'Username WSSecurity default' and 'Policy Binding' is set to 'WSDemo_client_binding'. The interface also includes fields for 'Username' and 'Password' under 'Protected WSDL', and 'Endpoint Address' and 'Port' under 'Override Endpoint'.

On this slide, you see how to configure a policy set and binding, within a web service server configuration. This server configuration can then be used when defining outbound web service integrations.

In this example, the WebSphere-provided "Username WSSecurity default" policy set has been selected, along with a binding named "WSDemo client binding", which contains a valid username and password. The policy set and binding together are used to configure an outbound web service integration to use username token security when invoking the web service endpoint.

Example – associating a policy set with an outbound web service integration

The screenshot displays the IBM Business Process Manager (BPM) interface. The main window shows a workflow diagram with a 'Start' event, a 'Call Weather Service' task, and an 'End' event. The 'Properties' panel is open, showing the configuration for the 'Call Weather Service' task. The 'Security and Policy' section is expanded, and the 'Policy' section is highlighted with a red box. The 'Policy Set' is set to 'Username WSSecurity_default' and the 'Policy Binding' is set to 'WSDemo_client_binding'. The 'Properties' panel also shows 'Implementation', 'Header', 'Data Mapping', and 'Pre & Post' sections. The bottom of the slide contains the text '11 What is new in web services © 2013 IBM Corporation'.

This slide shows an example of how to associate a policy set and binding directly with an outbound web service integration, without the use of a web service server configuration. For the Security and Policy field, you choose "Use Policy Set" and then, in the Policy section, you select your desired policy set and binding.

Example – associating a policy set with an inbound web service integration

The screenshot displays the configuration interface for the **BPMStockQuoteService** web service. The interface is divided into several sections:

- Common:** Shows the service name (**BPMStockQuoteService**) and the user who last modified it (**tw_admin** on May 23, 2013 at 4:51:00 PM). There is a text area for documentation with an **Edit** link.
- Web Service Definition Usage:** Provides a brief description of a Web Service Definition and its purpose in IBM BPM.
- Behavior:** Includes a **Protected** checkbox, a **WSDL URI** field, and **Target namespace** fields for both the scheme and the namespace.
- Operations:** A list of operations, with **getQuote** selected. **Add** and **Remove** buttons are visible.
- Operation Detail:** Shows the **Operation Name** (**getQuote**), the **Attached Service** (**GetQuoteGSS**), and another **Edit** link for documentation.
- Security and Policy (highlighted in red):** This section is where the security configuration is set. It shows:
 - Policy Set:** **Username WSSecurity default** (with a **Select...** button).
 - Policy Binding:** **Provider sample** (with a **Select...** button).

At the bottom of the console window, there is a footer with the number **12**, the text **What is new in web services**, and the copyright notice **© 2013 IBM Corporation**.

This slide shows how to associate a policy set and binding with an inbound web service integration. In this example, the web service endpoint is being protected with username token security.

Implicit SOAP headers

This section briefly describes the enhanced implicit SOAP headers in IBM Business Process Manager V8.5.

Background

- A SOAP header contains context information that flows with a SOAP request or response message (session ID, security, ...)

- Example (session ID flowing in a request message):

```
<?xml version="1.0"?>
<soap:Envelope xmlns:soap="http://www.w3.org/2001/12/soap-envelope">
<soap:Header>
  <ns1:Session
    xmlns:ns1="http://www.acmeprovider.com/sessionId/">1234:4567:acf9</ns1:Session>
</soap:Header>
...
</soap:Envelope>
```

- Explicit: The parameter is explicitly defined in the WSDL as a "header parameter"
 - Supported in previous releases, since the parameter is defined in WSDL PortType as operation parameter
- Implicit: The parameter is not defined in the WSDL PortType
 - Support for this has been added in V8.5

As background, a SOAP header is typically used to communicate additional context information as part of a SOAP request or response message. This can be any sort of context information, such as a session ID, security information, routing information, and so on.

An explicit SOAP header is one that is explicitly defined in the WSDL document as a "header parameter". Explicit SOAP headers are supported in previous releases of IBM Business Process Manager, since they are defined in the WSDL port type as operation parameters.

An implicit SOAP header is one that is not defined in the WSDL at all. It contains additional out-of-band information that is included with the request or response.

New in V8.5

- [new] You can send and receive **implicit** SOAP headers in SOAP request and response messages (outbound and inbound integrations)
- **Benefits**
 - Enhanced integration between IBM Business Process Manager and external web service applications
 - SOAP headers within inbound request messages can be propagated to downstream web service invocations (requires JavaScript)

IBM Business Process Manager V8.5 now supports sending and receiving implicit SOAP headers within request and response messages associated with inbound and outbound web service integrations. This provides enhanced integration capabilities between Business Process Manager and external web services.

Example – using SOAP headers with an outbound web service integration (1 of 2)

- Step 1: Define a variable to contain the SOAP header

The screenshot shows the IBM Business Process Designer interface for a process named 'RetrieveWeatherInfo'. The 'Variables' tab is active, and a private variable named 'subscriberId' of type 'SOAPHeader' is selected. The 'Details' pane shows the following configuration:

- Name:** subscriberId
- Documentation:** This SOAP header will contain the subscriber id required by the remote web service. Each user of the API is assigned a subscriber id for audit and billing purposes.
- Variable Type:** SOAPHeader
- Default Value:**

Property	Value
nameSpace	*http://com.weatherinfo.api*
name	*subscriberId*
value	*<ns1:subscriberId xmlns:ns1="http://com.weatherinfo.api">

The 'value' field is highlighted with a red box, indicating the XML content to be included in the outbound request message.

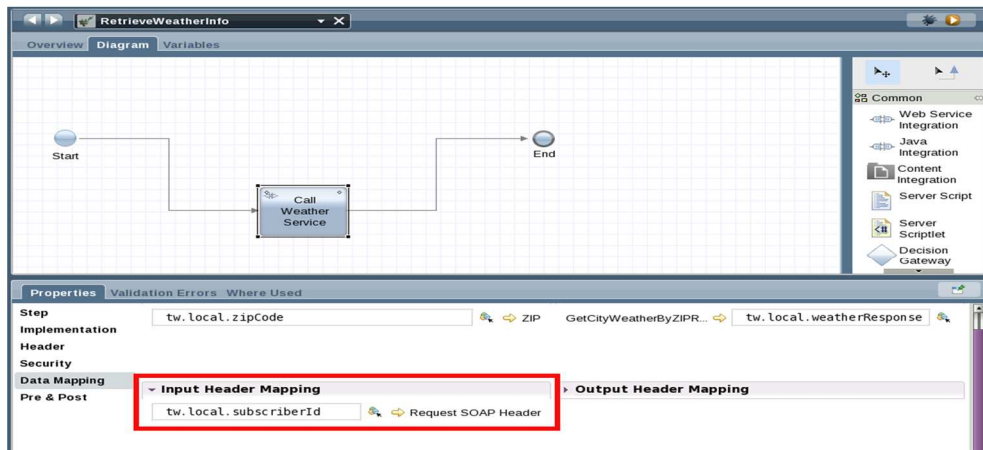
This example shows you how to use a SOAP header within an outbound web service integration. Suppose that your outbound web service integration needs to invoke a fee-based web service endpoint, which requires its customers to include a "subscription identifier" along with the request message for billing purposes.

The first step is to define a variable to contain the SOAP header. You do this in Process Designer, on the "Variables" tab

In this example, a private variable named "subscriberId" is defined. It is given a default value that provides the necessary SOAPHeader attributes, including the name, nameSpace and header value. The value field, within the SOAPHeader type, is used to specify the XML content to be included in the outbound request message. In this case, it contains the entire "subscriberId" element, including any required namespace prefix declarations.

Example – using SOAP headers with an outbound web service integration (2 of 2)

- Step 2: Map the SOAP header variable to the Request SOAP header



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The second step is to map the SOAPHeader variable to the Request SOAP header. You do this in Process Designer, in the "Data Mapping" view.

This will ensure that the contents of the "subscriberId" variable are included in the outbound SOAP request message, when the web service operation is invoked.

Example – using SOAP headers with an inbound web service integration

The screenshot displays a BPM diagram with a 'FakeQuote Service' task. Below the diagram is a 'Script' editor window. The script is as follows:

```

1// "subIdHeader" will be used to retrieve the subscriberId SOAP header
2// from the incoming SOAP request message.
3var subIdHeader;
4
5// Loop over all the SOAP headers received in the incoming SOAP request message.
6for (var i = 0; i < tw.system.header.soap.request.headers.length; i++) {
7  var header = tw.system.header.soap.request.headers[i]
8
9  // If we find the "subscriberId" header, then save it and then break out of the loop
10 if (header.namespace == "http://com.stockquote.api" && header.name == "subscriberId") {
11   subIdHeader = header
12   break
13 }
14
15
16if (subIdHeader == null ) {
17  log.info("The subscriberId SOAP header could not be found.")
18}
19else {
20  log.info("The subscriberId header was found. The value is: " + subIdHeader.value)
21}
22
23// Just return $99.99 from our fake stock quote service.
24tw.local.stockPrice = 99.99
  
```

The script is highlighted with a red box, indicating the main logic for finding the 'subscriberId' header. The BPM interface also shows a legend with icons for 'End Event', 'Note', 'Error End Event', and 'Invoke UCA'.

On this slide, there is an example of how to use SOAP headers with an inbound web service integration.

In this case, some JavaScript code is added to the General System Service that is being exposed as a web service operation. The JavaScript code examines each of the SOAP headers that were received in the incoming SOAP request message. It does this using the "tw.system.header.soap.request" system variable. The code checks to see whether the "subscriberId" SOAP header was received with the request and logs a message accordingly. You can also send a SOAP header within the outbound SOAP response message by using the "tw.system.header.soap.response" system variable.



Section

Summary

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What is new in web services

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The next slide summarizes the new web service-related features introduced in IBM Business Process Manager V8.5.

Summary

- Summary of presentation
 - Overview of web service components within IBM Business Process Manager
 - Discussion of new features in IBM Business Process Manager V8.5
 - New server configuration type for web service endpoint connection details
 - New support for policy sets and bindings configured with web service integrations
 - Enhanced support for sending and receiving SOAP headers within SOAP request and response messages
- Additional resources:
 - Online demonstrations:
 - <http://bpmwiki.blueworkslive.com/display/samples/BPM+Web+Service+Demonstrations+-+8.5>

The presentation started with a brief overview of the web service capabilities found in prior releases of IBM Business Process Manager, providing some background for the discussion of the new features.

Then it examined each of the new features and provided examples of how you can use them within your inbound and outbound web service integrations.

In addition to the examples presented here, demonstrations are also available. These explain how to use the new web service features in more detail. You can access the demonstrations at the URL provided on this page.



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