



Web Services

Workflow Designer
IBM FileNet Business Process
Manager



XML Web Service



- A programmatic, XML-based component that performs a specific set of related tasks
 - Interface conforms with accepted standards and specifications.
- A set of protocols defines how a service can be published, discovered, and used in a technology-neutral format.
 - WSDL – Web Services Description Language
 - XML – Extensible Markup Language
 - SOAP – Simple Object Access Protocol
 - HTTP – Hypertext Transfer Protocol
 - UDDI – Universal Description, Discovery and Integration

UDDI and WSRR

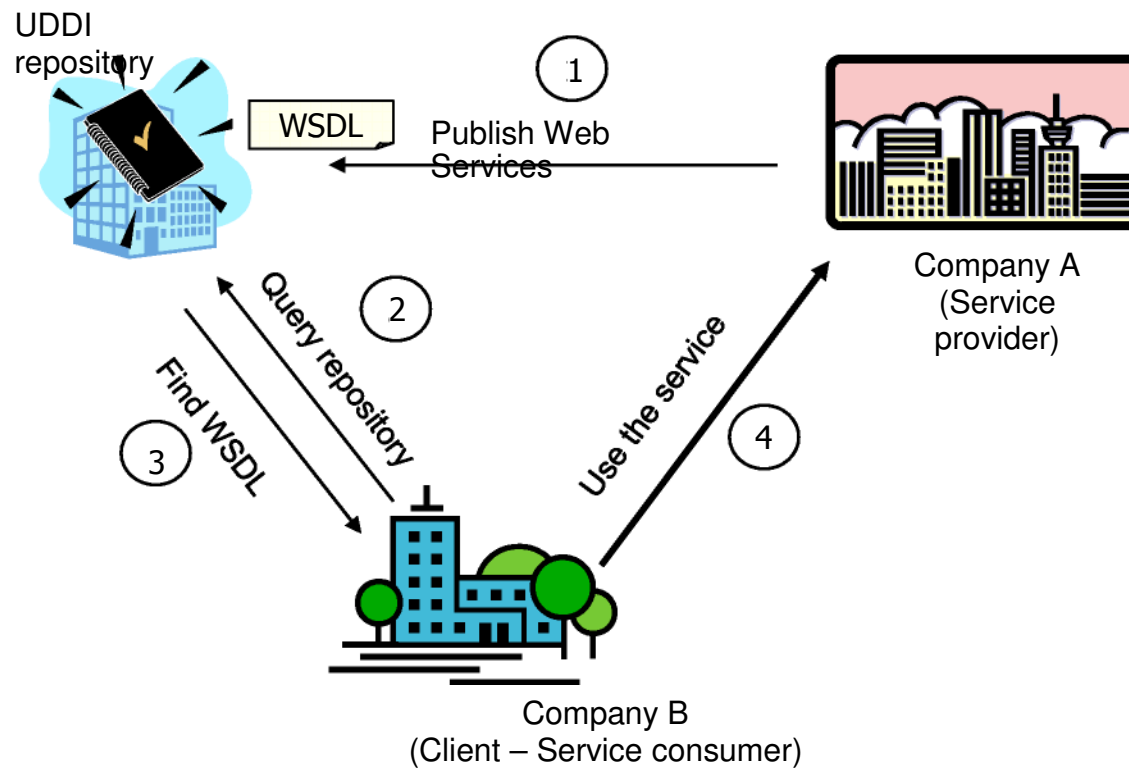


- UDDI is a platform-independent repository for locating and publishing Web Services.
 - Can be public or private
 - Accessed using SOAP messages
 - Contains a hierarchy of information to describe a service
- WebSphere Services Registry and Repository (WSRR) is an IBM system to store, access, and manage services.
 - Delivers service interoperability through adherence to standards

Services published to WSRR are accessible from the following:

- IBM FileNet P8 processes
- WebSphere Process Server tools

Web Services example



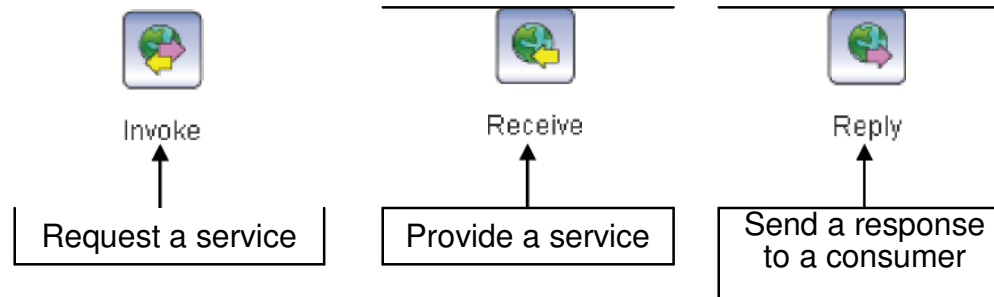
Process Orchestration



- Process Orchestration in an IBM FileNet BPM solution enables the following:
 - Collaborative business process
 - Business-to-business (B2B) transactions
 - End-to-end processes
 - Web Services composition
- Features of IBM FileNet BPM Process Orchestration
 - Processes can be consumed or published as Web Services.
 - An isolated region can be exposed as a read-only, UDDI repository
 - Web Services discovery is available using UDDI Registry, WSRR Registry, or region UDDI repository.
 - System functions are available in Process Designer for use in workflow definitions.

Web Services in Process Designer

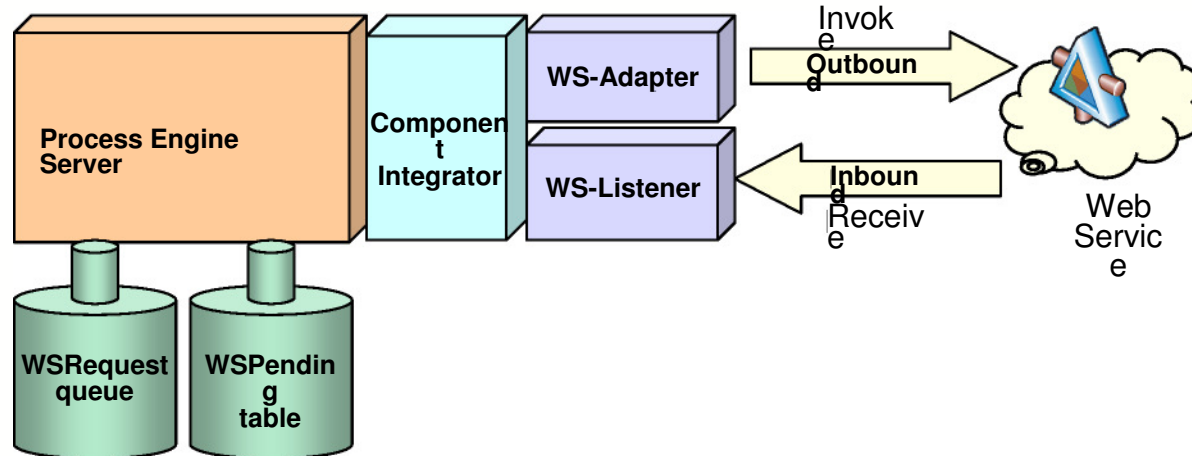
- Web Services Palette contains the following steps:



- At design time
 - You define partner links.
 - You add Web Services steps to maps.
 - You use the partner links to link steps to Web Services.
 - You map workflow parameters to service parameters.
- At run time
 - Web Services are called.

Web Services architecture

- Interaction with XML Web Services is handled using the Component Integrator.
 - [Component Manager for the WSRequest queue must be running.](#)
- Supports both polling and event-driven modes
- WS-Adapter and WS-Listener provide interface to outbound and inbound Web Service transmissions.



Steps to invoke a Web Service



1. Administrator uses Process Configuration Console to configure the UDDI or WSRR Registry List.
2. Workflow designer configures the Workflow Properties.
 - Define an Invoke partner link:
 - Select the Web Service (WSDL).
 - Select the Port Type.
3. Workflow designer adds an Invoke step to the workflow map.
 - Select the operation.
 - Assign parameters.

Configure registry lists



- Administrator configures UDDI and WSRR Registry lists for the process region.
 - . Server name and port number for WSRR . Name and inquiry URL for UDDI
 - . Option is available to enable publishing to the WSRR or UDDI registry.
- Must be configured before registry list can be used in Process Designer
- Option is available to allow or deny Process Designer access to any WSDL.

Define an Invoke partner link

- In Process Designer, define a Web Services partner link in Workflow Properties > Web Services > Partner Links.

Type: Invoke

WSDL URL

Port Type

You must define a link for each Web Service that you use in the workflow definition.

Workflow Properties

General | Data Fields | Attachments | **Web Services** | Workflow Groups

General | **Partner Links** | XML Schema | XML Data Fields

Name	Type
CreditCorp	Invoke
	Unknown

☒ Invoke

WSDL URL: g/wsdll/CreditRating.wsdl

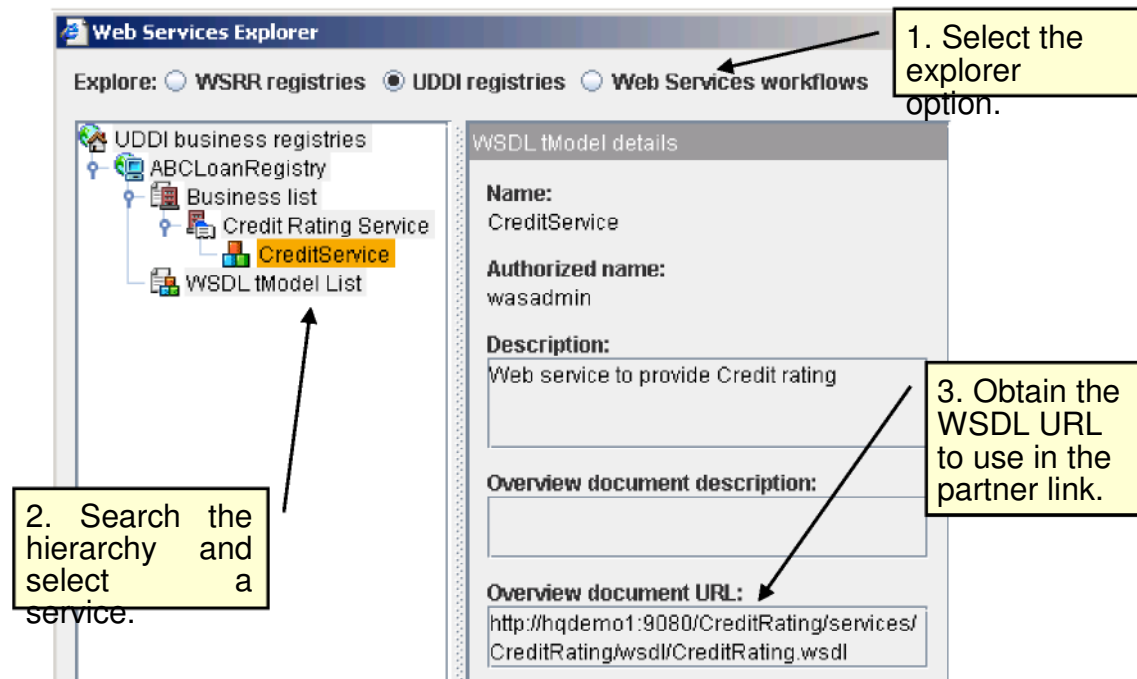
Port Type: <None>

Click to use Web Services Explorer to browse for a service (WSDL).

Invoking a Web Service

Web Services Explorer

- Explorer options: WSRR, UDDI, or Web Services workflows



Invoking a Web Service

Use Invoke step on a map

The diagram illustrates the process of configuring an Invoke step in a workflow map. It includes a visual representation of the step and a detailed screenshot of the configuration interface.

Visual Representation: A yellow box with a globe icon and a green arrow pointing to it, labeled "Get Credit Rating". An arrow points from the text "1. Add Invoke step to map." to this icon.

Configuration Interface: The "Workflow Properties" window for the "Get Credit Rating" step. The "General" tab is selected. The "Step Name" is "Get Credit Rating". The "Partner Link" is "CreditCorp". The "Operation" is "getCreditRating". The "Message Type" is "Parameters". The "Outgoing Parameters" table has columns "Name", "Type", and "Expression", with one row: "IDNumber", "String", "government_id". The "Incoming Parameters" table has columns "Name", "Type", and "Field Name", with one row: "getCreditRatingReturn", "Integer", "credit_rating".

Annotations:

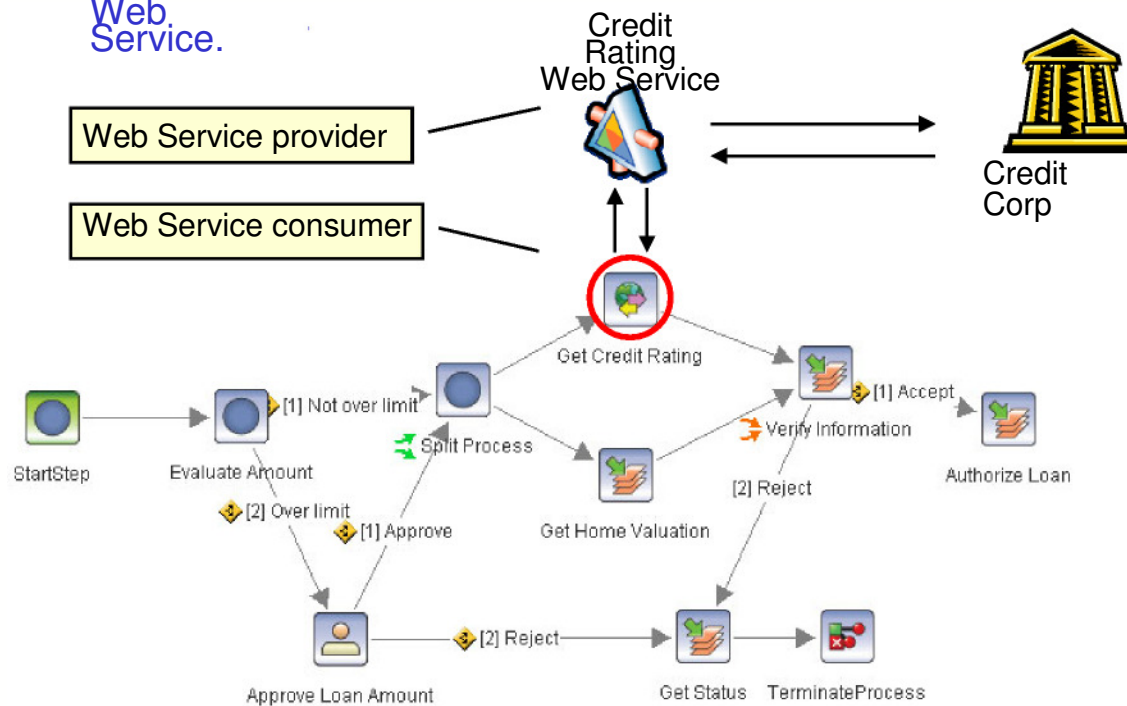
- 1. Add Invoke step to map.
- 2. Select partner link.
- 1. Select operation.
- 4. Appropriate message type is automatically selected.
- 5. Assign fields for incoming and outgoing parameters.

Invoking a Web Service

Example: Invoking a Web Service

- Loan Processing workflow

Step on Process Loan Map gets a customer's credit rating using a Web Service.



Other considerations when using Invoke

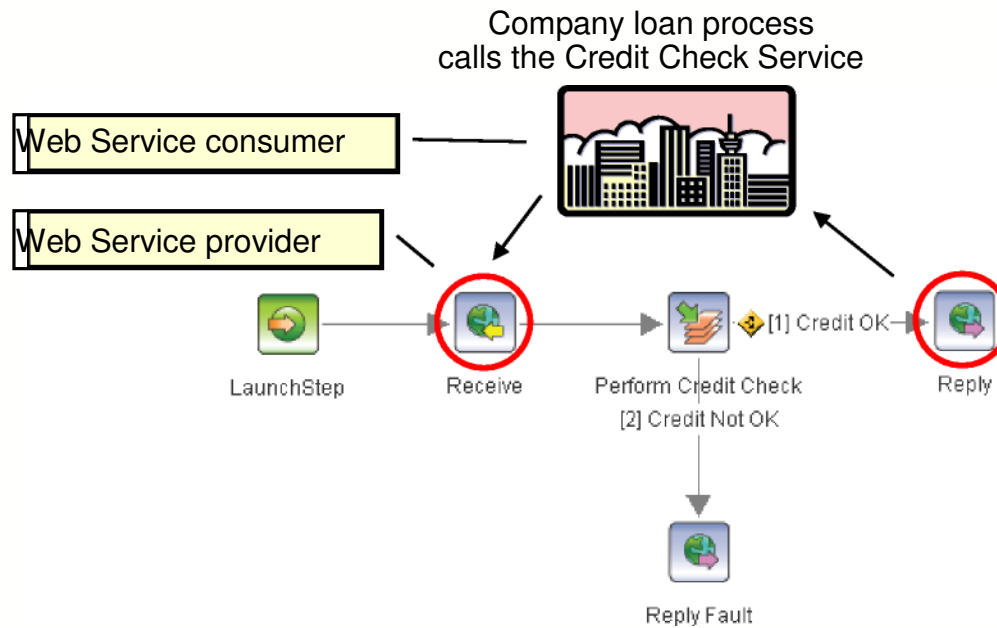
- Reliable messaging
 - Option is found in Advanced step properties of Invoke step. Enable this option **only** if a request requires it.
 - If enabled, define fault handling procedures.
- Timeout handling
 - Option to specify timeout expression in Advanced step properties. Submap is executed if timeout occurs.
- Fault handling
 - Options are available on Faults tab in Invoke step properties.
 - Specify String or XML field to hold fault message and submap to execute if fault occurs.
 - Specific and general faults can be specified.

Providing a Web Service

Example: Providing a Web Service

- Credit Check Service Workflow

Receive is the first step in the workflow (after LaunchStep). Reply steps respond to the calling Web Service.



Steps to provide a Web Service



1. Process designer creates a workflow definition. [Define a Receive/Reply partner link.](#)
 - Provide port definition.
 - [Add Receive and Reply steps to a map, which provides a Web Service.](#)
 - Select partner link. Define operation and parameters.
2. Administrator transfers the workflow definition. [Use the option to finalize Web Services operations.](#)
 1. Administrator uses the Process Configuration Console to do either or both of the following:
 - [Enable the region as a read-only UDDI repository.](#)
 - Consumers can then access the region UDDI repository.
 - [Publish the Web Service to a public UDDI or WSRR Registry.](#)
 - Consumers can then locate the Web Service in the registry.

Define a Receive/Reply partner link

- In Process Designer, define a Web Services partner link in Workflow Properties > Web Services > Partner Links.

Type: Receive/Reply Process Port Type

Partner link name

Workflow Properties

General | Data Fields | Attachments | Workflow Groups | Maps | Milestones | **Web Services** | Advanced

General | **Partner Links** | XML Schema | XML Data Fields

Name	Type
CreditAgency	Receive/Reply
	Unknown

1. Type the partner link name.

1. Select Receive/Reply and type the port name for the service.

☒ Receive/Reply

Process Port Type: CreditCheck

Process Role:

Receive system step

- Add Receive step to map using the partner link (first step after Launch).
 - Add Reply step, if there is a reply to the consumer of the Web Service.
 - Specify Partner Link, operation, and parameters.

1. Add Receive step to map.

Receive

Receive

General Advanced Correlation Set Routing Custom Attributes

Step Name
Receive

2. Select partner link.

Partner Link
CreditAgency

Operation
CreditCheck

3. Type operation name.

4. Select message type.

Message Type
☒ Parameters ☐ XML

5. Specify parameters.

Operation Parameters

Name	Type	Field Name
name	String	name
account	String	account
	Boolean	

Reply system step

- Use this step if the Web Service must return a message to the service consumer.

Allows for return of operation parameters or a specific, named fault

The diagram illustrates the configuration of the 'Reply' system step. It consists of a main configuration panel and a detailed 'Message Type' configuration panel.

Main Configuration Panel:

- Step Name:** Reply
- Partner Link:** CreditAgency
- Operation:** CreditCheck
- Message Type:** ☒ Message ☐ Fault
- Operation Parameters:** (indicated with a red X)

Detailed 'Message Type' Configuration Panel:

- Message Type:** ☐ Message ☒ Fault
- Fault Name:** Bad Credit
- Outgoing Message:** "Account " + account + " has credit problems."

An arrow points from the 'Message Type' section of the main panel to the detailed panel, indicating the selection of the 'Fault' option.

Select the option to reply with a message or to reply with a named fault.

Transfer the workflow definition



- Before transfer, enable the option to finalize Web Services operations used in Receive and Reply steps.
 - In [Workflow Properties > Web Services > General tab](#)
- Option takes effect when you transfer the workflow.
 - This option cannot be changed after it is enabled and the workflow is transferred.
- During design, ensure that this option cleared. [When ready for production, select this option and then transfer.](#)

Region as a UDDI repository

- Administrator enables an isolated region as a UDDI repository in Process Configuration Console Isolated Region Properties.
- Every transferred Web Service workflow in the region (contains a Receive step) is made available to be consumed.

The screenshot shows the 'Isolated Region Properties' dialog box with the 'UDDI' tab selected. The 'UDDI Registry List' sub-tab is active. A red rectangle highlights the checkbox 'Enable isolated region as UDDI repository', which is checked. Other fields include 'Inquiry URL' (http://ccv01122.usca), 'Business name' (Credit Corp), 'Business key' (uuid:2697f625-f106), 'Authorized name' (PE), 'Operator' (IBM), and 'Business description' (This business provides a credit check service.).

Isolated Region Properties	
Region Configuration Step Processor Info Web Applications Web Services	
General Event Logging Options	
WSRR UDDI	
Region Business Entity UDDI Registry List	
<input checked="" type="checkbox"/> Enable isolated region as UDDI repository	Inquiry URL: http://ccv01122.usca
Business name: Credit Corp	Business key: uuid:2697f625-f106
Authorized name: PE	Operator: IBM
Business description: This business provides a credit check service.	

Publish a Web Service



- Workflow administrator uses Process Configuration Console to publish a Web Service workflow to the following:
 - [UDDI Registry](#) • [WSRR Registry](#)
- Workflow must contain a Receive step and be transferred to Process Engine database.
- Provide the WSDL URL to external Web Service consumers.