



IBM Software Group

WebSphere® Process Server V6.0 WebSphere Integration Developer V6.0

Business flow manager overview



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This presentation will provide an overview of business flow manager component of business process choreography in WebSphere Process Server V6.0.

Goals

- Explain the architecture of the business flow manager in regards to business process choreographer
- Describe the installation steps for the business flow manager
- Examine the administrative options for the business flow manager

The goals of this presentation are to explain the architecture and installation options for the business flow manager and the locations and steps for administering the business flow manager and business processes.

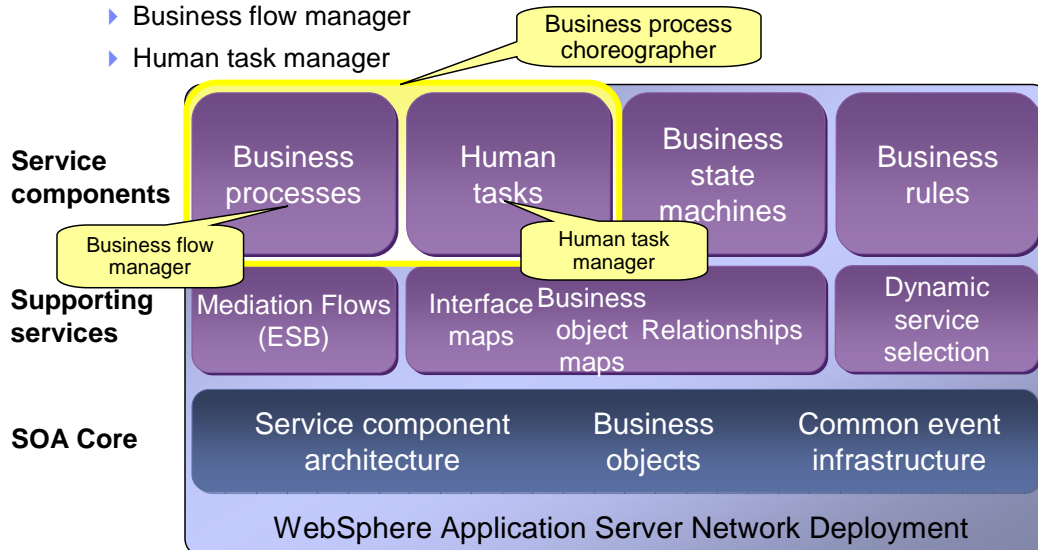
Agenda

- Architecture
- Installation
- Administration
- Summary

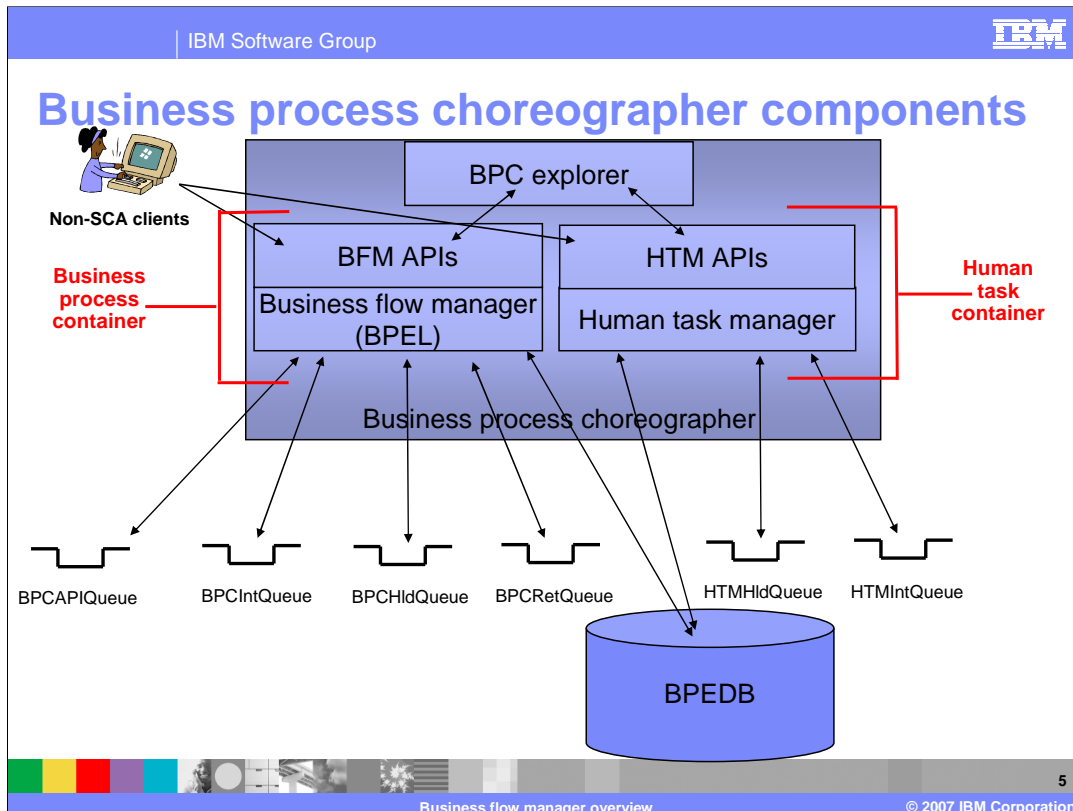
This section will focus on the architecture of the business flow manager.

Business process choreography components

- Business process choreographer included with WebSphere Process Server V6
 - Business flow manager
 - Human task manager



Support for business processes in applications running on WebSphere Process Server V6 is provided by the business flow manager component. This component is part of the business process choreographer which is part of WebSphere Process Server V6. While the human task manager is also a component and part of the business process choreographer, the human task manager can be used separately from the business flow manager. In a production environment, the business flow manager requires the human task manager for securing the different process instances and providing administrative capabilities. The business flow manager is built upon the SOA core capabilities provided by WebSphere Process Server. Business process can be defined as service components with SCA and Business Object definitions can be used to define the data for the processes. For monitoring of business processes, the common event infrastructure can be used.



For the business flow manager and human task manager there are a few main resources worth mentioning. For processing business processes or human tasks, the business flow manager and human task manager, respectively, use a set of messaging resources. These messaging resources can use WebSphere's Service Integration Bus technologies or WebSphere MQ. For business processes or human tasks, the same database is used for the storing of business process instances and human task work items (BPEDB). Finally, the BPC Explorer is used for managing and viewing business process instances and human tasks. The BPC Explorer calls public APIs for working with the processes or tasks. These APIs can be called directly from a client as well. It is the combination of the APIs and the appropriate manager, which form the business process container and Human Task Containers.

Agenda

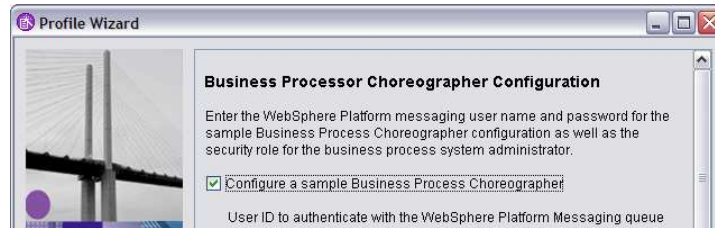
- Architecture
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The next section will look at the different installation options for the business flow manager.

Business flow manager installation

- Different installation options
 - ▶ Option available at stand-alone profile creation time
 - Sample configuration – not supported for production business flow manager use
 - ▶ Business flow manager and human task manager both installed as part of business process choreographer setup



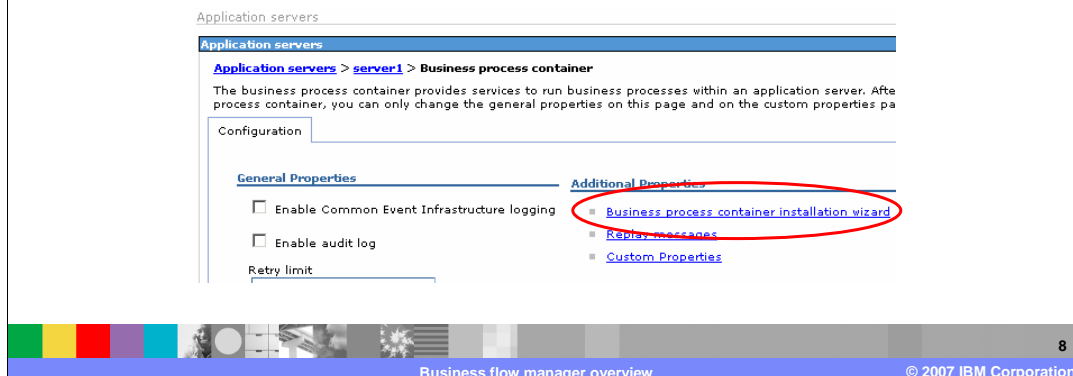
- Profile wizard is only available on distributed platforms; on z/OS®, there are options in the response file to configure.
- All required database and JMS resources are defined and created
 - ▶ Cloudscape™ database setup and service integration messaging engines



There are a number of different ways in which the business flow manager can be installed. At profile creation time, there is an option to configure a sample business process choreographer. This option includes the installation for both the business flow manager and the human task manager. The configuration will include the database and JMS resource definitions and the business process and human task containers, however it is not supported for use in production. This is because a Cloudscape database is created and security is not enabled. For a production environment a different database such as DB2 or Oracle should be used and security should be enabled.

Business flow manager installation (continued)

- Command line configuration option
 - ▶ <INSTALL_DIR>\ProcessChoreographer\sample\bpeconfig.jacl
- Business process container installation wizard in administrative console
 - ▶ Adds business flow manager and data store and messaging resources
 - ▶ Database must be setup manually
 - ▶ Supported configuration setup option for production on distributed platform



Besides configuring the business flow manager using the profile wizard, you can also configure the business flow manager from the command line. Using the bpeconfig.jacl file located in the <INSTALL_DIR>\ProcessChoreographer directory, the business flow manager and human task manager can be installed and the different resources created. When using the script with wsadmin, you will be prompted for values used to set up the business flow manager and human task manager and the different resources. Consult the product documentation for more details.

For installing the business process container with the business flow manager in a production environment, use the Business process container installation wizard in the Administrative console. Under the server container settings section, there is a Business process container link. This link will show some of the configuration values for the business flow manager if it has already been created or the installation wizard can be launched from here. The installation wizard is made up of 3 steps. The first step is where the different user IDs and role mappings are specified for running with security enabled, and selecting the JDBC provider. Step two provides choices for the internal messaging resources and the data source. Step three is a summary of the settings. The installation wizard will configure the data store and messaging resources. The wizard does not create the database and this must be setup manually. Also, the wizard does not configure the human task manager which is required for production installations. The Human task container installation wizard can be used to setup the human task manager. This is the only configuration option which is supported for production environments.

Database and JMS resources supported

- Supported databases
 - ▶ Cloudscape
 - Not recommended for production environments
 - Not supported in clustered environments
 - ▶ DB2® Universal Database
 - ▶ Oracle
 - ▶ Microsoft® SQL Server
 - ▶ Informix® Dynamic Server
- } distributed platforms only
- Specific JDBC driver available for each database
 - Scripts available to setup BPC schema
 - ▶ <INSTALL_DIR>\ProcessChoreographer
 - Java™ Messaging Service (JMS) resources
 - ▶ Default JMS provider
 - ▶ WebSphere MQ JMS provider

The business process choreographer and thus the business process manager support different databases for the data store and different JMS implementations for the messaging resources. For databases, Cloudscape is available for testing and development use, but it is not available for production environments. DB2, Oracle, Microsoft SQL Server, or Informix Dynamic Server can all be used for production environments. When setting up the human task manager through the Administrative Console or the jacl script, you can choose the database and the appropriate driver will be configured in the data source definition. With any database, you will need to create the database and schema. DDL files are provided and located in the ProcessChoreographer directory. For the JMS resources, the default JMS messaging provider included with WebSphere Process Server can be used or WebSphere MQ may be used. The resources can be created, or you can use existing messaging resources that you have defined on the server.

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The next section of the presentation will focus on Administration of the business flow manager and business processes.

Business process container administration

- Enable common event infrastructure logging
 - ▶ Allows common base events generated by business processes to be published to the common event infrastructure
- Enable audit log
 - ▶ Allows audit log information generated by business processes to be sent to the audit log and stored in the BPEDB
- Retry limit
 - ▶ Specifies the maximum number of retries for processing a message. When the limit is reached, the message is sent to the listener for unprocessed messages
- Retention queue message limit
 - ▶ The maximum number of messages that can be stored in the retention queue before the business process container switches into quiesce mode

[Application servers](#) > [server1](#) > [Business process container](#)

The business process container provides services to run busir business process container, you can only change the general

Configuration

General Properties

Enable Common Event Infrastructure logging

Enable audit log

Retry limit
5

Retention queue message limit
20

Retention queue
jms/BPERetQueue

Hold queue
jms/BPEHldQueue

Apply OK Reset Cancel

The administration of the business process container only involves a few options. You can allow any events generated by business process to be sent to the Common Event Infrastructure or Audit log. Enabling the Common Event Infrastructure Logging setting will cause events to be published to the Common Event Infrastructure bus. Enabling the audit log setting will cause events to be stored in the BPEDB database. These settings allow for a single point of administration for event generation regardless of the event monitoring settings on the business processes. After selecting either one of these options, you will need to restart the server in order for events to be generated. Additional Administration settings are available for specifying the Retry limit for messages when an error occurs during processing. After so many failures, the message will be moved to the Hold queue. There is also a setting to limit the number of messages on the Retention queue. Messages arrive on the Retention queue when there is an internal failure during processing. When this limit is reached, the business flow manager will not retry any messages on the retention queue. The server will go into quiesce mode at this point and will not retry any messages until a new messages is successfully processed.

Administering failed messages

- Failed business process messages may be retried
 - ▶ Failures which occur during internal message processing are placed on the retention or hold queue

[Application servers](#) > [server1](#) > [Business process container](#) > Runtime Configuration
 Replay failed messages that are in the hold and retention queues.

Runtime

Refresh Message Count Replay Hold Queue Replay Retention Queue

General Properties

Hold queue messages
0

Retention queue messages
0

Message exceptions

State observer logging

Enable Common Event Infrastructure logging

Enable audit log

Update State Observers

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Business flow manager overview

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As mentioned earlier, the business flow manager uses a set of messaging resources for the processing of business processes. Some of these messaging resources are used in failure situations. If an error occurs during the internal processing of a message for a business process, the message will be placed on the retention queue after being retried a certain number of times (three by default). When the business flow manager successfully completes another message, which indicates that there is not a problem with the business flow manager in general, the messages on the retention queue will be copied back to the internal queue for processing again. If the messages continue to fail again for a certain number of times (same value as above), it is again placed on the retention queue. This procedure is repeated for a certain number of times (5 by default). If the message still fails, which would indicate that something is wrong with that particular message or process instance, the message is copied to the hold queue. From the hold queue, the message can only be retried manually. From within the Administrative Console, you can manually force the messages on either one of these queues to be attempted to be retried. From within the Business process container link under the server, select the refresh and reply link. You can poll the queues and see the current message count on the queues or you can force the messages to be retried. During the retry, you can enable events to be generated for additional information, tracking, and potential problem determination.

Business process installing and uninstalling

- Applications with business processes follows normal installation steps for WebSphere Process Server
- Uninstalling a business process requires all instances terminated and deleted and template to be stopped first
 - ▶ Templates stopped under <app>\EJB Modules\Business Processes
- Server running in “Development Mode” does not have uninstallation requirements
- Business process applications can be installed and uninstalled easily
 - ▶ Use Add and remove projects
 - ▶ Terminating and deleting the instances or stopping the template is not required



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Business flow manager overview

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Business processes, as a deployable artifact, are contained within an EAR file and exposed as SCA components. They are installed in the normal application installation process. There are no additional steps necessary when installing an application that includes a business process. If you have to uninstall an application that contains a business process, you must first stop all running instances of that business process. This is done to prevent the loss of state from a long-running business processes by accidentally removing the application. Uninstalling a business process is therefore a three step process.

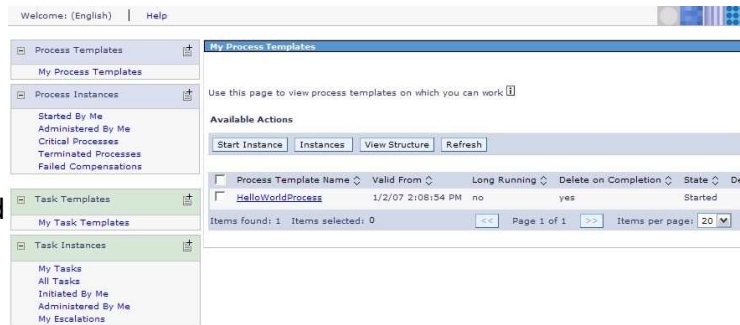
1. Ensure that all instances have completed and been removed.
2. Stop the template that represents that business process.
3. Uninstall the application.

This is made much easier in the development environment by using the Run in Development Mode, which allows you to uninstall and update the application without having to terminate all business process instances. You can enable this feature for testing if you are developing on Windows® and deploying on another platform, but it should not be enabled in a production environment.

Administering business processes

- BPC explorer included for task and process administration
 - ▶ View installed process templates
 - ▶ View, start, terminate, delete, compensate, retry process instances
 - ▶ Located at `http://<hostname>:9080/bpc`

- Built with Java Server Faces (JSF) components
 - Starting point for customized administrative clients



For managing business process instances, the BPC Explorer has been provided with WebSphere Process Server. The BPC explorer is an administrative client application where you can perform basic operations such as viewing installed process templates and process instances. You can also start, terminate, and delete process instances. You can also retry failed activities and force compensation on process instances. The BPC explorer is built using JSF components with a set of tag libraries that you can use to build your own custom clients.

Summary

- The business flow manager is part of the business process container of business process choreographer
- Installation for production is provided through administrative console
- Administrative options available for controlling logging and failure processing

In summary, the business flow manager is part of the business process container and business process choreographer. There are a number of installation options, however the only option which is supported for production installations is using the wizard in the Administration Console. For administering the business process container, there are options to control the logging and the processing of failed messages.

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