



IBM Software Group

WebSphere Process Server V6.2 WebSphere Integration Developer V6.2

Business flow manager overview



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

Goals

- Explain the architecture of the business flow manager component of the business process choreographer
- Describe the installation and configuration 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 configuration options of the business flow manager and the locations and steps for administering the business flow manager and business processes.

Agenda

- Architecture
- Configuration
- Administration
- Summary



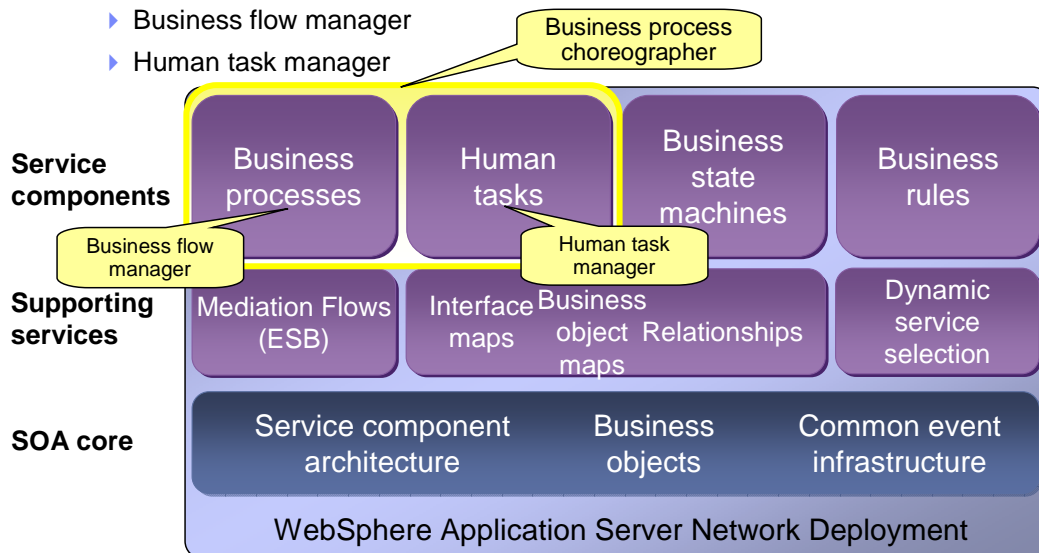
This section will focus on the architecture of the business flow manager.

Business process choreographer components

- WebSphere Process Server V6 business process choreographer includes

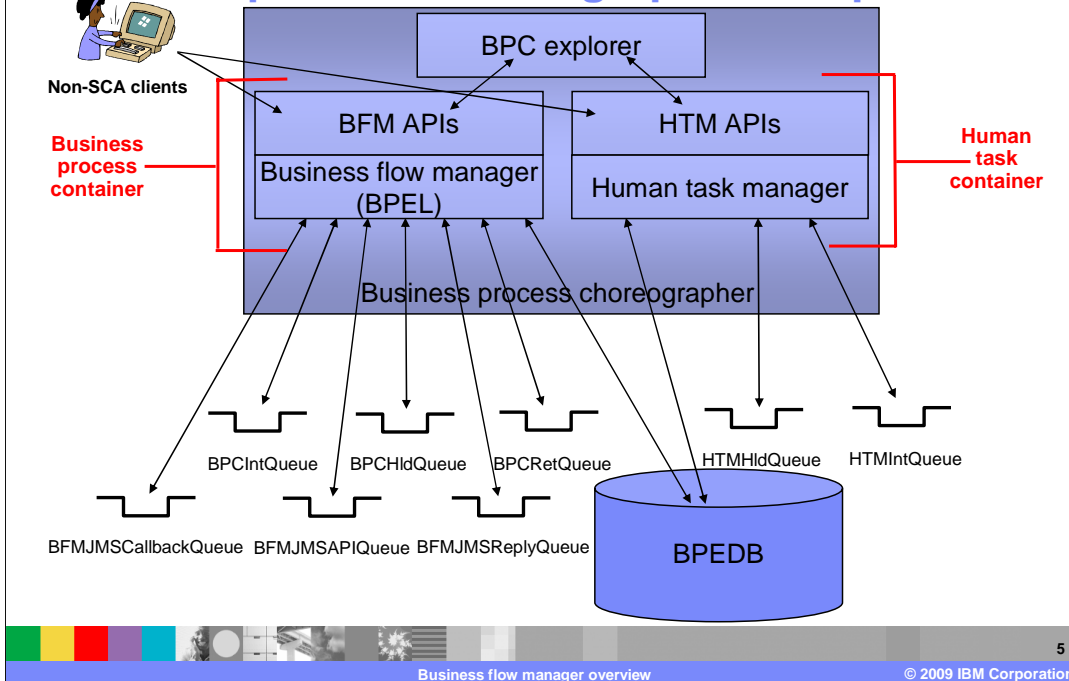
- ▶ Business flow manager

- ▶ 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. The business flow manager is built upon the SOA core capabilities provided by WebSphere Process Server. Business processes can be defined as service components using SCA, and business objects can be used to define the data for the processes. For monitoring of business processes, the common event infrastructure can be used.

Business process choreographer components



The business flow manager and the human task manager each have a few main resources associated with them. For processing business processes, the business flow manager uses a set of messaging resources. Likewise, the human task manager uses a different set of message queues for processing human tasks. These messaging resources use WebSphere's Service Integration Bus technologies. Besides messaging resources, the business process choreographer uses a database called BPEDB to store business process instances and human task work items. 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 container.

Section

Configuration



This section looks at the different configuration options for the business flow manager.

Business process choreographer configuration

- Installed as part of WebSphere Process Server
- Configuration options
 - ▶ During profile creation
 - ▶ By command line script
 - ▶ Using administrative console
- Configuration during profile creation (augmentation)
 - ▶ Option available at profile creation time to configure a sample business process choreographer
 - Sample configuration – not supported for production use
 - 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
 - Derby database setup and service integration messaging engines

The business flow manager and human task manager components of the business process choreographer are installed as part of WebSphere Process Server installation. There are several different ways in which the business flow manager can be configured: during profile creation, by command line script, or using the administrative console. At profile creation time, there is an option to configure a sample business process choreographer. This option includes the configuration of both the business flow manager and the human task manager. The sample configuration includes 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 Derby 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 process choreographer configuration

- Configuration by command line script
 - ▶ <INSTALL_DIR>\ProcessChoreographer\config\bpeconfig.jacl
- Configuration using administrative console
 - ▶ Specify data source, security settings and messaging resources
 - ▶ Database must be setup manually, all other resources are created

Application servers > server > Business Process Choreographer Containers

The Business Process Choreographer provides support for business-process applications. Business processes can be automatic, recoverable processes, or processes with human interaction. With the Business Process Choreographer, you can combine business process technology with any other service offered by products supporting the open J2EE architecture.

To use the Business Process Choreographer functionality, configure it with this page. The business flow and the human task containers will be installed and basic configuration will be performed. Use the links under "Related Items" for additional configuration.

Configuration

Data Source

Test Connection

Database Instance	Schema Name	Create Tables	User Name	Password	Server	Provider
C:\IBM\WPS61\profiles\Prod	WPS600	<input checked="" type="checkbox"/>				Derby Embedded

Human Task Manager Mail Session

Security

Role	User	Group	Description
Administrator	opsadmin		User name(s) and/or group name(s) for the business flow and human task administrator role. Users assigned to this role have all privileges.
Monitor	opsadmin		User name(s) and/or group name(s) for the business flow and human task monitor role. Users assigned to this role can view the properties of all of the business process and task objects.

Authentication	User	Password	Confirm Password	Description
JMS Authentication	opsadmin			Authentication used to authorize communication between messaging engines on the system integration bus

Additional Properties

- Business Flow Manager
- Human Task Manager

Related Items

- Business Process Choreographer Explorer
- Business Process Choreographer Event Collector
- Business Process Choreographer Explorer
- Business Process Choreographer Explorer

Related Resources

- People directory provider

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Besides configuring the business flow manager using the profile creation wizard, you can also configure the business flow manager from the command line. Using the bpeconfig.jacl file located in the <INSTALL_DIR>\ProcessChoreographer\config directory, the business flow manager and human task manager can be configured and the different resources created. When using the script with wsadmin, you are 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.

The final option for configuring the business flow manager is to use the administrative console. In the server container settings section, there is a business process choreographer container link. This link will show some of the configuration values for the business flow manager if it has already been configured. If it has not already been configured, the business process choreographer can be configured by specifying values for a data source, security settings, and messaging resources. The required database is not created; it must have been previously created. However, all required messaging resources are created, and there is an option to have the required database tables created.

Both the command line script and administrative console configuration options are supported for production environments.

Database and JMS resources supported

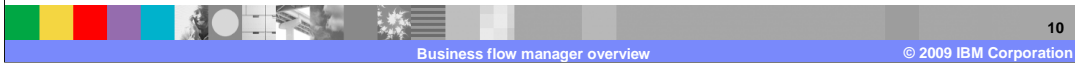
- Supported databases
 - ▶ Derby
 - Not recommended for production environments
 - Not supported in clustered environments
 - ▶ DB2 Universal Database
 - ▶ Oracle
 - ▶ Microsoft® SQL Server®
 - ▶ Informix® Dynamic Server
- Use specific JDBC driver for each database
- Scripts available to setup BPC schema
 - ▶ <INSTALL_DIR>\dbscripts\ProcessChoreographer
- Java™ Messaging Service (JMS) resources
 - ▶ Default JMS provider



The business process choreographer, and thus the business flow manager, supports different databases for the data store and different JMS implementations for the messaging resources. For databases, Derby 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 is 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 is used. The resources can be created for you, or you can use existing messaging resources that you have defined on the server.

Section

Administration



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

Business flow manager administration

- **Retry limit**
 - ▶ Specifies the maximum number of times that a message can be sent to the retention queue for reprocessing, after which the message is sent to the hold queue
- **Retention queue message limit**
 - ▶ Specifies the maximum number of messages that can be stored in the retention queue before the business process container switches into quiesce mode
- **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

[Application servers](#) > [server1](#) > [Business Process Chor](#)

The business flow manager provides services to run and configuring the business flow manager for the first time.

Configuration
Runtime

General Properties

Retry limit

Retention queue message limit

Retention queue

Hold queue

State Observers

Enable Common Event Infrastructure logging

Enable audit logging

Apply OK Reset Cancel



Once the business flow manager has been configured, there are two aspects that can be administered dynamically: the logging policy and the failed message policy. Business process navigation is driven by internal messages sent to the business flow manager. If an error occurs during the processing of a message, the message is automatically retried. After three failures, the message is sent to the retention queue where it is queued for reprocessing at a future point in time. The Retry limit specifies the maximum number of times that a message can be sent to the retention queue for reprocessing, after which it is sent to the hold queue. There is also a setting to limit the number of messages in the Retention queue. Messages arrive in the Retention queue when there is an internal failure during processing. When this limit is reached, the business flow manager will no longer retry any messages in the retention queue. Instead, The server will go into quiesce mode at this point and will not retry any messages until a new message is successfully processed.

With respect to logging, you can allow any events generated by business processes to be sent to the Common Event Infrastructure or audit log. Enabling the Common Event Infrastructure logging setting causes events to be published to the Common Event Infrastructure bus. Enabling the audit log setting causes 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.

Administering failed messages

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

Application servers > server1 > Business Process Choreographer Containers > Business Flow Manager > Runtime Configuration

Replay failed messages that are in the hold and retention queues.

Configuration Runtime

Refresh Message Count Replay Hold Queue Replay Retention Queue

General Properties

Hold queue messages
0

Retention queue messages
0

Message exceptions

State Observers

Enable Common Event Infrastructure logging

Enable audit logging

Save runtime changes to configuration as well

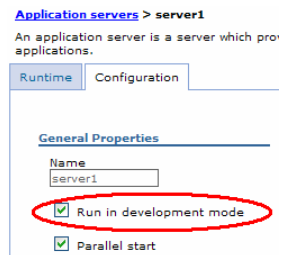
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As mentioned earlier, the business flow manager uses a set of messaging resources for the processing of business processes. Some of these messaging resources are used in failure situations. If an error occurs during the internal processing of a message for a business process, the message is 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, indicating that there is no problem with the business flow manager in general, the messages on the retention queue are copied back to the internal queue for processing. If the message continues 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, indicating 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.

Installing and uninstalling business processes

- Applications with business processes follow normal installation steps for WebSphere Process Server
- Uninstalling a business process requires all instances to be terminated and deleted, and the template to be stopped
 - ▶ Business process templates can be stopped by navigating as follows:
 - Applications > SCA Modules > *select module* > Business Processes
- A server running in “development mode” does not have the above uninstallation requirements



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 process 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 by using the “Run in development mode” option, which allows you to uninstall and update the application without having to terminate all business process instances. This feature is enabled by default in the unit test environment of WebSphere Integration Developer. It can also be enabled in WebSphere Process Server, but it should not be used 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://<host name>:9080/bpc>

- Built with Java Server Faces 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.

Section

Summary

The final section is the summary.

Summary

- The business flow manager is part of the business process container of business process choreographer
- Installation and Configuration for production is provided through the administrative console or the bpeconfig.jacl script
- Administrative options are available for controlling event logging and failure processing



In summary, the business flow manager is part of the business process container and business process choreographer. There are several configuration options, however the only supported options for production installations are using the administration console or the bpeconfig.jacl script. For administering the business process container, there are options to control the logging and the processing of failed messages.

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