IBM

IBM Software Group

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

Business Flow Manager Overview

@business on demand.

© 2006 IBM Corporation
Updated July 31, 2006

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

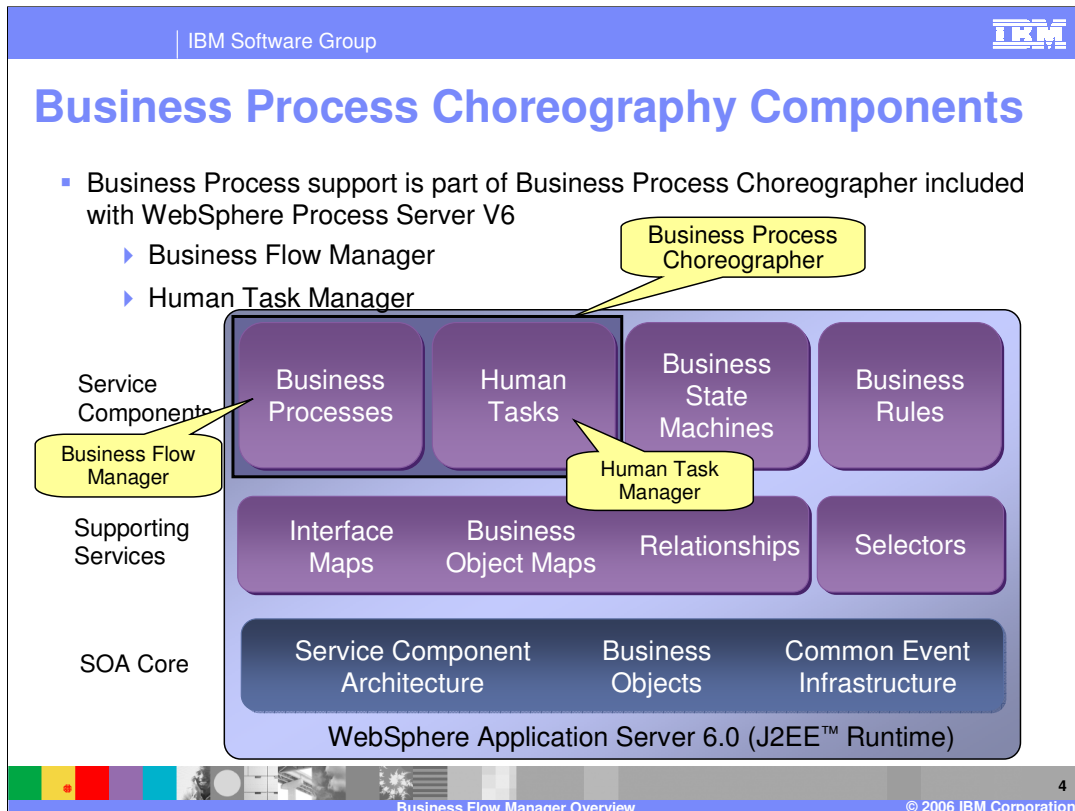- Examine the administrative options for the Business Flow Manager

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 support is part of Business Process Choreographer included with WebSphere Process Server V6
    - ▶ Business Flow Manager
    - ▶ Human Task Manager

Business Process Choreographer

Service Components

Business Flow Manager

| Business Processes | Human Tasks | Business State Machines | Business Rules |

Human Task Manager

Supporting Services

| Interface Maps | Business Object Maps | Relationships | Selectors |

SOA Core

| Service Component Architecture | Business Objects | Common Event Infrastructure |

WebSphere Application Server 6.0 (J2EE™ Runtime)

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 Business Process Choreographer which is part of WebSphere Process Server V6. While the Human Task Manager is also a component and part of 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.

Business Process Choreographer Components
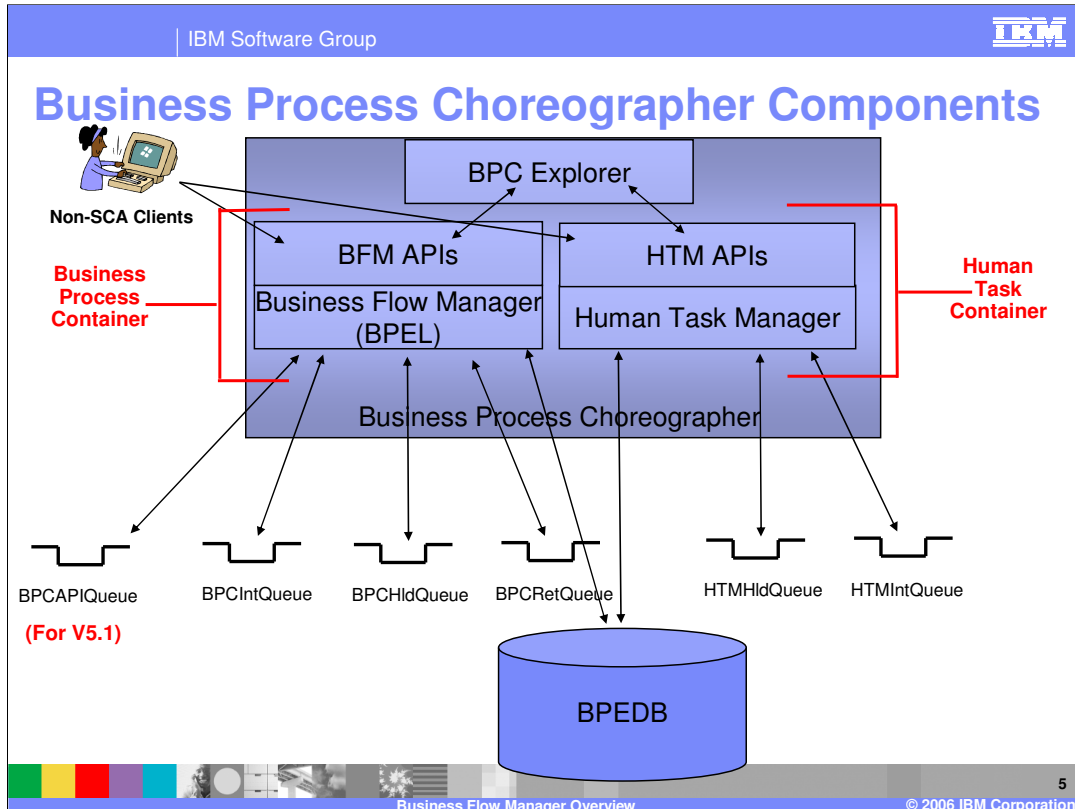
For the Business Flow Manager and Human Task Manager there are a few main resources worth mentioning. For processing business processes or human tasks, the Business Flow Manager and Human Task Manager, respectively, use a set of messaging resources. These messaging resources can use WebSphere's Service 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. 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.
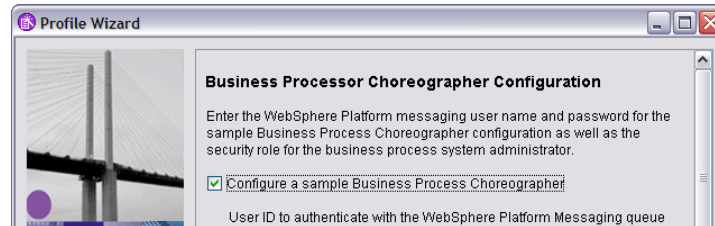
IBM Software Group

Agenda

- Architecture
- Installation
- Administration
- Summary

Business Flow Manager Overview

© 2006 IBM Corporation

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

Business Processor Choreographer Configuration

Enter the WebSphere Platform messaging user name and password for the sample Business Process Choreographer configuration as well as the security role for the business process system administrator.

☑ Configure a sample Business Process Choreographer

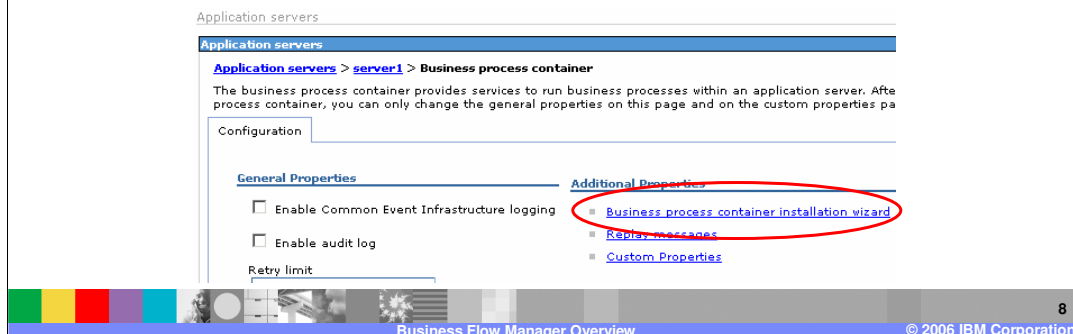User ID to authenticate with the WebSphere Platform Messaging queue

  - 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

7

Business Flow Manager Overview   © 2006 IBM Corporation

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 (cont.)

- Command line configuration option
  - ▶ <INSTALL_DIR>\ProcessChoreographer\sample\bpeconfig.jacl
- Business Process Container installation wizard in Administrative console
  - ▶ Adds Business Flow Manager and datastore and messaging resources
  - ▶ Database must be setup manually
  - ▶ Supported configuration setup option for production on distributed platforms
    - use bpeconfig.jacl script on z/OS

Application servers

Application servers

Application servers > server1 > Business process container

The business process container provides services to run business processes within an application server. Afte
process container, you can only change the general properties on this page and on the custom properties pa

Configuration

General Properties

☐ Enable Common Event Infrastructure logging

☐ Enable audit log

Retry limit

Additional Properties

- Business process container installation wizard
- Replay messages
- Custom Properties

8

© 2006 IBM Corporation

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 datasource. 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   distributed platforms only
  - Informix Dynamic Server
- Specific JDBC driver available for each database
- Scripts available to setup BPC schema
  - <INSTALL_DIR>\ProcessChoreographer
- JMS resources
  - Default JMS messaging provider
  - WebSphere MQ JMS provider
- List of fully supported software available at
  - http://www-
    1.ibm.com/support/docview.wss?rs=2307&context=SSQH9M&uid=swg27006206

9

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 datasource 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.

Agenda

- Architecture
- Installation
- **Administration**
- Summary

10

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 Port 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

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

IBM Software Group

Business Flow Manager Overview

13
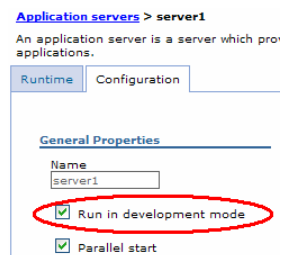
© 2006 IBM Corporation

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.

Administrating 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://localhost:9080/bpc

- Built with reusable JavaServer™ 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.

Agenda

- Architecture
- Installation
- Administration
- **Summary**

15

The final section is the summary.

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.

Template Revision: 11/22/2005 12:10 PM

Trademarks, Copyrights, and Disclaimers

The following terms are trademarks or registered trademarks of International Business Machines Corporation in the United States, other countries, or both:

IBM	CICS	IMS	MQSeries	Tivoli
IBM(logo)	Cloudscape	Informix	OS/390	WebSphere
e(logo)business	DB2	iSeries	OS/400	xSeries
AIX	DB2 Universal Database	Lotus	pSeries	zSeries

Java and all Java-based trademarks are trademarks of Sun Microsystems, Inc. in the United States, other countries, or both.

Microsoft, Windows, Windows NT, and the Windows logo are registered trademarks of Microsoft Corporation in the United States, other countries, or both.

Intel, ActionMedia, LANDesk, MMX, Pentium and ProShare are trademarks of Intel Corporation in the United States, other countries, or both.

UNIX is a registered trademark of The Open Group in the United States and other countries.

Linux is a registered trademark of Linus Torvalds.

Other company, product and service names may be trademarks or service marks of others.

Product data has been reviewed for accuracy as of the date of initial publication. Product data is subject to change without notice. This document could include technical inaccuracies or typographical errors. IBM may make improvements and/or changes in the product(s) and/or program(s) described herein at any time without notice. Any statements regarding IBM's future direction and intent are subject to change or withdrawal without notice, and represent goals and objectives only. References in this document to IBM products, programs, or services does not imply that IBM intends to make such products, programs or services available in all countries in which IBM operates or does business. Any reference to an IBM Program Product in this document is not intended to state or imply that only that program product may be used. Any functionally equivalent program, that does not infringe IBM's intellectual property rights, may be used instead.

Information is provided "AS IS" without warranty of any kind. THE INFORMATION PROVIDED IN THIS DOCUMENT IS DISTRIBUTED "AS IS" WITHOUT ANY WARRANTY, EITHER EXPRESS OR IMPLIED. IBM EXPRESSLY DISCLAIMS ANY WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR NONINFRINGEMENT. IBM shall have no responsibility to update this information. IBM products are warranted, if at all, according to the terms and conditions of the agreements (e.g., IBM Customer Agreement, Statement of Limited Warranty, International Program License Agreement, etc.) under which they are provided. Information concerning non-IBM products was obtained from the suppliers of those products, their published announcements or other publicly available sources. IBM has not tested those products in connection with this publication and cannot confirm the accuracy of performance, compatibility or any other claims related to non-IBM products. IBM makes no representations or warranties, express or implied, regarding non-IBM products and services.

The provision of the information contained herein is not intended to, and does not, grant any right or license under any IBM patents or copyrights. Inquiries regarding patent or copyright licenses should be made, in writing, to:

IBM Director of Licensing
IBM Corporation
North Castle Drive
Armonk, NY 10504-1785
U.S.A.

Performance is based on measurements and projections using standard IBM benchmarks in a controlled environment. All customer examples described are presented as illustrations of how those customers have used IBM products and the results they may have achieved. The actual throughput or performance that any user will experience will vary depending upon considerations such as the amount of multiprogramming in the user's job stream, the I/O configuration, the storage configuration, and the workload processed. Therefore, no assurance can be given that an individual user will achieve throughput or performance improvements equivalent to the ratios stated here.

© Copyright International Business Machines Corporation 2005,2006. All rights reserved.

Note to U.S. Government Users - Documentation related to restricted rights-Use, duplication or disclosure is subject to restrictions set forth in GSA ADP Schedule Contract and IBM Corp.

WPSWIDv6_BPRuntime.ppt