



IBM Software Group

# WebSphere® Process Server V6 WebSphere Integration Developer V6

## *BPC observer*



@business on demand.

© 2007 IBM Corporation  
Updated March 19, 2007

This presentation provides an overview of BPC observer enhancements.

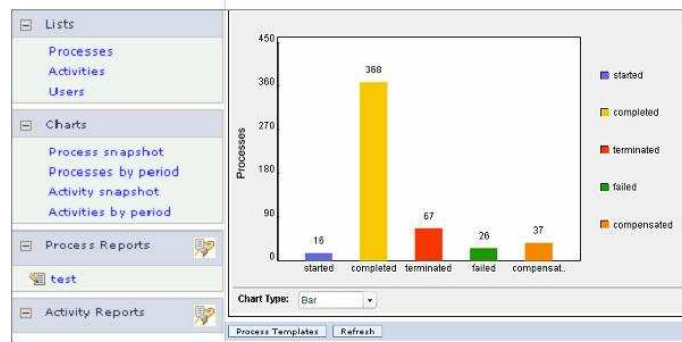
## Agenda

- BPC observer
  - ▶ Overview
  - ▶ Architecture
  - ▶ UI
  - ▶ Configuration
- Summary

To start out, you will need to know what the BPC observer is. Therefore, you will first be taken through an overview. Then you will learn about how the BPC observer works by digging into the architecture, user interface, and configuration.

## BPC observer overview

- 3 major functions of BPC observer
  - ▶ Record and transform CEI events for BPC components
  - ▶ Use predefined or savable user defined reports to retrieve statistical data on processes and activities
  - ▶ Display query results in tabular lists or statistical graphs



3

BPC observer

© 2007 IBM Corporation

The BPC Observer performs three major functions. The first function is to record and transform Common Event Infrastructure, or CEI, events for the BPC components. These events have to be turned on at development time and the BPC Observer subscribes to the events being emitted for the BPC components. The second function is to use predefined or savable user-defined reports to retrieve statistical data on processes and activities. This means BPC Observer comes with some predefined reporting functionality that allows you to choose a certain time period or time duration for a process and activity. If those do not suit what you are doing, then the BPC Observer allows you to build your own reports. The user-defined reports are saved so that the next time you use the BPC Observer, your custom report is available. The third function is to display query results in tabular lists or statistical graphs. The tabular lists allow you to see the CEI information for BPC components in an organized table format. In addition to tables, you can display report information in a pie chart or bar graph. An example of the graph display is shown on this slide.

## BPC observer overview

### Technology Comparison

#### ▶ BPC observer

- Lightweight product integrated into WebSphere Process Server for component level monitoring
  - Fills the gap between infrastructure-level monitoring of Tivoli Composite Application Manager and business level monitoring of WebSphere Business Monitor
- Process and activity events are information sources
- Provides base statistical information on current and past processes, activities and human tasks
  - Single instances and aggregates (like durations of activities)
- Used by BPC Administrator to create reports on what has been happening inside BPC
- Can observe multiple BPC containers

#### ▶ WebSphere Business Monitor

- Stand-alone product with rich model for business level monitoring
- Events, observation model, and key performance indicators are information sources
- Focuses on aggregates, dashboard, triggering mechanisms, and business data

#### ▶ Tivoli Composite Application Manager

- Provides infrastructure level monitoring to help solve application related problems
  - Computer processor usage, memory usage, transaction rate, transaction response time
- Web services client information
  - Message rate and response time

#### ▶ BPC Explorer

- Allows business users to search, view, and work on active process instances, tasks, and BSMS



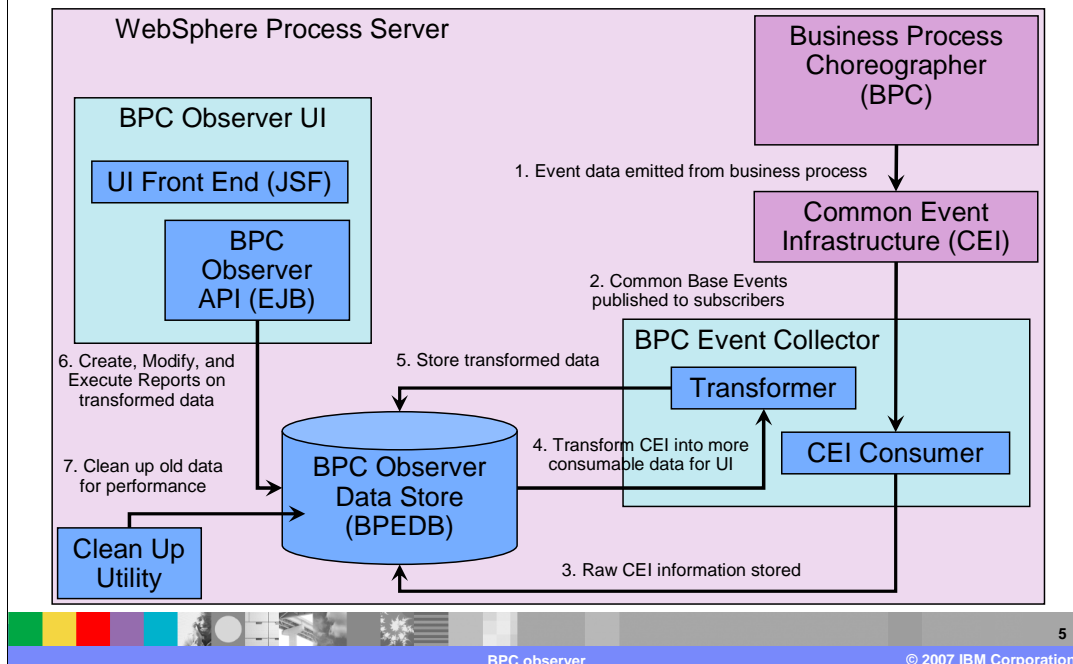
This slide compares the BPC Observer, WebSphere Business Monitor, the Tivoli Composite Application Manager, and BPC Explorer. The BPC Observer is a lightweight product integrated into WebSphere Process Server for component level monitoring. It fills the gap between infrastructure-level monitoring of the Tivoli Composite Application Manager and the business-level monitoring of WebSphere Business Monitor. The process and activity events are the only information source. It provides base statistical information on current and past processes, activities and human tasks. Meaning, the BPC Observer resolves statistics from single instances and aggregates like durations of activities. It is used by a BPC Administrator to create reports on what has been happening inside BPC.

WebSphere Business Monitor is a stand-alone product with a rich model for business-level monitoring. Events, observation model, and key performance indicators are information sources. It focuses on aggregates, dashboard, triggering mechanisms, and business data.

Tivoli Composite Application Manager provides infrastructure level monitoring to help solve application related problems like computer processor usage, memory usage, transaction rate, transaction response time. It also helps resolve Web services client information like message rate and response time.

BPC Explorer lets you search and work on active process instances, tasks, and business state machines only. It has no reporting features, but is the BPC client that operates on BPC components.

## BPC observer architecture



The BPC Observer is delivered in two parts, the BPC Observer UI and the BPC Event Collector. Both are contained in their own standard J2EE enterprise archive or .ear file. Configuration scripts are provided for deploying the applications and these scripts can be called stand-alone or as part of the overall BPC configuration. The Business Flow Manager, or BFM, and the Human Task Manager, or HTM, components emit information on changes occurring on processes and human tasks using the Common Event Infrastructure. The BPC Observer subscribes to specified groups of events offered by CEI to be notified about events coming from the Business Process Choreographer. Upon notification the event data is moved from CEI into the BPC Observer data store for further processing. By moving the data from CEI into its own data store the BPC Observer does not influence the overall performance of CEI beyond being a subscriber to it. The capturing of data phase is completed by transforming the data already in the data store into a format more suitable for the queries of BPC Observer UI. Once the transformed data is in the BPC Observer data store it is available for querying from the BPC Observer UI. The BPC Observer EJB APIs use the transformed data to create, modify, and run reports on the transformed data. The user interface of BPC Observer is built using standard Java Server Faces, or JSF, and using the BPC JSF Components. The look is similar to the BPC Explorer client application.

## BPC observer architecture

- Business Process Choreographer (BPC)
  - ▶ Provides framework for processes, activities, and tasks
- Common Event Infrastructure (CEI)
  - ▶ Provides framework for emitting and subscribing to events
- 2 enterprise applications comprise BPC Observer
  - ▶ BPC Event Collector application
    - Installed on the same server/cluster as the CEI event server
    - Handles consuming and transforming CEI information for UI
  - ▶ BPC Observer UI application
    - Installed with local BPC or remote client BPC
    - Operates on and displays Observer data stored in data store

The basis of the BPC Observer is the Business Process Choreographer, or BPC. It provides framework for processes, activities, and tasks. The Common Event Infrastructure provides the framework for emitting and subscribing to events for these BPC activities and processes. Two enterprise applications comprise BPC Observer. This is the BPC Event Collector application and the BPC Observer UI application. The BPC Event Collector application is installed on the same server or cluster as the CEI event server. It handles consuming and transforming CEI information for the UI. The BPC Observer UI application is installed with local BPC or remote client BPC. It operates on and displays BPC Observer data stored in BPEDB data store.

## BPC observer architecture – Event collector

- CEI Consumer
  - ▶ Message driven bean to store each event in the event collector table
  - ▶ Subscribes and consumes events from CEI
  - ▶ Triggers the Event Transformer
- Event Transformer
  - ▶ Enterprise Java™ Bean inserts events into BPEDB
  - ▶ Transforms and aggregates data
  - ▶ Corrects timestamps in the microsecond range
    - If process or activity having the same time stamp



The BPC Event Collector component is responsible for recording the information about the Business Process Choreographer components. This information is emitted as Common Base Events which the Common Event Infrastructure processes. The information is stored in the BPC Observer data store. Periodically, the raw data is transformed into a data format more suitable for the BPC Observer's reports. Finally it is made available in the data store for queries from the BPC Observer UI component.

The BPC Event Collector contains two sub components: CEI Consumer and Transformer. The CEI Consumer subscribes to the CEI events coming from BPC components. The subscription is defined by a CEI Event Group. Each Event Collector configuration creates such an Event Group. Each CEI event from BPC is sent to an instance of the CEI consumer, which extracts the content and puts it into the BPC Observer data store. The Transformer reads all entries belonging to the process instances from the data store. It then aggregates the information, and performs updates on the data entries associated with the process instance in the tables accessible from the Observer UI. That way the number of update operations on entries representing process instances is reduced.

Once all events related to the process instance have been processed, they are removed from the special table. The Transformer will then continue with the next process instance from the list that it determined in the first step. This process is continued until the list is empty. Process instance work time, number of instance events, number of activity events of a process instance and activity instance are calculated by the Transformer before performing an update operation.

## BPC observer architecture – Observer UI

- **Observer API EJB**
  - ▶ Performs reports on transformed data in BPEDB
  - ▶ Inserts and retrieves user-defined reports
- **Observer front end**
  - ▶ Built with JSF (Java Server Faces) and BPC JSF Components
    - BPC Observer uses JSF components like BPC Explorer
  - ▶ Dynamically displays information
    - Creates mark up, lists and graphs on the fly



The BPC Observer provides a Web application front end. The Web application uses the Java Server Faces, or JSF, technology and especially the BPC JSF Components to create its user interface. An Enterprise Java Bean, or EJB, encapsulates the access to the BPC Observer data store. A single J2EE Enterprise Application bundles the EJB and the JSF application into the BPC Observer User Interface. The Observer UI allows you to search through the Observer data store in the queries, displaying the results in tabular views or charts. It also provides a query creation wizard that lets you define your own reports. The definition of these reports can be made persistent in the Observer data store. Those persisted user-defined reports are also available for running in the Web application. By defining your own reports, you can adapt the BPC Observer to your specific needs.



## BPC observer architecture – Data store

- Supported databases for BPEDB
  - ▶ Cloudscape™, DB2®, and Oracle
  - ▶ Same as CEI supported databases
- Database scripts
  - ▶ <install>/dbscripts/ProcessChoreographer/<db\_type>
- Cleanup utility
  - ▶ A Jython script and MBean available
  - ▶ Used to remove old or completed data

9

BPC observer

© 2007 IBM Corporation

The BPC Observer data store is a set of database tables that store the event data emitted from the BPC components and some views that provide a unified interface to the data. The BPC Observer supports the same database systems as BPC and can even share the same database instance. The BPC Observer supports the same databases for CEI, which are Cloudscape, DB2, and Oracle. One thing to note here is Cloudscape is not supported, therefore not recommended, for production systems. Database scripts that operate on the BPEDB are located in the directory on this slide. In addition to creation scripts, there are also cleanup scripts that will maximize performance of your system and clean up old, completed data from the BPEDB.

## BPC observer UI enhancements

<b>Existing 6.0.1</b>	<ul style="list-style-type: none"> <li>■ BPC Observer shipped as sample only</li> <li>■ Contained predefined drill down reports only</li> </ul>
<b>New 6.0.2</b>	<ul style="list-style-type: none"> <li>■ BPC Observer becomes its own product</li> <li>■ Contains both drill down and user defined reports</li> <li>■ JSF based UI like BPC Explorer</li> <li>■ Old BPC Observer sample not touched               <ul style="list-style-type: none"> <li>▶ Recommended to uninstall sample</li> </ul> </li> </ul>
<b>Benefits</b>	<ul style="list-style-type: none"> <li>■ Ability to access key BPC statistics</li> <li>■ Determine load and reliability of process infrastructure</li> </ul>

10

BPC observer

© 2007 IBM Corporation

The BPC Observer sample in V6.0.1 is not touched during the product update. It continues to work on a V6.0.2 runtime, however the removal of the V6.0.1 sample is recommended. In V6.0.2, the BPC Observer configuration requires that the 6.0.1 sample does not exist.

BPC Observer lets you observe state and evolution of business processes including overall duration and actual work time. It provides customizable reports and graphical charts of historical and accumulated data of business processes and lets you retrieve statistical data on processes and activities. Available as sample in WebSphere Process Server 6.0.1, it is now a fully supported product feature in V6.0.2.

The key benefit of the BPC Observer is the ability to get access to key statistics of the Business Process Choreographer runtime infrastructure. You can determine how many processes are run by the underlying BPEL infrastructure and the load of the process infrastructure. Furthermore, you can see the percentage of failed instances, and how long the running of instances needed. If these statistics are collected regularly, then the BPC Observer also allows you to detect changes in the usage pattern of the BPEL infrastructure. Thus, increasing load can be detected and resources can be added to the processing infrastructure.

## BPC observer UI - Reports

- **Predefined Reports**
  - ▶ Set of predefined reports in Observer
  - ▶ Progressively refine selection criteria
    - Time period
    - Processes, activities, or user information
- **User Defined Reports**
  - ▶ New custom reports
  - ▶ No coding necessary, only defining search
    - Observer templates and graphs are reused

The BPC Observer distinguishes between two categories of queries. The first are predefined queries that cannot be modified. These queries are used to provide the detail and chart display capabilities of BPC Observer. The detail reports are a set of predefined reports in which you can progressively refine your selection criteria. The level of detail increases the farther you drill down. As an example, the welcome page displays some key properties of the observer database. After selecting the time period, you get a list of users involved. After selecting some users, you get information about the activities that those users were involved in. You can get detailed information for any single BPC activity.

The other type of query is the user-defined query. These queries define customized reports and show the extent of what is available in BPC Observer for reporting. Without specifying a complex SQL query, you have several options to create user-defined reports according to your needs. As an example, you can see a graph of the number of activities claimed during a given time period and the status of the activities.

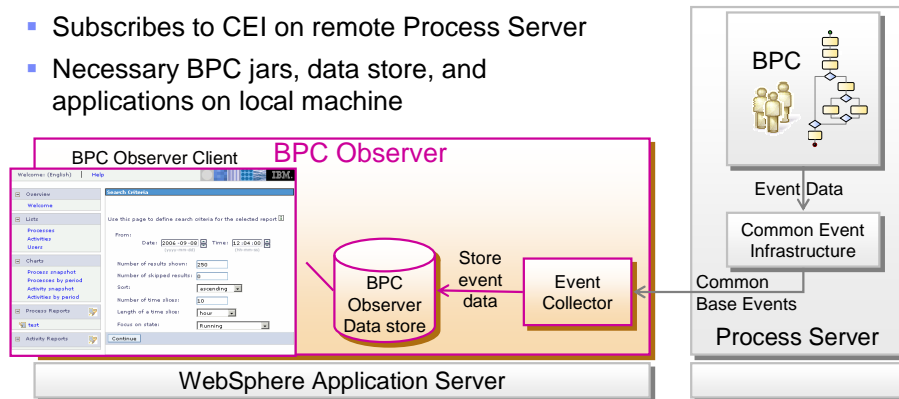
## BPC observer configuration

- Default configuration of Observer installed with BPC
- Administrative Console
  - ▶ Integrated in Business Process Container wizard
  - ▶ CEI has to be installed on the same server
  - ▶ Observer tables have to be created in BPEDB
- Scripts to create BPC Observer applications
  - ▶ setupObserver.bat/.sh
  - ▶ setupEventCollector.bat/.sh
  - ▶ Data Source has to be created manually
- Dedicated database is recommended
  - ▶ Cloudscape, DB2, or Oracle

The installation and configuration of the BPC Observer components is integrated into the overall BPC configuration. The configuration wizard for BPC available in the Administrative console of WebSphere Process Server allows you to set up a default configuration. For the more complex setups a configuration script is available, which allows you to create the BPC Observer data store in an existing database instance and to deploy the BPC Event Collector and the BPC Observer UI. The configuration wizard for configuring BPC allows you to create a default configuration of the BPC Observer. The BPC Observer is delivered in two parts, the BPC Observer UI and the BPC Event Collector. Both are contained in their own standard J2EE .ear file and are therefore administered using the standard administration capabilities of WebSphere Application Server. Configuration scripts are provided for deploying the applications. These scripts can be called stand-alone or as part of the overall BPC configuration.

## BPC observer configuration

- WebSphere Process Server Remote Client install
  - ▶ Observer and BPC part of remote install
  - ▶ Remote BPC Observer acts as if on other machine
    - Subscribes to CEI on remote Process Server
    - Necessary BPC jars, data store, and applications on local machine



The remote client installation of WebSphere Process Server includes the Business Process Choreographer. The BPC Observer is part of the remote Business Process Choreographer installation and acts as if it were not on a remote machine but on the same WebSphere Process Server machine. The remote BPC Observer subscribes to CEI on a remote WebSphere Process Server instance, and runs off the necessary BPC jars, data store, and applications on the local machine.

## Summary

- BPC observer overview
  - ▶ Overview
  - ▶ Architecture
  - ▶ UI
  - ▶ Configuration



In summary, you learned what the BPC Observer is, what it does, and the basics of how it works. Then you learned about how the BPC Observer works by digging into the architecture, UI, and configuration.

## Feedback

### Your feedback is valuable

You can help improve the quality of IBM Education Assistant content to better meet your needs by providing feedback.

- Did you find this module useful?
- Did it help you solve a problem or answer a question?
- Do you have suggestions for improvements?

[Click to send e-mail feedback](#)

## 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:

Cloudscape DB2 Tivoli WebSphere

EJB, J2EE, JSF, Java, and all Java-based trademarks are trademarks of Sun Microsystems, Inc. in the United States, other countries, or both.

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 or changes in the products or programs 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 NON-INFRINGEMENT. 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 (for example, 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 2007. 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.