Oracle® BPEL Process Analytics

Quick Start Guide

10*g* Release 2 (10.1.2)

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Oracle BPEL Process Analytics Quick Start Guide, 10*g* Release 2 (10.1.2)

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Preface

This guide provides an introduction, demo, and tutorial on using Oracle BPEL Process Analytics to monitor Oracle BPEL Process Manager activities.

Audience

This manual is intended for users who want to install and familiarize themselves with Oracle BPEL Process Analytics.

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Structure

This document contains four chapters:

Chapter 1, "Introduction to Oracle BPEL Process Analytics"

This chapter provides an introduction to Oracle BPEL Process Analytics.

Chapter 2, "Required Software"

This chapter describes the system and software requirements for running the demo and tutorial.

Chapter 3, "Running the Loan Provider Demo"

This chapter describes how to set up and use the Loan Provider demo to quickly familiarize yourself with Oracle BPEL Process Analytics.

Chapter 4, "Running the LoanFlowPlus Tutorial"

This chapter provides step-by-step instructions on setting up and using Oracle BPEL Process Analytics to monitor an Oracle BPEL Process Manager process flow.

Included are instructions on inserting activity sensors in the process flow, specifying the connection between Oracle BPEL Process Manager and Oracle BPEL Process Analytics, defining the objects needed to monitor activities, generating activity, and then viewing the data as it is generated in real time.

Related Documents

For more information, see the following manuals:

- *Oracle BPEL Process Analytics User's Guide*
- *Oracle BPEL Process Manager Developer's Guide*
- *Oracle BPEL Process Manager Quick Start Guide*
- *Oracle Application Server Integration Installation Guide*
- *Oracle BPEL Process Analytics Installation Guide*

Conventions

This section describes the conventions used in the text and code examples of this documentation set. It describes:

- Conventions in Text
- Conventions in Code Examples
- Conventions for Windows Operating Systems

Conventions in Text

We use various conventions in text to help you more quickly identify special terms. The following table describes those conventions and provides examples of their use.

Convention	Meaning	Example
Bold	Bold typeface indicates terms that are defined in the text or terms that appear in a glossary, or both.	When you specify this clause, you create an **index-organized table**.

Convention	Meaning	Example
Italic	Italic typeface indicates book titles or emphasis.	*Oracle Database Concepts* Ensure that the recovery catalog and target database do *not* reside on the same disk.
`UPPERCASE monospace (fixed-width) font`	Uppercase monospace typeface indicates elements supplied by the system. Such elements include parameters, privileges, datatypes, Recovery Manager keywords, SQL keywords, SQL*Plus or utility commands, packages and methods, as well as system-supplied column names, database objects and structures, user names, and roles.	You can specify this clause only for a `NUMBER` column. You can back up the database by using the `BACKUP` command. Query the `TABLE_NAME` column in the `USER_TABLES` data dictionary view. Use the `DBMS_STATS.GENERATE_STATS` procedure.
`lowercase monospace (fixed-width) font`	Lowercase monospace typeface indicates executable programs, file names, directory names, and sample user-supplied elements. Such elements include computer and database names, net service names and connect identifiers, user-supplied database objects and structures, column names, packages and classes, user names and roles, program units, and parameter values. *Note:* Some programmatic elements use a mixture of UPPERCASE and lowercase. Enter these elements as shown.	Enter `sqlplus` to start SQL*Plus. The password is specified in the `orapwd` file. Back up the datafiles and control files in the `/disk1/oracle/dbs` directory. The `department_id`, `department_name`, and `location_id` columns are in the `hr.departments` table. Set the `QUERY_REWRITE_ENABLED` initialization parameter to `true`. Connect as `oe` user. The `JRepUtil` class implements these methods.
`lowercase italic monospace (fixed-width) font`	Lowercase italic monospace font represents placeholders or variables.	You can specify the *`parallel_clause`*. Run *`old_release`*`.SQL` where *`old_release`* refers to the release you installed prior to upgrading.
Unix	Indicates Sun SPARC Solaris, Red Hat Enterprise Linux AS/ES, and SUSE Linux Enterprise Server are collectively referred to as Unix.	Instructions for setting up the Loan Provider Demo on Unix systems are found in Chapter 3.

Conventions in Code Examples

Code examples illustrate SQL, PL/SQL, SQL*Plus, or other command-line statements. They are displayed in a monospace (fixed-width) font and separated from normal text as shown in this example:

```
SELECT username FROM dba_users WHERE username = 'MIGRATE';
```

The following table describes typographic conventions used in code examples and provides examples of their use.

Convention	Meaning	Example
`[ ]`	Anything enclosed in brackets is optional.	`DECIMAL (`*`digits`*` [ , `*`precision`*` ])`
`{ }`	Braces are used for grouping items.	`{ENABLE | DISABLE}`
`|`	A vertical bar represents a choice of two options.	`{ENABLE | DISABLE}` `[COMPRESS | NOCOMPRESS]`

Convention	Meaning	Example

`...`	Ellipsis points mean repetition in syntax descriptions.
	
	In addition, ellipsis points can mean an omission in code examples or text.
		`CREATE TABLE ... AS subquery;`
		
		`SELECT col1, col2, ... , coln FROM employees;`

Other symbols	You must use symbols other than brackets ([ ]), braces ({ }), vertical bars (|), and ellipsis points (...) exactly as shown.	`acctbal NUMBER(11,2);` `acct    CONSTANT NUMBER(4) := 3;`
Italic	Italicized text indicates placeholders or variables for which you must supply particular values.	`CONNECT SYSTEM/system_password` `DB_NAME = database_name`

`UPPERCASE`	Uppercase typeface indicates elements supplied by the system. We show these terms in uppercase in order to distinguish them from terms you define. Unless terms appear in brackets, enter them in the order and with the spelling shown. Because these terms are not case-sensitive, you can use them in either UPPERCASE or lowercase.	`SELECT last_name, employee_id FROM employees;`
		`SELECT * FROM USER_TABLES;`
		`DROP TABLE hr.employees;`

`lowercase`	Lowercase typeface indicates user-defined programmatic elements, such as names of tables, columns, or files.
	
	Note: Some programmatic elements use a mixture of UPPERCASE and lowercase. Enter these elements as shown.
		`SELECT last_name, employee_id FROM employees;`
		`sqlplus hr/hr`
		`CREATE USER mjones IDENTIFIED BY ty3MU9;`

Conventions for Windows Operating Systems

The following table describes conventions for Windows operating systems and provides examples of their use.

Convention	Meaning	Example
File and directory names	File and directory names are not case sensitive. The following special characters are not allowed: left angle bracket (<), right angle bracket (>), colon (:), double quotation marks ("), slash (/), pipe (|), and dash (-). The special character backslash (\) is treated as an element separator, even when it appears in quotation marks. If the file name begins with \\, then Windows assumes it uses the Universal Naming Convention.	c:\winnt"\"system32 is the same as C:\WINNT\SYSTEM32
`C:\>`	Represents the Windows command prompt of the current hard disk drive. The escape character in a command prompt is the caret (^). Your prompt reflects the subdirectory in which you are working. Referred to as the *command prompt* in this manual.	`C:\oracle\oradata>`

Convention	Meaning	Example
Special characters	The backslash (\) special character is sometimes required as an escape character for the double quotation mark (") special character at the Windows command prompt. Parentheses and the single quotation mark (') do not require an escape character. Refer to your Windows operating system documentation for more information about escape and special characters.	`C:\> exp HR/HR TABLES=emp QUERY=\"WHERE job='REP'\"`
HOME_NAME	Represents the Oracle home name. The home name can be up to 16 alphanumeric characters. The only special character allowed in the home name is the underscore.	`C:\> net start Oracle`*HOME_NAME*`TNSListener`

1

Introduction to Oracle BPEL Process Analytics

Oracle BPEL Process Analytics is a feature of Oracle BPEL Process Manager. Oracle BPEL Process Analytics provides dashboards that measure service-level agreement, alert on exceptions, and gives greater business visibility. The Oracle BPEL Process Analytics Console is used to monitor business processes that might span multiple Oracle BPEL Process Manager processes. This console delivers useful information about service-level agreements, process metrics, and exceptions.

A business analyst can define key performance indicators (KPIs) on one or more Oracle BPEL Process Manager processes that implement a single business process and monitor the performance of these KPIs. Oracle BPEL Process Analytics offers the following benefits:

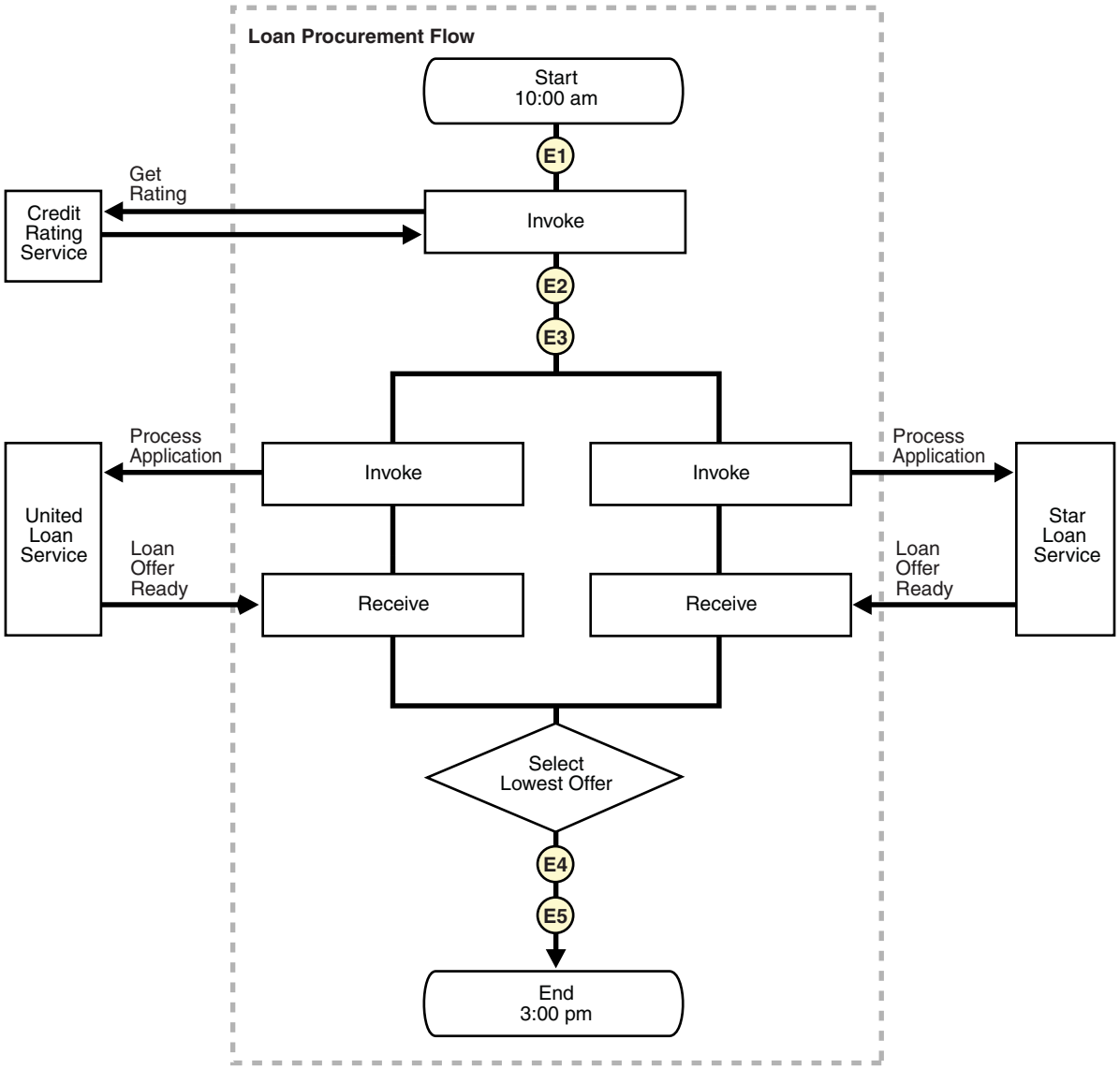
- Provides the ability to monitor one or more Oracle BPEL Process Manager processes as a single business process
- Provides the ability to define KPIs on the business processes
- Enables alignment between business operations and business strategy
- Provides a comprehensive view of related events across multiple business processes and allows the analyst to monitor these related events
- Provides the ability to notify mangers when KPIs are not performing at the optimal levels

This chapter includes the following topics:

Sample Scenario Using Oracle BPEL Process Analytics

To understand how Oracle BPEL Process Analytics works, consider the Oracle BPEL Process Manager **process flow** for a loan procurement process, as illustrated in Figure 1–1. In this process flow, a customer requests a loan. The loan procurement company requests a credit rating on the customer. If the returned credit rating is positive, then the application is submitted to two (fictitious) loan services: United Loan Service and Star Loan Service. Each service returns an offer on the loan and the lowest offer is presented to the customer. The customer accepts or rejects the loan offer. The goal of the loan procurement company is to return the best offer for a loan request (or reject the loan request) as quickly as possible.

Figure 1–1 Loan Procurement Process Flow



Business events are captured at five points within the process flow illustrated in Figure 1–1, as follows:

- E1: LoanRequest - A customer requests a loan
- E2 - LoanRejected - On the basis of the credit rating, the loan service rejects the loan request
- E3 - LoanApproved - On the basis of the credit rating, the loan service accepts the loan request
- E4 - LoanSelected - A loan for the customer is selected based on lowest APR
- E5 - LoanAccepted - The customer accepts the loan

Using Oracle BPEL Process Analytics, events in this process flow, can be captured, analyzed, and then processed and presented in many ways for analysis, including the following:

- A chart displaying events, as they occur.

- A table displaying the time at which a loan application was sent for processing, the time at which the loan offer was received, or if receipt of an offer is still pending.
- Line graphs displaying:
  - The average time it takes for the credit rating service to return a rating
  - The average time it takes for each loan service to return an offer
  - The average time it takes for a decision to be made on which offer to present to the customer
- Bar graphs displaying:
  - The number of loan applications processed by each loan service
  - The number of loan applications rejected by each loan service

If the analysis shows that the number of loan applications accepted by customers exceeds target goals, for example, then Oracle BPEL Process Analytics can automatically alert a business analyst of the situation, and it can invoke a Web service to take action. The Web service might increase the APR to maximize profits on a loan that has become particularly popular.

Typical Steps in Oracle BPEL Process Manager Analysis

The typical steps for using Oracle BPEL Process Analytics for monitoring and analyzing business activities are as follows:

1. Identify related Oracle BPEL Process Manager processes.
2. Capture events from the processes using sensors.
3. Correlate related event instances.
4. Analyze data.
5. Display analysis.
6. Respond to exceptions.

A business process can consist of one or more Oracle BPEL Process Manager processes. The Oracle BPEL Process Manager sensor framework allows users to capture important events within an Oracle BPEL Process Manager process using sensors. Oracle BPEL Process Analytics allows users to capture these events, correlate them and perform analysis on them. The administrator can configure the dashboards to view the analysis, monitor exception conditions, and take automated corrective action on exception conditions.

The following topics provide an overview of each of the steps involved in monitoring and analyzing business processes:

- Identifying Related Oracle BPEL Process Manager Processes on page 1-4
- Capturing Events from the Oracle BPEL Process Manager Processes Using Sensors on page 1-4
- Correlating Events into Meaningful Groups for Analysis on page 1-4
- Analyzing Events on page 1-5
- Presenting Data to Dashboard Users on page 1-7
- Identifying and Addressing Critical Business Conditions on page 1-9

Information about the interfaces used to perform these steps is provided in "Oracle BPEL Process Analytics User Interfaces" on page 1-11.

Identifying Related Oracle BPEL Process Manager Processes

Identify a set of related business processes that need to be monitored as a single entity. One or more Oracle BPEL Process Manager processes are implemented to perform a business activity.

Capturing Events from the Oracle BPEL Process Manager Processes Using Sensors

The Oracle BPEL Process Manager sensor framework allows the capture of important events that occur during the lifetime of a Oracle BPEL Process Manager process. Use JDeveloper BPEL Designer to define the sensors on the Oracle BPEL Process Manager process. The output of these sensors is captured as events in Oracle BPEL Process Analytics.

Correlating Events into Meaningful Groups for Analysis

To perform meaningful analysis on the events captured, related event instances must be grouped together. To determine the average amount of time it takes to process a given loan application, for example, each instance of a loan request submission must be linked to its associated acceptance or rejection event.

Composite Events and Groups

Making links between events is referred to as **correlating** the events. Events that are grouped together in this manner are referred to as composite events.

A **composite event** can include one or more events, from one event source only. Events are correlated on the basis of a common event attribute (referred to as a correlation attribute), as shown in Figure 1–2.

A **composite event group** is a collection of composite events. Each composite event in a composite event group can be associated with a different event source. In a composite event group, events are also correlated on the basis of a common event attribute.

Figure 1–2 Composite Event

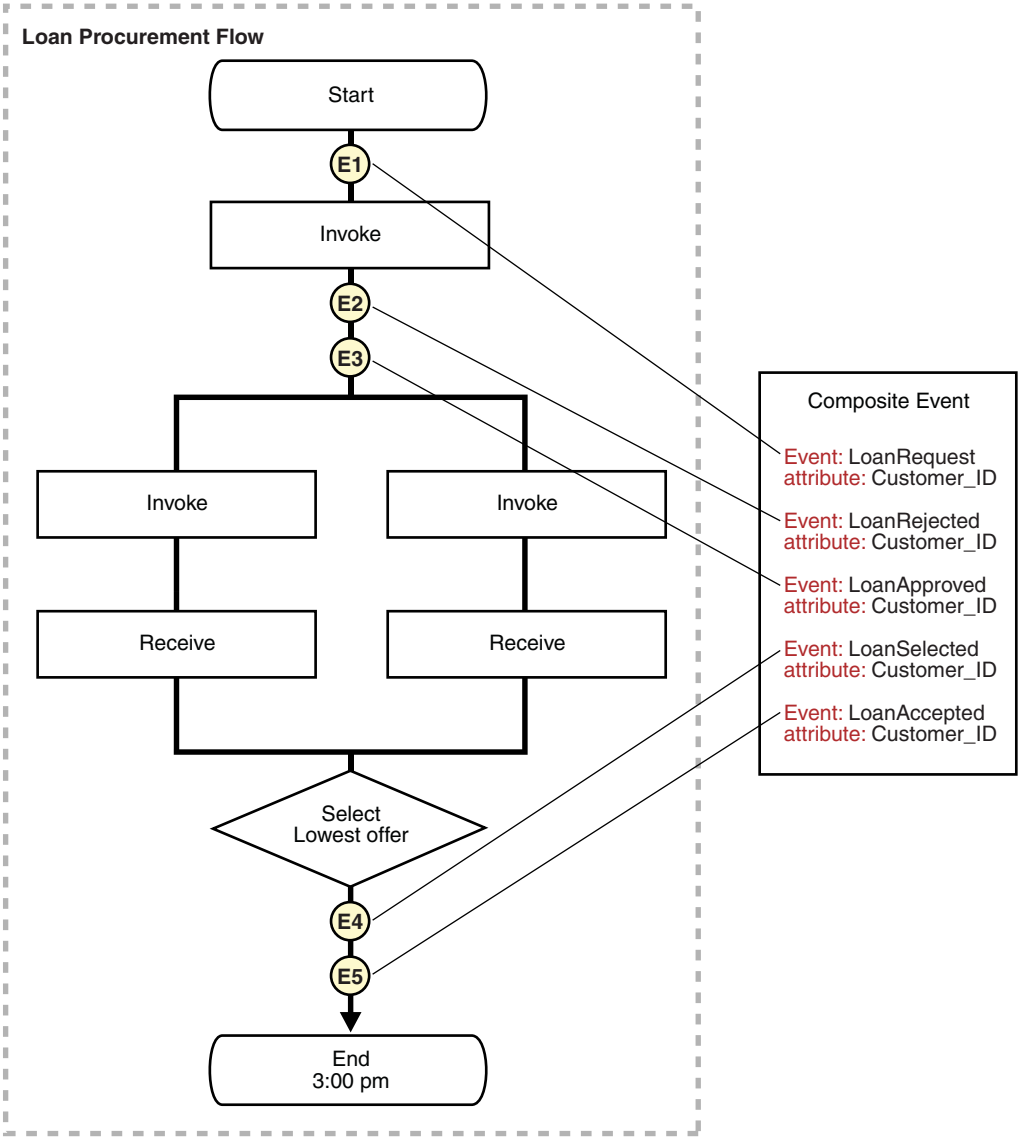


Table 1–1 presents an example of a composite event for each of the event sources that Oracle BPEL Process Analytics supports.

Table 1–1 Examples of Composite Events for Each Supported Event Type

Event Source	Example of Composite Event
Oracle BPEL Process Manager	Composite event, LoanFlow, is created by grouping sensors for activities within the Oracle BPEL Process Manager Loan Procurement process.
Applications with XSD written as required for the Oracle BPEL Process Analytics generic monitor	A composite event, SalaryIncrease, is created by grouping insertions into the EMPLOYEES and SALARY database tables and correlating them across the shared attribute, EMPLOYEE_ID. (A tool, such as XML Schema Utility (XSU) can be used to transform SQL SELECT statements into XML Schema Definition (XSD) statements.) See *Oracle BPEL Process Analytics User's Guide* for more information.

Analyzing Events

Once the events are captured and grouped into composite events, they can be configured for analysis. The grouping and configuration process is referred to as

modeling. Oracle BPEL Process Analytics provides wizards to help you create and model composite events into three key objects for analysis: metrics, key performance indicators (KPIs), and dimensions.

Metrics

A **metric** is an event attribute value, or a calculation on a set of event attribute values contained within a single composite event instance. The calculation can include addition, subtraction, multiplication, and division.

Using the loan flow process described in "Sample Scenario Using Oracle BPEL Process Analytics" on page 1-1, the following metrics might be defined:

- The annual percentage rate (APR) of a single instance of a loan offer
- The loan request processing time

A business analyst might find a metric useful for monitoring Oracle BPEL Process Analytics event instances to identify the pattern of critical business conditions over time. For example, a business analyst could see if there is a pattern to the rate at which approvals are taking relative to the day of the week or the season.

Key Performance Indicators

Briefly, a key performance indicator **(KPI)** consists of instances of a composite event attribute (or attributes) aggregated over a period of time, to which a mathematical function is applied. While metrics can be used to study general patterns and trends, KPIs enable an analyst to perform in-depth analysis of the event data.

Using the loan flow process described in "Sample Scenario Using Oracle BPEL Process Analytics" on page 1-1, the following KPIs might be defined:

- The total number of loans requested
- The total number of loans approved
- The average loan approval time (the average of the loan request time stamp minus the loan request approved time stamp for each of the loans requested)

For a complete discussion of KPIs, see *Oracle BPEL Process Analytics User's Guide*.

Dimensions

Dimensions are optional constructs that the Oracle BPEL Process Analytics administrator can specify and use in a composite event definition to allow KPI values to be filtered by dimensions. A time dimension is defined by default.

For example, suppose the Oracle BPEL Process Analytics administrator defines and specifies loan provider and car model dimensions and defines a composite event using those dimensions. If a KPI is defined on that composite event, to track the number of loans approved, then a car loan processing manager can monitor the number of loans approved based on time, loan provider, and car model. Similarly, if a regional sales manager is interested in sales only in a given region, then the administrator can define a KPI on a composite event with a region dimension. When viewing the KPI, the regional sales manager can constrain the results to just the region of interest.

See Figure 1–3 and Figure 1–4 for two examples of how the types of KPIs described in this section can be presented to the business analyst, in a section of the Oracle BPEL Process Analytics Console called the Dashboard.

Presenting Data to Dashboard Users

Once an Oracle BPEL Process Analytics administrator models the data, that administrator can specify how that data is presented in the Oracle BPEL Process Analytics Dashboard. The **Dashboard** is the section of the Oracle BPEL Process Analytics Console for end users, typically business analysts. Modeled data can be presented in a variety of charts and tables to provide information about business activity, such as the following:

- A pie chart, such as shown in Figure 1–3, can show what percentage of loan requests were made, by car make and model, today.
- A bar graph, such as shown in Figure 1–4, can show the number of actual loan requests compared to budgeted values (also known as target values) for several days.
- A radar chart, such as shown in Figure 1–5, can show how the number of loan requests and loan offers, and so on, are tracking against target values.

  Note that some labels within a radar chart can be truncated. In this Figure 1–5, CountLoanOffers is truncated to CountLoanO and CountRecReject is truncated to untReqReject, and CountLoanOffers4BadCredit is truncated to CountLoanOffers4BadCr. Figure 1–5 shows that when the mouse is placed over a truncated label, a pop-up window displays the full name.
- The Real-Time Viewer, such as shown in Figure 1–6, presents events within a composite event instance as they occur in real time.

These are just a few of the charts that can be used to present business data. For more information about the types of charts that can be presented and how to read them, see *Oracle BPEL Process Analytics User's Guide*.

Figure 1–3 Sample Pie Chart

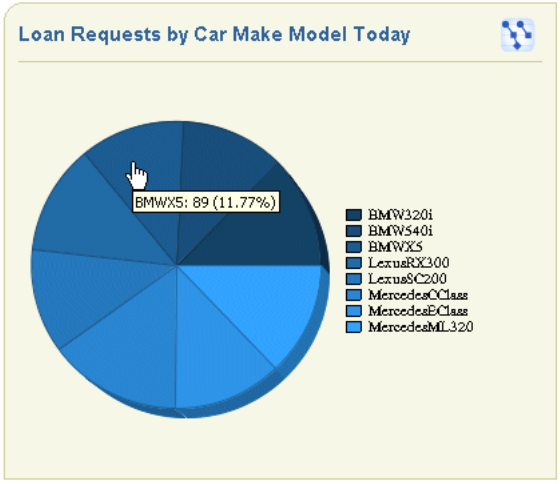


Figure 1–4 Sample Chart for Trend Analysis

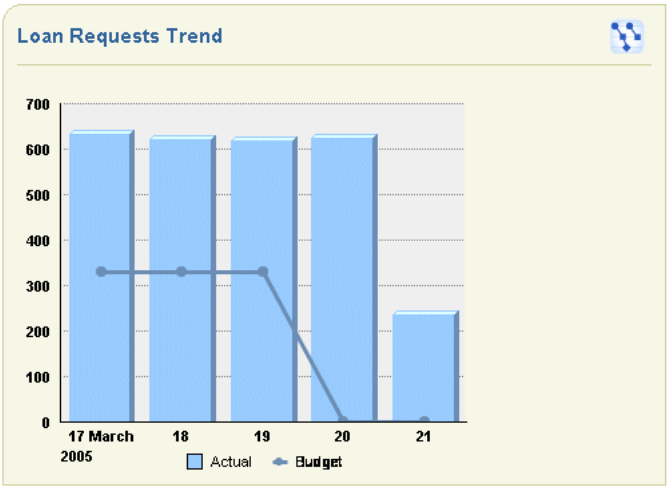


Figure 1–5 Sample Radar Chart to Track Performance Against Target Values

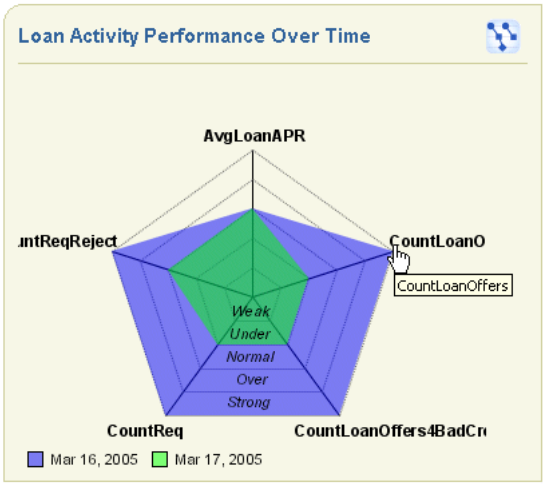
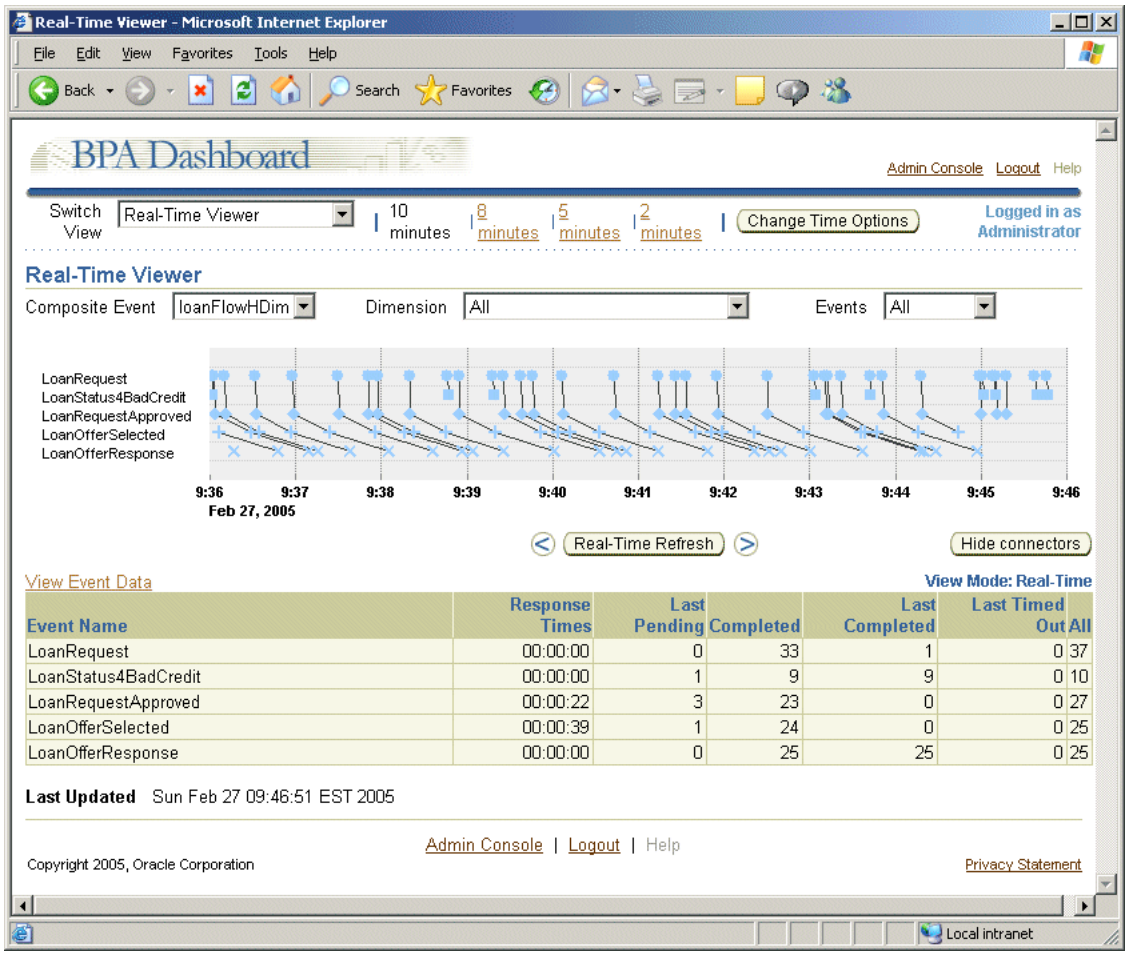


Figure 1–6 Sample Real-Time Viewer



Identifying and Addressing Critical Business Conditions

The point of capturing and modeling events is to enable a business analyst to identify and respond to critical business conditions. This is accomplished using one or all of the following methods:

- The business analyst can review the real-time data as it is presented in the Dashboard, and monitor it for critical business conditions

  For example, a business analyst might review the prediction for a KPI, such as shown in Figure 1–7. This detail uses statistical analysis to predict a KPI value. By viewing this detail, the business analyst can either anticipate problems and take corrective action before problems arise, or can anticipate positive results and investigate the circumstances so that the positive results can be sustained.

Figure 1–7 Sample KPI Prediction Table

Prediction Switch KPI AvgLoanAPR

Analysis Time Grain Day

Prediction Details

Predicted Value **4.458**
Target Value **3.914**
Confidence **27%**
Performance Band **Normal**

KPIs Used for Prediction

Source	Confidence	Predicted Value	Correlation Factor
CountLoanOffers4BadCredit	14%	4.399	38%
CountLoanOffers4Ford	68%	4.434	-83%
CountLoanOffers4Nissan	55%	4.468	74%
CountLoanOffers4Star	24%	4.509	49%
CountLoanOffers4Toyota	8%	4.416	29%
CountLoanOffers4United	55%	4.505	-74%
OfferApprovalTime	14%	4.452	-37%
OfferSelectTime	6%	4.427	-24%
OfferSelectTime4United	14%	4.439	-37%
ReqApprovalTime	12%	4.414	-35%
SumLoanAPR	29%	4.44	-54%

- A business analyst could also review the cause and effect table for a given KPI, such as shown in Figure 1–8. This table presents the KPIs which influence (cause) or are influenced by (effect) a given KPI. By examining these KPIs, the business analyst can further determine what might be causing a critical business condition.

Figure 1–8 Sample KPI Cause/Effect Table

Cause KPI Name	Influence	Band
OfferSelectTime	70.1%	Over
ReqApprovalTime	38.44%	Strong
CountLoanOffers4BadCredit	10.7%	Weak
Effect KPI Name	**Influence**	**Band**
CountReqReject	65.8%	Under

For a complete description of the KPI Prediction table and the KPI Cause/Effect table, see *Oracle BPEL Process Analytics User's Guide*.

- An administrator can set up notifications, called **explicit alerts,** that are sent to the business analyst if a KPI or metric exceeds a predetermined threshold value.

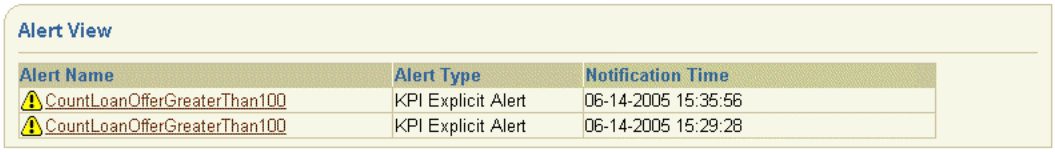
  An explicit alert can be sent as an e-mail message, a phone message, a fax, a Short Message Service (SMS) message, a pager message, or as an Internet instant message.

  For a complete description of alerts and how they are defined, see *Oracle BPEL Process Analytics User's Guide*.

- If the administrator configures it into the Dashboard, the user can review the Alert View table, such as shown in Figure 1–9, that lists explicit alerts.

  The Dashboard user can click a link in the alert table to get detailed information about that alert.

Figure 1–9 Sample Alert View Table



For a complete description of alert tables, see *Oracle BPEL Process Analytics User's Guide*.

After a critical business condition is identified, it can be addressed manually or programmatically, as follows:

- Programmatically

  For events that trigger explicit alerts, a Web service can be configured such that it is called to respond to the condition that caused the alert to be triggered. In the case of the loan flow process, for example, an alert could be defined such that a Web service is called to decrease the APR for car loans if the target number of car loans was not accepted for the preceding month. See *Oracle BPEL Process Analytics User's Guide* for more information about using Web services.

- Manually
  - The business analyst can use the variety of charts and graphs within the Dashboard to help determine the cause of, or anticipate, a problem and take action manually.
  - Upon receiving an explicit alert through an e-mail message, a phone message, or whatever method is used for explicit alert delivery, the recipient can take appropriate action.

Oracle BPEL Process Analytics User Interfaces

Oracle BPEL Process Analytics provides a Console that is divided into three main sections: an Admin Console, a Dashboard Configuration Console, and a Dashboard. Access to these sections of the Console is governed by the privileges of the account holder.

In addition, the Oracle Enterprise Manager Application Server Control Console enables a system administrator to configure, start, and stop Oracle BPEL Process Analytics, and set Oracle BPEL Process Analytics properties. See *Oracle BPEL Process Analytics User's Guide* for more information.

The following topics provide a brief introduction to the parts of the Oracle BPEL Process Analytics Console:

- Introduction to the Admin Console on page 1-11
- Introduction to the Dashboard Configuration Console on page 1-12
- Introduction to the Dashboard on page 1-13

Introduction to the Admin Console

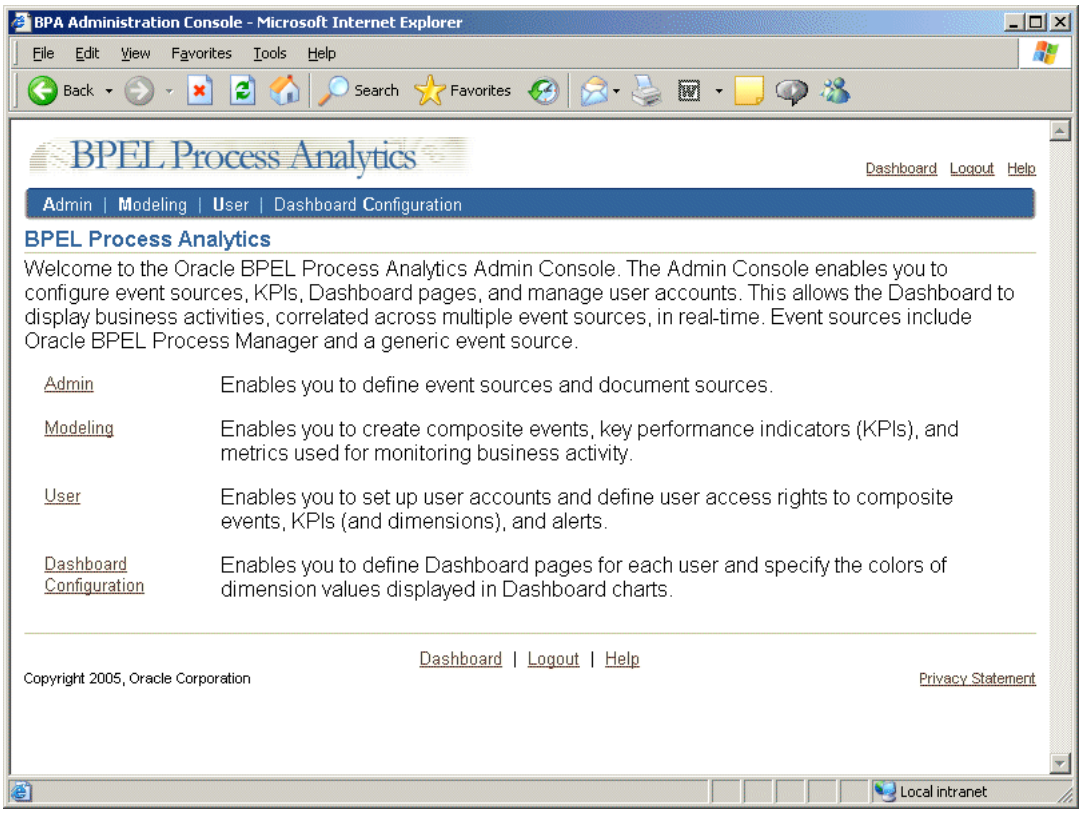
The Admin Console, accessible by accounts granted the Oracle BPEL Process Analytics Admin User privilege, provides wizards and other tools that enable an administrator to:

- Specify connection parameters for the sources from which events will be captured

- Create composite events.
- Model KPIs and metrics
- Set up alerts to send a notification to one or more users to inform them that critical measurements are not meeting expectations
- Configure data for presentation to end users in the Dashboard
- Create user accounts and grant them privileges to view the event source data

See *Oracle BPEL Process Analytics User's Guide* for more information about the tasks the administrator performs using the Admin Console.

Figure 1–10 Oracle BPEL Process Analytics Admin Console Welcome Page



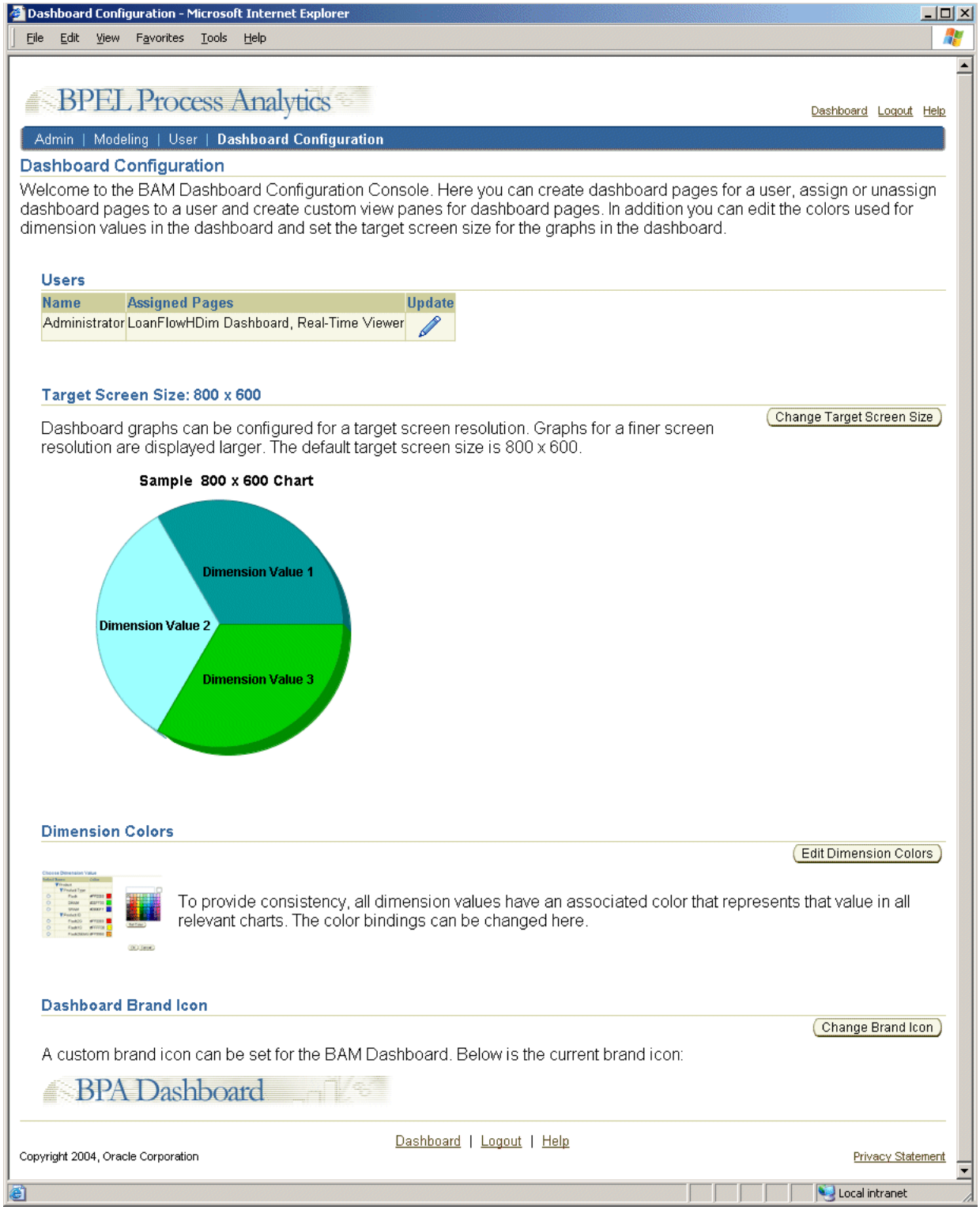
Introduction to the Dashboard Configuration Console

The Dashboard Configuration Console provides wizards that enable a user with Oracle BPEL Process Analytics admin privileges to specify how data modeled using the Admin Console should be displayed in the Dashboard. Tasks accomplished through the Dashboard Configuration Console include:

- Specifying the types of charts and tables to present to Dashboard users
- Creating Dashboard pages and specifying their layout
- Granting users access to Dashboard pages

Figure 1–11 shows a sample page in the Dashboard Configuration Console. See *Oracle BPEL Process Analytics User's Guide* for a detailed description of the tasks the administrator performs using the Dashboard Configuration Console.

Figure 1–11 Sample Dashboard Configuration Console Page



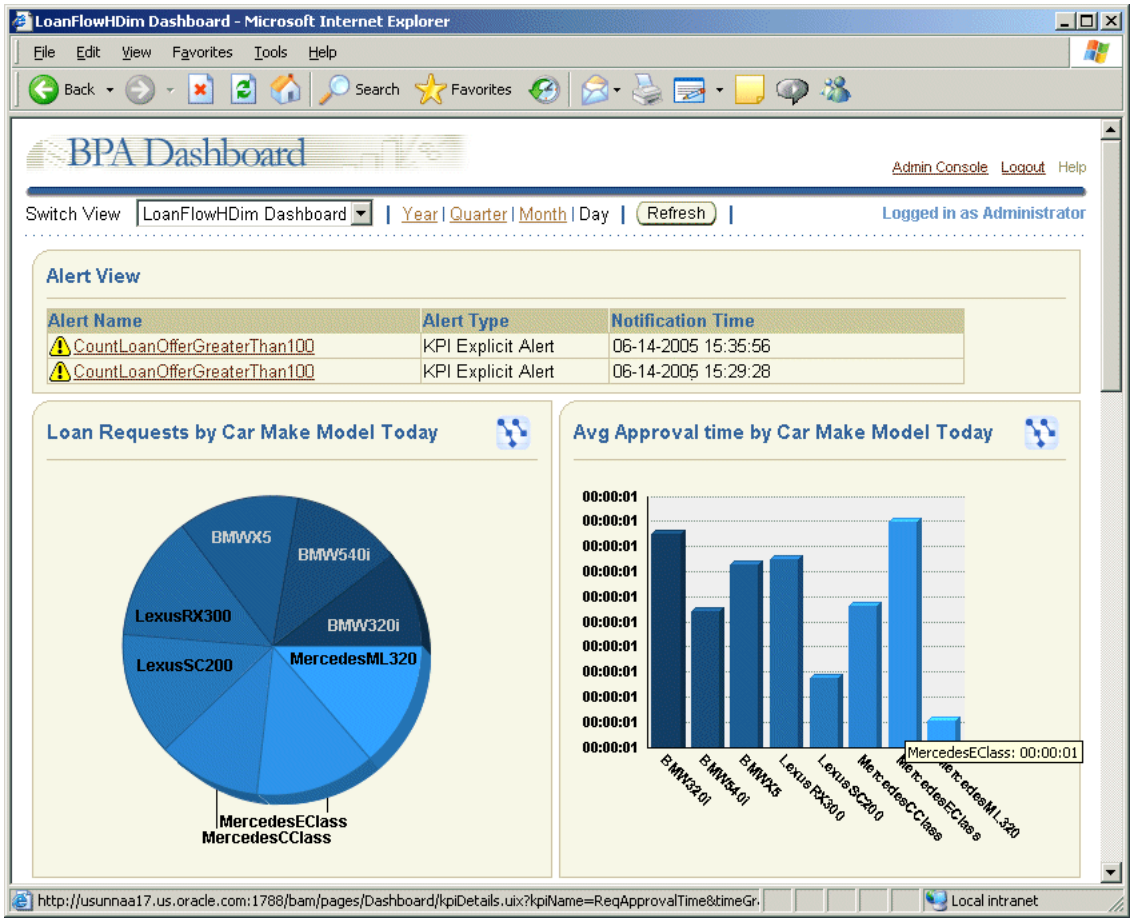
Introduction to the Dashboard

The Dashboard is the interface through which Oracle BPEL Process Analytics end users view and analyze modeled data. These users are typically business analysts or high-level business managers.

Using the Dashboard, a user views the data collected by Oracle BPEL Process Analytics and modeled by the administrator. The Dashboard interface presents the events and performance measurements, in real time, within tables and charts, for the business analyst to assess.

Figure 1–12 shows a sample Dashboard page. See *Oracle BPEL Process Analytics User's Guide* for a detailed description of the tasks the business administrator performs using the Dashboard.

Figure 1–12 Sample of Dashboard Charts



2

Required Software

This chapter provides information about the prerequisites for running the Oracle BPEL Process Analytics demo and tutorial, which are described in Chapter 3 and Chapter 4, respectively.

This chapter includes the following topics:

System Requirements

Ensure that the system on which you are running the demo or tutorial meets the following requirements:

- Operating system: Microsoft Windows XP or Windows 2000
- Disk space: 1 GB
- Memory: at least 512 MB RAM; ideally, 1 GB (gigabyte)
- Temp space: 150 MB
- Swap space: at least 1535 MB (megabyte)
- Web browser: Internet Explorer 6.0
- Monitor: configured to display at least 256 colors

Software Requirements

You must install the following software:

- Oracle9*i* Database Release 9.2 or later
- Oracle Application Server 10*g* Release 10.1.2
- Oracle BPEL Process Analytics Release 10.1.2

In addition, to run the complete tutorial, you must also install Oracle BPEL Process Manager, Release 10.1.2.

Installation Notes

The following sections provide important notes on installing the prerequisite software:

Notes on Installing Oracle Database

Install the Oracle Database (Release 9.2 or later) software from the Oracle Database Release 9.2 installation media or the Oracle Application Server 10*g* (10.1.2) installation media. The database can be on the same system, or a different system from where you intend to install Oracle BPEL Process Analytics.

If you install the database from the Oracle Application Server 10*g* (10.1.2) installation media, on the **Select a Product to Install** page of the installation, choose **OracleAS Infrastructure.**

Notes on Installing Oracle Application Server

> **Note:** Use Oracle Application Server 10*g* Release 10.1.2 software only.

You must install the Oracle Application Server 10*g* Release 10.1.2 software on the same system where you intend to install the Oracle BPEL Process Analytics software.

On the **Select a Product to Install** page of the installation, choose **Oracle Application Server.**

Be sure to note the port number at which you can access the Oracle Application Server main page. This information is presented at the end of the Oracle Application Server 10*g* installation.

For more information about this installation refer to *Oracle Application Server Installation Guide.*

Notes on Installing Oracle BPEL Process Manager

If you plan to run the tutorial described in Chapter 4, install Oracle BPEL Process Manager, as described in the following sections of the *Oracle BPEL Process Manager Quick Start Guide*:

- Installing the JDeveloper BPEL Designer and Oracle BPEL Process Manager
- Starting Oracle BPEL Process Manager Components
- Creating a Connection
- Setting the Hostname in Your Web Browser Preferences

> **Note:** You must install the BPEL Process Manager for Developers installation type.

Notes on Installing Oracle BPEL Process Analytics

To install Oracle BPEL Process Analytics, follow these steps:

1. If your locale is not AMERICAN_AMERICA.WE8MSWIN1252, change the value of the following Microsoft Windows Registry Editor key to your locale:

```
HKEY_LOCAL_MACHINE\SOFTWARE\ORACLE\KEY_HOME\NLS_LANG
```

In this example, *HOME* is the Oracle Application Server home into which you plan to install Oracle BPEL Process Analytics.

See *Oracle Database Globalization Support Guide* for complete information about locales and about specifying the NLS_LANG value.

2. Install Oracle BPEL Process Analytics as described in *Oracle BPEL Process Analytics Installation Guide*.

3

Running the Loan Provider Demo

This chapter describes how to set up and run the Loan Provider Demo. This demo uses a simulated event source to generate events that Oracle BPEL Process Analytics captures and publishes to the Dashboard. The composite event and KPIs are defined for you, as is the Dashboard configuration.

Using this demo you can quickly familiarize yourself with the Oracle BPEL Process Analytics Admin Console and Dashboard.

This chapter includes the following topics:

Setting Up the Loan Provider Demo on Microsoft Windows Systems

To set up the demo, follow these steps, where *OAS_Home_Name* is the name of the Oracle Application Server home into which you installed Oracle BPEL Process Analytics:

1. If it is currently running, stop Oracle BPEL Process Analytics.

   From the desktop **Start** menu, choose **All Programs,** then **Oracle - *OAS_Home_Name,*** then **Oracle BPEL Process Analytics,** and then click **Stop BPA Server.** A command window opens to show the progress of the operation.

2. When the server stops, from the desktop **Start** menu, choose **All Programs**, then **Oracle - *OAS_Home_Name,*** then **Oracle BPEL Process Analytics,** and then click **Setup BPA Samples.** A command window opens as shown in Figure 3–1.

3. At the **Enter your choice** prompt, enter `1`, then press Return.

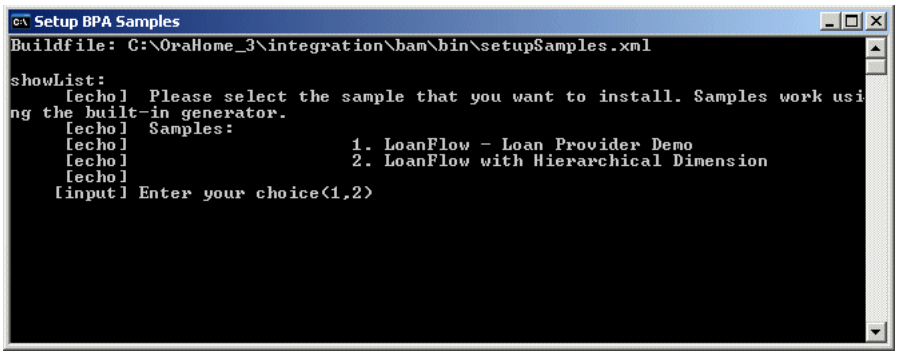
4. You are prompted to confirm that you want to set up the samples (because doing so overwrites the existing Oracle BPEL Process Analytics configuration). Enter yes to proceed; enter no to stop.

5. You are prompted to enter the database schema password that you specified when you installed Oracle BPEL Process Analytics. Enter the password and press Return.

6. When prompted, start Oracle BPEL Process Analytics, as follows:

   From the desktop **Start** menu, select **All Programs**, then **Oracle - *OAS_Home_Name,*** then **Oracle BPEL Process Analytics,** and then click **Start BPA Server.**

Figure 3–1 Command Window for Oracle BPEL Process Analytics Samples



You are now ready to start Oracle BPEL Process Analytics and view the demo, as described in the next section.

Setting Up the Loan Provider Demo on Unix Systems

To set up the demo, follow these steps, where *BPM_Home* is the directory path to the Oracle home into which you installed Oracle BPEL Process Analytics:

1. If it is currently running, stop Oracle BPEL Process Analytics, as follows:
   a. Set the current directory to the Oracle Process Manager and Notification Server (OPMN) `bin` directory in the Oracle home where you installed Oracle BPEL Process Analytics.
   b. Issue the `opmnctl stopall` command.

      ```
      > opmnctl stopall
      ```

2. When the server stops, run `setupSamples.sh` in the following directory. Prompts similar to those shown in Figure 3–1 are displayed.

   ORACLE_HOME`\integration\bam\bin\setupSamples.sh`

3. At the **Enter your choice** prompt, enter `1`, then press Return.
4. You are prompted to confirm that you want to set up the samples (because doing so overwrites the existing Oracle BPEL Process Analytics configuration). Enter yes to proceed; enter no to stop.
5. You are prompted to enter the database schema password that you specified when you installed Oracle BPEL Process Analytics. Enter the password and press Return.
6. When prompted, start Oracle BPEL Process Analytics, as follows:

   From the Oracle Process Manager and Notification Server (OPMN) `bin` directory in the Oracle home where you installed Oracle BPEL Process Analytics, issue the `opmnctl startall` command.

   ```
   > opmnctl startall
   ```

You are now ready to view the demo, as described in the next section.

Viewing the Loan Provider Demo

To view the demo, follow these steps:

1. Open the Oracle BPEL Process Analytics Console, as follows:

   - On Microsoft Windows systems (where *OAS_Home_Name* is the name of the Oracle Application Server home into which you installed Oracle BPEL Process Analytics):

     From the desktop **Start** menu, select **All Programs,** then **Oracle - *OAS_Home_Name*,** then **Oracle BPEL Process Analytics,** and then click **BPA Console.**

   - On Unix systems (where *OAS_HOME* is the directory specification for the home into which you installed Oracle BPEL Process Analytics:

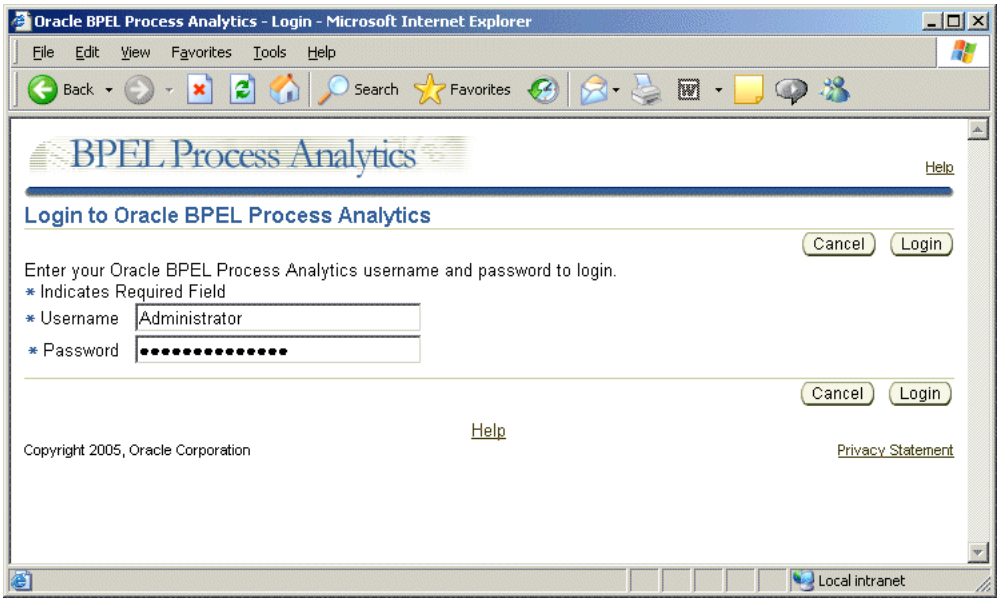
     Open a Web browser and specify the URL to access Oracle BPEL Process Analytics, as documented in `bamsetupinfo.txt`, in the following directory:

     OAS_HOME`/install`

   The login window opens.

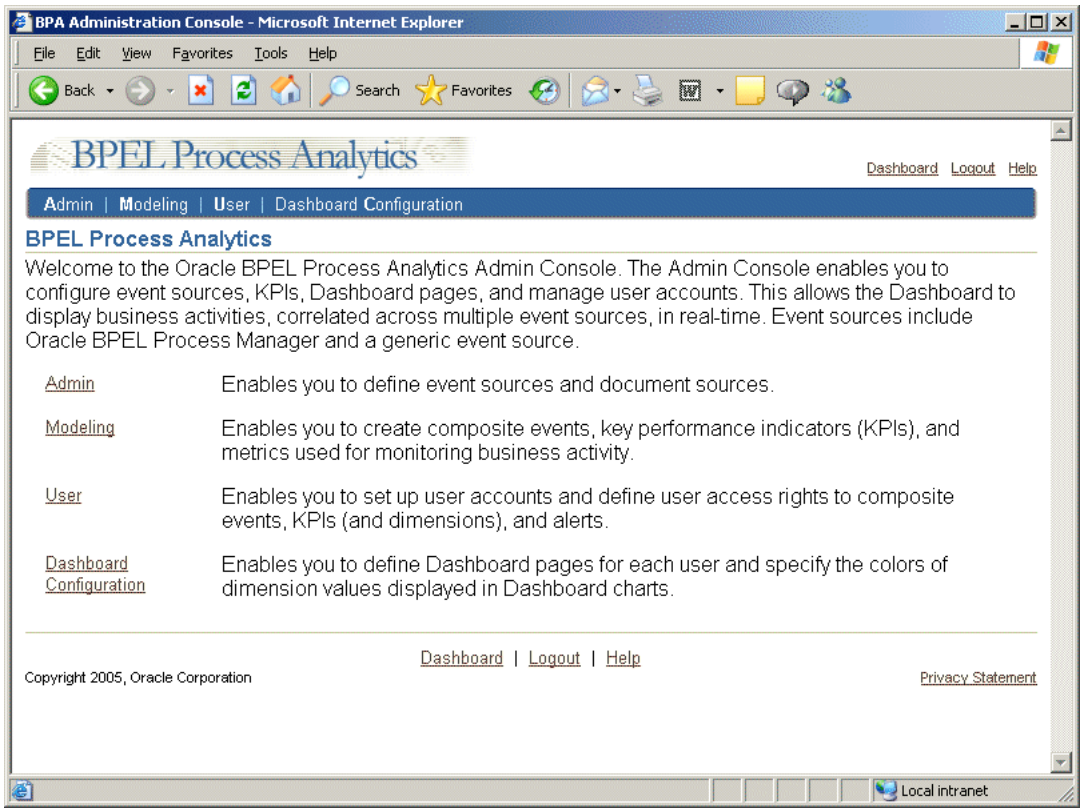
2. Enter `Administrator` for both the user name and password, as shown in Figure 3–2.

Figure 3–2 Oracle BPEL Process Analytics Login Window



3. Click **Login.** The Admin Console Welcome window opens, as shown in Figure 3–3.

Figure 3–3 Admin Console Welcome Window



4. Click the **Dashboard** link that appear in the upper-right corner of the window. The LoanFlow Dashboard displays. If little time has passed since you set up the sample, no data will appear in the Dashboard right away. Otherwise, you will see charts such as those shown in Figure 3–4 and Figure 3–5.

Figure 3–4 Sample Dashboard Charts - 1 of 2

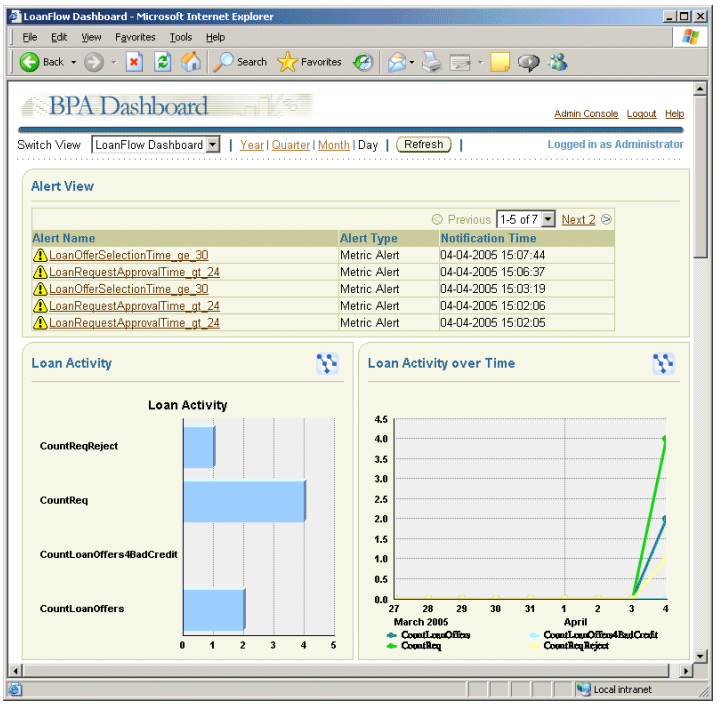
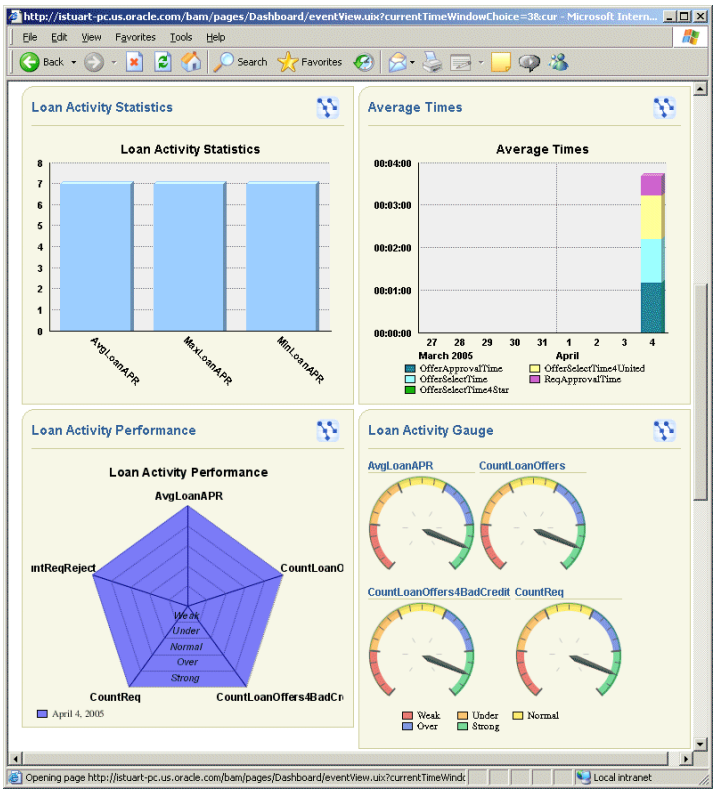


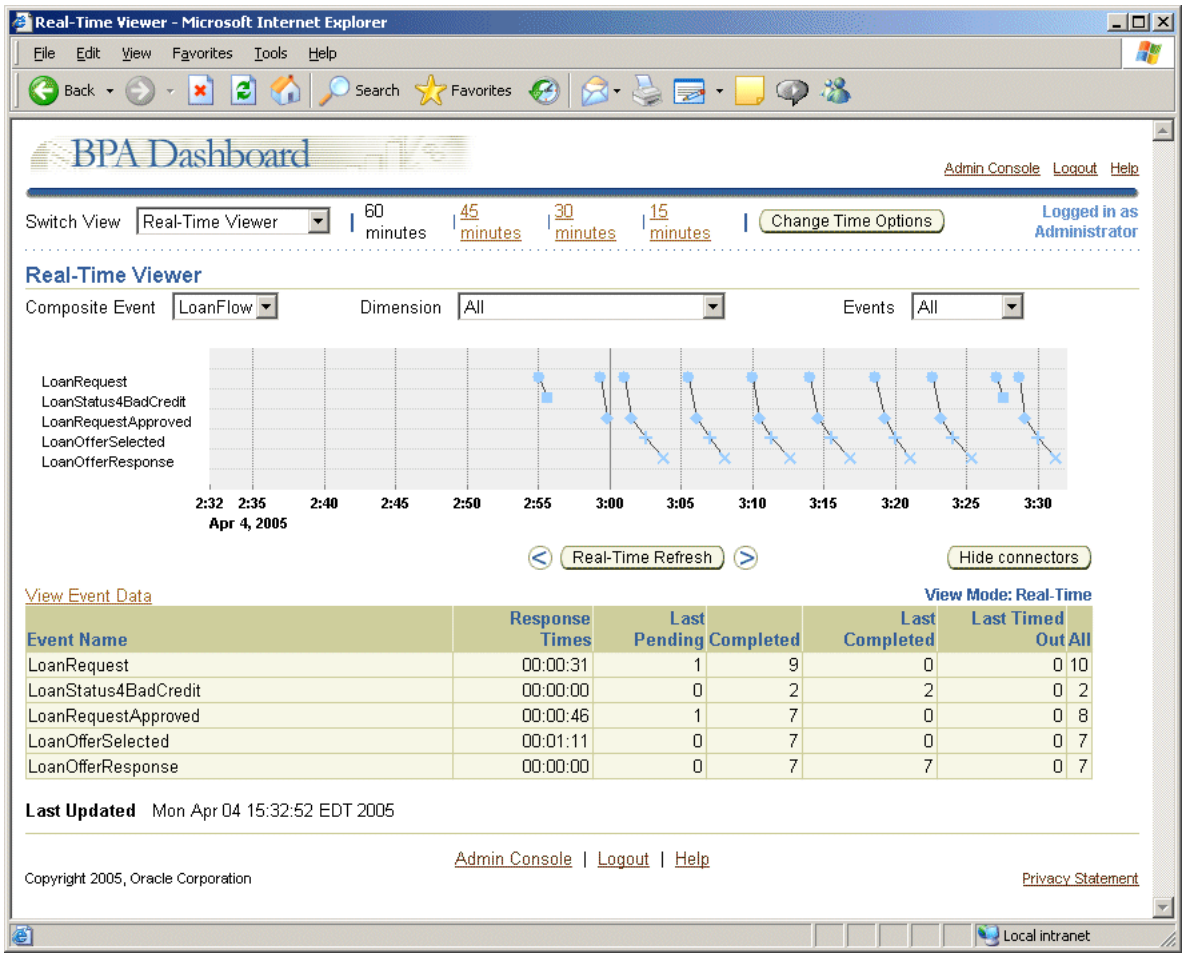
Figure 3–5 Sample Dashboard Charts - 2 of 2



5. From the **Switch View** box, select **Real-Time Viewer.** You can see the events that were simulated by the Oracle BPEL Process Analytics sample you set up. Your

window should look similar to Figure 3–6. See *Oracle BPEL Process Analytics User's Guide* for a complete description of the chart and table displayed in this page.

Figure 3–6 Demo: Event Viewer



6. Familiarize yourself with the Dashboard by trying out different options. For example, you might try the following:
   - Click on a data point in the Real-Time Viewer.
   - Select a dimension from the **Dimension** box in the Real-Time Viewer.
7. Switch to the Admin Console by clicking the **Admin Console** link in the upper-right corner of the window. Familiarize yourself with the Admin Console by seeing how the data was modeled and defined for presentation in the Dashboard. For example, you might try the following:
   - Click **Modeling,** then **Composite Events,** and then **LoanFlow** to see how the composite event is defined.
   - Click **Modeling,** then **KPIs**, and then ReqApprovalTime to see how this KPI was defined.
   - Click **Dashboard Configuration,** then **Update** (in the Users table) to see the Dashboard pages that were created and assigned to the Administrator.

4

Running the LoanFlowPlus Tutorial

The LoanFlowPlus tutorial provides step-by-step instructions on setting up and using Oracle BPEL Process Analytics to monitor an Oracle BPEL Process Manager process flow.

The following topics are included in this chapter:

> **Note:** The directory paths shown in this chapter follow Microsoft Windows conventions (using backslashes (\)). If you are running the tutorial on a Linux or Solaris operating system, modify the directory paths as required (using slashes (/)).

Prerequisites for the LoanFlowPlus Tutorial

To run the LoanFlowPlus tutorial, you must first deploy the LoanDemoPlus sample into Oracle BPEL Process Manager as described in the list that follows. In any step where it is mentioned, *BPM_HOME* is the Oracle home directory for Oracle BPEL Process Manager.

1. Make sure Oracle BPEL Process Manager Server is running.
2. For all files in the following directory, clear the read-only flag in the file properties:

   BPM_HOME\integration\orabpel\samples\demos\LoanDemoPlusWithWorkFlow\LoanFlowPlus

3. From the command line, set the command path to the following directory:

   BPM_HOME\integration\orabpel\bin

4. Run the `obant` command from the following directory:

   BPM_HOME\integration\orabpel\samples\demos\LoanDemoPlusWithWorkFlow

5. Open the Oracle BPEL Process Manager Console, select **default** from the **Domain** box, then click **Login.**

6. On the **Dashboard** tab, make sure that the following processes are included in the **Deployed BPEL Processes** column:
   - CreditRatingService
   - LoanFlowPlusWorkFlow
   - StarLoanWithWorkFlow
   - UnitedLoan

   Note: Leave Oracle BPEL Process Manager Server running for the duration of the tutorial.

Inserting Sensors into the LoanFlowPlus Process Flow

You insert sensors into the Oracle BPEL Process Manager LoanFlowPlus process flow, so that events are published to a JMS queue from which Oracle BPEL Process Analytics can capture them. Oracle BPEL Process Analytics uses the JMS queue to present the event metadata during composite event creation, and to capture the events in real time.

Use one of the methods described in the following sections to set up the event activity sensors:

- Using the Preconfigured Event Activity Sensors on page 4-2

  This method allows you to quickly move to the steps on using Oracle BPEL Process Analytics, but does not give you a complete understanding of what is involved in monitoring Oracle BPEL Process Manager events.

- Using JDeveloper BPEL Designer on page 4-2

  This is the preferred method. It provides a full demonstration of what is involved in monitoring Oracle BPEL Process Manager events.

Using the Preconfigured Event Activity Sensors

Preconfigured event activity sensors are included in the LoanDemoPlus sample. If you do not want to use the tutorial to understand how to insert sensors into the process flow, proceed to: "Using Oracle BPEL Process Analytics to Model Events" on page 4-15.

Using JDeveloper BPEL Designer

If you choose to insert event activity sensors using JDeveloper BPEL Designer, you need to insert the following sensors into the LoanFlowPlus process flow:

- LoanRequest
- LoanRequestApproved
- LoanOfferSelected
- LoanOfferAccepted

For the LoanRequest sensor, screenshots of how your window should look are provided for most steps. For the remaining sensors, screenshots are provided only when they vary substantially from the LoanRequest screenshots.

Before you can insert the sensors, you must load the LoanFlowPlus process into JDeveloper BPEL Designer.

This section includes the information about loading the process, inserting each of the required sensor actions and sensors, and deploying the modified LoanFlowPlus process as follows:

Loading the LoanFlowPlus Process

Follow these steps to load the process. In each step where it is mentioned, *BPM_HOME* is the directory specification for the Oracle home into which you installed Oracle BPEL Process Manager (on Microsoft Windows systems, for example, `C:\OraHome_5`).

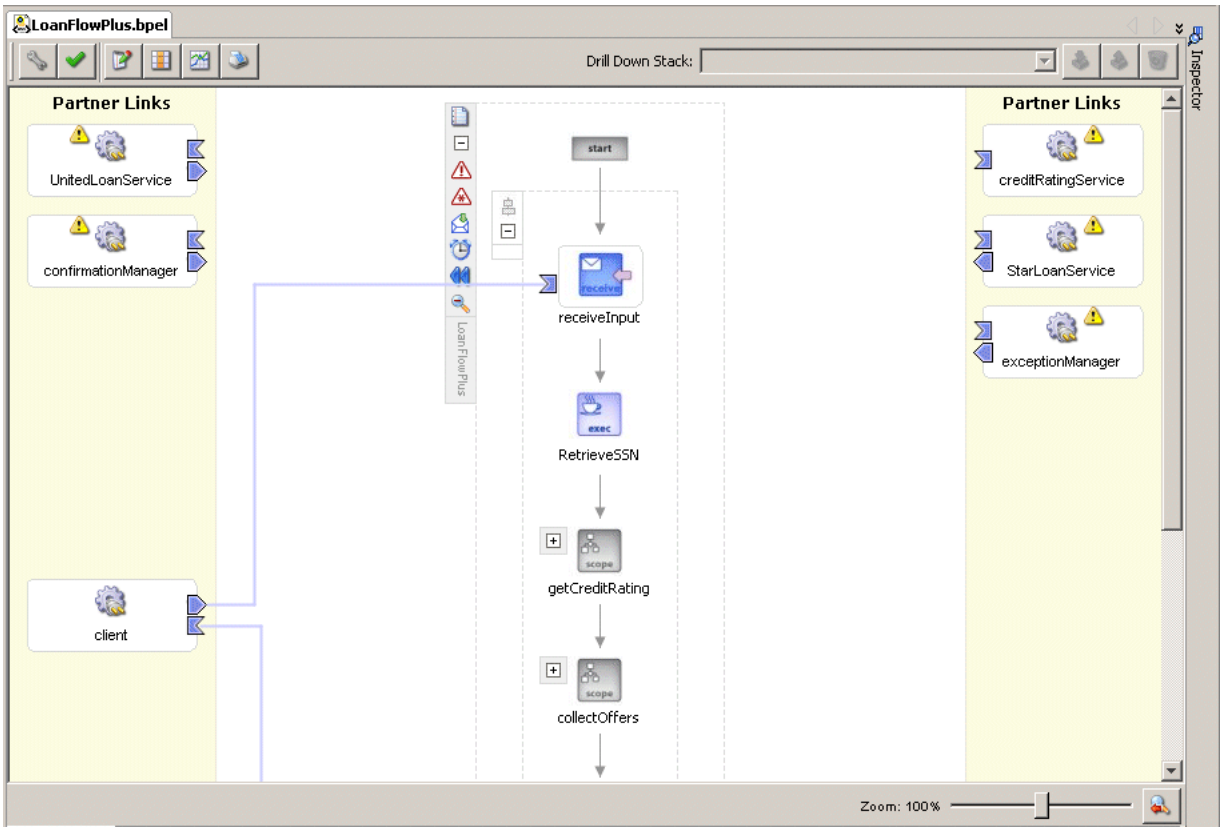
1. Open JDeveloper BPEL Designer.
2. On the **File** menu, click **New.** The New Gallery dialog box opens.
3. In the **Items** box, select **Application Workspace,** then click **OK.** The Create Application Workspace dialog box opens.
4. Click **OK.**
5. In the Applications Navigator, select **Application1.**
6. On the **File** menu, click **Open.** The Open dialog box opens.
7. In the Open dialog box, specify the following file, then click **Open.**

   BPM_HOME`\integration\orabpel\samples\demos\LoanDemoPlusWithWorkFlow\LoanFlowPlus\LoanFlowPlusWithWorkflow.jpr`

8. In the **Applications – Navigator** , expand **LoanFlowPlusWithWorkflow,** then **Integration Content.**
9. Double-click **LoanFlowPlus.bpel.**

The JDeveloper BPEL Designer interface should contain a panel in the **Diagram View** similar to Figure 4–1.

Figure 4–1 JDeveloper BPEL Designer Opening Window - LoanFlowPlus.bpel Panel



Deleting the Preconfigured Sensors

Sensors are included in the sample, by default. To understand how to insert them manually, you first need to delete the preconfigured sensors, as follows:

1. In the LoanFlowPlus.bpel - Structure panel (as shown in Figure 4–2), expand **Sensor Actions.**
2. Right-click **UTAction,** then click **Delete Sensor Action.**
3. Right-click **UTActionConsole,** then click **Delete Sensor Action.**
4. In the **LoanFlowPlus.bpel - Structure** panel (as shown in Figure 4–3), expand **Sensors,** then **Activity.**
5. Delete each of the preconfigured activity sensors, as follows:
   a. Right-click **LoanRequest,** then click **Delete Activity Sensor.**
   b. Right-click **LoanRequestApproved,** then click **Delete Activity Sensor.**
   c. Right-click **LoanOfferSelected,** then click **Delete Activity Sensor.**
   d. Right-click **LoanOfferAccepted,** then click **Delete Activity Sensor.**

Figure 4–2 Structure Panel - Preconfigured Sensor Actions

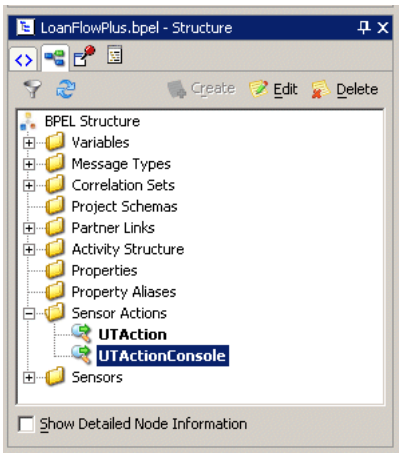
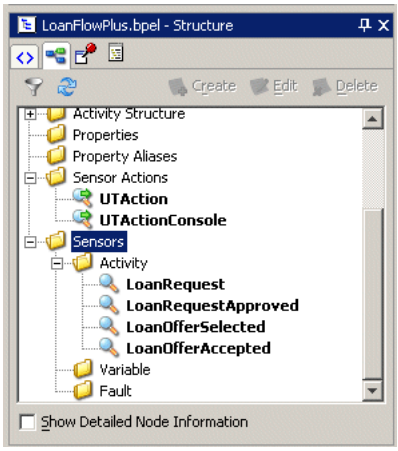


Figure 4–3 Structure Panel - Preconfigured Activity Sensors



Inserting Sensor Actions

To run the tutorial, you must insert two sensor actions, as follows:

- A sensor action for the database

  This sensor action is used for Oracle BPEL Process Analytics debugging and Oracle BPEL Process Manager process reports.

- A sensor action for the Java Message Service (JMS) queue

  This sensor action is used for publishing Oracle BPEL Process Manager events to Oracle BPEL Process Analytics.

To create the sensor action for the database, follow these steps:

1. In the **LoanFlowPlus.bpel - Structure** panel (as shown in Figure 4–4), right-click **Sensor Actions.**
2. Click **Create Sensor Action.** The Create Sensor Action dialog box opens.
3. Change the **Name** field to `BPMReportsPublisher`.
4. Leave the **Publish Type** as **Database**, leave the **Filter** field empty, and leave **Enable** selected, as shown in Figure 4–5.
5. Click **OK.**

Figure 4–4 LoanFlowPlus.bpel - Structure Panel

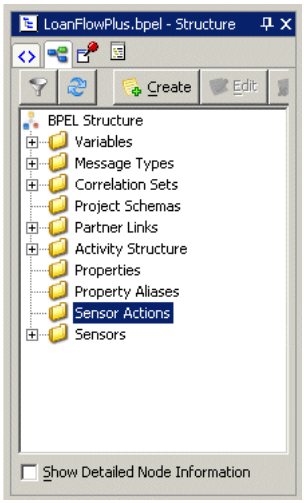
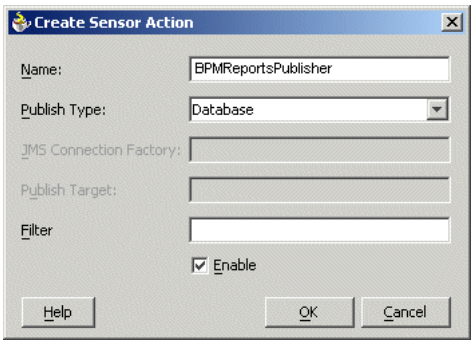


Figure 4–5 Create Sensor Action Dialog Box - BPMReportsPublisher

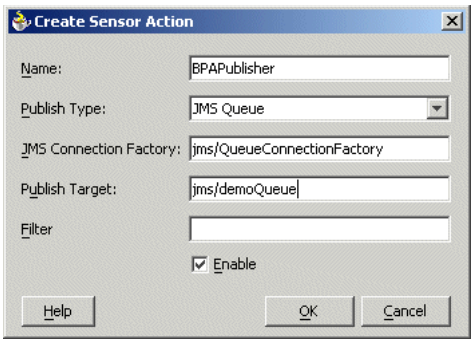


To create the sensor action for the JMS queue, follow these steps:

1. In the **LoanFlowPlus.bpel - Structure** panel, right-click **Sensor Actions.**
2. Click **Create Sensor Action.** The Create Sensor Action box opens.
3. Specify the fields as described in the following table (and shown in Figure 4–6), then click **OK.**

Page Element	Description
Name	Enter BPAPublisher.
Publish Type	Choose **JMS Queue.**
JMS Connection Factory	Enter `jms/QueueConnectionFactory`.
Publish Target	Enter `jms/demoQueue`.
Filter	Leave empty.
Enable	Leave selected.

Figure 4–6 Create Sensor Action Dialog Box - BPAPublisher



Inserting the LoanRequest Sensor

This section describes how to insert the first of the four sensors required for the tutorial. A sensor is composed of the attributes described in the following table:

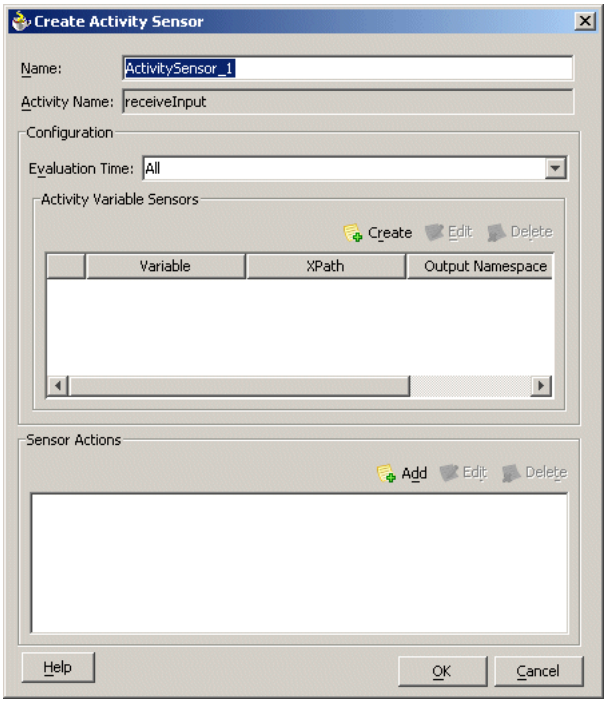
Attribute	Description
Sensor Name	A unique name to identify the sensor
Activity Name	The BPEL activity on which you want to place the sensor
Activity State	The specific time in the lifecycle of the activity for which you want the activity to be evaluated
Activity Variable	A variable to hold the structure of the event that will be published by the sensor
Actions	The action or actions that you want the sensor to take when the activity is in the specified activity state

The steps that follow describe how to insert the LoanRequest sensor.

Using these steps, you will create a sensor named `LoanRequest` on the Oracle BPEL Process Manager process activity named `receiveInput`. The structure of the event associated with that activity will be held in the activity variable named `input`, and the activity will be evaluated when it completes. At that time, the event structure will be published to the JMS queue as defined by the BPAPublisher sensor action (for the Oracle BPEL Process Analytics monitor to receive), and will be published to the database as defined by the BPMReportsPublisher sensor action (for the BPEL reports).

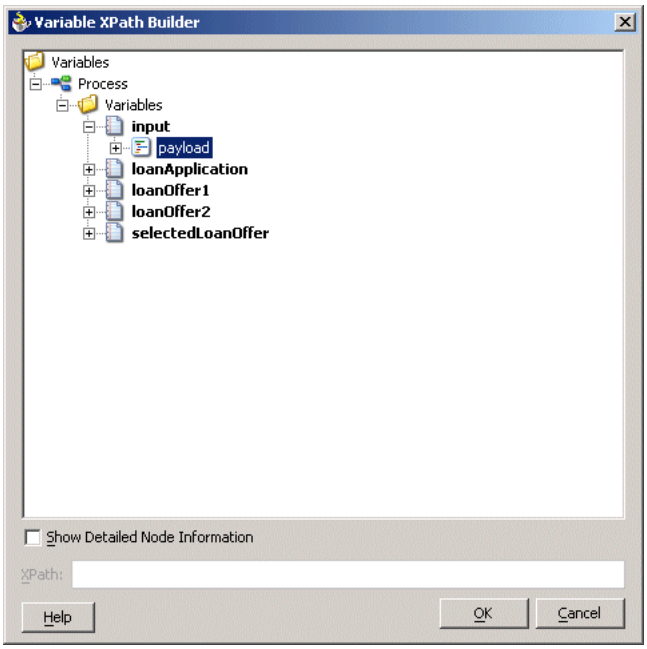
1. In the LoanFlowPlus diagram, double-click **receiveInput.** The Receive property sheet opens.
2. Click **Sensors,** then click **Create.** The Create Activity Sensor box opens, as shown in Figure 4–7.

Figure 4–7 Create Activity Sensor Dialog Box



3. In the **Name** field, replace **ActivitySensor_1** with `LoanRequest`.
4. In the **Evaluation Time** field, select **Completion.**
5. In the **Activity Variable Sensors** group, click **Create.** The Create Activity Variable Sensor dialog box opens.
6. Click the **pencil** icon. The Variable XPath Builder dialog box opens.
7. Under **Variables/Process/Variables,** expand **input,** then select **payload** (as shown in Figure 4–8), and then click **OK.** The Create Activity Sensor dialog box appears as shown in Figure 4–10

Figure 4–8 Variable XPath Builder Dialog Box - input Selected



8. The Create Activity Variable Sensor dialog box appears as shown in Figure 4–9. Click **OK.** The Create Activity Sensor dialog box appears as shown in Figure 4–10

Figure 4–9 Create Activity Variable Sensor Dialog Box - Fields Populated

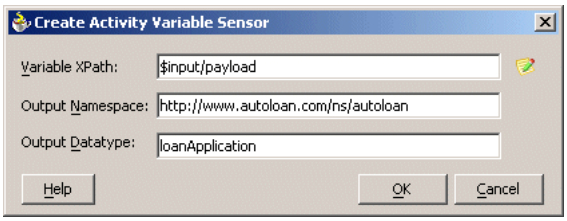
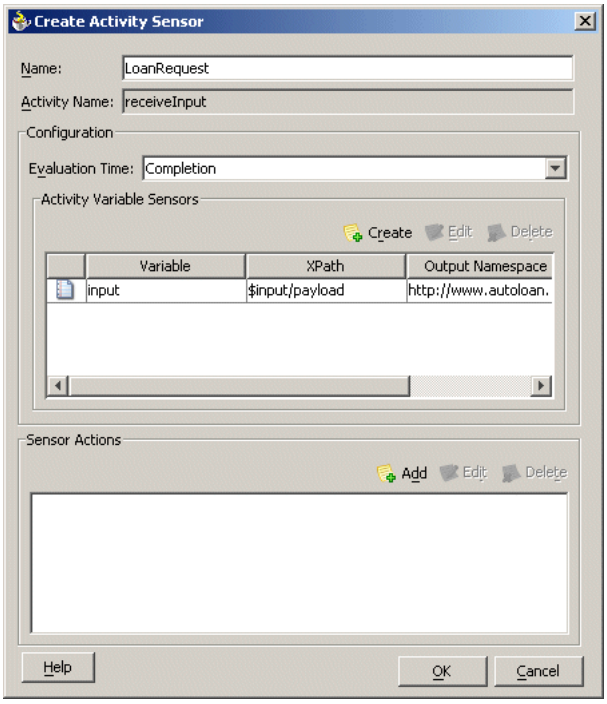
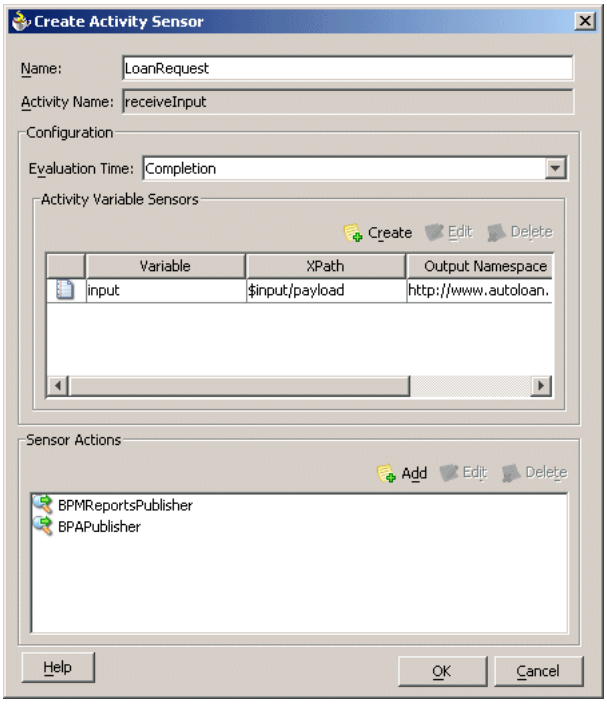


Figure 4–10 Create Activity Sensor Dialog Box - input Activity Variable Sensor



9. In the Create Activity Sensor dialog box, in the **Sensor Actions** group, click **Add.** The Sensor Action Chooser dialog box opens.
10. Select **BPMReportsPublisher,** and then click **OK.**
11. In the Create Activity Sensor dialog box, in the **Sensor Actions** group, click **Add.** The Sensor Action Chooser dialog box opens.
12. Select **BPAPublisher,** and then click **OK.**
13. The Create Activity Sensor dialog box should appear as shown in Figure 4–11; click **OK.**
14. In the Receive property sheet, click **OK.**

Figure 4–11 Create Activity Sensor Dialog Box - LoanRequest Completed



You have completed the insertion of the LoanRequest sensor.

The JDeveloper BPEL Designer indicates the presence of the sensor with a sensor icon, as shown in Figure 4–12.

Figure 4–12 Sensor Icon

Inserting the LoanRequestApproved Sensor

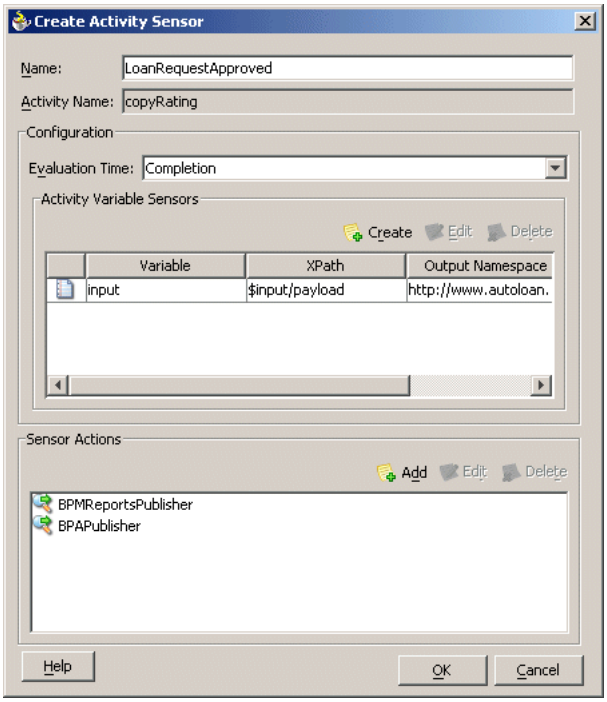
To insert the LoanRequestApproved sensor, follow these steps:

1. In the LoanFlowPlus diagram, click the expand control (plus sign) associated with **getCreditRating.**
2. Double-click **copyRating.** The Scope property sheet opens.
3. Click **Sensors,** then click **Create**. The Create Activity Sensor dialog box opens.
4. In the **Name** field, enter `LoanRequestApproved`.
5. In the **Evaluation Time** field, select **Completion.**
6. In the **Activity Variable Sensors** group, click **Create.** The Create Activity Variable Sensor dialog box opens.
7. Click the **pencil** icon. The Variable XPath Builder dialog box opens.
8. Under **Variables/Process/Variables/input,** select **payload,** then click **OK.**

The Create Activity Variable Sensor dialog box is presented with `$input/payload` in the **Variable XPath** field, `http://www.autoloan.com/ns/autoloan` in the **OutputNamespace** field, and `loanApplication` in the **Output Datatype** field.

9. In the Create Activity Variable Sensor dialog box, click **OK.**
10. In the Create Activity Sensor dialog box, in the **Sensor Actions** group, click **Add,** then select **BPMReportsPublisher,** and click **OK.**
11. In the Create Activity Sensor dialog box, in the **Sensor Actions** group, click **Add,** then select **BPAPublisher,** and click **OK.**
12. The Create Activity Sensor dialog box should appear as shown in Figure 4–13; click **OK.**
13. In the **Scope** property sheet **OK.**

Figure 4–13 Create Activity Sensor Dialog Box - LoanRequestApproved



You have completed the insertion of the LoanRequestApproved sensor.

Inserting the LoanOfferSelected Sensor

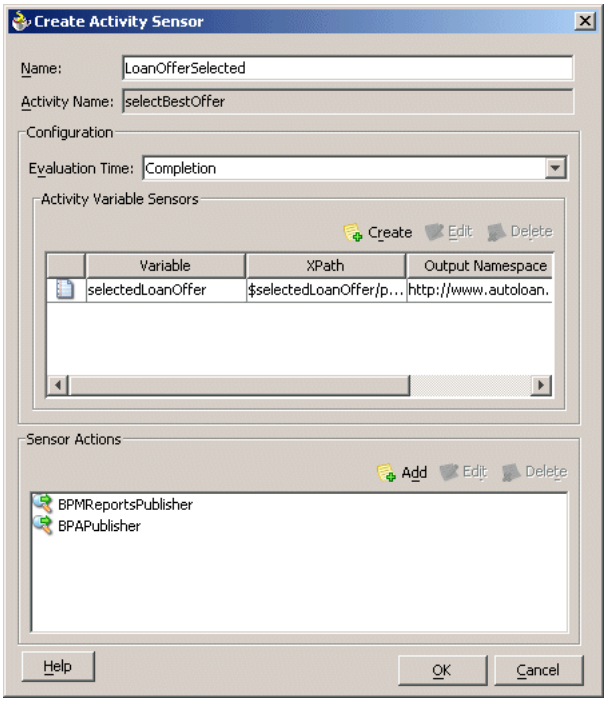
To insert the LoanOfferSelected sensor, follow these steps:

1. In the LoanFlowPlus diagram, click the expand control (plus sign) associated with **collectOffers.**
2. If it is expanded, click the collapse control (minus sign) associated with the **question mark** icon. The question mark icon is now labeled **selectBestOffer.**
3. Double-click **selectBestOffer.** The Switch property sheet opens.
4. Click **Sensors,** and then click **Create**. The Create Activity Sensor dialog box opens.
5. In the **Name** field, enter LoanOfferSelected.

6. In the **Evaluation Time** field, select **Completion.**
7. In the Activity Variable Sensors group, click **Create**. The Create Activity Variable Sensor dialog box opens.
8. Click the **pencil** icon. The Variable XPath Builder dialog box opens.
9. Under **Variables/Process/Variables/selectedLoanOffer** select **payload,** then click **OK.**

   The Create Activity Variable Sensor dialog box is presented with `$selectedLoanOffer/payload` in the **Variable XPath** field, `http://autoloan.com/ns/autoloan` in the **Output Namespace** field, and `loanOffer` in the **Output Datatype** field.
10. In the Create Activity Variable Sensor dialog box, click **OK.**
11. In the Create Activity Sensor dialog box, in the **Sensor Actions** group, click **Add,** then select **BPMReportsPublisher,** and click **OK.**
12. In the Create Activity Sensor dialog box, in the **Sensor Actions** group, click **Add,** then select **BPAPublisher,** and click **OK.**
13. The Create Activity Sensor dialog box should appear as shown in Figure 4–14; click **OK.**
14. In the **Switch** property sheet, click **OK.**

Figure 4–14 Create Activity Sensor Dialog Box - LoanOfferSelected



Inserting the LoanOfferAccepted Sensor

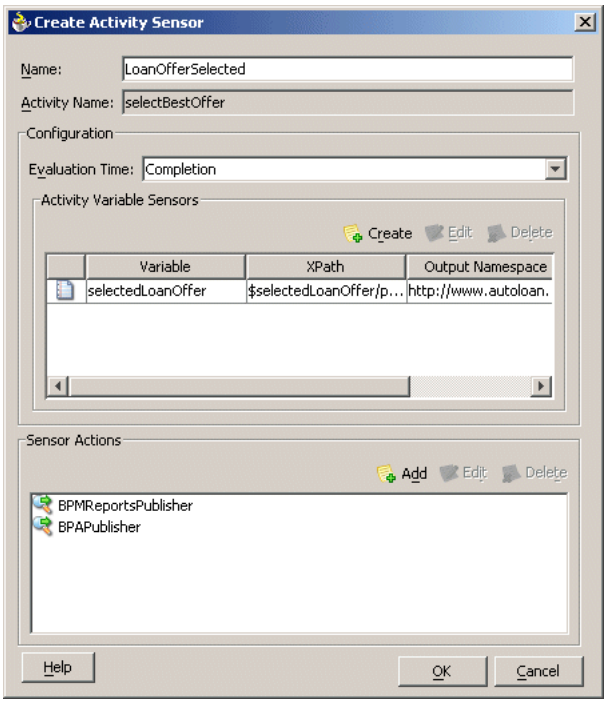
To insert the LoanOfferAccepted sensor, follow these steps:

1. In the LoanFlowPlus diagram, double-click **replyOutput.** The Invoke property sheet opens.
2. Click **Sensors,** then click **Create**. The Create Activity Sensor dialog box opens.

3. In the **Name** field, enter `LoanOfferAccepted`.
4. In the **Evaluation Time** field, select **Completion.**
5. In the Activity Variable Sensors Group, click **Create.** The Create Activity Variable Sensor dialog box opens.
6. Click the **pencil** icon. The Variable XPath Builder dialog box opens.
7. Under **Variables/Process/Variables/selectedLoanOffer** select **payload,** and then click **OK.**

   The Create Activity Variable Sensor dialog box is presented with `$selectedLoanOffer/payload` in the **Variable XPath** field, `http://autoloan.com/ns/autoloan` in the **Output Namespace** field, and `loanOffer` in the **Output Datatype** field.
8. In the Create Activity Variable Sensor dialog box, click **OK.**
9. In the Create Activity Sensor dialog box, in the **Sensor Actions** group, click **Add,** then select **BPMReportsPublisher,** and click **OK.**
10. In the Create Activity Sensor dialog box, in the **Sensor Actions** group, click **Add,** then select **BPAPublisher,** and click **OK.**
11. The Create Activity Sensor dialog box should appear as shown in Figure 4–15; click **OK.**
12. In the **Invoke** property sheet, click **OK.**
13. From the **File** menu, select **Save All.**

Figure 4–15 Create Activity Sensor Dialog Box - LoanOfferAccepted



You have completed the creation of all the sensors required for this tutorial. You are ready to deploy the modified LoanFlowPlus process, as described in the next section.

Deploying the Modified LoanFlowPlus Process

To deploy the modified LoanFlowPlus process, follow these steps:

1. Run the `obant` command from the following directory, where *BPM_HOME* is the Oracle home directory for Oracle BPEL Process Manager:

   BPM_HOME`\integration\samples\demos\LoanDemoPlusWithWorkFlow`

2. Make sure the sensors are defined as expected by following these steps:
   a. Open the Oracle BPEL Process Manager Console and log in.
   b. Click the **BPEL Processes** tab, and then in the Deployed Processes column, click **LoanFlowPlus (v. 1.0).**
   c. Click the **Sensors** tab. The activity sensors you created should be listed in the Activity Sensors column.

Using Oracle BPEL Process Analytics to Model Events

This portion of the tutorial describes how to start, log in to, and use Oracle BPEL Process Analytics to model composite events. It contains the following sections:

Starting and Logging In to Oracle BPEL Process Analytics

This section describes how to start Oracle BPEL Process Analytics and log in as Administrator. The instructions vary, depending on the operating system you are using, as follows:

- On Microsoft Windows systems:
  1. Ensure that Oracle HTTP Server is started.
  2. From the desktop **Start** button, choose **All Programs,** then **Oracle -** ***Oracle Application Server home name,*** then **Oracle BPEL Process Analytics,** and then click **Start BPA Server**
  3. After the server starts, from the desktop **Start** button, choose **All Programs,** then **Oracle -** ***Oracle Application Server home name,*** then Oracle BPEL Process Analytics, and then click **BPA Console.** Your default Web browser opens and displays the Oracle BPEL Process Analytics Console login page as shown in Figure 4–16.
  4. Log in to the Oracle BPEL Process Analytics Console. By default, the user name and password are both `Administrator` for the administrative user.
- On Unix systems:
  1. From the Oracle Process Manager and Notification Server (OPMN) `bin` directory in the Oracle home where you installed Oracle BPEL Process Analytics, issue the `opmnctl startall` command.

     ```
     > opmnctl startall
     ```

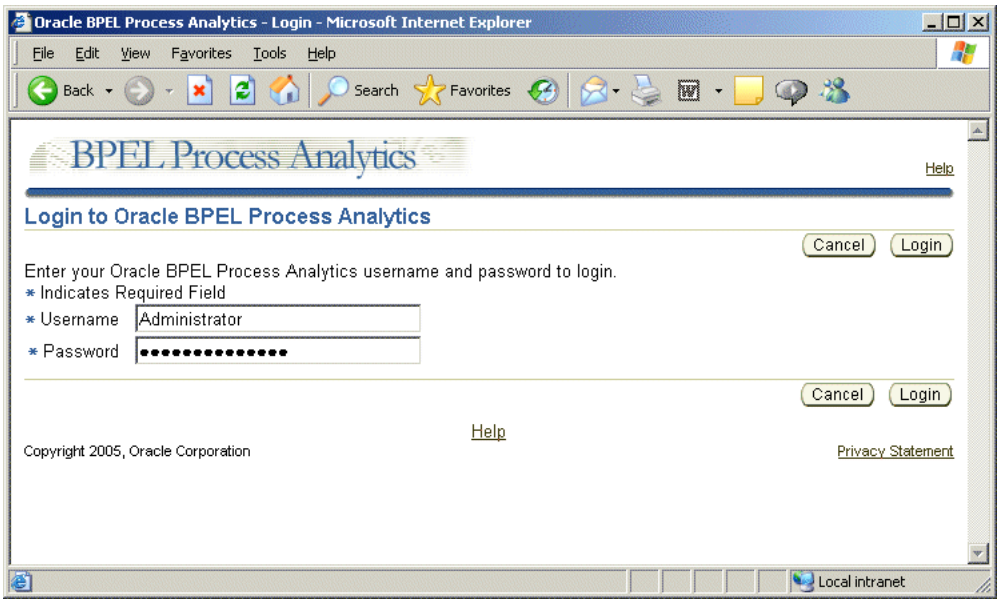
  2. After the server starts, open a Web browser and specify the URL to access Oracle BPEL Process Analytics, as documented in `bamsetupinfo.txt`, in the following directory:

OAS_HOME/install

The Web browser displays the Oracle BPEL Process Analytics Console login page as shown in Figure 4–16.

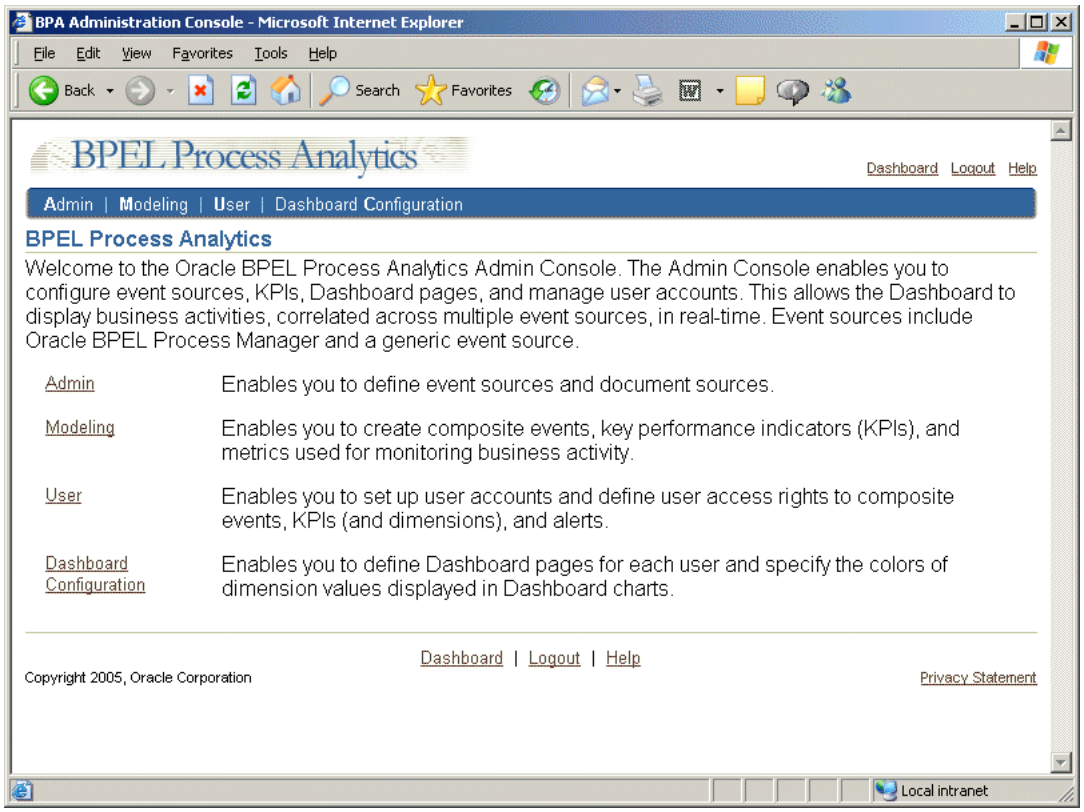
3. Log in to the Oracle BPEL Process Analytics Console. By default, the user name and password are both `Administrator` for the administrative user.

Figure 4–16 Login Page



After you log in, a page such as that shown in Figure 4–17 opens, displaying the Welcome page of the Admin Console.

Figure 4–17 Admin Console Welcome Page



Connecting to the Event Source

You must connect to Oracle Process Manager before you can model and view events. Follow these steps:

1. In the Admin Console, click **Admin.**
2. In the Admin page, click **Event Source.**
3. In the Event Sources page, click the **Create** button associated with the **Oracle BPEL Process Manager Sources** table.
4. In the Add Event Source page, enter values as described in the following table, where *BPM-system* is the name or IP address of the system on which Oracle BPEL Process Manager is installed. When you are done, click **Finish.**

Page Element	Value
Name	Tutorial
Description	LoanFlowPlus Tutorial
JMS Queue Hostname	*BPM-system*
Event Source Installation	Standalone
ORMI Port (Standalone)	23791
OPMN Port (Midtier)	6003
Administrator User name	admin
Administrator Password	welcome

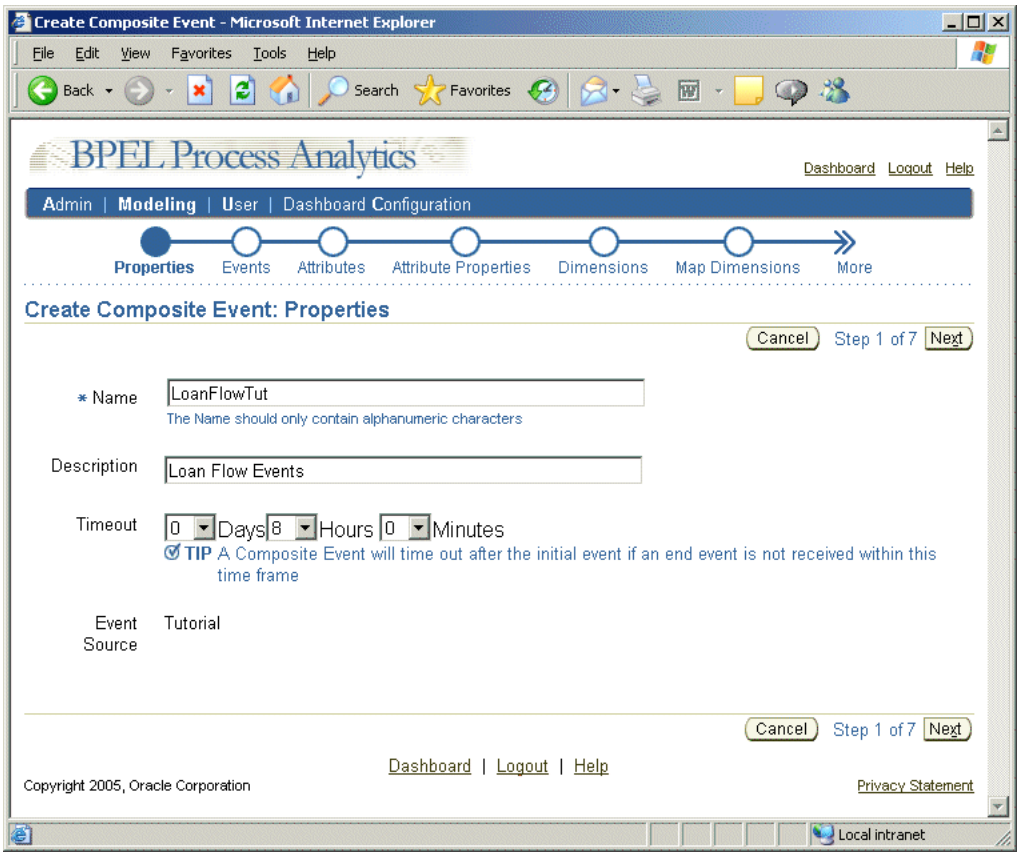
Page Element	Value
JMS Queue Factory	`jms/QueueConnectionFactory`
OJMS Queue Name	`jms/demoQueue`
Application Initial Context	`com.evermind.RMIInitiallContextFactory`
WSIL URL	`http://`*`BPM-system:port`*`/BPELConsole/wsil/processes` By default the WSIL URL port is 9700.

Modeling Events

This portion of the tutorial describes how to create a composite event using the Oracle BPEL Process Analytics samples. Follow these steps:

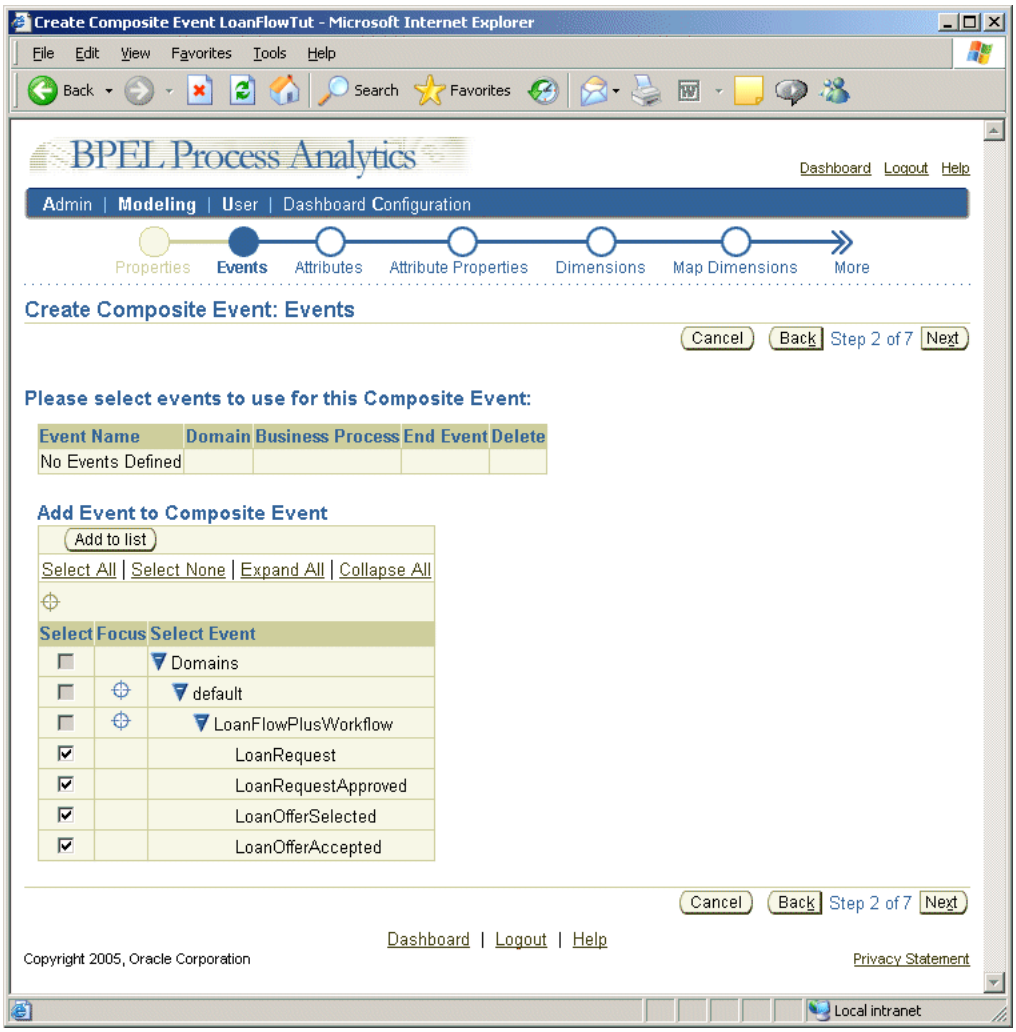
1. In the Admin Console, click **Modeling.**
2. In the Modeling page, click **Composite Events.**
3. In the Composite Events and Groups page, click **Add Composite Event.**
4. In the Create Composite Event page, select **Tutorial,** then click **Create**. The Properties page of the Create Composite Event wizard opens.
5. In the Properties page, follow these steps, as illustrated in Figure 4–18.
   a. In the **Name** field, enter LoanFlowTut.
   b. In the **Description** field, enter LoanFlow events.
   c. In the **Timeout** field, leave the settings as 0 **Days,** 8 **Hours,** 0 **Minutes.**
   d. Click **Next.** The Events page opens.

Figure 4–18 Add Composite Event Wizard - Properties Page



6. In the Events page of the wizard, follow these steps:
   a. In the navigator, expand **default,** then **LoanFlowPlusWorkflow.**
   b. Select each of the LoanFlowPlusWorkflow events. Your page should look similar to Figure 4–19.

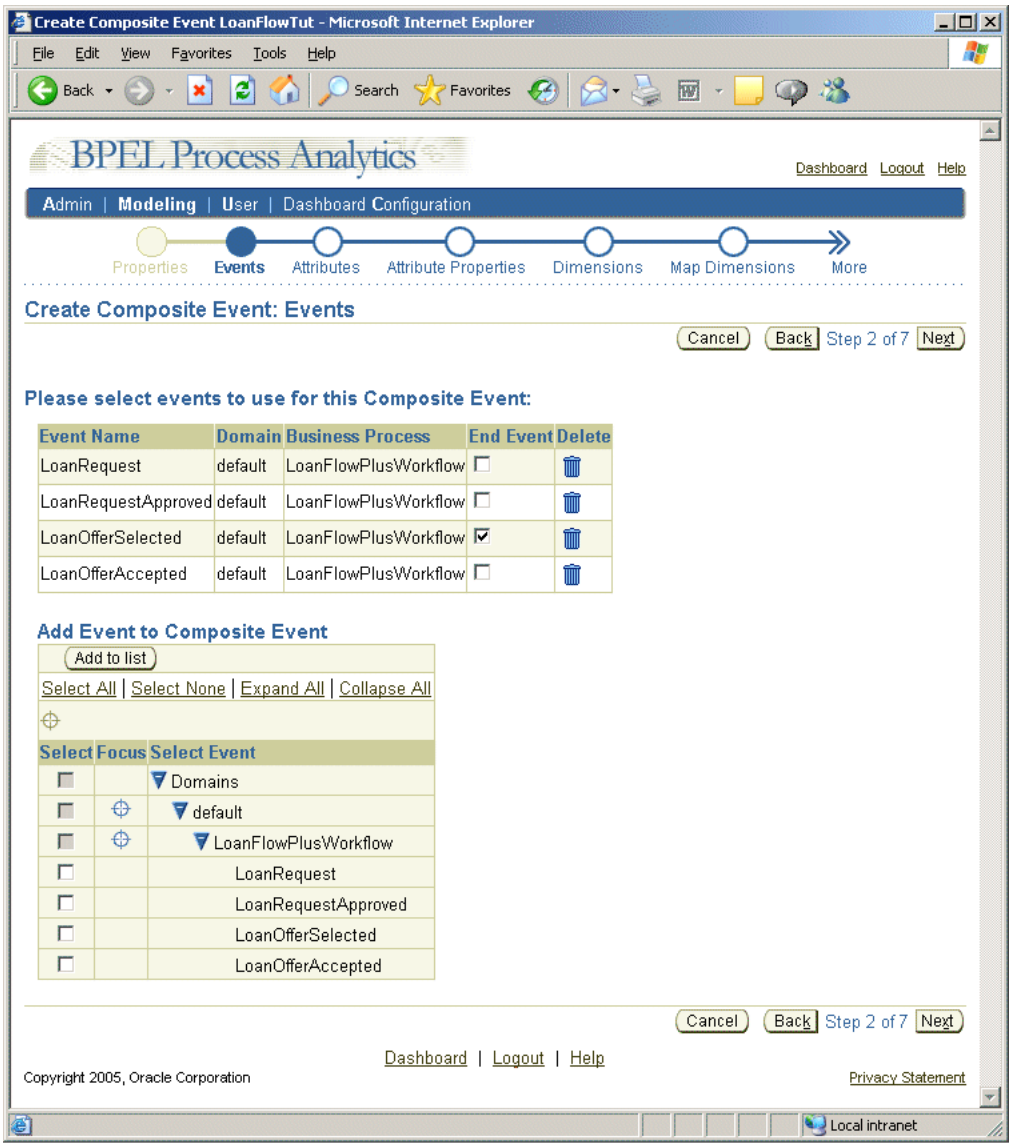
Figure 4–19 Add Composite Event Wizard - Events Page After Step 6b



c. Click **Add to list** (at the top of the Add Event to Composite Event table).

d. Select **LoanOfferAccepted** as the end event. Your page should look similar to Figure 4–20.

Figure 4–20 Add Composite Event Wizard - Events Page After Step 6d



e. Click **Next.** The Attributes page opens.

7. In the Attributes page of the wizard, you specify the event attributes to capture for each event.

a. For the **LoanRequest** event (preselected in the first table), expand **loanApplication** (in the second table) and select **SSN, customerName,** and **loanAmount.**

Note: If you used the predefined activity sensors, as described in "Using the Preconfigured Event Activity Sensors" on page 4-2, you will see **LoanApplicationType** instead of **loanApplication.**

---

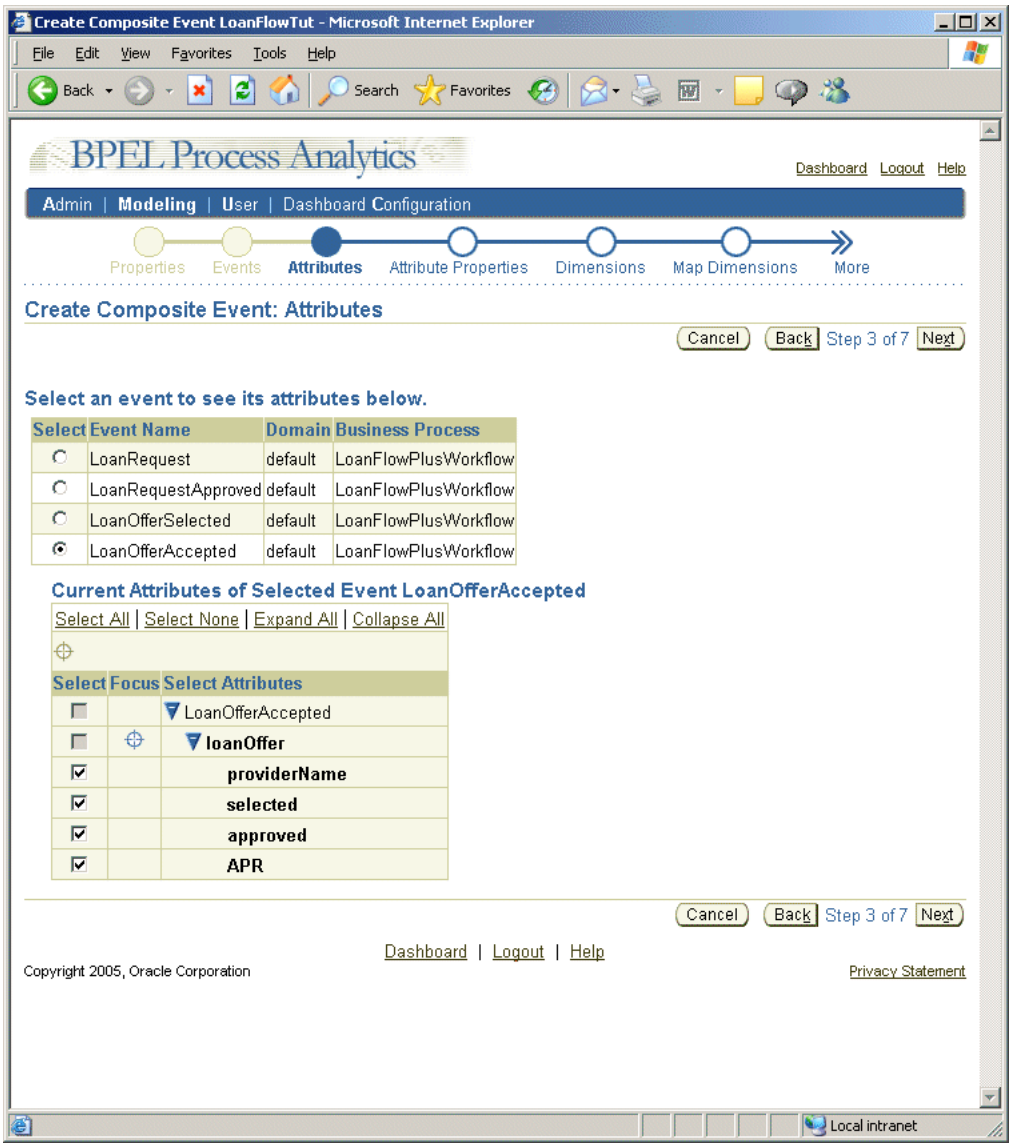
b. Select the **LoanRequestApproved** event from the first table, expand **loanApplication** (in the second table) and select **SSN, customerName,** and **loanAmount.**

c. Select the **LoanOfferSelected** event from the first table, expand **loanOffer** (in the second table) and select **providerName, selected,** and **approved,** and **APR.**

d. Select the **LoanOfferAccepted** event from the first table, expand **loanOffer** (in the second table) and select **providerName, selected,** and **approved,** and **APR.**Figure 4–21 shows the results.

e. Click **Next.** The Attribute Properties page opens.

Figure 4–21 Add Composite Event Wizard - Attributes Page After Step 7d



8. In the Attributes Properties page, select the correlation attribute for each of the events, as follows:

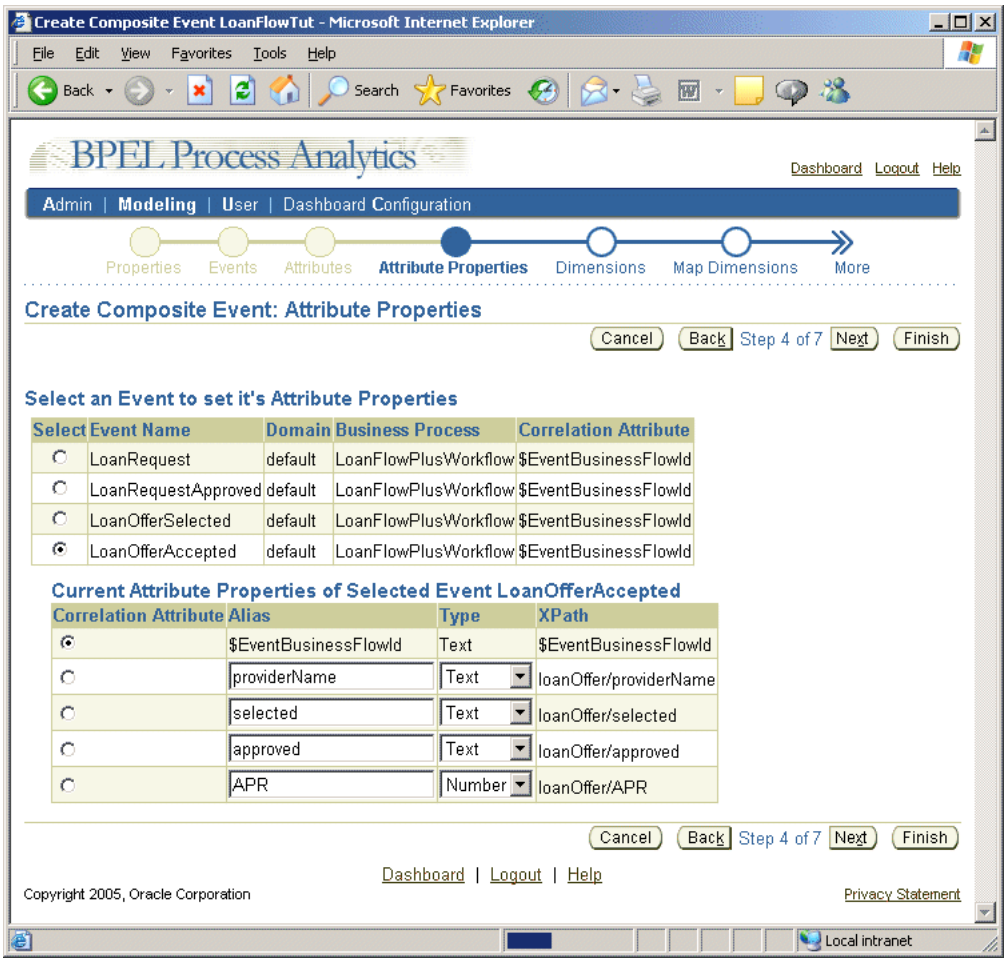
a. For the **LoanRequest** event (preselected in the first table), select **$EventBusinessFlowId** (in the second table).

b. Select **LoanRequestApproved** in the first table, then select **$EventBusinessFlowId** (in the second table).

c. Select **LoanOfferSelected** in the first table, then select **$EventBusinessFlowId** (in the second table).

d. Select **LoanOfferAccepted** in the first table, then select **$EventBusinessFlowId** (in the second table). Figure 4–22 shows the results.

Figure 4–22 Add Composite Event Wizard - Attribute Properties Page

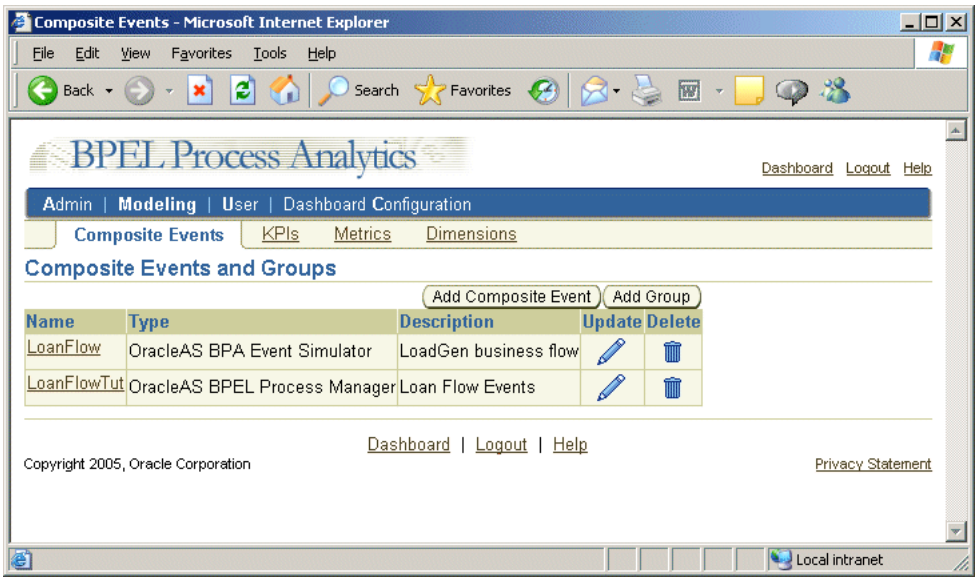


e. Click **Next.** The Dimensions page opens

f. In the Dimensions page of the wizard, you can select dimensions for the composite event. For this tutorial, dimensions will not be specified. Click **Finish.**

The Composite Events and Groups page opens. Your page should look similar to Figure 4–23. (If you did not run the demo described in Chapter 3, you will not see the LoanFlow composite event.)

Figure 4–23 Composite Events and Groups Page



Oracle BPEL Process Analytics is now ready to capture event instances generated by the event source. Creating event instances is described in the next section.

Creating Event Instances

> **Note:** If you specified a value other than 9700 as the port for the WSIL URL when you specified the event source (as described in "Connecting to the Event Source" on page 4-17), then replace 9700 with that value in each of the URLs mentioned in this section.

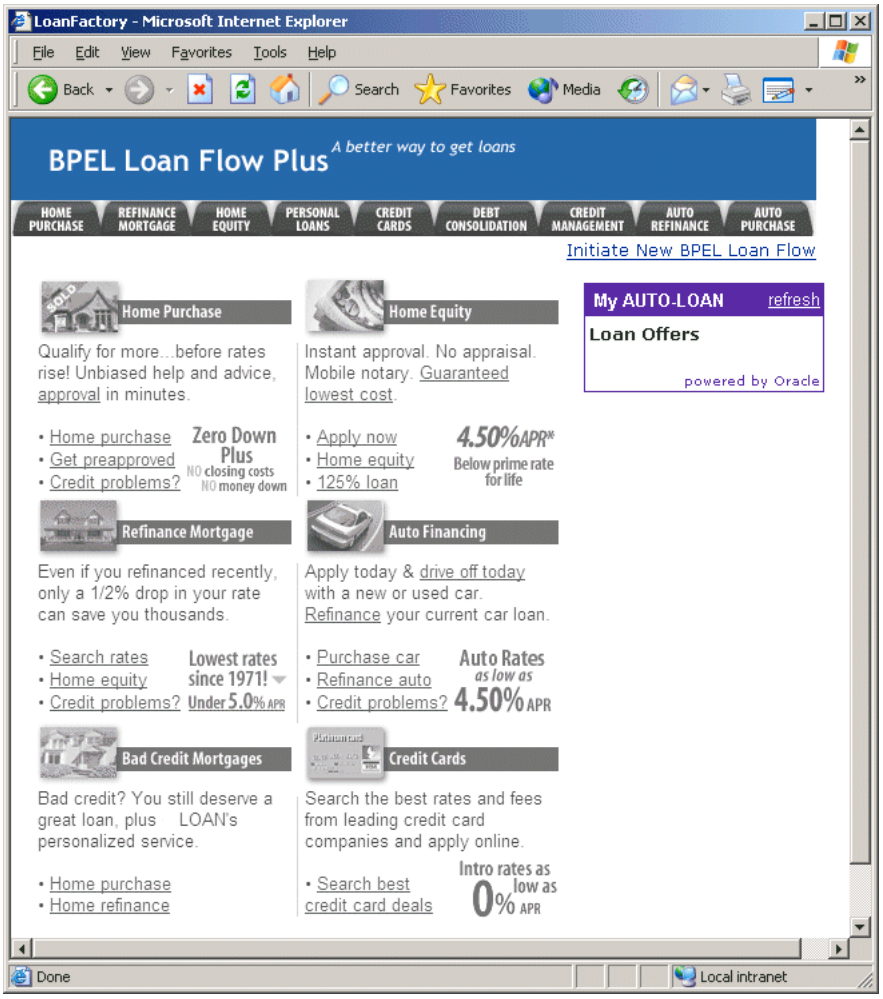
In this section, you create event instances, which you can then monitor in the Oracle BPEL Process Analytics Dashboard. Follow these steps:

1. Open the following URL in a Web browser, where *BPM-system* is the name or IP address of the system where you installed Oracle BPEL Process Manager:

   `http://BPM-system:9700/LoanFlowPlusWFUI/Homepage.html`

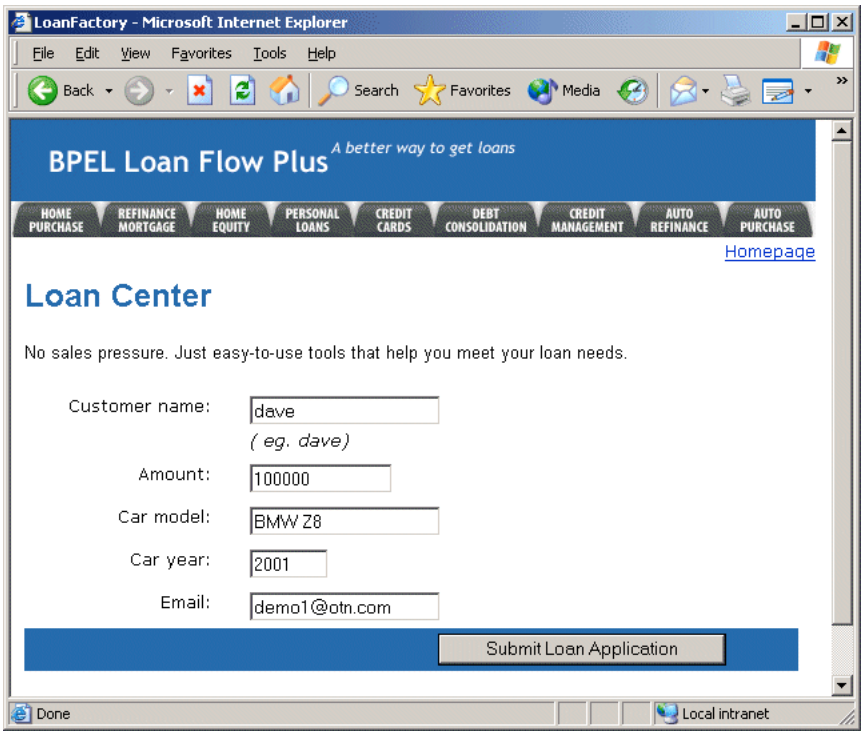
   A page, such as that shown in Figure 4–24, opens. It allows you to initiate a new simulated BPEL loan flow.

Figure 4–24 BPEL Loan Flow Plus



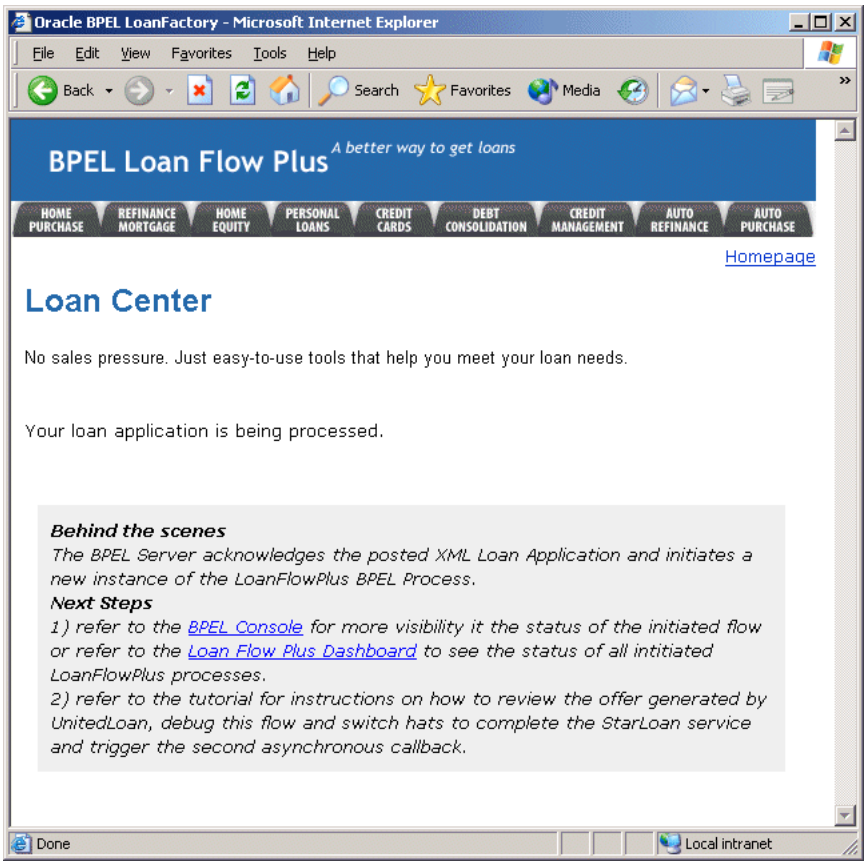
2. Click **Initiate New BPEL Loan Flow** (beneath the tabs, on the upper-right side of the page).
3. In the Loan Center page, as shown in Figure 4–25, click **Submit Loan Application.**

Figure 4–25 Submit Loan Application



4. The Loan Center page refreshes and indicates that the loan is being processed, as shown in Figure 4–26. Note that the tutorial mentioned in this Web page is not referring to this tutorial.

Figure 4–26 Application Being Processed



5. Go to the following URL to act as the Star Loan Provider:

   `http://BPM-system:9700/integration/worklistapp/Login`

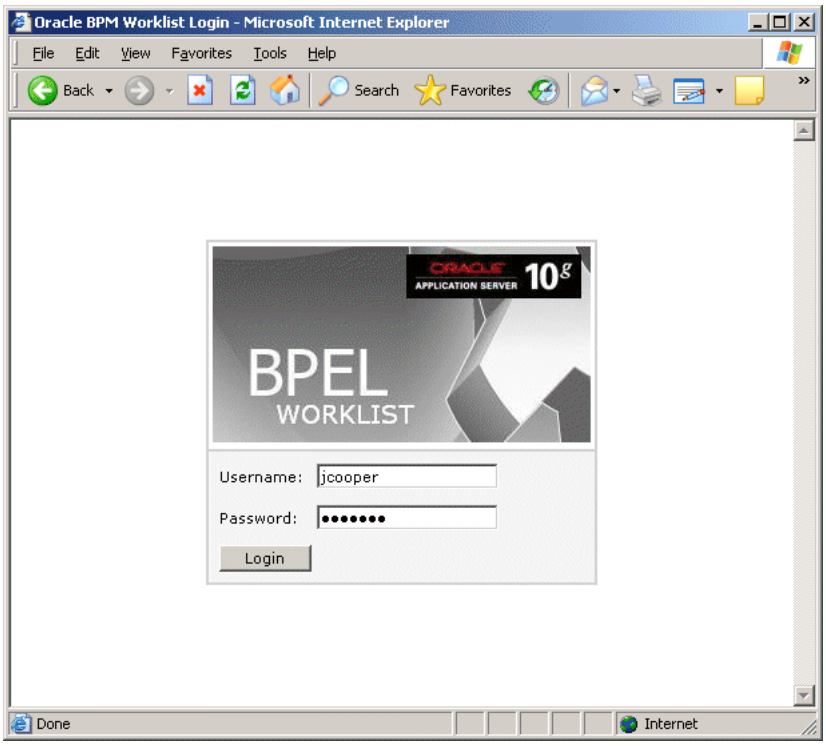
   A page opens, such as that shown in Figure 4–27. Enter the requested values, as follows, then click **Log In**:

   - Username: jcooper

     You can enter any one of the following: jcooper, istone, or mtwain; this tutorial uses `jcooper`.

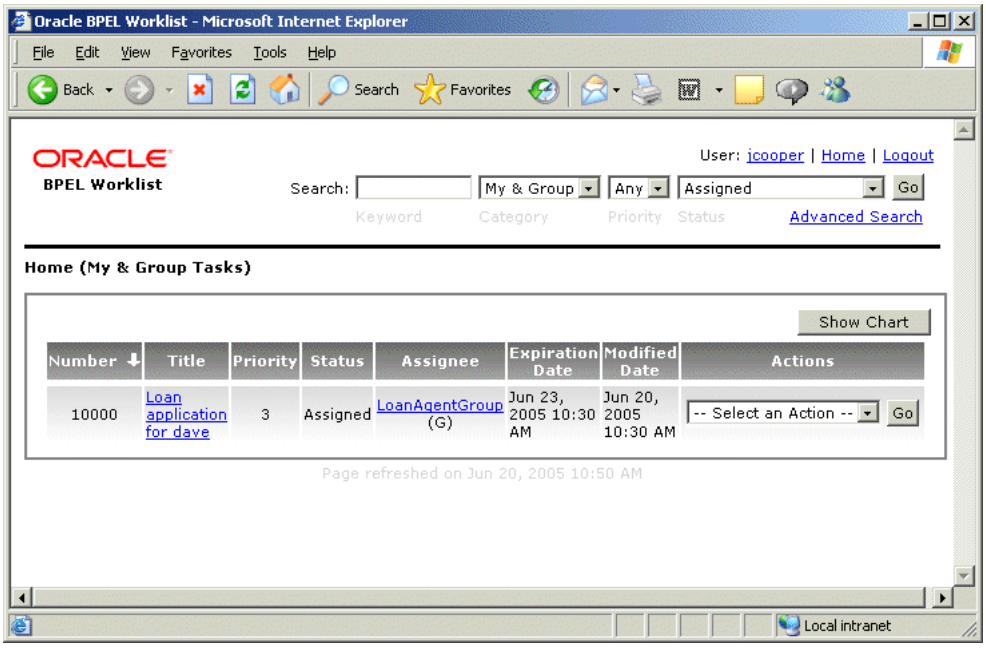
   - Password: welcome

Figure 4–27 BPM PM Worklist - Log In



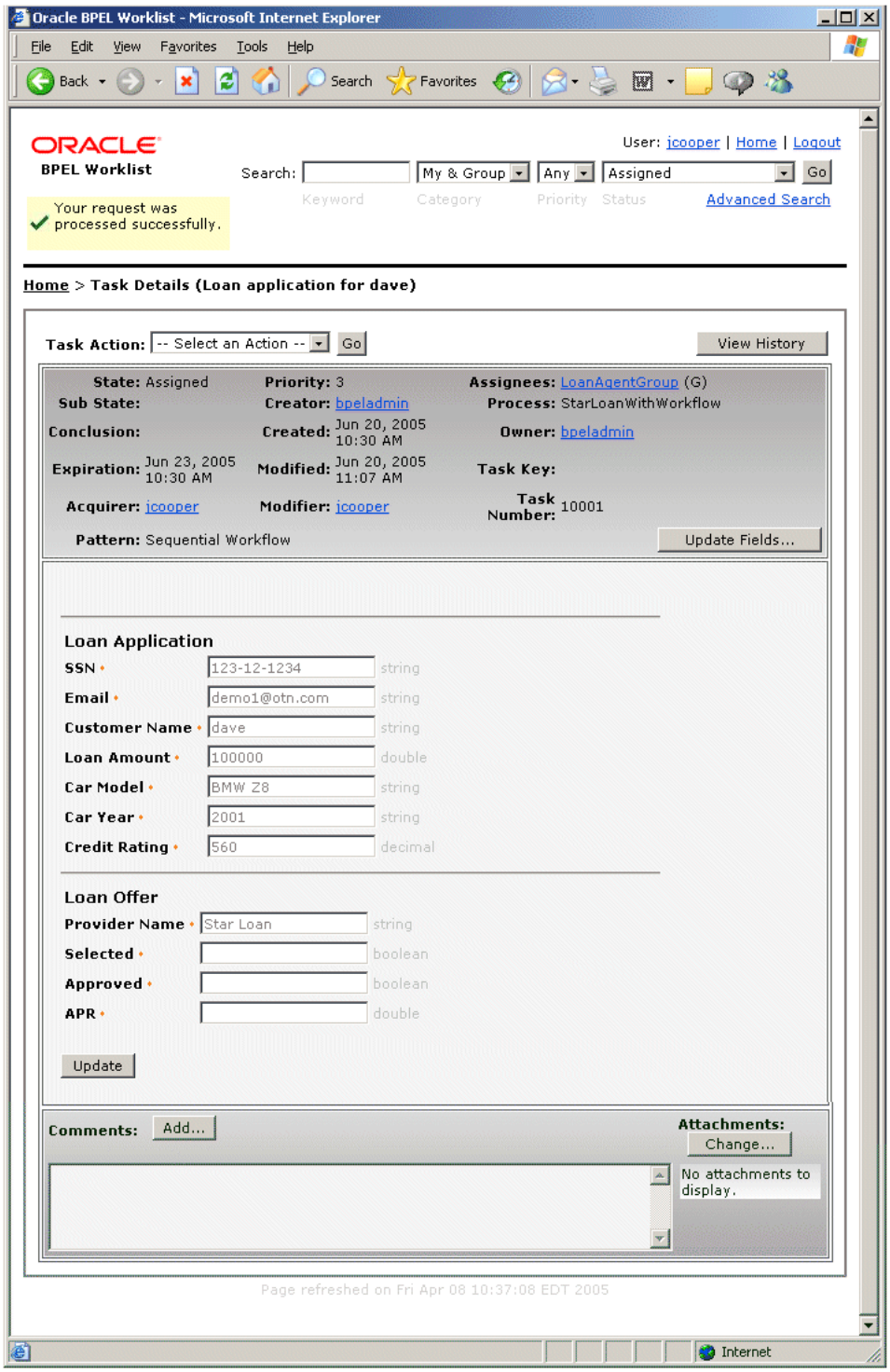
6. The BPEL Worklist page for the specified user opens, as shown in Figure 4–28.

Figure 4–28 Oracle BPEL Worklist Page for jcooper



7. From the **Actions** drop-down list, select **Acquire,** and then click **Go.** The Task Details page opens, as shown in Figure 4–29.

Figure 4–29 Oracle BPEL Worklist - Task Details



8. In the **APR** box, enter 2.2, then click **Update.** The page will refresh.

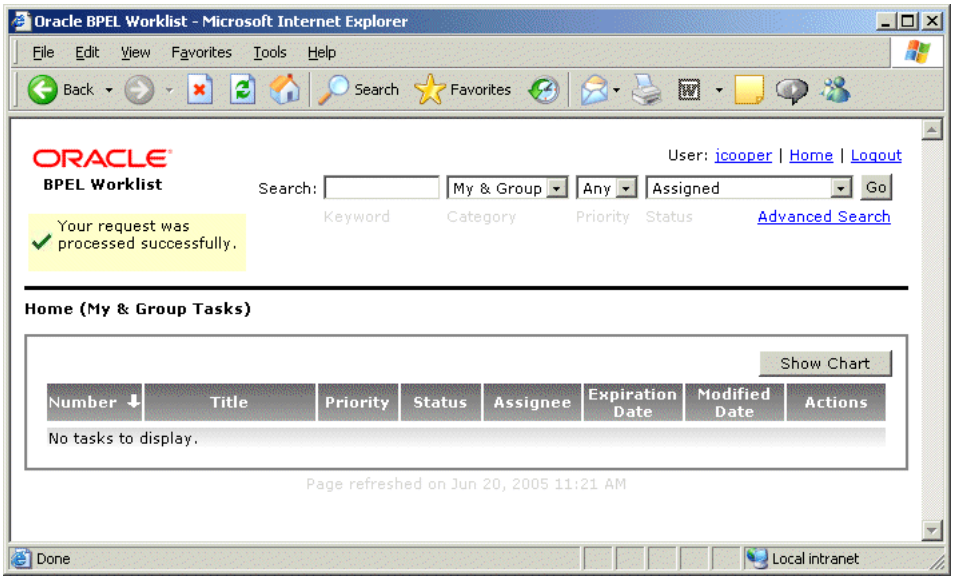
9. After the page refreshes, from the **Task Action** box, select **Approve,** and then click **Go.** Your page should look similar to Figure 4–30.

   Note that these instructions do not include a step to change the loan amount. However, if you decided to change the loan amount, be aware of the following:

- If the loan amount is less than or equal to 100,000 the approval process is complete.
- If the loan amount is greater than 100,000, an e-mail message is sent to user jstein, who is the manager of jcooper and mtwain. User jstein can either approve the loan through e-mail or by opening the BPM Worklist page himself and approving the loan.

  Following user jstein's approval, the task is routed to user wfaulk (who is user jstein's manager). User wfaulk can either approve the loan through e-mail or by opening the BPM Worklist page himself and approving the loan.

Figure 4–30 Oracle BPEL Worklist - No Tasks to Display



10. Return to the BPEL Loan Flow Plus page at the following URL:

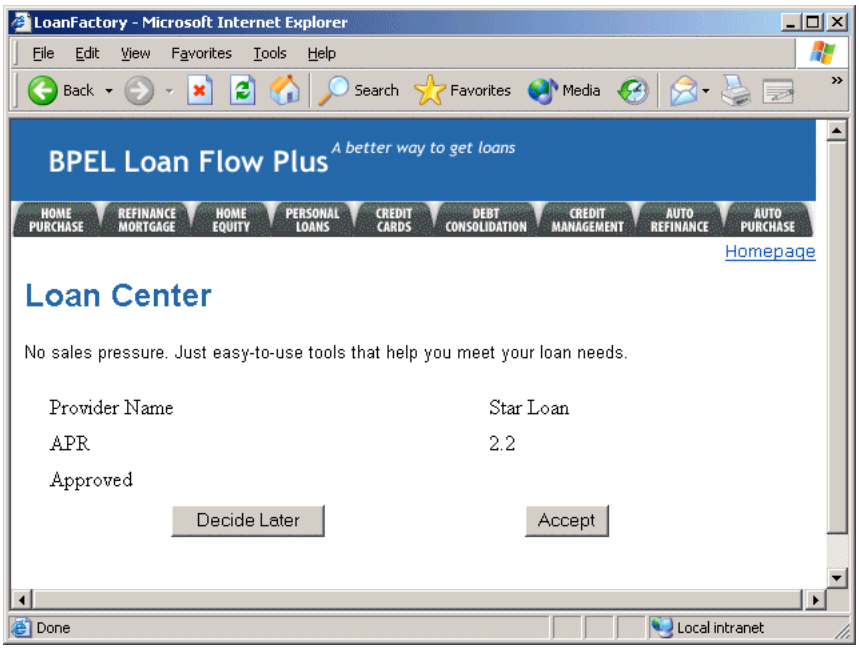
`http://BPM-system:9700/LoanFlowPlusWFUI/Homepage.html`

Your page should look similar to Figure 4–31.

Figure 4–31 My AUTO-LOAN - Offer Received

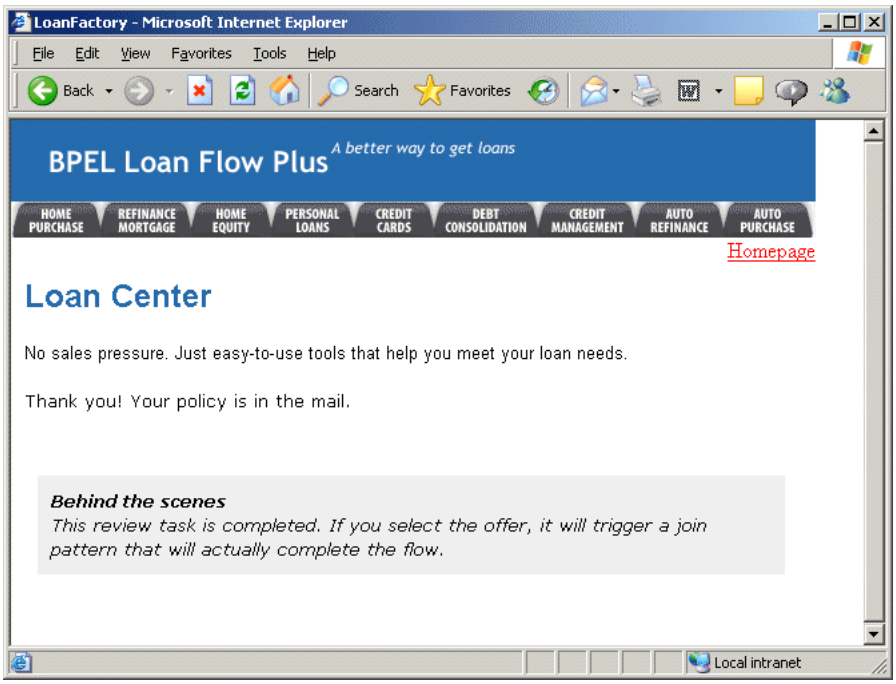
11. Click **Received offer from Star Loan with APR 2.2.** A page such as shown in Figure 4–32 opens.

Figure 4–32 Accept Loan



12. Click **Accept.** The page refreshes to indicate that the policy is in the mail, as shown in Figure 4–33.

Figure 4–33 Loan Center - Policy Is In the Mail Page



You can now repeat the steps in this section, changing values for the customer name and APR to create additional events, or you can continue to the next section and view the single event in the Oracle BPEL Process Analytics Dashboard.

Using Oracle BPEL Process Analytics to View Event Instances

Log in to the Oracle BPEL Process Analytics user interface, open the Dashboard, and view the event instance or instances you just created in the Real-Time Viewer by following these steps:

1. Depending on the system where Oracle BPEL Process Analytics is installed, open the Console, as follows:
   - On Microsoft Windows systems:

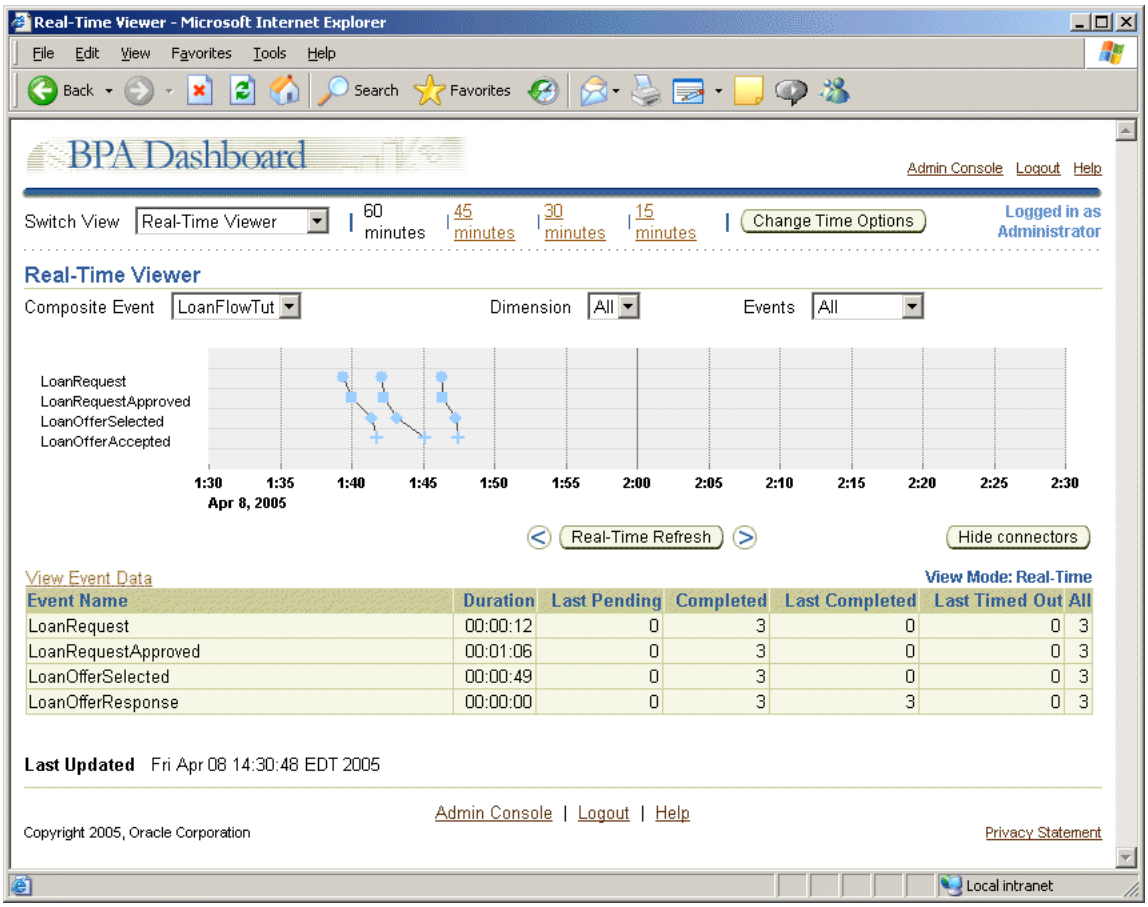
     From the desktop **Start** button, select **All Programs,** then **Oracle - *Oracle Application Server home name,*** then **Oracle BPEL Process Analytics,** and then click **BPA Console.**
   - On Unix systems:

     Open a Web browser and specify the URL to access Oracle BPEL Process Analytics as documented in `bamsetupinfo.txt`, in the following directory, where *`OAS_HOME`* is the directory specification for the home into which you installed Oracle BPEL Process Analytics:

     `OAS_HOME``/install`
2. Log in to the Oracle BPEL Process Analytics Console. Recall that the user name and password are both `Administrator` by default.
3. Click **Dashboard** in the upper-right corner of the page (above the tabs). The Dashboard opens.
4. In the **Switch View** box, select **Real-Time Viewer.** The Dashboard refreshes to display the Real-Time Viewer.
5. In the **Composite Event** box, select **LoanFlowTut,** if it is not already selected.

   Your page should look similar to Figure 4–34. If the event or events that you just created are not in the chart, click **Real-Time Refresh.** For detailed information on the data presented in the Real-Time Viewer, see *Oracle BPEL Process Analytics User's Guide*.

Figure 4–34 Real-Time Viewer



You have completed the LoanFlowPlus tutorial.

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