

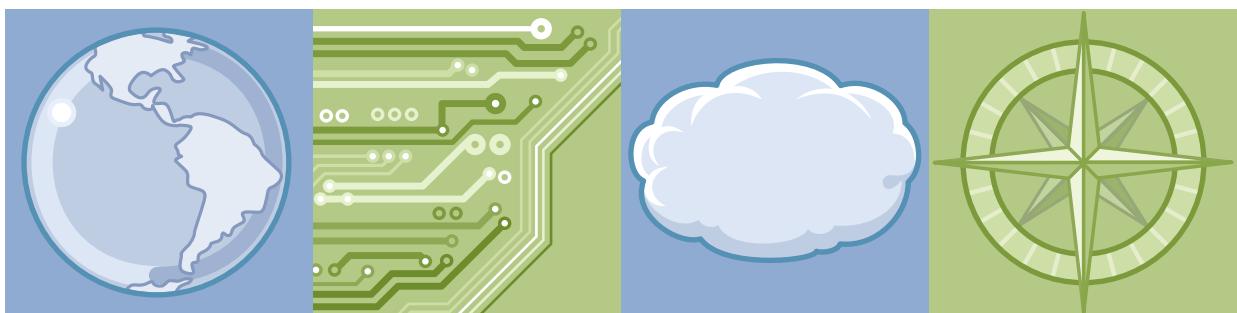


IBM Training

Student Exercises

Administration of IBM Business Process Manager Standard V8.5.6

Course code WB821 ERC 1.0



IBM Systems
Middleware

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Exercises description

This course includes the following exercises:

- Exercise 1: Installing IBM Business Process Manager Standard
- Exercise 2: Installing IBM HTTP Server
- Exercise 3: Configuring the Process Center environment
- Exercise 4: Administering Process Center
- Exercise 5: Adding users and groups
- Exercise 6: Administering Process Portal
- Exercise 7: Configuring the Process Server environment
- Exercise 8: Managing offline and online Process Servers
- Exercise 9: Creating and managing snapshots
- Exercise 10: Performance and troubleshooting
- Exercise 11: Implementing BPM security

In the exercise instructions, you can check off the line before each step as you complete it to track your progress.

Most exercises include required sections, which should always be completed. It might be necessary to complete these sections before you can start later exercises. Some exercises might also include optional sections. If you have sufficient time and want an extra challenge, you might want to complete these optional sections.



Important

For classes that are delivered by using the IBM Remote Lab Platform (IRLP) in Montpellier, France:
To log on to the lab virtual machine image, use ID `root` and password `web1sphere` and then follow the instructions.

Refer to the `readme.txt` file on the lab image desktop for possible additional information.

Online course material updates might exist for this course. To check for updates, see the Instructor wiki at: http://www.ibm.com/developerworks/connect/middleware_edu

Exercise 1. Installing IBM Business Process Manager Standard

What this exercise is about

This exercise covers the installation of IBM Business Process Manager Standard.

What you should be able to do

After completing this exercise, you should be able to:

- Use a response file to install IBM Business Process Manager Standard and its base products
- Verify the installation

Introduction

You can install IBM Business Process Manager by using typical or custom installation. In this exercise, you install IBM Business Process Manager Standard V8.5.6 by creating a response file and then running a command to use that response file to install the product.

During the silent installation, the following tasks are performed:

- Installation Manager is installed or updated to the appropriate level.
- The required base products and IBM Business Process Manager Standard are installed.

Requirements

To complete this exercise, you need the IBM Business Process Manager Standard V8.5.6 binary files.

Exercise instructions

User IDs and passwords

Use the following list of user ID and password information for this course.

| Entry point | User ID | Password |
|---------------------|----------|------------|
| Linux Administrator | root | web1sphere |
| DB2 Administrator | db2inst1 | web1sphere |



Note

When you start your computer, you are prompted for a user ID and password. At this prompt, enter:

- User ID: `root`
- Password: `web1sphere`

If you are already logged in, but not as `root`, then log off your current ID and log in as: `root`



Important

The exercises in this course use a set of lab files that might include scripts, applications, files, and others. The course lab files can be found in the `/usr/labfiles/` directory. The exercises point you to the lab files as you need them.

Part 1: Install IBM Business Process Manager Standard

In this exercise, you install IBM Business Process Manager as an administrator. After completing this course, when you get to your own environment, before you install IBM Business Process Manager, you must make several decisions. First, you must decide in which mode to run installation. The mode determines which user or user group can complete the installation. The choices are administrator, non-administrator, or group. Second, you must decide where the product files and runtime data are going to be located.



Information

When installing the product, you have two choices on the installation method.

- Typical installation: The typical installation option is the simplest and quickest method for installing and configuring IBM Business Process Manager Standard. Using the product launchpad, the typical installation installs the software, configures the deployment

manager and managed node profiles, and configures a single cluster deployment environment that consists of a single node and single server.

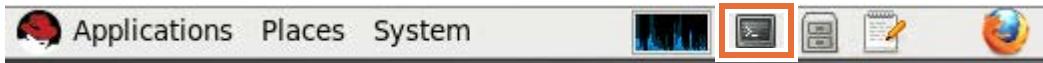
- Custom installation: Use the custom installation option to install or configure with options that are not provided by the typical installation option. This option installs silently, or installs on an existing installation of WebSphere Application Server.

You can find more details about the IBM Business Process Manager in the IBM Knowledge Center at:

http://www.ibm.com/support/knowledgecenter/SSFPJS_8.5.6/com.ibm.wbpm.imuc.sbpom.doc/topics/inst_cfg.html

In this exercise, you install IBM Business Process Manager Standard silently by creating a response file and then running a command to use that response file to install the product.

1. Create the response file for the custom silent installation.
 - a. Open a terminal window. Click **Applications > System Tools > Terminal** or click the **Terminal** icon at the top center of the image.



Information

By using response files, you can simplify the silent installation and reduce errors in the process. These advantages are available because you set up your installation options one time in a saved, sharable file that can be used on one or more workstations.

The installation software provides sample response files for each supported operating system. You can use an unmodified sample response file for a silent installation by using default settings, or you can modify the response file to set particular values. The comments in the sample response files provide detailed instructions and information about setting the values.

- b. Enter the following command in the terminal to change the directory:

```
cd /usr/software/bpm/responsefiles/BPM
```

```
root@rhel6base: /usr/software/bpm/responsefiles/BPM
File Edit View Search Terminal Help
[root@rhel6base ~]# cd /usr/software/bpm/responsefiles/BPM
[root@rhel6base BPM]#
```



Information

You do installation as an administrator, so you modify the sample response file `bpmStd_linux_response_root_64bit.xml` in the next steps.

- __ c. Create the backup of the response file `bpmStd_linux_response_root_64bit` by entering the following command and pressing Enter:

```
cp bpmStd_linux_response_root_64bit.xml
bpmStd_linux_response_root_64bit.xml_backup
```

- __ d. Verify the set of files by entering the following command:

```
ls
```

```
[root@bpmstdhost BPM]# ls
bpmStd_linux_response_group_64bit.xml
bpmStd_linux_response_nonroot_64bit.xml
bpmStd_linux_response_root_64bit.xml
bpmStd_linux_response_root_64bit.xml~
bpmStd_linux_response_root_64bit.xml_backup
```

- __ e. Edit the `bpmStd_linux_response_root_64bit.xml` response file by entering the following command:

```
gedit bpmStd_linux_response_root_64bit.xml
```

- __ f. Review the **Repository location** parameter and values in the response file.

- __ g. Keep the default repository location for IBM Installation Manager, Business Process Manager Standard, and WebSphere Application Server ND.

```
<server>
    <!-- ===== IBM Installation Repository Location =====-->
    <repository location='../../IM64/' temporary='true' />
    <!-- ===== IBM Business Process Manager Standard, WebSphere
Application Server ND, DB2 Express =====>
    <repository location="../../repository/repos_64bit/" />
</server>
```

- __ h. Change the installation location directory for IBM Installation Manager and Eclipse to: `/opt/IBM/IM/eclipse`

```
<profile kind='self' installLocation='/opt/IBM/IM/eclipse' id='IBM
Installation Manager'>
    <data key='eclipseLocation' value='/opt/IBM/IM/eclipse' />
</profile>
```

- __ i. Remove the comments for the default location of the Eclipse cache.

```
<!--
<preference value="/opt/IBM/IMShared" name="com.ibm.cic.common.core.preferences.eclipsecache" />
-->
```

```
<preference value="/opt/IBM/IMShared"
name="com.ibm.cic.common.core.preferences.eclipsecache" />
```

- __ j. Change the IBM Business Process Manager Standard installation location from /opt/ibm/BPM/v8.5 to /opt/IBM/BPM/ and leave the DB2 Express installation block commented.



Reminder

DB2 Enterprise Server Edition V10.5 is already installed on your image.

```
<profile installLocation='/opt/IBM/BPM/' id='IBM WebSphere Application
Server Network Deployment v8.5'>
<data key='eclipseLocation' value='/opt/IBM/BPM/' />
<data key="cic.selector.nl" value="en" />
    <data key='user.import.profile' value='false' />
    <data key='user.select.64bit.image,com.ibm.websphere.ND.v85'
value='true' />
    <!-- To install DB2 Express, remove the comments from the lines below, and
update the DB2 user name and encrypted password -->
    <!--
        <data key='user.db2.port' value='50000' />
        <data key='user.db2.instance.username'
value='${DB2INSTANCE_USERID}' />
        <data key='user.db2.instance.password' value='${ENCRYPTED_PWD}' />
        <data key='user.db2.das.newuser' value='true' />
        <data key='user.db2.fenced.newuser' value='true' />
        <data key='user.db2.fenced.username' value='${DB2FENCED_USERID}' />
        <data key='user.db2.fenced.password' value='${ENCRYPTED_PWD}' />
        <data key='user.db2.das.username' value='${DB2DAS_USERID}' />
        <data key='user.db2.das.password' value='${ENCRYPTED_PWD}' />
    -->
</profile>
```

**Note**

IBM Business Process Manager installation location is changed from /opt/ibm/BPM/v8.5 to /opt/IBM/BPM. Make sure to change lowercase ibm to uppercase IBM in the path: /opt/IBM/BPM

- __ k. Leave the default values for the features of the individual language packs for the runtime environment and administrative console.

```
<install>
    <offering profile="IBM WebSphere Application Server Network Deployment V8.5" id="com.ibm.websphere.ND.v85"
features='core.feature,ejbdeploy,thinclient,embeddablecontainer,samples,com.ibm.sdk.6_64bit' />
    <offering profile="IBM WebSphere Application Server Network Deployment V8.5" id="com.ibm.websphere.IBMJAVA.v70" features='com.ibm.sdk.7' />

    <offering profile="IBM WebSphere Application Server Network Deployment V8.5" id="com.ibm.bpm.STD.v85"
features='StandardProcessCenter' />
    <!-- To install DB2 Express, remove the comments from the line below. You can install DB2 Express only if you do not have another installation of DB2 on your system. -->
    <!-- <offering profile="IBM WebSphere Application Server Network Deployment V8.5" id="com.ibm.ws.DB2EXP.linuxia64" /> -->
</install>
```

**Information**

Java 6 is always installed with WebSphere Application Server Network Deployment. However, if you install Java 7, then it is used. If you do not specify the Java 7 package option, Java 6 is used. If you install Java 7 but find that you still need to use Java 6, you can use the `managesdk` command to switch before you create profiles.

**Note**

The installation process installs IBM Process Center or IBM Process Server server components that are based on your selection.

- **Process Center** provides a repository for process assets, a runtime environment for testing and studying the performance of processes, and a console for administering access to assets and deploying processes to test, stage, or production environments.
- **Process Server** is a runtime environment for process applications and a data warehouse for collecting performance data from the applications. It includes administrative consoles for managing and maintaining the runtime environments and data warehouses.

You can select the following features to install:

- *IBM Process Center*
- *IBM Process Server Production* to use the server in production.
- *IBM Process Server Non-production* to use the server only for test, staging, or development.

Do not mix production and non-production servers in the same cell.

- ___ l. Click **Save** to save the `bpmStd_linux_response_root_64bit.xml` response file.
- ___ m. Close the response file when completed by clicking **File > Quit**.
- ___ 2. Install IBM Business Process Manager.
 - ___ a. In the terminal window, enter the following command to change the directory:
`cd /usr/software/bpm/IM64`
 - ___ b. Copy and paste the following command in the terminal window:
`./installc -acceptLicense input
/usr/software/bpm/responsefiles/BPM/bpmStd_linux_response_root_64bit.xml
-log /usr/software/bpm/log/silent_install.log`

```
[root@rhel6base IM64]# ./installc -acceptLicense input usr/software/bpm/response  
files/BPM/bpmStd_linux_response_root_64bit.xml -log usr/software/bpm/log/silent_  
install.log
```

**Note**

Adding `-acceptLicense` to the command line means that you accept all licenses.

- ___ c. Depending on the system resources, the installation takes about 10 minutes. During the installation, verify the progress with the messages that appear on the window.

```
[root@bpmsstdhost IM64]# ./installc -acceptLicense input /usr/software/bpm/respon  
sefiles/BPM/bpmStd_linux_response_root_64bit.xml -log /usr/software/bpm/log/sile  
nt install.log  
Modified com.ibm.cic.agent_1.8.1000.20141126_2002 in the /opt/IBM/IM/eclipse di  
rectory.  
Installed com.ibm.websphere.ND.v85_8.5.5005.20150220_0158 to the /opt/IBM/BPM di  
rectory.  
Installed 8.5.5.5-WS-WAS-IFPI35502_8.5.5005.20150225_1959 to the /opt/IBM/BPM di  
rectory.  
Installed 8.5.0.0-WS-WASJavaSDK-LinuxX64-IFPI35615_8.5.0.20150224_1408 to the /o  
pt/IBM/BPM directory.  
Installed 8.5.5.5-WS-WASProd-IFPI35667_8.5.5005.20150225_1021 to the /opt/IBM/B  
PM directory.  
Installed com.ibm.websphere.IBMJAVA.v70_7.0.8010.20150219_1802 to the /opt/IBM/E  
PM directory.  
Installed com.ibm.bpm.STD.v85_8.5.6000.20150304_1832 to the /opt/IBM/BPM direc  
tory.  
[root@bpmsstdhost IM64]# █
```

Part 2: Confirming the installation

During installation, Installation Manager creates a session installation log file. This file is useful to either confirm a successful installation or to check for installation problems.



Information

IBM Installation Manager is an installation management tool that installs and maintains Installation Manager-based software packages. It is the Eclipse-based tool that provides you the ability to install and modify packages, search for updates, uninstall, and roll back. Installation Manager makes it easier for you to download and install code for a number of software packages. Only one IBM Installation Manager is required to install multiple instances of IBM Business Process Manager.

- ___ 1. Start the Installation Manager.
 - ___ a. In the terminal window, enter the following command to change directory:

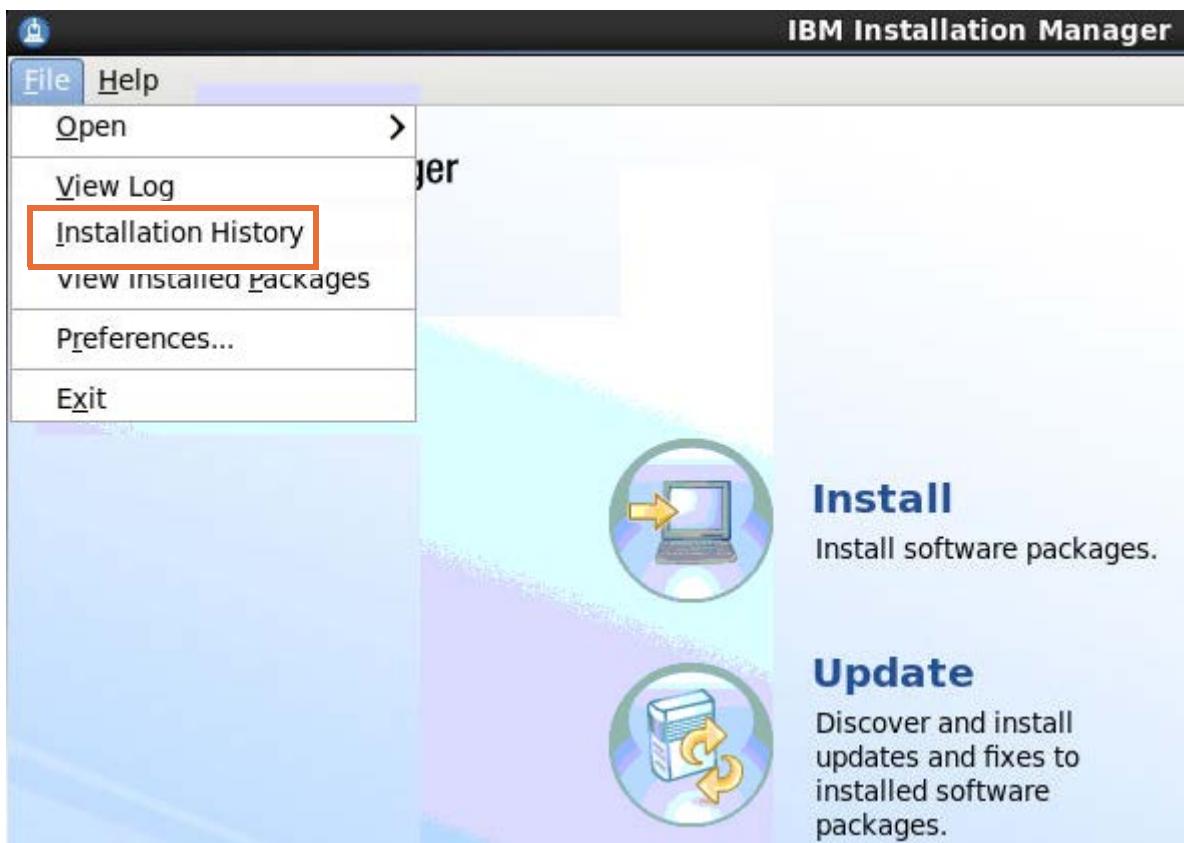
```
cd /opt/IBM/IM/eclipse
```
 - ___ b. To start the Installation Manager, enter the following command:

```
./IBMMIM
```

- ___ c. The IBM Installation Manager starts and shows the available wizards. Installation Manager contains a number of wizards to help install and maintain various packages.



- __ 2. View the installation log file.
- __ a. Click **File > Installation History**.



- ___ b. The installation history of the package groups is listed in the window. Note the success status listed for the IBM Installation Manager, IBM WebSphere Application Server ND 8.5.5.5, and IBM Business Process Manager Standard 8.5.6.0.

The screenshot shows the 'Installation History' window. At the top, there's a toolbar with icons for search, refresh, and other operations. Below the toolbar is a table titled 'Installation History' with columns: Date, Activity, Package Group Name, Status, and Installation Packages. The table lists ten entries, mostly 'Install' activities for 'IBM Installation Manager' and 'IBM WebSphere Application'. The last entry is for 'IBM® Business Process Manager Standard 8.5.6.0'. A 'View Log' button is located at the bottom right of the table area. Below the table, under the heading 'Details', are the following fields: Start Time (2015-10-08T07:08:03-04:00), End Time (2015-10-08T07:08:22-04:00), Activity (Install), Package Group Name (IBM Installation Manager), Status (Success), and Installation Packages (IBM® Installation Manager 1.8.1). At the very bottom of the window is a 'Close' button.

| Date | Activity | Package Group Name | Status | Installation Packages |
|---------------|----------|---------------------------|---------|---|
| 2015-10-08T07 | Install | IBM Installation Manager | Success | IBM® Installation Manager 1.8.1 |
| 2015-10-08T07 | Install | IBM Installation Manager | Success | IBM® Installation Manager 1.8.1 |
| 2015-11-27T08 | Install | IBM Installation Manager | Success | IBM® Installation Manager 1.8.1 |
| 2015-11-27T08 | Install | IBM Installation Manager | Success | IBM® Installation Manager 1.8.1 |
| 2015-11-27T08 | Install | IBM WebSphere Application | Success | IBM WebSphere Application Server Network Deployment 8.5.5.5 |
| 2015-11-27T08 | Install | IBM WebSphere Application | Success | 8.5.5.5-WS-WAS-IFPI35502 8.5.5005.20150225_1959 |
| 2015-11-27T08 | Install | IBM WebSphere Application | Success | 8.5.0.0-WS-WASJavaSDK-LinuxX64-IFPI35615 8.5.0.20150224_1408 |
| 2015-11-27T08 | Install | IBM WebSphere Application | Success | 8.5.5.5-WS-WASProd-IFPI35667 8.5.5005.20150225_1021 |
| 2015-11-27T08 | Install | IBM WebSphere Application | Success | IBM WebSphere SDK Java Technology Edition (Optional) 7.0.8.10 |
| 2015-11-27T08 | Install | IBM WebSphere Application | Success | IBM® Business Process Manager Standard 8.5.6.0 |

Details

Start Time: 2015-10-08T07:08:03-04:00
 End Time: 2015-10-08T07:08:22-04:00
 Activity: Install
 Package Group Name: IBM Installation Manager
 Status: Success
 Installation Packages: • IBM® Installation Manager 1.8.1

Close

- ___ c. Close the Installation History window by clicking **Close** at the lower right of the window.
- ___ d. Close the Installation Manager window by clicking **File > Exit**.
- ___ e. Close the terminal window.
- ___ 3. Verify the installed products and versions.
- ___ a. Open a new terminal window and enter the following command to change the directory:
- ```
cd /opt/IBM/BPM/bin
```
- \_\_\_ b. Enter the following command:
- ```
./versionInfo.sh
```

- ___ c. The version information utility returns IBM Business Process Manager Standard Version 8.5.6.0 and IBM WebSphere Application Server Network Deployment Version 8.5.5.5.

Installed Product

| | |
|--------------------|---|
| Name | IBM WebSphere Application Server Network Deployment |
| Version | 8.5.5.5 |
| ID | ND |
| Build Level | cf051507.01 |
| Build Date | 2/20/15 |
| Package | com.ibm.websphere.ND.v85_8.5.5005.20150220_0158 |
| Architecture | x86-64 (64 bit) |
| Installed Features | IBM 64-bit WebSphere SDK for Java WebSphere Application Server Full Profile EJBDeploy tool for pre-EJB 3.0 modules Embeddable EJB container Sample applications Stand-alone thin clients and resource adapters |

Installed Product

| | |
|--------------------|--|
| Name | IBM Business Process Manager Standard |
| Version | 8.5.6.0 |
| ID | BPMSID |
| Build Level | 20150304-164853 |
| Build Date | 3/4/15 |
| Package | com.ibm.bpm.STD.v85_8.5.6000.20150304_1832 |
| Architecture | x86-64 (64 bit) |
| Installed Features | Business Process Manager Standard Process Center License |

Installed Product

| | |
|--------------------|--|
| Name | IBM WebSphere SDK Java Technology Edition (Optional) |
| Version | 7.0.8.10 |
| ID | IBMJAVA7 |
| Build Level | cf051507.01 |
| Build Date | 2/19/15 |
| Package | com.ibm.websphere.IBMJAVA.v70_7.0.8010.20150219_1802 |
| Architecture | x86-64 (64 bit) |
| Installed Features | IBM WebSphere SDK for Java Technology Edition 7 |

End Installation Status Report

- ___ d. Close the terminal window.



Information

You can install IBM Business Process Manager Standard silently by using the command line. With this method, you need to run only one command for the installation.

```
extract_directory/IM64/tools/imcl install list_of_product_IDs
-acceptLicense -installationDirectory location -repositories repository
-properties key=value,key=value -showVerboseProgress -log logName.log
```

Some of the key words in the command are described as follows:

- **list_of_product_IDs:** A list of the IDs for the products and features that you want to install. You must include the required features. The syntax is:
productID,feature,feature
Use spaces to separate multiple products.
- **location:** The path to the directory where you want to install the products. To install into an existing supported instance of WebSphere Application Server Network Deployment, specify its directory.
- **repository:** The path to the repository where you extracted the files:
extract_directory/repository/repos_64bit
For more than one repository, separate the repository locations with commas.
- **key=value:** A list of the keys and values that you want to pass to the installation for DB2 Express, separated by commas. Do not put spaces between the commas. Create encrypted passwords by using the IBM Installation Manager.
- **logName:** The name of the log file that records messages and results.

You can find more details about the IBM Business Process Manager Standard V8.5.6 silent installation by using command line in the IBM Knowledge Center at:

http://www.ibm.com/support/knowledgecenter/SSFPJS_8.5.6/com.ibm.wbpm.imuc.sbpmp.doc/topics/inst_sil_cmd_lin.html

End of exercise

Exercise review and wrap-up

In this exercise, you installed IBM Installation Manager and IBM Business Process Manager Standard V8.5.6 with its base products. You verified the installation by checking the log files and the version information for all of the installed products.

Exercise 2. Installing the IBM HTTP Server

What this exercise is about

This exercise demonstrates how to install and configure the IBM HTTP Server to interact with the IBM Business Process Manager environment.

What you should be able to do

After completing this exercise, you should be able to:

- Install and configure the IBM HTTP Server
- Install and configure the web server plug-ins
- Install the WebSphere Customization Toolbox
- Verify the installation

Introduction

In this exercise, you install the IBM HTTP Server to interact with the IBM Business Process Manager environment. In this exercise, you use IBM Installation Manager to install IBM HTTP Server.

Requirements

To complete this exercise, you need the IBM WebSphere Application Server V8.5.5 supplementary files.

Exercise instructions

Part 1: Install the IBM HTTP Server

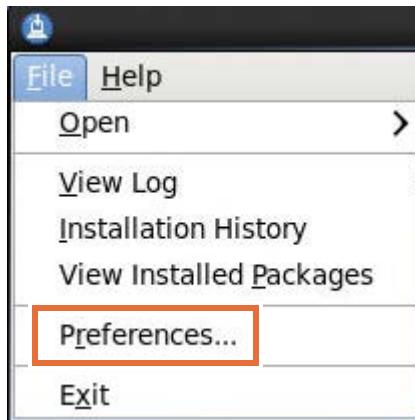
For this exercise, you install a single IBM HTTP Server instance and the HTTP Server plug-in.



Information

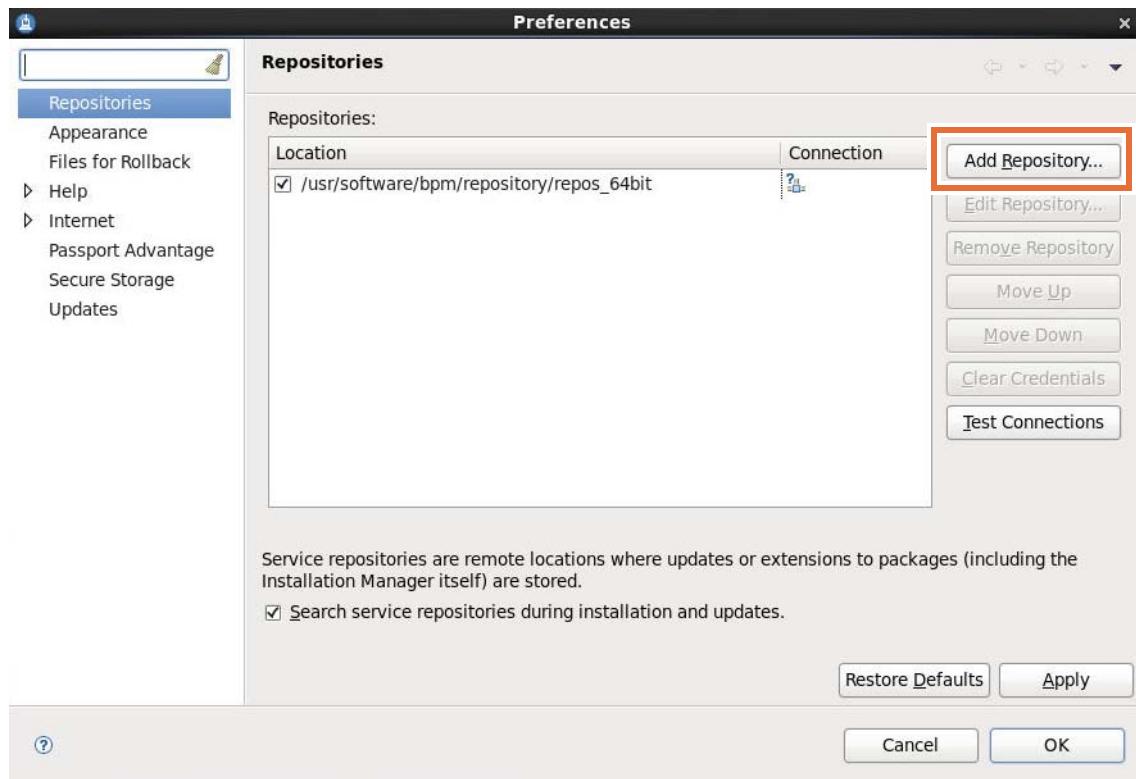
The installation for IBM HTTP Server and the web server plug-ins is completed through the Installation Manager. In this way, you learn about the interactive installation method. In the previous exercise, you completed installation of IBM Business Process Manager Standard by using silent installation method where you used the response file for the installation.

- 1. Start Installation Manager.
 - a. Open a terminal window and enter `cd /opt/IBM/IM/eclipse` to change the directory.
 - b. To start IBM Installation Manager, enter the following command:
`./IBMMIM`
Installation Manager opens to the main page.
- 2. To locate one or more installation packages, you must modify the repository preferences for Installation Manager.
 - a. Click **File > Preferences**.

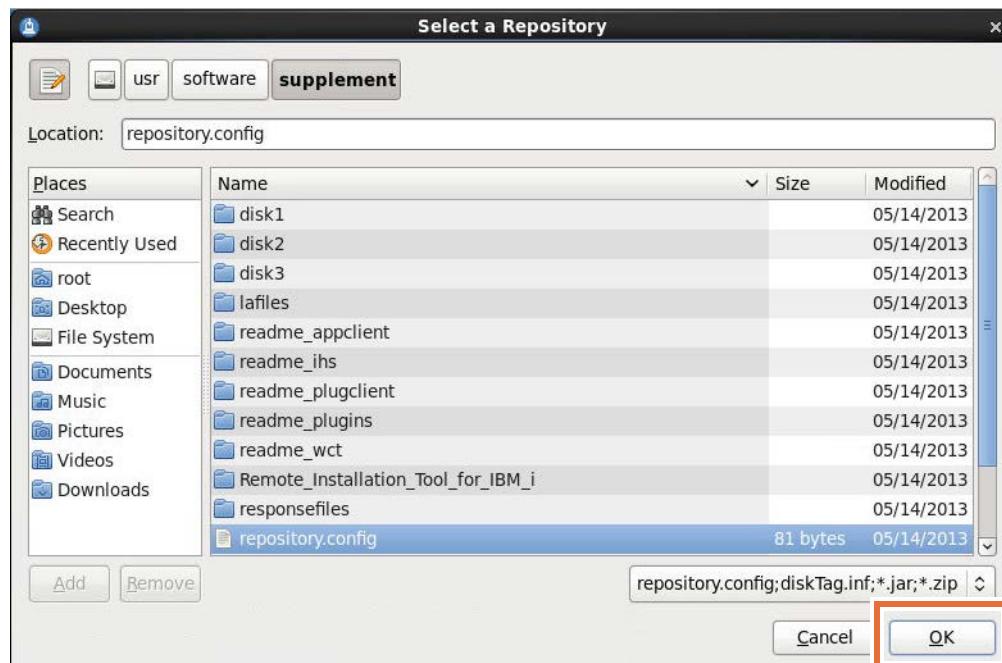


- b. Select **Repositories**.

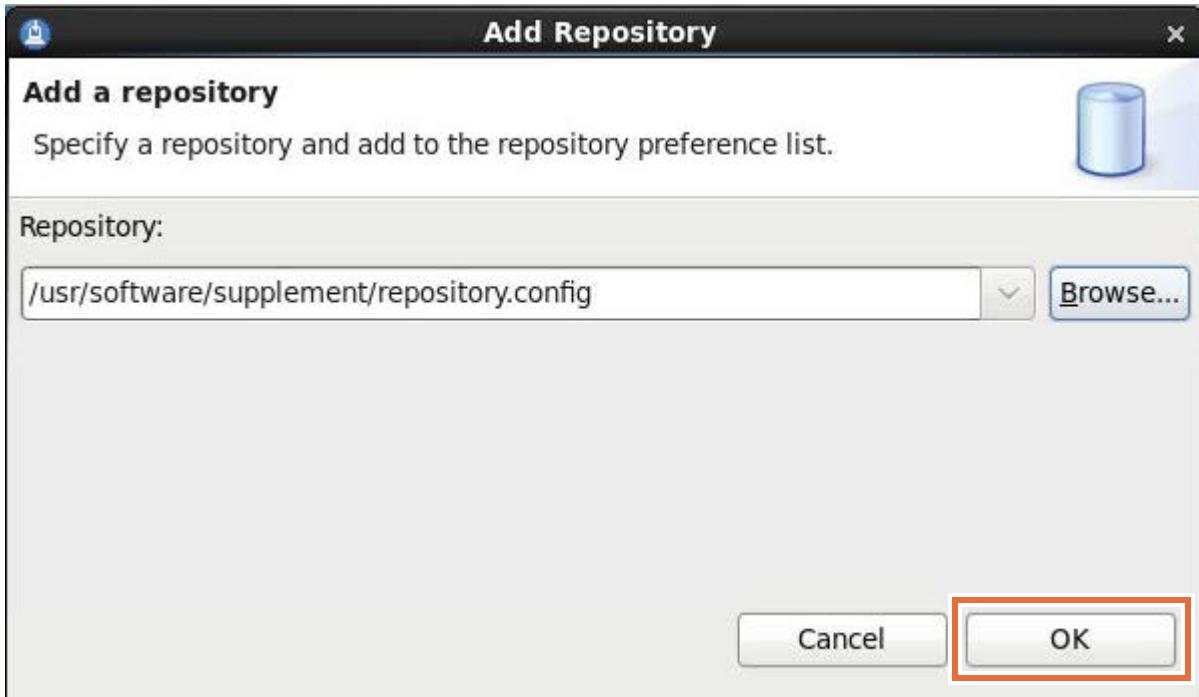
___ c. Click Add Repository.



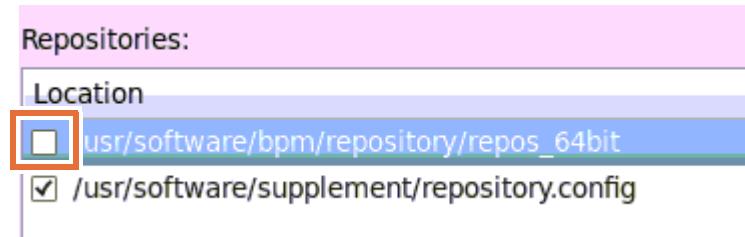
___ d. Browse to the /usr/software/supplement directory and select the **repository.config** file. Click **OK**.



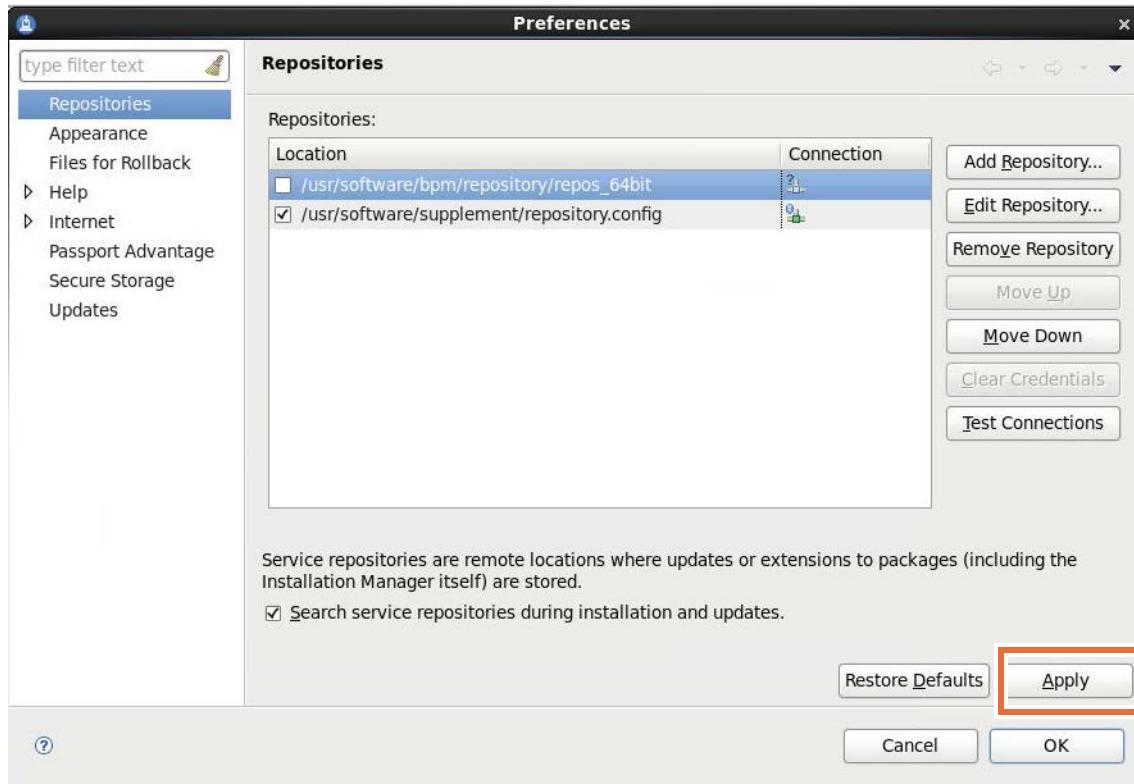
- __ e. Verify the repository path and click **OK**.



- __ f. The repository is added to the list of repositories. Clear the check box for the repository **/usr/software/bpm/repository/repos_64bit** that was added earlier.



- __ g. Click **Apply**.



- __ h. Click **OK** to close the Preferences window.

- __ 3. Start the installation.

- __ a. From the main page of Installation Manager, click **Install**.





Note

You might get the warning message to update Installation Manager. Click **No**.



- ___ b. Installation Manager lists all of the packages that it finds in the configured repositories. From the list of installation packages, select both **IBM HTTP Server for WebSphere Application Server** and **Web Server Plug-ins for IBM WebSphere Application Server**.

Install Packages

Select packages to install:

| Installation Packages | | Status |
|---|--|--------------------------|
| <input type="text"/> type filter text | | 2 packages are selected. |
| <input type="checkbox"/> Application Client for IBM WebSphere Application Server <input type="checkbox"/> Version 8.5.5.0 | | |
| <input checked="" type="checkbox"/> IBM HTTP Server for WebSphere Application Server <input checked="" type="checkbox"/> Version 8.5.5.0 | | Will be installed |
| <input type="checkbox"/> Pluggable Application Client for IBM WebSphere Application Server | | |
| <input checked="" type="checkbox"/> Web Server Plug-ins for IBM WebSphere Application Server <input checked="" type="checkbox"/> Version 8.5.5.0 | | Will be installed |
| <input type="checkbox"/> WebSphere Customization Toolbox <input type="checkbox"/> Version 8.5.5.0 | | |

- ___ c. The Install Packages pane is updated to indicate the status to *Will be installed* for each of the packages. Click **Next**. This action retrieves and validates the package files from the repository.

- ___ d. On the Licenses pane, you can read the license agreements for any of the packages you want to install. Select **I accept the terms in the license agreement** and click **Next**.

Install Packages

Read the following license agreements carefully.

The screenshot shows a software installation wizard with the following steps: Install, Licenses, Location, Features, Summary. The 'Licenses' step is active. On the left, there's a tree view with two expanded items: 'IBM HTTP Server for WebSphere Application Server' (with 'Software License Agreement') and 'Web Server Plug-ins for IBM WebSphere Application Server' (with 'Software License Agreement', which is currently selected and highlighted with a blue background). On the right, the full text of the selected license is displayed:

International Program License Agreement
Part 1 - General Terms
BY DOWNLOADING, INSTALLING, COPYING OR OTHERWISE USING THIS PROGRAM, LICENSEE AGREES TO THE TERMS OF THIS AGREEMENT. IF YOU ARE ACCEPTING ON BEHALF OF LICENSEE, YOU REPRESENT THAT LICENSEE HAS FULL AUTHORITY TO BIND LICENSEE TO THESE TERMS. IF YOU DO NOT AGREE TO THESE TERMS, DO NOT DOWNLOAD, INSTALL, COPY, USE THE PROGRAM.
* DO NOT DOWNLOAD, INSTALL, COPY, USE THE PROGRAM, OR USE THE PROGRAM.
* PROMPTLY RETURN THE UNUSED PORTION OF THE PROGRAM TO IBM IF IT WAS OBTAINED FOR A REFUND OR THE PROGRAM WAS DOWNLOADED, COPIED, USED, OR OTHERWISE USED.
1. Definitions
"Authorized Use" - the specified level of use authorized to execute or run the Program as measured by number of users, million processor value units, or other

I accept the terms in the license agreements
 I do not accept the terms in the license agreements

< Back Next >

- __ e. On the Location pane, the IBM HTTP Server package is selected. Leave the default **Installation Directory** as: /opt/IBM/HTTPServer

Select the **Web Server Plug-ins for IBM WebSphere Application Server** package. Enter /opt/IBM/Plugins for the **Installation Directory**.

Install Packages

The packages will be installed into the indicated package groups. Select the package group to change the installation directory.

| Package Group Name | Installation Directory |
|--|------------------------|
| IBM HTTP Server V8.5 | /opt/IBM/HTTPServer |
| IBM HTTP Server for WebSphere Application Server 8.5.5.0 | |
| Web Server Plug-ins for IBM WebSphere Application Server V8.5 | /opt/IBM/Plugins |
| Web Server Plug-ins for IBM WebSphere Application Server 8.5.5.0 | |

Package Group Name: Web Server Plug-ins for IBM WebSphere Application Server V8.5

Installation Directory: /opt/IBM/Plugins

- __ f. Click **Next**.

- __ g. On the Features pane, expand each of the options. Select **IBM HTTP Server for WebSphere Application Server 8.5.5.0 > Architecture Selection > IBM HTTP Server 64-bit with Java, Version 6**. Also, select **Web Server Plug-ins for IBM WebSphere Application Server 8.5.5.0 > IBM WebSphere SDK for Java Technology Edition 6 > IBM 64-bit WebSphere Runtime Environment for Java**.

Install Packages

Select the features to install.

| Features |
|---|
| IBM HTTP Server for WebSphere Application Server 8.5.5.0 |
| Architecture Selection |
| IBM HTTP Server 32-bit with Java, Version 6 |
| <input checked="" type="checkbox"/> IBM HTTP Server 64-bit with Java, Version 6 |
| Web Server Plug-ins for IBM WebSphere Application Server 8.5.5.0 |
| IBM WebSphere SDK for Java Technology Edition 6 |
| <input type="checkbox"/> IBM 32-bit WebSphere Runtime Environment for Java |
| <input checked="" type="checkbox"/> IBM 64-bit WebSphere Runtime Environment for Java |

- __ h. Click **Next**.
- __ i. On the Features pane for **Configuration for IBM HTTP Server for WebSphere Application Server 8.5.5.0**, keep the default port 80 as the HTTP port.

Install Packages

Fill in the configurations for the packages.

The screenshot shows the 'Features' tab of the configuration wizard. Under 'IBM HTTP Server for WebSphere Application Server 8.5.5.0', the 'Web Server Configuration' feature is selected. A note states: 'Specify a port number for IBM HTTP Server to communicate. If the default port is already in use, then change to another.' Below it, the 'HTTP port:' field contains the value '80'.

- __ j. Click **Next**.
- __ k. On the Summary pane, verify the information for the installation and click **Install**.

Install Packages

Review the summary information.



Target Location

Shared Resources Directory: /opt/IBM/IMShared

Packages

| Packages | Installation Directory |
|--|------------------------|
| IBM HTTP Server V8.5 | /opt/IBM/HTTPServer |
| IBM HTTP Server for WebSphere Application Server 8.5.5.0 | |
| Architecture Selection | |
| Web Server Plug-ins for IBM WebSphere Application Server V8.5 | /opt/IBM/Plugins |
| Web Server Plug-ins for IBM WebSphere Application Server 8.5.5.0 | |
| IBM WebSphere SDK for Java Technology Edition 6 | |

Environment

English

Disk Space Information

Total Available Space

/

22.86 GB

Total Download Size: 262.12 MB

Total Installation Size: 713.36 MB

Repository Information



< Back

Next >

Install

Cancel

- __ I. When the installation of the packages is complete, a message shows with the results.



The packages are installed. [View Log File](#)

The following packages were installed:

- ▽ IBM HTTP Server V8.5
 - IBM HTTP Server for WebSphere Application Server 8.5.5.0
 - ▽ Web Server Plug-ins for IBM WebSphere Application Server V8.5
 - Web Server Plug-ins for IBM WebSphere Application Server 8.5.5.0

- __ m. Click **Finish**.

Part 2: Configuring the web server plug-in

After products are installed with IBM Installation Manager, other tools are used to complete the configuration processes. The WebSphere Customization Toolbox includes tools for managing, configuring, and upgrading parts of your environment. Three tools that are available to install include:

- Profile Management Tool for z/OS
- z/OS Migration Tool
- Web Server Plug-ins Configuration Tool

In this part of the exercise, the Web Server Plug-ins Configuration Tool (PCT) is installed and is used to configure the web server plug-in.

- __ 1. Install the WebSphere Customization Toolbox.

- __ a. From the main page of Installation Manager, click **Install**.



Note

You might get the warning message to update Installation Manager. Click **No**.

- __ b. Select **WebSphere Customization Toolbox** and click **Next**.

Install Packages

Select packages to install:

| Installation Packages | Status |
|---|-------------------|
| Application Client for IBM WebSphere Application Server | |
| Version 8.5.5.0 | |
| IBM HTTP Server for WebSphere Application Server | Installed |
| Version 8.5.5.0 | Installed |
| Pluggable Application Client for IBM WebSphere Application Server | |
| Web Server Plug-ins for IBM WebSphere Application Server | Installed |
| Version 8.5.5.0 | Installed |
| WebSphere Customization Toolbox | Will be installed |
| Version 8.5.5.0 | |

- __ c. On the Licenses pane, select **I accept the terms in the license agreement** and click **Next**.
- __ d. On the Location pane, the WebSphere Customization Toolbox package is selected. Change the **Installation Directory** to: /opt/IBM/Toolbox

Install Packages

A package group is a location that contains one or more packages. Some compatible group and will share a common user interface. Select an existing package group, or c

Install > Licenses > **Location** > Features > Summary

Use the existing package group
 Create a new package group

| Package Group Name | Installation Directory |
|--------------------------------------|------------------------|
| WebSphere Customization Toolbox V8.5 | /opt/IBM/Toolbox |

Package Group Name: WebSphere Customization Toolbox V8.5
 Installation Directory: /opt/IBM/Toolbox

- __ e. Click **Next**.

- __ f. On the Features pane, clear the check boxes for the **Profile Management Tool (z/OS only)** and the **z/OS Migration Management Tool**. When you clear the Profile Management Tool check box, it automatically clears the check box for z/OS Migration Management Tool.

Install Packages

Select the features to install.

Install Licenses Location **Features** Summary

Features

WebSphere Customization Toolbox 8.5.5.0

- Web Server Plug-ins Configuration Tool
- Profile Management Tool (z/OS only)**
- z/OS Migration Management Tool

- __ g. Click **Next**.
- __ h. On the Summary pane, review the information for the installation and click **Install**.

Install Packages

Review the summary information.

Install Licenses Location Features **Summary**

Target Location

Package Group Name: WebSphere Customization Toolbox V8.5
 Installation Directory: /opt/IBM/Toolbox
 Shared Resources Directory: /opt/IBM/IMShared

Packages

| Packages |
|---|
| WebSphere Customization Toolbox 8.5.5.0 |
| Web Server Plug-ins Configuration Tool |

Environment

English

Disk Space Information

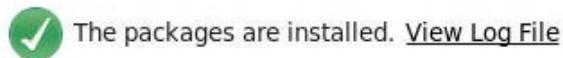
Total Available Space
 / 22.26 GB

Total Download Size: 149.31 MB
 Total Installation Size: 347.36 MB

Repository Information

< Back Next > **Install** Cancel

- ___ i. When the installation of the packages is complete, a message shows with the results. Under the section labeled “Which programs do you want to start?”, select **None**.



The following package was installed:

WebSphere Customization Toolbox V8.5
WebSphere Customization Toolbox 8.5.5.0

Which program do you want to start?

WebSphere Customization Toolbox
 None

- ___ j. Click **Finish**.
___ k. Exit IBM Installation Manager by clicking **File > Exit**.
___ 2. Start the WebSphere Customization Toolbox.

- ___ a. In a terminal window, enter `cd /opt/IBM/Toolbox/WCT` to change the directory.

- ___ b. To start WebSphere Customization Toolbox, enter the following command:

`./wct.sh`

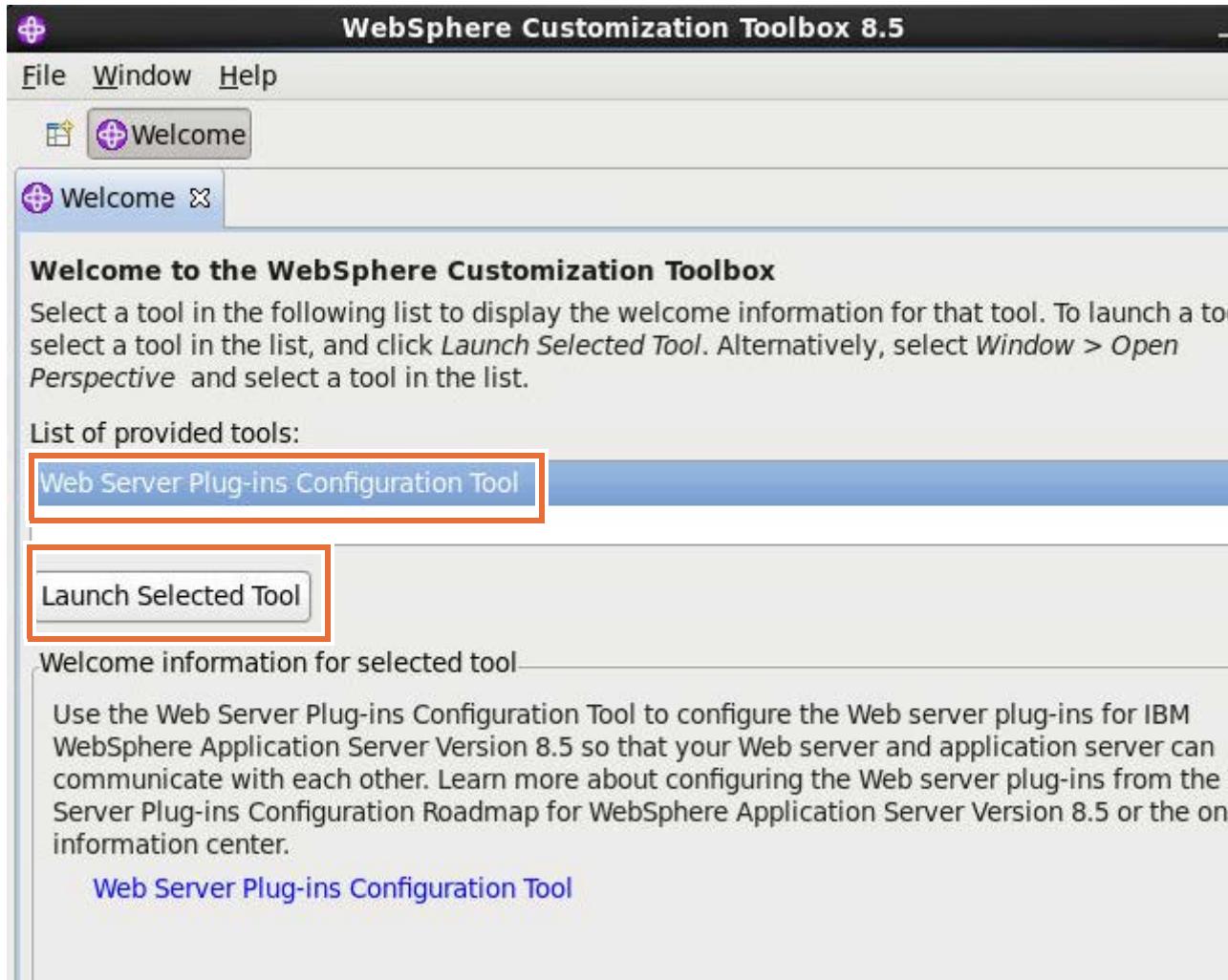


Information

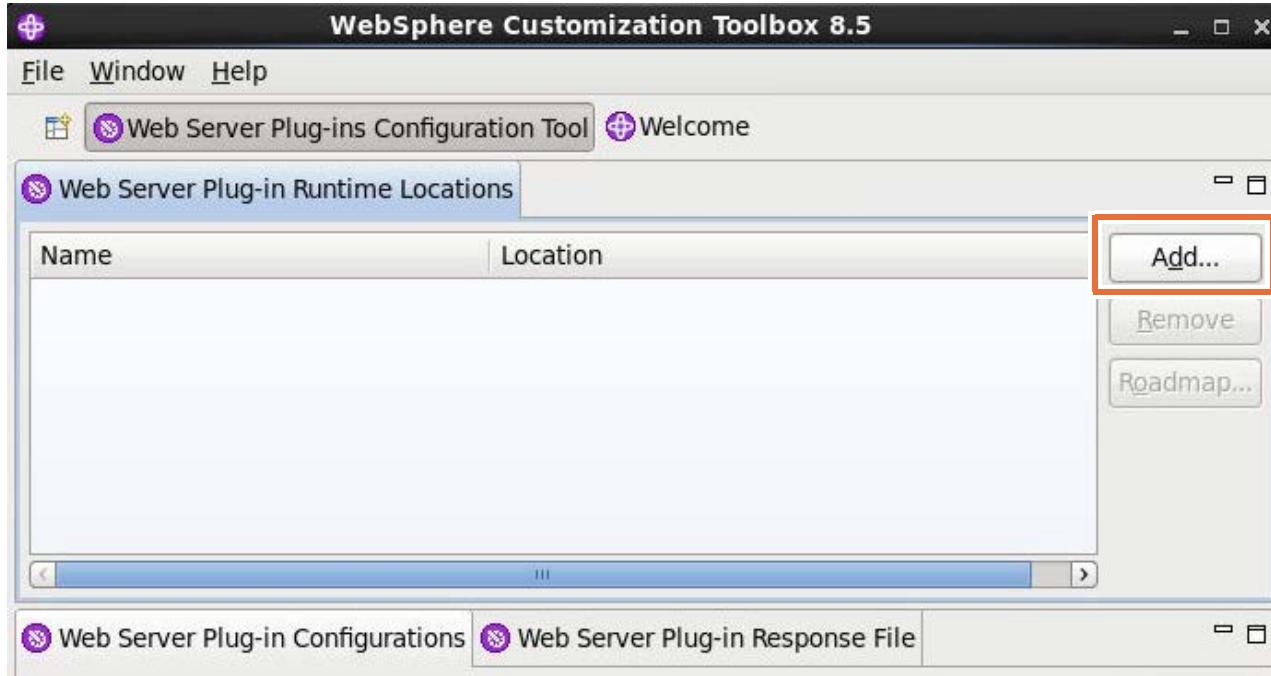
Ignore any errors that say “Failed to load” in the terminal window. This error might show in certain Linux setups, and it is not product-related.

```
[root@bpmsstdhost WCT]# ./wct.sh
Gtk-Message: Failed to load module "pk-gtk-module": libpk-gtk-module.so: cannot
open shared object file: No such file or directory
Gtk-Message: Failed to load module "canberra-gtk-module": libcanberra-gtk-module
.so: cannot open shared object file: No such file or directory
```

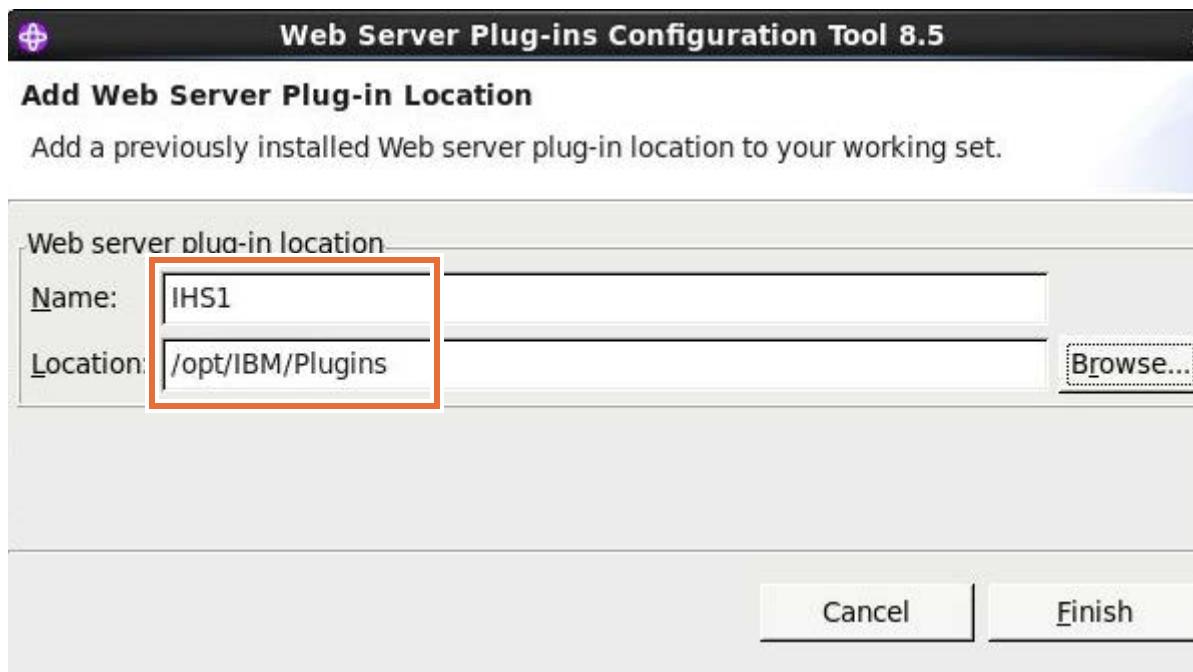
- ___ c. Select Web Server Plug-ins Configuration Tool and click Launch Selected Tool:



3. Since the installed web server plug-in that you want to use is not on the list, you must add it.
 Add the location of the web server plug-in runtime files.
- a. In the Web Server Plug-in Runtime Locations pane, click **Add**.

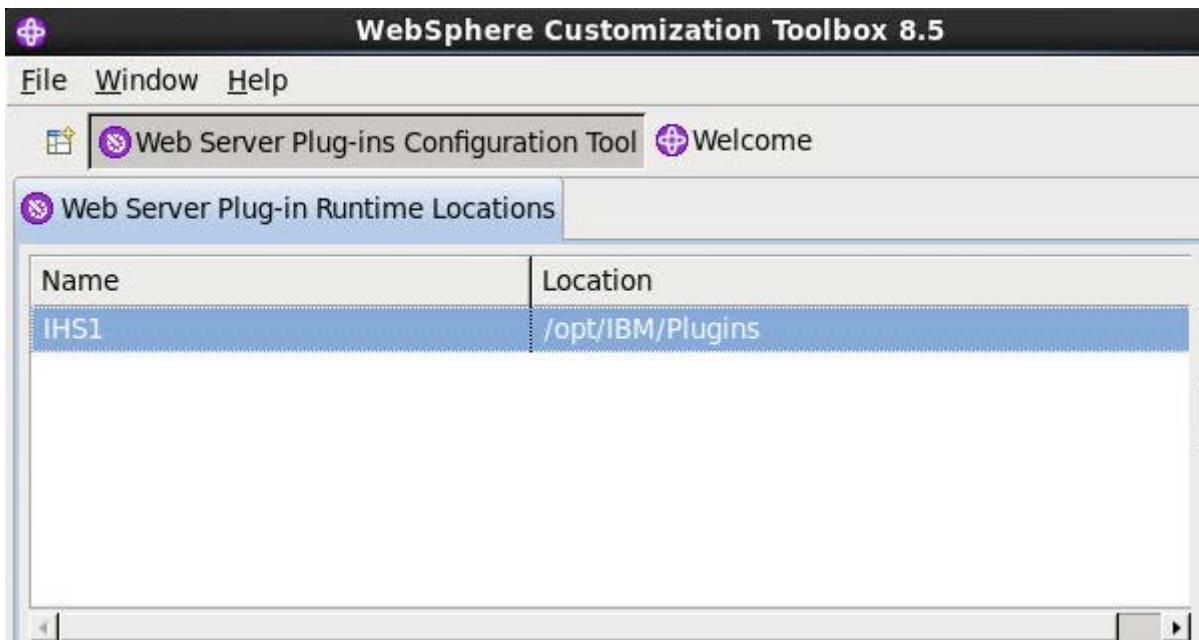


- b. In the **Add Web Server Plug-in Location** pane, enter the following values:
- In the **Name** field, enter: **IHS1**
 - Click **Browse** and browse to **/opt/IBM/Plugins**. Click **OK**.

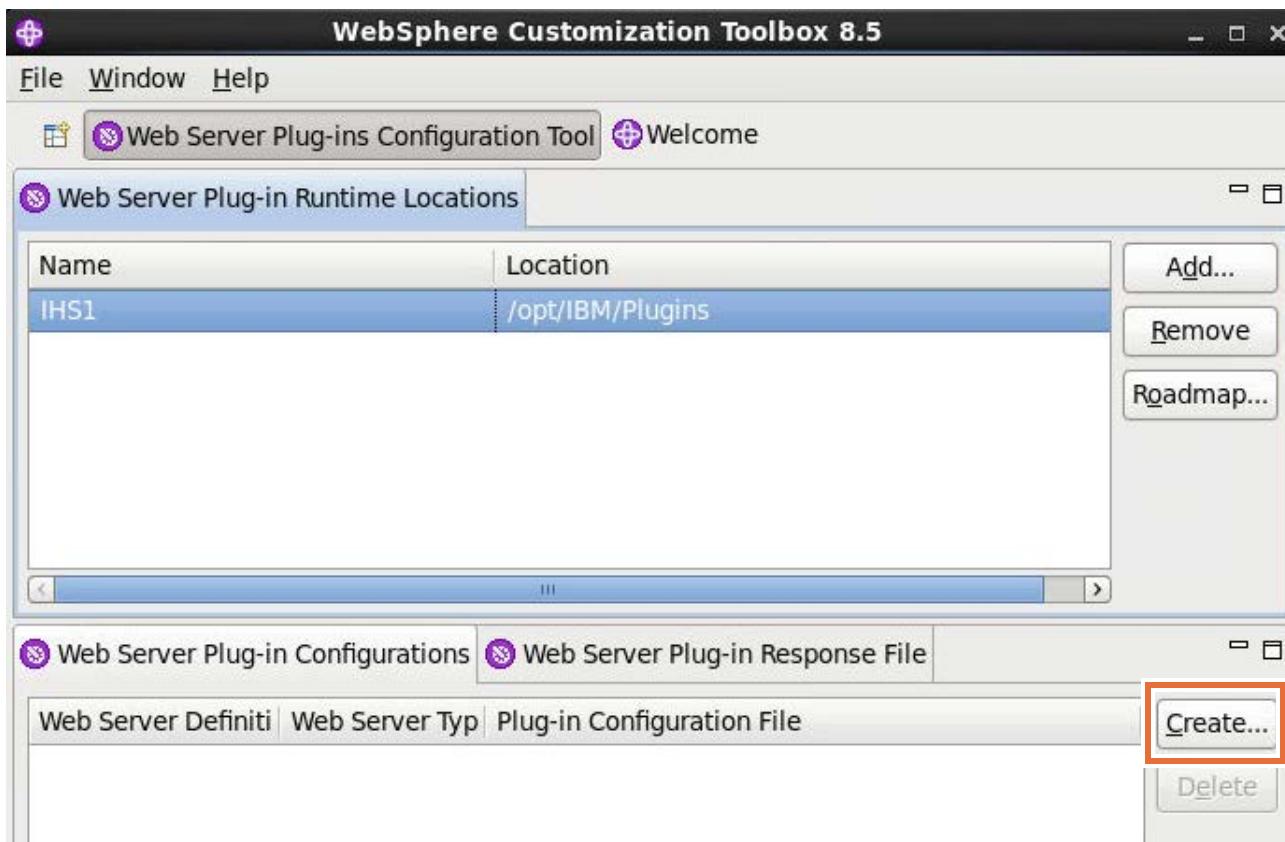


- c. Verify the settings and click **Finish**.

- ___ d. The web server is added to the location list.



- ___ e. In the Web Server Plug-in Configurations pane, click **Create**.



- ___ f. Verify that **IBM HTTP Server V8.5** is selected and click **Next**.

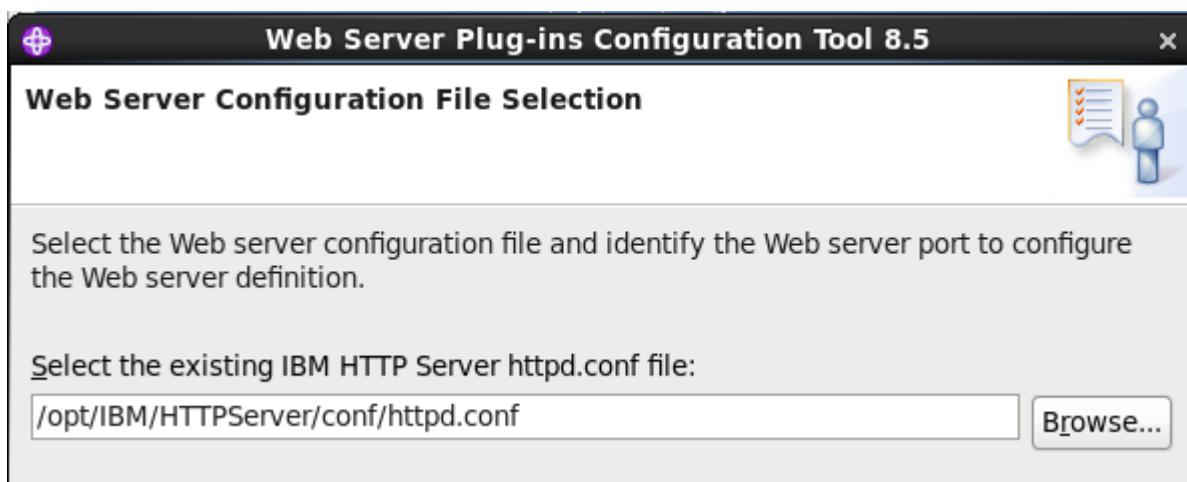


- ___ g. Verify that **64 bit** is selected for the architecture of your web server and click **Next**.



- ___ h. In the **Web Server Configuration File Selection** pane, verify that the value for the existing IBM HTTP Server httpd.conf file is:

/opt/IBM/HTTPServer/conf/httpd.conf



- ___ i. Verify that the **Web Server port** is set to 80.

- ___ j. Click **Next**.

- __ k. In the **Setup IBM HTTP Server Administration Server** pane, enter the following values:
- Verify that the **Setup IBM HTTP Server Administration Server** check box is selected.
 - **HTTP Administration Port:** 8008
 - Verify that the **Create a user ID for IBM HTTP Administration Server authentication** check box is selected.
 - **User ID:** ihsadmin
 - **Password:** web1sphere
 - **Confirm Password:** web1sphere

Setup IBM HTTP Server Administration Server

Optionally configure an administrative server to administer the Web server. You can manage the Web server from the Application Server administrative console by using the IBM HTTP Server administrative server to control the configuration of them.

Setup IBM HTTP Server Administration Server

Specify a port number for IBM HTTP Server administration server to communicate. The default port is 8008. If port 8008 is already in use, then change to another port that is available. Running IBM HTTP Server administration server with administrative privileges might restrict use of ports below 1024.

HTTP Administration Port:

8008

Optionally create a user ID and password to authenticate to the IBM HTTP Server Administration Server from the Application Server administrative console. The user ID and password is encrypted and stored in the configuration file. You can create additional user IDs after the configuration by using the htpasswd utility.

Create a user ID for IBM HTTP Server Administration Server authentication

User ID:

ihsadmin

Password:

Confirm password:



Hint

If you do not see the fields for **Password** and **Confirm password**, resize the window to see the entries.

- ___ l. Click **Next**.
- ___ m. On the **Setup IBM HTTP Server Administration Server** pane, enter `ihs` in both the **User ID** and **Group** fields. Use this option to create a unique user ID and group for IBM HTTP Server administration.

Setup IBM HTTP Server Administration Server

Specify a system user ID and group. The user ID is granted write access to IBM HTTP Server, IBM HTTP Server and web server plug-in configuration files. If the user ID or group does not exist on the system, then create a new system user and group with the credentials.

User ID:

ihs

Group:

ihs

Create a new unique system user ID and group using the credentials.

- ___ n. Click **Next**.

- ___ o. In the **Web Server Definition Name** pane, change the name for the web server to `IHS1` and click **Next**.

The screenshot shows the 'Web Server Plug-ins Configuration Tool 8.5' interface. The title bar reads 'Web Server Plug-ins Configuration Tool 8.5'. Below it, a section titled 'Web Server Definition Name' is displayed. A text box contains the instruction 'Specify a unique Web server definition name:' followed by an input field containing the value 'IHS1'. A red box highlights this input field. Below the input field, there is a note about valid character restrictions and a note about the first character being invalid if it is a period.

Web Server Definition Name

Use a Web server definition to manage a Web server through the WebSphere Application Server or the wsadmin tool. The definition name must be unique because this name is used to identify administrative console.

Specify a unique Web server definition name:

IHS1

The Web server definition name must not be empty and it must not contain the following special characters:
 / \ * , : ; = + ? | < > & % ' " [] > # \$ ^ { }

Note: a period(.) is not valid if it is the first character.

- ___ p. On the **Configuration Scenario Selection** pane, select the **Remote** option and enter `bpmstdhost` for the host name. Click **Next** to continue.

Web Server Plug-ins Configuration Tool 8.5

Configuration Scenario Selection

Configure the Web server plug-ins to the computer where the Web server exists. When the Web server are not on the same computer, choose the remote configuration scenario. When both server are on the same computer, choose the local configuration scenario. In the local scenario definition you create in this wizard is defined automatically in the application server.

Configuration scenario

(Remote) Host name or IP address of the application server
bpmstdhost

(Local) Installation location of WebSphere Application Server



Note

When a stand-alone application server and the web server exist on the same workstation, the web server installation is considered local. If they are not on the same workstation, the installation is considered remote. All components are configured on one workstation on the class image. However, for the labs, remote is used as it is more typical of a production environment.

- ___ q. On the **Plug-in Configuration Summary** pane, review your settings. Click **Configure**.

The screenshot shows the 'Web Server Plug-ins Configuration Tool 8.5' interface. The title bar reads 'Web Server Plug-ins Configuration Tool 8.5'. Below it, a section titled 'Plug-in Configuration Summary' contains the following information:

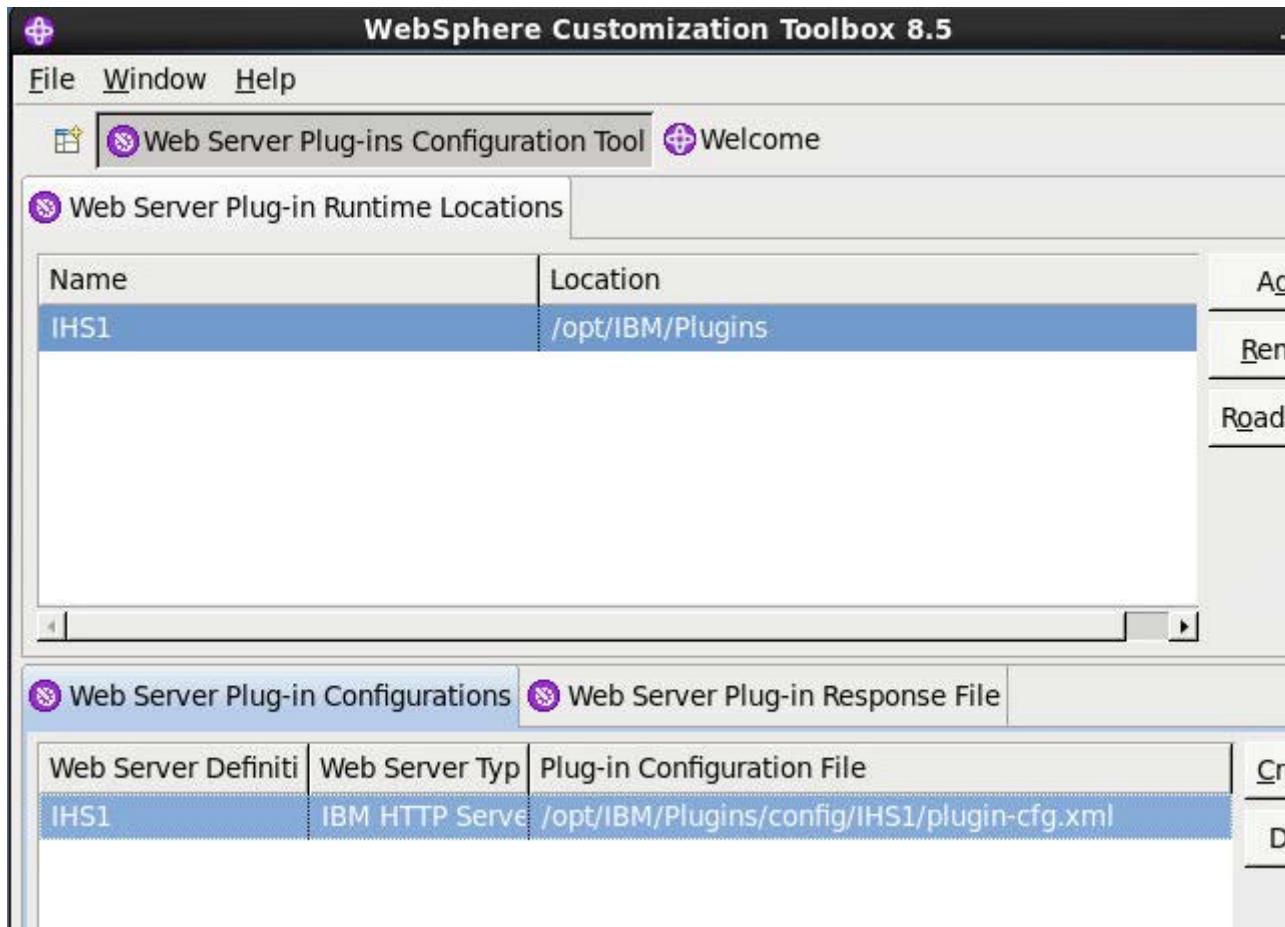
- Manual configuration steps are required before starting the Web server. Follow the configuration Web Server Plug-in Configuration Roadmap. Afterwards, you may start up your Web server and test your configuration.
- Web server to configure: IBM HTTP Server V8.5
- Web server definition: IHS1
- Plug-in configuration file: /opt/IBM/Plugins/config/IHS1/plugin-cfg.xml

At the bottom right of the summary pane, there are three buttons: '< Back', 'Configure >', and 'Cancel'. The 'Configure >' button is highlighted with a red rectangle.

- ___ r. When the configuration is complete, review the results. Clear the check box for **Launch the plug-in configuration roadmap** and click **Finish**.



- ___ s. Review the results in the WebSphere Customization Toolbox. When completed, click **File > Exit** to close the WebSphere Customization Toolbox.



Part 3: Start the IBM HTTP Server service

Next, you must start the IBM HTTP Server and the IBM HTTP administration server. By default, these services do not start automatically when the system starts or restarts. In this part of the exercise, you start the services manually.

- ___ 1. Start the IBM HTTP Server and IBM HTTP administration server.

- ___ a. In a terminal window, enter the following command:

```
ps -ef | grep httpd
```

```
root@bpmsstdhost:~#
File Edit View Search Terminal Help
[root@bpmsstdhost ~]# ps -ef | grep httpd
root      508  485  0 02:58 pts/0    00:00:00 grep httpd
[root@bpmsstdhost ~]#
```

No HTTPD processes are running. Continue with the following commands to start the IBM HTTP Server.

- ___ b. Enter `cd /opt/IBM/HTTPServer/bin` to change the directory.
- ___ c. Enter the following command to start the HTTP Server:
`./apachectl start`
- ___ d. Start the administrative server by entering the following command:
`./adminctl start`
- ___ e. A message is shown when the HTTP Server starts.

```
[root@bpmsstdhost WCT]# cd /opt/IBM/HTTPServer/bin  
[root@bpmsstdhost bin]# ./apachectl start  
[root@bpmsstdhost bin]# ./adminctl start  
[./adminctl start: admin http started]
```

- ___ f. Again enter the `ps -ef | grep httpd` command, and several processes are now started.

```
[root@bpmsstdhost bin]# ./apachectl start  
[root@bpmsstdhost bin]# ./adminctl start  
./adminctl start: admin http started  
[root@bpmsstdhost bin]# ps -ef | grep httpd  
root      820      1  0 03:01 ?          00:00:00 /opt/IBM/HTTPServer/bin/httpd -d  
 /opt/IBM/HTTPServer -k start  
nobody    822     820  0 03:01 ?          00:00:00 /opt/IBM/HTTPServer/bin/httpd -d  
 /opt/IBM/HTTPServer -k start  
nobody    823     820  0 03:01 ?          00:00:00 /opt/IBM/HTTPServer/bin/httpd -d  
 /opt/IBM/HTTPServer -k start  
nobody    824     820  0 03:01 ?          00:00:00 /opt/IBM/HTTPServer/bin/httpd -d  
 /opt/IBM/HTTPServer -k start  
root      881      1  0 03:02 ?          00:00:00 /opt/IBM/HTTPServer/bin/httpd -f  
 /opt/IBM/HTTPServer/conf/admin.conf  
root      882     881  0 03:02 ?          00:00:00 /opt/IBM/HTTPServer/bin/httpd -f  
 /opt/IBM/HTTPServer/conf/admin.conf  
ihs      883     881  0 03:02 ?          00:00:00 /opt/IBM/HTTPServer/bin/httpd -f  
 /opt/IBM/HTTPServer/conf/admin.conf  
root      915     485  0 03:02 pts/0        00:00:00 grep httpd  
[root@bpmsstdhost bin]# █
```

- ___ g. Enter `exit` to exit the terminal window.

2. Verify the installation and status of the IBM HTTP Server.

a. Open the web browser.



Hint

Firefox is the web browser that is installed on the image. To open Firefox, choose any of the following options:

- Click the Firefox icon in the toolbar.

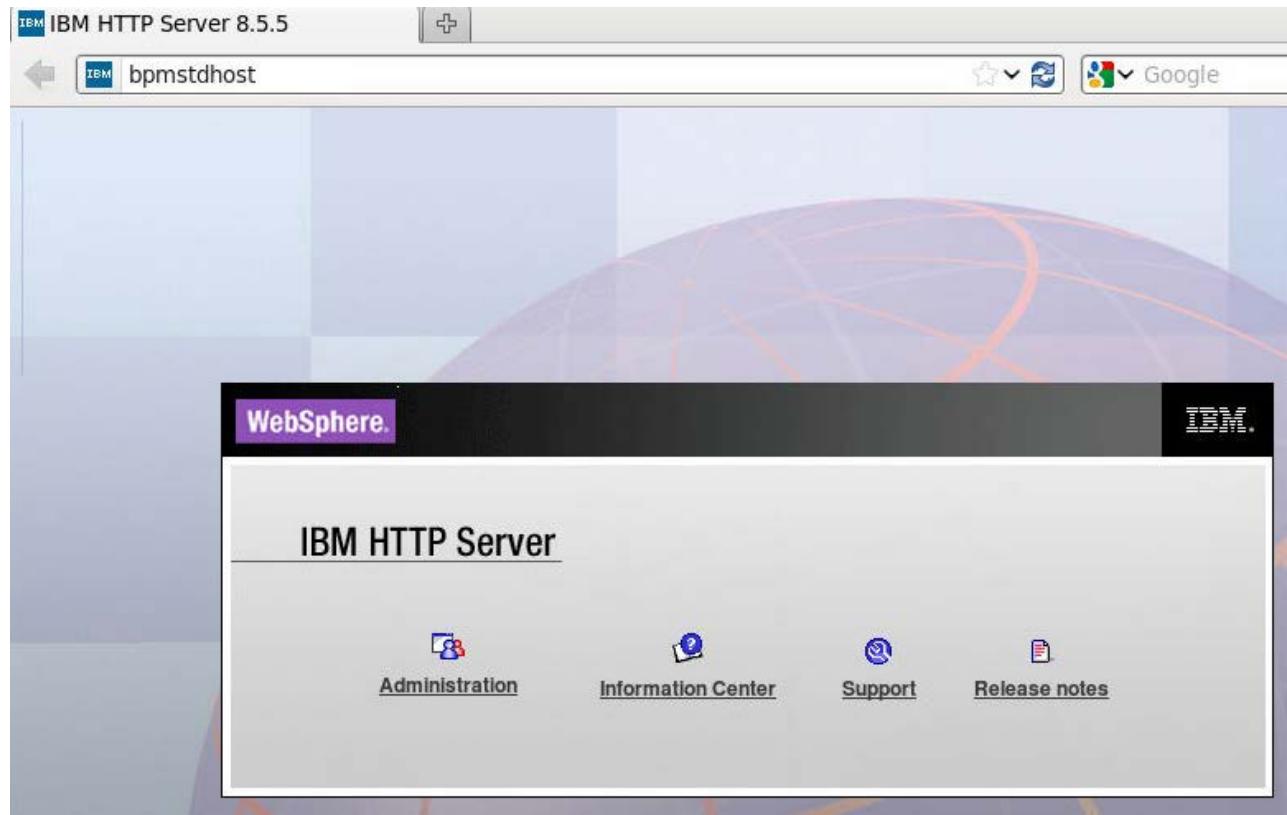


- In a terminal window, enter: `firefox&`
- Click **Applications > Internet > Firefox Web Browser**.

b. Enter the following URL:

`http://bpmstdhost`

You see the Welcome page for the IBM HTTP Server, assuming that the web server is running.



c. Close the browser when completed.

End of exercise

Exercise review and wrap-up

In this exercise, you used Installation Manager to install IBM HTTP Server and verified its installation.

Exercise 3. Configuring the Process Center environment

What this exercise is about

This exercise covers the creation of a Process Center cell, a Process Center deployment manager, and custom profiles.

What you should be able to do

After completing this exercise, you should be able to:

- Create the Process Center deployment manager and a custom profile
- Federate the custom profile
- Edit the soap.client.props file
- Verify the database configuration
- Back up the initial configuration
- Create the three required databases
- Create a Process Center deployment environment
- Verify the configuration of the database tables

Introduction

IBM Process Center is a runtime environment where IBM Process Designer and IBM Integration Designer (not included in Standard) share assets, allowing the cooperative development of business processes in a highly interactive manner. IBM Process Center includes a Process Center server and Business Performance Data Warehouse, allowing users who are working in the development environments to run processes and store performance data for testing and Playback purposes.

Requirements

To complete this exercise, you must have:

- IBM Business Process Manager Standard installed

Exercise instructions

After the product software is installed, the first step in creating your Process Center deployment environment is to create the deployment manager profile. The Process Center deployment manager acts as the central point of administration for all servers, clusters, and nodes in your cell.

In an IBM Process Center deployment environment, you must create and configure databases, create custom profiles, federate the custom profiles to your deployment manager, create servers, and create clusters if you want workload management capabilities.

The first steps are to select which methods to use to configure your profiles, databases, and network deployment environment. You can use either the BPMConfig utility or multiple tools to complete the profile and deployment environment setup.

A DB2 administrator user ID was created for you for interacting with DB2:

- User ID: db2inst1
- Password: web1sphere



Information

The screen captures in this exercise are focused on Linux. However, most of the instructions are applicable across all WebSphere compatible operating systems.

Part 1: Create the deployment manager profile

Profiles can be created manually by using the `manageprofiles` command, the Profile Management Tool interactive wizard, or the `BPMConfig` utility.

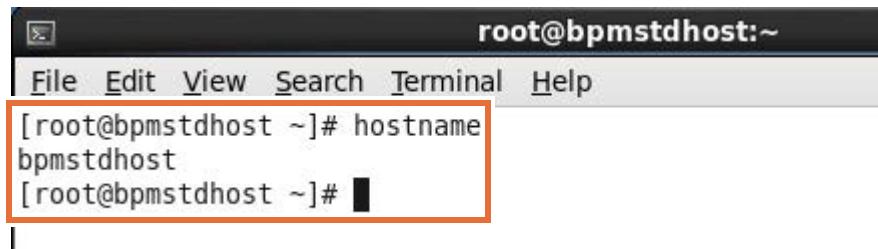
The Profile Management Tool is a graphical interface for profile creation and management. The Profile Management Tool is a tool in the WebSphere Customization Toolbox. The WebSphere Customization Toolbox includes tools for managing, configuring, and updating various parts of your WebSphere environment. The WebSphere Customization Toolbox embedded version is installed during the installation of WebSphere Application Server.

In this exercise, both the Profile Management Tool and the `manageprofiles` command are used to create profiles. The `BPMConfig` command is used in an upcoming exercise.

The 64-bit version of IBM Business Process Manager Standard includes the Profile Management Tool. In this exercise, you create profiles manually and by using the Profile Management Tool interactive wizard.

- 1. Examine the environment.
 - a. Open a terminal window.
 - b. Enter the following command to determine the host name:

```
hostname
```



```
root@bpmstdhost:~$ [root@bpmstdhost ~]# hostname
bpmstdhost
[root@bpmstdhost ~]#
```



Information

The form of the host name that is used (either short or long) is not important, as both work. The important thing is for you to be consistent when creating profiles. When ensuring that port numbers are unique, WebSphere considers `bpmstdhost` and `bpmstdhost.ibm.com` to be different workstations, and does not ensure that each has unique ports. This information is read from the hosts file.

-
- 2. Create the deployment manager profile by using the Profile Management Tool.
 - a. In a terminal window, enter `cd /opt/IBM/BPM/bin/ProfileManagement` to change the directory.
 - b. Enter the following command to start the WebSphere Customization Toolbox:
`./wct.sh`

The WebSphere Customization Toolbox opens.

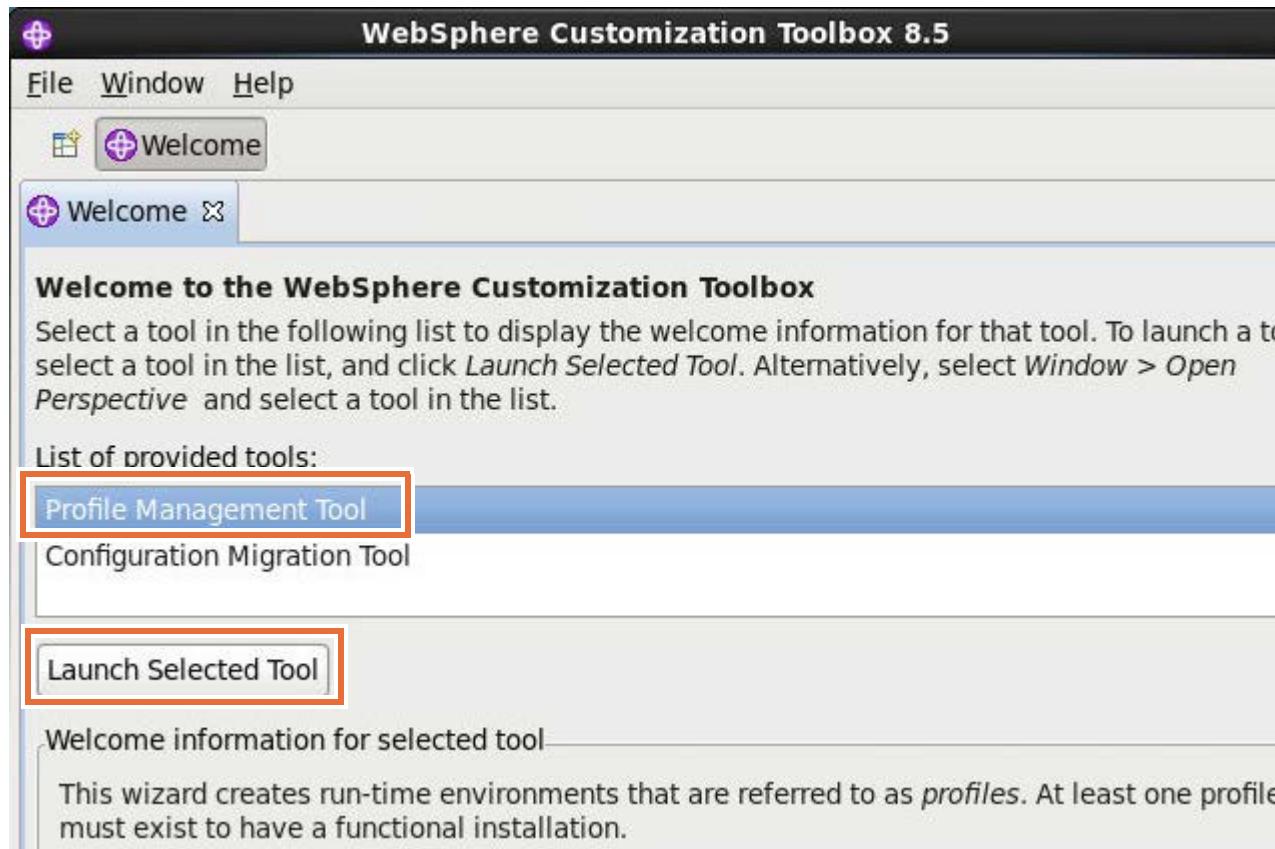


Information

The WebSphere Customization Toolbox can be started in several ways:

- Immediately after installation
- Entering `cd /opt/IBM/BPM/bin/ProfileManagement` to change the directory and then entering the following command:
`./wct.sh`
- Selecting **Applications > IBM WebSphere > IBM WebSphere Application Server V8.5 > WebSphere Customization Toolbox**

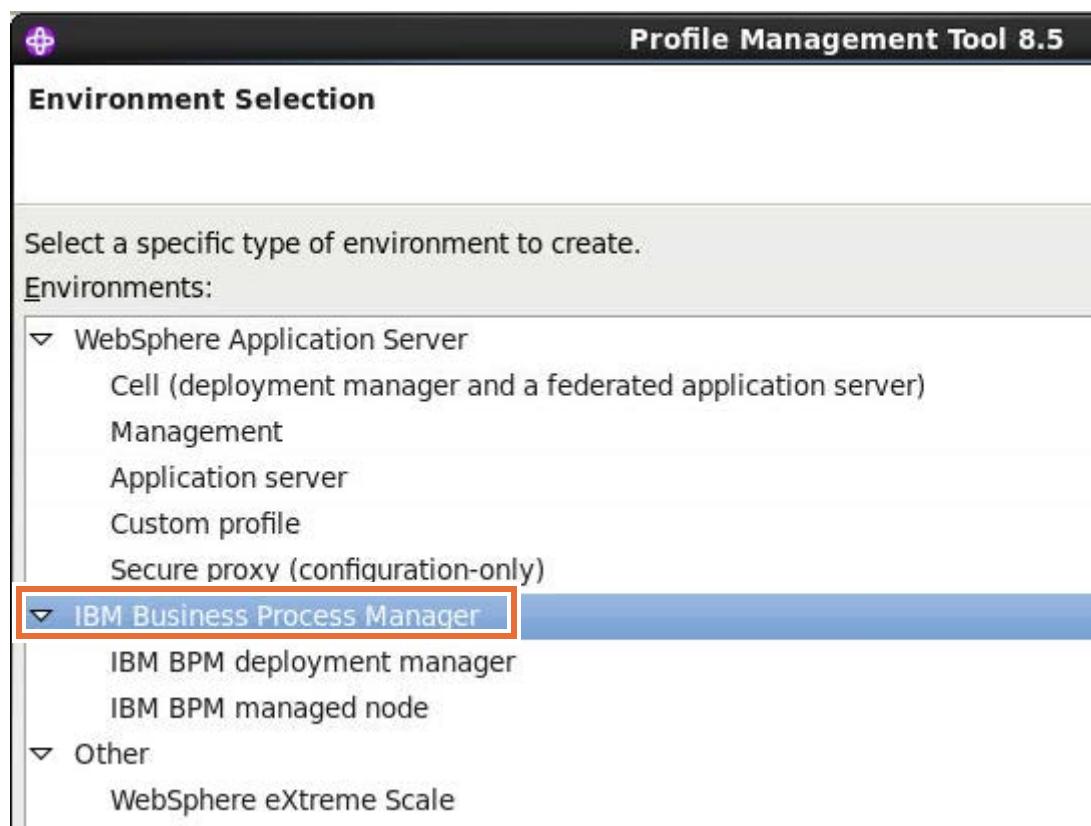
- ___ c. Select **Profile Management Tool** and click **Launch Selected Tool** to start the Profile Management Tool.



__ d. Click **Create**.



__ e. In the Environment Selection pane, expand **IBM Business Process Manager**.

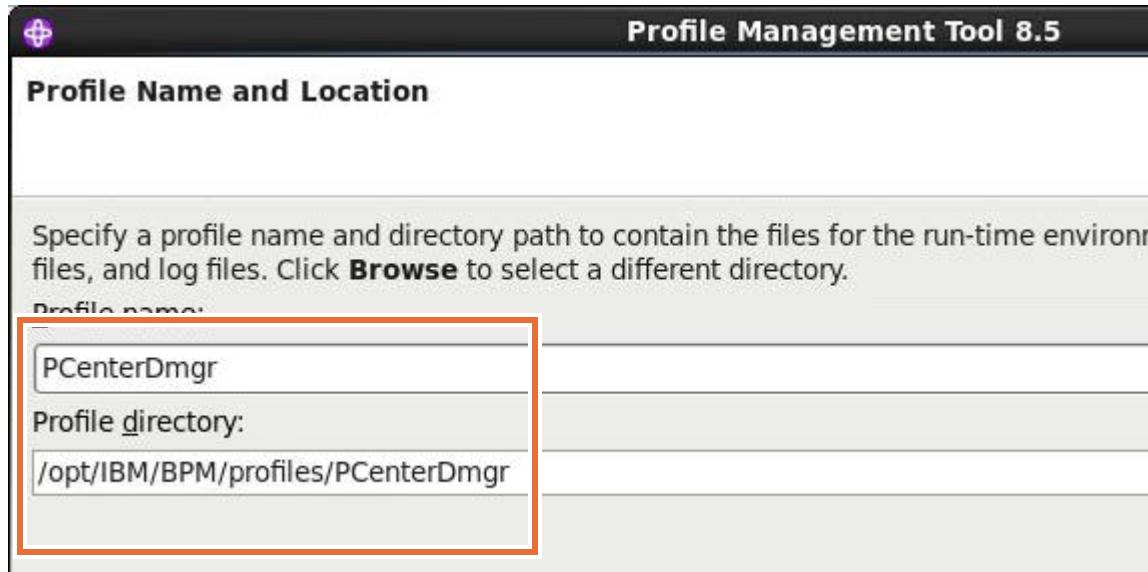


- __ f. In the Environment Selection pane, select **IBM BPM deployment manager** and click **Next**.



- __ g. In the Profile Name and Location pane, enter the following values:

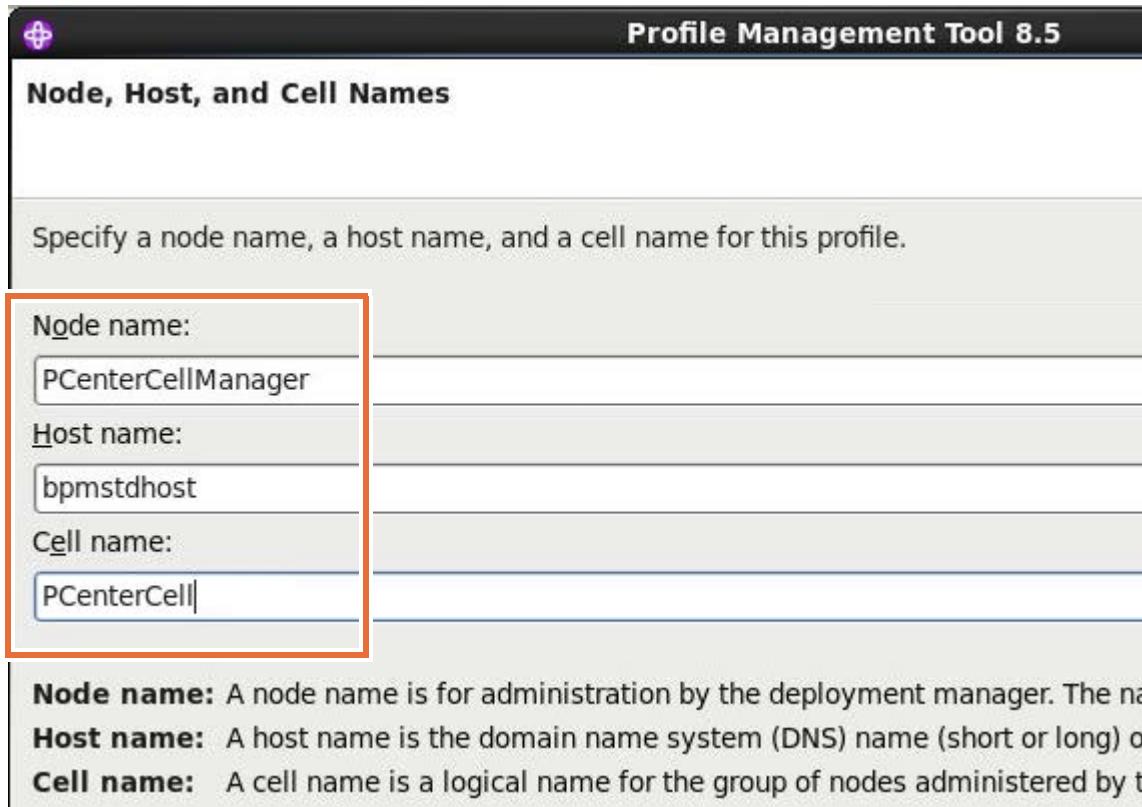
- **Profile name:** PCenterDmgr
- **Profile directory:** /opt/IBM/BPM/profiles/PCenterDmgr



Click **Next**.

___ h. In the Node, Host, and Cell Names pane, enter the following values:

- **Node name:** PCenterCellManager
- **Host name:** bpmstdhost
- **Cell name:** PCenterCell



___ i. Click **Next**.

- __ j. The Administrative Security pane specifies the initial user name and password that are used for administrative security. Enter the following values:
- **User name:** bpmadmin
 - **Password:** web1spHERE
 - **Confirm password:** web1spHERE

Profile Management Tool 8.5

Administrative Security

Security is always enabled. Supply the user name and password for logging into a repository. Permissions with administrative authority are created in a repository within the ESB. After profile creation completes, you can use the administrative console to add additional external repositories.

User name:
bpmadmin

Password:

Confirm password:

See the information center for more information about administrative security.
[View the online information center](#)

- __ k. Click **Next**.

-
- __ I. In the Security Certificate (Part 1) pane, accept the default selections. Click **Next**.

Security Certificate (Part 1)

Choose whether to create a default personal certificate and root signing certificate. To create new certificates, proceed to Part 2 and provide the certificate information. To use existing keystores, locate the certificates then proceed to Part 2 and verify the certificate information.

Create a new default personal certificate.

Import an existing default personal certificate.

Default personal certificate

Path:

Password:

Keystore type:

Keystore alias:

Create a new root signing certificate.

Import an existing root signing certificate.

Root signing certificate

Path:

- __ m. In the Security Certificate (Part 2) pane, ensure that for both the certificates, the **Expiration period in years** is set to 15 years. Although, WebSphere automatically renews the personal certificate before the one-year default expiration date, it is a good practice to change the default 1 year to a higher number.

Security Certificate (Part 2)

Modify the certificate information to create new certificates during profile creation certificates from keystores, use the information to verify whether the selected cer information. If the selected certificates do not, click **Back** to import different certif

[Restore Defaults](#)

Default personal certificate (a personal certificate for this profile, public and pri

Issued to distinguished name:

cn=bpmstdhost,ou=PCenterCell,ou=PCenterCellManager,o=IBM,c=US

Issued by distinguished name:

cn=bpmstdhost,ou=Root Certificate,ou=PCenterCell,ou=PCenterCellManager,o=IBM,c=US

Expiration period in years:

15 ▾

Root signing certificate (personal certificate for signing other certificates, public

Expiration period in years:

15 ▾

- __ n. Click **Next**.

- o. In the Port Values Assignment pane, accept the default values. Note the port for the administrative console. Click **Next**.

Profile Management Tool 8.5

Port Values Assignment

The values in the following fields define the ports for the deployment manager and do not profiles in this installation. Another installation of IBM Business Process Manager or other use the same ports. To avoid run-time port conflicts, verify that each port value is unique

Default Port Values **Recommended Port Values**

| | |
|---|------|
| Administrative console port (Default 9060): | 9060 |
| Administrative console secure port (Default 9043): | 9043 |
| Bootstrap port (Default 9809): | 9809 |
| SOAP connector port (Default 8879): | 8879 |
| Administrative interprocess communication port (Default 9632)(X): | 9632 |
| SAS SSL ServerAuth port (Default 9401): | 9401 |
| CSIV2 ServerAuth listener port (Default 9403): | 9403 |
| CSIV2 MultiAuth listener port (Default 9402): | 9402 |
| ORB listener port (Default 9100): | 9100 |



Information

The Profile Management Tool detects ports that other WebSphere products use and lists suggested port values that do not conflict with existing ones. If you have applications other than WebSphere applications that use specified ports, verify that the ports do not conflict.

-
- __ p. In the Linux Service Definition pane, verify that the check box for **Run the IBM Business Process Manager process as a Linux service** is not selected and click **Next**.

Linux Service Definition

Choose whether to use a Linux service to run the IBM Business Process Manager.

Run the IBM Business Process Manager process as a Linux service.

-
- ___ q. Review the Profile Creation Summary and click **Create**.

Profile Creation Summary

Review the information in the summary for correctness. If the information is correct, click **Create** creating a new profile. Click **Back** to change values on the previous panels.

Application server environment to create: IBM BPM deployment manager

Server type: Deployment manager

Location: /opt/IBM/BPM/profiles/PCenterDmgr

Disk space required: 31 MB

Profile name: PCenterDmgr

Make this profile the default: True

Cell name: PCenterCell

Node name: PCenterCellManager

Host name: bpmstdhost

Deploy the administrative console (recommended): True

Enable administrative security (recommended): True

Administrative console port: 9060

Administrative console secure port: 9043

Deployment manager bootstrap port: 9809

Deployment manager SOAP connector port: 8879

Run deployment manager as a service: False

< Back

Create

Cancel

Fi

-
- ___ r. It takes approximately 5 minutes to create the profile. The profile creation completes successfully.

- ___ s. In the Profile Creation Complete pane, clear the check box for **Launch the First steps console**. Click **Finish**.

Profile Creation Complete

The Profile Management Tool created the profile successfully.

The next step in creating a Network Deployment environment is to start the deployment manager and federate it into its cell. After the deployment manager is started, you can administer it from the deployment manager console.

You can start and stop the deployment manager from the command line or graphical interface. The deployment manager console also has links to an installation verification test and other information about the deployment manager.

[Launch the First steps console.](#)

To start the Profile Management Tool later, use the **PMT** command in the command line or graphical interface. You can also select the **Start** option in the First steps console.

- ___ t. The newly created profile is listed in the Profile Management Tool.



- ___ u. Exit the Profile Management Tool by clicking **File > Exit**.
- ___ 3. Use the log files to verify that the profile creation was successful.



Information

Various log files are created during installation of Process Center, profile creation, augmentation, and deletion. The log files contain a series of record elements for the document configuration actions. Examine the appropriate log files after one of the procedures is completed or if problems occur during these procedures.

- ___ a. In a terminal window, enter `cd /opt/IBM/BPM/logs/manageprofiles` to change the directory.
- ___ b. When creating a profile by using the Profile Management Tool or the `manageprofiles` command, a log file is generated containing needed details. The log file should be examined to verify that the profile created successfully with no errors.
Enter `gedit PCenterDmgr_create.log` to open the file in the gedit editor.
- ___ c. Examine the information in the log file. Notice that you can view the command line arguments that are used to create the profile in this log file. Scroll to the bottom of the log file and look for the return code. The code indicates `INSTCONFSUCCESS`.

```
<record>
<date>2015-10-11T03:22:54</date>
<millis>1444548174120</millis>
<sequence>13814</sequence>
<logger>com.ibm.wsspi.profile.WSProfileCLI</logger>
<level>INFO</level>
<class>com.ibm.wsspi.profile.WSProfileCLI</class>
<method>invokeWSProfile</method>
<thread>77</thread>
<message>Returning with return code: INSTCONFSUCCESS</message>
</record>
</log>
```



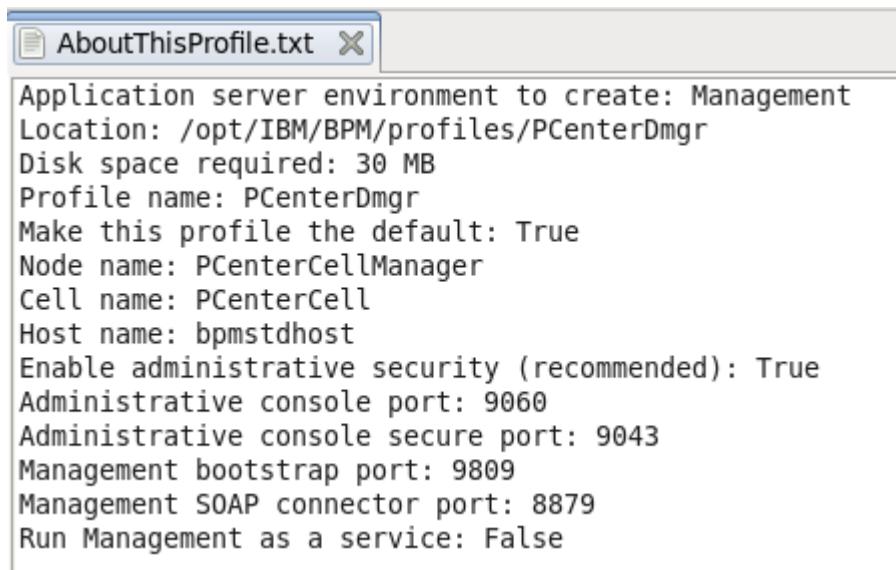
Information

A log file has an indicator of success and failure for the procedure that is being completed. Indicators can include:

- `INSTCONFFAILED`: Total installation failure.
- `INSTCONFSUCCESS`: Successful installation.
- `INSTCONFPARTIALSUCCESS`: Installation errors occurred, but the installation is still usable. More information in other log files identifies the errors.

- ___ d. Close the log file when completed by clicking **File > Quit**.
- ___ 4. Examine information about the profile.
 - ___ a. Enter `cd /opt/IBM/BPM/profiles/PCenterDmgr/logs` to change the directory.

-
- __ b. Enter `gedit AboutThisProfile.txt` in the terminal to open the file. Examine the settings for this profile. You can see the ports that are used for the administrative console and the SOAP port. These ports are used later in the exercise.



```
Application server environment to create: Management
Location: /opt/IBM/BPM/profiles/PCenterDmgr
Disk space required: 30 MB
Profile name: PCenterDmgr
Make this profile the default: True
Node name: PCenterCellManager
Cell name: PCenterCell
Host name: bpmstdhost
Enable administrative security (recommended): True
Administrative console port: 9060
Administrative console secure port: 9043
Management bootstrap port: 9809
Management SOAP connector port: 8879
Run Management as a service: False
```

- __ c. Close the `AboutThisProfile.txt` file by clicking **File > Quit**.



Information

You can also examine port information in the
`/opt/IBM/BPM/profiles/PCenterDmgr/properties/portdef.props` file.

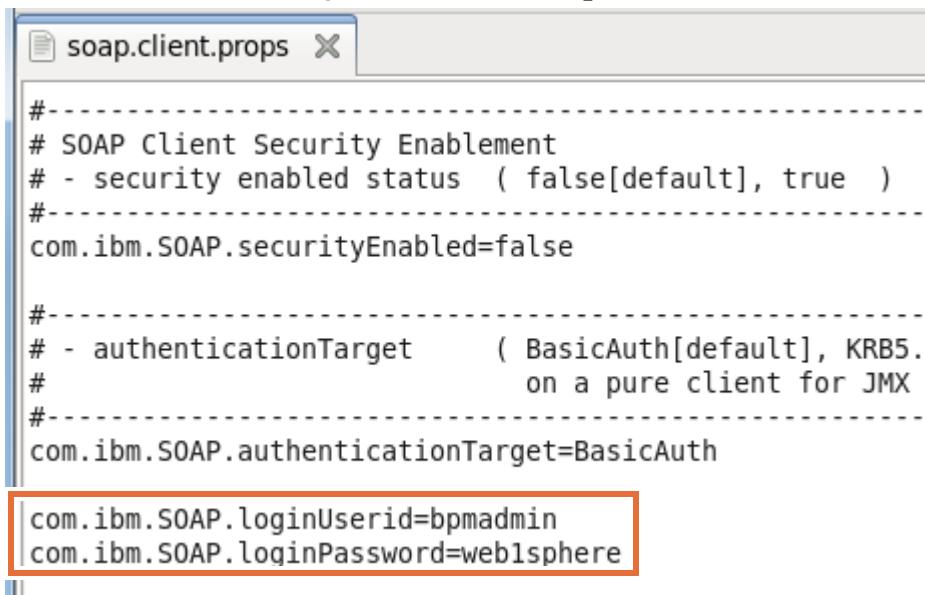
Part 2: Edit the SOAP client properties file

If you edit the `soap.client.props` file for the deployment manager profile, you can disable the authentication prompt you receive when using the batch files in the `<deployment manager>/bin` directory (for example, the `stopManager.sh` file). Editing the SOAP client properties also prevents you from entering the user name and password at the command line when you use the batch files in the `<deployment manager>/bin` directory.

- __ 1. Edit the `soap.client.props` file.
 - __ a. In a terminal window, enter `cd /opt/IBM/BPM/profiles/PCenterDmgr/properties` to change the directory.
 - __ b. Enter `gedit soap.client.props` to open the file in the gedit editor.

- ___ c. Go to the authenticationTarget section in the soap.client.props file and enter the following information:

```
com.ibm.SOAP.loginUserId=bpmadmin  
com.ibm.SOAP.loginPassword=websphere
```



```
soap.client.props X  
-----  
# SOAP Client Security Enablement  
# - security enabled status ( false[default], true )  
#-----  
com.ibm.SOAP.securityEnabled=false  
  
#-----  
# - authenticationTarget ( BasicAuth[default], KRB5.  
#                               on a pure client for JMX )  
#-----  
com.ibm.SOAP.authenticationTarget=BasicAuth  
  
com.ibm.SOAP.loginUserId=bpmadmin  
com.ibm.SOAP.loginPassword=websphere
```



Important

Editing the soap.client.props file in this manner is not suggested in a production environment. It shows security information to anyone who has access to the file system. If you choose to enter this information in a production environment, the **PropFilePasswordEncoder** command utility can be used to encode the password. For more information, go to URL:

http://www.ibm.com/support/knowledgecenter/SS7JFU_8.0.0/com.ibm.websphere.express.doc/info/exp/ae/tsec_protplaintxt.html

- ___ d. Click **Save** and close the file by clicking **File > Quit**.

Part 3: Verify the creation of the deployment manager

After you create the deployment manager profile and the required IBM Process Server common database, you can verify that the deployment manager server starts without error.

- ___ 1. Use the First steps console to verify and start the deployment manager.
- ___ a. In the terminal window, enter `cd /opt/IBM/BPM/profiles/PCenterDmgr/firststeps` to change the directory.

- __ b. Enter the following command to start the First steps console:

```
./firststeps.sh
```

The First steps console opens.

First steps

Installation verification
Confirm that your server is installed and that it can start properly.

Start the deployment manager
Start the deployment manager and its applications.

Administrative console
Install and administer applications.

WebSphere Customization Toolbox
Launch this toolbox to access the Profile Management Tool and work with profiles, or to access the Migration Management Tool and migrate WebSphere Application Server 6.0, 6.1, 7.0 or 8.0 profiles to version 8.5.

Information center for WebSphere Application Server
Learn more about WebSphere Application Server and explore sample applications.

IBM Education Assistant for WebSphere software
Access multimedia content for WebSphere Application Server version 8.5 and other IBM software products.

Exit



Hint

You can also start the First steps console by clicking **Applications > IBM WebSphere > IBM WebSphere Application Server V8.5 > Profiles > PCenterDmgr > First steps**.

- __ c. The installation verification tool starts the deployment manager and verifies that the deployment manager `SystemOut.log` file has no errors. Click **Installation verification** to run the verification tool.

-
- ___ d. The tool takes a few minutes to run as it must first start the deployment manager. If you see error or warning messages, it is safe to ignore them if the final message in the console indicates that the verification succeeded.

You see the following message in the **First steps output - Installation verification** window: The Installation Verification Tool verification succeeded.



The screenshot shows a terminal window titled "First steps output - Installation verification". The log output is as follows:

```
Server name is:dmgr
Profile name is:PCenterDmgr
Profile home is:/opt/IBM/BPM/profiles/PCenterDmgr
Profile type is:management
Cell name is:PCenterCell
Node name is:PCenterCellManager
Current encoding is:UTF-8
Start running the following command:/opt/IBM/BPM/profiles/PCenterDmgr/bin/startServer.sh dmgr -profileName
>ADMU0116I: Tool information is being logged in file
>          /opt/IBM/BPM/profiles/PCenterDmgr/logs/dmgr/startServer.log
>ADMU0128I: Starting tool with the PCenterDmgr profile
>ADMU3100I: Reading configuration for server: dmgr
>ADMU3200I: Server launched. Waiting for initialization status.
>ADMU3000I: Server dmgr open for e-business; process id is 6529
Server port number is:9060
IVTL0010I: Connecting to the bpmstdhost WebSphere Application Server on port: 9060
IVTL0015I: WebSphere Application Server bpmstdhost is running on port: 9060 for profile PCenterDmgr
IVTL0035I: The Installation Verification Tool is scanning the /opt/IBM/BPM/profiles/PCenterDmgr/logs/dmgr/S
[9/3/15 5:33:20:768 EDT] 00000001 WSKeyStore W CWPKI0041W: One or more key stores are using the
[9/3/15 5:33:23:974 EDT] 00000001 ObjectGridCat W CWOBJ0051W: This profile is not augmented with W
[9/3/15 5:33:54:360 EDT] 00000001 HostNameMap W HMGR0064W: Resolution of IP Addresses for host
[9/3/15 5:35:09:622 EDT] 00000001 TcpTransport W ADMD0025W: In process discovery, the 127.0.0.1
IVTL0040I: 4 errors/warnings are detected in the /opt/IBM/BPM/profiles/PCenterDmgr/logs/dmgr/SystemOut.
IVTL0070 The Installation Verification Tool verification succeeded.
IVTL0080 The installation verification is complete.
```

- ___ e. When installation verification is complete, close the **First steps output - Installation verification** window.

-
- ___ f. Click **Exit** to close the First steps window.

First steps

Installation verification

Confirm that your server is installed and that it can start properly.

Stop the deployment manager

Stop the deployment manager and its applications.

Administrative console

Install and administer applications.

WebSphere Customization Toolbox

Launch this toolbox to access the Profile Management Tool and work or to access the Migration Management Tool and migrate WebSphere Server 6.0, 6.1, 7.0 or 8.0 profiles to version 8.5.

Information center for WebSphere Application Server

Learn more about WebSphere Application Server and explore sample

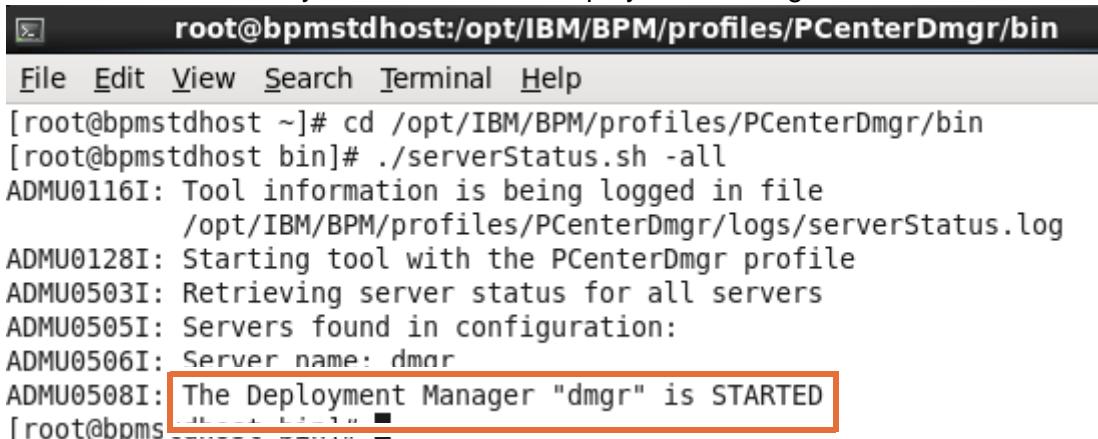
IBM Education Assistant for WebSphere software

Access multimedia content for WebSphere Application Server version IBM software products.

Exit

- ___ 2. Verify that the deployment manager is running.

- ___ a. In a terminal window, enter `cd /opt/IBM/BPM/profiles/PCenterDmgr/bin` to change the directory.
- ___ b. Enter the following command to verify that the deployment manager is running:
`./serverStatus.sh -all`
- ___ c. Notice the entry that indicates the deployment manager is started.



A terminal window with a black background and white text. The title bar says "root@bpmsstdhost:/opt/IBM/BPM/profiles/PCenterDmgr/bin". The menu bar includes "File", "Edit", "View", "Search", "Terminal", and "Help". The main area shows the output of a command-line session:

```
[root@bpmsstdhost ~]# cd /opt/IBM/BPM/profiles/PCenterDmgr/bin
[root@bpmsstdhost bin]# ./serverStatus.sh -all
ADMU0116I: Tool information is being logged in file
        /opt/IBM/BPM/profiles/PCenterDmgr/logs/serverStatus.log
ADMU0128I: Starting tool with the PCenterDmgr profile
ADMU0503I: Retrieving server status for all servers
ADMU0505I: Servers found in configuration:
ADMU0506I: Server name: dmgr
ADMU0508I: The Deployment Manager "dmgr" is STARTED
[root@bpmsstdhost bin]#
```

- ___ d. Leave the terminal window open.

Part 4: Create the profile

This step uses the manageprofiles command to create a custom profile that is called PCenterCustom. After creation of the profile, command line tools are used to federate the profile. A custom profile is useful because it does not create any servers on the node. It creates only the configuration and the node agent.

- 1. Create a custom profile by using the manageprofiles command.

- a. In a terminal window, enter `cd /opt/IBM/BPM/bin` to change the directory.

To create the custom profile by providing all parameters, copy and paste the following command:

```
. ./manageprofiles.sh -create -profileName PCenterCustom -profilePath  
/opt/IBM/BPM/profiles/PCenterCustom -templatePath  
/opt/IBM/BPM/profileTemplates/BPM/BpmNode -cellName Cell01 -hostName  
bpmsstdhost -nodeName PCenterNode01
```

```
[root@bpmsstdhost bin]# ./manageprofiles.sh -create -profileName PCenterCustom -p  
rofilePath /opt/IBM/BPM/profiles/PCenterCustom -templatePath /opt/IBM/BPM/profil  
eTemplates/BPM/BpmNode -cellName Cell01 -hostName bpmsstdhost -nodeName PCenterNo  
de01
```



Note

The command for custom profile creation is provided in the `createProfile.txt` file at the location `/usr/labfiles/ex3` in your VMware image. You can copy the command from this file and paste it in the terminal window to avoid any typographical errors.

- b. The profile creation takes approximately 5 minutes to complete. The profile creation is complete when a success message is displayed.

```
[root@bpmsstdhost bin]# ./manageprofiles.sh -create -profileName PCenterCustom -p  
rofilePath /opt/IBM/BPM/profiles/PCenterCustom -templatePath /opt/IBM/BPM/profil  
eTemplates/BPM/BpmNode -cellName Cell01 -hostName bpmsstdhost -nodeName PCenterNo  
de01
```

```
[INSTCONFSUCCESS: Success: Profile PCenterCustom now exists. Please consult /opt/  
IBM/BPM/profiles/PCenterCustom/logs/AboutThisProfile.txt for more information a  
bout this profile.]
```



Note

You can also use the `PCenterCustom.response` file present in the `/usr/software/labfiles/scripts` directory to create the custom node. It contains all of the needed input parameters. To create the custom node profile by using a response file, you can use the following command:

```
./manageprofiles.sh -response /usr/labfiles/ex3/scripts/PCCustom.response
```

2. Verify the profile creation.

a. Enter the following command in the terminal window to list the profiles in the repository:

```
./manageprofiles.sh -listProfiles
```

```
[root@bomstdhost bin]# ./manageprofiles.sh -listProfiles
```

```
[PCenterDmgr, PCenterCustom]
```

```
[root@bomstdhost bin]#
```

Note the two Process Center profiles that were created as part of this exercise.

3. Edit the `soap.client.props` file.

a. In a terminal window, enter `cd /opt/IBM/BPM/profiles/PCenterCustom/properties` to change the directory.

b. Enter `gedit soap.client.props` to open the file in the gedit editor.

c. Go to the `authenticationTarget` section.

d. In the `soap.client.props` file, enter the following information:

```
com.ibm.SOAP.loginUserId=bpmadmin  
com.ibm.SOAP.loginPassword=websphere
```

```
soap.client.props X  
-----  
#-----  
# SOAP Client Security Enablement  
# - security enabled status ( false[default], true )  
#-----  
com.ibm.SOAP.securityEnabled=false  
-----  
# - authenticationTarget ( BasicAuth[default], KRB5. These  
# on a pure client for JMX SOAP C  
#-----  
com.ibm.SOAP.authenticationTarget=BasicAuth  
-----  
com.ibm.SOAP.loginUserId=bpmadmin  
com.ibm.SOAP.loginPassword=websphere
```

-
- ___ e. Click **Save** and close the file by clicking **File > Quit**.



Information

The custom profile is federated by using the `addNode` command. To federate the node, the deployment manager must be running. You can verify that the deployment manager is running by changing to the `/opt/IBM/BPM/profiles/PCenterDmgr/bin` directory and entering the following command:

```
./serverStatus.sh -all
```

The `addNode` command requires the host name of the workstation on which the deployment manager is running and the SOAP port of the deployment manager. SOAP is the default Java Management Extensions (JMX) connector type for the command.

Also, since administrative security is configured, the administrative user ID and password must be provided. All of the other arguments in the `addNode` command are optional.

4. Federate the custom profile.

- ___ a. In the terminal window, enter `cd /opt/IBM/BPM/profiles/PCenterCustom/bin` to change the directory.
- ___ b. Copy and paste the following command to federate the node to the deployment manager:

```
./addNode.sh bpmstdhost -user bpmadmin -password web1sphere
```



Information

To determine the ports that are configured during profile creation for the deployment manager, open the `portdef.props` file that is in the `/opt/IBM/BPM/profiles/PCenterDmgr/properties` directory.

- __ c. When the federation process completes, you see the following message:

ADMU0003I: Node PCenterNode01 has been successfully federated.

The custom profile is federated to the deployment manager. A cell is configured that contains a deployment manager and one node.

A screenshot of a terminal window titled "root@bpmsr: host:/opt/IBM/BPM/profiles/PCenterCustom/bin". The window shows several messages from the command line:

- ADMU0300I: The node PCenterNode01 was successfully added to the PCenterCell cell.
- ADMU0306I: Note:
- ADMU0302I: Any cell-level documents from the standalone PCenterCell configuration have not been migrated to the new cell.
- ADMU0307I: You might want to:
- ADMU0303I: Update the configuration on the PCenterCell Deployment Manager with values from the old cell-level documents.
- ADMU0306I: Note:
- ADMU0304I: Because -includeapps was not specified, applications installed on the standalone node were not installed on the new cell.
- ADMU0307I: You might want to:
- ADMU0305I: Install applications onto the PCenterCell cell using wsadmin \$AdminApp or the Administrative Console.

At the bottom of the terminal window, the message "ADMU0003I: Node PCenterNode01 has been successfully federated." is highlighted with a red box.

Part 5: Verify the configuration

- 1. Start the deployment manager's administrative console.
- a. Open a web browser and go to the following website:

<http://bpmsstdhost:9060/ibm/console>



Information

Remember to use the administrative console port information noted in the `AboutThisProfile.txt` file. The administrative console port was configured when you installed the server.

- b. In the Untrusted Connection window, click **I Understand the Risks** to expand the option.



This Connection is Untrusted

You have asked Firefox to connect securely to **bpmsstdhost:9043**, but we can't confirm your connection is secure.

Normally, when you try to connect securely, sites will present trusted identification to show that you are going to the right place. However, this site's identity can't be verified.

What Should I Do?

If you usually connect to this site without problems, this error could mean that someone is trying to impersonate the site, and you shouldn't continue.

[Get me out of here!](#)

► **Technical Details**

► **I Understand the Risks**

__ c. Click Add Exception.



This Connection is Untrusted

You have asked Firefox to connect securely to **bpmstdhost:9043**, but we can't tell if your connection is secure.

Normally, when you try to connect securely, sites will present trusted identification so that you are going to the right place. However, this site's identity can't be verified.

What Should I Do?

If you usually connect to this site without problems, this error could mean that the site is trying to impersonate the site, and you shouldn't continue.

[Get me out of here!](#)

► Technical Details

▼ I Understand the Risks

If you understand what's going on, you can tell Firefox to start trusting this site. This identification. **Even if you trust the site, this error could mean that someone could be tampering with your connection.**

Don't add an exception unless you know there's a good reason why this site doesn't have trusted identification.

[Add Exception...](#)

- __ d. On the **Add Security Exception** window, the location is the secure port for the deployment manager. Verify that the location is the following URL:

<https://bpmsstdhost:9043/ibm/console>



- __ e. Click **Confirm Security Exception**. The Integrated Solutions Console, which is also known as the administrative console, login page is now visible.



Hint

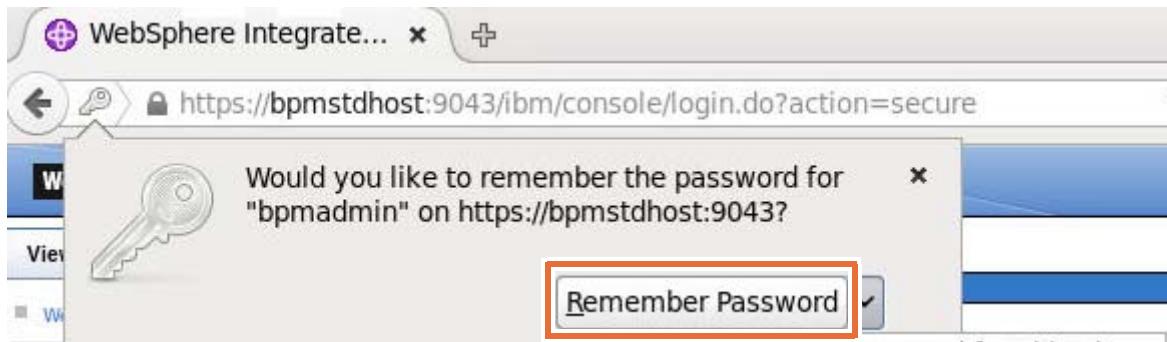
Since the administrative console is used numerous times throughout the exercises, it might be a good idea to create a bookmark to the URL.

- __ f. In the login area, enter `bpmsadmin` as the user ID and `websphere` as the password. Click **Login**.



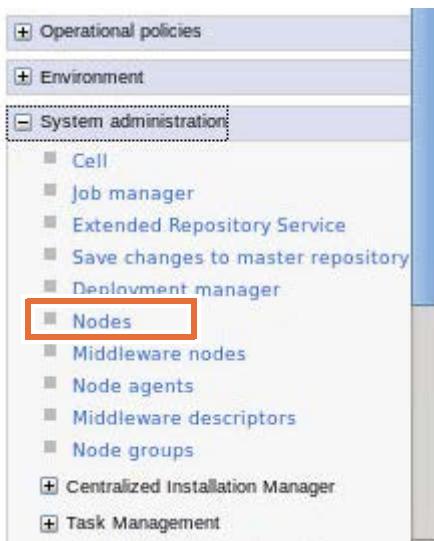
Note

If asked to save the password, click **Remember Password**.



__ 2. Verify the cell configuration.

- __ a. From the administrative console navigation pane, click **System administration > Nodes**.



- __ b. You see the two nodes listed.

| Add Node | Remove Node | Force Delete | Synchronize | Full Resynchronize | Stop |
|---|------------------------------------|--------------|------------------------------|--------------------|------|
| | | | | | |
| Select Name ◊ Host Name ◊ Version ◊ Discovery Protocol ◊ Status ◊ | | | | | |
| | PCenterCellManager | bpmstdhost | ND 8.5.5.5 BPMStd 8.5.6.0 | TCP | |
| <input type="checkbox"/> | PCenterNode01 | bpmstdhost | ND 8.5.5.5 BPMStd 8.5.6.0 | TCP | |
| Total 2 | | | | | |

-
- 3. Configure automatic synchronization. To ensure that subsequent changes are synchronized with the node, complete the following one-time setup.



Information

By default, when changes are made to the master configuration from the administrative console, synchronization of these changes with the node agent is not automatic. Rather, the node agent relies on the file synchronization service properties (such as the synchronization interval) to retrieve changes to the configuration from the deployment manager. For this course, you configure automatic synchronization.

- a. Click **System administration > Console Preferences**.
- b. In the Console preferences section, select the option **Synchronize changes with Nodes**. This option specifies whether you want to force node synchronization at the time that you save your changes to the master repository, rather than when node synchronization normally occurs.

Console preferences

Specify user preferences for the administrative console workspace.

- Turn on workspace automatic refresh
- No confirmation on workspace discard
- Use default scope
- Show the help portlet
- Enable command assistance notifications
- Log command assistance commands

Synchronize changes with Nodes

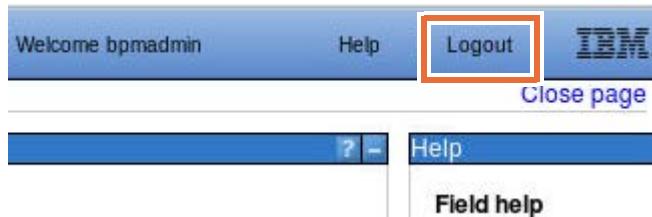
Bidirectional support options

[Apply](#) [Reset](#)

- c. Click **Apply**. You see the following message at the top of the window:

Your preferences have been changed.

-
- 4. Log out of the administrative console from the upper-right corner of the administrative console window and close the browser.



Part 6: Take the backup of the initial configuration

After completing a new installation, it is a good practice to make a backup of the initial configuration. You can create a backup of the master configuration files by using the `backupConfig` command. You can later restore this configuration if necessary.

- 1. Open the terminal and enter `cd /opt/IBM/BPM/profiles/PCenterDmgr/bin` to change the directory.
- 2. Create the backup by entering the following command:

```
./backupConfig.sh -nostop
```



Note

The `-nostop` option tells the `backupConfig` command not to stop the servers.

-
3. After the successful execution of the command, the master configuration files are saved as a compressed file in the directory /opt/IBM/BPM/profiles/PCenterDmgr/bin.

```
[root@bpmsstdhost bin]# cd /opt/TRM/RPM/nrofiles/PCenterDmgr/bin/  
[root@bpmsstdhost bin]# ./backupConfig.sh -nostop  
ADMU0116I: Tool information is being logged in file  
/opt/IBM/BPM/profiles/PCenterDmgr/logs/backupConfig.log  
ADMU0128I: Starting tool with the PCenterDmgr profile  
ADMU5001I: Backing up config directory /opt/IBM/BPM/profiles/PCenterDmgr/config  
to file  
/opt/IBM/BPM/profiles/PCenterDmgr/bin/WebSphereConfig_2015-09-03.zip  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
.....  
ADMU5002I: 1,498 files successfully backed up
```

Part 7: Create the required databases

Process Center uses a number of database tables to store and track information. In this part of the exercise, you create the required Process Center databases.

You can create the required databases for IBM Business Process Manager V8.5.6 before or after you create profiles but before you configure your network deployment environment. The databases can be created manually or by using scripts that are installed during product installation.

For a Business Process Manager Standard configuration, three databases are required.

- The Process Server database (default name is BPMDB)
- The Business Performance Data Warehouse database (default name is PDWDB)
- The common database name (default name is CMNDB)

By default, the common database name is CMNDB. However, since both Process Center and Process Server environments are configured on the same computer and are using the same database product, the database names must be unique. In this exercise, the database names that are used begin with PC to identify the database names for the Process Center environment.



Information

For development environments and basic installations, you can use any of the database products that are supported for production environments, or you can use Derby. Derby is not intended for use in production environments. DB2 Enterprise Server Edition is installed on the course image and is used for the exercises.

- ___ 1. Verify the version of DB2 that is installed.

- ___ a. In the terminal window enter the following command:

```
su - db2inst1
```



Information

The `su - db2inst1` command logs the user in as `db2inst1`, which is the owner of the DB2 processes. The important point is the extra – (dash) between the `su` and the `db2inst1`. The dash causes the window not only to become user `db2inst1`, but also to run the startup scripts for the user. As a result, the window changes to the home directory of the user and has all of the environment variables for the user defined.

- ___ b. Next, determine the current version and service level of the installed DB2 product. Enter the following command:

```
db2level
```

```
[db2inst1@bpmstdhost ~]$ db2level
DB21085I This instance or install (instance name, where applicable:
"db2inst1") uses "64" bits and DB2 code release "SQL10053" with level
identifier "0604010E".
Informational tokens are "DB2 v10.5.0.3" "s140203", "IP23551", and Fix Pack
"3".
Product is installed at "/opt/ibm/db2/V10.5".
```

Upon completion, you see the following message in the command window:

```
Informational tokens are "DB2 v10.5.0.3," "s140203", "IP23551", and Fix
Pack "3".
```

The message indicates that DB2 V10.5 Fix Pack 3 is installed.

- ___ c. Leave the DB2 command window open. You use it in the next step.
- ___ 2. Create the common database by using the scripts that are installed with the product. When the scripts are installed, they are placed in the `/opt/IBM/BPM/BPM/dbscripts` directory.
 - ___ a. In the DB2 command window, enter `cd /opt/IBM/BPM/BPM/dbscripts/DB2/Create` to change the directory.

- ___ b. List the contents of the directory by entering the following command:

```
ls
```

```
[db2inst1@bpmsstdhost Create]$ ls
admin_GroupMemberRefData_ProcessServer.sql
admin_RefData_ProcessServer.sql
author_GroupMemberRefData.sql
createDatabase.bat
createDatabase.sh
createDatabase.sql
createCommon_BusinessSpace.sql
createProcedure_ProcessServer.sql
createSchema_BusinessSpace.sql
createSchema_CommonDBCellOnly.sql
createSchema_CommonDB.sql
createSchema_Messaging.sql
createSchema_ProcessChoreographer.sql
createSchema.sql
createTable_BusinessSpace.sql
createTable_PerformanceDW.sql
createTable_ProcessServer.sql
createTablespace_BusinessSpace.sql
createTablespace_PerformanceDW.sql
createTablespace_ProcessChoreographer.sql
createTablespace_ProcessServer.sql
deadmin_GroupMemberRefData_ProcessServer.sql
[db2inst1@bpmsstdhost Create]$ █
```

- ___ c. This directory contains a number of different files. The `createDatabase.sql` file is used to create the required databases. The file must be updated to include the name of the database that you want to use and the user name that you want to use for the database.



Information

It is always a good idea to make a backup copy of the files that you are changing. You should never modify the original file.

- ___ d. Minimize the DB2 command window as you are going to use it again later.

- ___ 3. Modify the `createDatabaseCMN.sql` file.

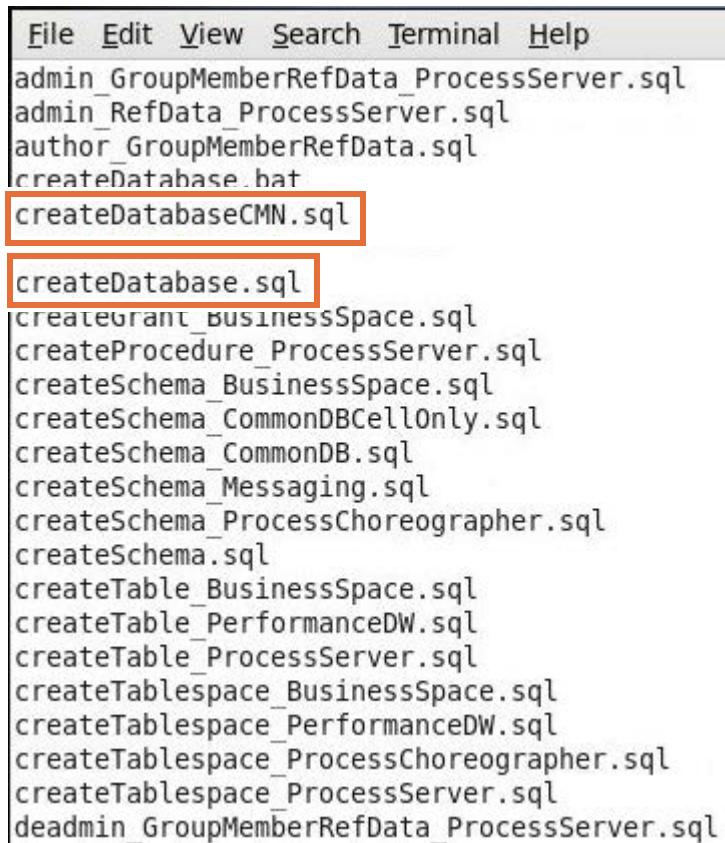
- ___ a. Open a new terminal window and enter `cd /opt/IBM/BPM/BPM/dbscripts/DB2/Create` to change the directory.
___ b. Create a copy of the `createDatabase.sql` file and name the copy:
`createDatabaseCMN.sql`

The Common database is created first, and the name identifies the script for creating the Common database. Use the following command:

```
cp createDatabase.sql createDatabaseCMN.sql
```

-
- __ c. List the contents of the directory by entering the following command in the terminal and verify that both the files exist:

ls



```
File Edit View Search Terminal Help
admin_GroupMemberRefData_ProcessServer.sql
admin_RefData_ProcessServer.sql
author_GroupMemberRefData.sql
createDatabase.bat
createDatabaseCMN.sql
createDatabase.sql
createGrant_BusinessSpace.sql
createProcedure_ProcessServer.sql
createSchema_BusinessSpace.sql
createSchema_CommonDBCellOnly.sql
createSchema_CommonDB.sql
createSchema_Messaging.sql
createSchema_ProcessChoreographer.sql
createSchema.sql
createTable_BusinessSpace.sql
createTable_PerformanceDW.sql
createTable_ProcessServer.sql
createTablespace_BusinessSpace.sql
createTablespace_PerformanceDW.sql
createTablespace_ProcessChoreographer.sql
createTablespace_ProcessServer.sql
deadmin_GroupMemberRefData_ProcessServer.sql
```

- __ d. Enter gedit createDatabaseCMN.sql to open the file in the gedit editor.
- __ e. In the file, replace each instance of the @DB_NAME@ placeholder with the database name: PCCMNDB
- There are four @DB_NAME@ placeholder instances.
- __ f. In the file, replace the instance of the @DB_USER@ placeholder with the database user: db2inst1
- There is one @DB_USER@ placeholder instance.

-
- ___ g. Verify the changes that you made to the file. Click **Save** and close the file by clicking **File > Quit**.

```
-- create the database:  
create database PCCMNDB automatic storage yes using codeset UTF-8 territory  
US pagesize 32768;  
  
-- connect to the created database:  
connect to PCCMNDB;  
  
-- A user temporary tablespace is required to support stored procedures in  
BPM.  
CREATE USER TEMPORARY TABLESPACE USRTMPSPC1;  
  
-- The following grant is used for databases without enhanced security.  
-- For more information, review the Info Center for Enhancing Security for  
DB2.  
grant dbadm on database to user db2inst1;  
UPDATE DB CFG FOR PCCMNDB USING LOGFILSIZ 16384 DEFERRED;  
UPDATE DB CFG FOR PCCMNDB USING LOGSECOND 64 DEFERRED;  
  
connect reset;
```

- ___ h. Close this terminal window.
- ___ 4. Create the common database.
- ___ a. In the DB2 command window that you minimized earlier, enter the following command to create the database:

```
db2 -tvf createDatabaseCMN.sql
```

- __ b. Next, the database is created. Look for the following message: The CREATE DATABASE command completed successfully. After that, a connection is obtained, the database is updated, and the connection is reset.

When the creation is complete, you see a message in the console that indicates the following information: The SQL command completed successfully.

```
db2inst1@bpmsstdhost:/opt/IBM/BPM/BPM/dbscripts/DB2/Create - □
File Edit View Search Terminal Help
Database server      = DB2/LINUXX8664 10.5.3
SQL authorization ID = DB2INST1
Local database alias = PCCMNDB

CREATE USER TEMPORARY TABLESPACE USRTMPSPC1
DB20000I  The SQL command completed successfully.

grant dbadm on database to user db2inst1
DB21034E  The command was processed as an SQL statement because it was not a
valid Command Line Processor command. During SQL processing it returned:
SQL0554N  An authorization ID cannot grant a privilege or authority to itself.
SQLSTATE=42502

UPDATE DB CFG FOR PCCMNDB USING LOGFILSIZ 16384 DEFERRED
DB20000I  The UPDATE DATABASE CONFIGURATION command completed successfully.

UPDATE DB CFG FOR PCCMNDB USING LOGSECOND 64 DEFERRED
DB20000I  The UPDATE DATABASE CONFIGURATION command completed successfully.

connect reset
DB20000I  The SQL command completed successfully.

[db2inst1@bpmsstdhost Create]$
```



Information

Running the script shows the following message that is safe to ignore: An authorization ID cannot grant a privilege or authority to itself. The script is expected to be run as another user. After the database is created, it contains a line that grants database admin rights to the db2inst1 user. By default, root does not have access rights to the DB2 executable files and the script is run as db2inst1. The user db2inst1 cannot grant access rights to itself. However, db2inst1 is the admin for this database, and thus it is safe to ignore this message.

- __ 5. Create the remaining required databases.

- __ a. In the DB2 command window, enter cd /usr/labfiles/ex3/scripts to change the directory.

-
- ___ b. List the contents of the directory by entering the following command:

```
ls
```

```
[db2inst1@bpmsstdhost Create]$ cd /usr/labfiles/ex3/scripts  
[db2inst1@bpmsstdhost scripts]$ ls  
createDatabaseBPM.sql  createDatabasePDW.sql  PCCustom.response
```

- ___ c. Notice the `createDatabaseBPM.sql` and the `createDatabasePDW.sql` script files. These scripts are updated to create the **PCBPMDB** and **PCPDWDB** databases. Feel free to examine the files.



Information

You can create these script files by following the steps mentioned in step 3 on page 34 of this exercise. You modify `@DB_NAME@` placeholder instances with the **PCBPMDB** and **PCPDWDB**, and the `@DB_USER@` placeholder instance with `db2inst1`.

- ___ d. In the DB2 terminal window enter the following command to create the PCBBPMDB database:

```
db2 -tvf createDatabaseBPM.sql
```

-
- ___ e. When the creation is complete, you see a message in the console that indicates the following information: The SQL command completed successfully.

```
[db2inst1@bpmsstdhost scripts]$ db2 -tvf createDatabaseBPM.sql  
create database PCBPMDB automatic storage yes using codeset UTF-8 territory US  
pagesize 32768  
DB20000I The CREATE DATABASE command completed successfully.
```

connect to PCBPMDB

Database Connection Information

```
Database server      = DB2/LINUXX8664 10.5.3  
SQL authorization ID = DB2INST1  
Local database alias = PCBPMDB
```

```
CREATE USER TEMPORARY TABLESPACE USRTMPSPC1  
DB20000I The SQL command completed successfully.
```

```
grant dbadm on database to user db2inst1  
DB21034E The command was processed as an SQL statement because it was not a  
valid Command Line Processor command. During SQL processing it returned:  
SQL0554N An authorization ID cannot grant a privilege or authority to itself.  
SQLSTATE=42502
```

```
UPDATE DB CFG FOR PCBPMDB USING LOGFILSIZ 16384 DEFERRED  
DB20000I The UPDATE DATABASE CONFIGURATION command completed successfully.
```

```
UPDATE DB CFG FOR PCBPMDB USING LOGSECOND 64 DEFERRED  
DB20000I The UPDATE DATABASE CONFIGURATION command completed successfully.
```

```
connect reset  
DB20000I The SQL command completed successfully.
```

- ___ f. Enter the following command to create the PCPDWDB database:

```
db2 -tvf createDatabasePDW.sql
```

-
- ___ g. When the creation is complete, you see a message in the console that indicates the following information: The SQL command completed successfully.

```
[db2inst1@bpmsstdhost scripts]$ db2 -tvf createDatabasePDW.sql  
create database PCPDWDB automatic storage yes using codeset UTF-8 territory US  
pagesize 32768  
DB20000I The CREATE DATABASE command completed successfully.
```

```
connect to PCPDWDB
```

Database Connection Information

```
Database server      = DB2/LINUXX8664 10.5.3  
SQL authorization ID = DB2INST1  
Local database alias = PCPDWDB
```

```
CREATE USER TEMPORARY TABLESPACE USRTMPSPC1  
DB20000I The SQL command completed successfully.
```

```
grant dbadm on database to user db2inst1  
DB21034E The command was processed as an SQL statement because it was not a  
valid Command Line Processor command. During SQL processing it returned:  
SQL0554N An authorization ID cannot grant a privilege or authority to itself.  
SQLSTATE=42502
```

```
UPDATE DB CFG FOR PCPDWDB USING LOGFILSZ 16384 DEFERRED  
DB20000I The UPDATE DATABASE CONFIGURATION command completed successfully.
```

```
UPDATE DB CFG FOR PCPDWDB USING LOGSECOND 64 DEFERRED  
DB20000I The UPDATE DATABASE CONFIGURATION command completed successfully.
```

```
connect reset  
DB20000I The SQL command completed successfully.
```

__ 6. Verify the databases.

- __ a. To list the databases, enter the following command:

```
db2 list database directory
```

The three required databases are listed.

```
Number of entries in the directory = 3
```

Database 1 entry:

| | |
|-----------------------------------|------------------|
| Database alias | = PCCMNDB |
| Database name | = PCCMNDB |
| Local database directory | = /home/db2inst1 |
| Database release level | = 10.00 |
| Comment | = |
| Directory entry type | = Indirect |
| Catalog database partition number | = 0 |
| Alternate server hostname | = |
| Alternate server port number | = |

Database 2 entry:

| | |
|-----------------------------------|------------------|
| Database alias | = PCBPMDB |
| Database name | = PCBPMDB |
| Local database directory | = /home/db2inst1 |
| Database release level | = 10.00 |
| Comment | = |
| Directory entry type | = Indirect |
| Catalog database partition number | = 0 |
| Alternate server hostname | = |
| Alternate server port number | = |

Database 3 entry:

| | |
|-----------------------------------|------------------|
| Database alias | = PCPDWDB |
| Database name | = PCPDWDB |
| Local database directory | = /home/db2inst1 |
| Database release level | = 10.00 |
| Comment | = |
| Directory entry type | = Indirect |
| Catalog database partition number | = 0 |
| Alternate server hostname | = |
| Alternate server port number | = |

- __ b. Log out of the DB2 command window by entering the following command:

```
exit
```

- __ c. Leave the terminal window open for use in next parts of the exercise.

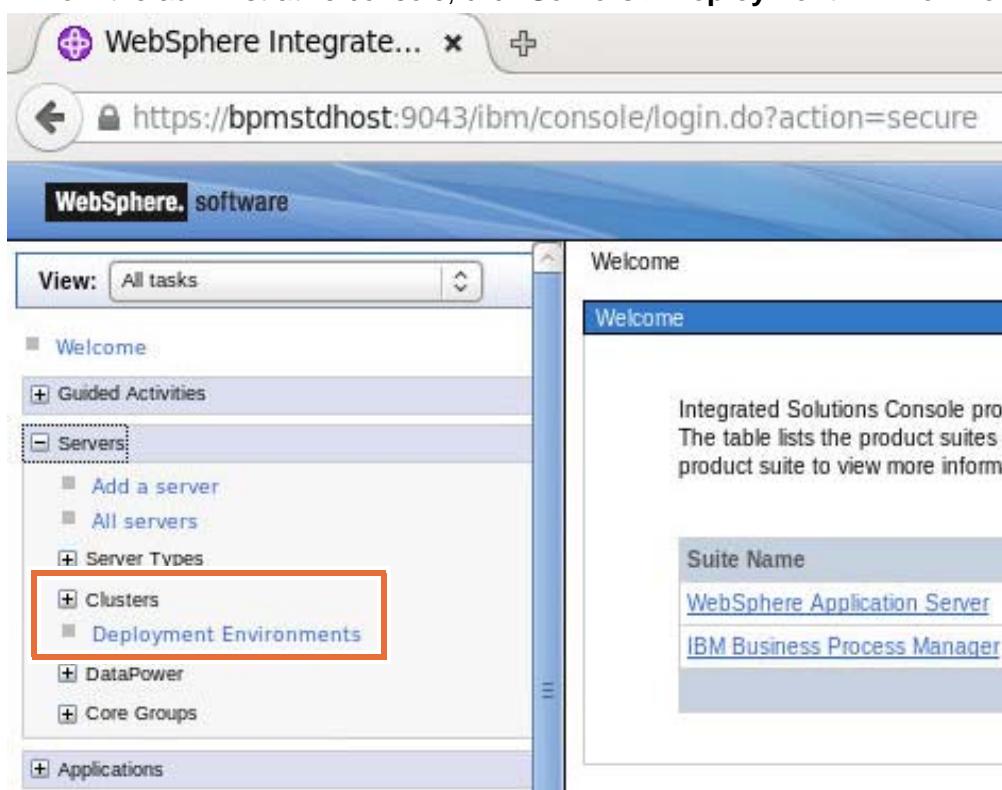
Part 8: Create the Process Center deployment environment

The layout of the IBM Business Process Manager cell topologies that are used for Process Center and Process Server cells follows the same general pattern. The primary difference between a Process Center cell and a Process Server cell is the use of the cell. A Process Server cell that is used as a production runtime environment might be intended to support a constant and high volume of traffic. A Process Center cell that is used as the master repository of the IBM Business Process Manager environment is expected to support a known set of developers and administrators. However, it might not have a significant number of users that are accessing it at any time. Therefore, it is the master repository and Playback server, and must cope with many process applications.

In this part of the exercise, you create the Process Center deployment environment by using the deployment environment wizard in the administrative console. The Process Center deployment environment is used to store, run, and administer process applications and toolkits that are developed in Process Designer and Integration Designer (included only in IBM Business Process Manager Advanced). You can create more than one deployment environment in the same cell by using the deployment environment wizard. However, you can create only one PC-based deployment environment in a single cell even though it is possible to create more than one environment by using the deployment environment wizard.

- ___ 1. Start the deployment manager's administrative console.
 - ___ a. Open a web browser and go to the following website:
`http://bpmsstdhost:9060/ibm/console`
 - ___ b. In the login area, enter `bpmadmin` as the user ID and `web1sphere` as the password. Click **Login**.

-
- __ 2. Create the deployment environment.
 - __ a. From the administrative console, click **Servers > Deployment Environments**.



- __ b. Click **New**.



__ c. On the Create a Deployment Environment pane, enter the following information:

- **Deployment environment name:** PCenter_DE
- **Deployment environment administrator:** pcdeadmin
- **Password:** web1sphere
- **Confirm password:** web1sphere

Create a Deployment Environment

Enter the deployment environment name and the deployment environment administrator user name and password.

* Deployment environment name

* Deployment environment administrator user name

* Password

* Confirm password



Information

The deployment environment administrator is the primary IBM Business Process Manager administrator. The deployment environment administrator has authorization in the assigned deployment environments. The administrator has administrative access to Process Center and the Process Admin Console. This role also enables administration of Process Servers, Business Performance Data Warehouses, and internal users and groups. It is a good practice to use a different administrator for each deployment environment and also the cell administrator.

__ d. For environment type, select **Standard Process Center**.

- __ e. For the deployment environment cluster pattern, select **Single Cluster**.

Select the type of deployment environment.

| Select | IBM BPM Deployment Environment Type | Description |
|----------------------------------|-------------------------------------|--|
| <input checked="" type="radio"/> | Standard Process Center | Store, test, and administer process applications and toolkits that are authored in Process Designer. |
| <input type="radio"/> | Standard Process Server | Run processes and services in process applications that are deployed from the Standard Process Center. |

Select a cluster pattern for the deployment environment.

| Select | Deployment Environment Pattern | Description |
|----------------------------------|---|---|
| <input type="radio"/> | Application, Remote Messaging, and Remote Support | Defines one cluster for application deployment, one remote cluster for the messaging infrastructure, and one remote cluster for the supporting applications |
| <input checked="" type="radio"/> | Single Cluster | Defines one application deployment target cluster, which includes the messaging infrastructure and supporting applications |

Next **Cancel**

- __ f. Click **Next**.

- __ g. In Step 1: Select Nodes, select the check box next to the node **PCenterNode01**, and click **Next**.

→ **Step 1: Select Nodes**

Select Nodes

Step 2: Define Clusters

Step 3: Customize Cluster Name and Ports

Step 4: Configure Databases

Step 5: Summary

>Select Nodes to use for the deployment environment. The PCenter_DE deployment environment has an Single Cluster pattern and, therefore, requires at least one node.

For high-availability and failover environments, select two nodes. For scalability, select more than two nodes.

| Select | Node | Version | Host |
|-------------------------------------|---------------|----------------|------------|
| <input checked="" type="checkbox"/> | PCenterNode01 | BPMSPC 8.5.6.0 | bpmstdhost |
| Number of nodes required | | 1 | |
| Number of nodes selected | | 1 | |

Next **Cancel**



Note

Select at least one node for a deployment environment. In a production topology, you are likely to have multiple managed nodes in the cell. The deployment environment wizard does not restrict the number of nodes you can select. In addition, you can add nodes to the deployment environment after it is generated if your capacity needs change.

- h. In Step 2: Clusters, define the distribution of servers in the clusters. By default, one cluster member is assigned on each node for the function. Leave the default value of 1 to place one cluster member in the Application Deployment Target cluster. Click **Next**.

Step 1: Select Nodes

→ **Step 2: Define Clusters**

Step 3: Customize Cluster Name and Ports

Step 4: Configure Databases

Step 5: Summary

Define Clusters

Map each cluster to the listed nodes by indicating the number of cluster members per node.

| Node | Version | Application Deployment Target |
|---------------|----------------|--------------------------------|
| PCenterNode01 | BPMSPC 8.5.6.0 | <input type="text" value="1"/> |

Previous **Next** **Cancel**



Note

A production environment is based on the number of managed nodes in the cell and the resources available on the nodes. You can choose to create zero or more cluster members on each node in the topology. A 0 value for a node means that the node does not contribute to the selected function, which is based on features that you selected.

- __ i. In Step 3: Customize Cluster Name and Ports, enter the following information In the Application Cluster:
- **Cluster Name:** PCenter_DE.AppCluster
 - **Cluster Member Name:** PCenter_DE.AppCluster.member1
 - Leave the default, which is blank, for **Starting Port**.

The screenshot shows a software interface for configuring an application cluster. On the left, a vertical navigation bar lists steps: Step 1: Select Nodes, Step 2: Define Clusters, Step 3: Customize Cluster Name and Ports (which is highlighted in blue), Step 4: Configure Databases, and Step 5: Summary. The main area is titled 'Customize Cluster Name and Ports' with the sub-section 'Application Cluster'. It contains a table with three columns: 'Node Name', 'Cluster Member Name', and 'Starting Port'. The 'Node Name' column has one entry: 'PCenterNode01'. The 'Cluster Member Name' column has one entry: 'PCenter_DE.AppCluster.member1'. The 'Starting Port' column has two empty entries. The 'Cluster Name' input field, containing 'PCenter_DE.AppCluster', is highlighted with a red box. The 'Cluster Member Name' input field, containing 'PCenter_DE.AppCluster.member1', is also highlighted with a red box. At the bottom, there are buttons for 'Previous', 'Next', and 'Cancel'.

| Node Name | Cluster Member Name | Starting Port |
|---------------|-------------------------------|---------------|
| PCenterNode01 | PCenter_DE.AppCluster.member1 | |

- __ j. Click **Next**.

__ k. In Step 4: Configure Databases, enter the following information:

- For Select Provider, select **DB2**
- **User name:** db2inst1
- **Password:** websphere
- **Confirm Password:** websphere
- **Server:** bpmstdhost
- **Port field:** 50000
- Leave the check box for **Create tables** enabled
- **Common database Name:** PCCMNDB
- **Process database Name:** PCBPMDB
- **Performance Data Warehouse database Name:** PCPDWDB

The screenshot shows the 'Configure Databases' step of a deployment environment configuration wizard. The left sidebar lists steps from 1 to 5. Step 4 is currently selected. The main pane shows fields for database parameters and three separate database sections: Common database, Process database, and Performance Data Warehouse database. The 'Create Tab' checkbox is checked.

Configure Databases

Edit the database parameters for the data sources that are used by this deployment environment.

* Select provider: DB2

Shared parameters:

* User name: db2inst1 * Password: ***** * Confirm passw: *****

* Server: bpmstdhost * Port: 50000 Create Tab

Databases:

Common database

* Name: PCCMNDB

Process database

* Name: PCBPMDB

Performance Data Warehouse database

* Name: PCPDWDB

Select the databases that you want to separate from the Process database.

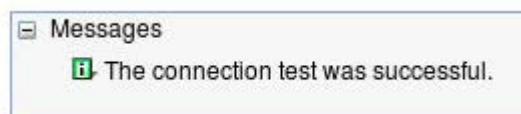
Messaging Name: MEDB

Test connection

Previous Next Cancel

It is important that the databases that are specified in this pane exist. The deployment environment configuration never creates a database. Keep all remaining defaults.

__ l. Click **Test connection**. A message indicates: The connection test was successful.



__ m. Click **Next**.

- __ n. In Step 5: Summary, review your options and click **Generate Deployment Environment**.

→ [Step 1: Select Nodes](#)
[Step 2: Define Clusters](#)
[Step 3: Customize Cluster Name and Ports](#)
[Step 4: Configure Databases](#)
Step 5: Summary

Summary

This summary shows an overview of your new deployment environment.

Click Generate Deployment Environment to complete the wizard and generate the deployment environment.

Click Export for Scripting to export a properties file that you can use in a BPMConfig script.

Overview

| Parameter | Value |
|--|-------------------------|
| Deployment environment name | PCenter_DE |
| Deployment environment administrator user name | pcdeadmin |
| Deployment environment type | Standard Process Center |
| Deployment environment pattern | Single Cluster |

Deployment Targets

| Cluster Name | Nodes | Cluster Members | Ports |
|-----------------------|---------------|-------------------------------|-------|
| PCenter_DE.AppCluster | PCenterNode01 | PCenter_DE.AppCluster.member1 | |

Data Sources

| Name | Database Name | Database Provider | Database Host |
|-----------------|---------------|-------------------|---------------|
| SharedDb | PCCMNDB | DB2 | bpmstdhost |
| PerformanceDB | PCPDWDB | DB2 | bpmstdhost |
| ProcessServerDB | PCBPMDB | DB2 | bpmstdhost |

Previous
Export for Scripting
Generate Deployment Environment
Cancel



Note

The generation takes approximately 20 minutes. It is not advisable to leave this process unattended for more than 15 minutes. The WebSphere login times out if too much time passes, which causes confusion when you log in again.

-
- ___ o. Wait until the configuration ends.

Configuration Status

| | | |
|-------------------|-------------------|--|
| [green info icon] | 9/7/15 6:18:54 AM | Beginning configuration ... |
| [green info icon] | 9/7/15 6:18:55 AM | Generating SQL files. |
| [green info icon] | 9/7/15 6:18:55 AM | Provisioning cell. |
| [green info icon] | 9/7/15 6:18:56 AM | Configuring the cell. |
| [green info icon] | 9/7/15 6:19:38 AM | Configuring the deployment manager. |
| [green info icon] | 9/7/15 6:19:40 AM | Provisioning deployment environment. |
| [green info icon] | 9/7/15 6:19:40 AM | Generating database configuration files to /opt/IBM/BPM/profiles/PCenterDmgr/dbscripts/PCenterCell.PCenter_DE. |
| [green info icon] | 9/7/15 6:19:42 AM | Performing security configuration. |
| [green info icon] | 9/7/15 6:19:45 AM | Creating clusters. |
| [green info icon] | 9/7/15 6:19:50 AM | Configuring data sources. |
| [green info icon] | 9/7/15 6:20:06 AM | Configuring the databases. |
| [green info icon] | 9/7/15 6:24:16 AM | Configuring clusters. |
| [green info icon] | 9/7/15 6:24:16 AM | Configuring cluster PCenter_DE.AppCluster for capability Messaging. |
| [green info icon] | 9/7/15 6:24:17 AM | Configuring cluster PCenter_DE.AppCluster for capability Application. |
| [green info icon] | 9/7/15 6:35:21 AM | Configuring cluster PCenter_DE.AppCluster for capability Support. |
| [green info icon] | 9/7/15 6:36:40 AM | Provisioning managed node PCenterNode01. |
| [green info icon] | 9/7/15 6:36:41 AM | The HTTP and HTTPS ports are added to the virtual hosts list. |
| [green info icon] | 9/7/15 6:36:41 AM | Creating cluster members. |
| [green info icon] | 9/7/15 6:41:01 AM | Configuring the REST services end points. |
| [green info icon] | 9/7/15 6:41:02 AM | The configuration has ended. |

Show Changes

Save Changes

Discard Changes

Close



Important

The WebSphere Application Server code (APAR PI40958), which handles the session workspace, contains a bug. You do not have this problem when you use the `BPMConfig` command to create the DE. The root cause of the problem is that the `ibmbpmks-DE-XX.jceks` file gets generated at two different places when you use admin console to create the deployment environment. Unfortunately, the interim fix for the APAR PI40958 for the WebSphere Application Server 8.5.5.x version is not published. It is available with WebSphere Application Server 8.5.6.

Remove the `ibmbpmks-DE-XX.jceks` file manually to avoid save conflict error.

- ___ 1. Enter `cd /opt/IBM/BPM/profiles/PCenterDmgr/config/cells/PCenterCell` to change the directory.

-
2. Enter `ls` to list the contents at this location. Note the `ibmbpmks-PCenter_DE.jceks` file.

```
[root@bpmsstdhost PCenterCell]# ls
admin-authz.xml           multibroker.xml
amwas.amjacc.template.properties  namestore.xml
amwas.pdjlog.template.properties  naming-authz.xml
apcservice.xml             nodegroups
applications               nodes
audit-authz.xml            overlaynodes.config
audit.xml                  pmirm.xml
autonomicrequestflowmanager.xml PolicySets
bindings                  PolicyTypes
blas                      product-info.xml
bwI-trust.p12              ras.rawtracelist.properties
cell-bpm.xml               repository
cell.xml                  resources-cei.xml
centralizedinstall.xml     resources-pme502.xml
coregroupbridge.xml        resources-pme.xml
coregroups                 resources.xml
cus                       rsatoken-key.p12
elasticityclasses          rsatoken-trust.p12
fileRegistry.xml           security.xml
filter.policy              serviceclasses
gridclassification         sts
gridjobclasses             trust.p12
gridscheduler.xml          variables.xml
healthcontroller.xml       virtualhosts.xml
ibmbpmks-PCenter_DE.jceks  wim
key.p12                   WSSCCache.xml
ltpa.jceks                WSSDistributedCache.xml
middlewaredescriptors      ws-security.xml
xdcatalognodes.config
```

3. Enter `rm ibmbpmks-PCenter_DE.jceks` to remove the file. Verify the deletion of this file by entering the `ls` command.

```
[root@bpmsstdhost PCenterCell]# rm ibmbpmks-PCenter_DE.jceks
[root@bpmsstdhost PCenterCell]# ls
```

__ p. Click **Save Changes**.

Configuration Status

| | | |
|-------------------|-------------------|--|
| [green info icon] | 9/7/15 6:18:54 AM | Beginning configuration ... |
| [green info icon] | 9/7/15 6:18:55 AM | Generating SQL files. |
| [green info icon] | 9/7/15 6:18:55 AM | Provisioning cell. |
| [green info icon] | 9/7/15 6:18:56 AM | Configuring the cell. |
| [green info icon] | 9/7/15 6:19:38 AM | Configuring the deployment manager. |
| [green info icon] | 9/7/15 6:19:40 AM | Provisioning deployment environment. |
| [green info icon] | 9/7/15 6:19:40 AM | Generating database configuration files to /opt/IBM/BPM/profiles/PCenterDmgr/dbscripts/PCenterCell.PCenter_DE. |
| [green info icon] | 9/7/15 6:19:42 AM | Performing security configuration. |
| [green info icon] | 9/7/15 6:19:45 AM | Creating clusters. |
| [green info icon] | 9/7/15 6:19:50 AM | Configuring data sources. |
| [green info icon] | 9/7/15 6:20:06 AM | Configuring the databases. |
| [green info icon] | 9/7/15 6:24:16 AM | Configuring clusters. |
| [green info icon] | 9/7/15 6:24:16 AM | Configuring cluster PCenter_DE.AppCluster for capability Messaging. |
| [green info icon] | 9/7/15 6:24:17 AM | Configuring cluster PCenter_DE.AppCluster for capability Application. |
| [green info icon] | 9/7/15 6:35:21 AM | Configuring cluster PCenter_DE.AppCluster for capability Support. |
| [green info icon] | 9/7/15 6:36:40 AM | Provisioning managed node PCenterNode01. |
| [green info icon] | 9/7/15 6:36:41 AM | The HTTP and HTTPS ports are added to the virtual hosts list. |
| [green info icon] | 9/7/15 6:36:41 AM | Creating cluster members. |
| [green info icon] | 9/7/15 6:41:01 AM | Configuring the REST services end points. |
| [green info icon] | 9/7/15 6:41:02 AM | The configuration has ended. |

Show Changes

Save Changes

Discard Changes

Close

- __ q. Click **OK** for the synchronization message.

The screenshot shows the 'Deployment Environments' pane with a blue header bar. Below it, a message box displays two status messages: 'ADMS0200I: The configuration synchronization started for cell.' and 'ADMS0208I: The configuration synchronization complete for cell.' An 'OK' button is highlighted with a red border at the bottom left of the message box.

- __ r. You are placed on the Deployment Environments pane. The `PCenter_DE` deployment environment is listed in a stopped state.

Deployment Environments

Select the deployment environments to manage. You can manage deployment environment that are created using patterns.

| Deployment Environments | | | | | |
|---|--------|-----------------------------|---------------------------------|----------------|-------------|
| Start Stop New... | | | | | |
| | | | | | |
| Select | Status | Deployment Environment Name | Features | Pattern | Description |
| <input type="checkbox"/> | | PCenter_DE | IBM BPM Standard Process Center | Single Cluster | |
| Total 1 | | | | | |

- __ 4. Stop the server processes. For Standard deployment environments, the deployment manager and node agents must be restarted for the cell scoped configuration to take effect. This step is required only for the first deployment environment that you create.
- __ a. From the left pane of the admin console, click **System administration > Node agents**.

- ___ b. If the nodeagent is in started state, select the check box next to **nodeagent** on PCenterNode01 and click **Stop**. Wait for the node agent to stop.

Node agents

Use this page to manage node agents and application servers on the node that a node agent manages. The node agent serves as an intermediary between the application servers on the node and the deployment manager. The node agent runs on every node and is specialized to perform node-specific administration functions, such as server process monitoring, synchronization, file transfer, and request routing.

Preferences

The screenshot shows a web-based administrative interface for managing node agents. At the top, there are three buttons: 'Stop' (highlighted with a red box), 'Restart', and 'Restart all Servers on Node'. Below these are several icons for filtering and sorting. A table follows, with columns for 'Select', 'Name', 'Node', 'Host Name', and 'Version'. The table header includes dropdown menus for sorting. A message 'You can administer the following resources:' is displayed above the table. The table contains one row where 'nodeagent' is listed under 'Name', with a checkbox next to it. This row is also highlighted with a red box. The 'Node' column shows 'PCenterNode01', 'Host Name' shows 'bpmstdhost', and 'Version' shows 'ND 8.5.5.5 BPMStd 8.5.6.0'. At the bottom left of the table area, it says 'Total 1'.

- ___ c. Log out of the administrative console and close the browser.
___ d. Open a terminal window, and enter `cd /opt/IBM/BPM/profiles/PCenterDmgr/bin` to change the directory. The path is now for the deployment manager in the Process Center cell.
___ e. Stop the deployment manager by entering the following command:

```
./stopManager.sh
```

Wait for the message that indicates that the deployment manager is stopped.

```
[root@bpmstdhost bin]# ./stopManager.sh
ADMU0116I: Tool information is being logged in file
          /opt/IBM/BPM/profiles/PCenterDmgr/logs/dmgr/stopServer.log
ADMU0128I: Starting tool with the PCenterDmgr profile
ADMU3100I: Reading configuration for server: dmgr
ADMU3201I: Server stop request issued. Waiting for stop status.
ADMU4000I: Server dmgr stop completed.
```

___ 5. Start the server processes.

- ___ a. Start the deployment manager by entering the following command:

```
./startManager.sh
```

Wait for the message that indicates that the deployment manager is started.

```
[root@bpmsstdhost bin]# ./startManager.sh
ADMU0116I: Tool information is being logged in file
    /opt/IBM/BPM/profiles/PCenterDmgr/logs/dmgr/startServer.log
ADMU0128I: Starting tool with the PCenterDmgr profile
ADMU3100I: Reading configuration for server: dmgr
ADMU3200I: Server launched. Waiting for initialization status.
ADMU3000I: Server dmgr open for e-business; process id is 26350
[root@bpmsstdhost bin]# █
```

- ___ b. Enter cd /opt/IBM/BPM/profiles/PCenterCustom/bin to change the directory.

- ___ c. Start the node agent by entering the following command:

```
./startNode.sh
```

Wait for the message that indicates that the node agent is started.

```
[root@bpmsstdhost bin]# ./startNode.sh
ADMU0116I: Tool information is being logged in file
    /opt/IBM/BPM/profiles/PCenterCustom/logs/nodeagent/startServer.log
ADMU0128I: Starting tool with the PCenterCustom profile
ADMU3100I: Reading configuration for server: nodeagent
ADMU3200I: Server launched. Waiting for initialization status.
ADMU3000I: Server nodeagent open for e-business; process id is 26980
[root@bpmsstdhost bin]# █
```

Part 9: Verify the database tables creation

- ___ 1. Verify that the database tables are created for the common database.

- ___ a. Open a terminal window and enter the following command:

```
su - db2inst1
```

- ___ b. To connect to the Common database, enter the following command:

```
db2 connect to PCCMNDB user db2inst1 using web1sphere
```

```
[db2inst1@bpmsstdhost ~]$ db2 connect to PCCMNDB user db2inst1 using web1sphere
```

```
Database Connection Information
```

```
Database server      = DB2/LINUXX8664 10.5.3
SQL authorization ID = DB2INST1
Local database alias = PCCMNDB
```

-
- ___ c. To verify that the tables were created, enter the following command:

```
db2 list tables for schema db2inst1  
38 records are listed.
```

- ___ d. To reset the connection, enter the following command:

```
db2 connect reset
```

```
[db2inst1@bpmsstdhost ~]$ db2 connect reset  
DB20000I The SQL command completed successfully.  
[db2inst1@bpmsstdhost ~]$ █
```

- ___ 2. Verify that the database tables are created for the Process Server database.

- ___ a. To connect to the Process Server database, enter the following command:

```
db2 connect to PCBPMDB user db2inst1 using websphere
```

```
[db2inst1@bpmsstdhost ~]$ db2 connect to PCBPMDB user db2inst1 using websphere
```

Database Connection Information

```
Database server      = DB2/LINUXX8664 10.5.3  
SQL authorization ID = DB2INST1  
Local database alias = PCBPMDB
```

- ___ b. To verify that the tables were created, enter the following command:

```
db2 list tables for schema db2inst1  
254 records are listed.
```

- ___ c. To reset the connection, enter the following command:

```
db2 connect reset
```

```
[db2inst1@bpmsstdhost ~]$ db2 connect reset  
DB20000I The SQL command completed successfully.  
[db2inst1@bpmsstdhost ~]$ █
```

___ 3. Verify that the database tables are created for the Business Performance Data Warehouse database.

___ a. To connect to the Business Performance Data Warehouse database, enter the following command:

```
db2 connect to PCPDWDB user db2inst1 using web1sphere
```

```
[db2inst1@bpmsstdhost ~]$ db2 connect to PCPDWDB user db2inst1 using web1sphere
```

Database Connection Information

```
Database server      = DB2/LINUXX8664 10.5.3  
SQL authorization ID = DB2INST1  
Local database alias = PCPDWDB
```

___ b. To verify that the tables were created, enter the following command:

```
db2 list tables for schema db2inst1
```

22 records are listed.

___ c. To reset the connection, enter the following command:

```
db2 connect reset
```

```
[db2inst1@bpmsstdhost ~]$ db2 connect reset  
DB20000I The SQL command completed successfully.  
[db2inst1@bpmsstdhost ~]$ █
```

___ d. Enter `exit` in the terminal window to log out of the DB2 command window.

___ e. Close the terminal window.

___ f. If the web browser still opens, then log out of the browser and close it.

___ g. Close any other open terminal windows.

End of exercise

Exercise review and wrap-up

In this exercise, you created a Process Center network deployment profile and started the deployment manager. You also created a Process Center custom profile and federated it by using command line tools. Finally, the Process Center required databases were created and tables were verified.

Exercise 4. Administering Process Center

What this exercise is about

This exercise examines a Process Center topology configuration and uses the Process Center Console to examine and deploy process applications.

What you should be able to do

After completing this exercise, you should be able to:

- Administer the Process Center environment
- Administer the Process Center repository
- Explore the Process Center Console to examine process applications

Introduction

Process Center Console provides a convenient location to create and maintain high-level containers such as process applications and toolkits. Administrators who do not actively work in the Process Designer view can use the Process Center Console to provide a framework in which IBM Business Process Manager analysts and developers can build their processes and underlying implementations. Administrators can also use the console to set up appropriate authorization for users and groups that need access to the Process Center repository.

From the Process Center Console, you can:

- Create process applications and toolkits and grant other users access to those process applications and toolkits
- Create process models, services, and other assets within process applications
- Install process applications that are ready for testing or production on the Process Servers in those environments
- Manage running instances of process applications in configured environments

Requirements

To complete this exercise, you must have:

- IBM Business Process Manager Standard installed
- The Process Center profiles created
- The Process Center single cluster deployment environment created

Exercise instructions

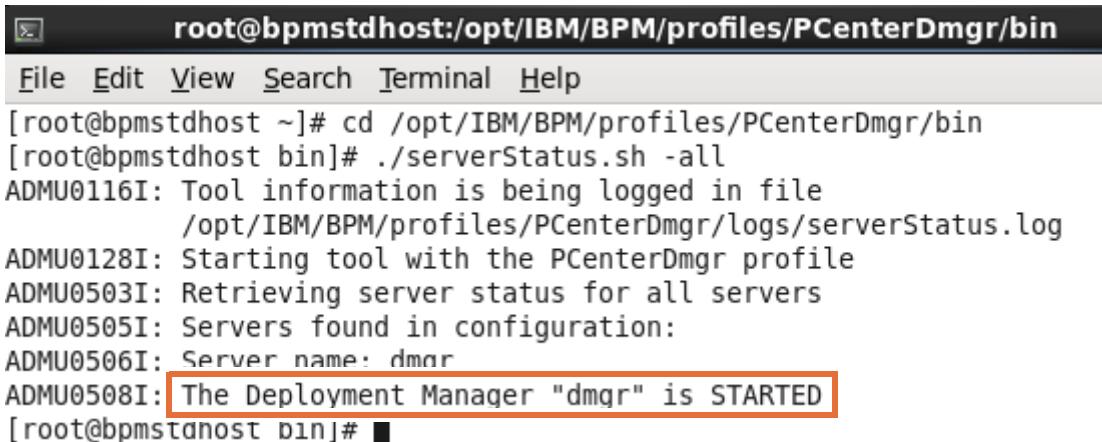
Part 1: Start the server and examine various settings

After modeling, designing, and implementing a business process solution, the next step in the business process application lifecycle is the deployment of the application to a runtime server. Process Center is the central repository in IBM Business Process Manager V8.5.6. The Process Center repository contains the artifacts of process applications and enables the sharing of processes and assets across process applications. It also provides governance and lifecycle management capabilities and plays an important role in the deployment of process applications. Process applications can also be versioned, enabling different levels of the same application to be maintained in the repository and deployed to Process Servers. Additionally, the Process Center repository also maintains a registry of all of the Process Server environments.

Before you begin working with the Process Center environment, you must start the server processes. First, you must log in to the administrative console by using the deployment environment administrator credentials.

- __ 1. Verify that the deployment manager is running.
 - __ a. In a terminal window, enter `cd /opt/IBM/BPM/profiles/PCenterDmgr/bin` to change the directory.
 - __ b. Enter the following command to verify that the deployment manager is running:

```
./serverStatus.sh -all
```



A screenshot of a terminal window titled "root@bpmstdhost:/opt/IBM/BPM/profiles/PCenterDmgr/bin". The window shows the output of the command ./serverStatus.sh -all. The output includes logs from ADMU0116I, ADMU0128I, ADMU0503I, ADMU0505I, ADMU0506I, and ADMU0508I. The line "ADMU0508I: The Deployment Manager "dmgr" is STARTED" is highlighted with a red box.

```
[root@bpmstdhost ~]# cd /opt/IBM/BPM/profiles/PCenterDmgr/bin
[root@bpmstdhost bin]# ./serverStatus.sh -all
ADMU0116I: Tool information is being logged in file
          /opt/IBM/BPM/profiles/PCenterDmgr/logs/serverStatus.log
ADMU0128I: Starting tool with the PCenterDmgr profile
ADMU0503I: Retrieving server status for all servers
ADMU0505I: Servers found in configuration:
ADMU0506I: Server name: dmgr
ADMU0508I: The Deployment Manager "dmgr" is STARTED
[root@bpmstdhost bin]#
```

Notice the entry that indicates that the deployment manager is started.

- __ c. If the deployment manager is running, then skip to the next step. Otherwise, start it by entering the following command:

```
./startManager.sh
```

Wait for the message that indicates that the deployment manager is started.

- __ 2. Verify that the node agent is running.

- __ a. In a terminal window, enter `cd /opt/IBM/BPM/profiles/PCenterCustom/bin` to change the directory.

- ___ b. Enter the following command to verify that the deployment manager is running:

```
./serverStatus.sh -all
```

```
root@bpmsstdhost bin]# ./serverStatus.sh -all
DMU0116I: Tool information is being logged in file
/opt/IBM/BPM/profiles/PCenterCustom/logs/serverStatus.log
DMU0128I: Starting tool with the PCenterCustom profile
DMU0503I: Retrieving server status for all servers
DMU0505I: Servers found in configuration:
DMU0506I: Server name: nodeagent
DMU0506I: Server name: PCenter_DE.AppCluster.member1
DMU0508I: The Node Agent "nodeagent" is STARTED
DMU0509I: The Application Server "PCenter_DE.AppCluster.member1" cannot be
reached. It appears to be stopped.
```

- ___ c. If the node agent is running, then skip to the next step. Otherwise, start it by entering the following command:

```
./startNode.sh
```

Wait for the message that indicates that the node agent is started.

- ___ 3. Start the deployment manager administrative console.

- ___ a. Open a web browser and go to the following URL:

<http://bpmsstdhost:9060/ibm/console>

- ___ b. In the login area, enter `pcdeadmin` as the user ID and `websphere` as the password. Click **Login**.

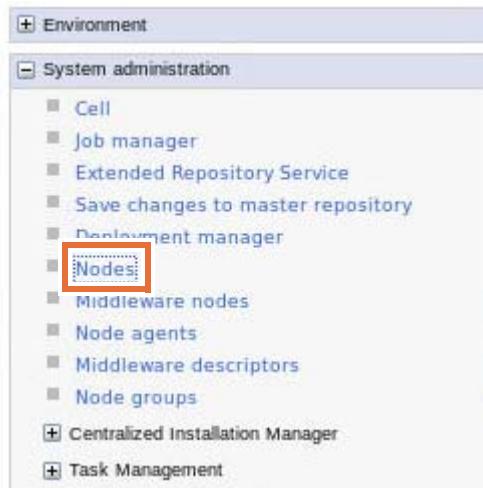


Note

This time you are logging in as a Process Center administrator with the user ID: `pcdeadmin`

- ___ 4. Examine the cell configuration.

- __ a. From the administrative console, click **System administration > Nodes**.



- __ b. You see the two nodes in the cell listed.

Nodes

Use this page to manage nodes in the application server environment. A node corresponds to a physical computer system with a distinct IP host address. The following table lists the managed and unmanaged nodes in this cell. The first node is the deployment manager. Add new nodes to the cell and to this list by clicking Add Node.

Preferences

| Add Node | Remove Node | Force Delete | Synchronize | Full Resynchronize | Stop |
|---|------------------------------------|--------------|------------------------------|--------------------|--------|
| | | | | | |
| Select | Name | Host Name | Version | Discovery Protocol | Status |
| You can administer the following resources: | | | | | |
| <input checked="" type="checkbox"/> | PCenterCellManager | bpmstdhost | ND 8.5.5.5 BPMStd 8.5.6.0 | TCP | |
| <input type="checkbox"/> | PCenterNode01 | bpmstdhost | ND 8.5.5.5 BPMStd 8.5.6.0 | TCP | |
| Total 2 | | | | | |

- ___ c. Click **Servers > Deployment Environments**. One deployment environment is listed.

Deployment Environments

Select the deployment environments to manage. You can manage deployment environment that are created using patterns.



The screenshot shows a software interface for managing deployment environments. At the top, there are three buttons: 'Start', 'Stop', and 'New...'. Below these are several icons: a checkbox, a folder, a double arrow, and a refresh symbol. A table follows, with columns labeled 'Select', 'Status', 'Deployment Environment Name', 'Features', 'Pattern', and 'Description'. The first row contains a checkbox, a red 'X' icon (indicating stopped status), the name 'PCenter_DE' (which is highlighted with a red box), 'IBM BPM Standard Process Center' under Features, 'Single Cluster' under Pattern, and an empty Description field. At the bottom left of the table area, it says 'Total 1'.

| Select | Status | Deployment Environment Name | Features | Pattern | Description |
|--------------------------|---|-----------------------------|---------------------------------|----------------|-------------|
| <input type="checkbox"/> |  | PCenter_DE | IBM BPM Standard Process Center | Single Cluster | |

Total 1

- ___ d. The PCenter_DE deployment environment that is listed is based on the single-cluster pattern, where one cluster is part of this topology. All components run in the same cluster.

The status of the PCenter_DE deployment environment is Stopped (red X).



Information

In the application, remote messaging, and remote support topology, the messaging engine is in a cluster separate from the rest of the functions. Not only does this separation relieve the other clusters of the messaging workload, but it is also valuable because it limits the impact of specific failure scenarios.

- __ e. Click **PCenter_DE**. You are placed on the **PServer_DE** pane where it lists the clusters that are part of the deployment environment.

Deployment Environments

Deployment Environments > PCenter_DE

A deployment environment manages a set of resources as defined by its deployment topology pattern.

Configuration

General Properties

Deployment Environment
PCenter_DE

Deployment Environment Pattern
Single Cluster

Description

Deployment Environment Status 

| Cluster | Cluster Name | Status |
|------------------------------------|---------------------------------------|---|
| Application, Messaging and Support | PCenter_DE.AppCluster |  |

Apply OK Reset Cancel

- __ f. In the Cluster section, one cluster is listed which includes the following details:

- **PCenter_DE.AppCluster**: This cluster hosts the Process Center server, which includes the Process Center Console, Process Admin Console, and the Process Portal. It also hosts the remaining components such as the Business Performance Data Warehouse, Business Space, and messaging engine for the topology. This cluster also hosts the support applications for the topology, which includes and Business Performance Data Warehouse console.

| Cluster | Cluster Name | Status |
|------------------------------------|---------------------------------------|---|
| Application, Messaging and Support | PCenter_DE.AppCluster |  |

- __ g. Under Additional Properties, click Deployment Topology.

Additional Properties

- [Deployment Topology](#)
- [Deferred Configuration](#)
- [Health Center](#)

- __ h. You can see one node that is added to the topology, and the cluster has one member.

Configuration

| Add Nodes | | | | | |
|--|---------------|----------|----------------|------------|--------------------------------|
| <input style="width: 100px; height: 25px; border: 1px solid #ccc; border-radius: 5px; padding: 2px; margin-right: 10px;" type="text" value="PCenterNode01"/> <input style="border: 1px solid #0070C0; border-radius: 5px; width: 50px; height: 25px; background-color: #F0F8FF; color: #0070C0; font-weight: bold; font-size: 10px;" type="button" value="Add"/> | | | | | |
| <input style="border: 1px solid #ccc; border-radius: 5px; width: 50px; height: 25px; background-color: #F0F8FF; color: #0070C0; font-weight: bold; font-size: 10px;" type="button" value="Reset"/> <input style="border: 1px solid #ccc; border-radius: 5px; width: 50px; height: 25px; background-color: #F0F8FF; color: #0070C0; font-weight: bold; font-size: 10px;" type="button" value="Remove"/> | | | | | |
| Select | Node ▾ | Status ▾ | Version | Host | Application Deployment Target |
| <input type="checkbox"/> | PCenterNode01 | | BPMSPC 8.5.6.0 | bpmstdhost | <input type="text" value="1"/> |
| Cluster Status | | | | | |



Information

Since the deployment environment is already generated, the changes you make to the topology configuration are used to update the number of cluster members for the corresponding deployment environment clusters. If you use the Deployment Topology pane to add a node, then the deployment environment definition updates that one node. All clusters that the deployment environment manages include one more cluster member on that node.

- __ 5. Start the deployment environment.



Information

Starting and stopping a deployment environment calls a stop or start operation on all of the clusters in the deployment environment at the same time. If the deployment environment contains multiple clusters that depend on one another, you can start and stop the individual clusters in the deployment environment.

- __ a. Click Servers > Deployment Environments.

- __ b. Select the check box for **PCenter_DE**, and click **Start**.

Deployment Environments

Select the deployment environments to manage. You can manage deployment environment th using patterns.



The screenshot shows a table-based interface for managing deployment environments. At the top, there are buttons for 'Start', 'Stop', and 'New...'. Below them is a toolbar with icons for selecting, de-selecting, and other operations. The main table has columns for 'Select', 'Status', 'Deployment Environment Name', 'Features', and 'Pattern'. A row is selected, indicated by a red border around the 'Select' column checkbox and the 'PCenter_DE' name. The 'Select' column contains a checked checkbox. The 'Status' column shows a red 'X'. The 'Deployment Environment Name' column contains 'PCenter_DE'. The 'Features' column lists 'IBM BPM Standard Process Center'. The 'Pattern' column lists 'Single Cluster'. At the bottom of the table, it says 'Total 1'.

| Select | Status | Deployment Environment Name | Features | Pattern |
|-------------------------------------|---|-----------------------------|---------------------------------|----------------|
| <input checked="" type="checkbox"/> |  | PCenter_DE | IBM BPM Standard Process Center | Single Cluster |
| Total 1 | | | | |

Wait a few moments for the deployment environment to start before proceeding. If after a few minutes the status is still Partial Start, the console must be refreshed by clicking **Servers > Deployment Environments**. It takes up to 20 minutes to fully start.

Deployment Environments

Select the deployment environments to manage. You can manage deployment environment th using patterns.



The screenshot shows a table-based interface for managing deployment environments. At the top, there are buttons for 'Start', 'Stop', and 'New...'. Below them is a toolbar with icons for selecting, de-selecting, and other operations. The main table has columns for 'Select', 'Status', 'Deployment Environment Name', 'Features', and 'Pattern'. A row is selected, indicated by a red border around the 'Select' column checkbox and the 'PCenter_DE' name. The 'Select' column contains an empty checkbox. The 'Status' column contains a green right-pointing arrow. The 'Deployment Environment Name' column contains 'PCenter_DE'. The 'Features' column lists 'IBM BPM Standard Process Center'. The 'Pattern' column lists 'Single Cluster'. At the bottom of the table, it says 'Total 1'.

| Select | Status | Deployment Environment Name | Features | Pattern |
|--------------------------|---|-----------------------------|---------------------------------|----------------|
| <input type="checkbox"/> |  | PCenter_DE | IBM BPM Standard Process Center | Single Cluster |
| Total 1 | | | | |

**Hint**

Tail the `SystemOut.log` file for the cluster member, `PCenter_DE.AppCluster`, to monitor the output as the process starts. To tail the log file, change the directory by entering:

```
cd /opt/IBM/BPM/profiles/PCenterCustom/logs/PCenter_DE.AppCluster.member1
```

**Note**

This directory gets created during the first start of the deployment environment. If it does not exist initially, try again after some delay.

Enter the following command:

```
tail -f SystemOut.log
```

```
[11/27/15 22:12:30:457 EST] 00000162 I com.ibm.mm.framework.persistence.00BSpaceCreator import00BSpaces Importing 00B Spaces...
[11/27/15 22:12:30:470 EST] 00000162 I com.ibm.mm.framework.persistence.00BSpaceCreator import00BSpaces BMWFP0058I: The standard spaces are loading.
[11/27/15 22:12:30:822 EST] 00000162 ServerCache I DYNAL001I: WebSphere Dynamic Cache instance named services/cache/user/mashupInstance initialized successfully.
[11/27/15 22:12:30:833 EST] 00000162 ServerCache I DYNAL071I: The cache provider "default" is being used.
[11/27/15 22:12:45:219 EST] 0000013d TaskLoader I CWLLG0597I: Trying to acquire synchronous queue SYNC_QUEUE_3.
[11/27/15 22:12:45:221 EST] 0000013d TaskLoader I CWLLG0581I: Acquired synchronous queue SYNC_QUEUE_3.
[11/27/15 22:13:04:399 EST] 00000162 I com.ibm.mm.framework.persistence.00BSpaceCreator import00BSpaces BMWFP0059I: The standard spaces have finished loading.
```

When you are finished with monitoring, enter `Ctrl + Z` to stop the tail.

___ 6. Verify the configuration.

___ a. Click **Servers > Clusters > WebSphere application server clusters**.



___ b. Verify that the cluster has a Started state.

WebSphere application server clusters

Use this page to change the configuration settings for a cluster. A server cluster consists of a group of application servers. If one of the member servers fails, requests will be routed to other members of the cluster. Learn more about this task in a [guided activity](#). A guided activity provides a list of task steps and more general information about the topic.

Preferences

| Select | Name | Status |
|--------------------------|---------------------------------------|--------|
| <input type="checkbox"/> | PCenter_DE.AppCluster | |

___ 7. Examine security information.

___ a. Click **Security > Global security**.



- ___ b. Examine the security settings. Under **User account repository**, you can see that the Federated repository is configured and uses the default file-based repository.

User account repository

| | |
|-----------------------------|-----------------------------|
| Realm name | defaultWIMFileBasedRealm |
| Current realm definition | Federated repositories |
| Available realm definitions | |
| Federated repositories | Configure... Set as current |

- ___ c. Click **Users and Groups > Manage Users**. You see the users that are listed.

Search for Users

| | | |
|---------------|--------------|-------------------|
| Search by | * Search for | * Maximum results |
| User ID | * | 100 |
| Search | | |

2 users matched the search criteria.

| Select | User ID | First name | Last name | E-mail | Unique Name |
|--------------------------|-----------|------------|-----------|--------|--|
| <input type="checkbox"/> | bpmadmin | bpmadmin | bpmadmin | | uid=bpmadmin,o=defaultWIMFileBasedRealm |
| <input type="checkbox"/> | pcdeadmin | pcdeadmin | pcdeadmin | | uid=pcdeadmin,o=defaultWIMFileBasedRealm |

Page 1 of 1 Total: 2



Information

The user bpmadmin is the cell administrative user that is created during profile creation. The user pcdeadmin is the administrative user for managing the deployment environment. This user is created during the deployment environment configuration.

- ___ d. Log out of the administrative console.
 ___ e. Close the browser window.

Part 2: Start the Process Center Console

The Process Center Console is a tool that is intended for administrators and developers who must manage the lifecycle of application components from development and testing to production. Administrators and developers can create, export, clone, activate, or archive snapshots of process applications or toolkits and grant access.

The Process Center Console can be accessed in a number of ways:

- If you are primarily an **administrator** and do not actively work on application development, you can use the web portal to view the Process Center Console.
- If you are a **business analyst** and work on the creation of business process definitions and associated assets, you can view the Process Center Console from inside IBM Process Designer.
- If you work as a **developer** on the Advanced Integration service assets of the process application, you can also view the Process Center Console in a separate perspective in IBM Integration Designer. IBM Integration Designer is not included with the IBM Business Process Manager Standard product, and is only available with the Advanced version.

— 1. Start the Process Center Console.

— a. Open a web browser and go to the Process Center Console at the following URL:

<http://bpmsstdhost:9080/ProcessCenter>



Hint

Create a bookmark for this URL.

— b. In the Untrusted Connection window, click **I Understand the Risks** to expand the option.



This Connection is Untrusted

You have asked Firefox to connect securely to **bpmsstdhost:9443**, but we can't confirm that your connection is secure.

Normally, when you try to connect securely, sites will present trusted identification to prove that you are going to the right place. However, this site's identity can't be verified.

What Should I Do?

If you usually connect to this site without problems, this error could mean that someone is trying to impersonate the site, and you shouldn't continue.

[Get me out of here!](#)

► [Technical Details](#)

► **I Understand the Risks**

___ c. Click Add Exception.



This Connection is Untrusted

You have asked Firefox to connect securely to **bpmstdhost:9443**, but we can't confirm that your connection is secure.

Normally, when you try to connect securely, sites will present trusted identification to prove that you are going to the right place. However, this site's identity can't be verified.

What Should I Do?

If you usually connect to this site without problems, this error could mean that someone is trying to impersonate the site, and you shouldn't continue.

[Get me out of here!](#)

► Technical Details

▼ I Understand the Risks

If you understand what's going on, you can tell Firefox to start trusting this site's identification. **Even if you trust the site, this error could mean that someone is tampering with your connection.**

Don't add an exception unless you know there's a good reason why this site doesn't use trusted identification.

[Add Exception...](#)

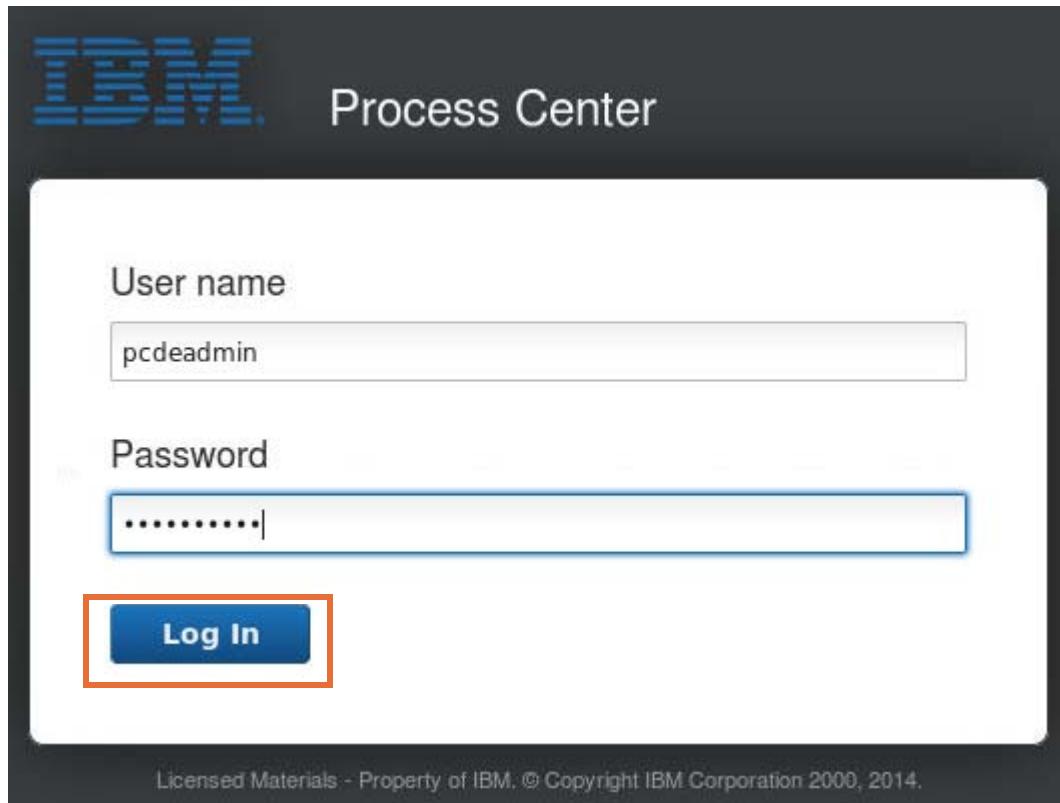
- ___ d. On the **Add Security Exception** window, the location is the secure port for the deployment manager. Verify that the location is the following URL:

<https://bpmsstdhost:9443/ProcessCenter>



- ___ e. Click **Confirm Security Exception**. The Integrated Solutions Console, which is also known as the administrative console, login page is now visible.

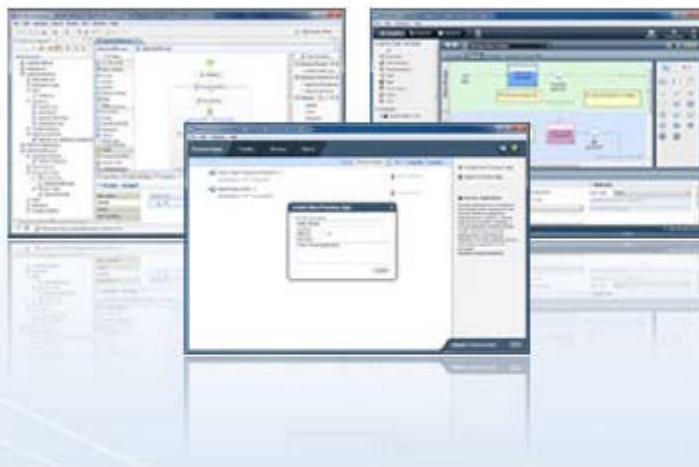
- ___ f. In the login area, enter `pcdeadmin` as the user ID and `websphere` as the password. Click **Login**.



- ___ g. If asked to save the password, click **Save Password**.

- ___ h. After a few moments, the **Getting Started with IBM Process Center 8.5.6.0** welcome page opens. From the Getting Started page, you can obtain information about how to complete various tasks, get product information, view online help topics, and connect to the community wiki and forms. Feel free to explore any of these areas.

Getting Started with IBM Process Center 8.5.6.0



What do you want to do?

- Create a process
- Participate in a process
- Administer a process
- Measure and improve a process
- Administer the Process Center repository



What do you want to know?

- [Business process management overview](#)
- Product overview
- Reference information
- What's new?



Information

There is an area to download the IBM Process Designer package from Process Center. You can use IBM Process Designer for the development of business processes. Typically, BPMN assets are within IBM Process Designer. IBM Process Designer is available only on Windows.

- ___ i. Close the **Getting Started with IBM Process Center 8.5.6.0** welcome page, by clicking the X at the upper-right corner of the window. If you do not see the X, maximize your browser window.

**Hint**

You can get back to the Getting Started page at any time by clicking **Launch Getting Started** in the Process Center Console right navigation pane.

- 2. Explore the Process Center Console.
 - a. When you close the Getting Started welcome page, you see a list of process applications that are available within Process Center. The Process Apps tab that lists all process applications on the Process Center is the default view.

The screenshot shows the Process Center Console interface. At the top, there are tabs for Process Apps, Toolkits, Servers, Admin, Preferences, and Logout. Below the tabs, there is a sorting section with 'Sort By: Recently Updated' and buttons for 'All' and 'Favorites'. The main content area displays three application items, each with a small icon, the application name, a star rating, and a question mark icon. The first item is 'Hiring Sample (HSS)' with a star rating of 5 and a question mark icon. The second item is 'Saved Search Admin (SSA)' with a star rating of 5 and a question mark icon. The third item is 'Process Portal (TWP)' with a star rating of 1 and a question mark icon. All three items show they were last updated on 9/8/15 by pcdeadmin.

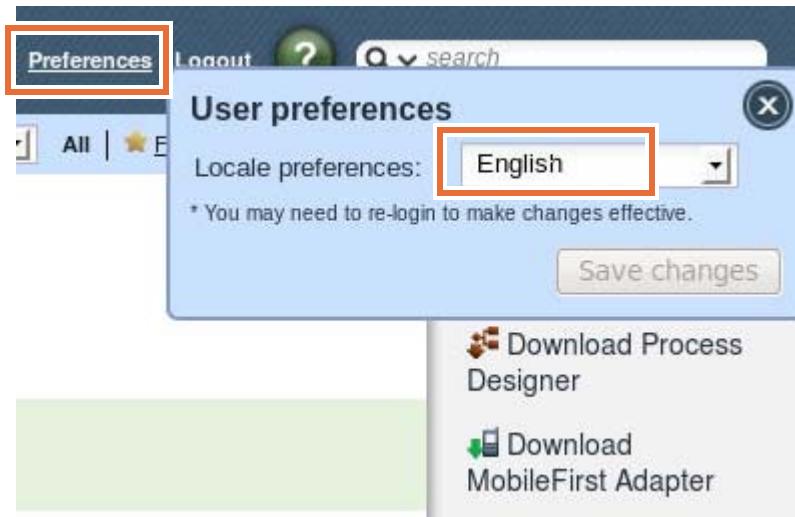
| Application | Last Updated | Rating |
|--------------------------|--------------|--------|
| Hiring Sample (HSS) | 9/8/15 | 5 |
| Saved Search Admin (SSA) | 9/8/15 | 5 |
| Process Portal (TWP) | 9/8/15 | 1 |

- b. Note the set of tabs across the top for Process Apps, Toolkits, Servers, and Admin. Each tab takes you to a specific page, each with different functions.

The screenshot shows the Process Center Console interface with the Admin tab selected. The tabs at the top are Process Apps, Toolkits, Servers, Admin, Preferences, and Logout. Below the tabs, there is a sorting section with 'Sort By: Recently Updated' and buttons for 'All' and 'Favorites'. The main content area displays the same three application items as the previous screenshot: 'Hiring Sample (HSS)', 'Saved Search Admin (SSA)', and 'Process Portal (TWP)'. Each item includes its last update date and the user who updated it.

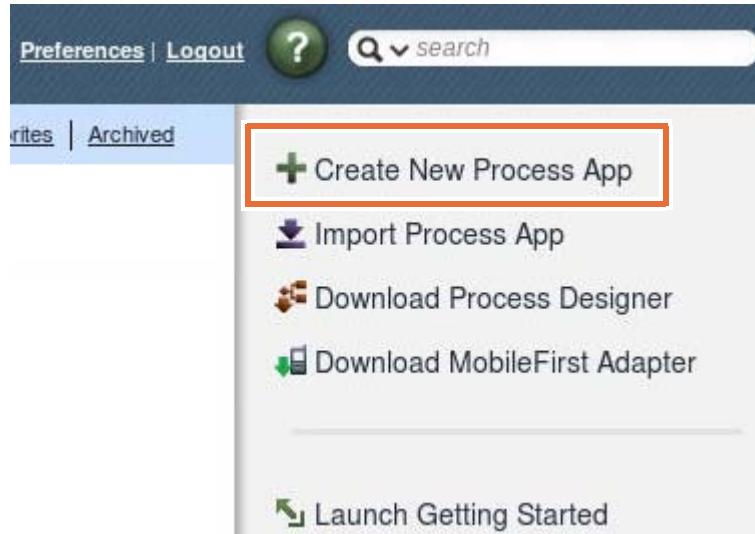
| Application | Last Updated | Rating |
|--------------------------|--------------|--------|
| Hiring Sample (HSS) | 9/8/15 | 5 |
| Saved Search Admin (SSA) | 9/8/15 | 5 |
| Process Portal (TWP) | 9/8/15 | 1 |

- ___ c. In the upper corner of the console window, click **Preferences**. These preferences are used to change the local language of your administration console. Some of the supported languages in this virtual environment include English, French, Italian, German, Spanish, and Russian.



When you change the local language of the administration console, you must log in again for the language to take effect. Do not change the local language of your console.

- ___ d. Click the X icon to close the preferences window.
___ 3. Create new process application.
___ a. On the right side, click **Create New Process App**.



- ___ b. Enter the following information in each field:

- **Process App Name:** Travel Approval Process
 - **Acronym:** TP821
 - **Documentation:** This is travel approval process application.
- Click **Create**.

Create New Process App

Process App Name:
Travel Approval Process

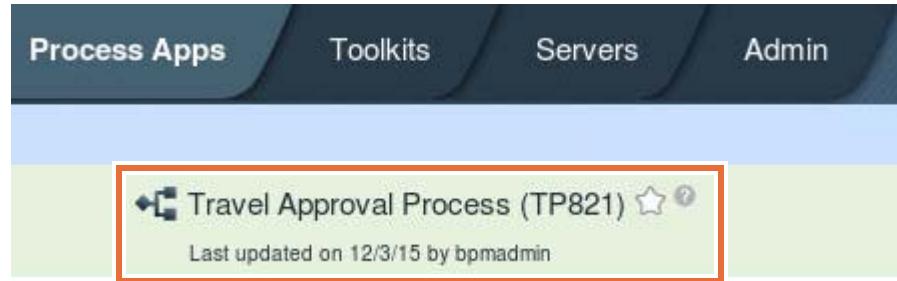
Acronym:
TP821 (?)

Documentation:

This is travel approval process application.

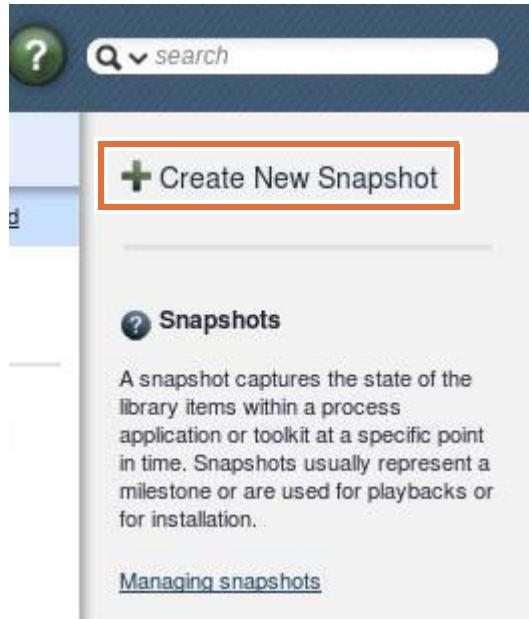
Create

- ___ c. Click **Travel Approval Process (TP821)**.



- ___ d. You can now examine the process application. You see the current version of the process application.

- __ e. Click **Create New Snapshot** on the right side of the window.



Information

Snapshots capture and save the items in a process application at a specific point in time. Snapshots are analogous to versions of the process application. Snapshots can be exported to an external file and cloned, deployed, deactivated, or archived. The current version of an application that is not yet saved as a snapshot, and unlike snapshots is editable, is called the tip. You can see one snapshot for this application.

Tabs available for snapshots are: History, Manage, and Governance. From the History tab, you can see the history of tasks that are completed on the process application. From the Manage tab, you can manage access to the process application.

- __ f. Enter Snapshot 1 for the **Snapshot Name** and Snapshot 1 for Travel Process process application for the **Documentation**. Click **Create**.

Create New Snapshot

Snapshot Name:
Snapshot 1

Documentation:

B **I** **U** 12pt

Snapshot 1 for Travel Process process application.

Create

- __ g. The newly created snapshot appears in the list.

Process Apps Toolkits Servers Admin

+ Travel Approval Process (TP821) ☆ Snapshots History

Current
Last changed on 12/3/15 by bpmadmin

Snapshot 1 (S1) (New)

Created on 12/3/15 by bpmadmin
Not Yet Installed to Process Server

- __ h. Open the menu next to **Snapshot 1 (S1)**. Click **Archive**.

The screenshot shows the 'Schemas' pane of the IBM Business Process Manager Administration interface. At the top, there are tabs for 'Process Apps', 'Toolkits', 'Servers', and 'Admin'. Below that, a navigation bar includes a star icon, 'Travel Approval Process (TP821)', 'Schemas' (which is highlighted in green), and 'History'. In the main area, there are two entries: 'Current' (last changed on 12/3/15 by bpmadmin) and 'Snapshot 1 (S1)'. A context menu is open over 'Snapshot 1 (S1)', listing options like 'Status', 'Edit', 'Clone', 'Activate', and 'Archive'. The 'Archive' button is highlighted with a red box.

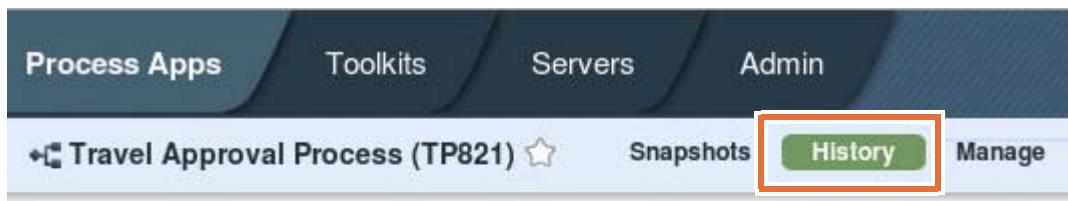
- __ i. Click **Archive** on the **Archive “Snapshot 1”** pop-up.
__ j. Click **Archived** on the pane to view the archived snapshots for the process application.

The screenshot shows the 'Schemas' pane with the 'Manage' tab selected. Below it, a filter bar allows sorting by 'Date' (set to 'All'), 'Installed', and 'Archived'. The 'Archived' tab is highlighted with a red box.

- __ k. The **Snapshot 1(S1)** appears in the Archived list.

The screenshot shows the 'Schemas' pane with the 'Manage' tab selected. The 'Archived' tab is selected. The 'Snapshot 1 (S1)' entry is listed, showing it was created on 12/3/15 by bpmadmin and is 'Not Yet Installed to Process Server'.

- __ I. Click **History** to see the history details of the process application.



Snapshot 1 snapshot was archived by bpmadmin on 12/3/15 at 6:01:44 AM

Snapshot 1 snapshot was modified in Main by bpmadmin on 12/3/15 at 5:57:17 AM

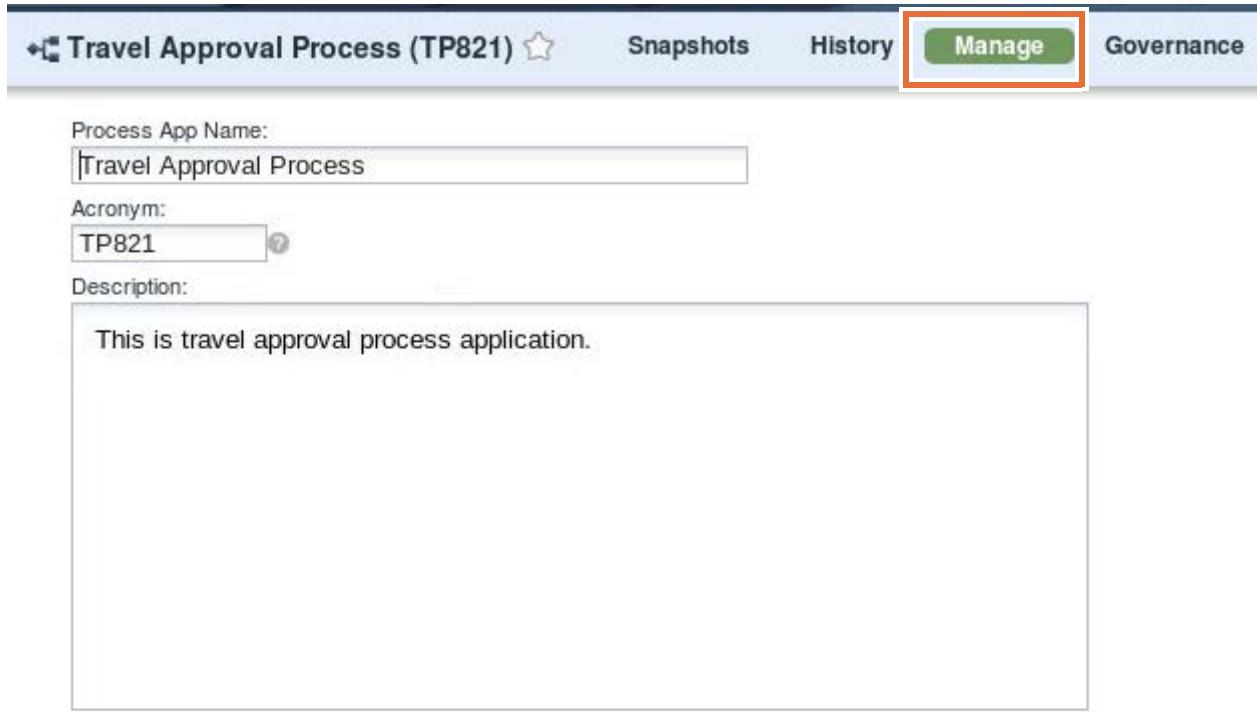
Snapshot 1 snapshot was created in Main by bpmadmin on 12/3/15 at 5:57:17 AM

Travel Approval Process process app modified by bpmadmin on 12/3/15 at 5:49:10 AM

Main track was created by bpmadmin on 12/3/15 at 5:49:05 AM

Travel Approval Process process app created by bpmadmin on 12/3/15 at 5:49:04 **AM**

- ___ m. Click **Manage** to see which users and groups have access to this process application.



The screenshot shows the 'Travel Approval Process (TP821)' application. At the top, there's a navigation bar with tabs: 'Snapshots', 'History', 'Manage' (which is highlighted with a red border), and 'Governance'. Below the navigation bar, there are three input fields: 'Process App Name' containing 'Travel Approval Process', 'Acronym' containing 'TP821', and 'Description' containing 'This is travel approval process application.'

Manage Access to Process Library

[Add Users](#)

[Add Groups](#)

| Read | Write | Admin | |
|-------------------------------------|-------------------------------------|-------------------------------------|---|
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  bpmadmin (bpmadmin) |



Note

Press the **F11** key to fill the entire screen with the browser window to view the Manage Access to Process Library section.



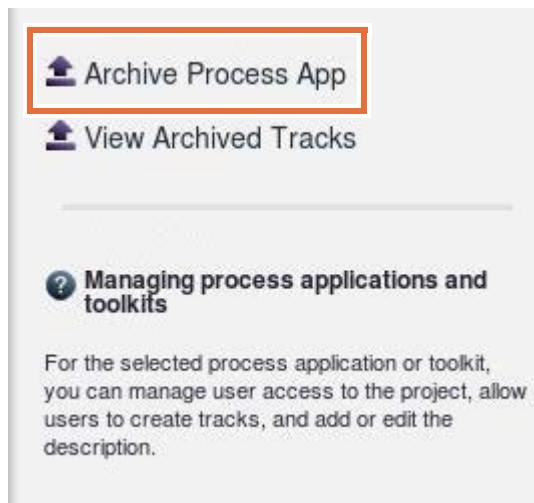


Information

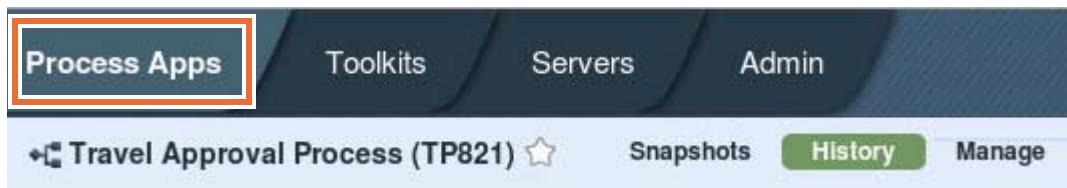
When you manage access to the Process Library, you can give users and groups different access levels.

- **Read:** Users with read access can view the process application or toolkit in the Process Center Console, and view all library items included in the process application or toolkit in the Designer view. However, with read access, edits are not allowed.
- **Write:** Users with write access can view the process application or toolkit in the Process Center Console. They can also create, edit, or delete library items in the process application or toolkit in the Designer view. Users with write access can also create and edit snapshots of the process application or toolkit in either the Process Center Console or the Designer view.
- **Admin:** Users with admin access have all of the capabilities included with write access. In addition, users with admin access can complete the following actions in the Process Center Console: edit process application or toolkit settings; create, edit, or archive tracks; archive snapshots; and modify user access to the process application or toolkit.

- ___ n. On the right side, click **Archive Process App**.

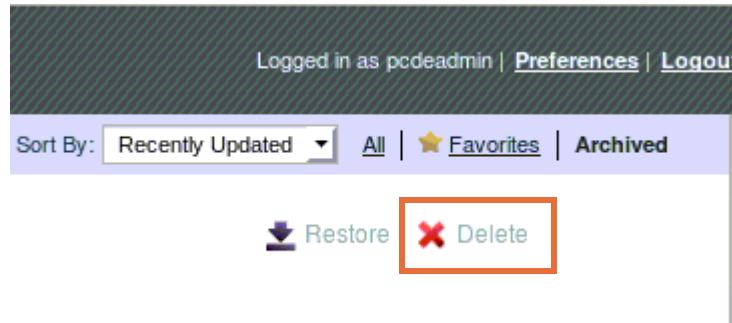


- ___ o. Click **Archive** on the Archive Process App pop-up.
 ___ p. Click the **Process Apps** tab.



- ___ q. The **Travel Approval Process** process application is no longer in the list of process applications.
 ___ r. Click **Archived** on the right side. The **Travel Approval Process** process application is listed.

- ___ s. Click **Delete**. The process application is deleted from the Process Center repository.



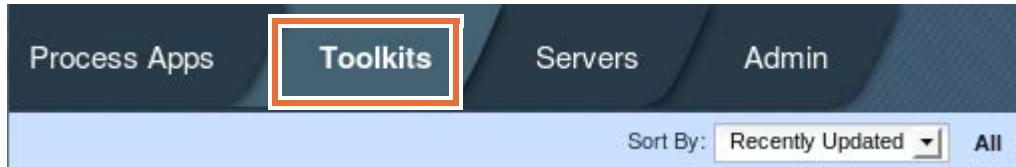
- ___ 4. Examine the **Toolkits** tab.

 **Information**

Toolkits can be enabled for IBM Process Designer so that users can share library items across process applications. The Process Center perspective establishes and maintains relationships between toolkits, process applications, and SCA services. You can complete tasks such as:

- Create a process application or toolkit
- Associate SCA services with a process application or toolkit
- Import process application and toolkit artifacts into the IBM Integration Designer
- Publish process applications and toolkits to the Process Center

- ___ a. In the Process Center perspective, click the **Toolkits** tab.



- ___ b. Several toolkits are listed under the **Toolkits** tab.

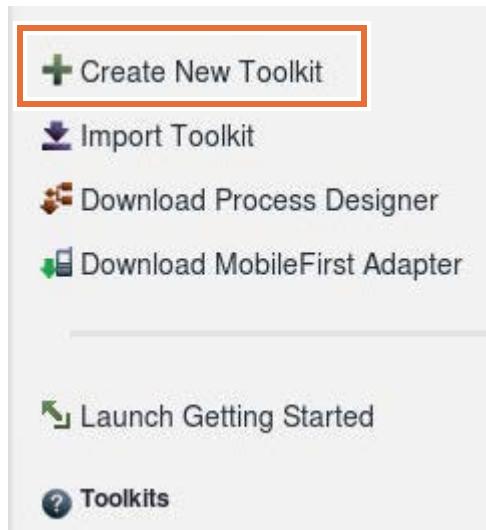
The screenshot shows the SAP Process Center interface with the 'Toolkits' tab selected. The tabs at the top are 'Process Apps', 'Toolkits', 'Servers', and 'Admin'. Below the tabs, there is a sorting dropdown set to 'Recently Updated'. The main area lists six toolkits:

- SAP Guided Workflow (SGW) - Last updated on 9/8/15 by pcdeadmin
- System Governance (TWSYSG) - Last updated on 9/8/15 by pcdeadmin
- Dashboards (SYSD) - Last updated on 9/8/15 by pcdeadmin
- Content Management (SYSCM) - Last updated on 9/8/15 by pcdeadmin
- Coaches (SYSC) - Last updated on 9/8/15 by pcdeadmin
- System Data (TWSYS) - Last updated on 9/8/15 by pcdeadmin

During installation, a number of system toolkits are imported into the Process Center repository. These system toolkits provide resources that you can use as you build your process applications.

The System Data toolkit gives you access to assets that all IBM Business Process Manager projects require, such as standard variable types and standard charts for reports. Each process application and toolkit that you create automatically includes a System Data toolkit dependency.

- ___ c. Click **Create New Toolkit** on the right side of the window.



__ d. Enter the following information in each field:

- **Toolkit Name:** WB821 Administration Toolkit
- **Acronym:** WB821
- **Documentation:** WB821 administration toolkit

Click **Create**.

Create New Toolkit (X)

Toolkit Name:
WB821 Administration Toolkit

Acronym:
WB821 ?

Documentation:

B **I** **U** 12pt Font Size Font Style Font Color Font Background Font Underline Font Bold Font Italic Font Strike Font Subscript Font Superscript Font Text Color Font Text Background

WB821 administration toolkit

Cancel Create

- ___ e. The newly created toolkit **WB821 Administration Toolkit** appears in the Toolkits list.

The screenshot shows the SAP Process Center interface with the 'Toolkits' tab selected. A list of toolkits is displayed, each with a small icon, the toolkit name, a star rating, and a question mark icon. The first toolkit, 'WB821 Administration Toolkit (WB821)', is highlighted with a red rectangular border. Below it, other toolkits listed are 'SAP Guided Workflow (SGW)', 'System Governance (TWSYSG)', 'Dashboards (SYSD)', 'Content Management (SYSCM)', 'Coaches (SYSC)', and 'System Data (TWSYS)'. Each toolkit entry includes a timestamp indicating it was last updated on 11/27/15 by 'pcdeadmin'.

| Toolkit Name | Last Updated | By |
|--------------------------------------|--------------|-----------|
| WB821 Administration Toolkit (WB821) | 11/28/15 | pcdeadmin |
| SAP Guided Workflow (SGW) | 11/27/15 | pcdeadmin |
| System Governance (TWSYSG) | 11/27/15 | pcdeadmin |
| Dashboards (SYSD) | 11/27/15 | pcdeadmin |
| Content Management (SYSCM) | 11/27/15 | pcdeadmin |
| Coaches (SYSC) | 11/27/15 | pcdeadmin |
| System Data (TWSYS) | 11/27/15 | pcdeadmin |

- ___ f. Click **WB821 Administration Toolkit (WB821)**. The snapshot page opens that lists the **Current** snapshots for this toolkit.

The screenshot shows the 'Snapshots' page for the 'WB821 Administration Toolkit (WB821)'. At the top, there are tabs for 'Solutions', 'Snapshots' (which is selected and highlighted in green), 'History', 'Manage', and 'Governance'. Below the tabs, a button 'Sort Snapshots By:' is visible. The main area displays a single snapshot entry under the heading 'Current'. The entry shows a small icon, the label 'Current', the timestamp 'Last changed on 11/28/15 by pcdeadmin', and the note '(Not Used)'.

| Snapshots |
|-----------|
| Current |

- ___ 5. Examine the **Servers** tab.

- ___ a. In the Process Center perspective, click the **Servers** tab. This tab shows all of the Process Servers that are connected to Process Center. The display is blank because no Process Servers are connected.



Information

A key role for administrators is to deploy applications to Process Servers that Process Center manages.

There are two types of runtime Process Servers:

- **Online or connected:** An online runtime Process Server that is configured during IBM Business Process Manager installation is automatically discovered and shown in the Process Center Console.
- **Offline:** An offline server is a runtime Process Server that is not connected to a Process Center. Offline servers can still be used when deploying snapshots of process applications.

It is suggested that you connect the various test Process Servers directly to Process Center to enable automated deployment.

Do not connect production Process Servers directly to the Process Center. Administrators can still use the Process Center Console to manage deployment to disconnected Process Servers. In this case, rather than directly deploying to the server, the Process Center Console creates a deployment package. This deployment package must then be transferred to the directory structure of the target offline Process Server and deployed locally.

6. Examine the **Admin** tab.

- __ a. In the Process Center perspective, click the **Admin** tab. The Admin tab is used to manage users. Two groups are added, and `tw_admins` is the only group with admin access.

The screenshot shows the 'Manage Users' section of the Process Center Console. At the top, there are three tabs: 'Manage Users' (which is selected and highlighted in green), 'Activity Log', and 'Registration'. Below the tabs, there is a table with two rows. The first row has a checked checkbox and a user icon next to the word 'Admin'. The second row has an unchecked checkbox and a user icon next to the group names 'tw_admins' and 'tw_authors'. A red rectangular box highlights the 'tw_admins' row.

- __ b. Continue to explore the Process Center Console. When you are completed with this task, press **F11** to restore the size of the browser and log out.
 __ c. Optionally, close the browser window.
 __ d. Close all open terminals.

End of exercise

Exercise review and wrap-up

In this exercise, you examined a Process Center configuration that includes a remote message deployment environment topology. You explored different tabs on the Process Center Console.

Exercise 5. Adding users and groups

What this exercise is about

This exercise demonstrates how to create groups and then add users to groups. You learn to grant access to users and groups on specific projects and explore the Process Admin Console.

What you should be able to do

After completing this exercise, you should be able to:

- Create groups
- Add users to groups
- Grant access to users and groups on specific projects
- Explore the Process Admin Console and examine its components

Introduction

In this exercise, you are asked to set up security for the organization on two separate projects:

- The Insurance Claims project (CP)
- The Account Verification project (VP)

Both projects are developed in IBM Business Process Manager on the Process Center. The team members in each project must have access only to their specific process applications.

A common place is necessary, where all project teams can share common utility processes, services, and components. The business process development group develops and maintains these common assets.

The CP team is involved in the development of the claims submission processes. The project is divided into the following subteams:

- IT Development Team
- Business Analysts

The IT Development Team administers the process applications. The IT Development Team also needs access to add more users when needed, and this team creates and edits all processes. After the process runs for a while, Business Analysts would like to examine the process and the data. Analysts do not make any direct changes to the process.

Requirements

To complete this exercise, IBM Business Process Manager V8.5.6 Standard must be installed with a Process Center profile. The Process Center server must be running.

Part 1: Exploring the Process Admin Console

The Process Admin Console provides configuration and management tools for the Process Servers in your configuration. You can use the Process Admin Console to view status information for process instances and applications, manage process instances for process applications, and view and manage snapshots of installed process applications.

- 1. Start the Process Admin Console.

- a. Open a web browser and go to the following URL:

<http://bpmsstdhost:9080/ProcessAdmin>



Hint

Create a bookmark to the Process Admin Console URL.

- b. In the login area, enter `pcdeadmin` as the user ID and `websphere` as the password.
Click **Login**.



Note

For remember the password message, click **Remember Password**.

- ___ c. From the Process Admin Console, you can complete various administrative tasks, including managing user accounts, installed applications, and monitoring performance. The Process Admin Console opens and looks like the following screen capture:

The screenshot shows the IBM Process Admin Console interface. At the top, there is a navigation bar with tabs: 'Process Admin Console' (highlighted in blue), 'Server Admin' (highlighted in green), 'Process Inspector', and 'Installed Apps'. On the left, a sidebar menu lists several options: 'IBM BPM Admin', 'User Management', 'Monitoring', 'Event Manager', 'Admin Tools', 'Alert Definitions', and 'Saved Search Admin'. The main content area contains two sections. The first section, titled 'The Process Admin console provides configuration and management tools for the Process Servers in your IBM Business Process Manager environment.', describes the overall purpose of the console. The second section, titled 'The Process Admin console enables you to manage IBM BPM users, as well as the queues and caches for particular servers. The console also provides tools to help you configure the process applications installed on the servers in your runtime environments.', details specific management capabilities. Below these sections is a heading 'To work with the Process Admin console:' followed by a bulleted list of three items.

The Process Admin console provides configuration and management tools for the Process Servers in your IBM Business Process Manager environment.

The Process Admin console enables you to manage IBM BPM users, as well as the queues and caches for particular servers. The console also provides tools to help you configure the process applications installed on the servers in your runtime environments.

To work with the Process Admin console:

- Use this Server Admin page to perform server administration tasks and view status information for process instances and applications.
- Use the Process Inspector page to view and manage process instances for process applications.
- Use the Installed Apps page to view and manage snapshots of installed process applications.

- ___ d. On the right, you can obtain a quick process summary.

The screenshot shows the 'Process Status Summary' page. At the top, there is a header 'Process Status Summary' and a set of time filters: 'Today', 'Week', 'Month', 'Year', and 'All-time'. Below the filters are five colored circles representing different process states: 'Active' (green), 'Completed' (blue), 'Failed' (red), 'Suspended' (orange), and 'Terminated' (black). To the right of each circle is a small minus sign. Below these circles is a section titled 'Process Applications' with a red border. It lists three applications: 'Process Portal (TWP)', 'Saved Search Admin (SSA)', and 'Hiring Sample (HSS)'. Each application name is preceded by a small icon.

Process Status Summary

Today Week Month Year All-time

Active Completed Failed Suspended Terminated

Process Applications

[Process Portal \(TWP\)](#)
[Saved Search Admin \(SSA\)](#)
[Hiring Sample \(HSS\)](#)

2. Explore User Management.
- a. In the left navigation pane, click **User Management > User Management**.



- b. In the Retrieve Profile field, enter * and click **Retrieve**.

User Management > Maintain User Settings

The screenshot shows the 'User Management > Maintain User Settings' page. On the left, there is a 'Retrieve Profile' section with a text input field containing '*' and a 'Retrieve' button below it, both of which are highlighted with a red box. To the right, there is a 'File Registry Users' list containing 'bpmadmin' and 'pcdeadmin'. On the far right, there is a 'User Details' section with four input fields: 'User Name', 'Full Name', 'Password', and 'Confirm Password'.

The * retrieves and lists all of the users in the security repository. You can also type the first character of the user name to get a listing of users that begin with that character.

- c. In the left navigation pane, click **User Management > Group Management**.

- __ d. In the Select Group to Modify field, enter the following characters:

%%

User Management > Group Management

Select Group to Modify: %%

New Group

| | | Remove |
|--|----------------------|--------|
| | Debug | |
| | tw_admins | |
| | tw_allusers | |
| | tw_allusers_managers | |
| | tw_authors | |
| | tw_managers | |
| | tw_portal_admins | |
| | tw_process_owners | |
| | twem | |

The double percent lists all of the groups in the security repository. You can also type the first 2 characters of the group name to get a listing of groups that begin with the 2 characters.

- __ e. Click the group name **tw_admins**. On the right, it shows the members of the group, which includes bpmadmin and pcdeadmin.

User Management > Group Management

Select Group to Modify: %%

New Group

| | | Remove |
|--|----------------------|--------|
| | Debug | |
| | tw_admins | |
| | tw_allusers | |
| | tw_allusers_managers | |
| | tw_authors | |
| | tw_managers | |
| | tw_portal_admins | |
| | tw_process_owners | |
| | twem | |

tw_admins

Team Manager
Group
(deprecated):

No Team Manager Group

Add Users Add Groups

| | | Remove |
|--|-----------------------|--------|
| | bpmadmin (bpmadmin) | |
| | pcdeadmin (pcdeadmin) | |

Part 2: Creating access for a project

You are asked to set up security for the organization on two separate projects:

- The Insurance Claims project (CP)
- The Account Verification project (VP)

Both projects are developed in IBM Business Process Manager on the Process Center. The team members in each project must have access to only their specific process applications.

A common place is necessary where all project teams can share common utility processes, services, and components. The business process development group develops and maintains these common assets.

The CP team is involved in the development of the claims submission processes. The project is divided into the following subteams:

- IT Development Team
- Business Analysts

The IT Development Team administers the process applications. The IT Development Team also needs access to add more users when needed, and this team creates and edits all processes. After the process runs for a while, Business Analysts would like to examine the process and the data. Analysts do not make any direct changes to the process.

You create two groups Business Analysts and IT Development Team and the following user IDs for these two user groups:

- busAnalyst01
- busAnalyst02
- itDev01
- itDev02

Use the following credentials for the users:

| Group Name | User ID | Full Name | Password |
|---------------------|--------------|---------------------|-----------|
| Business Analysts | busAnalyst01 | Business Analyst 01 | websphere |
| Business Analysts | busAnalyst02 | Business Analyst 02 | websphere |
| IT Development Team | itDev01 | IT Developer 01 | websphere |
| IT Development Team | itDev02 | IT Developer 02 | websphere |

- __ 1. Create a user.
- __ a. Click **User Management > User Management**.



- ___ b. To create a new user busAnalyst01, complete the information in the editor by entering the credentials. Click **Add**.

User Management > Maintain User Settings

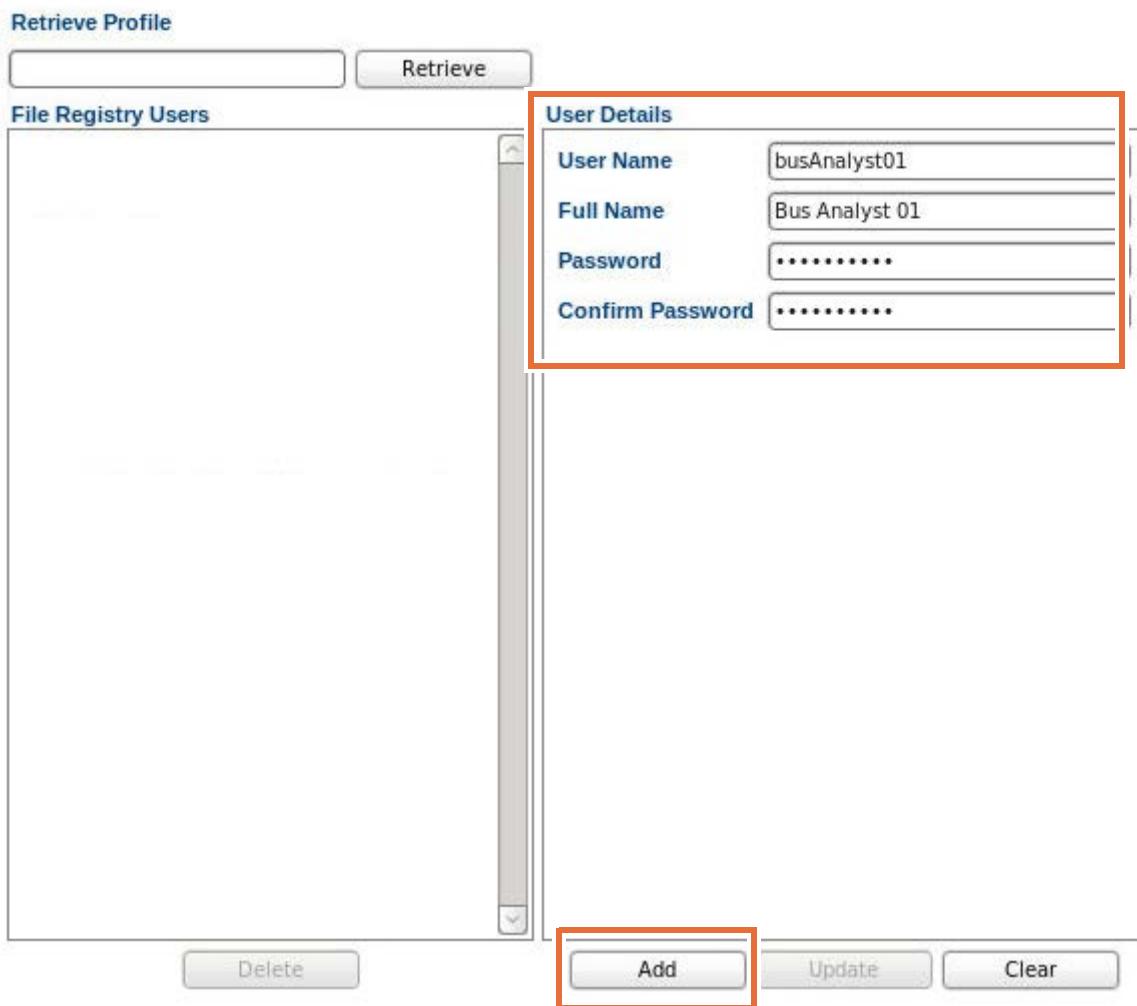
Retrieve Profile

File Registry Users

User Details

| | |
|------------------|----------------|
| User Name | busAnalyst01 |
| Full Name | Bus Analyst 01 |
| Password | |
| Confirm Password | |

Add



Reminder

Use the credentials from the following table:

| User ID | Full Name | Password |
|--------------|---------------------|-----------|
| busAnalyst01 | Business Analyst 01 | websphere |
| busAnalyst02 | Business Analyst 02 | websphere |
| itDev01 | IT Developer 01 | websphere |
| itDev02 | IT Developer 02 | websphere |

- ___ c. Verify that the user was properly added. In the **Retrieve Profile** field, enter * and click **Retrieve**.

User Management > Maintain User Settings

Retrieve Profile

| | |
|---|----------|
| * | Retrieve |
|---|----------|

- ___ d. Verify that the newly created user is listed.

User Management > Maintain User Settings

Retrieve Profile

| | |
|---|----------|
| * | Retrieve |
|---|----------|

File Registry Users

| | |
|---------------------------------------|--|
| bpmadmin busAnalyst01 pcdeadmin | |
|---------------------------------------|--|

User Details

| | |
|------------------|--|
| User Name | |
| Full Name | |
| Password | |
| Confirm Password | |

- ___ 2. Create the users busAnalyst02, itDev01, and itDev02 by following the steps that are mentioned in step 1, which you completed.
___ 3. Create groups to support the different users.

- ___ a. Select **User Management > Group Management**.



- ___ b. Click **New Group**.

User Management > Group Management

Select Group to Modify:

| | |
|------------------|--------|
| New Group | Remove |
|------------------|--------|

- ___ c. In the **Create Group** dialog, name the group **Business Analysts** and add a description: This is a group reserved for Business Analysts. Click **Save**.



- ___ 4. Repeat the preceding step 3 to create the IT Development Team group.
 ___ 5. Review the list of groups. Type %% in the **Select Group to Modify** field. The list of groups is shown.

User Management > Group Management

Select Group to Modify:

(No group selected)

| New Group | Remove |
|----------------------|--------|
| Business Analysts | - |
| Debug | - |
| IT Development Team | - |
| tw_admins | - |
| tw_allusers | - |
| tw_allusers_managers | - |
| tw_authors | - |
| tw_managers | - |
| tw_portal_admins | - |
| tw_process_owners | - |
| twem | - |

Team Manager Group (deprecated): Remove

- ___ 6. Add the users to the new groups.
- ___ a. Select the **Business Analysts** group from the list.

User Management > Group Management

Select Group to Modify: %%

(No group selected)

| New Group | Remove |
|----------------------|----------|
| Business Analysts | [Remove] |
| Debug | [Remove] |
| IT Development Team | [Remove] |
| tw_admins | [Remove] |
| tw_allusers | [Remove] |
| tw_allusers_managers | [Remove] |
| tw_authors | [Remove] |
| tw_managers | [Remove] |
| tw_portal_admins | [Remove] |
| tw_process_owners | [Remove] |
| twem | [Remove] |

Team Manager Group (deprecated): No Team Manager Group

Remove

- ___ b. Click **Add Users**.

User Management > Group Management

Select Group to Modify: %%

Business Analysts

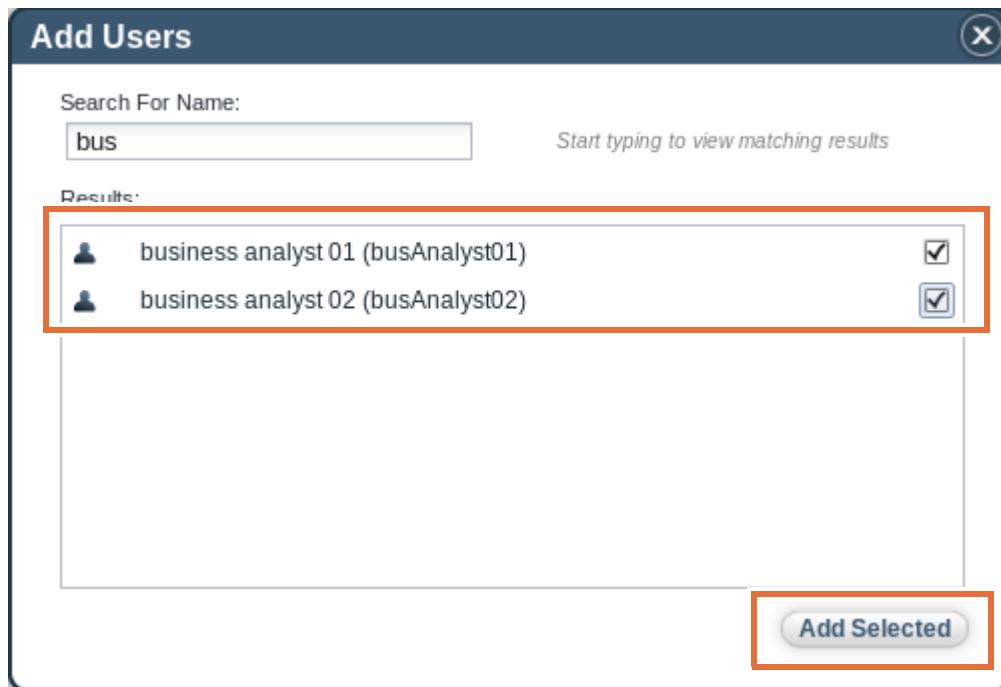
Team Manager Group (deprecated): No Team Manager

| New Group | Remove |
|-----------------------------|----------|
| Business Analysts | [Remove] |
| Claims Project Team Members | [Remove] |
| Debug | [Remove] |
| General Managers | [Remove] |

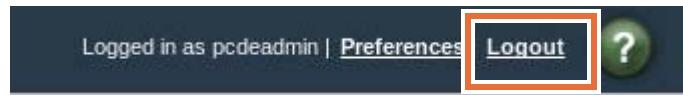
Add Users Add Groups

- ___ c. In the **Group Management** editor, type **bus** in the **Select Group to Modify** field. The users whose names begin with **bus** are filtered in the selection list.

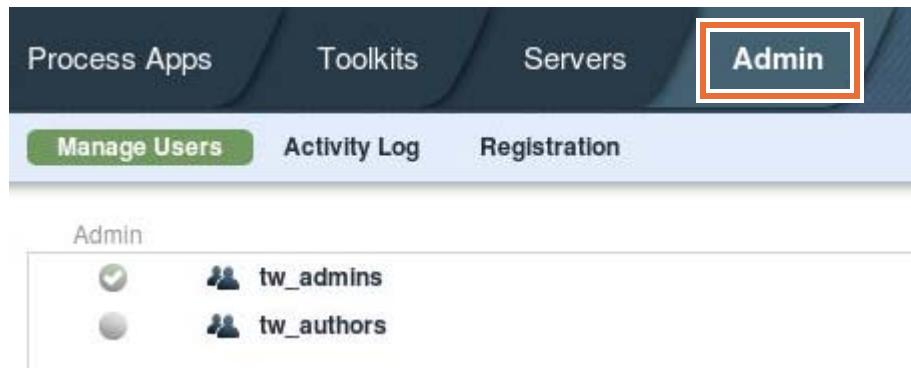
- ___ d. Select the two business analyst users for the group. Click **Add Selected**.



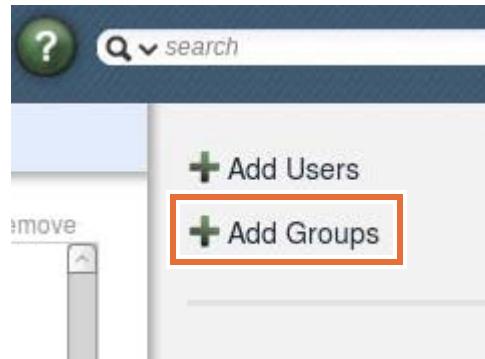
- ___ 7. Repeat step 6 to add `itDev01` and `itDev02` users to the **IT Development Team** group.
 ___ 8. Now that the users and groups are created, log out of Process Admin Console.



- ___ 9. Provide the authorization to the Business Analysts to use the Process Designer to create BPDs and process applications.
- ___ a. Start the Process Center Console by entering the following value in the URL field:
`http://bpmsstdhost:9080/ProcessCenter`
 - ___ b. Log in to Process Center with `pcdeadmin` as the **user ID** and `websphere` as the **password**.
 - ___ c. Click the **Admin** tab.



- __ d. Click **Add Groups** on the right side.



- __ e. Type: bus

- __ f. Select the **Business Analysts** group from the list and click **Add Selected**.

A screenshot of a modal dialog box titled "Add Groups". At the top is a search bar with the placeholder "Search For Name:" and a text input containing "bus". To the right of the input is the text "Start typing to view matching results". Below the search bar is a table with one row, labeled "Results:". The row contains a small user icon, the text "Business Analysts", and a checked checkbox. At the bottom right of the dialog is a button labeled "Add Selected" with a red rectangular box around it.

- ___ g. Repeat this process to add the IT Development Team group to the list of available groups in Process Center.

The screenshot shows the 'Admin' tab selected in the top navigation bar. Below it, the 'Manage Users' tab is active. A list of user groups is displayed, with 'IT Development Team' highlighted by a red box. The other groups listed are 'Business Analysts', 'tw_admins', and 'tw_authors'. Each group entry includes a small icon and a checkmark or circle indicator.

- ___ 10. Create two process applications.

- ___ a. Click the **Process Apps** tab.

The screenshot shows the 'Process Apps' tab highlighted with a red box in the top navigation bar. Below it, the 'Manage Users' tab is active. A list of user groups is displayed, identical to the previous screenshot. The 'Create New Process App' button, which has a plus sign icon, is highlighted with a red box.

- ___ b. Click **Create New Process App**.

The screenshot shows a modal dialog box titled 'Create New Process App'. It contains four options: 'Create New Process App' (highlighted with a red box), 'Import Process App', 'Download Process Designer', and 'Download MobileFirst Adapter'. Each option has a corresponding icon.

___ c. Name the process application Claims Project and set the **Acronym** to: CP821

Add a description in the **Documentation** editor.

Create New Process App X

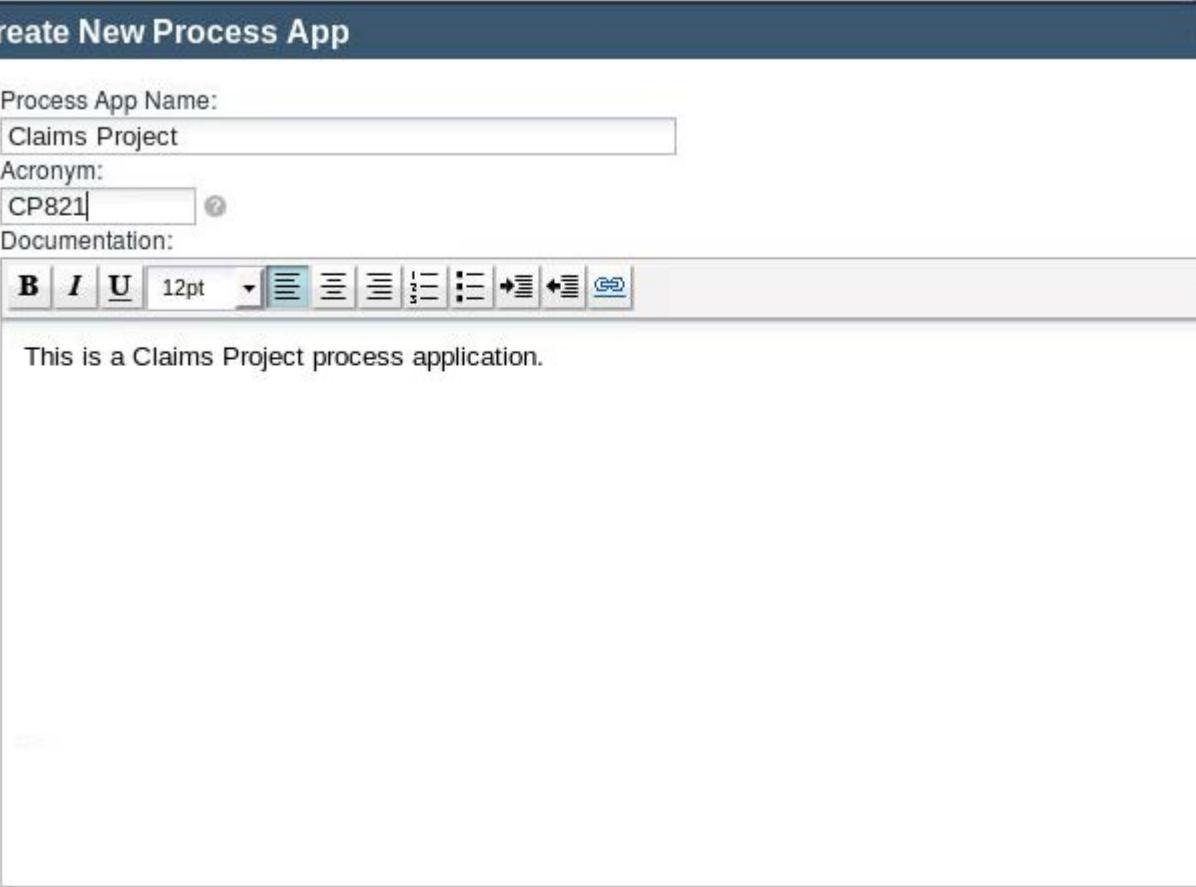
Process App Name:
Claims Project

Acronym:
CP821 ?

Documentation:

This is a Claims Project process application.

Create



___ d. Click **Create**. The process app is now available in the list of available process applications.

- ___ e. Repeat the preceding steps to create a process application that is named Verification Project and that has the acronym: VP821

| Process Application | Last Updated | By |
|------------------------------|--------------|-----------|
| Verification Project (VP821) | 10/12/15 | pcdeadmin |
| Claims Project (CP821) | 10/12/15 | pcdeadmin |
| Hiring Sample (HSS) | 10/11/15 | pcdeadmin |
| Saved Search Admin (SSA) | 10/11/15 | pcdeadmin |
| Process Portal (TWP) | 10/11/15 | pcdeadmin |

- __ 11. Assign users to each project. The access for users is limited, and they can view only the process applications for which they have access.
- __ a. Click the **Claims Project (CP821)** process application.

The screenshot shows a user interface for managing process applications. At the top, there are tabs for 'Process Apps', 'Toolkits', 'Servers', and 'Admin'. Below the tabs, a 'Sort By' dropdown is set to 'Recent'. A list of applications is displayed, each with a small icon, the application name, a star rating, and a 'Last updated' timestamp. The 'Claims Project (CP821)' application is highlighted with a red rectangular box around its row.

| Application | Last updated |
|-------------------------------|-----------------------|
| Verification Project (VP821) | 10/12/15 by pcdeadmin |
| Claims Project (CP821) | 10/12/15 by pcdeadmin |
| Hiring Sample (HSS) | 10/11/15 by pcdeadmin |
| Saved Search Admin (SSA) | 10/11/15 by pcdeadmin |
| Process Portal (TWP) | 10/11/15 by pcdeadmin |

- __ b. Click the **Manage** tab.

The screenshot shows the details for the 'Claims Project (CP821)' application. The top navigation bar includes 'Process Apps', 'Toolkits', 'Servers', 'Admin', and a partially visible 'Preferences' tab. Below the navigation, the application name 'Claims Project (CP821)' is shown with a star icon. To the right are tabs for 'Snapshots', 'History', 'Manage' (which is highlighted with a red box), and 'Governance'. Below these tabs, there are input fields for 'Process App Name' (containing 'Claims Project') and 'Acronym' (containing 'CP821').

- ___ c. Click **Add Users**.

Manage Access to Process Library

Add Users

Add Groups

Read

Write

Admin



pcdeadmin (pcdeadmin)

- ___ d. Type: %01
- ___ e. This command shows all users with the 01 suffix in the user name.
- ___ f. Select each of these users and click **Add Selected**. Only the users with the 01 suffix can work with the **Claims Project**.

Add Users

Search For Name: Start typing to view matching results

Results:

| | | |
|--|-------------------------------|-------------------------------------|
| | Bus Analyst 01 (busAnalyst01) | <input checked="" type="checkbox"/> |
| | IT Developer 01 (itDev01) | <input checked="" type="checkbox"/> |

Add Selected



Hint

To see all of the options on the administration console, set the browser to full screen mode by pressing F11.

- __ g. For the **IT Developer 01** user, click the appropriate **Write** control to grant read and write access to the process application.

Manage Access to Process Library

Add Users Add Groups

| Read | Write | Admin |
|-------------------------------------|-------------------------------------|-------------------------------|
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | pcdeadmin (pcdeadmin) |
| <input checked="" type="checkbox"/> | <input type="radio"/> | Bus Analyst 01 (busAnalyst01) |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | IT Developer 01 (itDev01) |

- __ h. Click the **Process Apps** tab.

Process Apps Toolkits Servers Admin Preferences

Claims Project (CP821) ★ Snapshots History Manage Governance

Process App Name: Claims Project

Acronym: CP821

- __ i. Click the **Verification Project (VP821)** process application.

The screenshot shows a navigation bar with tabs: Process Apps, Toolkits, Servers, and Admin. Below the bar, a button says "Sort By: Recent". A list of applications follows:

- Verification Project (VP821)** (highlighted with a red box)
Last updated on 10/12/15 by pdeadmin
- Claims Project (CP821)
Last updated on 10/12/15 by pdeadmin
- Hiring Sample (HSS)
Last updated on 10/11/15 by pdeadmin
- Saved Search Admin (SSA)
Last updated on 10/11/15 by pdeadmin
- Process Portal (TWP)
Last updated on 10/11/15 by pdeadmin

- __ j. Click **Manage** and repeat the preceding steps to add only the users with the %02 suffix to the list, and click **Add Selected**.

The screenshot shows a modal dialog titled "Add Users". It has a search bar containing "%02" (highlighted with a red box) and a results section below it. The results section shows two entries:

| User | Name | Action |
|-----------------|--------------|-------------------------------------|
| Bus Analyst 02 | busAnalyst02 | <input checked="" type="checkbox"/> |
| IT Developer 02 | itDev02 | <input checked="" type="checkbox"/> |

At the bottom right of the dialog is a button labeled "Add Selected" (highlighted with a red box).

- ___ k. For the **IT Developer 02** user, click the appropriate **Write** control to grant read and write access to the process application.

Manage Access to Process Library

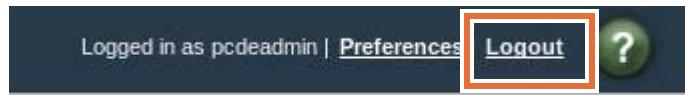
[Add Users](#)

[Add Groups](#)

| Read | Write | Admin | |
|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------|
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | pcdeadmin (pcdeadmin) |
| <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="radio"/> | IT Developer 02 (itDev02) |
| <input checked="" type="checkbox"/> | <input type="radio"/> | <input type="radio"/> | Bus Analyst 02 (busAnalyst02) |

- ___ 12. Test the levels of access to the users for the process applications.

- ___ a. Click **Login**.



- ___ b. On the IBM Process Center Login page, enter `itDev01` as the user name and `websphere` as the password.
- ___ c. Click **Login**.
- ___ d. The first IT developer has access to the Claims Project, but nothing else. The Claims Project is the only process app visible.



- ___ e. Click **Logout**.
- ___ f. On the IBM Process Center Login page, enter `busAnalyst02` as the user name and `websphere` as the password.
- ___ g. Click **Login**.

- ___ h. The second business analyst has access to the Verification Project, but nothing else.
The Verification Project is the only process app visible.

The screenshot shows a software interface with a dark blue header bar. On the left of the bar, the text "Process Apps" is displayed in white. To the right of the bar, there are two other tabs: "Toolkits" and "Servers", both in white text. Below the header, there is a light blue rectangular area. Inside this area, there is a small icon of a document with a gear, followed by the text "Verification Project (VP821)" and a yellow star icon. Below this line, the text "Last updated on 10/12/15 by pcdeadmin" is visible in a smaller font.

- ___ i. Click **Logout**.

End of exercise

Exercise review and wrap-up

In this exercise, you explored the Process Admin console. You also created groups and then added user accounts to groups and limited user access to the Process Center Console.

Exercise 6. Administering Process Portal

What this exercise is about

This exercise examines the features of Process Portal.

What you should be able to do

After completing this exercise, you should be able to:

- Explore Process Portal capabilities
- Modify Process Portal user preferences
- Work with tasks
- Collaborate on a task
- Customize the Process Portal login page

Introduction

The Process Center Console provides a convenient location to create and maintain high-level containers such as process applications and toolkits. You manage running instances of process applications in configured environments.

Requirements

To complete this exercise, you must have:

- IBM Business Process Manager Standard installed
- The Process Center profiles created
- The Process Center single cluster deployment environment created

Exercise instructions

Part 1: Create users in process admin console

You import the Mortgage Approval process application. A new group of employees just completed their onboarding session and must be added to the users list. They are interested in using the social aspects of the Process Portal for their process. Three users are assigned to different roles in this application. The users include:

- **Linda:** Can initiate a mortgage application. Linda is an originator for the application.
- **John:** Can review and collect information. John is the mortgage officer.
- **Andrew:** Has experience with mortgages. Andrew is an expert in the field.

- 1. Create users by using the Process Admin Console.
- a. In the left navigation pane, click **User Management > User Management**.
- b. In the **Internal IBM BPM User Details** area, enter the following information:

- **User Name:** Linda
- **Full Name:** Linda Louis
- **Password:** web1sphere
- **Confirm Password:** web1sphere

| User Details | |
|-------------------------|-------------|
| User Name | Linda |
| Full Name | Linda Louis |
| Password | ***** |
| Confirm Password | ***** |

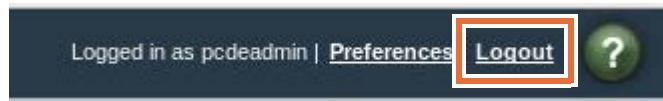
- c. Scroll down the window to click **Add**.
- d. In the Internal IBM BPM User Details area, enter the following information:
- **User Name:** John
 - **Full Name:** John Doe
 - **Password:** web1sphere
 - **Confirm Password:** web1sphere
- e. Click **Add**.
- f. In the Internal IBM BPM User Details area, enter the following information:
- **User Name:** Andrew
 - **Full Name:** Andrew Adam
 - **Password:** web1sphere
 - **Confirm Password:** web1sphere
- g. Click **Add**.

- ___ h. Verify that the new users are added to the system. In the Retrieve Profile field, enter * and click **Retrieve**. If a previous Process Admin lab was not completed, the list in the lab might not match the one in the screen capture.

User Management > Maintain User Settings

| User Name | User Details |
|------------|---|
| Andrew | User De User N Full Na Passw Confir |
| John | User De User N Full Na Passw Confir |
| Linda | User De User N Full Na Passw Confir |
| pcdeadmin | User De User N Full Na Passw Confir |
| superAdmin | User De User N Full Na Passw Confir |

- ___ i. Log out of the Process Admin Console.



Part 2: Import the Mortgage Approval process

- ___ 1. Import a Process App.
- ___ a. In the browser, go to the Process Center Console at the following URL:
`http://bpmsstdhost:9080/ProcessCenter`
- ___ b. In the login area, enter `pcdeadmin` as the user ID and `websphere` as the password. Click **Login**.
- ___ c. If a Getting Started window is displayed, close it by clicking the X icon at the upper right of that window.

- __ d. In the Process Center perspective, the **Process Apps** tab is opened.

The screenshot shows the IBM Business Process Manager Administration interface. At the top, there is a navigation bar with four tabs: 'Process Apps' (which is highlighted with a red box), 'Toolkits', 'Servers', and 'Admin'. Below the navigation bar, there is a search bar labeled 'Sort By: R'. The main content area displays a list of process applications:

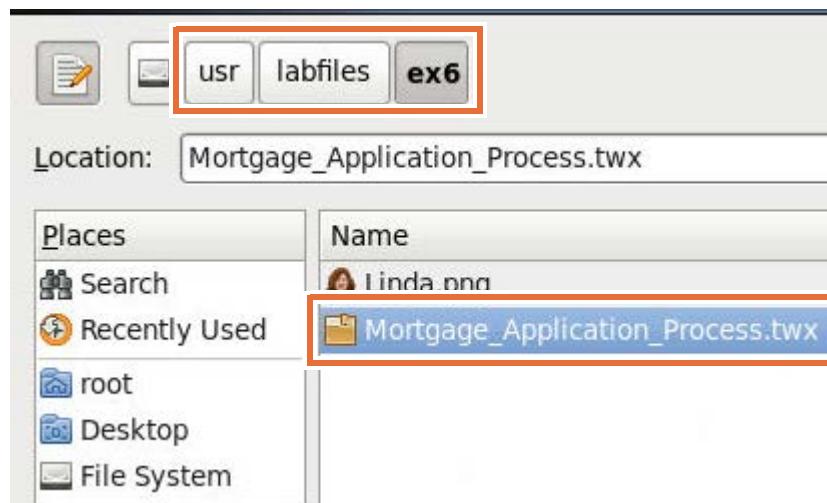
- Verification Project (VP821) ★
- Last updated on 10/12/15 by pcdeadmin
- Claims Project (CP821) ★
- Last updated on 10/12/15 by pcdeadmin
- Hiring Sample (HSS) ★ ?
- Last updated on 10/11/15 by pcdeadmin
- Saved Search Admin (SSA) ★ ?
- Last updated on 10/11/15 by pcdeadmin
- Process Portal (TWP) ★
- Last updated on 10/11/15 by pcdeadmin

- __ e. On the menu on the right, click **Import Process App**.

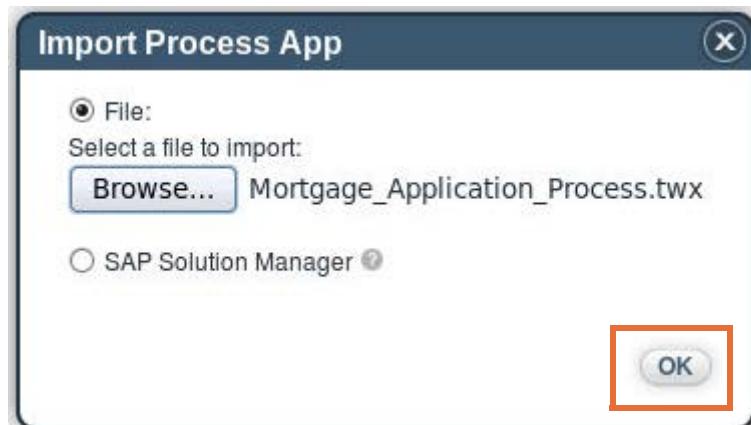
The screenshot shows a vertical menu on the right side of the screen. At the top of the menu is a search bar with the placeholder text 'search'. Below the search bar are several menu items, each with an icon and a label:

- + Create New Process App
- Import Process App** (This item is highlighted with a red box.)
- Download Process Designer
- Download MobileFirst Adapter

- ___ f. In the Import Process App dialog, click **Browse** to navigate to the /usr/labfiles/ex6 folder and select **Mortgage_Application_Process.twx**.



- ___ g. Click **Open**. Click **OK** in the Import Process App window.



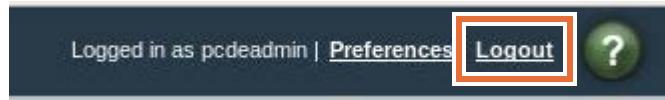
- ___ h. In the Import Process App window, click **Import** to import the process application.

- __ i. The import is complete when the Last updated date is shown below the Process App name. Verify that the **Mortgage Application Process (MAP)** process app exists.

The screenshot shows a list of process applications under the 'Process Apps' tab. The 'Mortgage Application Process (MAP)' app is highlighted with a red box around its entry. The entry for MAP includes a star icon, a last update date of '9/18/15', and a user 'pcdeadmin'. Other listed apps include 'Verification Project (VP812)', 'Claims Project (CP812)', 'Hiring Sample (HSS)', 'Saved Search Admin (SSA)', and 'Process Portal (TWP)'. The 'Claims Project (CP812)' entry is highlighted with a green background.

| Process App | Last updated | User |
|------------------------------------|--------------|-----------|
| Mortgage Application Process (MAP) | 9/18/15 | pcdeadmin |
| Verification Project (VP812) | 9/14/15 | pcdeadmin |
| Claims Project (CP812) | 9/14/15 | pcdeadmin |
| Hiring Sample (HSS) | 9/8/15 | pcdeadmin |
| Saved Search Admin (SSA) | 9/8/15 | pcdeadmin |
| Process Portal (TWP) | 9/8/15 | pcdeadmin |

- __ j. Log out of the Process Center Console.

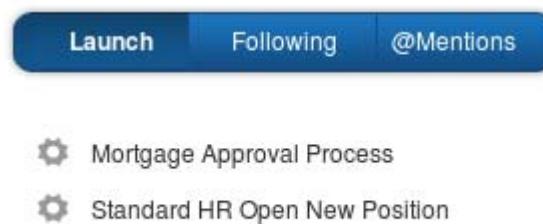


Part 3: Work with the Mortgage Approval process in Process Portal

Process Portal is the user interface environment that allows users to interact with and gain visibility over business processes. It is provided as a ready-to-use, default web application that has rich collaboration features too. Process Portal is the suggested environment from which you interact with processes.

Traditionally, Process Portal is used to run and test the business process applications in the various test and quality assurance environments. Process Portal includes features for monitoring and managing all aspects of the business processes.

- ___ 1. Log in to Process Portal as the user Linda and modify the user profile preferences.
 - ___ a. Open a web browser and go to the following URL:
`https://bpmsstdhost:9443/portal`
 - ___ b. Click **Confirm Security Exception**. The Process Portal login page is now shown.
 - ___ c. In the login area, enter `Linda` as the user ID and `web1sphere` as the password. Click **Login**.
 - ___ d. On the Work page, no tasks are for Linda. On the right, under the **Launch** tab, you can see the list of processes where Linda can start an instance. The **Mortgage Approval Process** is listed.



- ___ e. From the main tab bar at the top, click **Linda L > User Profile** to modify the profile.



- ___ f. In the window, you can change settings in the profile such as contact information, including a photo, your working language, receiving confirmation messages and getting them by email, and other preferences. In the main area, click **Change** to add a photo.



Portal Preferences

Language 

Calendar Type 

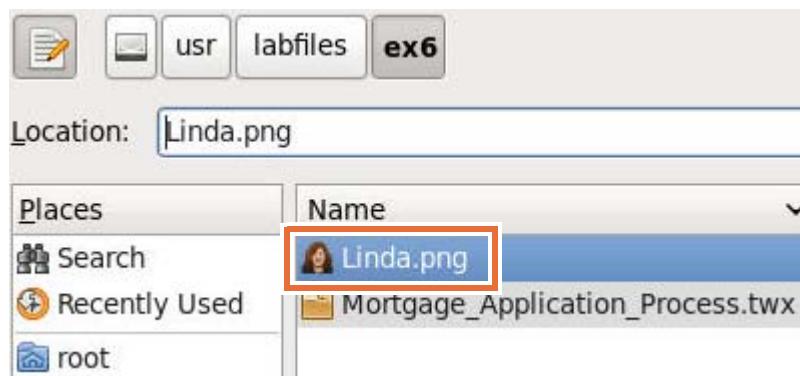
- Show a confirmation window when I open an unclaimed task
- Send me an email when I have a new task assignment
- Show a confirmation message when I stop following a process

Display a notification when

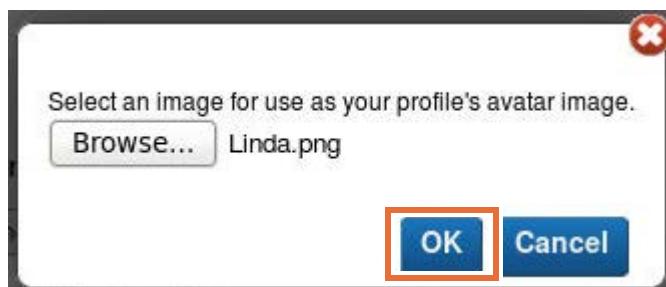
- A new task is assigned to me
- A new task is assigned to my team
- An activity is updated
- I'm mentioned in a post

Update

- ___ g. In the window, click **Browse** to navigate to the /usr/labfiles/ex6 folder and select **Linda.png**.



- ___ h. Click **Open**. Click **OK**.

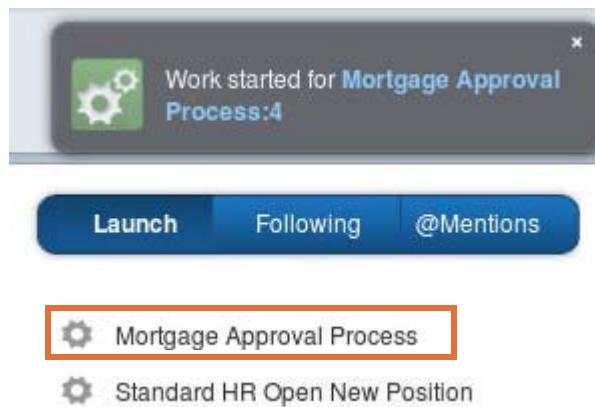


- ___ i. The profile now contains a photo, which becomes the avatar image for the profile. Hover your mouse over **Job Title**, and the pencil appears to edit the field.

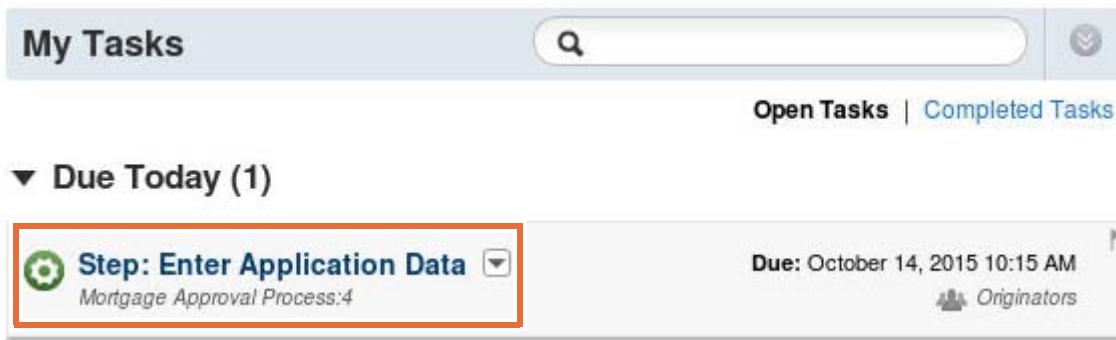


- ___ j. Click **Job Title**. Enter Mortgage App Originator and click anywhere in the window to update the entry. The changes take effect immediately except for changes to the language setting. You must log out and log in again for any language changes to take effect.
- ___ k. Scroll through the rest of the options available. When completed, scroll to the bottom and click **Update**.

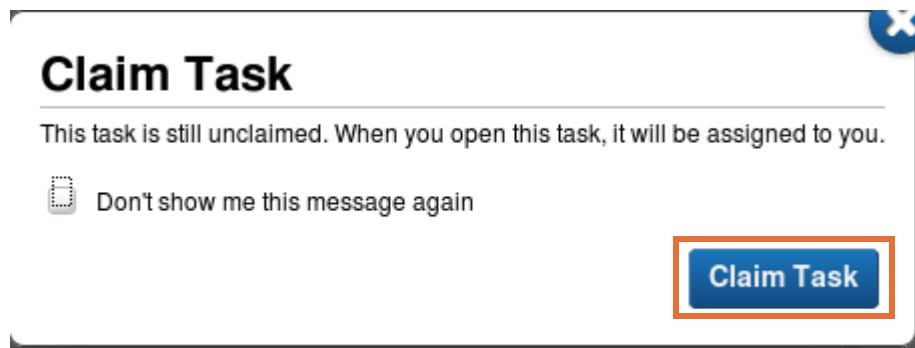
2. Create instances of the Mortgage Approval Process application.
- a. Under the Launch tab, click **Mortgage Approval Process** to start an instance. When you click the entry, a message opens to indicate that the new process instance is started. The message is visible only for a few seconds, and then it disappears.



- b. Under tasks Due Today, the task is listed. The role for this task is Originators, which Linda is since Linda started the instance. Click **Step: Enter Application Data**.



- c. A window opens that indicates when you open the task, the task is assigned to Linda. Click **Claim Task**.



- ___ d. The first coach of the task is displayed with two tabs, Applicant Information and Application Information. Enter the following information on the **Applicant Information** tab:

- **First Name:** Joe
- **Last Name:** Joseph
- **City:** Anchorage
- **State:** select Alaska

Please enter the applicant information and requested mortgage application information

Applicant Information Application Information

Personal and Demographic Information

| | | |
|-------------------------|--------------------------|----------------------|
| First Name | Last Name | |
| Joe | Joseph | |
| Street Address | | |
| <input type="text"/> | | |
| City | State or Province | Postal Code |
| Anchorage | Alaska | <input type="text"/> |
| Date of Birth | | |
| <input type="text"/> 18 | | |

Qualifying Information



Information

You can enter any information in the coach for the applicant. The information that is entered does not matter in this case. This exercise is meant to show the functions of Process Portal.

- ___ e. Click the **Application Information** tab, and enter the **Mortgage Amount** of 50000.

Please enter the applicant information
mortgage application information

Applicant Information Application Information

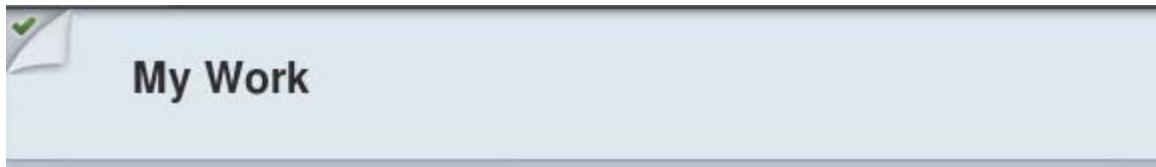
Mortgage Request Details

Mortgage Type

Mortgage Amount
50000

Mortgage Rate
0

- ___ f. Scroll to the bottom and click **Submit**.
- ___ g. You are placed on the My Work page. The task is now completed, and it disappeared from the My Tasks listing. The submit action also causes the process to move to the next step, which John must complete.



- ___ h. Click **Completed Tasks** to see the task that Linda just completed.

My Tasks

Open Tasks | **Completed Tasks**

No tasks were found.

Step: Enter Application Data ▾ Completed: November 30, 2015 2:39 AM

Mortgage Approval Process:5

- ___ i. Log out of Process Portal.



- ___ 3. Log in to Process Portal as the user John and examine the task.
- ___ a. Log in to Process Portal by entering John as **User ID** and web1sphere as **Password**. Click **Login**.
 - ___ b. Verify that a task is listed for John that is due today. This task is to gather documents from the applicant. The team that is identified for the task is Mortgage Officers, and John is a mortgage officer.

My Tasks

Open Tasks | Completed Tasks

▼ Due Today (1)

| | | | | |
|--|--|--|------------------------------------|---------------------------------------|
| | Step: Gather Documents from Applicant | | Mortgage Approval Process:4 | Due: October 14, 2015 11:15 AM |
| | | | | |



Note

The process instance number might vary in your environment.

- ___ c. Open the menu next to **Step: Gather Documents from Applicant**. You can see the various operations that John can complete before working on the task. In the menu, click **View Instance**.

My Tasks

Open Tasks | Completed Tasks

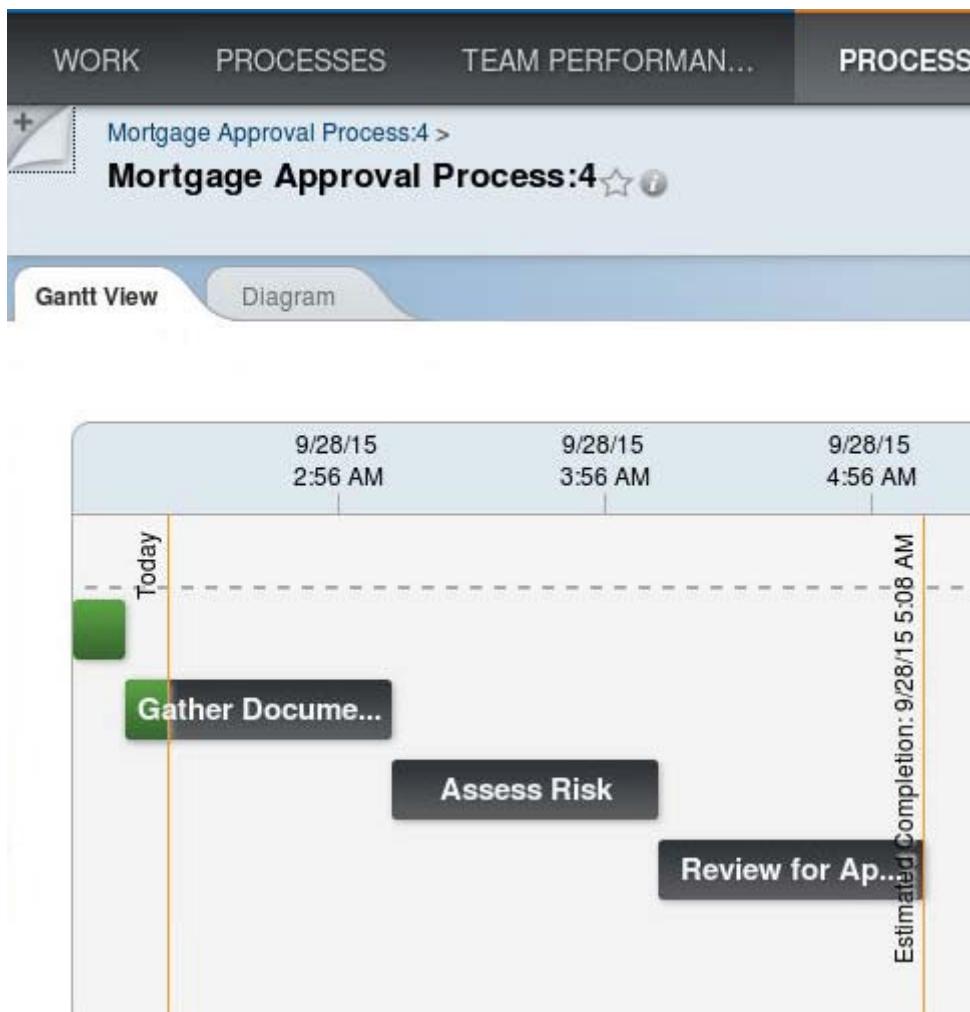
▼ Due Today (1)

| | | | | |
|--|--|--|------------------------------------|---------------------------------------|
| | Step: Gather Documents from Applicant | | Mortgage Approval Process:4 | Due: October 14, 2015 11:15 AM |
| <div style="background-color: #0070C0; color: white; padding: 5px; text-align: center;"> View Instance View Process Diagram </div> | | | | |

- ___ d. You are placed on the Process Performance Dashboard. This page contains charts and graphs that help you visualize the progress of process instances. You can use the data that is provided to identify instances that need attention. In addition, you can filter the data by using the search filter.
- ___ e. Click the **GANTT CHART** icon on the upper-right corner of the window.



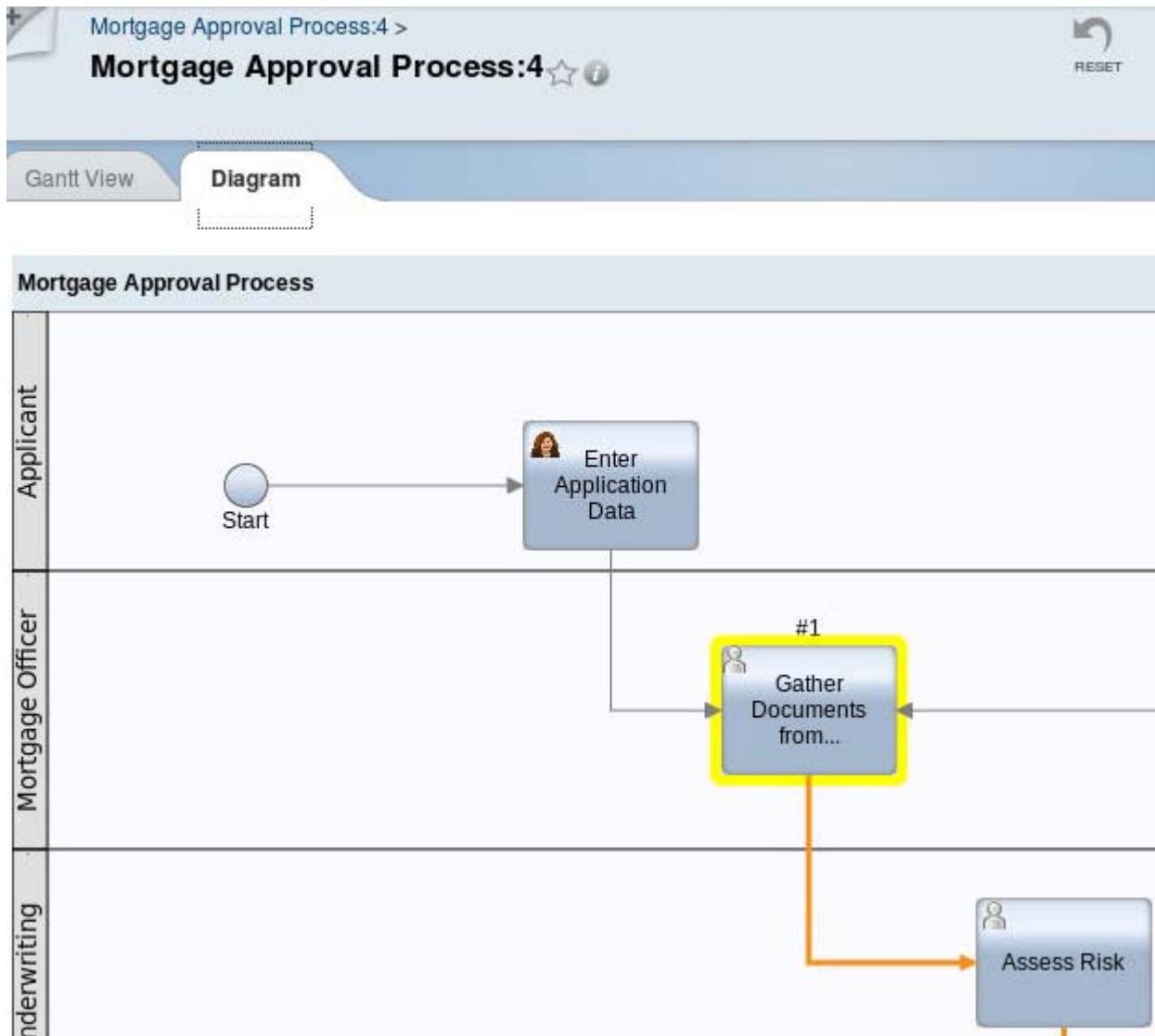
- ___ f. The **Gantt View** for this process appears.

**Hint**

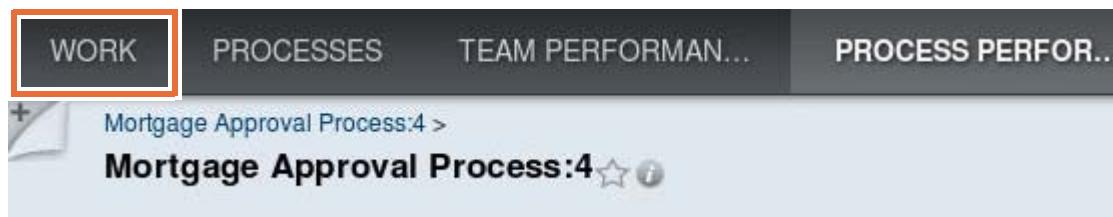
Click the star icon next to the name **Mortgage Approval Process: 4** to follow the task.

- g. Click the **Diagram** tab. This page shows the overall status of the tasks in the open instances. Based on the information in the status indicators, you can identify which tasks are causing bottlenecks. You can identify instances that need attention, see the tasks in linked processes, and go to an instance by selecting the entry for the instance in the list.

The first activity in the diagram is Enter Application Data. You can see the avatar for Linda, indicating that Linda completed this task. The process is at the Gather Documents from Applicant activity, highlighted by the yellow outline box.



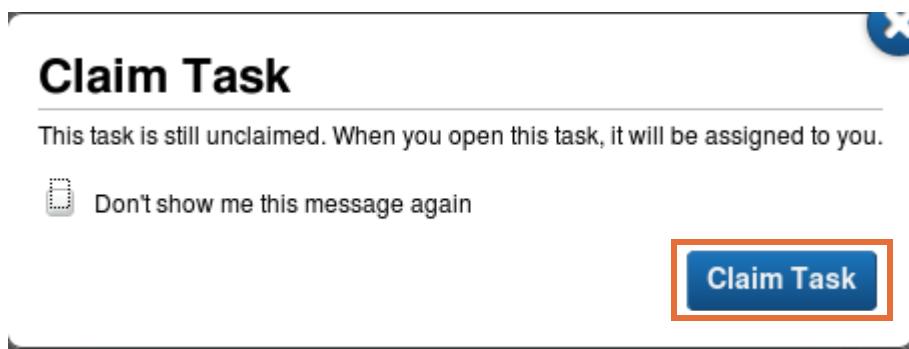
- h. Click **Work** in the tab bar at the top of the browser.



- ___ 4. Complete the task assigned to John.
 - ___ a. Click **Step: Gather Documents from Applicant**.

The screenshot shows a web-based application titled "My Work". At the top, there is a header bar with "My Tasks" on the left, a search icon in the center, and "Open Tasks | Completed Tasks" on the right. Below the header, a section titled "▼ Due Today (1)" is visible. Under this section, a task card is displayed for "Step: Gather Documents from Applicant". The task card includes a green gear icon, the task name, its due date ("Due: October 14, 2015 11:15 AM"), and the assignee ("Mortgage Officers"). A red box highlights the task name "Step: Gather Documents from Applicant".

- ___ b. A window opens that indicates the unassigned task. Click **Claim Task**.



- ___ c. On the right, you are on the Details tab. From here, examine the Tasks area that shows the two steps for the process.



☆ Mortgage Approval Process:5

Due: Today

City: Anchorage

[View Process Diagram](#)

Tasks

| | |
|---|--|
| | Step: Gather Documents from Applicant |
| | John Doe |
| <i>Created: November 30, 2015 2:39 AM</i> | |
| <i>Due: November 30, 2015 3:39 AM</i> | |
| | Step: Enter Application Data |
| | Linda Louis |
| <i>Created: November 30, 2015 2:37 AM</i> | |
| <i>Completed: November 30, 2015 2:39</i> | |

- ___ d. Click the **Stream** tab to view the evolution of the process.

The screenshot shows the Stream tab selected in a navigation bar. Below the bar is a text input field labeled "Post ...". The main area displays a list of tasks:

- Step: Gather Documents from Applicant** task was claimed (currently assigned to **John Doe**)
November 30, 2015 2:41 AM
- Step: Gather Documents from Applicant** task was created (currently assigned to **John Doe**)
November 30, 2015 2:39 AM
- Linda Louis** completed the **Step: Enter Application Data** task.
November 30, 2015 2:39 AM
- Step: Enter Application Data** task was claimed (currently assigned to **Linda Louis**)
November 30, 2015 2:38 AM
- Step: Enter Application Data** task was created (currently assigned to **Linda Louis**)

- ___ e. On the left, scroll down to enable the check box for **Is Applicant an Existing Homeowner?** on the Applicant information tab and click **Submit**.

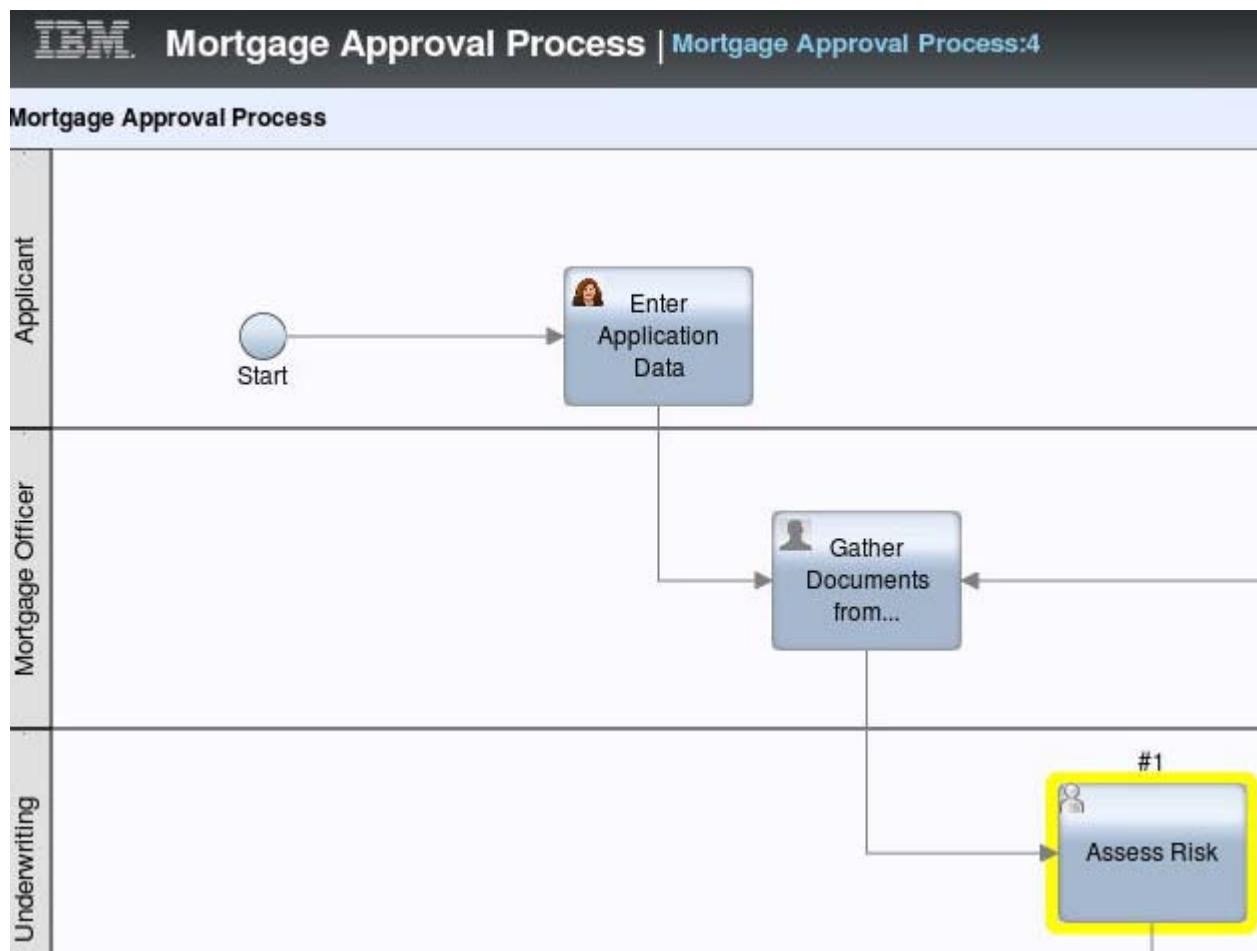
The screenshot shows the "Qualifying Information" tab. It includes fields for Marital Status (dropdown), Yearly Income (text input with value "0"), and Applicant Credit Score (text input with value "0"). A checkbox labeled "Is Applicant an Existing Homeowner?" is checked and highlighted with an orange border. A large blue "Submit" button at the bottom is also highlighted with an orange border.

- ___ f. You are placed on the Work page. The Gather Documents task is now complete, and it disappeared from the My Tasks listing. The submit action also causes the process to move to the next step, which All Users can complete.

The next step is **Step: Assess Risk**. Because the activity is assigned to the All Users team, it immediately appears in the tasks for John.

The screenshot shows the 'My Tasks' interface. At the top, there is a search bar and navigation links for 'Open Tasks' and 'Completed Tasks'. Below this, a section titled 'Due Today (1)' is expanded. Inside this section, there is a task card for 'Step: Assess Risk'. The card includes a gear icon, the task name, a dropdown arrow, a subtitle 'Mortgage Approval Process:4', a due date of 'October 14, 2015 11:46 AM', and an assignee 'All Users'. A red box highlights the 'Step: Assess Risk' button.

- ___ g. Open the menu next to **Step: Assess Risk** and click **View Process Diagram**. The process is at the Assess Risk activity, highlighted by the yellow outline box.



- ___ h. Click the first activity in the diagram, **Enter Application Data**, which reveals some of the details of the activity.



- ___ i. Click anywhere in the diagram to close the details window.
___ j. Click the second activity in the diagram, **Gather Documents from Applicant**, to see the details. The green dot next to the name indicates that the user John is logged in.



- ___ k. Click X in the upper-right corner to close the process diagram.

- __ l. Click **Step: Assess Risk** and click **Claim Task**.

The screenshot shows the 'My Tasks' interface. At the top, there is a search bar and navigation links for 'Open Tasks' and 'Completed Tasks'. Below this, a section titled 'Due Today (1)' is shown. A single task card is listed: 'Step: Assess Risk' (Mortgage Approval Process:4), which is due on October 14, 2015, at 11:46 AM, and is assigned to 'All Users'. The task card has a red box around it.

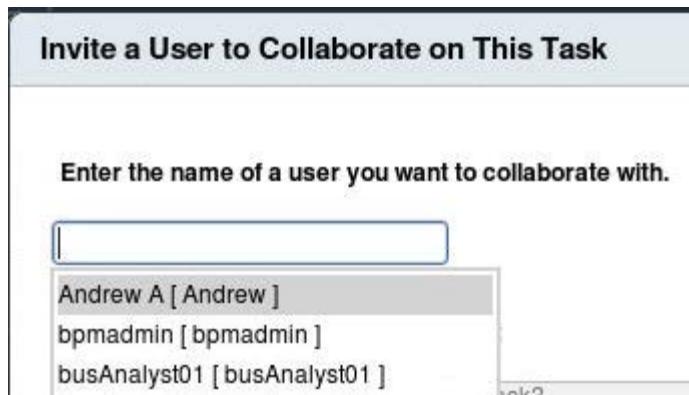
- __ m. The next coach opens, and you can see an extra tab, **Underwriting**.

The screenshot shows the 'Underwriting - Check if Application meets Risk Requirements' coach. At the top, there are three tabs: 'Applicant Information', 'Application Information', and 'Underwriting', with 'Underwriting' highlighted by a red box. Below the tabs, the section title 'Personal and Demographic Information' is displayed. The form fields include 'First Name' (Joe), 'Last Name' (Joseph), 'Street Address' (empty), 'City' (Anchorage), 'State or Province' (Alaska), 'Postal Code' (empty), and 'Date of Birth' (10/14/2015).

- __ n. Open the menu next to Step: Assess Risk and click **Collaborate**.

The screenshot shows the context menu for 'Step: Assess Risk'. The menu items are: 'Modify Task', 'Reassign Back to Team', 'Collaborate' (highlighted by a red box), 'View Instance', and 'View Process Diagram'. The background shows the 'Underwriting - Check if Application meets Risk Requirements' coach interface.

- __ o. The “Invite a User to Collaborate on This Task” window opens.



- __ p. Select **Andrew A** for the name of the user that you want to collaborate with and enter a message, such as Please review the applicant and provide your final decision. When completed, click **Invite**.

The screenshot shows the same modal window as before. The input field now contains "Andrew Adam". In the message area, the text "Please review the applicant and provide your final decision." is entered. The "Invite" button at the bottom right is highlighted with a red border.

- __ q. Click the **Underwriting** tab and select the option **Did this application meet risk requirements?**

The screenshot shows a tab labeled "Underwriting - Check if Application meets Risk Requirements". Below the tabs, there is a checkbox labeled "Did this application meet risk requirements?" which is checked. This checkbox is highlighted with a red border.

- __ r. Scroll to the bottom and click **Submit**.

- ___ s. The task is now complete, and it disappeared from the My Tasks listing. The submit action also causes the process to move to the next step, which is the Review for Approval task. Again, the role is defined is for All Users, so the task immediately appears for John. Do not claim the task as John.

The screenshot shows the 'My Tasks' interface. At the top, there's a search bar and navigation links for 'Open Tasks' and 'Completed Tasks'. Below that, a section titled 'Due Today (1)' is shown. A single task card is listed: 'Step: Review for Approval' (with a dropdown arrow), 'Mortaaae Approval Process:4', 'Due: October 14, 2015 12:41 PM', and 'All Users'. The 'All Users' button is highlighted with a red box.

- ___ t. Log out of Process Portal.



- ___ 5. Log in to Process Portal as the user Andrew and work with the task.
- ___ a. Log in to Process Portal by entering Andrew as **User ID** and web1sphere as **Password**. Click **Login**.
- ___ b. In the right, you can see that Andrew was mentioned on a task as indicated by the **1** icon.

The screenshot shows the Process Portal dashboard. At the top, there are tabs for 'Launch', 'Following', and '@Mentions', with '@Mentions' highlighted and a red box around the '1' notification icon. Below the tabs, two tasks are listed: 'Mortgage Approval Process' and 'Standard HR Open New Position'.

- ___ c. Click the **@Mentions** tab to see which task Andrew is mentioned on and who mentioned Andrew. You can see that John J asked to collaborate to review the applicant.

The screenshot shows a user interface for a task collaboration feature. At the top, there are three tabs: "Launch", "Following", and "@Mentions", with "@Mentions" being the active tab. Below the tabs is a button labeled "Clear all x". A notification box is displayed, showing a profile picture of a user named "John Doe" and the message: "John Doe invited you to collaborate on the Step: Assess Risk task for Mortgage Approval Process:5". The message continues with "November 30, 2015 2:59 AM" and the instruction "Please review the applicant and provide your final decision.".

- ___ d. On the left, under the tasks Due Today, click **Step: Review for Approval**.

The screenshot shows a "My Tasks" page. At the top, there is a search bar and a dropdown menu. Below it, two buttons: "Open Tasks" and "Completed Tasks". A section titled "Due Today (1)" is shown, containing a single task card. The task card has a green circular icon with a soccer ball, the title "Step: Review for Approval", a dropdown arrow, and the subtitle "Mortgage Approval Process:4". To the right of the title, it says "Due: October 14, 2015 12:41 PM" and "All Users".

- ___ e. Click **Claim Task**.
 ___ f. The next coach is displayed, and the Final Decision tab is now included. Click the **Final Decision** tab.

The screenshot shows a form titled "Manager - Enter final application decision below". At the top, there are four tabs: "Applicant Information", "Application Information", "Underwriting", and "Final Decision", with "Final Decision" being the active tab. Below the tabs is a section titled "Personal and Demographic Information". It contains fields for "First Name" (Joe), "Last Name" (Joseph), "Street Address" (empty), "City" (Anchorage), "State or Province" (Alaska), "Postal Code" (empty), and "Date of Birth" (10/14/2015). The "Final Decision" tab is highlighted with a red border.

- ___ g. Select the option **Accept**, and scroll down to click **Submit**.

Manager - Enter final application decision below

Applicant Information Application Information Underwriting Final Decision

ACCEPT
 DENY
 MORE INFO

- ___ h. The task is completed, and no new tasks are found. Click **Completed Tasks** and verify that the task is listed.

My Tasks

Open Tasks **Completed Tasks**

Step: Review for Approval Mortgage Approval Process:5 Completed: November 30, 2015 3:07 AM

- ___ i. On the right, click **Launch**.

Launch Following @Mentions

Mortgage Approval Process
 Standard HR Open New Position

- ___ j. Click **Mortgage Approval Process** three times to start a few new tasks. The tasks do not appear for Andrew. They appear for Linda and John only because they are the only users that are part of the “Originators” team.
- ___ k. Log out of Process Portal.

Part 4: Customize Process Portal login page

You can customize the appearance of your Process Portal in various ways, such as customizing the login page, banner, and theme. Web-based Distributed Authoring and Versioning (WebDAV) is used to store and deploy the artifacts that are used for the Process Portal theme. If you customize the theme, deploy the updated artifacts by using WebDAV.

Installed in your environment is JSCAPE AnyClient, which is the WebDAV client that IBM Business Process Manager V8.5.6 suggests.



Information

WebDAV is a set of extensions to Hypertext Transfer Protocol (HTTP), which allows users to cooperatively edit and manage files on remote web servers. Most operating systems provide built-in support for WebDAV.

For more information about the WebDAV clients that IBM Business Process Manager V8.5.6 suggests, and their versions, see the following URL:

<http://www.ibm.com/software/reports/compatibility/clarity-reports/report/html/softwareReqsForProduct?deliverableId=1379596967826&osPlatform=Linux>

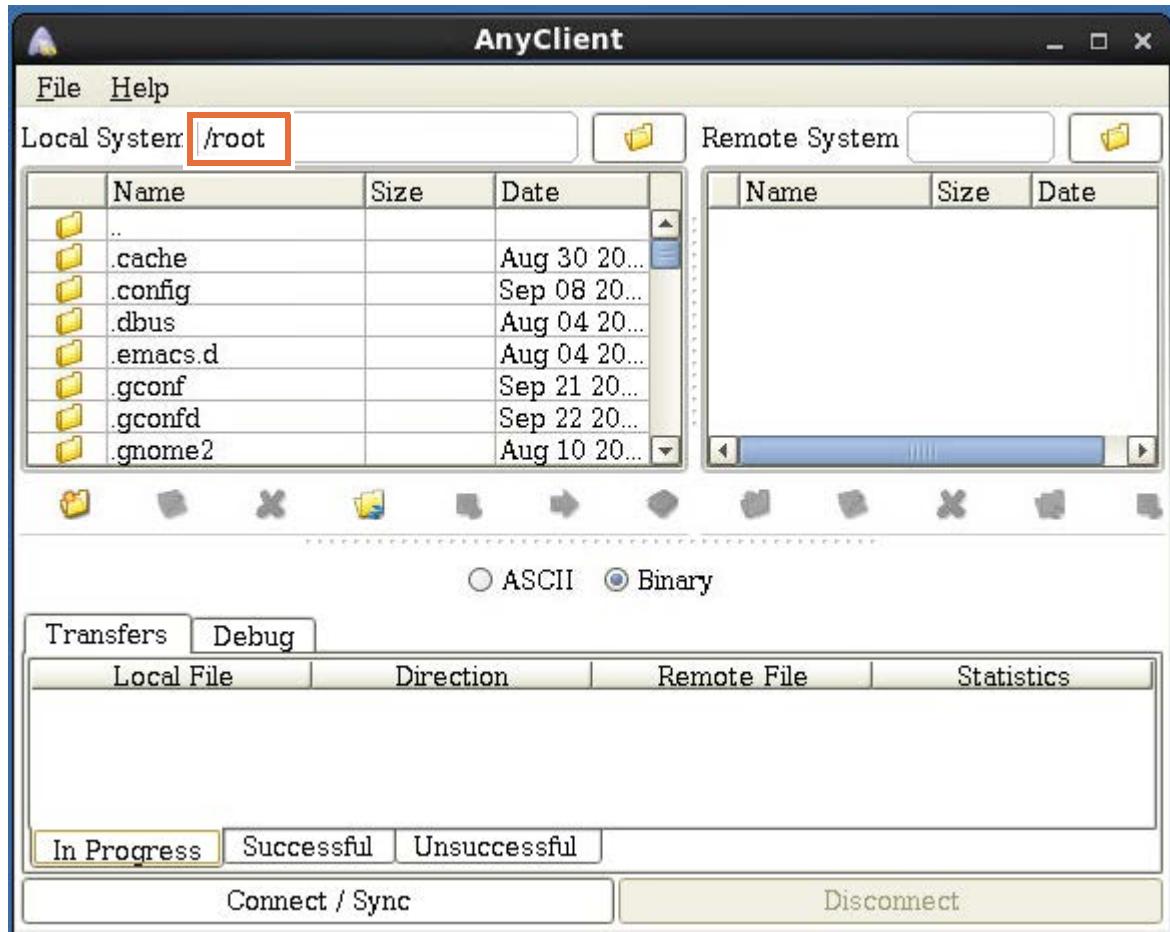
- ___ 1. Connect to the WebDAV folder to customize Process Portal.
 - ___ a. Open the WebDAV client from the desktop by double-clicking the **AnyClient** icon.



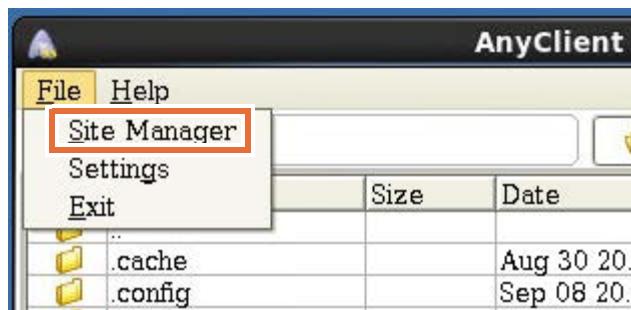
Note

If you see a “New version available” dialog, click **Cancel**. Click **Exit** for the confirmation message.

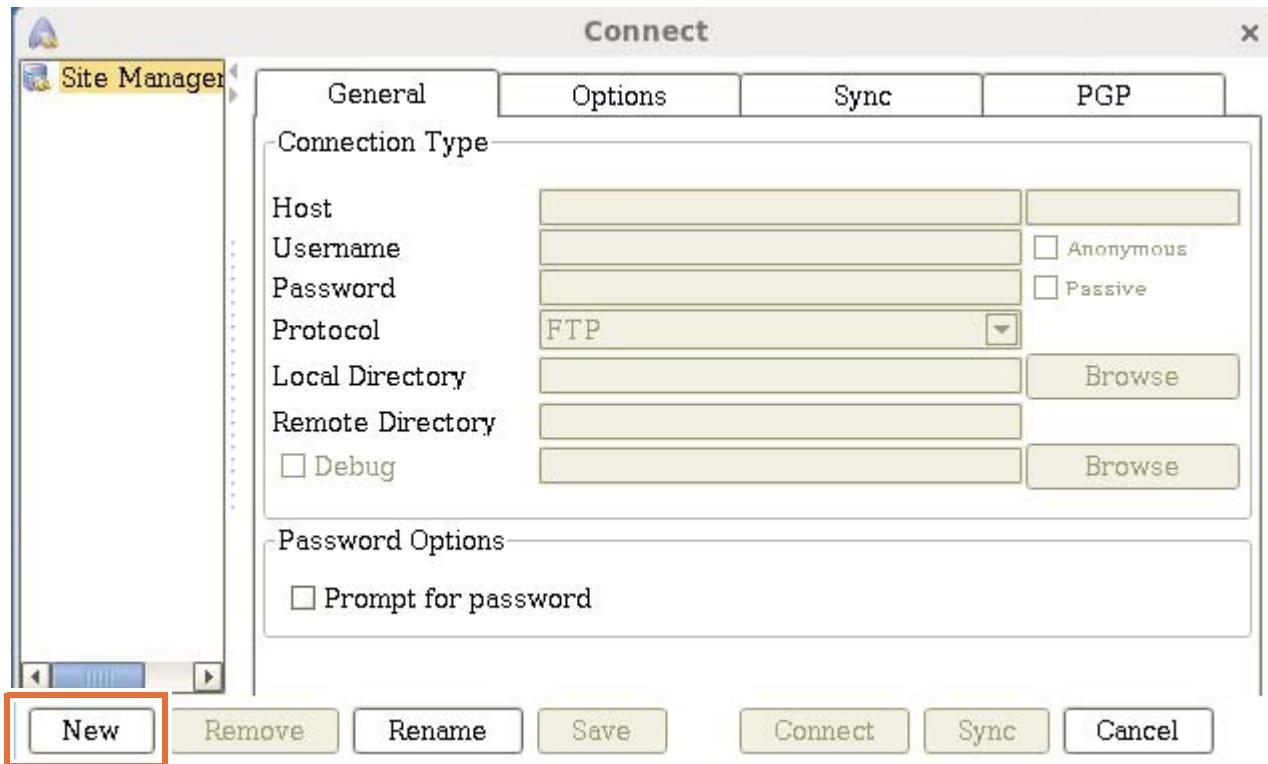
- ___ b. The AnyClient window opens and displays the /root directory of your local environment on the left side.



- ___ c. Click **File > Site Manager**.

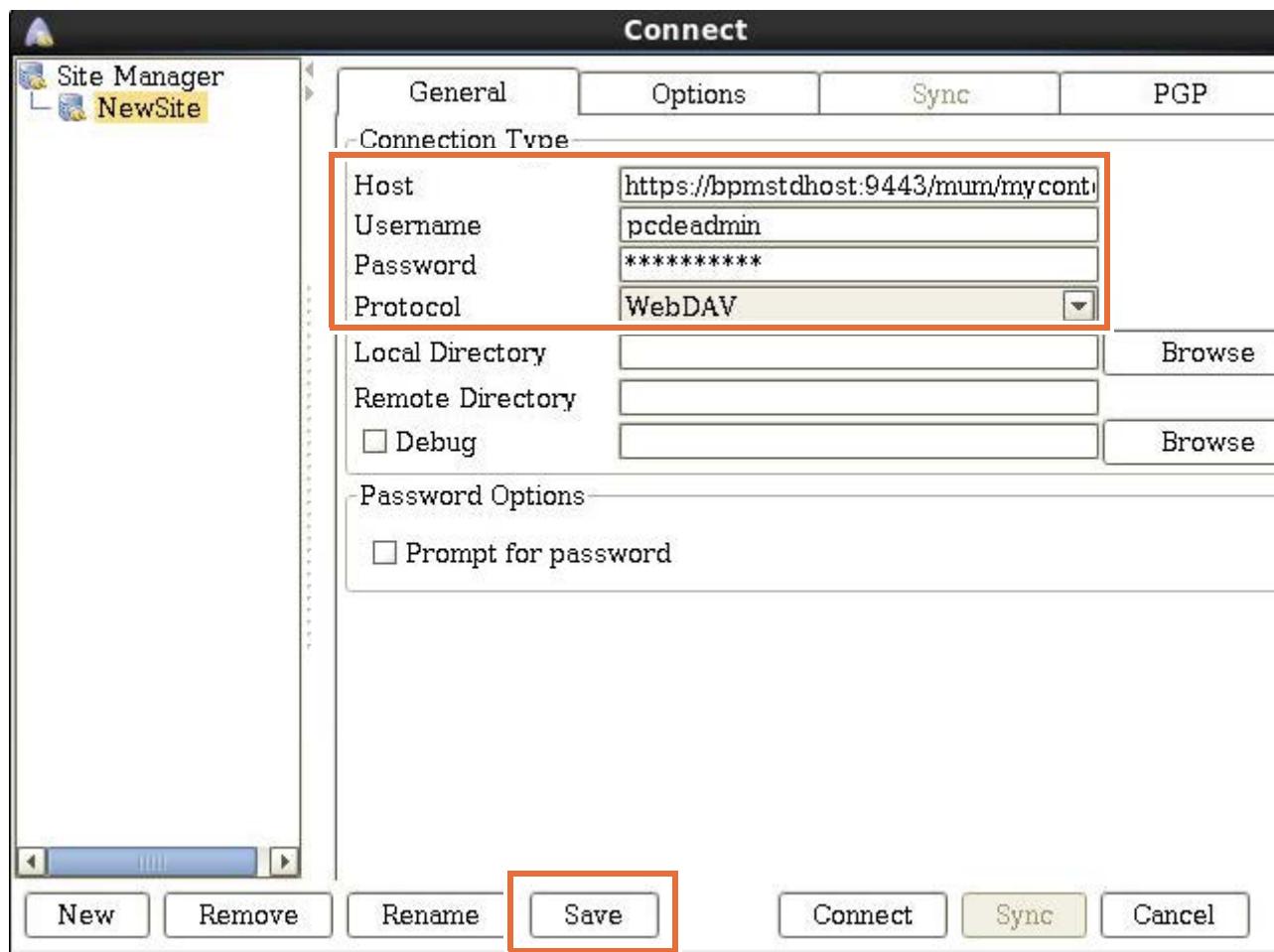


- ___ d. Click **New** on the Connect window.

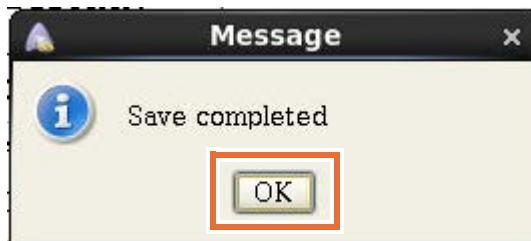


__ e. Enter the following information:

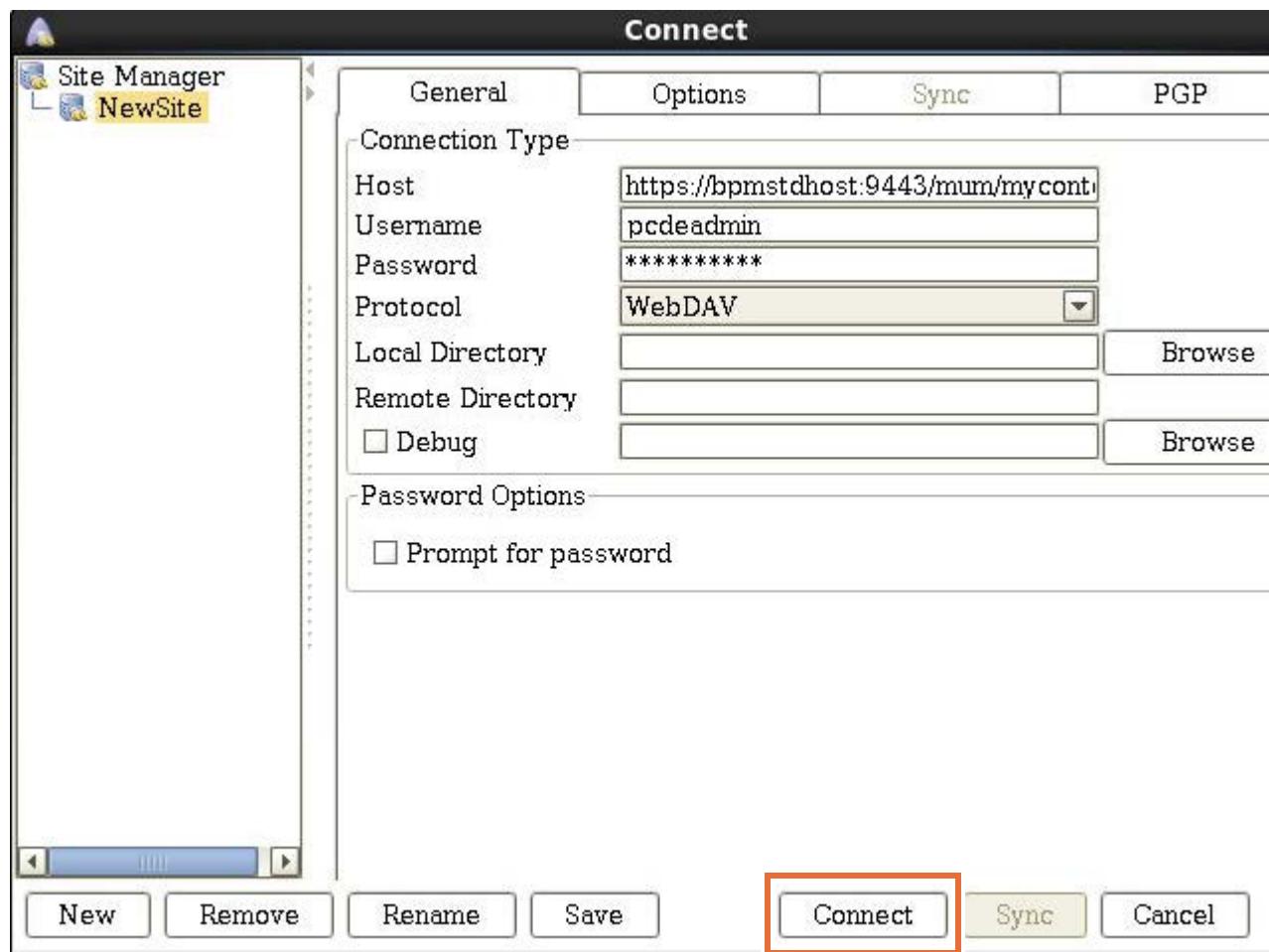
- **Host:** https://bpmsstdhost:9443/mum/mycontenthandler/mm/dav/filestore
- **Username:** pcdeadmin
- **Password:** weblsphere
- **Protocol:** WebDAV



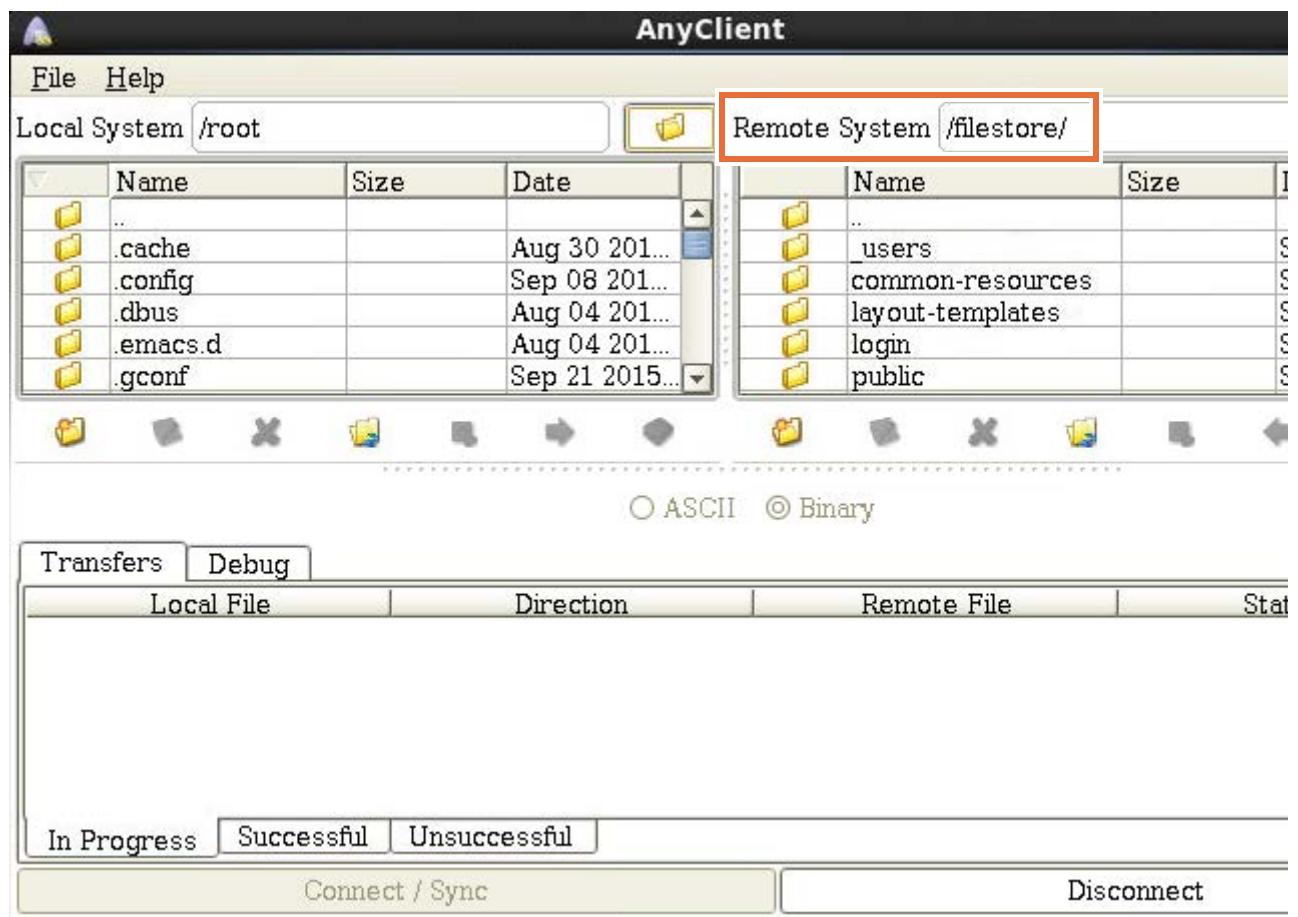
__ f. Click **Save**. Click **OK** for the “Save completed” dialog.



g. Click Connect.



- h. After the successful connection, WebDAV directory
/mum/mycontenthandler/mm/dav/filestore is listed on the right side.



**Note**

If customizing Process Portal with WebDAV does not work, you might need to adjust the following security configuration settings:

- Open a web browser and go to the following URL:
`http://bpmsstdhost:9060/ibm/console`
- In the login area, enter `pcdeadmin` as the user ID and `websphere` as the password. Click **Login**.
- In the administrative console, open the Global security page by clicking **Security > Global security**.
- Expand **Web and SIP security** and click **General settings**.

Authentication

Authentication mechanisms and expiration

[LTPA](#)

Kerberos and LTPA

[Kerberos configuration](#)

[Authentication cache settings](#)

[Web and SIP security](#)

[General settings](#)

[Single sign-on \(SSO\)](#)

[SPNEGO web authentication](#)

[Trust association](#)

[SIP digest authentication](#)

[RMI/IOP security](#)

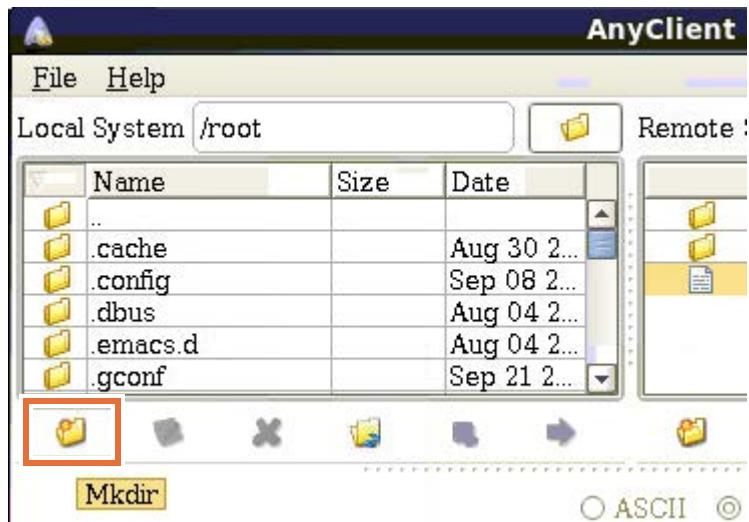
[Java Authentication and Authorization Service](#)

- Make sure that **Default to basic authentication...** is selected. Click **OK**.

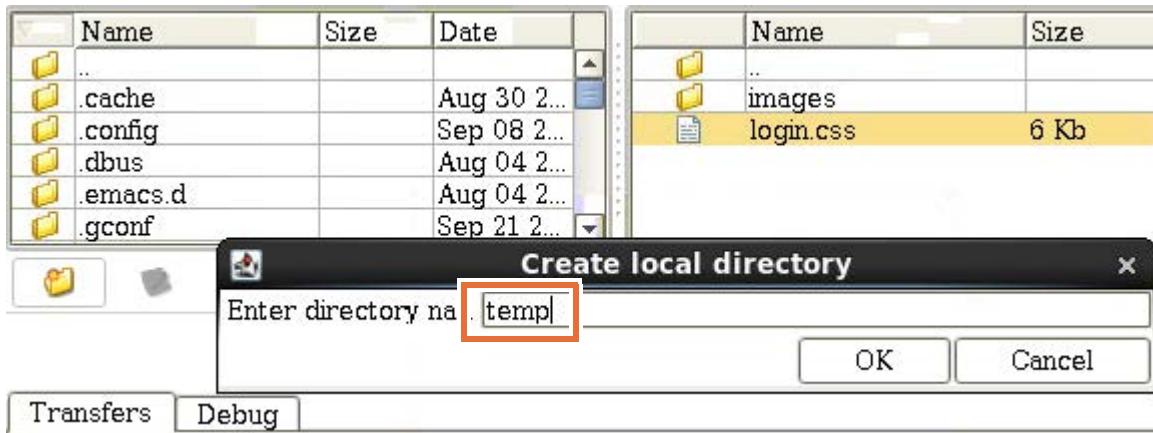


- Click **Save** to save the configuration.
- Restart the server to apply changes.

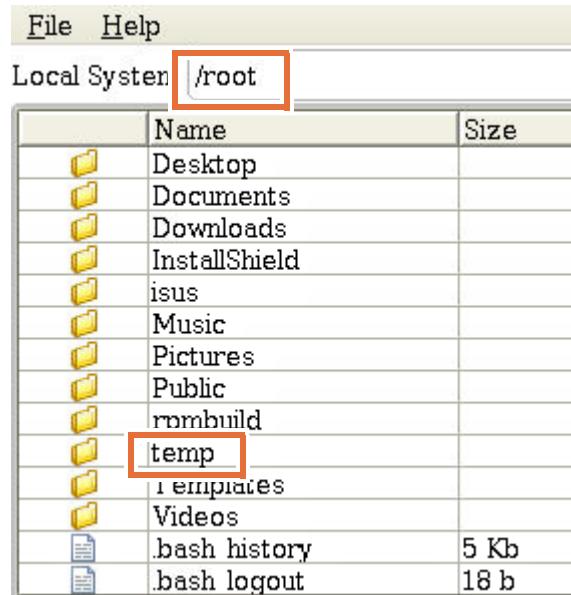
2. Download the `login.css` file from the IBM BPM WebDAV folder.
- a. Click the **Mkdir** icon for the Local System to create a new directory.



- ___ b. Enter the name for the new directory as `temp` and click **OK**.

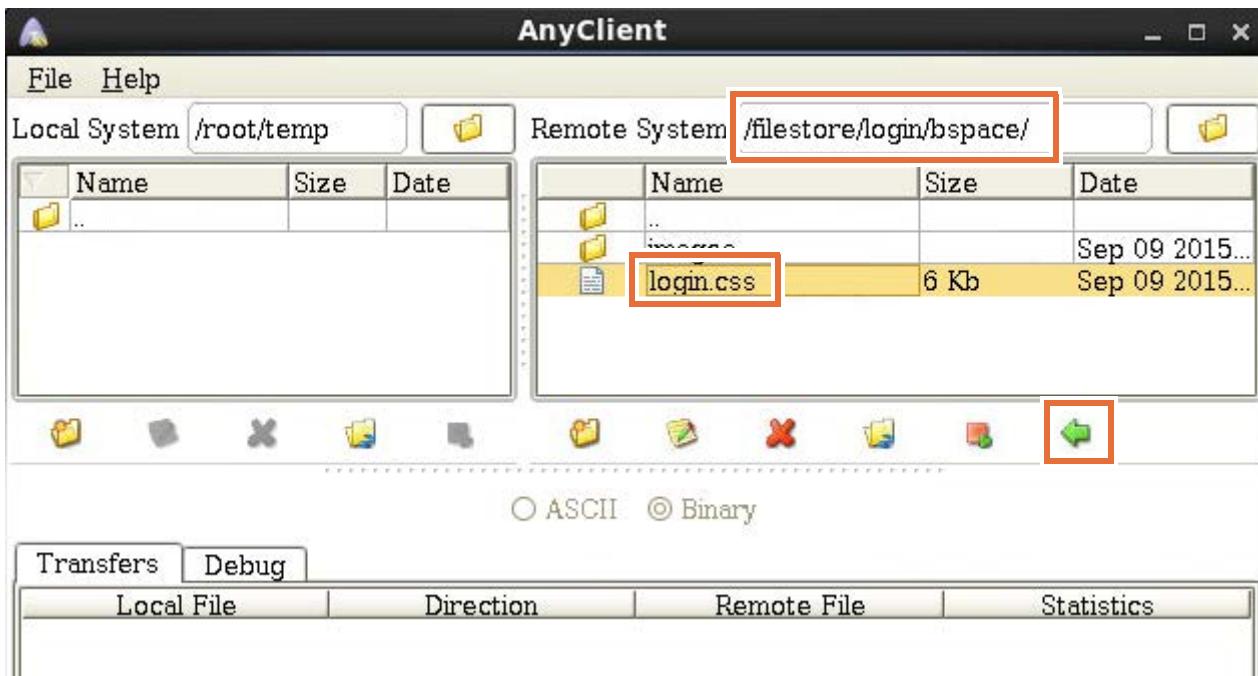


- ___ c. The new directory is listed in the `/root` directory in the Local system on left side.
 ___ d. Open the new directory `/root/temp` for the Local System on left side by double-clicking the `temp` folder or by typing `/temp` after `/root` and pressing Enter.

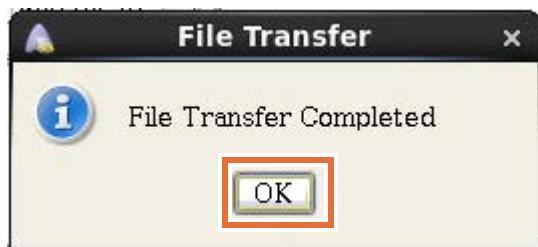


- ___ e. In the Remote System on right side of the window, open the folder `/filestore/login/bspace`.

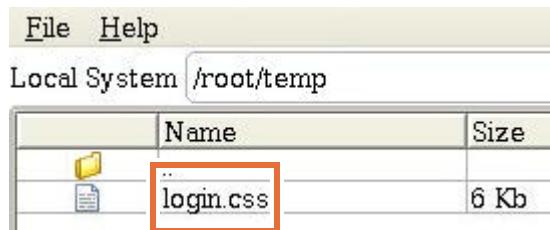
- ___ f. Select **login.css** and click the download icon to download this file.



- ___ g. The File Transfer Completed message is shown as soon as the transfer is complete. Click **OK**.



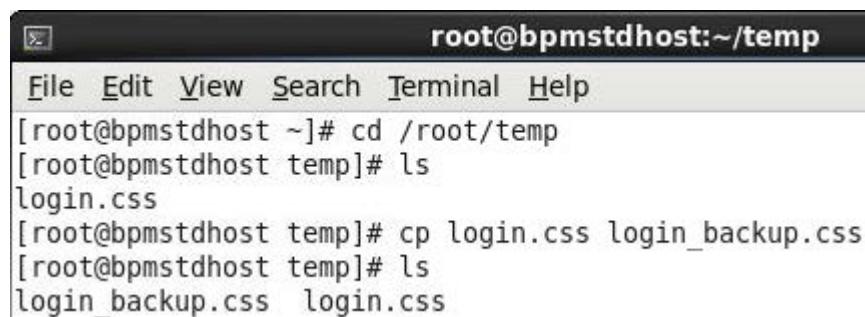
- ___ h. The **login.css** file is listed in the `/root/temp` folder at the left side of the window.



- ___ 3. Modify the `login.css` file in WebDAV folder to customize the Process Portal login page.
- ___ a. Open the terminal window and enter `cd /root/temp` to change the directory.
- ___ b. Enter the `ls` command to list the content present in the `/root/temp` directory. The `login.css` file is listed.

- __ c. Enter the following command to take the backup of the login.css file:

```
cp login.css login_backup.css
```



```
root@bpmsstdhost:~/temp
File Edit View Search Terminal Help
[root@bpmsstdhost ~]# cd /root/temp
[root@bpmsstdhost temp]# ls
login.css
[root@bpmsstdhost temp]# cp login.css login_backup.css
[root@bpmsstdhost temp]# ls
login_backup.css  login.css
```

- __ d. Enter gedit login.css to open the login.css file in the gedit editor.
- __ e. To customize the Process Portal login page, you change the background color of the login page in this exercise.
- __ f. Search for the code snippet for login_background_image in the login.css file.

```
.processPortal .login_background_image{
    width: 100%;
    height: 100%;
    position: absolute;
    top: 0;
    left: 0;
    background-color: #3B3E40;

    /* Mozilla Firefox < v16.0 */
    background-image: -moz-radial-gradient(center, circle closest-corner, #202224 0%, #3B3E40 100%);

    /* Webkit (Safari/Chrome 10) */
    background-image: -webkit-gradient(radial, center center, 0, center center, 497, color-stop(0, #202224), color-stop(1, #3B3E40));

    /* Webkit (Chrome 11+) */
    background-image: -webkit-radial-gradient(center, circle closest-corner, #202224 0%, #3B3E40 100%);

    /* W3C Markup, IE10, Firefox v16+, Chrome 20+ */
    background-image: radial-gradient(circle closest-side at left center, #202224 0%, #3B3E40 100%);
}
```

- __ g. Change the RGB color for the `login_background_image` code snippet from `#3B3E40` to `#FF0000`. The color code `#3B3E40` has five occurrences.

```
.processPortal .login_background_image{  
    width:100%;  
    height:100%;  
    position:absolute;  
    top:0;  
    left:0;  
    background-color: #FF0000; #FF0000  
  
    /* Mozilla Firefox < v16.0 */  
    background-image: -moz-radial-gradient(center, circle closest-corner, #202224 0%, #FF0000 100%);  
  
    /* Webkit (Safari/Chrome 10) */  
    background-image: -webkit-gradient(radial, center center, 0, center center, 497, color-stop(0, #202224), color-stop(1, #FF0000)); #FF0000  
  
    /* Webkit (Chrome 11+) */  
    background-image: -webkit-radial-gradient(center, circle closest-corner, #202224 0% #FF0000 100%); #FF0000  
  
    /* W3C Markup, IE10, Firefox v16+, Chrome 20+ */  
    background-image: radial-gradient(circle closest-side at left center, #202224 0% #FF0000 100%);  
}
```

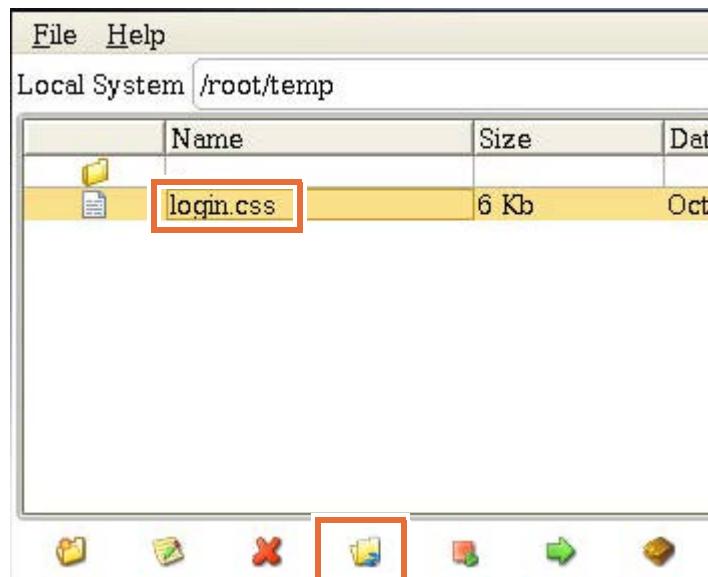


Note

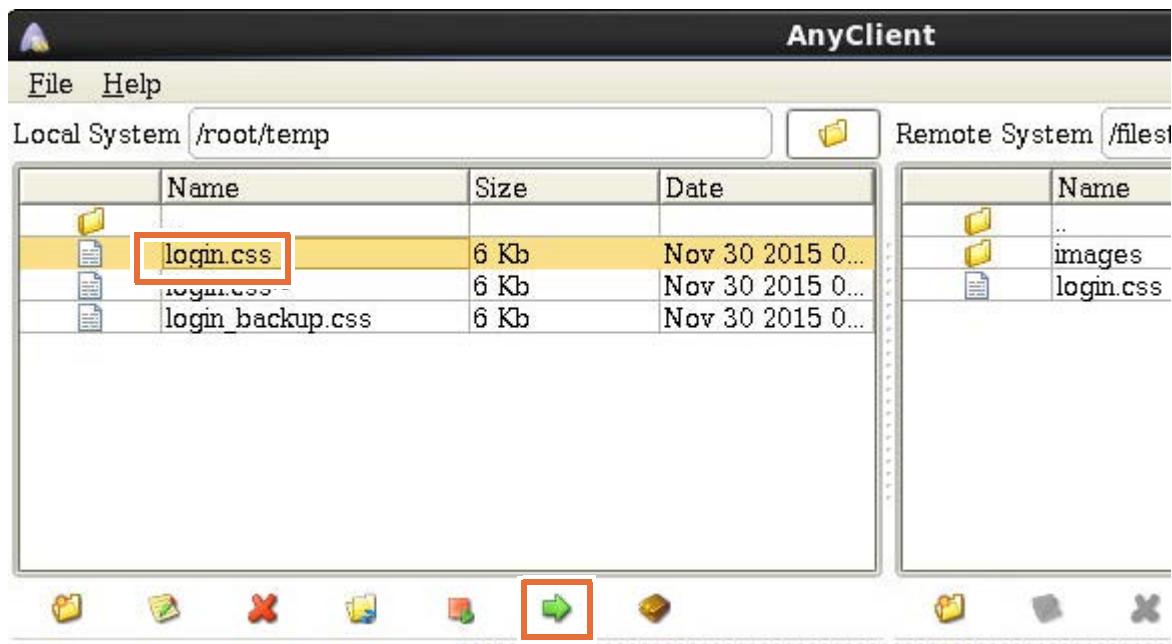
RGB color code `#FF0000` represents the red color. You can use any color code of your choice to customize the login page.

- __ h. Click **Save** to save the `login.css` file and close the file by clicking **File > Quit**.
- __ i. Close the terminal window.
- __ j. Go back to the **AnyClient** window.

- __ k. Select the **login.css** file under the Local System directory and click the **Refresh** icon.

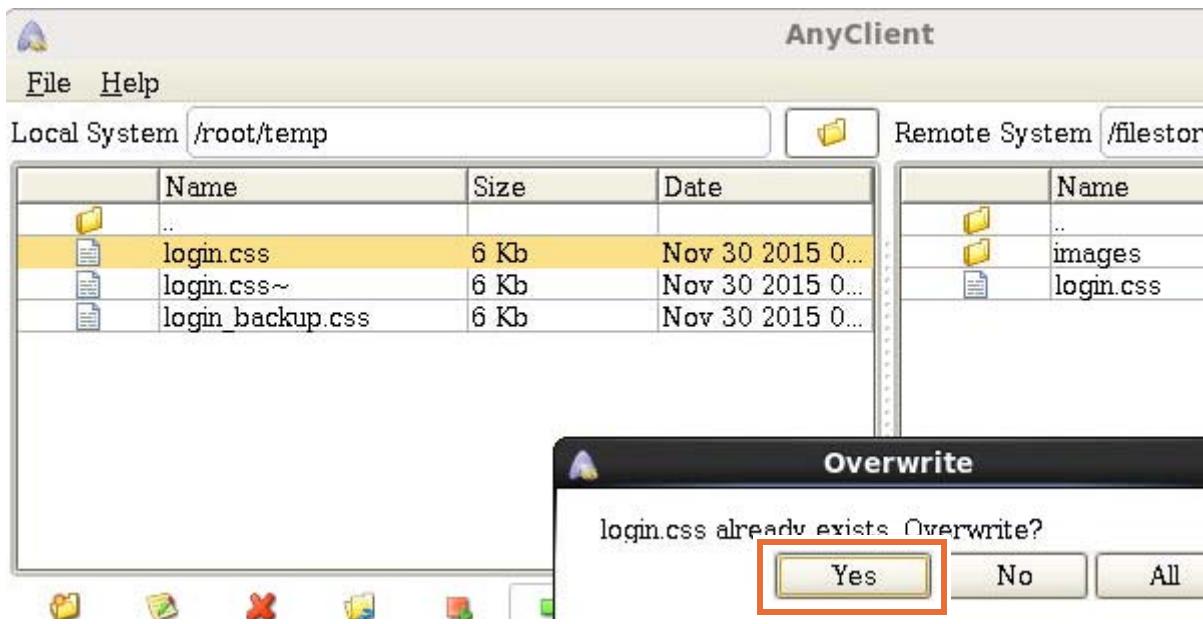


- __ l. The **login_backup.css** and modified **login.css** files are listed.
__ m. Upload the **login.css** file to the Remote System directory by clicking the **Upload** icon.

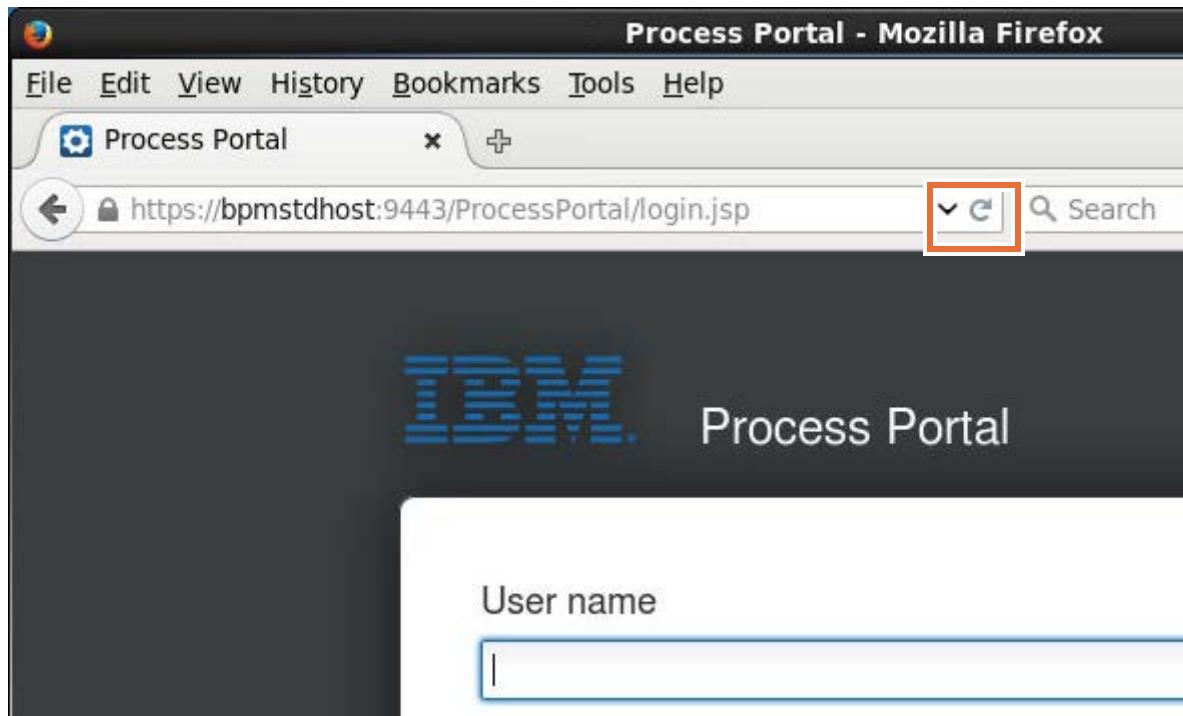


- __ n. You get the message: login.css already exists. Overwrite?

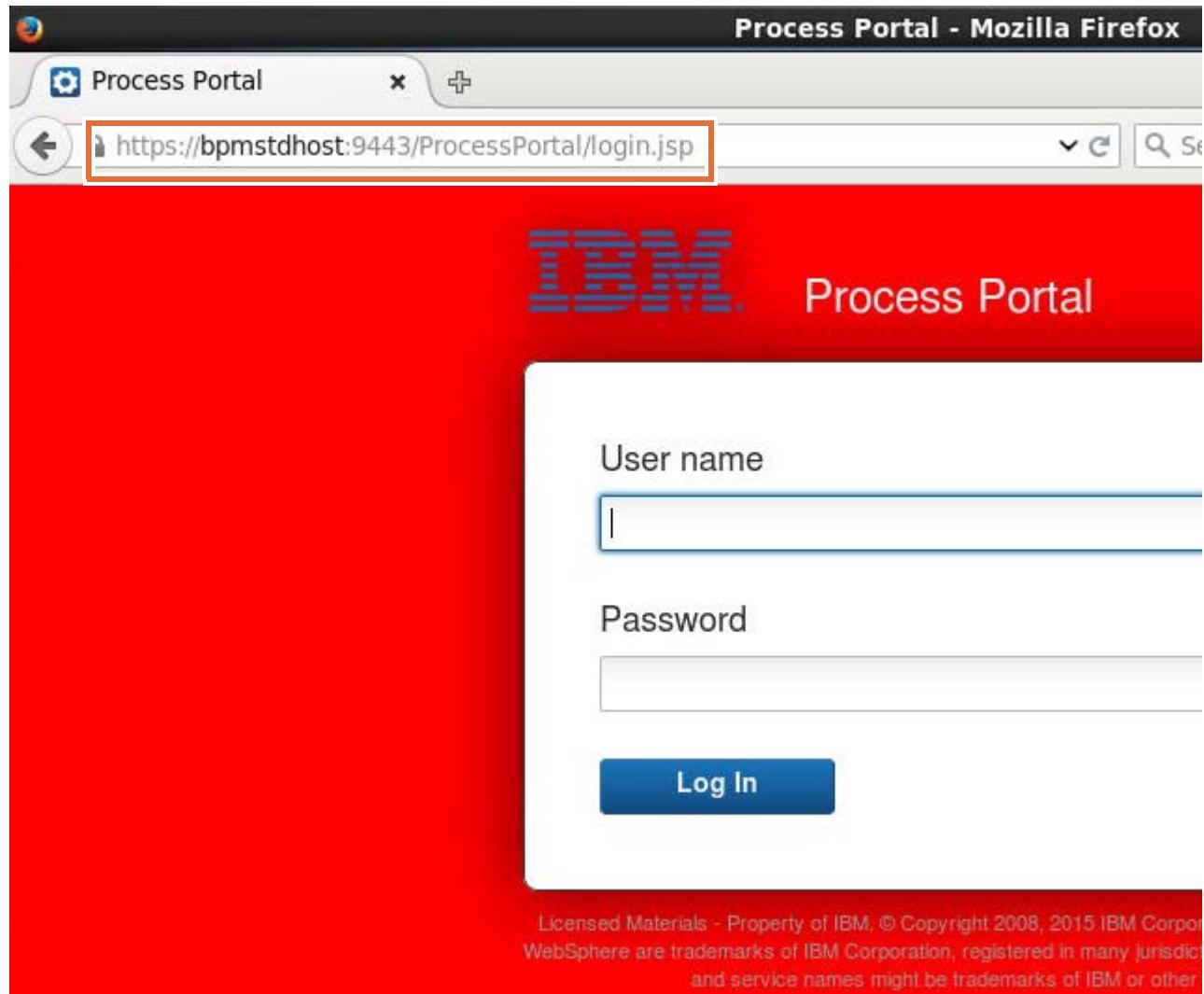
- __ o. Click **Yes** to overwrite the **login.css** file.



- __ p. You get the message: File Transfer Completed. Click **OK**.
- __ q. Open your browser and enter the URL: <http://bpmstdhost:9080/portal>
- __ r. Hold the **Shift** key and click the **Refresh** icon on the browser to dump the cache and refresh the page.



- ___ s. You can now see the modified login page with a red background.



- ___ t. Close the browser.



Information

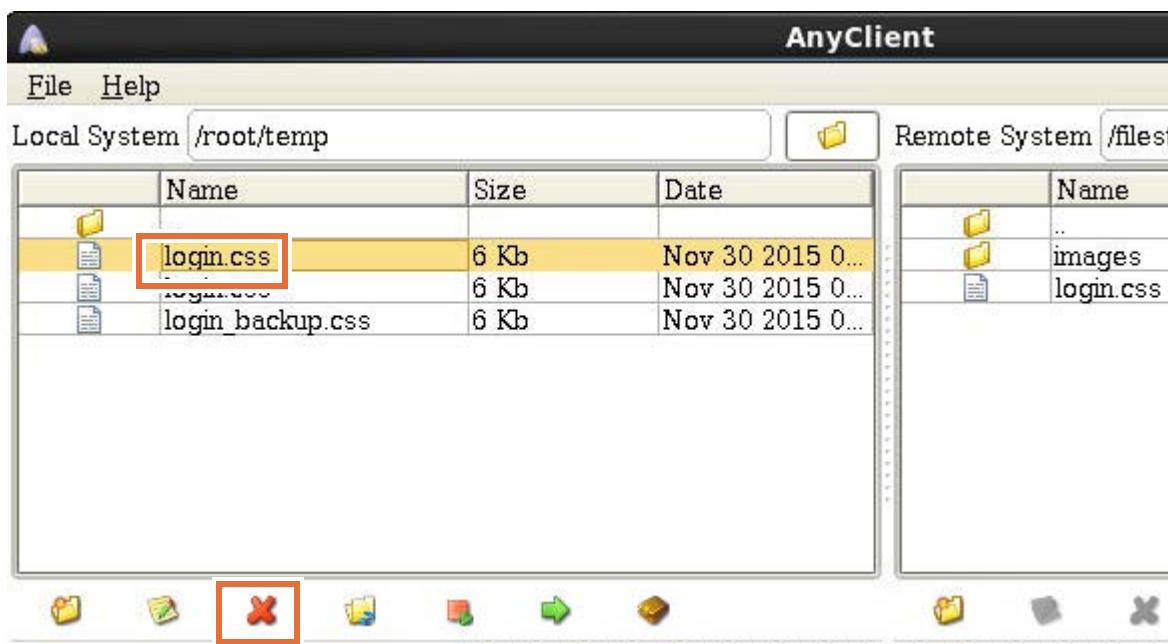
You can customize a number of different elements of the Process Portal login page, such as the graphics and the login field labels. For many changes, use a web development tool, such as Mozilla Firebug, that can edit Cascading Style Sheets (CSS) files. For simple changes, such as replacing images with other images of the same size, a web development tool is not necessary.



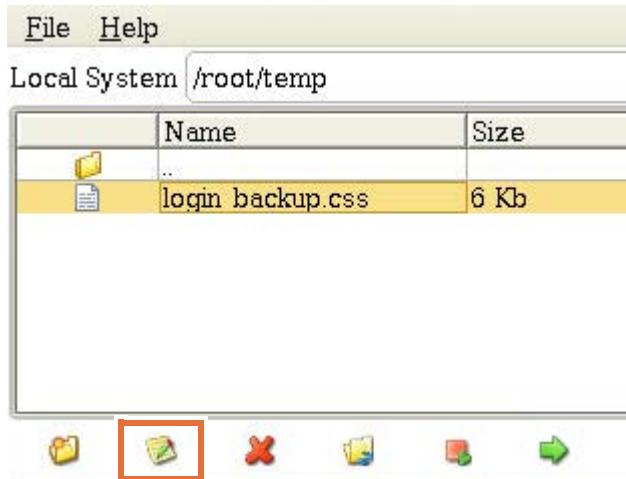
Note

You cannot move the IBM copyright statement or change its size or prominence. You cannot modify the IBM logo, but you can remove it.

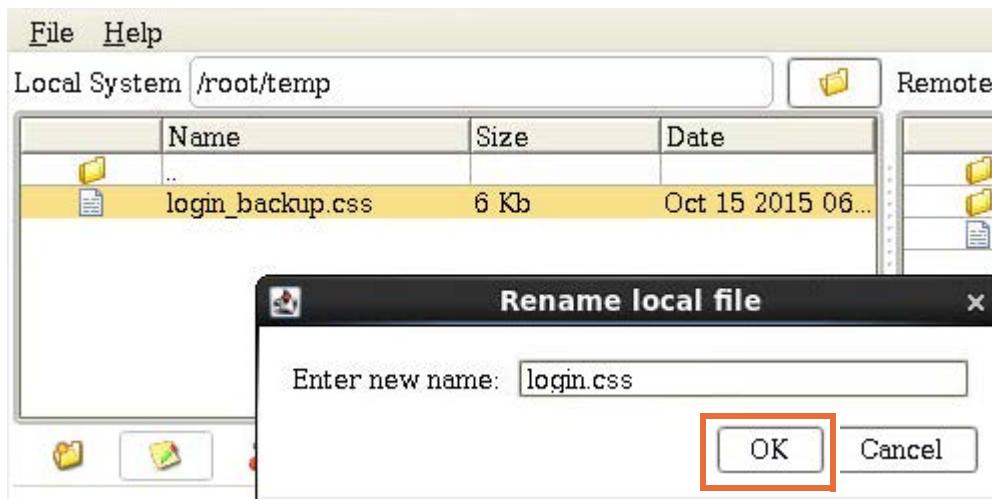
4. Replace the modified **login.css** file with the original **login.css** file.
- __ a. Open the AnyClient window and delete the **login.css** file at the location `/root/temp` in the Local System directory by clicking the **Delete** icon.



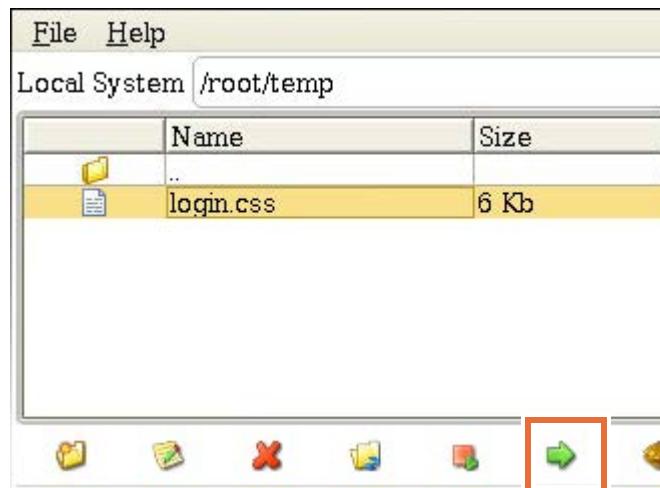
- __ b. Click **OK** for the Delete local file message.
- __ c. Repeat the steps to delete the **login.css** file.
- __ d. Rename the **login_backup.css** file to **login.css** by clicking the **Rename** icon.



- ___ e. In the Rename local file window, enter login.css and click **OK**.



- ___ f. Upload the **login.css** file from Local System to Remote System by using the Upload icon.



- ___ g. Click **Yes** for the Overwrite confirmation message.
___ h. Click **OK** for the File Transfer Completed message.
___ i. Close the AnyClient window by clicking **File > Exit**.
___ j. Clear your browser cache, and go to the following URL:
<http://bpmsstdhost:9080/portal>
___ k. Hold the **Shift** key and click the **Refresh** icon on the browser to dump the cache and refresh the page.

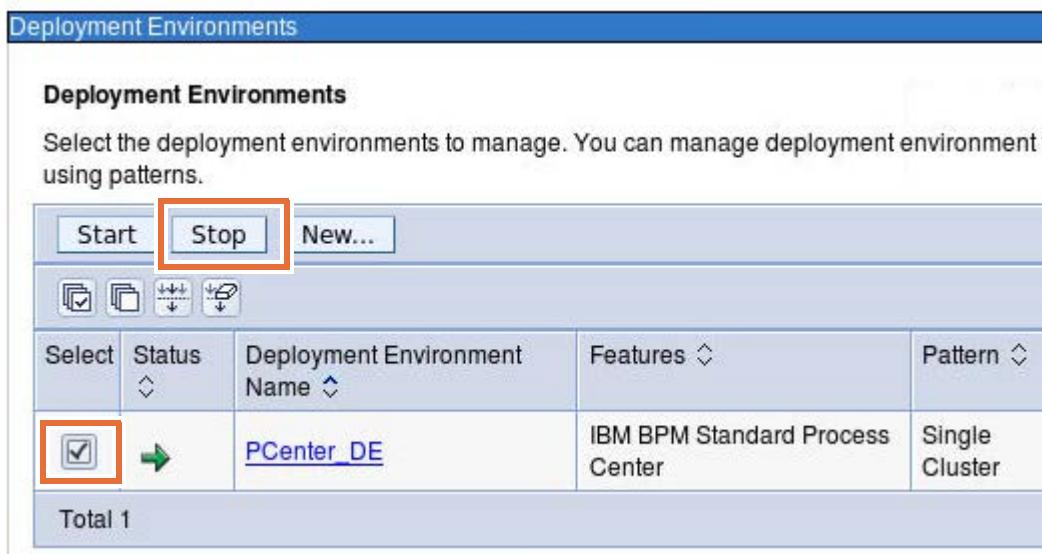
__ I. You now see the original login page for the Process Portal.

The screenshot shows a web browser window with the URL <https://bpmsstdhost:9443/ProcessPortal/login.jsp> in the address bar. The page itself has a dark header with the IBM logo and "Process Portal". Below the header is a white login form. It contains two text input fields labeled "User name" and "Password", each with a corresponding empty input box. A blue "Log In" button is centered below the password field. At the bottom of the page, there is a small legal notice: "Licensed Materials - Property of IBM. © Copyright 2008, 2015 IBM Corporation. I WebSphere are trademarks of IBM Corporation, registered in many jurisdictions w and service names might be trademarks of IBM or other compa".

Part 5: Stop the Process Center environment

It is important that you stop the entire Process Center environment. This environment is used in a later exercise. To help with system performance, the Process Center environment is stopped until it is used again.

- ___ 1. Start the deployment manager administrative console.
 - ___ a. Open a web browser and go to the following URL:
`http://bpmsstdhost:9060/ibm/console`
 - ___ b. In the login area, enter `pcdeadmin` as the user ID and `websphere` as the password. Click **Login**.
- ___ 2. Stop the deployment environment.
 - ___ a. From the administrative console, click **Servers > Deployment Environments**.
 - ___ b. Select the check box for **PCenter_DE**, and click **Stop**. Wait a few moments for the deployment environment to stop before proceeding.



The screenshot shows the 'Deployment Environments' page. At the top, there are buttons for 'Start', 'Stop' (which is highlighted with a red box), and 'New...'. Below these are icons for creating, deleting, and managing environments. The main table lists one deployment environment:

| Select | Status | Deployment Environment Name | Features | Pattern |
|-------------------------------------|--------|-----------------------------|---------------------------------|----------------|
| <input checked="" type="checkbox"/> | → | PCenter_DE | IBM BPM Standard Process Center | Single Cluster |

Total 1

- ___ c. Log out of the administrative console.
- ___ d. Close the browser window.
- ___ 3. Stop the server processes.
 - ___ a. Open the terminal window and enter `cd /opt/IBM/BPM/profiles/PCenterCustom/bin` in the terminal to change the directory.

- ___ b. Enter the following command to stop the node agent:

```
./stopNode.sh
```

Wait for the message that indicates that the node agent is stopped.

```
File Edit View Search Terminal Help
[root@bpmstdhost ~]# cd /opt/IBM/BPM/profiles/PCenterCustom/bin
[root@bpmstdhost bin]# ./stopNode.sh
ADMU0116I: Tool information is being logged in file
    /opt/IBM/BPM/profiles/PCenterCustom/logs/nodeagent/stopServer.log
ADMU0128I: Starting tool with the PCenterCustom profile
ADMU3100I: Reading configuration for server: nodeagent
ADMU3201I: Server stop request issued. Waiting for stop status.
ADMU4000I: Server nodeagent stop completed.
```

- ___ c. Enter `cd /opt/IBM/BPM/profiles/PCenterDmgr/bin` to change the directory.

- ___ d. Enter the following command to stop the deployment manager:

```
./stopManager.sh
```

Wait for the message that indicates that the deployment manager is stopped.

```
[root@bpmstdhost bin]# cd /opt/IBM/BPM/profiles/PCenterDmgr/bin
[root@bpmstdhost bin]# ./stopManager.sh
ADMU0116I: Tool information is being logged in file
    /opt/IBM/BPM/profiles/PCenterDmgr/logs/dmgr/stopServer.log
ADMU0128I: Starting tool with the PCenterDmgr profile
ADMU3100I: Reading configuration for server: dmgr
ADMU3201I: Server stop request issued. Waiting for stop status.
ADMU4000I: Server dmgr stop completed.
```

- ___ e. Enter `exit` to exit the terminal window.

End of exercise

Exercise review and wrap-up

In this exercise, you learned some of the key functions of the Process Portal. You explored the Process Portal capabilities, and modified Process Portal user preferences. You worked with tasks, and collaborated with another user. Finally, you customized the Process Portal login page by using the WebDAV client to change the background color.

Exercise 7. Configuring the Process Server environment

What this exercise is about

This exercise covers the creation of a Process Server cell. You use the BPMConfig utility to create a Process Server production three-cluster topology.

What you should be able to do

After completing this exercise, you should be able to:

- Customize a sample deployment environment properties file
- Generate a deployment environment by using the BPMConfig utility
- Verify the creation of the deployment environment
- Start the deployment environment by using the BPMConfig utility
- Explore the deployment environment

Introduction

Process Server provides a single Business Process Manager runtime environment that can support a range of business processes, service orchestration, and integration capabilities.

You can use Process Server to run processes as you build them. Process Server runs processes and services that authors build by using the authoring environments. Process Server handles a process's access to external applications, the coaches (the graphical user interfaces for process participants), and the business logic. Every process component is loaded and runs in Process Server at run time.

Requirements

To complete this exercise, you must have:

- IBM Business Process Manager Standard installed

Exercise instructions

Part 1: Updating the properties for the deployment environment creation

You can use the `BPMConfig` command to create a typical network deployment environment by using a properties file that contains all of the values that are used in the configuration of your deployment environment.

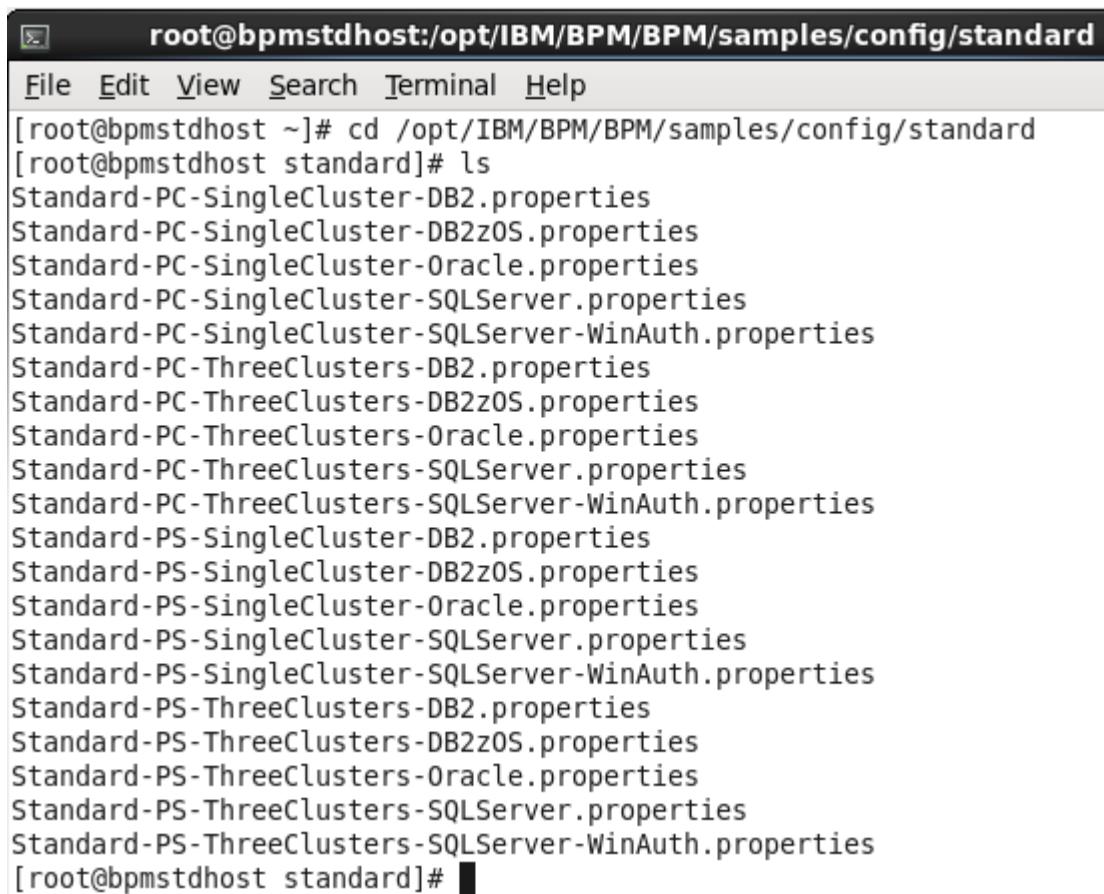
In this exercise, the `BPMConfig` command is used to create the deployment manager, custom node profiles, and the Process Server deployment environment. During this process, database scripts are generated, which you must run to create the tables for the required databases.

The `BPMConfig` utility is the suggested approach to building production environments in IBM Business Process Manager Standard V8.5.6.

In this part of the exercise, the `Standard-PS-ThreeClusters-DB2.properties` file is customized to create a three-cluster Process Server deployment environment configuration.

- 1. View the properties file.
 - a. Open a terminal window and enter `cd /opt/IBM/BPM/BPM/samples/config/standard` to change the directory.
 - b. List the contents of the directory to see the sample properties files. Enter the following command to list the directory:

```
ls
```



```
root@bpmsstdhost:/opt/IBM/BPM/BPM/samples/config/standard
File Edit View Search Terminal Help
[root@bpmsstdhost ~]# cd /opt/IBM/BPM/BPM/samples/config/standard
[root@bpmsstdhost standard]# ls
Standard-PC-SingleCluster-DB2.properties
Standard-PC-SingleCluster-DB2zOS.properties
Standard-PC-SingleCluster-Oracle.properties
Standard-PC-SingleCluster-SQLServer.properties
Standard-PC-SingleCluster-SQLServer-WinAuth.properties
Standard-PC-ThreeClusters-DB2.properties
Standard-PC-ThreeClusters-DB2zOS.properties
Standard-PC-ThreeClusters-Oracle.properties
Standard-PC-ThreeClusters-SQLServer.properties
Standard-PC-ThreeClusters-SQLServer-WinAuth.properties
Standard-PS-SingleCluster-DB2.properties
Standard-PS-SingleCluster-DB2zOS.properties
Standard-PS-SingleCluster-Oracle.properties
Standard-PS-SingleCluster-SQLServer.properties
Standard-PS-SingleCluster-SQLServer-WinAuth.properties
Standard-PS-ThreeClusters-DB2.properties
Standard-PS-ThreeClusters-DB2zOS.properties
Standard-PS-ThreeClusters-Oracle.properties
Standard-PS-ThreeClusters-SQLServer.properties
Standard-PS-ThreeClusters-SQLServer-WinAuth.properties
[root@bpmsstdhost standard]#
```

**Information**

Sample properties files are provided for configuring both Process Center and Process Server environments for both single and three-cluster configurations. To begin, you select the sample that most closely resembles the environment that you want to configure.

- ___ c. Copy the Standard-PS-ThreeClusters-DB2.properties file to the location /usr/tmp by entering the following command:

```
cp Standard-PS-ThreeClusters-DB2.properties  
/usr/tmp/Standard-PS-ThreeClusters-DB2-MODIFIED.properties
```

```
[root@bpmsstdhost standard]# cp Standard-PS-ThreeClusters-DB2.properties /usr/tmp/  
/Standard-PS-ThreeClusters-DB2-MODIFIED.properties
```

- ___ d. Enter cd /usr/tmp to change the directory.

- ___ e. Verify that the Standard-PS-ThreeClusters-DB2-MODIFIED.properties file is listed under the /usr/tmp directory by entering the ls command.

```
[root@bpmsstdhost standard]# cp Standard-PS-ThreeClusters-DB2.properties /usr/tmp/  
/Standard-PS-ThreeClusters-DB2-MODIFIED.properties  
[root@bpmsstdhost standard]# cd /usr/tmp  
[root@bpmsstdhost tmp]# ls  
Standard-PS-ThreeClusters-DB2-MODIFIED.properties  
[root@bpmsstdhost tmp]# █
```

You modify this file with all of the entries that are needed for this exercise. In this section, you edit the contents of this file and use it to run the scripts.

**Note**

The Standard-PS-ThreeClusters-DB2-MODIFIED.properties properties file with the changes necessary to create the environment is already provided at the location /usr/labfiles/ex7/scripts for verification against your own configuration file, which you will generate in next steps.

- __ f. Enter gedit Standard-PS-ThreeClusters-DB2-MODIFIED.properties to edit the file and examine the default settings.

The file is organized into sections that relate to the different types of environment characteristics. Most entries have default values, which you can modify to suit your configuration. You can also see that a number of entries do not have values that are provided. If you do not provide a value for the property, that property is not configured.

```
Standard-PS-ThreeCl...-MODIFIED.properties
#####
# Deployment environment basic properties. #
#####
bpm.de.name=PServer_DE
# Options: true, false If this is set false, database tables are
BPMConfig is run with the create de action . If set to true, the
bpm.de.deferSchemaCreation=true
# Type of product configuration: Express, Standard, Advanced or ,
bpm.de.type=Standard
# Type of deployment environment: Process Center or Process Server
bpm.de.environment=Process Server
bpm.de.psServerName=PROD-ProcessServer
# The intended purpose for this deployment environment. Options:
bpm.de.psPurpose=Production
# Options: true, false. Set to false if the Process Server is on
bpm.de.psOffline=true
# The transport protocol to access the Process Center specified :
bpm.de.psProcessCenterTransportProtocol=http
# The host name of the Process Center specified above.
bpm.de.psProcessCenterHostname=bpmstdhost
# The port number for the Process Center specified above.
bpm.de.psProcessCenterPort=
```

2. Edit the values in the properties file that are appropriate for the production Process Server deployment environment.
 - a. The first section is the **Deployment environment properties** section. This section contains the properties that relate to the overall deployment environment, including the deployment environment name, product configuration, and deployment environment type. It also contains a setting that determines whether database tables should be created during the creation of the deployment environment.

For this environment, a production Process Server deployment environment is created. The database tables are not created during the configuration, and the production cell is not connected to the Process Center cell. Enter the following entries:

```
bpm.de.name=PServer_DE
bpm.de.deferSchemaCreation=true
bpm.de.psServerName=PROD-ProcessServer
bpm.de.psOffline=true
bpm.de.psProcessCenterHostname=bpmstdhost
#####
# Deployment environment properties: Del #
#####

bpm.de.name=PServer_DE
# The type or product configuration: Express, Standard, Advanced, or Ad
bpm.de.type=Standard
# The type of deployment environment: Process Center or Process Server.
bpm.de.environment=Process Server
# Options: 'true' or 'false'. If false is specified, the database schema
# database schemas must be created manually using the generated scripts, i
# os the option must be set to true.
bpm.de.deferSchemaCreation=true
# The context root prefix for all web modules in this environment. If si
bpm.de.contextRootPrefix=
# The virtualHost for all web modules in this environment. If a value is
bpm.de.virtualHost=
bpm.de.psServerName=PROD-ProcessServer
# The purpose of this process server environment: Development, Test, St
bpm.de.psPurpose=Production
# Options: true or false. Set to false if the Process Server is online.
bpm.de.psOffline=true
# Options: http or https. The transport protocol for communicating with
bpm.de.psProcessCenterTransportProtocol=https
# The host name of the Process Center environment.
bpm.de.psProcessCenterHostname=bpmstdhost
# The port number of the Process Center environment.
bpm.de.psProcessCenterPort=
```



Information

The `bpm.de.deferSchemaCreation` property indicates when the database tables, schemas, and procedures are created. The items can be created when the BPMConfig command is run or can be created independently. If this value is set to `true`, only the SQL files are generated. Then, you must manually create the database tables, schemas, and procedures. To create the database tables, schemas, and procedures as part of BPMConfig execution, change this value to `false`.

- __ b. In the **Deployment environment administrator authentication alias** section, you define the authentication alias and role properties for the deployment environment administrator. Enter the following entires:

```
bpm.de.authenticationAlias.1.user=psdeadmin  
bpm.de.authenticationAlias.1.password=websphere  
#####  
# Deployment environment administrator authentication alias. #  
#####  
bpm.de.authenticationAlias.1.name=DeploymentAdminAlias  
bpm.de.authenticationAlias.1.user=psdeadmin  
bpm.de.authenticationAlias.1.password=websphere
```

- __ c. In the **Process Center authentication alias** section, you define the authentication alias and role properties for connecting to the Process Center environment. The Process Server is being configured as offline, but in case it might be needed in the future, the alias is defined now. Here you defined the Deployment environment administrator for the Process Center deployment environment. Enter the following entires:

```
bpm.de.authenticationAlias.2.user=pcdeadmin  
bpm.de.authenticationAlias.2.password=websphere  
#####  
# Process Center authentication alias (used by online Process  
#####  
bpm.de.authenticationAlias.2.name=ProcessCenterUserAlias  
bpm.de.authenticationAlias.2.user=pcdeadmin  
bpm.de.authenticationAlias.2.password=websphere
```

- ___ d. In the **Database user authentication alias** section, you define the authentication alias and role properties for the database administrator. Enter the following entries:

```
bpm.de.authenticationAlias.3.user=db2inst1  
bpm.de.authenticationAlias.3.password=websphere  
#####  
# Database user authentication alias #  
#####  
bpm.de.authenticationAlias.3.name=RDMLDB_ALTAC  
bpm.de.authenticationAlias.3.user=db2inst1  
bpm.de.authenticationAlias.3.password=websphere
```

- ___ e. Scroll to the Cell properties: PSCell1 and Cell (WAS) administration authentication alias sections. You use these sections to define the cell name and cell administrator authentication information. Enter the following entries:

```
bpm.cell.name=PROD-PServerCell  
bpm.cell.authenticationAlias.1.user=bpmadmin  
bpm.cell.authenticationAlias.1.password=websphere  
#####  
# Cell properties: PSCell1 #  
#####  
bpm.cell.name=PROD-PServerCell  
#####  
# Cell (WAS) administration authentication alias #  
#####  
bpm.cell.authenticationAlias.1.name=CellAdminAlias  
bpm.cell.authenticationAlias.1.user=bpmadmin  
bpm.cell.authenticationAlias.1.password=websphere  
#####  
# Cell role and authentication alias association #  
#####  
# Do not modify this value. Role mapping names are predefined.  
bpm.cell.roleMapping.1.name=CellAdmin  
bpm.cell.roleMapping.1.alias=CellAdminAlias
```

- __ f. Scroll to the **Deployment manager properties** section. This section contains the properties that are related to the deployment manager node, including deployment manager profile name, installation location for the product, deployment manager host name, and SOAP port. You can also see where you define cluster capabilities for Application, Support, and Messaging.

Note the cluster names also. The default cluster names are used for this environment, which includes AppCluster, MECluster, and SupCluster.

Enter the following entries:

```
bpm.dmgr.nodeName=PServerDmgr  
bpm.dmgr.hostname=bpmstdhost  
bpm.dmgr.installPath=/opt/IBM/BPM  
bpm.dmgr.profileName=PServerDmgr
```

```
#####
# Deployment manager properties #
#####
# The name of the deployment manager node.  
bpm.dmgr.nodeName=PServerDmgr  
# Do not use localhost  
bpm.dmgr.hostname=bpmstdhost  
# The installation location of the BPM product. If you want to change it, add a slash before it, for example bpm.dmgr.installPath=c:\\IBM\\BPM85.  
bpm.dmgr.installPath=/opt/IBM/BPM  
# The name of the deployment manager profile.  
bpm.dmgr.profileName=PServerDmgr  
# Custom options that are passed to the 'manageprofiles' command  
bpm.dmgr.profileOptions=  
# To override the default port assignments for this profile, specify the initial port assignment.  
bpm.dmgr.initialPortAssignment=  
# The deployment manager SOAP port. This port is used to establish the connection to the profile after you create the deployment manager profile.  
bpm.dmgr.soapPort=8879
```

- g. Scroll to the **Node Properties: Node 1** section. This section contains properties that are related to the managed nodes in a deployment environment, including the name, the installation location for the product, and the node profile name, host name, and initial port assignment. Enter the following entries:

```
bpm.de.node.1.name=PServerNode01  
bpm.de.node.1.hostname=bpmstdhost  
bpm.de.node.1.installPath=/opt/IBM/BPM  
bpm.de.node.1.profileName=PServerNode01
```

```
#####
# Node properties: Node1 #
#####

bpm.de.node.1.name=PServerNode01
# If the host name is the same as deployment manager, this node
# computer. Do not use localhost for environments that span multiple
# computers.
bpm.de.node.1.hostname=bpmstdhost
# The installation location of the BPM product. If you want to
# change the location of your properties file, you must use an escape backslash before
# bpm.de.node.1.installPath=c:\\IBM\\BPM\\BPM05
bpm.de.node.1.installPath=/opt/IBM/BPM

# The name of the node profile
bpm.de.node.1.profileName=PServerNode01
# Custom options that are passed to the manageprofiles' command
# to customize port assignments.
bpm.de.node.1.profileOptions=
# To override the default port assignments for this profile,
# generating and assigning ports.
bpm.de.node.1.initialPortAssignment=
```

- ___ h. The next section is the **Cluster member properties** section, which describes the cluster members for each cluster and the cluster each corresponds to. Notice the default names of the cluster members and the default cluster name indicated earlier in the file. For example, AppClusterMember1 is a member of the AppCluster cluster. Examine the default settings.

```
#####
# Cluster member properties: AppClusterMember1 #
#####
bpm.de.node.1.clusterMember.1.name=AppClusterMember1
# The cluster this cluster member belongs to. This value should corre
bpm.de.node.1.clusterMember.1.cluster=AppCluster
# The proportion of requests that are sent to this cluster member
bpm.de.node.1.clusterMember.1.weight=2
bpm.de.node.1.clusterMember.1.initialPortAssignment=


#####
# Cluster member properties: MEClusterMember1 #
#####
bpm.de.node.1.clusterMember.2.name=MEClusterMember1
# The cluster this cluster member belongs to. This value should corre
bpm.de.node.1.clusterMember.2.cluster=MECluster
# The proportion of requests that are sent to this cluster member
bpm.de.node.1.clusterMember.2.weight=2
bpm.de.node.1.clusterMember.2.initialPortAssignment=


#####
# Cluster member properties: SupClusterMember1 #
#####
bpm.de.node.1.clusterMember.3.name=SupClusterMember1
# The cluster this cluster member belongs to. This value should corre
bpm.de.node.1.clusterMember.3.cluster=SupCluster
# The proportion of requests that are sent to this cluster member
bpm.de.node.1.clusterMember.3.weight=2
bpm.de.node.1.clusterMember.3.initialPortAssignment=
```

- ___ i. Scroll to the **Node Properties: Node2** section. This section is for creating a second node. Since only one node is needed now, comment out these entries by adding # in front of each entry, so that they are read, not executed.

```
# #####
# Node properties: Node2 #
# #####
# pm.de.node.2.name=Node2
# If the host name is the same as deployment manager, this node will
# multiple hosts.
# pm.de.node.2.hostname=
# The installation location of the BPM product. If you want to use a
# before it, for example bpm.de.node.1.installPath=c:\\IBM\\BPM85.
# pm.de.node.2.installPath=C:/IBM/bpm85
# The name of the node profile.
# pm.de.node.2.profileName=Node2Profile
# Custom options that are passed to the 'manageprofiles' command and
# pm.de.node.2.profileOptions=
# To override the default port assignments for this profile, specify
# pm.de.node.2.initialPortAssignment=
```

- ___ j. Scroll to the **Cluster member properties** sections. Notice that each of these clusters contains three sections for creating a second cluster. Since only one cluster member is needed now, comment out these entries by adding # in front of each entry, so that they are read, not executed.

```
# #####  
# Cluster member properties: AppClusterMember2 #  
# #####  
# ipm.de.node.2.clusterMember.1.name=AppClusterMember2  
# The cluster this cluster member belongs to. This value should correspond to the cluster name defined in the previous step.  
# ipm.de.node.2.clusterMember.1.cluster=AppCluster  
# The proportion of requests that are sent to this cluster member  
# ipm.de.node.2.clusterMember.1.weight=2  
# ipm.de.node.2.clusterMember.1.initialPortAssignment=  
  
# #####  
# Cluster member properties: MEClusterMember2 #  
# #####  
# ipm.de.node.2.clusterMember.2.name=MEClusterMember2  
# The cluster this cluster member belongs to. This value should correspond to the cluster name defined in the previous step.  
# ipm.de.node.2.clusterMember.2.cluster=MECluster  
# The proportion of requests that are sent to this cluster member  
# ipm.de.node.2.clusterMember.2.weight=2  
# ipm.de.node.2.clusterMember.2.initialPortAssignment=  
  
# #####  
# Cluster member properties: SupClusterMember2 #  
# #####  
# ipm.de.node.2.clusterMember.3.name=SupClusterMember2  
# The cluster this cluster member belongs to. This value should correspond to the cluster name defined in the previous step.  
# ipm.de.node.2.clusterMember.3.cluster=SupCluster  
# The proportion of requests that are sent to this cluster member  
# ipm.de.node.2.clusterMember.3.weight=2  
# ipm.de.node.2.clusterMember.3.initialPortAssignment=
```

- ___ k. Scroll to the Database properties: SharedDb section. These entries are for the Common database. Edit the following entries:

```
bpm.de.db.1.databaseName=PSCMNDB  
bpm.de.db.1.hostname=bpmstdhost  
bpm.de.db.1.schema=db2inst1
```

```
#####
# Database properties: SharedDb #
#####
# Keyword to use to refer to this set of database prop
bpm.de.db.1.name=SharedDb
# The list of available options depends on the product
Standard, the options are ProcessServer, EmbeddedECM,
IBM BPM Advanced, the options are ProcessServer, Embed
BusinessSpace, CommonDB, and BPC. For IBM BPM Advanced
Messaging, BusinessSpace, CommonDB, and BPC. For Embed
operating system for the IBM BPM environment is z/OS.
bpm.de.db.1.dbCapabilities=Messaging,BusinessSpace
# Options: DB2, DB2zOS, Oracle, or SQL Server.
bpm.de.db.1.type=DB2
# The host name of the database. Do not use localhost
bpm.de.db.1.hostname=bpmstdhost
#####
# The name of the database
bpm.de.db.1.databaseName=PSCMNDB
bpm.de.db.1.schema=db2inst1
```

**Information**

For each database that you are using for this deployment environment, specify the authentication alias that you want to use. The number of aliases depends on the database type you are configuring. Therefore, for example, in DB2 you can use the same authentication for all of the databases that are being configured, and only one authentication alias is required. Therefore, for Oracle databases the isolation is based on the user name, and a greater number of aliases is required.

- I. Scroll to the Database properties: ProcessServerDb section. These entries are for the Process Server database. Edit the following entries:

```
bpm.de.db.2.databaseName=PSBPMDB  
bpm.de.db.2.hostname=bpmstdhost  
bpm.de.db.2.schema=db2inst1  
  
#####  
# Database properties: ProcessServerDb #  
#####  
# Keyword to use to refer to this set of database prop  
bpm.de.db.2.name=ProcessServerDb  
# The list of available options depends on the product  
Standard, the options are ProcessServer, EmbeddedECM,  
IBM BPM Advanced, the options are ProcessServer, Embed  
BusinessSpace, CommonDB, and BPC. For IBM BPM Advanced  
Messaging, BusinessSpace, CommonDB, and BPC. For Embed  
operating system for the IBM BPM environment is z/OS.  
bpm.de.db.2.dbCapabilities=ProcessServer,EmbeddedECM  
# Options: DB2, DB2zOS, Oracle, or SQL Server.  
bpm.de.db.2.type=DB2  
# The host name of the database. Do not use localhost  
bpm.de.db.2.hostname=bpmstdhost  
bpm.de.db.2.portNumber=50000  
# The name of the database  
bpm.de.db.2.databaseName=PSBPMDB  
bpm.de.db.2.schema=db2inst1
```

- ___ m. Scroll to the Database properties section for the PerformanceDb. These entries are for the Business Performance Data Warehouse database. Examine the following entries:

```
bpm.de.db.3.databaseName=PSPDWDB
bpm.de.db.3.hostname=bpmstdhost
bpm.de.db.3.schema=db2inst1

#####
# Database properties: PerformanceDb #
#####

# Keyword to use to refer to this set of database prop
bpm.de.db.3.name=PerformanceDb
# The list of available options depends on the product
Standard, the options are ProcessServer, EmbeddedECM,
IBM BPM Advanced, the options are ProcessServer, Embed
BusinessSpace, CommonDB, and BPC. For IBM BPM Advanced
Messaging, BusinessSpace, CommonDB, and BPC. For Embed
operating system for the IBM BPM environment is z/OS.
bpm.de.db.3.dbCapabilities=PDW
# Options: DB2, DB2zOS, Oracle, or SQL Server.
bpm.de.db.3.type=DB2
# The host name of the database. Do not use localhost
bpm.de.db.3.hostname=bpmstdhost
# The name of the database.
bpm.de.db.3.databaseName=PSPDWDB
bpm.de.db.3.schema=db2inst1
```

- ___ n. When you are done editing the file, click **Save**.
 ___ o. Close it by clicking **File > Quit**.



Reminder

The Standard-PS-ThreeClusters-DB2-MODIFIED.properties properties file with the changes necessary to create the environment is already provided at the location /usr/labfiles/ex7/scripts for verification against your own configuration file, which you edited and saved in previous steps.

Part 2: Create the deployment environment

Before you run the BPMConfig command to create the deployment environment, you must install the database software and create all of the users that you specify in the properties file. IBM DB2 10.1 is installed, and the DB2 required users were created as part of the image creation.

- __ 1. Create the deployment environment.
 - __ a. In the terminal window, enter `cd /opt/IBM/BPM/bin` to change the directory.
 - __ b. To create the deployment environment by using the properties file, enter the following command:
`./BPMConfig.sh -create -de
/usr/tmp/Standard-PS-ThreeClusters-DB2-MODIFIED.properties`



Hint

To determine whether your file differs from the provided file, enter the following command in the terminal:

```
diff -q /usr/tmp/Standard-PS-ThreeClusters-DB2-MODIFIED.properties  
/usr/labfiles/ex7/scripts/Standard-PS-ThreeClusters-DB2-MODIFIED.properties
```

If your file differs from the provided file, use the properties file provided at the location `/usr/labfiles/ex7/scripts` by entering the following command:

```
./BPMConfig.sh -create -de  
/usr/labfiles/ex7/scripts/Standard-PS-ThreeClusters-DB2-MODIFIED.properties
```

The command takes about 20 minutes to complete. During this time, you can watch the output in the terminal window. You can see that the first part is to create the deployment manager profile and start the deployment manager. In the properties file, a default value of SOAP port 8879 was defined. However, when the deployment manager is configured, a unique port is generated of 8881.

```
[root@bpmsstdhost tmp]# cd /opt/IBM/BPM/bin
[root@bpmsstdhost bin]# ./BPMConfig.sh -create -de /usr/tmp/Standard-PS-ThreeClusters-DB2-MODIFIED.properties
Logging to file /opt/IBM/BPM/logs/config/BPMConfig_20151130-081806.log.
Validating the profile registry.
[]
Configuring the deployment manager.
Creating the deployment manager profile
NSTCONFSUCCESS: Success: Profile PServerDmgr now exists. Please consult /opt/IBM/BPM/profiles/PServerDmgr/logs/ABOUTTHISPROFILE.txt for more information about this profile.
WMCB0135W: The deployment manager SOAP port 8879 in the property file '/usr/tmp/Standard-PS-ThreeClusters-DB2-MODIFIED.properties' does not match the actual SOAP port (8881).
Starting deployment manager profile PServerDmgr.
ADMU0116I: Tool information is being logged in file
            /opt/IBM/BPM/profiles/PServerDmgr/logs/dmgr/startServer.log
ADMU0128I: Starting tool with the PServerDmgr profile
ADMU3100I: Reading configuration for server: dmgr
ADMU3200I: Server launched. Waiting for initialization status.
ADMU3000I: Server dmgr open for e-business; process id is 4400
Configuring managed node profiles.
Creating the managed node PServerNode01 profile.
[ ]
```

- ___ c. Next, the managed node PServerNode01 is created. Note the INSTCONFSUCCESS message that indicates the profile PServerNode01 now exists.

```
root@bpmsstdhost:/opt/IBM/BPM/bin
File Edit View Search Terminal Help
Logging to file /opt/IBM/BPM/logs/config/BPMConfig_20150928-062247.log.
Validating the profile registry.
[]
Configuring the deployment manager.
Creating the deployment manager profile.
INSTCONFSUCCESS: Success: Profile PServerDmgr now exists. Please consult /opt/IE
M/BPM/profiles/PServerDmgr/logs/AboutThisProfile.txt for more information about
this profile.
CWMCB0135W: The deployment manager SOAP port 8879 in the property file '/usr/lat
files/ex7/scripts/Standard-PS-ThreeClusters-DB2-MODIFIED.properties' does not ma
tch the actual SOAP port (8881).
Starting deployment manager profile PServerDmgr.
ADMU0116I: Tool information is being logged in file
    /opt/IBM/BPM/profiles/PServerDmgr/logs/dmgr/startServer.log
ADMU0128I: Starting tool with the PServerDmgr profile
ADMU3100I: Reading configuration for server: dmgr
ADMU3200I: Server launched. Waiting for initialization status.
ADMU3000I: Server dmgr open for e-business; process id is 22465
Configuring managed node profiles.
Creating the managed node PServerNode01 profile.
INSTCONFSUCCESS: Success: Profile PServerNode01 now exists. Please consult /opt/
    IBM/BPM/profiles/PServerNode01/logs/AboutThisProfile.txt for more information at
    out this profile.
Adding the node PServerNode01 to the cell PROD-PServerCell.
```

- ___ d. The node is then federated to the cell. After the successful federation of the node, the database scripts are created for the deployment environment. You can see the output for creating the clusters, data sources, and security information.

Finally, after the deployment is created and the environment is synchronized, the deployment manager is stopped. The last entry that you can see is the message that the "BPMConfig.sh -create.." command completed successfully.

The HTTP and HTTPS ports are added to the virtual hosts list.

Creating cluster members.

Configuring the REST services end points.

Saving configuration changes...

Synchronizing node PServerNode01.

ADMU0116I: Tool information is being logged in file

 /opt/IBM/BPM/profiles/PServerNode01/logs/syncNode.log

ADMU0128I: Starting tool with the PServerNode01 profile

ADMU0401I: Begin syncNode operation for node PServerNode01 with Deployment Manager bpmstdhost: 8881

ADMU0016I: Synchronizing configuration between node and cell.

ADMU0402I: The configuration for node PServerNode01 has been synchronized with Deployment Manager bpmstdhost: 8881

Stopping deployment manager profile PServerDmgr.

ADMU0116I: Tool information is being logged in file

 /opt/IBM/BPM/profiles/PServerDmgr/logs/dmgr/stopServer.log

ADMU0128I: Starting tool with the PServerDmgr profile

ADMU3100I: Reading configuration for server: dmgr

ADMU3201I: Server stop request issued. Waiting for stop status.

ADMU4000I: Server dmgr stop completed.

The 'BPMConfig.sh -create -de /usr/tmp/Standard-PS-ThreeClusters-DB2-MODIFIED.properties' command completed successfully.

Part 3: Verify the configuration

- ___ 1. Verify the configuration.

- ___ a. Enter the following command to list the profiles in the repository:

```
./manageprofiles.sh -listProfiles
```

```
[root@bpmsstdhost bin]# ./manageprofiles.sh -listProfiles  
[PCenterDmgr, PCenterCustom, PServerDmgr, PServerNode01]  
[root@bpmsstdhost bin]#
```

Note the two Process Center profiles that were created in an earlier exercise and the two Process Server profiles that are created as part of this exercise.

- ___ b. Enter cd /opt/IBM/BPM/logs/config to change the directory.

- ___ c. Enter ls to list the log file.

- ___ d. Enter gedit BPMConfig_<date_timestamp>.log to open the file. Messages that are related to the running of the BPMConfig command are recorded in this file. Examine the details of the log. Scroll to the end, and you can see the message that the "BPMConfig.sh . . . command completed successfully."

```
2015-10-15 09:38.36.629 com.ibm.bpm.config.soe.SoeFactory.getOsByType():  
RETURN com.ibm.bpm.config.soe.impl.OsUnix@911f0d7e  
2015-10-15 09:38.36.629 com.ibm.bpm.config.soe.SoeFactory.currentOs():  
RETURN com.ibm.bpm.config.soe.impl.OsUnix@911f0d7e  
2015-10-15 09:38.36.629 com.ibm.bpm.config.BPMConfig.main(): The  
'BPMConfig.sh -create -de /usr/labfiles/ex7/scripts/Standard-PS-  
ThreeClusters-DB2-MODIFIED.properties' command completed successfully.  
2015-10-15 09:38.36.629 com.ibm.bpm.config.BPMConfig.main(): RETURN AFTER  
create
```

- ___ e. Close the file when completed by clicking **File > Quit**.

- ___ f. Enter cd /opt/IBM/BPM/profiles/PServerDmgr/logs to change the directory.

- ___ g. Enter `gedit AboutThisProfile.txt` to open the file. Examine the settings for this profile. You can see the ports that are used for the administrative console and the SOAP port. These ports are used later in the exercise. Close the file by clicking **File > Quit**.

```

AboutThisProfile.txt X
Application server environment to create: Management
Location: /opt/IBM/BPM/profiles/PServerDmgr
Disk space required: 30 MB
Profile name: PServerDmgr
Make this profile the default: False
Node name: PServerDmgr
Cell name: PROD-PServerCell
Host name: bpmstdhost
Enable administrative security (recommended): True
Administrative console port: 9062
Administrative console secure port: 9045
Management bootstrap port: 9811
Management SOAP connector port: 8881
Run Management as a service: False

```

- ___ 2. Edit the `soap.client.props` file for the deployment manager.
- ___ a. In a terminal window, enter `cd /opt/IBM/BPM/profiles/PServerDmgr/properties` to change the directory.
 - ___ b. Enter `gedit soap.client.props` to edit the file in the gedit editor.
 - ___ c. Go to the `authenticationTarget` section.
 - ___ d. In the `soap.client.props` file, enter the following information:
- ```

com.ibm.SOAP.loginUserId=bpmadmin
com.ibm.SOAP.loginPassword=websphere
com.ibm.SOAP.authenticationTarget=BasicAuth
com.ibm.SOAP.loginUserId=bpmadmin
com.ibm.SOAP.loginPassword=websphere
...

```
- \_\_\_ e. Click **Save** and close the file by clicking **File > Quit**.
- \_\_\_ 3. Edit the `soap.client.props` file for the node.
- \_\_\_ a. In a terminal window, enter `cd /opt/IBM/BPM/profiles/PServerNode01/properties` to change the directory.
  - \_\_\_ b. Enter `gedit soap.client.props` to edit the file in the gedit editor.
  - \_\_\_ c. Go to the `authenticationTarget` section.

- \_\_\_ d. In the `soap.client.props` file, enter the following information:

```
com.ibm.SOAP.loginUserId=bpmadmin
com.ibm.SOAP.loginPassword=websphere
com.ibm.SOAP.authenticationTarget=BasicAuth
com.ibm.SOAP.loginUserId=bpmadmin
com.ibm.SOAP.loginPassword=websphere
```

- \_\_\_ e. Click **Save** and close the file by clicking **File > Quit**.

## Part 4: Create the databases and tables

Before you create a deployment environment, you must create all of the databases manually that are specified in the properties file. The BPMConfig command does not create the databases. It creates the schema and tables only.

Three databases are required in a Process Server deployment environment:

- The Process Server database (default name is BPMDB)
- The Business Performance Data Warehouse database (default name is PDWDB)
- The common database name (default name is CMNDB)

By default, the common database name is CMNDB. However, since both Process Center and Process Server environments are configured on the same computer and are using the same database product, the database names must be unique. In this exercise, the database scripts are modified to include the PS prefix that is based on the information you provided in the response file.

1. Create the common database.

- a. In the terminal window, change to the db2inst1 account by entering the following command:  
`su - db2inst1`
- b. Enter `cd /opt/IBM/BPM/profiles/PServerDmgr/dbscripts` to change the directory.
- c. List the contents of the directory by entering the `ls` command. The BPMConfig utility creates a subdirectory that contains the generated database scripts for the cell and the deployment environment.

`PROD-PServerCell.PServer_DE` contains the deployment environment scoped databases scripts.

```
[root@bpmpstdhost properties]# su - db2inst1
[db2inst1@bpmpstdhost ~]$ cd /opt/IBM/BPM/profiles/PServerDmgr/dbscripts
[db2inst1@bpmpstdhost dbscripts]$ ls
PROD-PServerCell.PServer_DE
```

- d. In the DB2 terminal window, enter `cd /opt/IBM/BPM/profiles/PServerDmgr/dbscripts/PROD-PServerCell.PServer_DE/D B2/PSCMNDB` to change the directory.

- \_\_\_ e. To create the common database, enter the following command:

```
./createDatabase.sh
```

Next, the database is created. Look for the following message: The CREATE DATABASE command completed successfully.

```
[db2inst1@bpmsstdhost ~]$ cd /opt/IBM/BPM/profiles/PServerDmgr/dbscripts
[db2inst1@bpmsstdhost dbscripts]$ ls
PROD-PServerCell.PServer_DE
[db2inst1@bpmsstdhost dbscripts]$ cd /opt/IBM/BPM/profiles/PServerDmgr/dbscripts/
PROD-PServerCell.PServer_DE/DB2/PSCMNDB
[db2inst1@bpmsstdhost PSCMNDB]$./createDatabase.sh
DB20000I The CREATE DATABASE command completed successfully.
```

#### Database Connection Information

```
Database server = DB2/LINUXX8664 10.5.3
SQL authorization ID = DB2INST1
Local database alias = PSCMNDB
```

DB20000I The SQL command completed successfully.

DB21034E The command was processed as an SQL statement because it was not a valid Command Line Processor command. During SQL processing it returned:  
SQL0554N An authorization ID cannot grant a privilege or authority to itself.  
SQLSTATE=42502



## Information

Running the script shows the following message, which is safe to ignore: An authorization ID cannot grant a privilege or authority to itself. The script is expected to be run as another user. After the database is created, it contains a line that grants database admin rights to the db2inst1 user. By default, root does not have access rights to the DB2 executable files, and the script is run as db2inst1. The user db2inst1 cannot grant access rights to itself. However, db2inst1 is the admin for this database, and thus it is safe to ignore this message.

- \_\_\_ f. To connect to the database, enter the following command:

```
db2 connect to PSCMNDB user db2inst1 using web1sphere
```

```
[db2inst1@bpmsstdhost PSCMNDB]$ db2 connect to PSCMNDB user db2inst1 using web1sp
here
```

### Database Connection Information

```
Database server = DB2/LINUXX8664 10.5.3
SQL authorization ID = DB2INST1
Local database alias = PSCMNDB
```

- \_\_\_ g. To create the Standard schema and tables, enter the following command:

```
db2 -tvf createSchema_Standard.sql
```

```
CREATE INDEX db2inst1.WIDGETWINDOW_INSTANCEOID ON db2inst1.WIDGET_WINDOW(INSTANC
E_OID)
DB20000I The SQL command completed successfully.
```

```
INSERT INTO db2inst1.VERSION_INFO (OID,VERSION_MAJOR,VERSION_MINOR,VERSION_RELEASE,VERSION_DEV,VERSION_TIME,DESCRIPTION) VALUES ('458202233263219661970198300000
000000',1,0,0,15,0,'Initialization from install script')
DB20000I The SQL command completed successfully.
```

```
CREATE TABLE db2inst1.BSP_USER_DATA_T (USER_DN VARCHAR(1000) NO
T NULL , EXTENSION BLOB(10K) , PRIMARY KEY (USER_DN))
DB20000I The SQL command completed successfully.
```

- \_\_\_ h. To create the Messaging schema and tables, enter the following command:

```
db2 -tvf createSchema_Messaging.sql
```

When the creation is complete, you see a number of messages in the console that indicate the following information: The SQL command completed successfully.

```
DB20000I The SQL command completed successfully.
```

```
ALTER TABLE db2inst1.SIB002 VOLATILE CARDINALITY
DB20000I The SQL command completed successfully.
```

```
CREATE TABLE db2inst1.SIBXACTS (XID VARCHAR(254) NOT NULL, STATE CHAR(1) NOT NULL, PRIMARY KEY(XID))
DB20000I The SQL command completed successfully.
```

```
CREATE TABLE db2inst1.SIBKEYS (ID VARCHAR(50) NOT NULL, LAST_KEY BIGINT NOT NULL, PRIMARY KEY(ID))
DB20000I The SQL command completed successfully.
```

- \_\_\_ i. Verify the number of tables that are created by entering the following command:

```
db2 list tables for schema db2inst1
```

You see that 47 records are listed.

|                   |          |   |                            |
|-------------------|----------|---|----------------------------|
| SPACENODE_LOD     | DB2INST1 | T | 2015-11-03-04.12.07.126800 |
| TEMPLATENODE      | DB2INST1 | T | 2015-11-03-04.12.07.763411 |
| TEMPLATENODE_LOD  | DB2INST1 | T | 2015-11-03-04.12.08.742796 |
| VERSION_INFO      | DB2INST1 | T | 2015-11-03-04.11.56.992160 |
| WIDGET_DEFINITION | DB2INST1 | T | 2015-11-03-04.12.13.406789 |
| WIDGET_INSTANCE   | DB2INST1 | T | 2015-11-03-04.12.13.903397 |
| WIDGET_RELATION   | DB2INST1 | T | 2015-11-03-04.12.13.001881 |
| WIDGET_WIDGETBLOB | DB2INST1 | T | 2015-11-03-04.12.14.728523 |
| WIDGET_WINDOW     | DB2INST1 | T | 2015-11-03-04.12.14.279240 |
| WIREITEM          | DB2INST1 | T | 2015-11-03-04.12.16.130159 |

```
47 record(s) selected.
```

- \_\_\_ j. To reset the connection, enter the following command:

```
db2 connect reset
```

- \_\_\_ 2. Create the Process Server database.

- \_\_\_ a. In the terminal window, enter cd

```
/opt/IBM/BPM/profiles/PServerDmgr/dbscripts/PROD-PServerCell.PServer_DE/DB2/PSBPMDB to change the directory.
```

- \_\_\_ b. To create the Process Server database, enter the following command:

```
./createDatabase.sh
```

Next, the database is created. Look for the following message: The CREATE DATABASE command completed successfully.

#### Database Connection Information

```
Database server = DB2/LINUXX8664 10.5.3
SQL authorization ID = DB2INST1
Local database alias = PSBPMDB
```

DB20000I The SQL command completed successfully.

DB21034E The command was processed as an SQL statement because it was not a valid Command Line Processor command. During SQL processing it returned:  
SQL0554N An authorization ID cannot grant a privilege or authority to itself.  
SQLSTATE=42502

- \_\_\_ c. To connect to the database, enter the following command:

```
db2 connect to PSBPMDB user db2inst1 using web1sphere
```

- \_\_\_ d. To create the schema and tables, enter the following command:

```
db2 -tvf createSchema_Standard.sql
```

INSERT INTO db2inst1.LSW\_USR\_GRP\_MEM\_XREF("USER\_ID", "GROUP\_ID") VALUES (1, 4)  
DB20000I The SQL command completed successfully.

INSERT INTO db2inst1.LSW\_USR\_GRP\_MEM\_XREF("USER\_ID", "GROUP\_ID") VALUES (1, 11)  
DB20000I The SQL command completed successfully.

INSERT INTO db2inst1.LSW\_USR\_GRP\_MEM\_XREF("USER\_ID", "GROUP\_ID") VALUES (1, 15)  
DB20000I The SQL command completed successfully.

INSERT INTO db2inst1.LSW\_USR\_GRP\_MEM\_XREF("USER\_ID", "GROUP\_ID") VALUES (1, 16)  
DB20000I The SQL command completed successfully.

- \_\_ e. Enter the following command:

```
db2 -tdGO -vf createProcedure_Standard.sql
```

When the creation is complete, you see a number of messages in the console that indicate the following information: The SQL command completed successfully.

```
CALL db2inst1.BPM_SET_LOB_INLINE_LENGTH('db2inst1.LSW_TASK_NARR', 'NARRATIVE_R/W', 1024)
```

```
Return Status = 0
```

```
DROP PROCEDURE db2inst1.BPM_SET_LOB_INLINE_LENGTH
DB20000I The SQL command completed successfully.
```

- \_\_ f. Verify the number of tables that are created by entering the following command:

```
db2 list tables for schema db2inst1
```

You see that records are listed.

- \_\_ g. To reset the connection, enter the following command:

```
db2 connect reset
```

- \_\_ 3. Create the Business Performance Data Warehouse database.

- \_\_ a. In the terminal window, enter `cd`

```
/opt/IBM/BPM/profiles/PServerDmgr/dbscripts/PROD-PServerCell.PServer_DE/D
B2/PSPDWDB to change the directory.
```

- \_\_ b. To create the Business Performance Data Warehouse database, enter the following command:

```
./createDatabase.sh
```

Next, the database is created. Look for the following message: The CREATE DATABASE command completed successfully.

#### Database Connection Information

```
Database server = DB2/LINUXX8664 10.5.3
SQL authorization ID = DB2INST1
Local database alias = PSPDWDB
```

```
DB20000I The SQL command completed successfully.
```

```
DB21034E The command was processed as an SQL statement because it was not a
valid Command Line Processor command. During SQL processing it returned:
SQL0554N An authorization ID cannot grant a privilege or authority to itself
SQLSTATE=42502
```

- \_\_\_ c. To connect to the database, enter the following command:

```
db2 connect to PSPDWDB user db2inst1 using web1sphere
```

- \_\_\_ d. To create the schema and tables, enter the following command:

```
db2 -tvf createSchema_Standard.sql
```

```
ALTER TABLE db2inst1.LSW_COLUMN ADD CONSTRAINT LSWC_COLUMN_FK1 FOREIGN KEY("TABLE_ID") REFERENCES db2inst1.LSW TABLE("TABLE_ID")
DB20000I The SQL command completed successfully.
```

```
CREATE INDEX db2inst1.LSWC_SNAPSHOT_PK4 ON db2inst1.LSW_SNAPSHOT("NAME")
DB20000I The SQL command completed successfully.
```

```
INSERT INTO db2inst1.LSW_SYSTEM_SCHEMA("PROPNAM", "PROPVAL") VALUES ('DatabaseSchemaVersion', '8.5.6')
DB20000I The SQL command completed successfully.
```

- \_\_\_ e. Verify the number of tables that are created by entering the following command:

```
db2 list tables for schema db2inst1
```

You see that 22 records are listed.

- \_\_\_ f. To reset the connection, enter the following command:

```
db2 connect reset
```

\_\_\_ 4. Verify the databases.

- \_\_\_ a. To list the databases, enter the following command:

```
db2 list database directory
```

The Process Center cell and the Process Server cell now have a total of six databases. The three databases for the Process Center cell are listed, and the three databases for the Process Server cell are listed.

- \_\_\_ b. Enter `exit` to log out of the DB2 command window.

- \_\_\_ c. Keep the terminal window open for use in the next parts of the exercise.

## Part 5: Work with the deployment environment

The deployment environment, databases, and database tables are now created but still do not have the required data in the various databases. The databases must be populated with the required data manually by running the `bootstrapProcessServerData` script before the servers in the deployment environment are started.

The bootstrap process completes two key activities:

- Imports Toolkits: A number of toolkits, such as System toolkit and System Coaches, are added to the database that the various process applications use.
- Imports Resource Bundle Groups: The Process Portal application that users would use supports multiple languages (depending on what is chosen during the installation process). The resource bundles representing the various locales are imported to the database.



### Information

If you created the database tables when you created the deployment environment, either by setting the parameter `bpm.de.deferSchemaCreation` to false for the BPMConfig command, or by enabling Create Tables in the Deployment Environment wizard, it is not necessary to run the `bootstrapProcessServerData` command.

1. Bootstrap the database.

- In the terminal window, enter `cd /opt/IBM/BPM/profiles/PServerDmgr/bin` to change the directory.
- Enter the following command:

```
./bootstrapProcessServerData.sh -clusterName AppCluster
```

The command takes a few minutes to run. When completed, look for the following message:

```
'BootstrapProcessServerData admin command completed.....'
```

```
[root@bpmsstdhost properties]# cd /opt/IBM/BPM/profiles/PServerDmgr/bin
[root@bpmsstdhost bin]# ./bootstrapProcessServerData.sh -clusterName AppCluster
Bootstrapping data into cluster AppCluster and logging into /opt/IBM/BPM/profiles/PServerDmgr/logs/bootstrapProcesServerData.AppCluster.log
```

**WASX7357I:** By request, this scripting client is not connected to any server process. Certain configuration and application operations will be available in local mode.

```
Activating snapshot 8.5.6.0 in process app TWP
Activating snapshot done: 8.5.6.0 in process app TWP
Activating snapshot 8.5.6.0 in process app SSA
Activating snapshot done: 8.5.6.0 in process app SSA
'BootstrapProcessServerData admin command completed successfully.....'
```

- 2. Start the environment by using the BPMConfig utility.
- a. In the terminal window, enter `cd /opt/IBM/BPM/bin` to change the directory.
- b. To start the deployment environment, enter the following command:

```
./BPMConfig.sh -start
/usr/tmp/Standard-PS-ThreeClusters-DB2-MODIFIED.properties
```

The command takes approximately 5 minutes to run. You can see that the deployment manager and the node agent are all started.

```
ADMU0128I: Starting tool with the PServerDmgr profile
ADMU3100I: Reading configuration for server: dmgr
ADMU3200I: Server launched. Waiting for initialization status
ADMU3000I: Server dmgr open for e-business; process id is 7853
Starting node PServerNode01.

ADMU0101I: Tool information is being logged in file
 /opt/IBM/BPM/profiles/PServerNode01/logs/nodeagent/startServer.log
ADMU0128I: Starting tool with the PServerNode01 profile
ADMU3100I: Reading configuration for server: nodeagent
ADMU3200I: Server launched. Waiting for initialization status
ADMU3000I: Server nodeagent open for e-business; process id is 8339

Starting cluster AppCluster.
Starting cluster SupCluster.

When the BPMConfig command is used to start a deployment environment, it invokes the processes that are used to start the associated clusters. If the command is successful in invoking the processes, it returns a message to report that the command completed successfully. However, to determine whether the cluster members were all started successfully, you need to check the log files of the cluster members. The log files are located in <WAS_HOME>/profiles/logs.

The 'BPMConfig.sh -start /usr/tmp/Standard-PS-ThreeClusters-DB2-MODIFIED.properties' command completed successfully.

[root@bpmsstdhost bin]#
```



### Information

After you install IBM Business Process Manager Standard and configure a deployment environment, you can also use the Quick Start console. By using the Quick Start console, you can start and stop the deployment environment, access the product documentation, or access the administrative consoles that are related to the deployment environment.

A version of the Quick Start console is available for each deployment environment in your installation, and can be used to manage that deployment environment. Options on each console are shown dynamically, depending on features that you install and the availability of elements on each operating system. Options might include starting or stopping the server or deployment manager, accessing the administrative console, and accessing the product documentation.

3. Start the deployment manager administrative console.

a. Open a web browser and go to the following URL:

<http://bpmsstdhost:9062/ibm/console>



### Note

Remember to use the administrative console port information that is noted in the `AboutThisProfile.txt` file.

- b. In the Untrusted Connection window, click **I Understand the Risks** to expand the option.
- c. Click **Add Exception**.



## This Connection is Untrusted

You have asked Firefox to connect securely to **bpmsstdhost:9045**, but we can't confirm your connection is secure.

Normally, when you try to connect securely, sites will present trusted identification to confirm that you are going to the right place. However, this site's identity can't be verified.

### What Should I Do?

If you usually connect to this site without problems, this error could mean that someone is trying to impersonate the site, and you shouldn't continue.

Get me out of here!

#### ► Technical Details

#### ▼ I Understand the Risks

If you understand what's going on, you can tell Firefox to start trusting this site's identification. **Even if you trust the site, this error could mean that someone is tampering with your connection.**

Don't add an exception unless you know there's a good reason why this site doesn't present trusted identification.

Add Exception...

- \_\_\_ d. On the **Add Security Exception** window, the location is the secure port for the deployment manager. Verify that the location is the following URL:

`https://bpmsstdhost:9045/ibm/console`



- \_\_\_ e. Click **Confirm Security Exception**. The Integrated Solutions Console, which is also known as the administrative console, login page is now visible.



**Hint**

Because the administrative console is used numerous times throughout the exercises, it might be a good idea to create a bookmark to the URL.

- \_\_\_ f. In the login area, enter `psdeadmin` as the user ID and `websphere` as the password. Click **Login**.

**Note**

The user name is `psdeadmin` for Process Server. You were using the user name `pcdeadmin` for the Process Center in earlier exercises.

- \_\_\_ g. If prompted to remember the password, click **Remember Password**.
- \_\_\_ 4. Examine the cell configuration.
  - \_\_\_ a. From the administrative console navigation pane, click **System administration > Nodes**. You see that two nodes are listed.

| Add Node                                    | Remove Node                   | Force Delete             | Synchronize                  | Full Resynchronize       | Stop                     |
|---------------------------------------------|-------------------------------|--------------------------|------------------------------|--------------------------|--------------------------|
| <input checked="" type="checkbox"/>         | <input type="checkbox"/>      | <input type="checkbox"/> | <input type="checkbox"/>     | <input type="checkbox"/> | <input type="checkbox"/> |
| Select                                      | Name ▲                        | Host Name ▲              | Version ▲                    | Discovery Protocol ▲     | Status ▲                 |
| You can administer the following resources: |                               |                          |                              |                          |                          |
| <input checked="" type="checkbox"/>         | <a href="#">PServerDmgr</a>   | bpmstdhost               | ND 8.5.5.5<br>BPMStd 8.5.6.0 | TCP                      |                          |
| <input type="checkbox"/>                    | <a href="#">PServerNode01</a> | bpmstdhost               | ND 8.5.5.5<br>BPMStd 8.5.6.0 | TCP                      |                          |
| Total 2                                     |                               |                          |                              |                          |                          |

- \_\_\_ b. Click **System administration > Node agents**. One node agent on the PServerNode01 node is in a started state.

| Stop                                        | Restart                   | Restart all Servers on Node |             |                              |          |
|---------------------------------------------|---------------------------|-----------------------------|-------------|------------------------------|----------|
| <input checked="" type="checkbox"/>         | <input type="checkbox"/>  | <input type="checkbox"/>    |             |                              |          |
| Select                                      | Name ▲                    | Node ▲                      | Host Name ▲ | Version ▲                    | Status ▲ |
| You can administer the following resources: |                           |                             |             |                              |          |
| <input type="checkbox"/>                    | <a href="#">nodeagent</a> | PServerNode01               | bpmstdhost  | ND 8.5.5.5<br>BPMStd 8.5.6.0 |          |
| Total 1                                     |                           |                             |             |                              |          |

- \_\_\_ c. Click **Servers > Clusters > WebSphere application server clusters**. Some of the clusters might be listed in a partial state and not yet fully started. You can refresh the page to check the changed status.

### WebSphere application server clusters

Use this page to change the configuration settings for a cluster. A server cluster consists of a group of application servers. If one of the member servers fails, requests will be routed to other members of the cluster. Learn more about this task in a [guided activity](#). A guided activity provides a list of task steps and more general information about the topic.

Preferences

| Select                   |                            | Name                                        | Status |
|--------------------------|----------------------------|---------------------------------------------|--------|
|                          |                            | You can administer the following resources: |        |
| <input type="checkbox"/> | <a href="#">AppCluster</a> |                                             |        |
| <input type="checkbox"/> | <a href="#">MECluster</a>  |                                             |        |
| <input type="checkbox"/> | <a href="#">SupCluster</a> |                                             |        |
| Total 3                  |                            |                                             |        |



#### Important

Sometimes the status for AppCluster changes from a partially started state to the stopped state. It keeps getting started at the back end, but the status is shown as stopped. Click the check box in front of AppCluster and click **Start**. The cluster starts in few minutes, or you might get the message that the cluster is already started.

| Select                              |                            | Name                                        | Status |
|-------------------------------------|----------------------------|---------------------------------------------|--------|
|                                     |                            | You can administer the following resources: |        |
| <input checked="" type="checkbox"/> | <a href="#">AppCluster</a> |                                             |        |
| <input type="checkbox"/>            | <a href="#">MECluster</a>  |                                             |        |
| <input type="checkbox"/>            | <a href="#">SupCluster</a> |                                             |        |
| Total 3                             |                            |                                             |        |

- \_\_\_ d. Click **Servers > Deployment Environments**. You can see the PServer\_DE deployment environment, which is based on the application, remote messaging, and remote support pattern in a partial start. You can hover over the status to see the **Partial Start** status. It takes approximately 5 minutes to start.

#### Deployment Environments

Select the deployment environments to manage. You can manage deployment environment th: using patterns.

| Select                   | Status | Deployment Environment Name | Features                        | Pattern                                           |
|--------------------------|--------|-----------------------------|---------------------------------|---------------------------------------------------|
| <input type="checkbox"/> |        | PServer_DE                  | IBM BPM Standard Process Server | Application, Remote Messaging, and Remote Support |
| Total 1                  |        | Partial start               |                                 |                                                   |

- \_\_\_ e. When the deployment environment status changes to started, click **PServer\_DE**.  
\_\_\_ f. In the messages area, click the **deferred configuration steps** link.



- \_\_\_ g. The details indicate more configuration steps that must be completed. The steps include running the database scripts and running the `bootstrapProcessServerData` utility. Each of these steps was completed earlier in this exercise. Click **Configuration Done**.

Configuration

**Configuration Done**

Instructions

1. Locate the database scripts in the directory `/opt/IBM/BPM/profiles/PServerDmgr/dbscripts/PServer_DE` (Note: The scripts might be generated ONLY after the deployment environment is generated). Run the scripts on the database host to initialize your database(s). For more information, please visit [IBM Business Process Manager Documentation](#).
2. Run the `bootstrapProcessServerData` utility from the command line. The utility is found in the Deployment manager profile directory `/opt/IBM/BPM/profiles/PServerDmgr/bin`. For more information, enter the search string `bootstrapProcessServerData` in the [IBM Business Process Manager Documentation](#).

**Close**

- \_\_\_ h. Click **Save** to save the changes directly to the master configuration.
- \_\_\_ i. A message indicates that this configuration is completed. Click **Close**.

Configuration

**Configuration Done**

The configuration has been performed by psdeadmin on October 15, 2015 11:52:10 AM EDT.

Instructions

There are no deferred instruction steps for this configuration.

**Close**

- \_\_\_ j. You are placed on the PServer\_DE pane where it lists the clusters that are part of the deployment environment.

| Cluster     | Cluster Name               | Status |
|-------------|----------------------------|--------|
| Application | <a href="#">AppCluster</a> |        |
| Messaging   | <a href="#">MECluster</a>  |        |
| Support     | <a href="#">SupCluster</a> |        |

- \_\_\_ k. Under Additional Properties, click **Deployment Topology**.

Additional Properties

- [Deployment Topology](#)
- [Deferred Configuration](#)
- [Health Center](#)
- [Process Server Settings](#)

- \_\_\_ l. You can see one node in the deployment environment and one member of each cluster.

#### Add Nodes

**Add Nodes**

PServerNode01

| Reset                    | Remove        |                |            |                                |                                |                                |                           |
|--------------------------|---------------|----------------|------------|--------------------------------|--------------------------------|--------------------------------|---------------------------|
| Select                   | Node          | Status         | Version    | Host                           | Application Deployment Target  | Messaging Infrastructure       | Supporting Infrastructure |
| <input type="checkbox"/> | PServerNode01 | BPMSPC 8.5.6.0 | bpmstdhost | <input type="text" value="1"/> | <input type="text" value="1"/> | <input type="text" value="1"/> |                           |
| Cluster Status           |               |                |            |                                |                                |                                |                           |

5. Determine server port numbers for the cluster members. The port numbers are used in later exercises.
- Click **Servers > Server Types > WebSphere application servers**.
  - Click **AppClusterMember1**.

### Application servers

Use this page to view a list of the application servers in your environment and the status of each of these servers. You can also use this page to change the status of a specific application server.

**Preferences**

| New...                                      | Delete                            | Templates...  | Start       | Stop                            | Restart        | ImmediateStop | Terminate |
|---------------------------------------------|-----------------------------------|---------------|-------------|---------------------------------|----------------|---------------|-----------|
|                                             |                                   |               |             |                                 |                |               |           |
| Select                                      | Name ▾                            | Node ▾        | Host Name ▾ | Version ▾                       | Cluster Name ▾ | Status ▾      |           |
| You can administer the following resources: |                                   |               |             |                                 |                |               |           |
| <input type="checkbox"/>                    | <a href="#">AppClusterMember1</a> | PServerNode01 | bpmstdhost  | ND 8.5.5.5<br>BPMStd<br>8.5.6.0 | AppCluster     |               |           |
| <input type="checkbox"/>                    | <a href="#">MEClusterMember1</a>  | PServerNode01 | bpmstdhost  | ND 8.5.5.5<br>BPMStd<br>8.5.6.0 | MECluster      |               |           |
| <input type="checkbox"/>                    | <a href="#">SupClusterMember1</a> | PServerNode01 | bpmstdhost  | ND 8.5.5.5<br>BPMStd<br>8.5.6.0 | SupCluster     |               |           |
| <b>Total 3</b>                              |                                   |               |             |                                 |                |               |           |

- c. In the Communications section, click the + sign to expand **Ports**. This pane gives you a listing of the ports for the server.

**Server Infrastructure**

- Java and Process Management
- Administration
  - Java SDKs

**Communications**

- Ports**
- Messaging

**Performance**

- \_\_ d. Look for the default host port for the server, which is listed as **WC\_defaulthost**.

#### Communications

##### Ports

| Port Name                             | Port | Details |
|---------------------------------------|------|---------|
| BOOTSTRAP_ADDRESS                     | 9813 |         |
| SOAP_CONNECTOR_ADDRESS                | 8884 |         |
| ORB_LISTENER_ADDRESS                  | 9104 |         |
| SAS_SSL_SERVERAUTH_LISTENER_ADDRESS   | 9413 |         |
| CSIV2_SSL_SERVERAUTH_LISTENER_ADDRESS | 9414 |         |
| CSIV2_SSL_MUTUALAUTH_LISTENER_ADDRESS | 9415 |         |
| WC_adminhost                          | 9064 |         |
| WC_defaulthost                        | 9082 |         |
| DCS_UNICAST_ADDRESS                   | 9358 |         |
| WC_adminhost_secure                   | 9047 |         |
| WC_defaulthost_secure                 | 9445 |         |
| SIP_DEFAULTHOST                       | 5064 |         |

- \_\_ e. If the default host port is different from 9082, make a note of the port number for WC\_defaulthost here: \_\_\_\_\_



#### Information

To edit the ports, click the **Ports** link or click **Details**.

6. Examine security information.

- \_\_ a. Click **Security > Global security**. Examine the security settings. Under User account repository, you can see that the Federated repository is configured and uses the default file based repository.

**User account repository**

Realm name  
defaultWIMFileBasedRealm

Current realm definition  
Federated repositories

Available realm definitions

Federated repositories    Configure...    Set as current

- \_\_ b. Click **Users and Groups > Manage Users**. You see the users that are listed.

Search for Users

Search by \* Search for \* Maximum results  
User ID \* 100

Search

2 users matched the search criteria.

| Select                   | User ID   | First name | Last name | E-mail | Unique Name                              |
|--------------------------|-----------|------------|-----------|--------|------------------------------------------|
| <input type="checkbox"/> | bpmadmin  | bpmadmin   | bpmadmin  |        | uid=bpmadmin,o=defaultWIMFileBasedRealm  |
| <input type="checkbox"/> | psdeadmin | psdeadmin  | psdeadmin |        | uid=psdeadmin,o=defaultWIMFileBasedRealm |

Page 1 of 1      Total: 2

The user `bpmadmin` is the cell administrative user that is created during profile creation. The user `psdeadmin` is the administrative user for managing the deployment environment. This user is created during the deployment environment configuration.

- \_\_\_ 7. Configure automatic synchronization. To ensure that subsequent changes are synchronized with the node, complete the following one-time setup.



### Information

By default, when changes are made to the master configuration from the administrative console, synchronization of these changes with the node agent is not automatic. Rather, the node agent relies on the file synchronization service properties (such as the synchronization interval) to retrieve changes to the configuration from the deployment manager. For this course, you configure automatic synchronization.

- \_\_\_ a. Click **System administration > Console Preferences**.
- \_\_\_ b. In the Console preferences dialog, select the option **Synchronize changes with Nodes**. This option specifies whether you want to force node synchronization at the time that you save your changes to the master repository, rather than when node synchronization normally occurs.

#### Console preferences

Specify user preferences for the administrative console workspace.

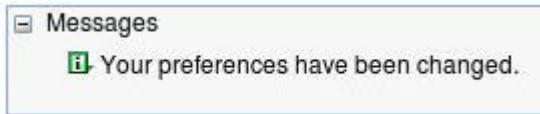
- Turn on workspace automatic refresh
- No confirmation on workspace discard
- Use default scope
- Show the help portlet
- Enable command assistance notifications
- Log command assistance commands
- Synchronize changes with Nodes

#### Bidirectional support options

[Apply](#) [Reset](#)

- \_\_\_ c. Click **Apply**. You see the following message at the top of the window:

Your preferences have been changed.



- 
- \_\_\_ 8. Log out of the administrative console and close the browser. You can leave the server in the running state since it is used in the next exercise.

**Note**

After completing a new installation, it is a good practice to make a backup of the initial configuration. You can use the `backupConfig` command to create a backup of the master configuration files. You can later restore this configuration if necessary. For example, you can create the backup by entering the following command:

```
/opt/IBM/BPM/profiles/PServerDmgr/bin/backupConfig.sh -nostop
```

The `-nostop` option tells the `backupConfig` command not to stop the servers.

---

**End of exercise**

## Exercise review and wrap-up

In this exercise, you used the BPMConfig utility and product response files to create a Process Server three-cluster deployment environment topology. You also used generated scripts to create the Process Server required databases. Finally, you started the deployment environment and then verified the configuration.

# Exercise 8. Managing offline and online Process Servers

## What this exercise is about

This exercise examines the differences between an offline Process Server and an online Process Server and how to deploy process applications to each of these environments.

## What you should be able to do

After completing this exercise, you should be able to:

- Create an offline server by using the Process Center Console
- Deploy a snapshot to an offline Process Server
- Change the configuration of an offline Process Server to an online Process Server
- Manage an online Process Server
- Deploy a snapshot to an online Process Server
- Deploy an installation package to a Process Server

## Introduction

A Process Server can have the following two types of runtimes:

- Online or connected: An online Process Server runtime that is configured during installation and is automatically discovered and shown in the web-based Process Center Console.
- Offline: An offline server is a Process Server runtime that is not connected to a Process Center. Offline servers can still be used when deploying snapshots of process applications. However, the method for deploying process application snapshots to an offline Process Server differs from the method for deploying process application snapshots to an online Process Server.

## Requirements

To complete this exercise, you must have:

- IBM Business Process Manager Standard installed
- The Process Center profiles created
- The Process Center deployment environment created

- The Process Server profiles created
- The Process Server deployment environment created

## Exercise instructions

An offline server is a Process Server runtime that is not connected to a Process Center. Offline servers can still be used when deploying snapshots of process applications. However, the method for deploying process application snapshots to an offline Process Server differs from the method that is used for an online Process Server.

### **Part 1: Start the Process Center environment**



#### Hint

Both the Process Center cell and the Process Server cell are configured on the same computer. However, all server processes have unique port numbers that are assigned to them. Since the entire course configuration is on one computer, the Process Center processes were stopped to save system resources.

1. Start the Process Center cell environment.

- a. In a terminal window, enter `cd /opt/IBM/BPM/profiles/PCenterDmgr/bin` to change the directory. The path is now for the deployment manager in the Process Center cell.
- b. Start the deployment manager by entering the following command:  
`./startManager.sh`

It takes approximately 2 minutes to start the deployment manager. Wait for the message that indicates that the deployment manager is started.

```
[root@bpmsstdhost bin]# cd /opt/IBM/BPM/profiles/PCenterDmgr/bin
[root@bpmsstdhost bin]# ./startManager.sh
ADMU0116I: Tool information is being logged in file
/opt/IBM/BPM/profiles/PCenterDmgr/logs/dmgr/startServer.log
ADMU0128I: Starting tool with the PCenterDmgr profile
ADMU3100I: Reading configuration for server: dmgr
ADMU3200I: Server launched. Waiting for initialization status.
ADMU3000I: Server dmgr open for e-business; process id is 26457
```

- c. Enter `cd /opt/IBM/BPM/profiles/PCenterCustom/bin` to change the directory. The path is now for the node agent in the Process Center cell.

- \_\_ d. Start the node agent by entering the following command:

```
./startNode.sh
```

It takes approximately 2 minutes to start the node agent. Wait for the message that indicates that the node agent is started.

```
[root@bpmsstdhost bin]# cd /opt/IBM/BPM/profiles/PCenterCustom/bin
[root@bpmsstdhost bin]# ./startNode.sh
ADMU0116I: Tool information is being logged in file
 /opt/IBM/BPM/profiles/PCenterCustom/logs/nodeagent/startServer.log
ADMU0128I: Starting tool with the PCenterCustom profile
ADMU3100I: Reading configuration for server: nodeagent
ADMU3200I: Server launched. Waiting for initialization status.
ADMU3000I: Server nodeagent open for e-business; process id is 28272
```



### Note

Each of the cluster members is in a stopped state. You start them in next part of the exercise.

- \_\_ 2. Start the deployment manager administrative console.

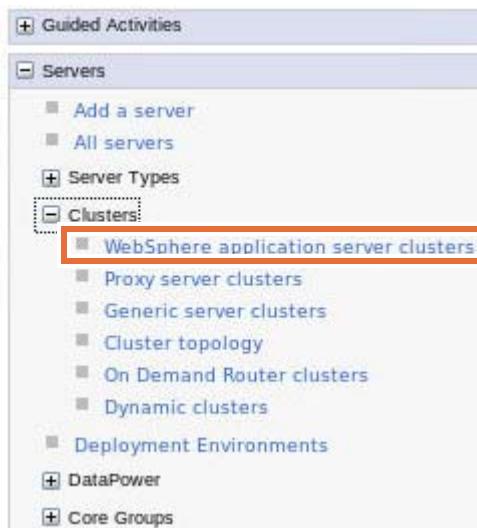
- \_\_ a. Open a web browser and enter the following URL:

```
http://bpmsstdhost:9060/ibm/console
```

- \_\_ b. In the login area, enter `pcdeadmin` as the user ID and `websphere` as the password.  
Click **Login**.

- \_\_ 3. Start the deployment environment.

- \_\_ a. Click **Servers > Clusters > WebSphere application server clusters**.



- \_\_\_ b. If not already started, select the check box for **PCenter\_DE.AppCluster**, and click **Start**.

#### WebSphere application server clusters

Use this page to change the configuration settings for a cluster. A server cluster consists of a group of application servers. If one of the member servers fails, requests will be routed to other members of the cluster. Learn more about this task in a [guided activity](#). A guided activity provides a list of task steps and more general information about the topic.

Preferences

|                                             |                                       |        |      |             |               |
|---------------------------------------------|---------------------------------------|--------|------|-------------|---------------|
| New...                                      | Delete                                | Start  | Stop | Ripplestart | ImmediateStop |
|                                             |                                       |        |      |             |               |
| Select                                      | Name                                  | Status |      |             |               |
| You can administer the following resources: |                                       |        |      |             |               |
| <input checked="" type="checkbox"/>         | <a href="#">PCenter_DE.AppCluster</a> |        |      |             |               |
| Total 1                                     |                                       |        |      |             |               |



#### Information

It takes approximately 20 minutes for the cluster to start. Wait for the cluster to start before proceeding. If after a few minutes the status is still **Partial Start**, click **Servers > Clusters > WebSphere application server clusters** to refresh the page.



#### Information

Instead of starting the cluster, you can also start the deployment environment. The deployment environment starts all clusters in the environment. To start the deployment environment:

- Click **Servers > Deployment Environments**.
- Select the check box for **PCenter\_DE**, and click **Start**.

\_\_\_ 4. Examine the port numbers for AppClusterMember1.

- \_\_\_ a. Click **Servers > Server Types > WebSphere application servers > PCenter\_DE.AppCluster.member1**.

#### Application servers

Use this page to view a list of the application servers in your environment and the status of each. You can use this page to change the status of a specific application server.

Preferences

|                                             |                                               |                                       |                                            |                                          |                          |                          |
|---------------------------------------------|-----------------------------------------------|---------------------------------------|--------------------------------------------|------------------------------------------|--------------------------|--------------------------|
| New...                                      | Delete                                        | Templates...                          | Start                                      | Stop                                     | Restart                  | ImmediateStop            |
| <input type="checkbox"/>                    | <input type="checkbox"/>                      | <input type="checkbox"/>              | <input type="checkbox"/>                   | <input type="checkbox"/>                 | <input type="checkbox"/> | <input type="checkbox"/> |
| Select                                      | Name <input type="button" value="▼"/>         | Node <input type="button" value="▼"/> | Host Name <input type="button" value="▼"/> | Version <input type="button" value="▼"/> |                          |                          |
| You can administer the following resources: |                                               |                                       |                                            |                                          |                          |                          |
| <input type="checkbox"/>                    | <a href="#">PCenter_DE.AppCluster.member1</a> | PCenterNode01                         | bpmstdhost                                 | ND 8.5.5.5<br>BPMStd<br>8.5.6.0          |                          |                          |

- \_\_\_ b. Under Communications, click the + sign next to **Ports** to expand and get a list of ports.

■ [Java SDKs](#)

#### Communications

[Ports](#)

[Messaging](#)

#### Performance

■ [Performance Monitoring Infrastructure \(PMI\)](#)

- \_\_\_ c. Scroll down to find the **SOAP\_CONNECTOR\_ADDRESS**. The **SOAP\_CONNECTOR\_ADDRESS** for the server is **8880**. You use this port when connecting to the server for creating and extracting installation packages.

|                          |                                        |            |      |                                            |
|--------------------------|----------------------------------------|------------|------|--------------------------------------------|
| <input type="checkbox"/> | <a href="#">SIP_DEFAULTHOST_SECURE</a> | *          | 5061 | <a href="#">View associated transports</a> |
| <input type="checkbox"/> | <a href="#">SOAP_CONNECTOR_ADDRESS</a> | bpmstdhost | 8880 | No associated transports                   |
| <input type="checkbox"/> | <a href="#">WC_adminhost</a>           | *          | 9061 | <a href="#">View associated transports</a> |

- \_\_\_ d. Log out of the administrative console.

## Part 2: Configure an offline Process Server

From the Process Center Console, you can manage configured Process Servers in their environment. A Process Server provides a single runtime and execution environment that can support a range of business processes, service orchestration, and integration capabilities for deployed and released process application snapshots.

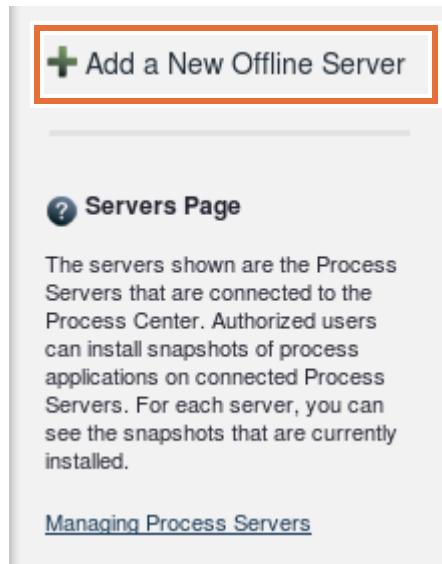
The two types of runtime for a Process Server are online (or connected) and offline. It is suggested that you connect the various test Process Servers directly to Process Center to enable automated deployment.

Do not connect production Process Servers directly to the Process Center. Administrators can still use the Process Center Console to manage deployment to disconnected Process Servers. In this case, rather than directly deploying to the server, the Process Center Console creates a deployment package. This deployment package must then be transferred to the directory structure of the target offline Process Server and deployed locally. Often, company security policies prevent administrators from communicating directly between a development environment and a production environment. Offline servers provide companies a workaround that allows them to function even if they cannot communicate directly with the production environment.

- 1. Start the Process Center Console by using the web portal.
  - a. Open a web browser and go to the Process Center Console at the following URL:  
`http://bpmsstdhost:9080/ProcessCenter`
  - b. In the login area, enter `pcdeadmin` as the user ID and `websphere` as the password. Click **Login**.
  - c. If you see the **Getting Started with IBM Process Center 8.5.6** welcome page, close it by clicking the **X** at the upper-right corner of the window.
- 2. Create an offline Process Server.
  - a. In the Process Center perspective, click the **Servers** tab. This tab shows all of the Process Servers that are connected to Process Center. The pane is blank because no Process Servers are connected.



- \_\_ b. On the right, click **Add a New Offline Server**.



- \_\_ c. In the Create New Server window, enter the following items:

- **Server Name:** PROD\_ProcessServer
- **Environment Type:** Production
- **Documentation:** Offline process server in the production Process Server cell.

A screenshot of a "Create New Server" dialog box. The "Server Name:" field contains "PROD\_ProcessServer" and the "Environment Type:" dropdown menu is set to "Production". Both of these fields are highlighted with a red box. Below the form is a rich text editor toolbar and a description area containing the text "Offline process server in the production Process Server cell.".

- \_\_ d. Click **Create**.



## Information

A typical IBM Business Process Manager topology includes four environment types that support the development, testing, staging, and eventual installation of process applications. From the environment type option, you can select any of these types as listed in the following screen capture:

**Create New Server**

Server Name:

Environment Type:

- e. The server is now listed in the Servers tab. You can see the details and status of the server.

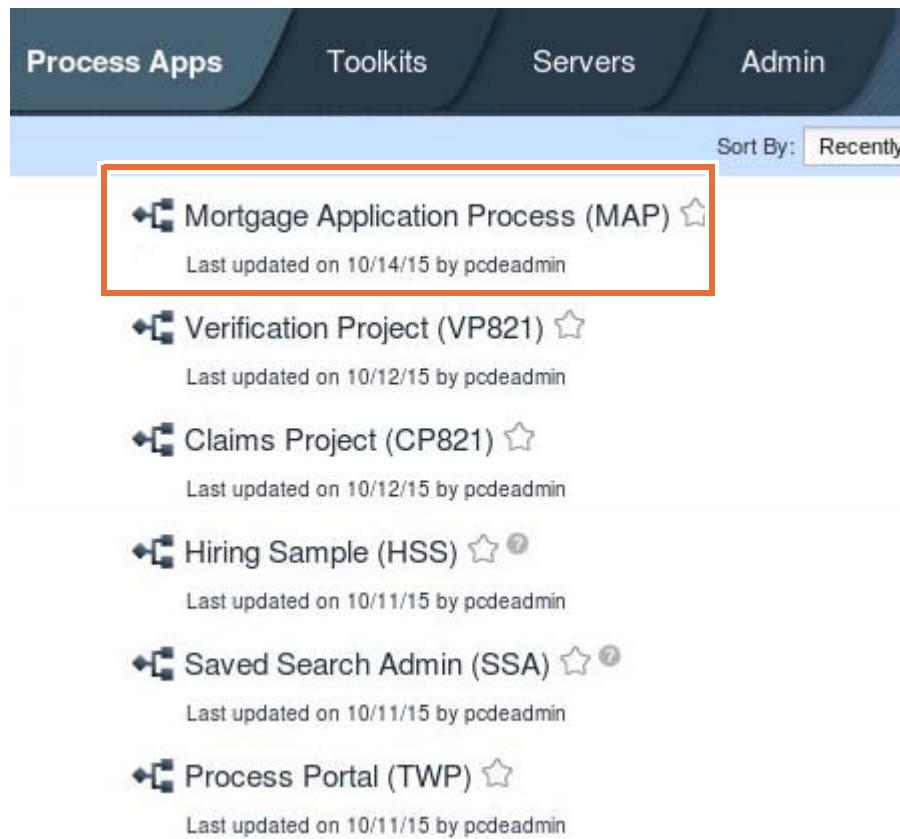
Process Apps      Toolkits      **Servers**      Admin

PROD\_ProcessServer ?  
PRODUCTION - Status: Offline

## Part 3: Deploy a snapshot to an offline Process Server

You can deploy process application snapshots to an offline Process Server that is running but is not connected to Process Center. In this situation, you create a deployment package for a particular snapshot on the Process Center server, transfer the package to the offline Process Server, and then run the package. The deployment package deploys all library items (including toolkit dependencies) from the selected snapshot to the offline Process Server.

- 1. Create the installation package.
  - a. In the Process Center perspective, click the **Process Apps** tab. You see the list of Process Apps. Note the acronym name for **Mortgage Application Process**, which is MAP. You use the acronym name shortly when using the command line mode.



The screenshot shows the 'Process Apps' tab selected in the top navigation bar. Below it, a list of process applications is displayed. The first item, 'Mortgage Application Process (MAP)', is highlighted with a red box. Each item includes a small icon, the application name, a star rating, and a note about the last update and user.

| Process App                        | Last updated | By        |
|------------------------------------|--------------|-----------|
| Mortgage Application Process (MAP) | 10/14/15     | podeadmin |
| Verification Project (VP821)       | 10/12/15     | podeadmin |
| Claims Project (CP821)             | 10/12/15     | podeadmin |
| Hiring Sample (HSS)                | 10/11/15     | podeadmin |
| Saved Search Admin (SSA)           | 10/11/15     | podeadmin |
| Process Portal (TWP)               | 10/11/15     | podeadmin |



### Reminder

The Mortgage Application Process application was imported in a previous exercise.

- \_\_ b. Click **Mortgage Application Process (MAP)**. From here, you see the list of snapshots.

The screenshot shows the 'Process Apps' tab selected in the top navigation bar. Below it, the 'Mortgage Application Process (MAP)' is selected. The main content area displays two snapshots:

- Current**: Last changed on 10/14/15 by pcdeadmin.
- V5 (V5)**: Created on 10/14/15 by pcdeadmin. Not Yet Installed to Process Server.

- \_\_ c. To the right of **V5** snapshot, click **Install**.

The screenshot shows the 'Schemas' tab selected in the top navigation bar. Below it, the 'Mortgage Application Process (MAP)' is selected. The main content area displays two snapshots:

- Current**: Last changed on 10/14/15 by pcdeadmin.
- V5 (V5)**: Created on 10/14/15 by pcdeadmin. Not Yet Installed to Process Server.

To the right of the 'V5 (V5)' entry, there are 'Export' and 'Install' buttons. The 'Install' button is highlighted with a red box.

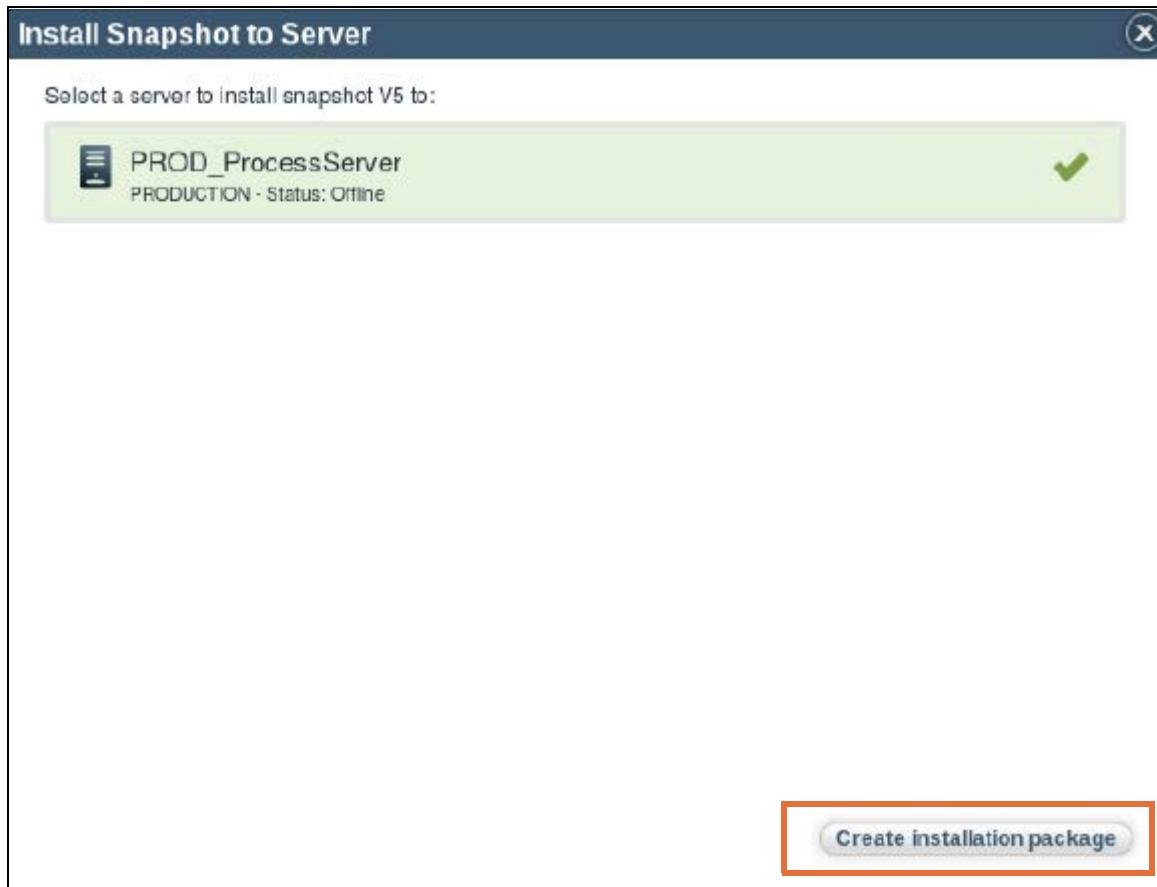
- \_\_ d. Click **PROD\_ProcessServer** to select the offline Process Server.

The screenshot shows a modal dialog titled 'Select a server to install snapshot V5 to:'.

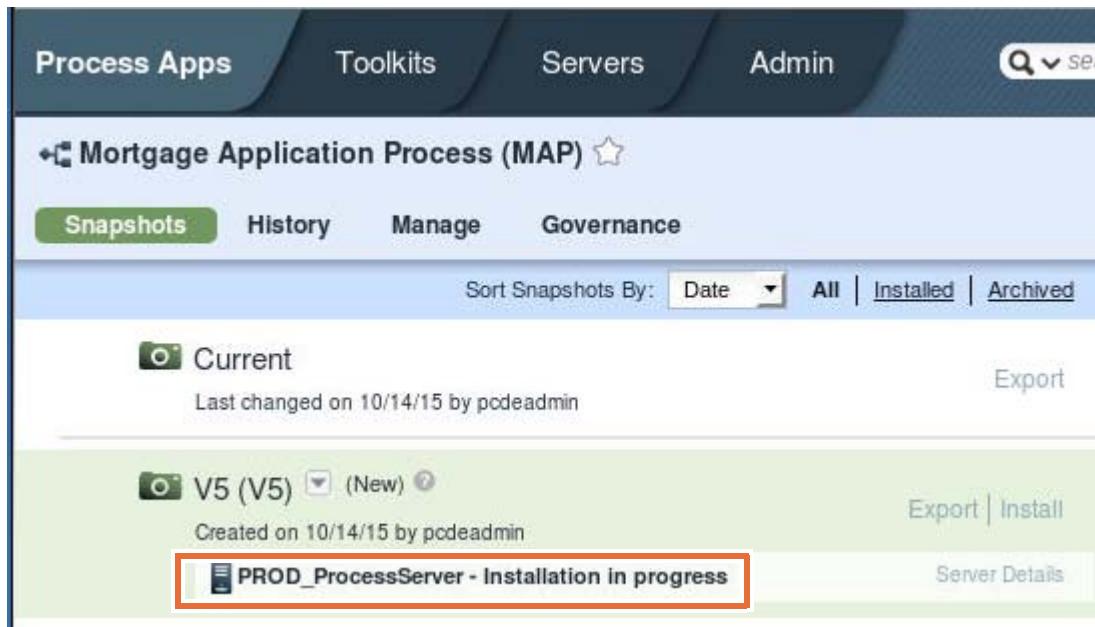
Inside the dialog, there is a list of servers:

- PROD\_ProcessServer** (highlighted with a red box)
- PRODUCTION - Status: Offline

- \_\_ e. The server is now selected as noted by the check mark to the right. Click **Create installation package**.



- \_\_ f. During this time, you see the message “Installation in progress”.



- g. When completed, the status message changes to: "Installation package Available: PROD\_ProcessServer".

The screenshot shows the Process Center Console interface. At the top, there are tabs for Process Apps, Toolkits, Servers, and Admin. Below that, a title bar says '+ Mortgage Application Process (MAP) ☆'. Underneath, there are tabs for Snapshots (which is selected), History, Manage, and Governance. A search bar is at the top right. Below these, there's a sorting section with 'Sort Snapshots By: Date' and buttons for All, Installed, and Archived. The main area shows two snapshots: 'Current' (Last changed on 10/14/15 by pcdeadmin) and 'V5 (V5)' (Created on 10/14/15 by pcdeadmin). The 'V5 (V5)' row has a red box around the 'Installation Package Available' field, which contains 'PROD\_ProcessServer'.



### Information

You can create an offline package by using the Process Center Console or by using the `BPMCreateOfflinePackage` command. To create an offline package by using the command line, use the following command:

```
$AdminTask BPMCreateOfflinePackage {-containerAcronym MAP
-containerSnapshotAcronym V5 -containerTrackAcronym Main -serverName
PROD_ProcessServer}
```

- \_\_ h. Click **Server Details** to the right of the server name.

The screenshot shows the 'Schemas' tab for the 'Mortgage Application Process (MAP)'. The 'Current' snapshot is selected. A red box highlights the 'Server Details' link next to the 'PROD\_ProcessServer' entry.

- \_\_ i. The information about the snapshots that are deployed to the server is displayed.

The screenshot shows the 'Servers' tab for the 'PROD\_ProcessServer'. A red box highlights the 'Current Snapshots Deployed' section, which lists 'V5'.

- \_\_ j. Minimize the Process Center Console browser.

- \_\_ 2. You created the installation package for a process application. The next step is to extract the installation package.



## Information

The Process Center Console can be used to create the offline installation package for a process application snapshot. You can also use the command line interface to create the installation package. Three common commands pertain to offline deployments, which include the following commands:

- **BPMCreateOfflinePackage**: This command creates an installation package for a process application snapshot on the Process Center server. If you want to install a snapshot on an offline Process Server, use this command in connected mode from a Process Center server to create an installation package of a snapshot. This package is stored in the database.
- **BPMExtractOfflinePackage**: This command extracts the process application snapshot installation package from Process Center.
- **BPMInstallOfflinePackage**: This command installs a process application snapshot from a Process Center to an offline Process Server that is not currently connected to the Process Center. Use this command in connected mode from Process Server to install a process application snapshot installation package on Process Server. The installation package must already be created and extracted on the server. After this command is complete, the installed snapshot is active. You can also use the `installProcessAppPackage` command to complete this task.

- a. In a terminal window, enter `cd /opt/IBM/BPM/bin` to change the directory.



## Information

When using the command line interface to view, create, extract, and install packages, you must run the commands on the node that contains the application cluster member that handles Process Server applications. You must connect to the **PCenter\_DE.AppCluster.member1** cluster member by using the SOAP port you obtained earlier in the exercise. Do not run the commands from the deployment manager.

- \_\_ b. Copy and paste the following command to open the wsadmin interactive mode and establish a SOAP connection to Process Center:

```
./wsadmin.sh -conntype SOAP -port 8880 -host bpmstdhost -user pcdeadmin
-password web1sphere
```

A message indicates that you are connected to the PCenter\_DE.AppCluster.member1 cluster member.

```
[root@bpmstdhost bin]# ./wsadmin.sh -conntype SOAP -port 8880 -host bpmstdhost
user pcdeadmin -password web1sphere
WASX7209I: Connected to process "PCenter_DE.AppCluster.member1" on node PCenter
ode01 using SOAP connector; The type of process is: ManagedProcess
WASX7029I: For help, enter: "$Help help"
wsadmin>■
```



**Note**

The commands are provided in the commands.txt file present in the /usr/labfiles/ex8 folder. You can copy the command from this file to avoid any typographical errors.

- \_\_\_ c. You must obtain information about the snapshot before extracting the package. Copy and paste the following command to get the needed information about the process application:

```
$AdminTask BPMShowProcessApplication {-containerAcronym MAP}

wsadmin>$AdminTask BPMShowProcessApplication {-containerAcronym MAP}
Name: Mortgage Application Process
Acronym: MAP
Description:
Toolkit: false
Tracks:

 Track Name: Main
 Track Acronym: Main
 Default: true

Tip:
 Created On: 2015-10-14 09:25:33.622
 Created By: User.9
 State: State[Inactive]
 Capability: Capability[Standard]
 No of running instances: 2

List of Snapshots:
 Name: V5
 Acronym: V5
 Created On: 2015-10-14 09:25:33.622
 Created By: User.9
 Is Default: false
 State: State[Inactive]
 Capability: Capability[Standard]
 No of running instances: 0
```

- \_\_\_ d. In the output, you can see the following information:

- **Name:** Mortgage Application Process
- **Acronym:** MAP
- **Track Name:** Main
- **Track Acronym:** Main
- **Snapshot Name:** V5
- **Snapshot Acronym:** V5

- \_\_\_ e. Next, extract the package. When entering the command, you must provide a number of pieces of information about the snapshot that you just obtained. You also must indicate a file to which the package is extracted.

Copy and paste the following command in the terminal to extract the package to a compressed file:

```
$AdminTask BPMExtractOfflinePackage {-containerAcronym MAP
-containSnapshotAcronym V5 -containerTrackAcronym Main -serverName
PROD_ProcessServer -outputFile /usr/labfiles/ex8/ProcessCenter/MAP.zip}
```

```
wsadmin>$AdminTask BPMExtractOfflinePackage {-containerAcronym MAP -contain
rSnapshotAcronym V5 -containerTrackAcronym Main -serverName PROD_ProcessServ
er -outputFile /usr/labfiles/ex8/ProcessCenter/MAP.zip}
BPMExtractOfflinePackage passed.
```

wsadmin>■

The output indicates: `BPMExtractOfflinePackage` passed.



### Reminder

The commands are provided in **commands.txt** file present at the location `/usr/labfiles/ex8` folder. You can copy the command from this file to avoid any typographical errors.

- \_\_\_ f. Exit wsadmin by entering the following command:  
`quit`
- \_\_\_ g. In the terminal window, enter `cd /usr/labfiles/ex8/ProcessCenter` to change the directory.
- \_\_\_ h. Enter `ls` to list the newly compressed file named `MAP` in the directory. You install this process application in the next steps.

```
[root@bpmsstdhost bin]# cd /usr/labfiles/ex8/ProcessCenter
[root@bpmsstdhost ProcessCenter]# ls
MAP.zip
[root@bpmsstdhost ProcessCenter]# ■
```

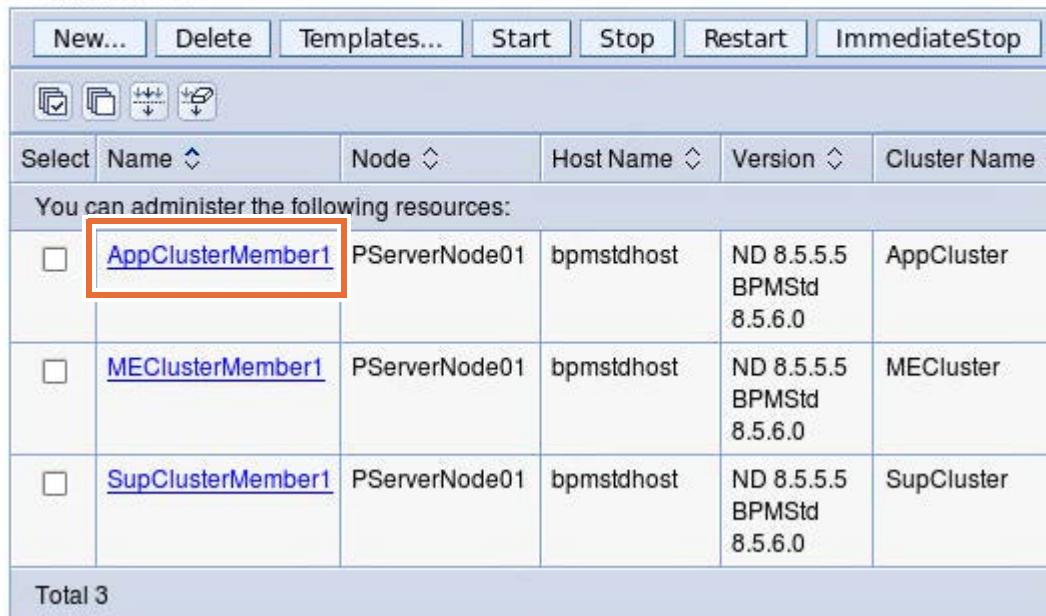
- \_\_\_ 3. Examine the port numbers for AppCluster\_member1.
- \_\_\_ a. Open a web browser and go to the following URL:  
`http://bpmsstdhost:9062/ibm/console`
- \_\_\_ b. In the login area, enter `psdeadmin` as the user ID and `websphere` as the password. Click **Login**.

- \_\_\_ c. Click **Servers > Server Types > WebSphere application servers > AppClusterMember1**.

#### Application servers

Use this page to view a list of the application servers in your environment and the status of each servers. You can also use this page to change the status of a specific application server.

Preferences



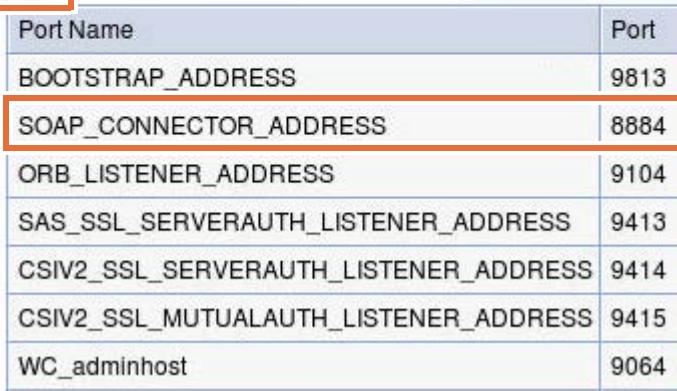
| New...                                      | Delete                            | Templates...  | Start      | Stop                            | Restart      | ImmediateStop |
|---------------------------------------------|-----------------------------------|---------------|------------|---------------------------------|--------------|---------------|
| Select                                      | Name                              | Node          | Host Name  | Version                         | Cluster Name |               |
| You can administer the following resources: |                                   |               |            |                                 |              |               |
| <input type="checkbox"/>                    | <a href="#">AppClusterMember1</a> | PServerNode01 | bpmstdhost | ND 8.5.5.5<br>BPMStd<br>8.5.6.0 | AppCluster   |               |
| <input type="checkbox"/>                    | <a href="#">MEClusterMember1</a>  | PServerNode01 | bpmstdhost | ND 8.5.5.5<br>BPMStd<br>8.5.6.0 | MECluster    |               |
| <input type="checkbox"/>                    | <a href="#">SupClusterMember1</a> | PServerNode01 | bpmstdhost | ND 8.5.5.5<br>BPMStd<br>8.5.6.0 | SupCluster   |               |
| Total 3                                     |                                   |               |            |                                 |              |               |

- \_\_\_ d. Under Communications, expand **Ports** and get a list of ports.

Java SDKs

#### Communications

Ports



| Port Name                             | Port        |
|---------------------------------------|-------------|
| BOOTSTRAP_ADDRESS                     | 9813        |
| <b>SOAP_CONNECTOR_ADDRESS</b>         | <b>8884</b> |
| ORB_LISTENER_ADDRESS                  | 9104        |
| SAS_SSL_SERVERAUTH_LISTENER_ADDRESS   | 9413        |
| CSIV2_SSL_SERVERAUTH_LISTENER_ADDRESS | 9414        |
| CSIV2_SSL_MUTUALAUTH_LISTENER_ADDRESS | 9415        |
| WC_adminhost                          | 9064        |

Notice that the **SOAP\_CONNECTOR\_ADDRESS** for the server is **8884**. This address is used in the next part of the exercise.

- \_\_\_ e. Log out of the administrative console and minimize the browser.

4. Deploy the offline package. To deploy an offline package, you must manually install the package to Process Server.



### Reminder

Earlier in the exercise, you created an offline package for an offline server.

- \_\_ a. In a terminal window, enter `cd /opt/IBM/BPM/bin` to change the directory.
- \_\_ b. Copy and paste the following command in the terminal to open the wsadmin interactive mode and establish a SOAP connection to Process Server.

```
./wsadmin.sh -conntype SOAP -port 8884 -host bpmstdhost -user psdeadmin
-pw web1sphere
```

A message indicates that you are connected to the process AppClusterMember1.

```
[root@bpmstdhost bin]# cd /opt/IBM/BPM/bin
[root@bpmstdhost bin]# ./wsadmin.sh -conntype SOAP -port 8884 -host bpmstdhost -
user psdeadmin -password web1sphere
WASX7209I: Connected to process "AppClusterMember1" on node PServerNode01 using
SOAP connector; The type of process is: ManagedProcess
WASX7029I: For help, enter: "$Help help"
```

- \_\_ c. You are prompted for an SSL signer certificate. Click **y** to add the signer certificate.



- \_\_ d. Copy and paste the following command to install the offline package:

```
$AdminTask BPMInstallOfflinePackage {-inputFile
/usr/labfiles/ex8/ProcessCenter/MAP.zip}
```

**Reminder**

The commands are provided in the `commands.txt` file present in the `/usr/labfiles/ex8` folder. You can copy the command from this file to avoid any typographical errors.

- \_\_\_ e. When completed, a message indicates that the `BPMInstallOfflinePackage` passed.

```
wsadmin>$AdminTask BPMInstallOfflinePackage {-inputFile /usr/labfiles/ex8/Proces
|sCenter/MAP.zip}
|BPMInstallOfflinePackage passed.
wsadmin>■
```

**Information**

If you are using a SOAP connection, the command can take longer to complete than the specified SOAP timeout value. Although the command continues to run until it is finished, you might see the exception `java.net.SocketTimeoutException: Read timed out`. It is OK to ignore this message.

If you want to prevent the exception `java.net.SocketTimeoutException: Read timed out`, set a higher value for the `com.ibm.SOAP.requestTimeout` property in the `soap.client.props` file. The file is present in the `/opt/IBM/BPM/profiles/PServerNode01/properties` directory.

`soap.client.props`

```
of a Kerberos
Service Principal Name (SPN) of the target
server. example: the service name is WAS for the SPN
WAS/<hostname>@krbRealm)
#
#-----#
com.ibm.SOAP.krb5Service=
```

#-----#

```
SOAP Request Timeout
#
- timeout (specified in seconds [default 180], 0 implies no timeout)
#
#-----#
com.ibm.SOAP.requestTimeout=180
```

- \_\_\_ f. After you see that `BPMInstallOfflinePackage` passed a message, exit `wsadmin` by entering the following command:

`quit`

- \_\_\_ 5. Verify the installation of the offline package.
- \_\_\_ a. Open a web browser and go to the Process Portal for the Process Server environment at the following URL:

<http://bpmsstdhost:9082/ProcessAdmin>



### Important

The Process Portal page for the Process Server environment is accessible at port 9082 and not 9080. If you recall, port 9080 is used by the Process Portal for the Process Center environment. Since you deployed the process app to the Process Server environment, you need to go to port 9082 and not 9080.

- \_\_\_ b. In the Untrusted Connection window, click **I Understand the Risks** to expand the option.
- \_\_\_ c. Click **Add Exception**.



## This Connection is Untrusted

You have asked Firefox to connect securely to **bpmsstdhost:9445**, but we can't confirm your connection is secure.

Normally, when you try to connect securely, sites will present trusted identification to confirm that you are going to the right place. However, this site's identity can't be verified.

### What Should I Do?

If you usually connect to this site without problems, this error could mean that someone is trying to impersonate the site, and you shouldn't continue.

[Get me out of here!](#)

#### ► Technical Details

#### ▼ I Understand the Risks

If you understand what's going on, you can tell Firefox to start trusting this site's identification. **Even if you trust the site, this error could mean that someone is tampering with your connection.**

Don't add an exception unless you know there's a good reason why this site doesn't have trusted identification.

[Add Exception...](#)

- \_\_\_ d. On the **Add Security Exception** window, the location is the secure port for the ProcessAdmin. Verify that the location is the following URL:

<https://bpmsstdhost:9445/ProcessAdmin>



- \_\_\_ e. Click **Confirm Security Exception**. The login page is now visible.  
\_\_\_ f. In the login area, enter `psdeadmin` as the user ID and `websphere` as the password.

- \_\_ g. Click **Login**. You are now placed on the **Server Admin** page.

The Process Admin console provides configuration and management tools for the Process Servers in your IBM Business Process Manager environment.

The Process Admin console enables you to manage IBM BPM users, as well as the queues and caches for particular servers. The console also provides tools to help you configure the process applications.

- \_\_ h. Click **Installed Apps** to view the list of deployed process apps.

| Application Name                        | Status          |
|-----------------------------------------|-----------------|
| Mortgage Application Process (MAP) - V5 | Active, Default |
| Process Portal (TWP) - 8.5.6.0          | Active, Default |
| Saved Search Admin (SSA) - 8.5.6.0      | Active, Default |

- \_\_ i. **Mortgage Application Process (MAP) - V5** is now listed as the installed application. This entry confirms that your offline deployment is successful.

| Application Name                               | Status          |
|------------------------------------------------|-----------------|
| <b>Mortgage Application Process (MAP) - V5</b> | Active, Default |
| Mortgage Approval Process - 0 instances        |                 |
| <b>Process Portal (TWP) - 8.5.6.0</b>          | Active, Default |
| <b>Saved Search Admin (SSA) - 8.5.6.0</b>      | Active, Default |

- \_\_ j. Log out of the browser.

## Part 4: Delete the offline server



### Important

If you have an offline server and you plan to change the configuration to an online server, you must first delete the offline server from the Process Center repository.

1. Delete the offline server.

a. In the web browser, go to the Process Center Console at the following URL:

`http://bpmsstdhost:9080/ProcessCenter`

b. Log back in using `pcdeadmin` as the user ID and `websphere` as the password.

c. Click the **Servers** tab.

| Process Application                | Last updated | Actions               |
|------------------------------------|--------------|-----------------------|
| Mortgage Application Process (MAP) | 10/14/15     | Remove Offline Server |
| Verification Project (VP821)       | 10/12/15     | Remove Offline Server |

d. Click **Remove Offline Server**.

| Server             | Status  | Action                |
|--------------------|---------|-----------------------|
| PROD_ProcessServer | Offline | Remove Offline Server |

- \_\_\_ e. If you want to remove the offline server, click **Yes** when prompted.



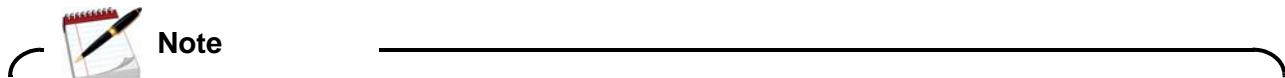
- \_\_\_ f. The server is removed from the server listing.  
\_\_\_ g. Log out of the Process Center Console browser.

## Part 5: Creating an authentication alias

After you install and configure IBM Business Process Manager, you might want to customize your configuration. For example, you can change the Process Server from an offline server to a Process Center connected server, and vice versa. You can also customize settings, set up an extra security provider, set up user accounts, and change and encrypt passwords.

IBM Business Process Manager uses some configuration files that are read during the Process Server and Process Center startup. These files contain XML content and are readable and editable in a text or XML editor. You manage configuration customization by using various `wsadmin` commands to modify the configuration files. It is not advisable to edit these files by hand.

The first step in customizing an offline Process Server to an online server is to create an authentication alias. The authentication alias is used when the Process Server is connecting to the Process Center environment. The user and password that are set in this alias must be present in Process Center.



In this case, the Process Center deployment environment administrator user name `bpmadmin` and password `websphere` are used.

- \_\_\_ 1. Start the deployment manager administrative console.
  - \_\_\_ a. Open a web browser and go to the following URL:  
`http://bpmsstdhost:9062/ibm/console`
  - \_\_\_ b. In the login area, enter `bpmadmin` as the user ID and `websphere` as the password. Click **Login**.
- \_\_\_ 2. Configure an authentication alias.
  - \_\_\_ a. Click **Security > Global security**.

- \_\_\_ b. Under **Authentication** on the right side, click **Java Authentication and Authorization Service > J2C authentication data**.

**Authentication**  
Authentication mechanisms and expiration

- [LTPA](#)
- Kerberos and LTPA
  - [Kerberos configuration](#)

[Authentication cache settings](#)

- Web and SIP security
- RMI/IOP security
- Java Authentication and Authorization Service
  - Application logins
  - System logins
  - [J2C authentication data](#)
- Enable Java Authentication SPI (JASPI)
  - [Providers](#)
- Use realm-qualified user names

- \_\_\_ c. Verify that the option for **Prefix new alias name with the node name of the cell** is not selected. If selected, clear the check box. Then, click **Apply** and click **Save** to save the changes to the master configuration.

**Global security** ? ▾

[Global security > JAAS - J2C authentication data](#)

Specifies a list of user identities and passwords for Java(TM) 2 connector security to use.

Prefix new alias names with the node name of the cell (for compatibility with earlier releases)

**Apply**

- \_\_ d. You are placed on the Global Security page. Under **Authentication** on the right side, click **Java Authentication and Authorization Service > J2C authentication data**.

**Authentication**

Authentication mechanisms and expiration

[LTPA](#)

Kerberos and LTPA  
[Kerberos configuration](#)

[Authentication cache settings](#)

- Web and SIP security
- RMI/IOP security
- Java Authentication and Authorization Service
  - Application logins
  - System logins
  - [J2C authentication data](#)
- Enable Java Authentication SPI (JASPI)  
[Providers](#)
- Use realm-qualified user names

- \_\_ e. On the JAAS - J2C authentication data pane, click **New**.

**Global security > JAAS - J2C authentication data**

Specifies a list of user identities and passwords for Java(TM) 2 connector security to use.

- Prefix new alias names with the node name of the cell (for compatibility with earlier releases)

**Apply**

Preferences

**New...** Delete

| Select                   | Alias                          | User ID   | Description                  |
|--------------------------|--------------------------------|-----------|------------------------------|
| <input type="checkbox"/> | <a href="#">BPM_DB_ALIAS</a>   | db2inst1  |                              |
| <input type="checkbox"/> | <a href="#">CellAdminAlias</a> | bpmadmin  | BPM Cell Administrator Alias |
| <input type="checkbox"/> | <a href="#">DeAdminAlias</a>   | psdeadmin |                              |

You can administer the following resources:

|                          |                                |           |                              |
|--------------------------|--------------------------------|-----------|------------------------------|
| <input type="checkbox"/> | <a href="#">BPM_DB_ALIAS</a>   | db2inst1  |                              |
| <input type="checkbox"/> | <a href="#">CellAdminAlias</a> | bpmadmin  | BPM Cell Administrator Alias |
| <input type="checkbox"/> | <a href="#">DeAdminAlias</a>   | psdeadmin |                              |

\_\_ f. Enter the following information in the General Properties section:

- **Alias:** ProcessCenterUserAlias
- **User ID:** pcdeadmin
- **Password:** web1sphere
- **Description:** For connecting to Process Center

**Global security**

**Global security > JAAS - J2C authentication data > New...**

Specifies a list of user identities and passwords for Java(TM) 2 connector security to use.

**General Properties**

\* Alias  
ProcessCenterUserAlias

\* User ID  
pcdeadmin

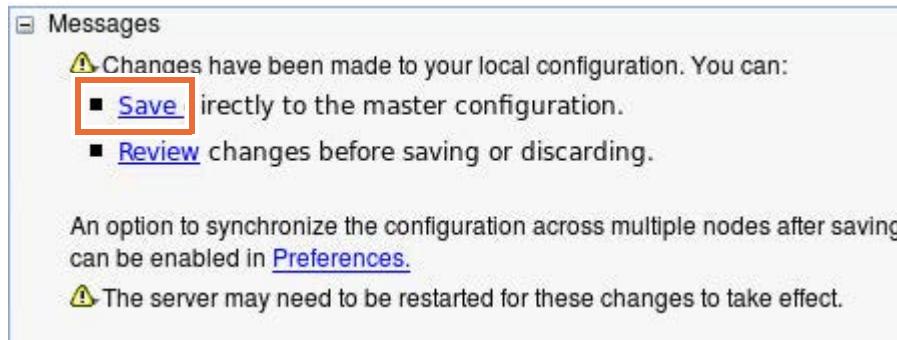
\* Password  
\*\*\*\*\*

Description  
For connecting to Process Center

Apply OK Reset Cancel

\_\_ g. Click **OK**.

\_\_ h. **Save** the changes to the master configuration.



- \_\_ i. On the JAAS - J2C authentication data pane, verify that the new alias is listed.

| Select                   | Alias                  | User ID   | Description                      |
|--------------------------|------------------------|-----------|----------------------------------|
| <input type="checkbox"/> | BPM_DB_ALIAS           | db2inst1  |                                  |
| <input type="checkbox"/> | CellAdminAlias         | bpmadmin  | BPM Cell Administrator Alias     |
| <input type="checkbox"/> | DeAdminAlias           | psdeadmin |                                  |
| <input type="checkbox"/> | ProcessCenterUserAlias | pcdeadmin | For connecting to Process Center |

- \_\_ 3. Modify the authentication alias.  
\_\_ a. Click **Servers > Deployment Environments**.



- \_\_ b. Click **PServer\_DE**.

The screenshot shows a software interface titled "Deployment Environments". At the top, there are buttons for "Start", "Stop", and "New...". Below these are several icons: a checkmark, a folder, a double arrow, and a refresh symbol. A toolbar below the icons has dropdown menus for "Select", "Status", "Deployment Environment Name", and "Features". The main table lists one entry: "PServer\_DE" with the status "IBM BPM Standard Process Server". A green arrow points from the "PServer\_DE" entry towards the "Deployment Environment Name" column. The table footer indicates "Total 1".

| Select                   | Status | Deployment Environment Name | Features                        |
|--------------------------|--------|-----------------------------|---------------------------------|
| <input type="checkbox"/> | →      | <a href="#">PServer_DE</a>  | IBM BPM Standard Process Server |

- \_\_ c. Under the Related Items section on the right side, click **Authentication Aliases**. This action shows a list of roles and alias mappings.

- \_\_ d. For the ProcessCenterUser, select **ProcessCenterUserAlias** from the menu.

[Deployment Environments](#) > [PServer DE](#) > Business Integration Security

Use this page to secure your application server and your business integration applications. It lists the authentication credentials that you need to set to secure your business integration applications.

**Authentication Alias**

| Role ▾                   | Alias                    |
|--------------------------|--------------------------|
| BPCUser                  | DeAdminAlias ▾           |
| BPMAuthor                | DeAdminAlias ▾           |
| BPMUser                  | DeAdminAlias ▾           |
| BPMWebserviceUser        | DeAdminAlias ▾           |
| CEIDbUser                | DeAdminAlias ▾           |
| CEIUser                  | DeAdminAlias ▾           |
| DeAdmin                  | DeAdminAlias ▾           |
| EmbeddedECMTechnicalUser | DeAdminAlias ▾           |
| EventManagerUser         | DeAdminAlias ▾           |
| PerformanceDWUser        | DeAdminAlias ▾           |
| ProcessCenterUser        | ProcessCenterUserAlias ▾ |
| ProcessServerUser        | DeAdminAlias ▾           |

- \_\_ e. Scroll to the bottom and click **OK**.

|                   |                |
|-------------------|----------------|
| SCADeploymentUser | DeAdminAlias ▾ |
| SCAUser           | DeAdminAlias ▾ |
| Total 15          |                |

You can specify multiple aliases for role SystemLaneUser. Hold the CTRL key to select multiple items.



Apply   **OK**   Reset   Cancel

- \_\_ f. Save the changes to the master configuration.

4. Stop the Process Server cell deployment manager.
- a. Select the check box for **PServer\_DE**, and click **Stop**.

#### Deployment Environments

Select the deployment environments to manage. You can manage deployment environments using patterns.



| Select                              | Status | Deployment Environment Name | Features                        | Pattern                                           |
|-------------------------------------|--------|-----------------------------|---------------------------------|---------------------------------------------------|
| <input checked="" type="checkbox"/> | →      | <a href="#">PServer_DE</a>  | IBM BPM Standard Process Server | Application, Remote Messaging, and Remote Support |
| Total 1                             |        |                             |                                 |                                                   |

Wait for approximately 5 minutes for the clusters to stop before proceeding.

- b. Log out of the administrative console and close the browser window.
- c. In a terminal window, enter `cd /opt/IBM/BPM/profiles/PServerDmgr/bin` to change the directory.
- d. Stop the deployment manager by entering the following command:

```
./stopManager.sh
```

Wait for approximately 2 minutes for the message that indicates that the deployment manager is stopped.

---

```
[root@bpmstdhost ~]# cd /opt/IBM/BPM/profiles/PServerDmgr/bin
[root@bpmstdhost bin]# ./stopManager.sh
ADMU0116I: Tool information is being logged in file
 /opt/IBM/BPM/profiles/PServerDmgr/logs/dmgr/stopServer.log
ADMU0128I: Starting tool with the PServerDmgr profile
ADMU3100I: Reading configuration for server: dmgr
ADMU3201I: Server stop request issued. Waiting for stop status.
ADMU4000I: Server dmgr stop completed.
```

- e. Enter `cd /opt/IBM/BPM/profiles/PServerNode01/bin` to change the directory.

- \_\_ f. Enter the following command to stop the node agent:

./stopNode.sh

Wait approximately 2 minutes for the message that indicates that the node agent is stopped.

```
[root@bpmsstdhost bin]# cd /opt/IBM/BPM/profiles/PServerNode01/bin
[root@bpmsstdhost bin]# ./stopNode.sh
ADMU0116I: Tool information is being logged in file
 /opt/IBM/BPM/profiles/PServerNode01/logs/nodeagent/stopServer.log
ADMU0128I: Starting tool with the PServerNode01 profile
ADMU3100I: Reading configuration for server: nodeagent
ADMU3201I: Server stop request issued. Waiting for stop status.
ADMU4000I: Server nodeagent stop completed.
```

## Part 6: Modify the configuration for an online server

In this part of the lab, you learn how to modify the configuration to change an offline server to an online server. To make this configuration change, you must customize the Process Server settings that are used to connect to Process Center. You use various wsadmin commands to make the configuration changes to the environment.

- 1. Determine the port number for the Process Center server.

- a. In the terminal window, enter `cd`

```
/opt/IBM/BPM/profiles/PCenterCustom/config/cells/PCenterCell/nodes/PCenterNode01
```

to change the directory.

- b. Enter `gedit serverindex.xml` to open the file.

- c. Search for the `endPoint` name `BOOTSTRAP_ADDRESS` under `deployedApplication` in the `specialEndpoints` section for the server. From here, you can determine the host for the server. The host is "bpmsstdhost".

```
<deployedApplications>commsvc.ear/deployments/commsvc</deployedApplications>
<specialEndpoints xmi:id="NamedEndPoint_1381998311594"
endPointName="BOOTSTRAP_ADDRESS">
 <endPoint xmi:id="EndPoint_1381998311594" host="bpmsstdhost" port="9810"/>
</specialEndpoints>
<specialEndpoints xmi:id="NamedEndPoint_1381998311595"
endPointName="SOAP_CONNECTOR_ADDRESS">
 <endPoint xmi:id="EndPoint_1381998311595" host="bpmsstdhost" port="8880"/>
</specialEndpoints>
<specialEndpoints xmi:id="NamedEndPoint_1381998311596"
```

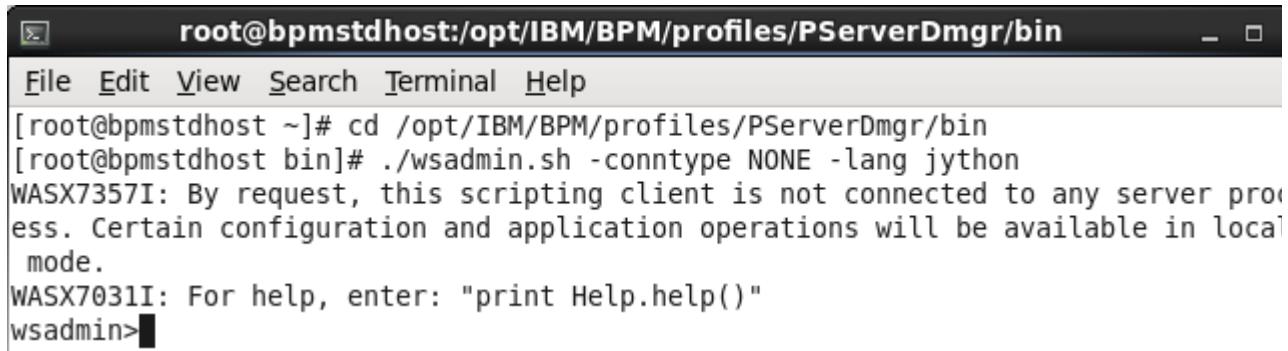
- d.

- e. Scroll down in the file and look for the `endPointName` "WC\_defaulthost". From here, you can determine the port number to be used for a connection to the Process Center server. The port is 9080.

```
<specialEndpoints xmi:id="NamedEndPoint_1381998311600"
endPointName="WC_adminhost">
 <endPoint xmi:id="EndPoint_1381998311600" host="*" port="9061"/>
</specialEndpoints>
<specialEndpoints xmi:id="NamedEndPoint_1381998311601"
endPointName="WC_defaulthost">
 <endPoint xmi:id="EndPoint_1381998311601" host="*" port="9080"/>
</specialEndpoints>
<specialEndpoints xmi:id="NamedEndPoint_1381998311602"
endPointName="DCS_UNICAST_ADDRESS">
 <endPoint xmi:id="EndPoint_1381998311602" host="*" port="9354"/>
</specialEndpoints>
<specialEndpoints xmi:id="NamedEndPoint_1381998311603"
endPointName="WC_adminhost_secure">
 <endPoint xmi:id="EndPoint_1381998311603" host="*" port="9044"/>
</specialEndpoints>
```

- f. Close the `serverindex.xml` file by clicking **File > Quit**.

- \_\_ 2. Customize the Process Server settings.
- \_\_ a. Enter `cd /opt/IBM/BPM/profiles/PServerDmgr/bin` in the terminal to change the directory. The path is for the deployment manager in the Process Server cell.
- \_\_ b. Start the wsadmin scripting tool by entering the following command:  
`./wsadmin.sh -conntype NONE -lang jython`



A screenshot of a terminal window titled "root@bpmsstdhost:/opt/IBM/BPM/profiles/PServerDmgr/bin". The window shows the following command-line session:

```
[root@bpmsstdhost ~]# cd /opt/IBM/BPM/profiles/PServerDmgr/bin
[root@bpmsstdhost bin]# ./wsadmin.sh -conntype NONE -lang jython
WASX7357I: By request, this scripting client is not connected to any server process. Certain configuration and application operations will be available in local mode.
WASX7031I: For help, enter: "print Help.help()"
wsadmin>■
```

- \_\_ c. Copy and paste the following command to extract the properties in the configuration:

```
ps=AdminConfig.list('BPMProcessServer')
```

- \_\_\_ d. Print the information for the variable that you defined by entering the following command:

```
print AdminConfig.show(ps)
```

```
wsadmin>ps=AdminConfig.list('BPMProcessServer')
wsadmin>print AdminConfig.show(ps)
[authoringEnvironmentPortalPrefix portal]
[baseUrl teamworks/webservices]
[bpdTrackingEnabledDefault false]
[clientLink teamworks]
[cmisSsoAjaxWsHandlers []]
[cmisTechnicalUserAjaxWsHandlers []]
[coachDesignerXslUrl teamworks/coachdesigner/transform/CoachDesigner.xsl]
[commonPortalPrefix portal]
[consoleSections [root(cells/PROD-PServerCell/clusters/AppCluster|cluster-bpm.xml#BPMConsoleSection_1444915157888) console.lombardi.admin(cells/PROD-PServerCell/clusters/AppCluster|cluster-bpm.xml#BPMConsoleSection_1444915157892) console.user.management(cells/PROD-PServerCell/clusters/AppCluster|cluster-bpm.xml#BPMConsoleSection_1444915157908) console.monitoring(cells/PROD-PServerCell/clusters/AppCluster|cluster-bpm.xml#BPMConsoleSection_1444915157932) console.event.manager(cells/PROD-PServerCell/clusters/AppCluster|cluster-bpm.xml#BPMConsoleSection_1444915157947) console.admin.tools(cells/PROD-PServerCell/clusters/AppCluster|cluster-bpm.xml#BPMConsoleSection_1444915158131) console.alerts(cells/PROD-PServerCell/clusters/AppCluster|cluster-bpm.xml#BPMConsoleSection_1444915158145)]]
[defaultNamespacePrefix schema/]
[heartBeatInterval -1]
[httpProtocolOnly true]
[imagePrefix teamworks]
[processAdminPrefix ProcessAdmin]
[processHelpWikiUrlEdit processhelp/en/Special>Edit?topic=%TITLE%&teamworksTitle=%TEAMWORKS_TITLE%]
[processHelpWikiUrlView processhelp/en/%TITLE%?teamworksTitle=%TEAMWORKS_TITLE%]
[repositoryPrefix ProcessCenter]
[security (cells/PROD-PServerCell/clusters/AppCluster|cluster-bpm.xml#BPMServerSecurity_1444915150407)]
[servletPrefix teamworks]
[teamworksWebappPrefix teamworks]
[useHTTPSURLPrefixes true]
[virtualHost (cells/PROD-PServerCell/clusters/AppCluster|cluster-bpm.xml#BPMVirtualHostInfo_1444915150407)]
[webapiPrefix webapi]
```



### Information

From the output, you can see that the `heartBeatInterval` variable is set to `-1`. The heartbeat interval is a polling interval, in seconds, that the Process Server uses in the runtime environment to poll the Process Center for updates. To change the state of an offline Process Server to online, update the `heartBeatInterval` value to a number that is larger than 0 (zero). Since the value is a negative number, polling is disabled.

- \_\_ e. To change the polling interval, copy and paste the following command:

```
AdminConfig.modify(ps, [['heartBeatInterval','60']])
```

```
wsadmin>AdminConfig.modify(ps, [['heartBeatInterval','60']])
"
```



#### Information

By default, the `processCenterUrl` variable is not defined. To define the variable, you use the host name and port number that are obtained from the `serverindex.xml` file for the Process Center server.

- \_\_ f. To identify the Process Center URL that is used to connect to the environment, copy and paste the following command:

```
AdminConfig.modify(ps,
[['processCenterInternalUrl','http://bpmsstdhost:9080/ProcessCenterInternal']])
```

```
wsadmin>ps=AdminConfig.list('BPMProcessServer')
wsadmin>AdminConfig.modify(ps, [['processCenterInternalUrl','http://bpmsstdhost:9
080/ProcessCenterInternal']])
"
```



#### Note

In the `AdminConfig.modify` command, a space follows the `(ps, text)`.

- \_\_\_ g. Verify that the variable is now defined. Print the information by entering the following command:

```
print AdminConfig.show(ps)
```

```
wsadmin>AdminConfig.modify(ps, [['processCenterInternalUrl','http://bpmsstdhost:9080/ProcessCenterInternal']])
''

wsadmin>print AdminConfig.show(ps)
[authoringEnvironmentPortalPrefix portal]
[baseUrl teamworks/webservices]
[bpdTrackingEnabledDefault false]
[clientLink teamworks]
[cmisSsoJaxWsHandlers []]
[cmisTechnicalUserJaxWsHandlers []]
[coachDesignerXslUrl teamworks/coachdesigner/transform/CoachDesigner.xsl]
[commonPortalPrefix portal]
[consoleSections [root(cells/PROD-PServerCell/clusters/AppCluster|cluster-bpm.xml#BPMConsoleSection_1444915157888) console.lombardi.admin(cells/PROD-PServerCell/clusters/AppCluster|cluster-bpm.xml#BPMConsoleSection_1444915157892) console.user.management(cells/PROD-PServerCell/clusters/AppCluster|cluster-bpm.xml#BPMConsoleSection_1444915157908) console.monitoring(cells/PROD-PServerCell/clusters/AppCluster|cluster-bpm.xml#BPMConsoleSection_1444915157932) console.event.manager(cells/PROD-PServerCell/clusters/AppCluster|cluster-bpm.xml#BPMConsoleSection_1444915157947) console.admin.tools(cells/PROD-PServerCell/clusters/AppCluster|cluster-bpm.xml#BPMConsoleSection_1444915158131) console.alerts(cells/PROD-PServerCell/clusters/AppCluster|cluster-bpm.xml#BPMConsoleSection_1444915158145)]]
[defaultNamespaceUri schema/]
[heartBeatInterval 60]
[httpProtocolOnly true]
[imagePrefix teamworks]
[inprocessAdminPrefix ProcessAdmin]
[processCenterInternalUrl http://bpmsstdhost:9080/ProcessCenterInternal]
[processHelpWikiUrlEdit processhelp/en/Special>Edit?topic=%TITLE%&teamworksTitle=%TEAMWORKS_TITLE%]
[processHelpWikiUrlView processhelp/en/%TITLE%?teamworksTitle=%TEAMWORKS_TITLE%]
[repositoryPrefix ProcessCenter]
[security (cells/PROD-PServerCell/clusters/AppCluster|cluster-bpm.xml#BPMServerSecurity_1444915150407)]
[servletPrefix teamworks]
[teamworksWebappPrefix teamworks]
[useHTTPSPURLPrefixes false]
[virtualHost (cells/PROD-PServerCell/clusters/AppCluster|cluster-bpm.xml#BPMVirtualHostInfo_1444915150407)]
[webapiPrefix webapi]
wsadmin>■
```

- \_\_\_ h. You can see that the variable is now updated to show a polling interval of 60 seconds, and `processCenterInternalUrl` is now listed in the configuration properties.

- \_\_ i. Process Center connects to Process Server by using HTTPS by default. Copy and paste the following command to update the `useHTTPSPURLPrefixes` property to use HTTP for connecting to Process Server:

```
AdminConfig.modify(ps, [['useHTTPSPURLPrefixes', 'false']])
```

```
wsadmin>AdminConfig.modify(ps, [['useHTTPSPURLPrefixes', 'false']])
"
wsadmin>|
```

- \_\_ j. Save the configuration by entering the following command:

```
AdminConfig.save()
```

- \_\_ k. Exit the wsadmin interactive mode by entering the following command:

```
exit
```

```
wsadmin>AdminConfig.save()
"
wsadmin>exit
[root@bpmsstdhost bin]# |
```



### Note

You stopped the deployment manager and Process Server cluster before modifying Process Server configuration properties. You start the environment in the next steps.

- \_\_ 3. Start the environment.

- \_\_ a. Start the deployment manager by entering the following command in the same terminal that is used in the previous step:

```
./startManager.sh
```

Wait for approximately 2 minutes for the message that indicates that the deployment manager is started.

```
[root@bpmsstdhost bin]# ./startManager.sh
ADMU0116I: Tool information is being logged in file
 /opt/IBM/BPM/profiles/PServerDmgr/logs/dmgr/startServer.log
ADMU0128I: Starting tool with the PServerDmgr profile
ADMU3100I: Reading configuration for server: dmgr
ADMU3200I: Server launched. Waiting for initialization status.
ADMU3000I: Server dmgr open for e-business; process id is 25011
```

- \_\_ b. Enter `cd /opt/IBM/BPM/profiles/PServerNode01/bin` to change the directory.

- \_\_\_ c. Start the node agent by entering the following command:

```
./startNode.sh
```

Wait for approximately 2 minutes for the message that indicates that the node agent is started.

```
[root@bpmsstdhost bin]# ./startNode.sh
ADMU0116I: Tool information is being logged in file
 /opt/IBM/BPM/profiles/PServerNode01/logs/nodeagent/startServer.log
ADMU0128I: Starting tool with the PServerNode01 profile
ADMU3100I: Reading configuration for server: nodeagent
ADMU3200I: Server launched. Waiting for initialization status.
ADMU3000I: Server nodeagent open for e-business; process id is 25786
```

- \_\_\_ 4. Start the deployment manager administrative console and synchronize the node.

- \_\_\_ a. Open a web browser and go to the following URL:

```
http://bpmsstdhost:9062/ibm/console
```

- \_\_\_ b. In the login area, enter `bpmadmin` as the user ID and `websphere` as the password. Click **Login**.

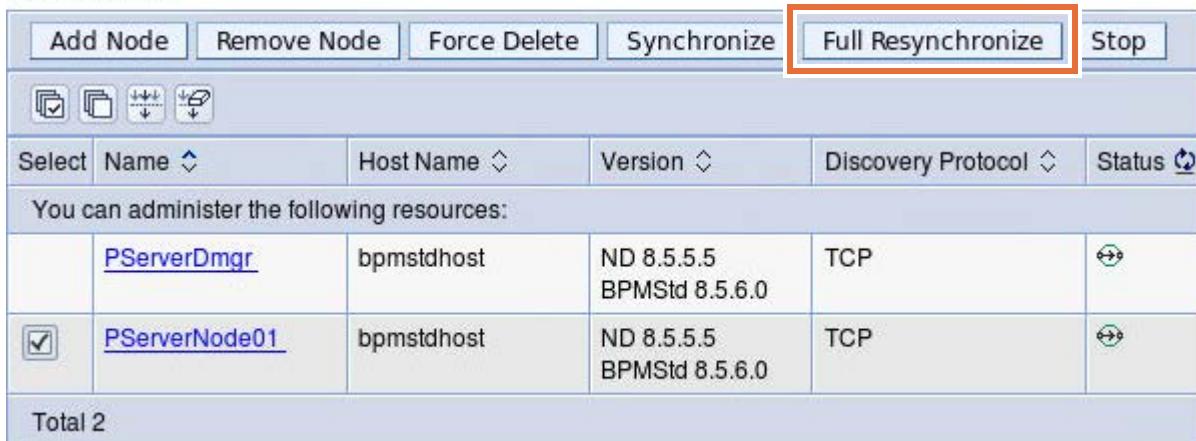
- \_\_\_ c. Click **System administration > Nodes**.

- \_\_\_ d. Select the check box next to **PServerNode01** and click **Full Resynchronize**.

#### Nodes

Use this page to manage nodes in the application server environment. A node corresponds to a physical computer system with a distinct IP host address. The following table lists the managed and unmanaged nodes in this cell. The first node is the deployment manager. Add new nodes to the cell and to this list by clicking **Add Node**.

#### Preferences



| Add Node                                    | Remove Node                   | Force Delete | Synchronize                  | Full Resynchronize | Stop   |
|---------------------------------------------|-------------------------------|--------------|------------------------------|--------------------|--------|
|                                             |                               |              |                              |                    |        |
| Select                                      | Name                          | Host Name    | Version                      | Discovery Protocol | Status |
| You can administer the following resources: |                               |              |                              |                    |        |
|                                             | <a href="#">PServerDmgr</a>   | bpmstdhost   | ND 8.5.5.5<br>BPMStd 8.5.6.0 | TCP                |        |
| <input checked="" type="checkbox"/>         | <a href="#">PServerNode01</a> | bpmstdhost   | ND 8.5.5.5<br>BPMStd 8.5.6.0 | TCP                |        |
| Total 2                                     |                               |              |                              |                    |        |

- \_\_\_ e. After the page refreshes, you see the message similar to: Successfully initiated synchronization of the repository on node ...

**Messages**

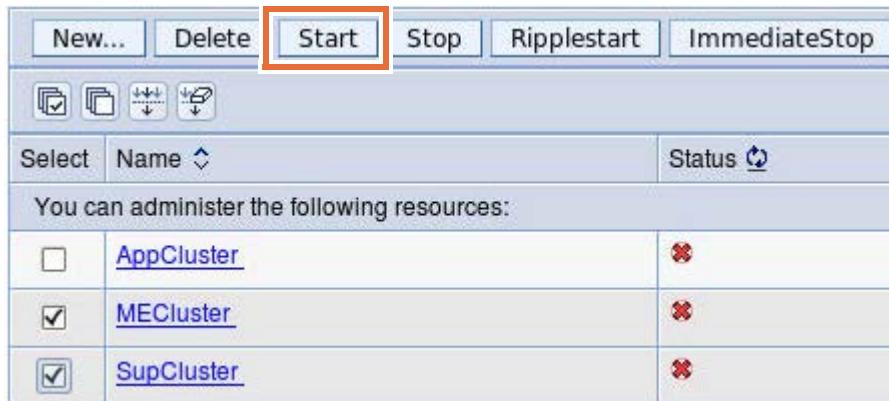
- Success** Successfully initiated synchronization of the repository on node PServerNode01 with the deployment manager's repository.
- Info** Refresh the page to see the current synchronization status.

**Information**

After modifying the configuration, it is a good idea to do a Full Resynchronize to replicate the settings from the deployment manager server to the individual nodes.

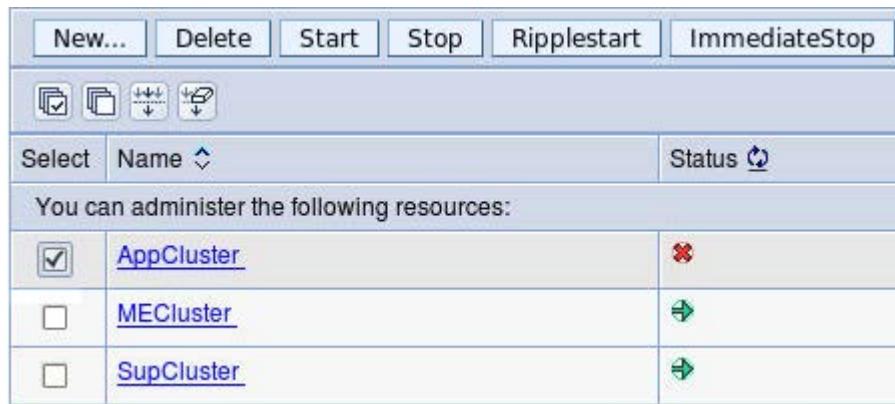
## Part 7: Verify the configuration for an online server

- \_\_\_ 1. Verify the configuration.
  - \_\_\_ a. Click **Servers > Clusters > WebSphere application server clusters**.
  - \_\_\_ b. Select the check box for **MECluster** and **SupCluster** and click **Start**. These clusters were stopped earlier and need to be started now.

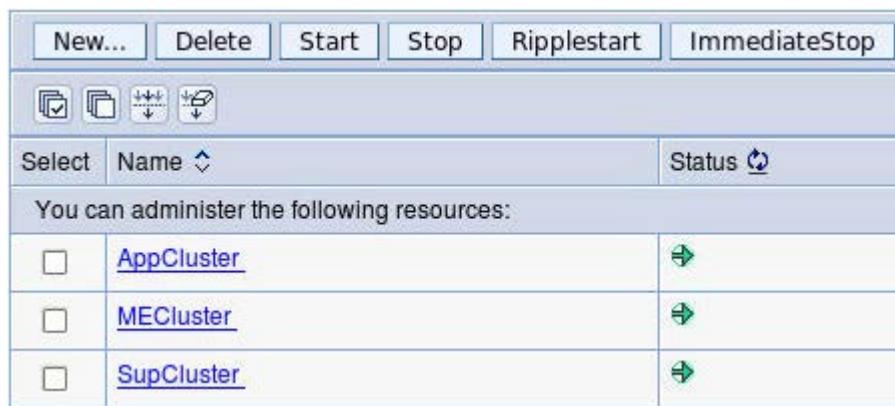


Wait for approximately 5 minutes for the servers to start.

- \_\_\_ c. Select **AppCluster** and click **Start**. This cluster was stopped earlier and needs to be started now.



- \_\_\_ d. Wait for approximately 5 minutes for the server to start.



- \_\_\_ e. Log out of the administrative console.
- \_\_\_ 2. Start the Process Center Console.
- \_\_\_ a. In the web browser, go to the Process Center Console at the following URL:  
`http://bpmsstdhost:9080/ProcessCenter`
- \_\_\_ b. In the login area, enter `pcdeadmin` as the user ID and `websphere` as the password.  
 Click **Login**.
- \_\_\_ 3. Examine the online Process Server.

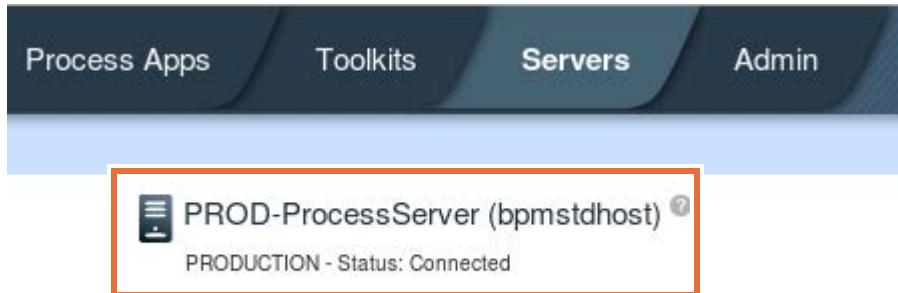
- \_\_\_ a. In the Process Center perspective, click the **Servers** tab.

The screenshot shows the Process Center perspective with a navigation bar at the top featuring tabs for Process Apps, Toolkits, Servers (which is highlighted with a red box), and Admin. Below the navigation bar, there is a sorting dropdown set to "Recently Updated". The main content area displays two process definitions:

- Mortgage Application Process (MAP)** (highlighted with a green star icon)
- Verification Project (VP821)** (highlighted with a green star icon)

Below each process definition, the last update date and the user who updated it are listed.

- \_\_ b. The server is now connected to the Process Center repository as an online server.

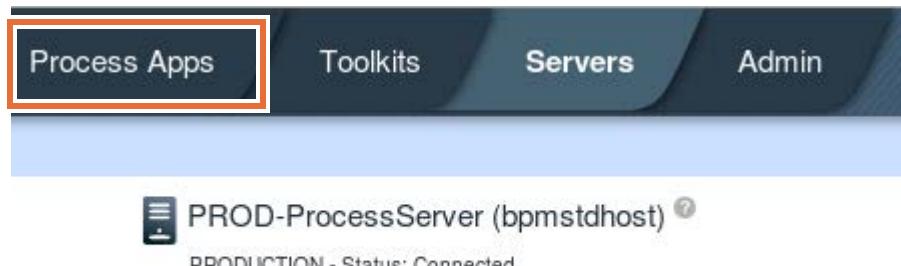


### Important

If you do not see the online server that is listed, then you need to go back to step 2 and check your steps. Most likely the cause is a typographical error in the section where you customize the Process Server settings with the wsadmin script. Make sure that you stop the Process Server environment and start it again after your changes.

- \_\_ 4. Install a process application.

- \_\_ a. Click the **Process Apps** tab.



- \_\_ b. Click **Hiring Sample (HSS)**.

The screenshot shows a navigation bar with tabs: Process Apps, Toolkits, Servers, and Admin. Below the bar, a search field says "Sort By: Recently Up". A list of process samples is displayed:

- Mortgage Application Process (MAP) [star]
- Last updated on 10/14/15 by pcdeadmin
- Verification Project (VP821) [star]
- Last updated on 10/12/15 by pcdeadmin
- Claims Project (CP821) [star]
- Last updated on 10/12/15 by pcdeadmin
- Hiring Sample (HSS) [star]** [red box]
- Last updated on 10/11/15 by pcdeadmin
- Saved Search Admin (SSA) [star]
- Last updated on 10/11/15 by pcdeadmin
- Process Portal (TWP) [star]
- Last updated on 10/11/15 by pcdeadmin

- \_\_ c. From here, you see the list of snapshots. To the right of the **Standard Hiring Sample v8560** snapshot, click **Install**.

The screenshot shows a navigation bar with tabs: Process Apps, Toolkits, Servers, Admin, Logout, and a help icon. Below the bar, a menu bar has tabs: Snapshots, History, Manage, and Governance. A search bar says "Sort Snapshots By: Date All | Installed | Archived".

The main area displays two snapshots:

- Current [radio button] Last changed on 10/11/15 by pcdeadmin Export
- Standard Hiring Sample v8560 (SHSV856) [radio button] (New)  
Created on 10/11/15 by pcdeadmin  
Not Yet Installed to Process Server Export **Install** [red box]

- \_\_ d. Select the online server, **PROD-ProcessServer**.

### Install Snapshot to Server

Select a server to install snapshot Standard Hiring Sample v8560 to:



**PROD-ProcessServer (bpmstdhost)**

PRODUCTION - Status: Connected

- \_\_ e. The server is now selected as noted by the check mark to the right. Click **Install**.

### Install Snapshot to Server



Select a server to install snapshot Standard Hiring Sample v8560 to:



**PROD-ProcessServer (bpmstdhost)**

PRODUCTION - Status: Connected



**Install**

- \_\_\_ f. During this time, you see the message: Installation in progress

The screenshot shows the BPMN Studio interface with the title bar "Hiring Sample (HSS)". The "Snapshots" tab is selected. A search bar at the top right says "Sort Snapshots By: Date All | Installed | Archived". Below it, there are two sections: "Current" and "Standard Hiring Sample v8560 (SHSV856) (New)". The "Current" section has a green background and shows "Last changed on 10/11/15 by pcdeadmin". The "Standard Hiring Sample" section has a light green background and shows "Created on 10/11/15 by pcdeadmin". It includes a "Server Details" button and a link to "Installation details". A red box highlights the status "Installation in progress" next to the server name "PROD-ProcessServer(bpmstdhost)".

- \_\_\_ g. When completed, the status indicates that the process application is installed in the PROD-ProcessServer.

The screenshot shows the BPMN Studio interface with the title bar "Hiring Sample (HSS)". The "Snapshots" tab is selected. A search bar at the top right says "Sort Snapshots By: Date All | Installed | Archived". Below it, there are two sections: "Current" and "Standard Hiring Sample v8560 (SHSV856) (New)". The "Current" section has a green background and shows "Last changed on 10/11/15 by pcdeadmin". The "Standard Hiring Sample" section has a light green background and shows "Created on 10/11/15 by pcdeadmin". It includes a "Server Details" button and a link to "Installation details". A red box highlights the status "Currently Installed" next to the server name "PROD-ProcessServer(bpmstdhost) - 0 instances".

- \_\_ h. Click **Server Details** to the right of the server name to see information about the snapshots that are deployed to the server.

**PROD-ProcessServer (bpmstdhost)**

**Better Mortgage Toolkit (BMT)**  
Last updated on 10/14/15 by pcodeadmin  
Current Snapshots Deployed:  
V2.0 - 0 instances

**Hiring Sample (HSS)**  
Last updated on 10/11/15 by pcodeadmin  
Current Snapshots Deployed:  
Standard Hiring Sample v8560 - 0 instances

**Mortgage Application Process (MAP)**  
Last updated on 10/14/15 by pcodeadmin  
Current Snapshots Deployed:  
V5 - 0 instances

**Coaches (SYSC)**  
Last updated on 10/14/15 by pcodeadmin  
Current Snapshots Deployed:  
8.5.6.0 - 0 instances  
8.5.0 - 0 instances

**System Data (TWSYS)**  
Last updated on 10/14/15 by pcodeadmin

- \_\_ i. Log out of the Process Center Console.
- \_\_ 5. Verify the installation.
- \_\_ a. In the web browser, go to the Process Portal for the Process Server environment at the following URL:

<http://bpmstdhost:9082/ProcessAdmin>



### Important

The Process Portal page for the Process Server environment is accessible at port 9082 and not 9080. If you recall, port 9080 is used by the Process Portal for the Process Center environment. Since you deployed the process app to the Process Server environment, you need to go to port 9082 and not 9080.

- \_\_ b. In the login area, enter `psdeadmin` as the user ID and `websphere` as the password.
- \_\_ c. Click **Login**.
- \_\_ d. Click **Installed Apps** to view the list of deployed process apps.

The screenshot shows the IBM Process Admin Console interface. The top navigation bar includes tabs for 'Server Admin', 'Process Inspector', and 'Installed Apps', with 'Installed Apps' highlighted by a red box. On the left, a sidebar titled 'PROD-ProcessServer' lists various administration modules. The main content area displays a summary of process status: 'The Process Admin console provides configuration and management tools for the Process Servers in your environment.' Below this is a 'Process Status' section with two buttons: 'Today' and 'Week'. Under 'Today', there are two green buttons labeled '-' and 'Active', and two dark blue buttons labeled '-' and 'Completed'.

- \_\_ e. **Hiring Sample (HSS) - Standard Hiring Sample v8560** is now listed as the installed application. This entry confirms that your offline deployment is successful.

The screenshot shows the 'Installed Apps' list in the IBM Process Admin Console. The top navigation bar includes tabs for 'Server Admin', 'Process Inspector', and 'Installed Apps', with 'Installed Apps' highlighted. A dropdown menu 'Sort Snapshots By:' is set to 'Application Name'. Below the header, there are three buttons: 'All', 'Active', and 'Default', with 'Active' being the selected option. The list contains four entries, each with a small icon and a link:

|                                                                    |                 |
|--------------------------------------------------------------------|-----------------|
| <a href="#">Hiring Sample (HSS) - Standard Hiring Sample v8560</a> | Active, Default |
| Standard HR Open New Position* - '0 instances                      |                 |
| <a href="#">Mortgage Application Process (MAP) - V5</a>            | Active, Default |
| Mortgage Approval Process* - '0 instances                          |                 |
| <a href="#">Process Portal (TWP) - 8.5.6.0</a>                     | Active, Default |
| <a href="#">Saved Search Admin (SSA) - 8.5.6.0</a>                 | Active, Default |

- \_\_ f. Log out of the browser.

## End of exercise

## Exercise review and wrap-up

The first part of the exercise examined how to configure an offline server and create installation packages for an offline server. Next, the offline Process Server was configured as an online server. A snapshot was deployed to the online server. Finally, the offline package that you created earlier in the exercise was deployed to the running Process Server. In the last part of the exercise, you modified the configuration properties of Process Server to change an offline server to an online server.

# Exercise 9. Creating and managing snapshots

## What this exercise is about

This exercise covers managing a snapshot on a Process Server.

## What you should be able to do

After completing this exercise, you should be able to:

- Create a snapshot of a process application
- Manage the snapshot on a Process Server
- Migrate process instances between snapshot versions
- Deactivate a snapshot

## Introduction

After a process is developed and ready for testing, it can be moved to a runtime server. In this exercise, you import a simple business process, take a snapshot of it, and install it on Process Server.

## Requirements

IBM Business Process Manager Standard must be installed in an environment that contains a Process Center profile and a Process Server profile. The Process Center server must be running. The Process Server must be running before the snapshot can be installed.

## Exercise instructions

### Part 1: Creating snapshots in the Process Center Console

Snapshots record the state of library items within a process application or track at a specific point in time. You can create snapshots in the Process Center Console or in the Designer view. Snapshot management, such as installing, exporting, and archiving, is run in the Process Center Console.

- \_\_ 1. Log in to the Process Center Console.
  - \_\_ a. Open a browser, and browse to: `http://bpmsstdhost:9080/ProcessCenter`
  - \_\_ b. Log in with `pcdeadmin` as the user name and `web1sphere` as the password.
- \_\_ 2. Create a snapshot for the Claims Project.
  - \_\_ a. Click **Claims Project (CP821)** in the **Process Apps** tab.

The screenshot shows the Process Center Console interface. At the top, there is a navigation bar with tabs: Process Apps (which is active and highlighted in blue), Toolkits, Servers, and Admin. Below the navigation bar, a list of process applications is displayed. Each item in the list includes a small icon, the application name, a star rating, and a last updated timestamp. The 'Claims Project (CP821)' item is highlighted with a red rectangular box around its icon and name. The other items listed are Mortgage Application Process (MAP), Verification Project (VP821), Hiring Sample (HSS), Saved Search Admin (SSA), and Process Portal (TWP).

| Process Application                | Last Updated | Rating |
|------------------------------------|--------------|--------|
| Mortgage Application Process (MAP) | 10/14/15     | ☆      |
| Verification Project (VP821)       | 10/12/15     | ☆      |
| <b>Claims Project (CP821)</b>      | 10/12/15     | ☆      |
| Hiring Sample (HSS)                | 10/11/15     | ☆ ?    |
| Saved Search Admin (SSA)           | 10/11/15     | ☆ ?    |
| Process Portal (TWP)               | 10/11/15     | ☆      |

- \_\_\_ b. Click the **Create New Snapshot** link on the right.

The screenshot shows the 'Process Apps' interface with a navigation bar at the top: 'Process Apps', 'Toolkits', 'Servers', and 'Admin'. Below the bar, a section titled 'Claims Project (CP821)' is displayed. On the right side of this section, there is a green button labeled '+ Create New Snapshot' which is highlighted with a red box. Below this button, there is a 'Solutions' section with a 'Current' tab selected, showing a note that it was last changed on 10/12/15 by pcodeadmin. There is also a 'Solutions' link with a question mark icon and a brief description: 'A snapshot captures ...'.

- \_\_\_ c. Enter Claims Project as the snapshot name.  
\_\_\_ d. Enter a brief description for this snapshot: This is version 1 snapshot for Claims Project.  
\_\_\_ e. Click **Create**.

The screenshot shows a 'Create New Snapshot' dialog box. At the top, it says 'Create New Snapshot' and has a close button. Below that, there is a 'Snapshot Name:' label with a text input field containing 'Claims Project'. Underneath the input field is a 'Documentation:' label with a rich text editor toolbar. The toolbar includes buttons for bold (B), italic (I), underline (U), font size (12pt), and various alignment and style options. Below the toolbar, there is a text area containing the placeholder text 'This is version 1 snapshot for Claims Project.' In the bottom right corner of the dialog box, there is a 'Create' button which is highlighted with a red box.

Now you created a snapshot, which is not yet installed to the Process Server.

The screenshot shows the 'Schemas' tab selected in the top navigation bar. A new schema named 'Claims Project (CP)' is highlighted with a red box. The details for this schema are shown below:

- Created on:** 10/31/15 by pcdeadmin
- Status:** Not Yet Installed to Process Server
- Actions:** Export | Install

## Part 2: Archive and delete process app

If a process application is no longer used, you can archive it. When you archive a process application, it no longer appears in the list of all process applications in the Process Center Console. To remove a process application from the Process Center repository, you use the Process Center Console to first archive the process application and then delete it.

1. Click the **Manage** option.

The screenshot shows the 'Manage' tab selected in the top navigation bar. Other tabs include 'Schemas', 'History', and 'Governance'.

2. Click the **Archive Process App** option.

The screenshot shows the 'Archive Process App' page. It includes a search bar and a sidebar with options like 'Allow users to create tracks in this process app' and 'View Archived Tracks'.

3. When prompted, click **Archive** to confirm that you want to archive this process application.



4. Click the **Process Apps** tab to return to the list of process applications.



5. Click **Archived** to show a list of archived processes.



6. Click the **X Delete** icon next to the process application you want to remove.



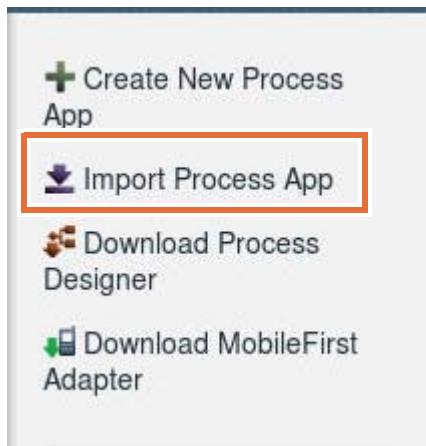
7. When you are prompted, click **Delete** to confirm the action.



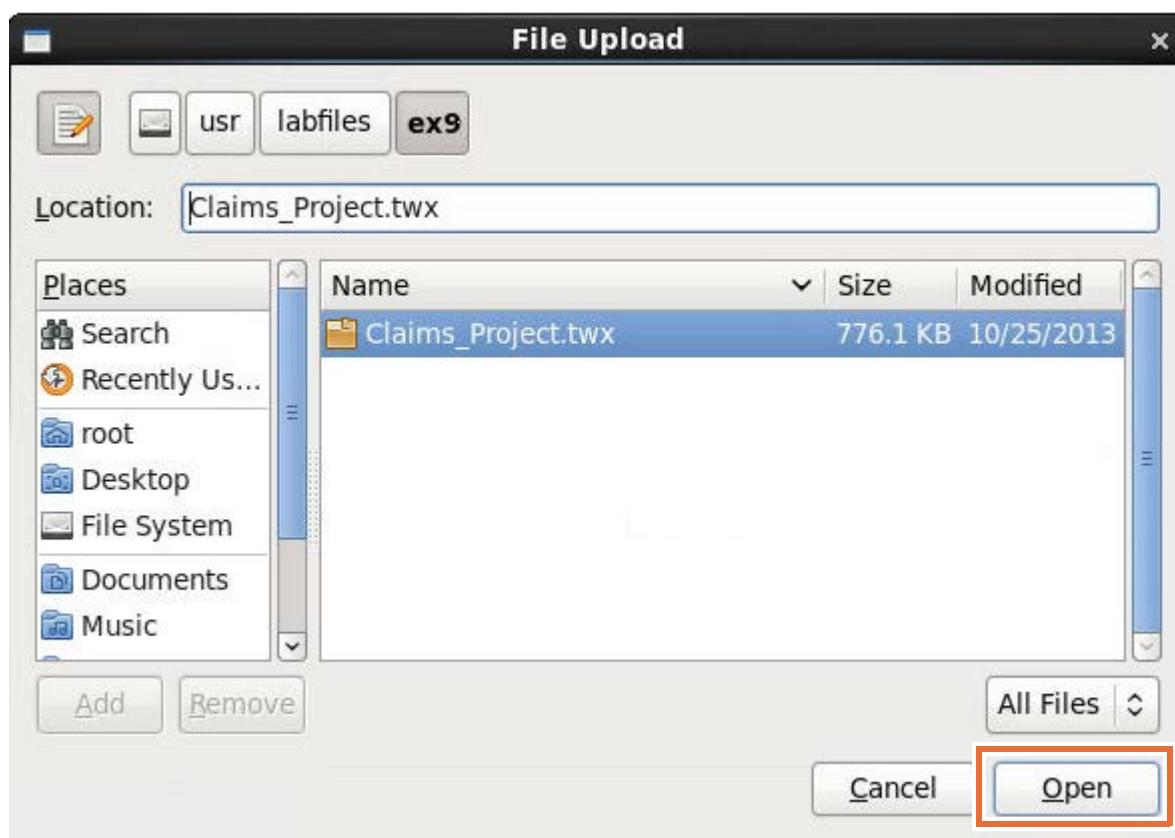
### Part 3: Import a new process app

You import a new Claims process app, which already has a business process definition (BPD). The new process app is stored in the `/usr/labfiles` directory. You import a process application from an IBM Business Process Manager export (`.twx`) file.

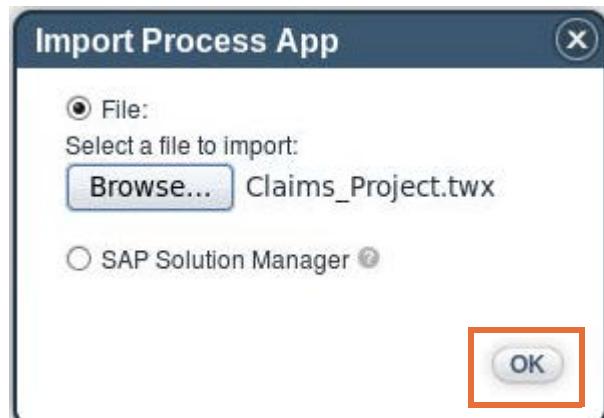
- 1. Click the **Import Process App** option on the right side of the window.



- 2. In the Import Process App window, click **Browse** to navigate to the `usr/labfiles/ex9` directory, and select the `Claims_Project.twx` file.
- 3. Click **Open**.



- \_\_\_ 4. Click **OK**.



- \_\_\_ 5. Click **Import**. When the import completes, the Claims project replaces the old one.



Process applications that you import should have unique acronyms. If an acronym is not unique, the import completes with a warning; however, attempts to install snapshots of the process application on test and production servers fail with an error.

- \_\_\_ 6. Examine the new process app.

- \_\_\_ a. From the Process Apps tab, click **All** to list all of the process applications.



- \_\_ b. Select **Claims Project (CP812)**.

The screenshot shows a navigation bar with tabs: Process Apps, Toolkits, Servers, and Admin. Below the bar is a 'Sort By:' dropdown. A list of projects follows:

- Claims Project (CP812)** ★ ⓘ  
Last updated on 10/31/15 by pcdeadmin
- Mortgage Application Process (MAP) ★ ⓘ  
Last updated on 10/14/15 by pcdeadmin
- Verification Project (VP821) ★ ⓘ  
Last updated on 10/12/15 by pcdeadmin
- Hiring Sample (HSS) ★ ⓘ  
Last updated on 10/11/15 by pcdeadmin
- Saved Search Admin (SSA) ★ ⓘ  
Last updated on 10/11/15 by pcdeadmin
- Process Portal (TWP) ★ ⓘ  
Last updated on 10/11/15 by pcdeadmin

- \_\_ c. Click the **Sample BPD (SBPD)** snapshot.

The screenshot shows a navigation bar with tabs: Process Apps, Toolkits, Servers, and Admin. Below the bar is a 'Schemas' tab. A list of snapshots follows:

- Claims Project (CP812) ★ ⓘ
- Sample BPD (SBPD)** (New) ⓘ  
Created on 10/31/15 by pcdeadmin  
Not Yet Installed to Process Server

The Process App Settings are expanded.

Claims Project > Sample BPD

Process App Settings

Toolkits

- System Data(8.0)
- Coaches(8.0)

Coach Overrides

- Coach Transformation Override
- Coach CSS Override

Business Monitor Tracking

- Enable tracking using IBM Business Monitor

Business Process Definitions 1

- \_\_ d. Expand the **Business Process Definitions**.
- \_\_ e. Click **Claims Process**. It takes few minutes for the process definition to show.

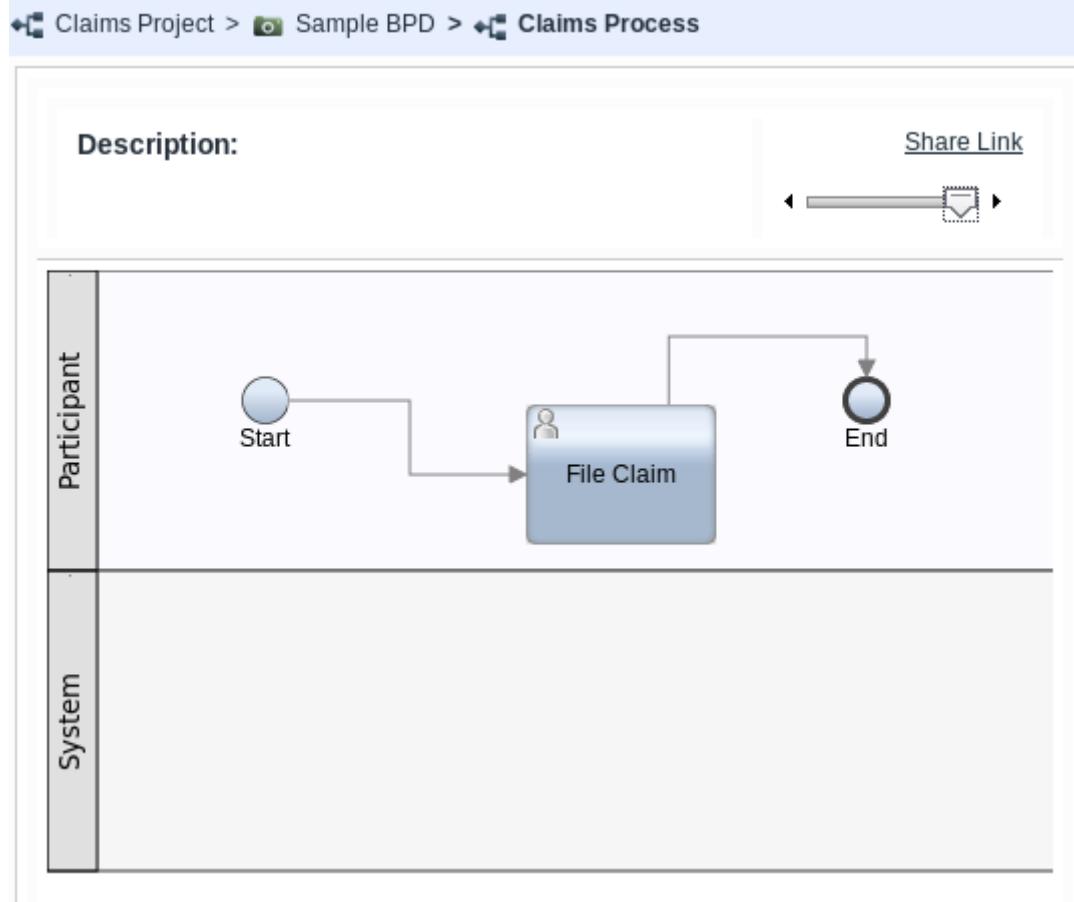
Claims Project > Sample BPD

Process App Settings

Business Process Definitions 1 Description

Claims Process

You can review the business process definition here.



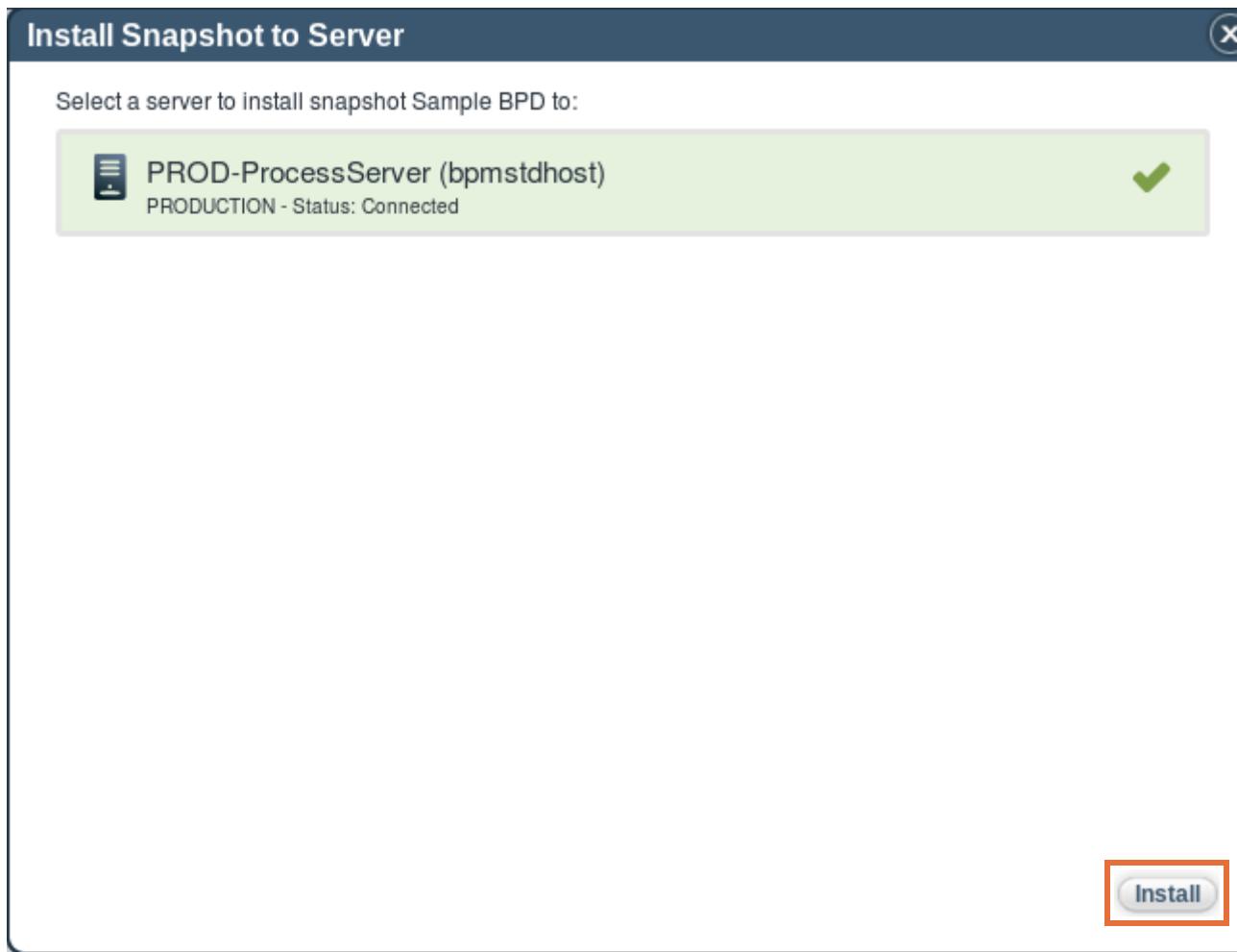
- \_\_\_ 7. Click the **Process Apps** tab to return to the list.

#### **Part 4: Deploy the process app to Process Server**

- \_\_\_ 1. Deploy the Claims Project process app to the connected IBM Process Server.
  - \_\_\_ a. Click **Claims Project (CP812)** in the **Process Apps** tab.
  - \_\_\_ b. Click the **Install** link next to the **Sample BPD** snapshot.

The screenshot shows the "Process Apps" tab for "Claims Project (CP812)". The "Schemas" section lists two snapshots: "Current" (last changed on 10/31/15 by pcodeadmin) and "Sample BPD (SBPD) (New)" (created on 10/31/15 by pcodeadmin, not yet installed). The "Install" link for the "Sample BPD (SBPD)" snapshot is highlighted with a red box.

- \_\_\_ c. In the **Install Snapshot to Server** dialog, click the **PROD-ProcessServer (bpmstdhost)** link. A green check mark is shown when you click the server link. Click **Install**.



- \_\_\_ d. The installation is in progress.

|                                                                                                                                                                                   |                                                     |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|
| Current<br>Last changed on 10/31/15 by pcodeadmin                                                                                                                                 | Export                                              |
| Sample BPD (SBPD) (New)<br>Created on 10/31/15 by pcodeadmin<br>PROD-ProcessServer(bpmstdhost) <span style="border: 2px solid red; padding: 2px;">Installation in progress</span> | Export    Install<br><a href="#">Server Details</a> |

- \_\_\_ e. The snapshot is installed on the server, and the server currently has zero instances that are running on the server of the process application.

The screenshot shows the 'Claims Project (CP812)' interface. The 'Schemas' tab is active. A 'Sample BPD (SBPD)' snapshot is listed under 'Currently Installed'. It was created on 10/31/15 by 'psdeadmin'. Below it, there is a note: 'PROD-ProcessServer(bpmstdhost) - 0 instances' and a link to 'Installation details'.

- \_\_\_ 2. Verify that the snapshot installed successfully.
- \_\_\_ a. In the terminal window, enter `cd /opt/IBM/BPM/profiles/PCenterCustom/logs/PCenter_DE.AppCluster.member1` to change the directory.
- \_\_\_ b. Enter `gedit SystemOut.log` to open the file.
- \_\_\_ c. Browse to the bottom of the log file and examine the messages to determine whether the **Sample BPD** snapshot installed successfully. If it was successful, a succeeded message is displayed, and the snapshot is marked as '**INSTALLED**'.

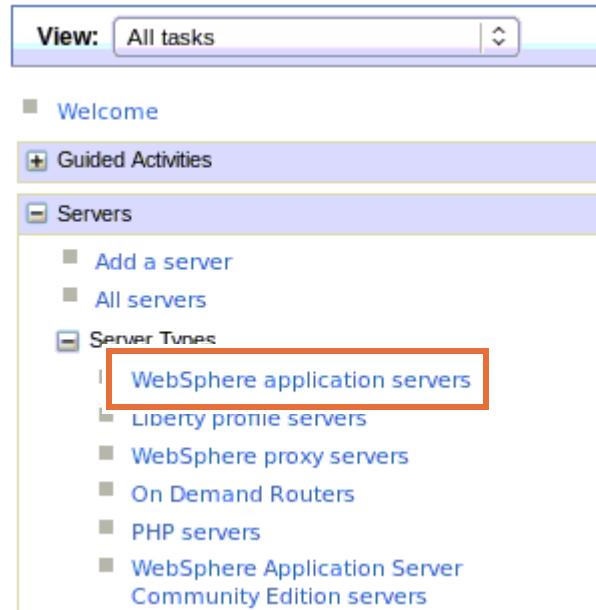
```
CWLLG3569I: [END] Assembling artifacts and sending them to the server
CWLLG3571I: [END] Communicating with server PROD-ProcessServer at add
user psdeadmin
CWLLG1324I: Sample BPD Export sent.
CWLLG0156I: Sample BPD Install succeeded
CWLLG1325I: Sample BPD The snapshot is being marked as 'INSTALLED'
CWLLG0159I: Sample BPD Install complete.
CWLLG3564I: [END] Running the governance process default installation
SECJ0371W: Validation of the LTPA token failed because the token expir
current Date: Sat Oct 31 11:19:24 EDT 2015 Token attributes: port=8880,
o=defaultWIMFileBasedRealm, hostname=bpmstdhost.. This warning might ind
```

- \_\_\_ d. Close the file by clicking **File > Quit**.

## **Part 5: Create process application instances**

- \_\_\_ 1. Verify the port number for the Process Portal.
- \_\_\_ a. Open the browser and enter `http://bpmstdhost:9062/ibm/console` to open the administrative console of Process Server.
- \_\_\_ b. Enter `psdeadmin` for the user ID and `websphere` for the Password.

- \_\_\_ c. Select **Servers > Server Types > WebSphere application servers.**



- \_\_\_ d. Click the **AppClusterMember1** link.

#### Application servers

Use this page to view a list of the application servers in your environment and their status. You can also use this page to change the status of a specific application.

#### + Preferences

The screenshot shows the 'Application servers' page. At the top, there's a toolbar with buttons for 'New...', 'Delete', 'Templates...', 'Start', 'Stop', 'Restart', and 'Import'. Below the toolbar is a toolbar with icons for creating, deleting, and managing resources. A search bar allows filtering by 'Select', 'Name', 'Node', 'Host Name', and 'Version'. A message says 'You can administer the following resources:'. A table lists three cluster members:

| Select                   | Name                              | Node          | Host Name  | Version                         |
|--------------------------|-----------------------------------|---------------|------------|---------------------------------|
| <input type="checkbox"/> | <a href="#">AppClusterMember1</a> | PServerNode01 | bpmstdhost | ND 8.5.5.5<br>BPMStd<br>8.5.6.0 |
| <input type="checkbox"/> | <a href="#">MEClusterMember1</a>  | PServerNode01 | bpmstdhost | ND 8.5.5.5<br>BPMStd<br>8.5.6.0 |
| <input type="checkbox"/> | <a href="#">SupClusterMember1</a> | PServerNode01 | bpmstdhost | ND 8.5.5.5<br>BPMStd<br>8.5.6.0 |

Total 3

- \_\_ e. Under Communications, click the + sign next to **Ports**.

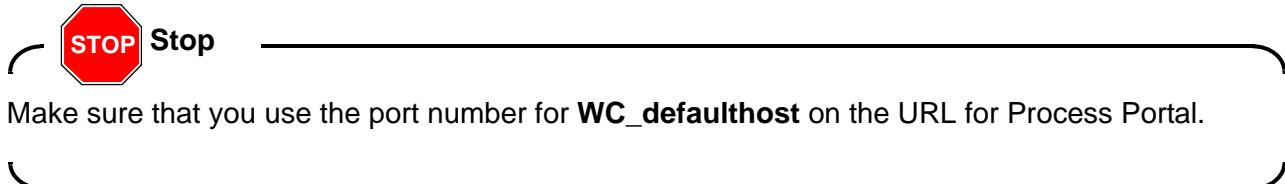


- \_\_ f. Identify the port number for **WC\_defaulthost**, which is 9082.

**Ports**

| Port Name                             | Port        | Details |
|---------------------------------------|-------------|---------|
| BOOTSTRAP_ADDRESS                     | 9813        |         |
| SOAP_CONNECTOR_ADDRESS                | 8884        |         |
| ORB_LISTENER_ADDRESS                  | 9104        |         |
| SAS_SSL_SERVERAUTH_LISTENER_ADDRESS   | 9413        |         |
| CSIV2_SSL_SERVERAUTH_LISTENER_ADDRESS | 9414        |         |
| CSIV2_SSL_MUTUALAUTH_LISTENER_ADDRESS | 9415        |         |
| WC_adminhost                          | 9064        |         |
| <b>WC_defaulthost</b>                 | <b>9082</b> |         |
| DCS_UNICAST_ADDRESS                   | 9358        |         |
| WC_adminhost_secure                   | 9047        |         |
| WC_defaulthost_secure                 | 9445        |         |
| SIP_DEFAULTHOST                       | 5064        |         |

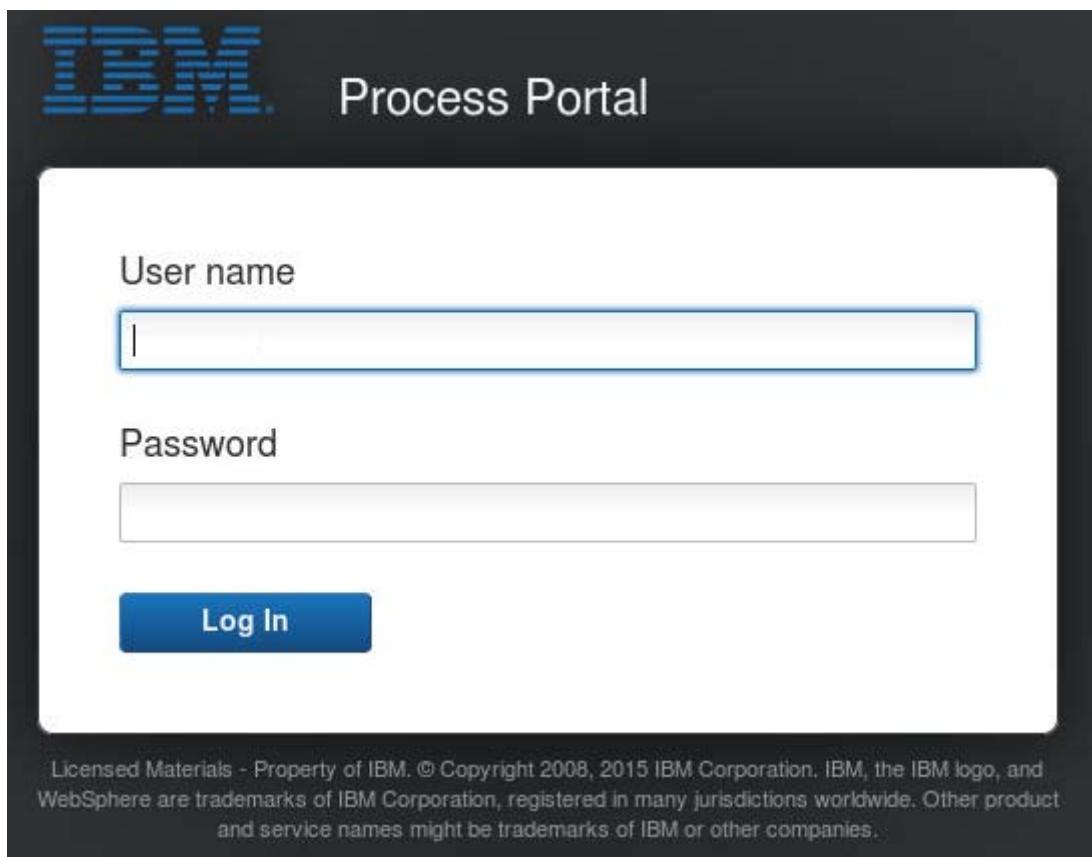
- \_\_ g. Click **Logout**.



- \_\_ 2. Create process app instances.

- \_\_ a. Open the browser and enter `http://bpmstdhost:9082/portal` to open Process Portal to create instances of the Claims Project (CP812) process application.

- \_\_ b. Enter `bpmadmin` for the user ID and `websphere` for the Password.



- \_\_ c. After the portal is displayed, click the **Claims Process** link on the right side of the page to create an instance of the process. Repeat this process two more times to create three instances in the inbox.



- \_\_\_ d. Click the **Work** link at the top to refresh the page, and notice that three instances are created.

The screenshot shows the 'My Work' section of the BPMN interface. At the top, there is a navigation bar with tabs: WORK (highlighted with a red box), PROCESSES, TEAM PERFORMANCE, and PROCESS PERFORMA... . Below the navigation bar, the title 'My Work' is displayed. Underneath, there is a search bar and links for 'Open Tasks' and 'Completed Tasks'. A section titled 'Due Today (3)' is expanded, showing three task items:

| Task Description                    | Due Date                  | Assigned To |
|-------------------------------------|---------------------------|-------------|
| Step: File Claim (Claims Process:3) | October 31, 2015 12:45 PM | All Users   |
| Step: File Claim (Claims Process:4) | October 31, 2015 12:45 PM | All Users   |
| Step: File Claim (Claims Process:5) | October 31, 2015 12:45 PM | All Users   |

- \_\_\_ e. In the browser, browse to: `http://bpmsstdhost:9080/ProcessCenter`  
\_\_\_ f. Log in with `pcdeadmin` as the **user name** and `websphere` as the **password**.  
\_\_\_ g. Click **Claims Project (CP812)** process application.

- \_\_\_ h. Examine the **Sample BPD** snapshot of the **Claims Project**. You see three instances that are created on the Process Server.

The screenshot shows the 'Schemas' tab selected in the Process Apps interface. It lists two snapshots: 'Current' and 'Sample BPD (SBPD) (New)'. The 'Sample BPD (SBPD)' entry is highlighted with a red box. Below it, it says 'Currently Installed:' followed by a list of instances: 'PROD-ProcessServer(bpmstdhost) - 3 instances', which is also highlighted with a red box. There is a link 'Installation details' next to it.

## **Part 6: Migrating instances to a new version of snapshot**

- \_\_\_ 1. Deploy another snapshot of the **Claims Project (CP812)** process application to the Process Server.
- \_\_\_ a. From the snapshots page, click the **Create New Snapshot** link on the right side of the page.

The screenshot shows the 'Schemas' page with a 'Create New Snapshot' button highlighted with a red box. To the right, a tooltip window titled 'Schemas' provides a definition: 'A snapshot captures the state of the library items within a process application or toolkit at a specific point in time. Snapshots usually represent a milestone or are used for playbacks or for installation.' It also includes a link 'Managing snapshots'.

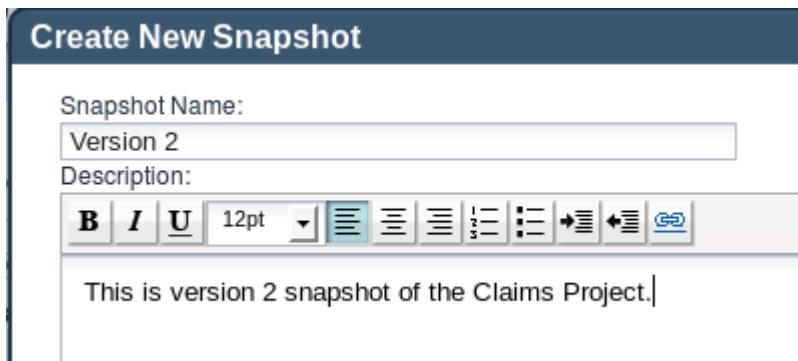
- \_\_\_ b. In the **Create New Snapshot** page, set the Snapshot Name to Version 2 and add a meaningful description: This is version 2 snapshot of the Claims Project.

**Create New Snapshot**

Snapshot Name:  
Version 2

Description:

This is version 2 snapshot of the Claims Project.



- \_\_\_ c. Click **Create**.

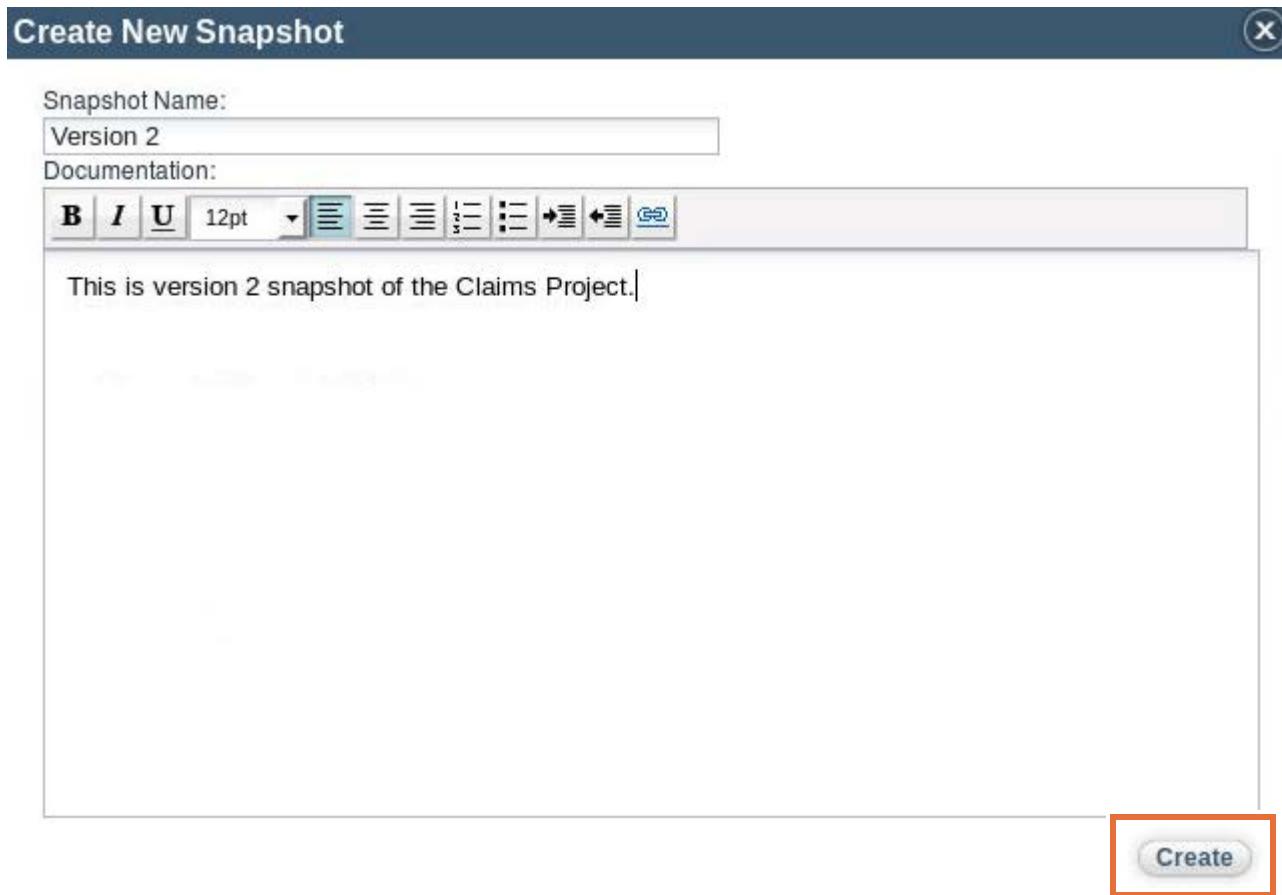
**Create New Snapshot** (X)

Snapshot Name:  
Version 2

Documentation:

This is version 2 snapshot of the Claims Project.

**Create**



- \_\_\_ d. The new snapshot is now listed.

Claims Project (CP812)

Schemas

**Current**  
Last changed on 10/31/15 by pcdeadmin

**Version 2 (V2)** (New)  
Created on 10/31/15 by pcdeadmin  
Not Yet Installed to Process Server

**Sample BPD (SBPD)** (New)  
Created on 10/31/15 by pcdeadmin  
Currently Installed:  
PROD-ProcessServer(bpmstdhost) - 3 instances  
▶ [Installation details](#)

- \_\_\_ e. Deploy the new Claims Project snapshot to the connected Process Server and click the **Install** link next to the **Version 2** snapshot.

Claims Project (CP812)

Schemas

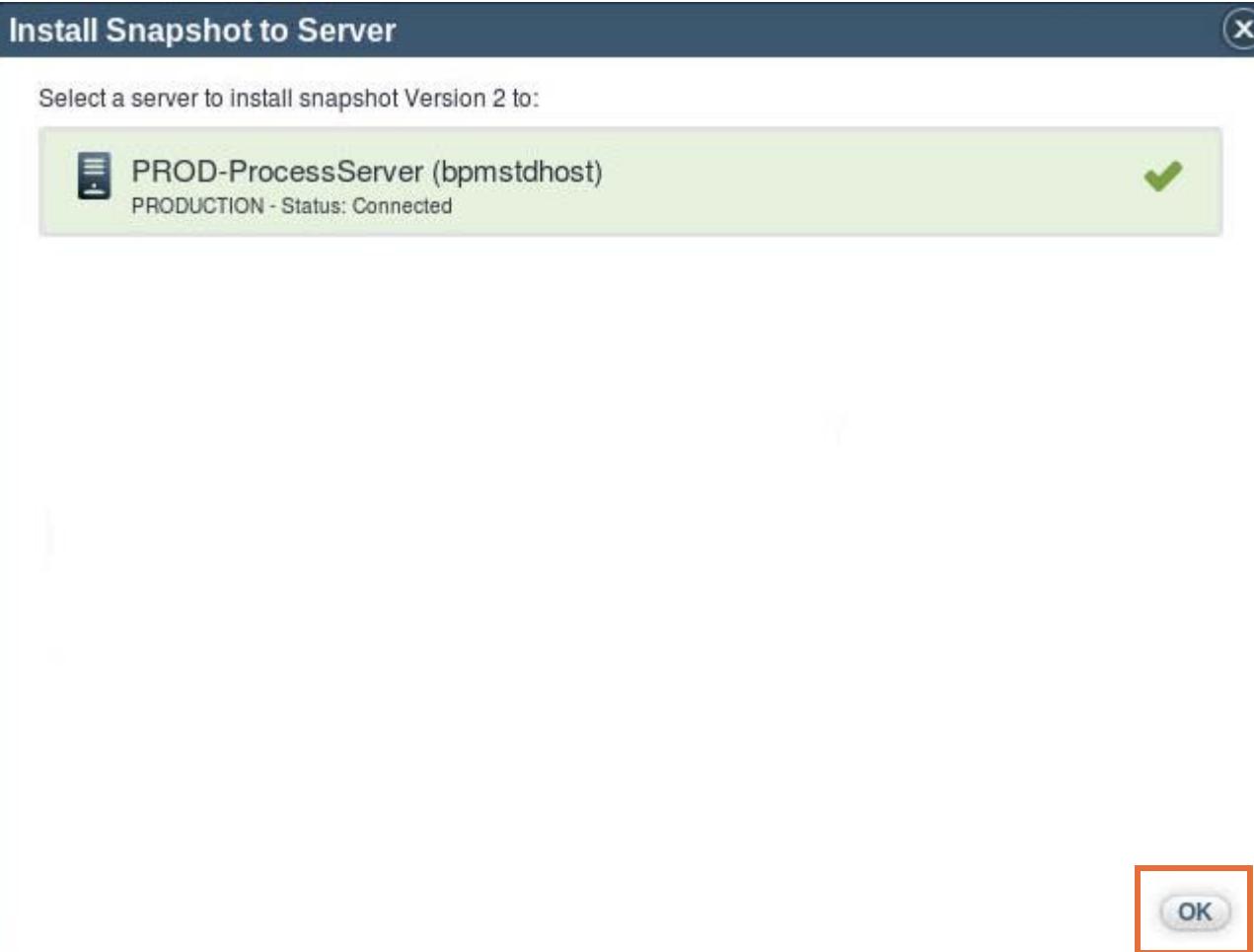
Sort Snapshots By: Date All | **Installed** | Archived

**Current**  
Last changed on 10/31/15 by pcdeadmin Export

**Version 2 (V2)** (New)  
Created on 10/31/15 by pcdeadmin  
Not Yet Installed to Process Server Export **Install**

**Sample BPD (SBPD)** (New)  
Created on 10/31/15 by pcdeadmin  
Currently Installed:  
PROD-ProcessServer(bpmstdhost) - 3 instances  
▶ [Installation details](#) Export | Install Server Details

- \_\_\_ f. In the **Install Snapshot to Server** dialog, click the **PROD-ProcessServer (bpmstdhost)** link. The green check mark is shown when you click the server link. Click OK.



- \_\_\_ g. In the **Install Snapshot - Manage Instances** dialog, select **Migrate** to migrate the old instances to the new snapshot of the process app. Click **Install**.

Select how to handle existing snapshots and instances from this process app.

To handle possible orphaned tokens if you are migrating instances using a migration policy file, select the Leave action. Using a migration policy file to handle orphaned token occurs after installing a snapshot.

- \_\_\_ h. It takes a few moments to install, and you see a message: Installation in progress.

Current

Last changed on 10/31/15 by pdeadmin

Version 2 (V2) (New)

Created on 10/31/15 by pdeadmin

PROD-ProcessServer(bpmstdhost) **Installation in progress**

[Installation details](#)

Sample BPD (SBPD) (New)

Created on 10/31/15 by pdeadmin

Currently Installed:

PROD-ProcessServer(bpmstdhost) - 3 instances

[Installation details](#)

- \_\_ i. Notice that all of the instances that were created in the **Sample BPD** snapshot are upgraded to the new snapshot **Version 2** of the process application.

Current  
Last changed on 10/31/15 by pcdeadmin

Version 2 (V2) (New)  
Created on 10/31/15 by pcdeadmin  
Currently Installed:  
**PROD-ProcessServer(bpmstdhost) - 3 instances**  
▶ Installation details

Sample BPD (SBPD) (New)  
Created on 10/31/15 by pcdeadmin  
Currently Installed:  
**PROD-ProcessServer(bpmstdhost) - 0 instances**  
▶ Installation details

- \_\_ 2. Verify the upgrade in **SystemOut.log** file.

- \_\_ a. In the terminal window, enter `cd /opt/IBM/BPM/profiles/PCenterCustom/logs/PCenter_DE.AppCluster.member1` to change the directory.
- \_\_ b. Enter `gedit SystemOut.log` to open the file.
- \_\_ c. Scroll to the bottom of the log file, and look for messages that confirm that the new version installed successfully.

```
CWLLG3576I: Server PROD-ProcessServer is at version 8.5.6.0.
CWLLG0714I: Version 2 Sending export.
CWLLG3571I: [BEGIN] Communicating with server PROD-ProcessServer at a
CWLLG3609I: The reason for the communication is to retrieve the deplo
CWLLG3571I: [END] Communicating with server PROD-ProcessServer at add

CWLLG3571I: [BEGIN] Communicating with server PROD-ProcessServer at a
user psdeadmin.
CWLLG3610I: The reason for the communication is to send the deploymen

CWLLG3569I: [END] Assembling artifacts and sending them to the server
CWLLG3571I: [END] Communicating with server PROD-ProcessServer at add
user psdeadmin.
CWLLG1324I: Version 2 Export sent.
CWLLG0156I: Version 2 Install succeeded
CWLLG1325I: Version 2 The snapshot is being marked as 'INSTALLED'.
CWLLG0159I: Version 2 Tinstall complete.
CWLLG3564I: [END] Running the governance process Default Installation
```

- \_\_ d. Close the `SystemOut.log` file by clicking **File > Quit**.

## **End of exercise**

## Exercise review and wrap-up

In this exercise, you created and installed a snapshot on the connected Process Server. You also created process instances of a process application in Process Portal and migrated the instances to a new version of the snapshot.

# Exercise 10. Performance and troubleshooting

## What this exercise is about

This exercise covers aspects of performance tuning and troubleshooting the IBM Business Process Manager V8.5.6 Standard environment.

## What you should be able to do

After completing this exercise, you should be able to:

- View performance metrics with the Tivoli Performance Viewer
- Read an instrumentation file and clean up the tasks
- Create blackout periods
- Monitor processes by using the Process Monitor utility
- Create an Alert Definition
- Reset caches by using the Manage Caches utility
- Manage Process Instances by using Process Inspector
- Configure the Business Process Definition queue size and worker thread pool
- Gather logs, heap dumps, and other resources for troubleshooting

## Introduction

After IBM Business Process Manager V8.5.6 Standard is installed, and a topology is configured, you create profiles. It is also important to configure your solution to provide optimal performance. In case you encounter a problem, you must be able to recognize, identify, and effectively report the problem to support.

## Requirements

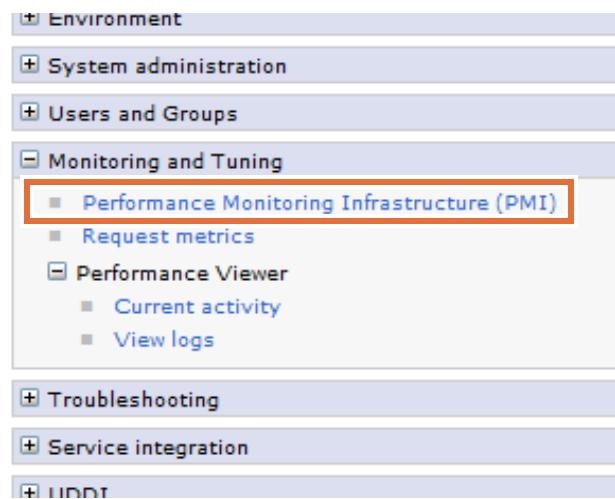
You must have a process application that is named Claims Project, which includes a business process definition.

## Exercise instructions

### Part 1: View performance metrics with Tivoli Performance Viewer

You can use Tivoli Performance Viewer to start and stop performance monitoring. You can view Performance Monitoring Infrastructure (PMI) data in a chart or a table as it occurs on your system. Optionally, you can log the data to a file that you can later review.

- \_\_ 1. Enable Performance Monitoring Infrastructure.
  - \_\_ a. Open a browser window and browse to the Integrated Solutions Console for Process Center by entering the following URL:  
`http://bpmsstdhost:9060/ibm/console`
  - \_\_ b. Log in as the administrative user:
    - **User name:** bpadmin
    - **Password:** web1sphere
  - \_\_ c. Click **Monitoring and Tuning > Performance Monitoring Infrastructure (PMI)** in the administrative console navigation tree.



- \_\_\_ d. Click **PCenter\_DE.AppCluster.member1** to view the PMI settings.

#### Performance Monitoring Infrastructure (PMI)

Use this page to configure Performance Monitoring Infrastructure (PMI)

⊕ Preferences

| Select                                      | Name                                          | Node          | Host Name  | Version                      |
|---------------------------------------------|-----------------------------------------------|---------------|------------|------------------------------|
| You can administer the following resources: |                                               |               |            |                              |
| <input type="checkbox"/>                    | <a href="#">PCenter_DE.AppCluster.member1</a> | PCenterNode01 | bpmstdhost | ND 8.5.5.5<br>BPMStd 8.5.6.0 |
| <input type="checkbox"/>                    | <a href="#">nodeagent</a>                     | PCenterNode01 | bpmstdhost | ND 8.5.5.5<br>BPMStd 8.5.6.0 |
| Total 2                                     |                                               |               |            |                              |

- \_\_\_ e. Make sure that **Enable Performance Monitoring Infrastructure** is enabled.

Performance Monitoring Infrastructure (PMI)

Performance Monitoring Infrastructure (PMI) > **PCenter\_DE.AppCluster.member1**

Use this page to configure Performance Monitoring Infrastructure (PMI)

Runtime Configuration

General Properties

Enable Performance Monitoring Infrastructure

Use sequential counter updates

Currently monitored statistic set

- \_\_ f. Select **Extended** to provide extended monitoring options and click **Apply**.

The screenshot shows the 'General Properties' configuration dialog. At the top, there are two tabs: 'Runtime' (selected) and 'Configuration'. Below the tabs, under 'General Properties', there are two checkboxes: 'Enable Performance Monitoring Infrastructure' (checked) and 'Use sequential counter updates' (unchecked). In the 'Currently monitored statistic set' section, there are five options: 'None' (radio button), 'Basic' (radio button), 'Extended' (radio button, highlighted with a red box), 'All' (radio button), and 'Custom' (radio button). Each option has a detailed description below it. At the bottom of the dialog are four buttons: 'Apply' (highlighted with a red box), 'OK', 'Reset', and 'Cancel'.

- \_\_ g. Click **Save** to save your changes to the master configuration.

The screenshot shows a 'Messages' dialog with a warning message: 'Changes have been made to your local configuration. You can:'. There are two options listed: 'Save directly to the master configuration.' (with 'Save' highlighted with a red box) and 'Review changes before saving or discarding.'

An option to synchronize the configuration across multiple nodes can be disabled in [Preferences](#).

**⚠** The server may need to be restarted for these changes to take effect.

- \_\_\_ h. Click **OK** when the synchronization of the nodes is completed.

Performance Monitoring Infrastructure (PMI)

Performance Monitoring Infrastructure (PMI) > PCenter DE.AppCluster.member1 > Synchronize change with Nodes

The current status of the Nodes being synchronized.

ADMS0202l: Automatic synchronization mode is disabled for node: PCenterNode01.  
ADMS0201l: The configuration synchronization started for node: PCenterNode01.  
ADMS0205l: The configuration synchronization completed successfully for node: PCenterNode01.  
ADMS0203l: The automatic synchronization mode is enabled for node: PCenterNode01  
ADMS0208l: The configuration synchronization complete for cell.

OK

- \_\_\_ 2. Monitor current activity.
- \_\_\_ a. Click **Monitoring and Tuning > Performance Viewer > Current activity**.

- + Environment
- + System administration
- + Users and Groups
- Monitoring and Tuning
  - Performance Monitoring Infrastructure (PMI)
  - Request metrics
  - Performance Viewer
    - Current activity
    - View logs
- + Troubleshooting
- + Service integration
- + IODT

- \_\_ b. Click **PCenter\_DE.AppCluster.member1** to view the activity you want to monitor.

Tivoli Performance Viewer

**Tivoli Performance Viewer**

Specifies the server to monitor with Tivoli Performance Viewer. Select the check box for the servers that to monitor, and click Start Monitoring. Click the name of the server to display the activity page.

[ Preferences

**Start Monitoring** **Stop Monitoring**

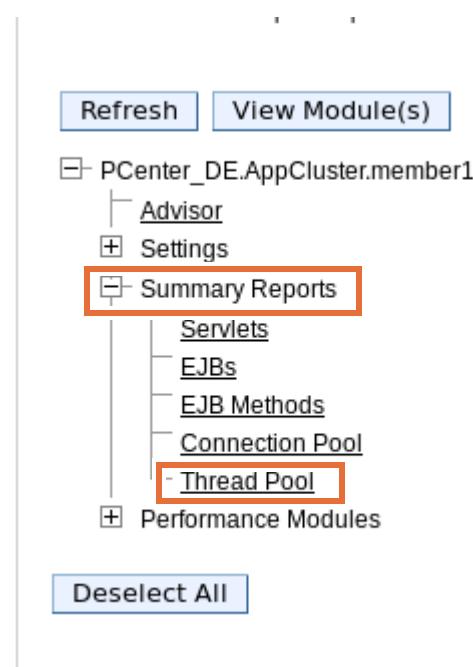
| Select                   | Server ▾                                      | Node ▾        | Host Name ▾ | Version ▾                       | Collection ▾ |
|--------------------------|-----------------------------------------------|---------------|-------------|---------------------------------|--------------|
| <input type="checkbox"/> | <a href="#">PCenter_DE.AppCluster.member1</a> | PCenterNode01 | bpmstdhost  | ND 8.5.5.5<br>BPMStd<br>8.5.6.0 | Available    |
| <input type="checkbox"/> | <a href="#">nodeagent</a>                     | PCenterNode01 | bpmstdhost  | ND 8.5.5.5<br>BPMStd<br>8.5.6.0 | Available    |

Total 2

**Hint**

You can alternatively select the check box for the server whose activity you want to monitor, and then click **Start Monitoring**. To start monitoring multiple servers at the same time, select the servers and then click **Start Monitoring**.

- \_\_\_ c. Expand **Summary Reports** by clicking the + sign and click **Thread Pool**. A chart that provides the requested data is displayed on the right side of the page.



- \_\_\_ d. Click **Start Logging**.

[Thread Pool Summary Report](#)

[More information about this page](#)



Each module has several counters that are associated with it. These counters are shown in a table.

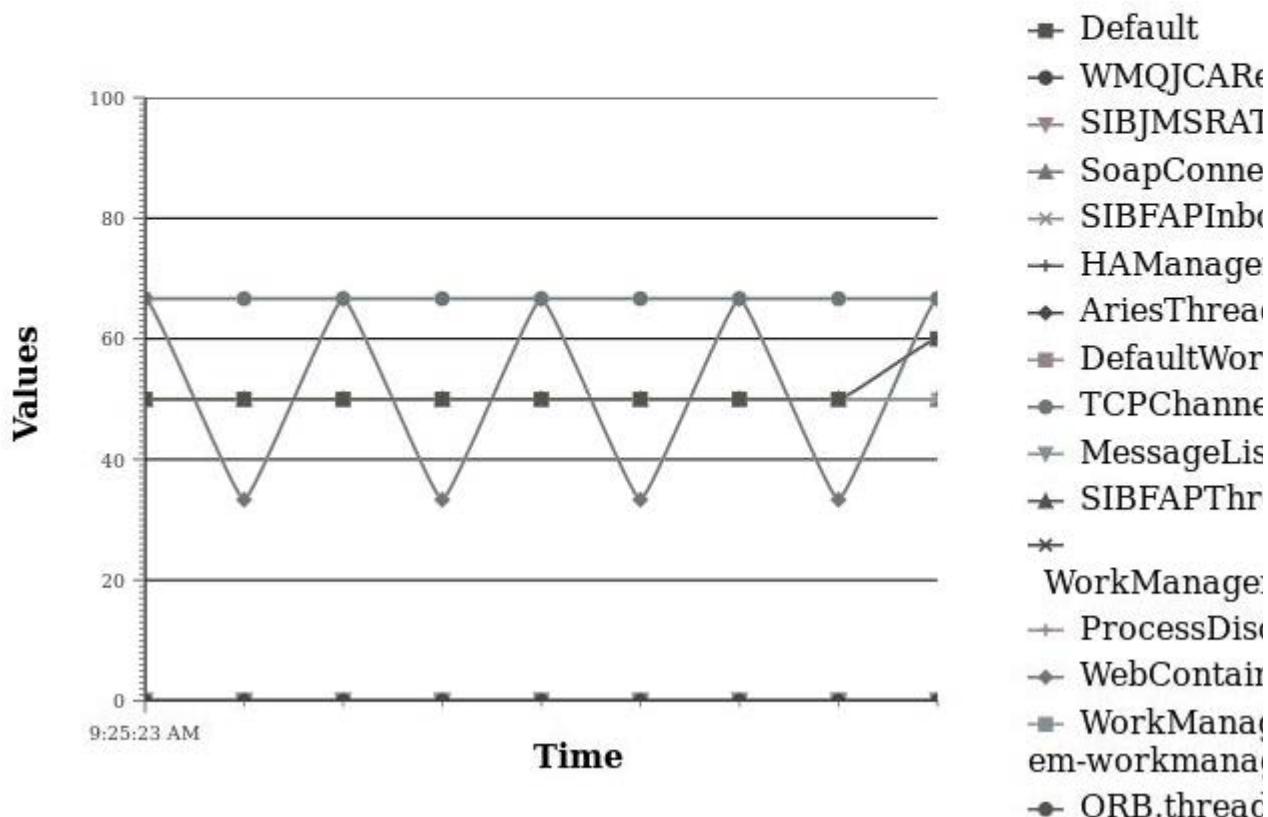
### Thread Pool Summary Report

[More information about this page](#)

#### Start Logging

Logging has started for server PCenter\_DE.AppCluster.member1 on node PCenterNode01.

#### Stop Logging



### Thread Pool Summary Report

Feel free to resize the browser to get a full view. You can also press **F11** to maximize the browser and after you complete, press **F11** again to resize the browser back to original size.



## Information

If you are monitoring a service component to gather performance metrics, lightweight events are fired to the Performance Monitoring Infrastructure. You can select to monitor one or more of the performance statistics that are generated for server-specific components:

- A counter for each EXIT event, which counts successful computations
- A counter for each FAILURE event, which counts failed computations
- The processing duration that is calculated between corresponding ENTRY and EXIT events

- e. When you are finished monitoring the performance of your events, click **Stop Logging**.

### [Thread Pool Summary Report](#)

[More information about this page](#)

#### **Start Logging**

Logging has started for server PCenter\_DE.AppCluster.member1 on node PCenterNode01.

**Stop Logging**

- \_\_ f. A summary report is displayed. The report looks similar to your server report.

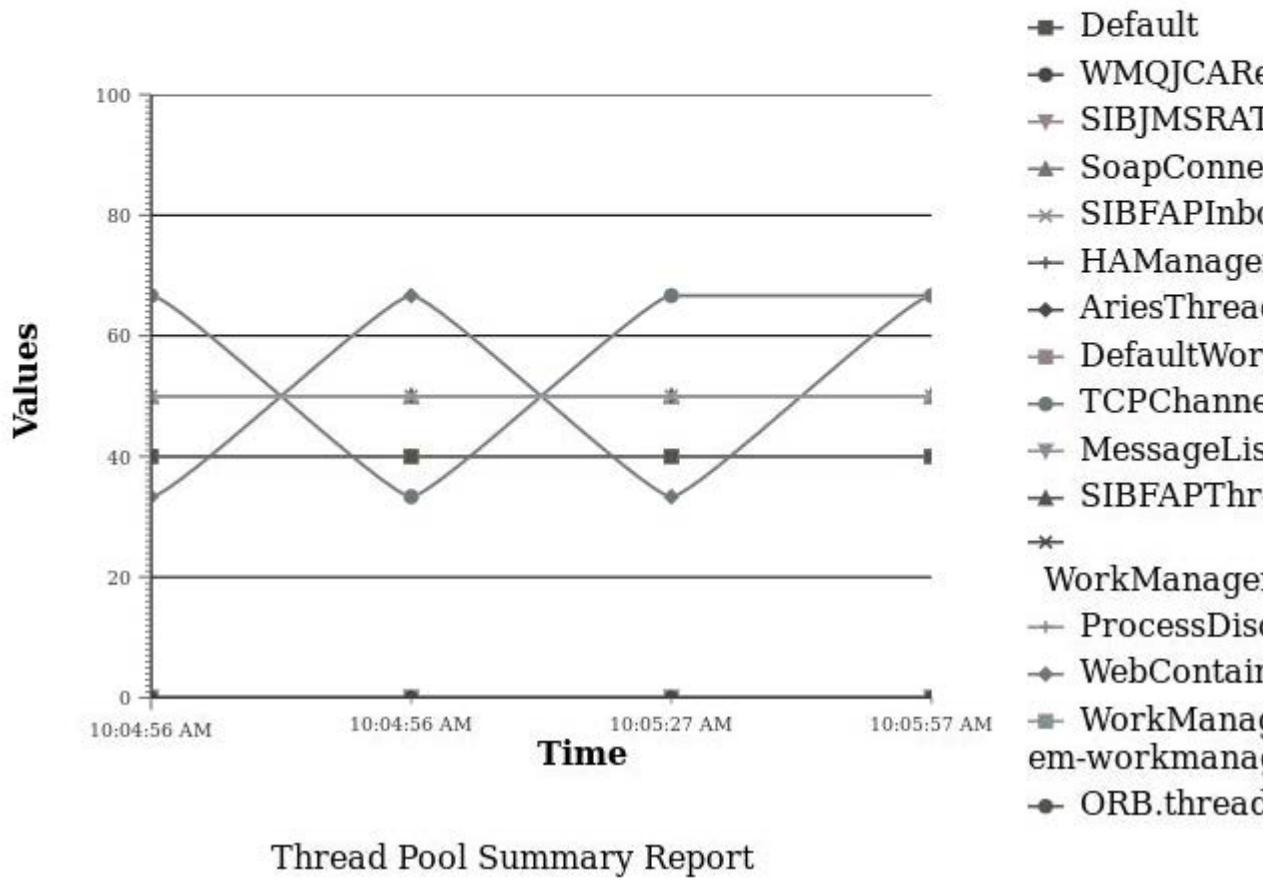
### Thread Pool Summary Report

[More information about this page](#)

#### Stop Logging

Logging has stopped for server PCenter\_DE.AppCluster.member1 on node PCenterNode01.

[Start Logging](#)



#### Reminder

The results of your logging summary is different from what is displayed in this screen capture.

- \_\_ 3. Check the log files for Performance Statistics.

- \_\_ a. By default, the log files are stored in a `<profile_root>/logs/tpv` folder. In the terminal window, enter `cd /opt/IBM/BPM/profiles/PCenterCustom/logs/tpv` to change the directory.

- \_\_ b. List the contents of the <profile\_root>/logs/tpv folder by entering the ls command.



```
root@bpmstdhost:/opt/IBM/BPM/profiles/PCenterCustom/logs/tpv
File Edit View Search Terminal Help
[root@bpmstdhost ~]# cd /opt/IBM/BPM/profiles/PCenterCustom/logs/tpv
[root@bpmstdhost tpv]# ls
tpv_PCenter_DE.AppCluster.member1_1449481283267_1.zip
[root@bpmstdhost tpv]#
```



### Note

The ID number on your file is different from the one that is represented in this screen capture.



### Information

The Tivoli Performance Viewer automatically compresses the log file when it finishes writing to conserve space. Each compressed file contains a single log file, which must have the same name as the compressed file. Each file is qualified with a unique ID.

- \_\_ c. Switch back to the administrative console and click **Monitoring and Tuning > Performance Viewer > View logs**.



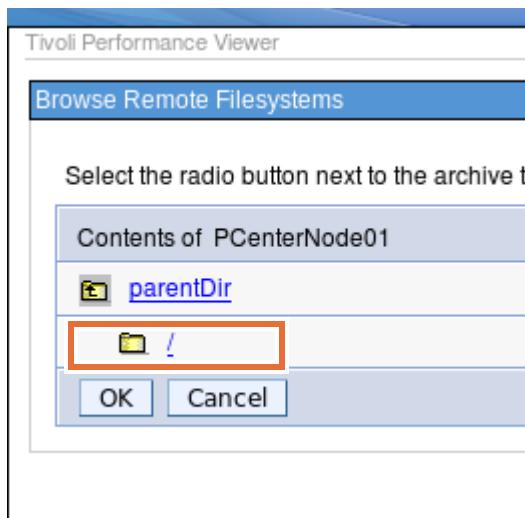
- \_\_ d. To open the log file on the server, select **Server File** and click **Browse**.

The screenshot shows the 'Tivoli Performance Viewer' interface. In the 'View Logged Data' section, there are two options: 'Explicit Path to Log File' and 'Server File'. The 'Server File' option is selected and highlighted with a red box. Below it is a 'Specify Path' input field containing a 'Browse...' button, which is also highlighted with a red box. At the bottom of the page is a 'View Log' button.

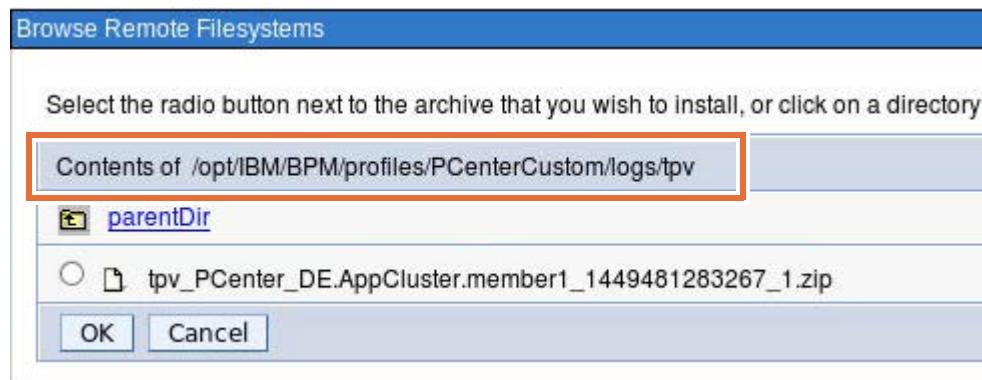
- \_\_ e. Click the **PCenterNode01** link.

The screenshot shows a 'Browse Remote Filesystems' dialog. It displays the 'Contents of PCenterCell' with two entries: 'PCenterCellManager' and 'PCenterNode01'. The 'PCenterNode01' entry is highlighted with a red box. At the bottom of the dialog are 'OK' and 'Cancel' buttons.

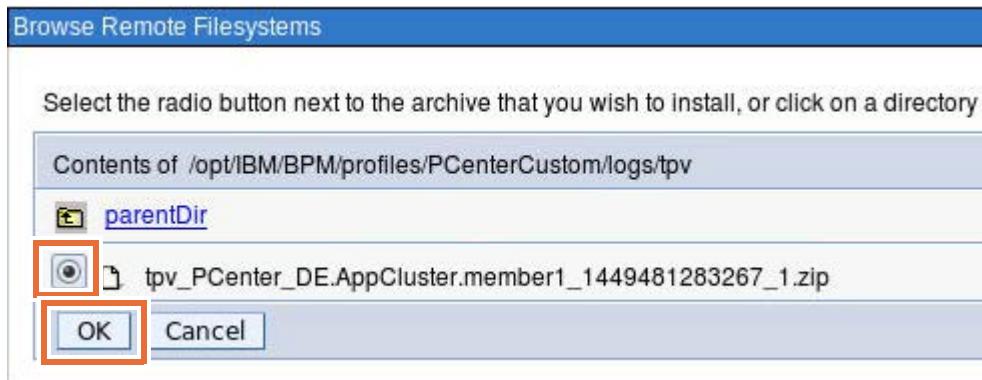
- \_\_\_ f. Click the “/” link.



- \_\_\_ g. Go to the /opt/IBM/BPM/profiles/PCenterCustom/logs/tpv folder by clicking each folder one by one. You see the log file present at this location:



- \_\_\_ h. Select the compressed file in the view and click **OK**.



- \_\_ i. Click View Log.

### Tivoli Performance Viewer

Use this page to view logged data from Tivoli Performance Viewer.

**View Logged Data**

Explicit Path to Log File  
Specify Path

Server File  
Specify Path

| File Name | Node | Server |
|-----------|------|--------|
|-----------|------|--------|

- \_\_ j. You can view the contents of the log file in the Tivoli Performance Viewer as you monitored the current activity. Under the **Summary Reports** section, you can compare reports by clicking **Servlets**, **Connection Pool**, and **Thread Pool**.

### Tivoli Performance Viewer > PCenter\_DE.AppCluster.member1

Use this page to view and refresh performance data for the selected server, change user and log settings, and view specific performance modules.

Refresh View Module(s)

tpv\_PCenter\_DE.AppCluster.member1\_1

- Advisor
- + Settings
- Summary Reports
  - Servlets
  - EJBs
  - EJB Methods
  - Connection Pool
  - Thread Pool
- + Performance Modules

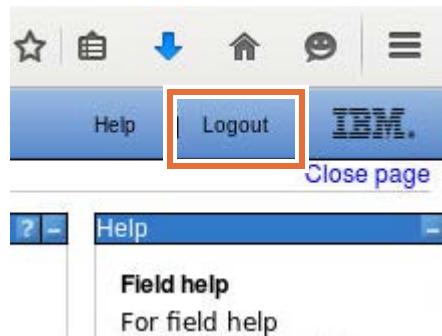
Deselect All

**Servlets Summary Report**

[More information about this page](#)

| <a href="#">Initial summary report</a>   <a href="#">Next summary report</a> |                |                |
|------------------------------------------------------------------------------|----------------|----------------|
|                                                                              |                |                |
| Name                                                                         | Application    | Total Requests |
| /login.jsp                                                                   | repository.war | 141            |
| Repository.jsp                                                               | repository.war | 4              |
| /welcome.jsp                                                                 | repository.war | 4              |

- \_\_\_ k. After you complete examining the summary reports, click **Logout**.



## **Part 2: Troubleshoot by using Instrumentation file in Process Admin Console**

Process Admin Console can be used for debugging the performance-related issues. You can manage caches, clean up the deleted tasks and attachments, monitor the processes by using instrumentation file, manage task alerts and create saved searches for managing the performance of IBM Business Process Manager. In this part of the exercise, you work with the instrumentation file and the task cleanup utility in Process Admin console.

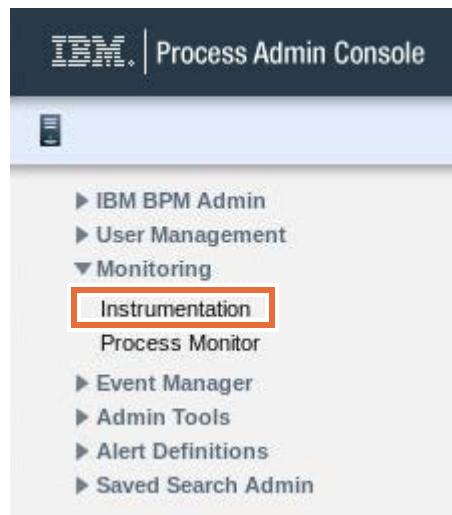


### Note

Logging is an expensive operation. You see performance decrease when you run logging operations. Therefore, run logging operations during an analysis period only. These log files are large. A 5-minute sample might yield a 5 MB file, which expands to 25 MB. The more activity that you have, the larger the file.

- \_\_\_ 1. Troubleshoot problems by using instrumentation file in Process Admin Console.
  - \_\_\_ a. Open a browser and go to the Process Admin Console by entering the following URL  
`http://bpmsstdhost:9080/ProcessAdmin`
  - \_\_\_ b. Log in as the `bpmadmin` user with `websphere` password. Click **Login**.

- \_\_ c. Expand **Monitoring** and click **Instrumentation**.



- \_\_ d. Click **Start Logging** to collect the data.

#### Monitoring > Instrumentation

Server: cell=PCenterCell,node=PCenterNode01,process=PCenter\_DE.AppCluster.member1

**Start Logging**

Refresh

Reset

Save

Automatically refresh every

Never

| Name                    | Count/Value | In Process | Average Duration (ms) | Moving Average Duration (ms) |
|-------------------------|-------------|------------|-----------------------|------------------------------|
| BPD                     |             |            |                       |                              |
| Instances               |             |            |                       |                              |
| BPD Instances Completed | 0           |            |                       |                              |
| BPD Instances Failed    | 0           |            |                       |                              |

- \_\_ e. Note where the log file is stored. By default, it is stored in the `<profile_root>/logs` folder as a `.dat` file.

#### Monitoring > Instrumentation

Server: cell=PCenterCell,node=PCenterNode01,process=PCenter\_DE.AppCluster.member1

**Stop Logging**

Logging instrumentation data to `"/opt/IBM/BPM/profiles/PCenterCustom/.logs/inst001.dat"`

Refresh

Reset

Save

Automatically refresh every

Never

| Name | Count/Value | In Process | Average Duration (ms) | Moving Average Duration (ms) |
|------|-------------|------------|-----------------------|------------------------------|
|      |             |            |                       |                              |

- \_\_\_ f. Click **Logout**.

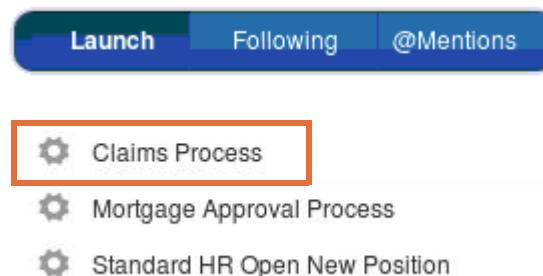


- \_\_\_ g. To create some process instances in Process Portal, open a browser and log in to the Process Portal by going to the following URL:

<http://bpmsstdhost:9080/portal>

- \_\_\_ h. Log in as the `bpmadmin` user with `websphere` password.

- \_\_\_ i. Click **Claims Process** three times.

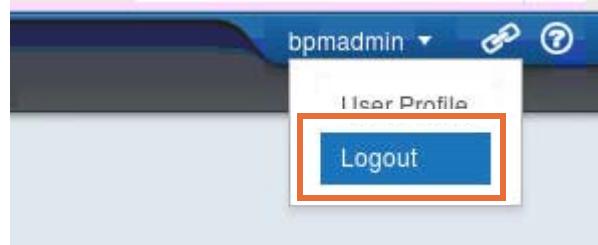


- \_\_ j. Click the **Work** tab to refresh the workspace. It is possible that some of your process instances are tagged as overdue. Ignore these warnings.

The screenshot shows the 'My Work' section of the Process Portal. At the top, there is a navigation bar with tabs: WORK (which is highlighted with a red box), PROCESSES, TEAM PERF..., and PROCESS P... (with a plus sign icon). Below the navigation bar, the title 'My Work' is displayed next to a document icon. Underneath, a sub-section titled 'My Tasks' is shown with a search bar. At the bottom of this section, there are links for 'Open Tasks' and 'Completed Tasks'. A dropdown menu is open, showing three items under the heading '▼ Due Today (3)'. Each item is a card-like entry with a gear icon, the task name 'Step: File Claim', a dropdown arrow, the process ID 'Claims Process:153', the due date 'Due: November 5, 2015 5:28 AM', and 'All Users'.

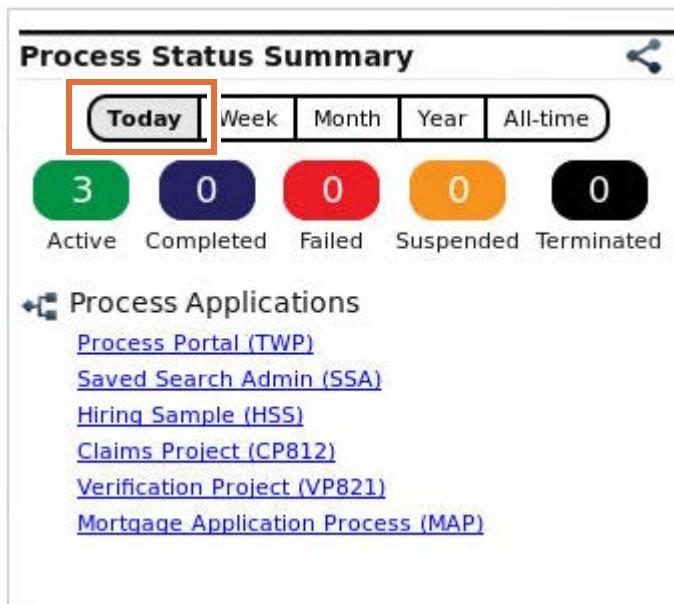
| Task Details                           | Due Date                      | Assigned To |
|----------------------------------------|-------------------------------|-------------|
| Step: File Claim<br>Claims Process:153 | Due: November 5, 2015 5:28 AM | All Users   |
| Step: File Claim<br>Claims Process:154 | Due: November 5, 2015 5:28 AM | All Users   |
| Step: File Claim<br>Claims Process:155 | Due: November 5, 2015 5:28 AM | All Users   |

- \_\_ k. Log out of the Process Portal.



- \_\_ l. Return to the Process Admin console at URL  
<http://bpmsstdhost:9080/ProcessAdmin>
- \_\_ m. Log in with the `bpmadmin` user name and `websphere` password.

- \_\_ n. Click **Today** in the Process Status Summary dialog box:



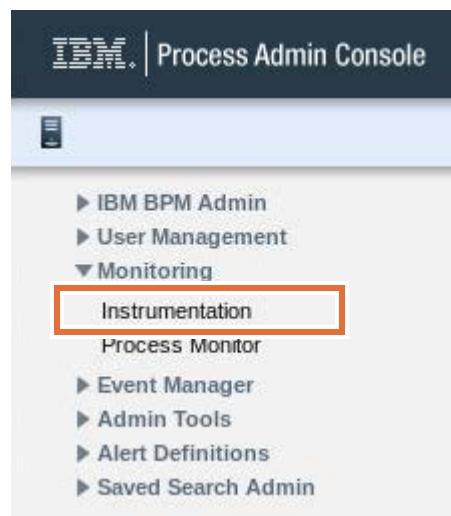
The Claims Project is deployed to the server, and the system reports the three active instances you created.



#### Note

Depending on how many instances you started or completed in the previous exercises, the number of instances that started or completed might not match with the screen capture.

- \_\_ o. Expand **Monitoring** and click **Instrumentation**.



- \_\_ p. Explore the values. The value for BPD Instances Started is 3.

### Monitoring > Instrumentation

Server: cell=PCenterCell,node=PCenterNode01,process=PCenter\_DE.AppCluster.merr  
 Logging instrumentation data to: "/opt/IBM/BPM/profiles/PCenterCustom/inst001.dat"

Automatically refresh every

Never



| Name                     | Count/Value | In Process | Average Duration (ms) | Moving Average Duration (ms) |
|--------------------------|-------------|------------|-----------------------|------------------------------|
| BPD                      |             |            |                       |                              |
| Instances                |             |            |                       |                              |
| BPD Instances Completed  | 0           |            |                       |                              |
| BPD Instances Failed     | 0           |            |                       |                              |
| BPD Instances Resumed    | 0           |            |                       |                              |
| BPD Instances Started    | 3           |            |                       |                              |
| BPD name is Claims       | 3           |            |                       |                              |
| Processes                |             |            |                       |                              |
| BPD Instances Terminated | 0           |            |                       |                              |

- \_\_ q. Click Stop Logging.

### Monitoring > Instrumentation

Server: cell=PCenterCell,node=PCenterNode01,process=PCenter\_DE.AppCluster.merr  
 Logging instrumentation data to: "/opt/IBM/BPM/profiles/PCenterCustom/inst001.dat"

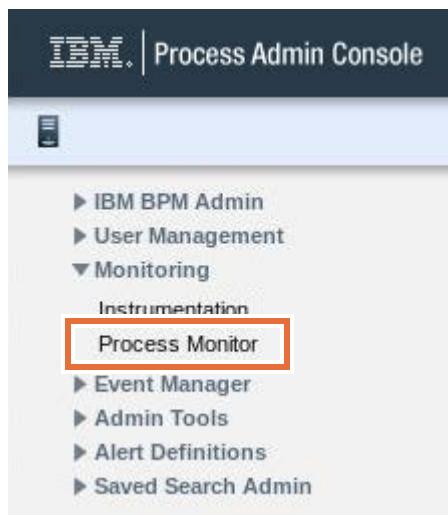
Automatically refresh every

Never



### Part 3: Process monitoring by using Process Monitor utility in Process Admin console

- \_\_ 1. Monitor IBM Business Process Manager processes by using the Process Monitor utility in Process Admin Console.
- \_\_ a. Expand **Monitoring** and click **Process Monitor**.



- \_\_ b. The **Summary** page provides an overview of active and most expensive processes and services.

#### Monitoring > Process Monitor

Server: cell=PCenterCell,node=PCenterNode01,process=PCenter\_DE.AppCluster.member1

**Summary**    Processes    Services

|                                      |   |
|--------------------------------------|---|
| Active Processes Currently Executing | 0 |
| Active Services Currently Executing  | 0 |

#### Most Expensive Services

| Process App       | Service Name |
|-------------------|--------------|
| No data available |              |

#### Most Expensive Processes

| Process App          | Process Name         |
|----------------------|----------------------|
| Claims Project (tip) | Claims Process (153) |
| Claims Project (tip) | Claims Process (154) |

#### Most Expensive Service Steps

| Process App       | Service Name | Sub-Service Name | Step Name |
|-------------------|--------------|------------------|-----------|
| No data available |              |                  |           |

#### Most Expensive Process Steps

| Process App          | Process Name         | Sub-Process Name | Step Name  |
|----------------------|----------------------|------------------|------------|
| Claims Project (tip) | Claims Process (153) |                  | File Claim |
| Claims Project (tip) | Claims Process (153) |                  | Start      |

- \_\_\_ c. To monitor the process app, click the **Claims Process** process app.

## Monitoring > Process Monitor

Server: cell=PCenterCell,node=PCenterNode01,process=PCenter\_DE.AppCluster.member1

**Summary**   **Processes**   **Services**

|                                      |   |
|--------------------------------------|---|
| Active Processes Currently Executing | 0 |
| Active Services Currently Executing  | 0 |

### Most Expensive Services

| Process App       | Service Name |
|-------------------|--------------|
| No data available |              |

### Most Expensive Processes

| Process App          | Process Name         |
|----------------------|----------------------|
| Claims Project (tip) | Claims Process (153) |
| Claims Project (tip) | Claims Process (154) |



### Note

Click the process app name under the **Process Name** column. You cannot click the process app name under the **Process App** column.

- \_\_\_ d. The **Processes** page opens showing the details of the process app. You can view the duration of each step in the process, including the type of activity, such as event or gateway. You can also view the list of services that are running and the total duration of each service. You can identify a service to investigate, for example, you might look at the service that is taking the longest time.

## Monitoring > Process Monitor

Server: cell=PCenterCell,node=PCenterNode01,process=PCenter\_DE.AppCluster.member1

**Summary**   **Processes**   **Services**

### Process "Claims Process" Details

|                       |                         |
|-----------------------|-------------------------|
| BPD Name              | Claims Process          |
| Process App           | Claims Project (tip)    |
| Instance ID           | 203                     |
| Last Enter Time       | Nov 12, 2015 1:51:08 AM |
| Last Duration         | 0:00:02.025             |
| Total Duration        | 0:00:58.634             |
| State                 | Completed               |
| Total Steps Completed | 8                       |

## Part 4: Work with the Task Cleanup utility in Process Admin Console

Sometimes long-running process instances can build up many completed task instances. You must delete these tasks to improve system performance.

- \_\_\_ 1. Clean up deleted tasks by using Task Cleanup utility in Process Admin Console.
- \_\_\_ a. Expand IBM BPM Admin and click **Task Cleanup**.



- \_\_\_ b. Select the option: Clean up tasks and their associated data that are marked as 'DELETED'.

### IBM BPM Admin > Task Cleanup

|                                                                                                                       |
|-----------------------------------------------------------------------------------------------------------------------|
| <input type="radio"/> Clean up task attachments that have been orphaned or are associated with deleted tasks.         |
| <input checked="" type="radio"/> Clean up tasks and their associated data that are marked as 'DELETED'.               |
| <input type="radio"/> Clean up tasks and their associated data for tasks in the 'DELETED' or 'SENT' state.            |
| <input type="radio"/> Clean up tasks and their associated data for tasks in the 'DELETED', 'SENT', or 'CLOSED' state. |

#### Current Counts

|             |    |
|-------------|----|
| Tasks       | 13 |
| Attachments | 0  |

Cleanup

#### After Cleanup Counts

|             |   |
|-------------|---|
| Tasks       | 0 |
| Attachments | 0 |

- \_\_\_ c. Note the **Current Counts** for the tasks and then click **Cleanup**.

#### Current Counts

|             |    |
|-------------|----|
| Tasks       | 13 |
| Attachments | 0  |

Cleanup

#### After Cleanup Counts

|             |   |
|-------------|---|
| Tasks       | 0 |
| Attachments | 0 |

- \_\_\_ d. Now after the cleanup of all tasks in 'DELETED' state, you see the updated number of tasks in the **After Cleanup Counts** table and the message: Cleanup Completed
- Clean up tasks and their associated data for tasks in the 'DELETED' or 'SENT' state.
  - Clean up tasks and their associated data for tasks in the 'DELETED', 'SENT', or 'CLOSED' state.

| Current Counts |    |
|----------------|----|
| Tasks          | 13 |
| Attachments    | 0  |

Cleanup

| After Cleanup Counts |    |
|----------------------|----|
| Tasks                | 13 |
| Attachments          | 0  |

**Cleanup Completed**



### Information

To delete completed tasks from the running process instances, you can use the `BPMTasksCleanup` command. You can run the following `BPMTasksCleanup` command by using the `AdminTask` object of the `wsadmin` scripting client.

```
$AdminTask BPMTasksCleanup {-containerAcronym CP812
 -containerSnapshotAcronym V2 -taskStatus ALL COMPLETED -outputFile
 /usr/tmp/log1.txt}
```

To improve system performance, clean the failed process tasks, archived or obsolete process applications, and snapshots by using the `wsadmin` scripting commands. More information about the set of commands is available at the following URL:

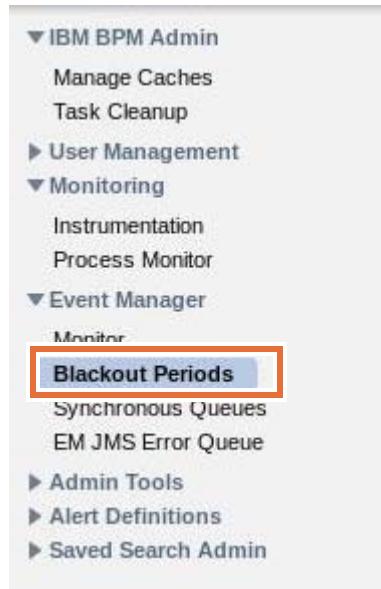
[http://www.ibm.com/support/knowledgecenter/SSFPJS\\_8.5.6/com.ibm.wbpm.ref.doc/topics/welc\\_ref\\_adm\\_script.html?lang=en](http://www.ibm.com/support/knowledgecenter/SSFPJS_8.5.6/com.ibm.wbpm.ref.doc/topics/welc_ref_adm_script.html?lang=en)

## Part 5: Create a blackout period

 **Information**

Administrators should establish blackout periods to specify times when events cannot be scheduled, for example, due to a holiday or when regular system maintenance is scheduled. The event manager takes blackout periods into account when scheduling and queuing events, event subscriptions, and undercover agents (UCAs).

- 1. Create a blackout period.
  - a. Expand Event Manager and click **Blackout Periods**.



- b. In the **Blackout Period Details** section, set a **Date/Time Range** for a holiday by clicking the **From** drop-down arrow and selecting the date **12/25/2015** from the calendar and entering the time **08:00** next to the date field.

- \_\_\_ c. Click the **To** drop-down arrow and select the date **12/26/2015** from the calender. Enter the time **08:00** next to the date field. Click **Add**.

### Event Manager > Blackout Periods

**Blackout Periods**

|                                                                                  |
|----------------------------------------------------------------------------------|
| <b>Blackout Period Details</b>                                                   |
| Date/Time Range                                                                  |
| From: <input type="text" value="12/25/2015"/> <input type="text" value="08:00"/> |
| To: <input type="text" value="12/26/2015"/> <input type="text" value="08:00"/>   |
| (M/d/yy) (HH:mm)                                                                 |
| <input type="radio"/>                                                            |
| Weekday/Time Range                                                               |
| From: <input type="text" value="Monday"/>                                        |
| To: <input type="text" value="Monday"/>                                          |
| (HH:mm)                                                                          |
| <input type="radio"/>                                                            |

**Delete**   **Add**   **Update**   **Clear**

The blackout period is displayed in your local time zone.

- \_\_\_ d. The blackout period that you created appears in the **Blackout Periods** box.

### Event Manager > Blackout Periods

**Blackout Periods**

|                                       |
|---------------------------------------|
| Dec 25, 2015 08:00-Dec 26, 2015 08:00 |
|---------------------------------------|

**Blackout Period Details**

|                                           |
|-------------------------------------------|
| Date/Time Range                           |
| From: <input type="text"/>                |
| To: <input type="text"/>                  |
| (M/d/yy) (HH:mm)                          |
| <input type="radio"/>                     |
| Weekday/Time Range                        |
| From: <input type="text" value="Monday"/> |
| To: <input type="text" value="Monday"/>   |
| (HH:mm)                                   |
| <input type="radio"/>                     |

**Delete**   **Add**   **Update**   **Clear**

The blackout period is displayed in your local time zone.

## Part 6: Create an alert definition

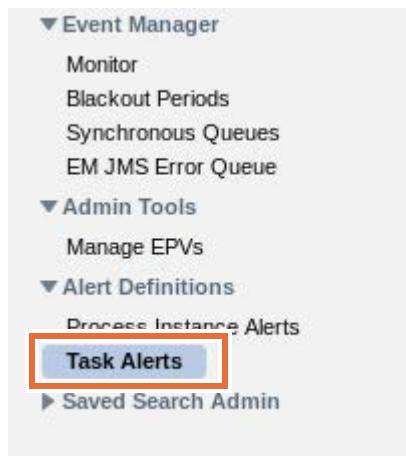


### Information

In the Process Admin Console, you can create alert definitions. APIs can then be used to check the status of these alert definitions, for example, to notify administrators of potential issues.

The business process management (IBM Business Process Manager) alert system defines alerts to monitor the number of business process application instances and tasks.

- \_\_ a. Expand Alert Definitions and click Task Alerts.



- \_\_\_ b. The **Task Alerts** page opens, and it has no existing alert definitions to display.

### Alert Definitions > Task Alerts

The following alert definitions contain a threshold condition that is true when the number of tasks meets the specified criteria. Click the clear alert definition and fill out the form at the bottom, then click the Apply button. Click the delete icon at the end of a row to remove an alert definition. [Learn more ...](#)

#### Existing Alert Definitions

| Name                | ▲ | Process App | Snapshot | Process | Instance status | Task status | Threshold |
|---------------------|---|-------------|----------|---------|-----------------|-------------|-----------|
| No items to display |   |             |          |         |                 |             |           |

#### Add Alert Definition

|                                                                           |                                             |                                               |     |
|---------------------------------------------------------------------------|---------------------------------------------|-----------------------------------------------|-----|
| Name                                                                      | <input type="text" value="Type in a name"/> |                                               |     |
| Process App                                                               | All                                         | Snapshot                                      | All |
| Instance status                                                           | All                                         | Task status                                   | All |
| Threshold                                                                 | >                                           | <input type="text" value="Type in a number"/> |     |
| <input type="button" value="Apply"/> <input type="button" value="Clear"/> |                                             |                                               |     |

\_\_\_ c. In the **Add Alert Definition** form, enter the following values:

- **Name:** Instance Alert
- **Process App:** All (this value is the default)
- **Snapshot:** All (this value is the default)
- **Process:** All (this value is the default)
- **Instance Status:** Failed (select from the drop-down list)
- **Task Status:** All (this value is the default)
- **Threshold:** > 1

Click **Apply**.

### Add Alert Definition

|                                                                           |                |             |     |
|---------------------------------------------------------------------------|----------------|-------------|-----|
| Name                                                                      | Instance Alert |             |     |
| Process App                                                               | All            | Snapshot    | All |
| Instance status                                                           | Failed         | Task status | All |
| Threshold                                                                 | > 1            |             |     |
| <input type="button" value="Apply"/> <input type="button" value="Clear"/> |                |             |     |

\_\_\_ d. The new alert definition appears in the **Existing Alert Definitions** list.

### Alert Definitions > Task Alerts

The following alert definitions contain a threshold condition that is true when the number of tasks meets the specified condition. Click the **Apply** button. Click the delete icon at the end of a row to delete an alert definition. [Learn more ...](#)

### Existing Alert Definitions

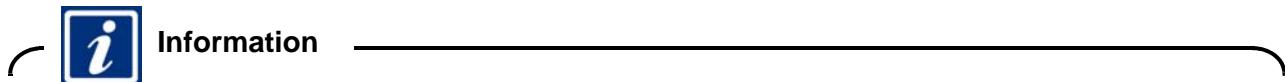
| Name           | Process App | Snapshot | Process | Instance status | Task status | Threshold |
|----------------|-------------|----------|---------|-----------------|-------------|-----------|
| Instance Alert | All         | All      | All     | Failed          | All         | >         |



#### Information

The alert definitions pages in the Process Admin Console display the alert definitions. They do not display whether alerts are triggered. An application, service, or dashboard must be created to display or otherwise handle the alert definitions and to display whether they are triggered or not.

## Part 7: Reset the cache in the Manage Caches page



### Information

You can use the Manage Caches page in the Process Admin Console to view all caches and their status, and reset each cache.

- 1. Reset the cache in Process Admin Console.
  - a. Expand **IBM BPM Admin** and click **Manage Caches**.



### Note

For performance reasons, IBM Business Process Manager caches some information about the Process Server. The caches for IBM Business Process Manager refresh automatically, and so resetting these caches should be required only when an issue exists that a reset might rectify.

- \_\_\_ b. The **Manage Caches** page displays information for each cache on Process Server.  
Click **Refresh View** to refresh the cache information.

### IBM BPM Admin > Manage Caches

| Name                       | Description                                                    | CA      | UCA | UCP  | Last A.  | Status | Actions        |
|----------------------------|----------------------------------------------------------------|---------|-----|------|----------|--------|----------------|
| E@GroupInfoCache           | Stores UserGroup objects by GroupName and GroupId              | 7,702   | 0   | 0%   | 1:54 AM  | ON     | (Show) (Reset) |
| E@UserInfoCache            | Stores UserInfo objects by UserName and UserId                 | 558,161 | 18  | 0%   | 1:55 AM  | ON     | (Show) (Reset) |
| GroupCache                 | Caches group information and list of groups with information.  | 0       | 0   | Inf  | 7:00 PM  | ON     | (Show) (Reset) |
| E@GroupMembers             | Stores group members (User IDs and Group IDs)                  | 66      | 4   | 0%   | 1:54 AM  | ON     | (Show) (Reset) |
| E@BusinessDataAliasesCache |                                                                | 1       | 1   | 100% | 7:12 AM  | ON     | (Show) (Reset) |
| E@NamedSnapshots           | Caches non-archived snapshots with non-null names by branch ID | 0       | 0   | Inf  | 7:00 PM  | ON     | (Show) (Reset) |
| ProfileCache               | Caches user profile information                                | 287     | 2   | 0%   | 10:00 AM | ON     | (Show) (Reset) |
| Runtime TWClass Cache      | Caches all business objects for use by the runtime engine      | -       | -   | -    | -        | ON     | (Reset)        |

**Refresh View**



#### Information

The CA (Cache Access) column on Manage Caches page shows the number of times the cache was refreshed and accessed. The UCA (Unrefreshed Cache Access) shows the number of times the cache was accessed but not refreshed and UCP (Unrefreshed Cache Percentage) shows the percentage of uncached access versus cached access for this cache. "Last A." shows the most recently accessed cache.

- \_\_\_ c. Click **Show** in the Actions column to view E@GroupInfoCache cache information in a separate browser window.

**Cache Data: E@GroupInfoCache** Close

This is a remote cache and the information is not always updated. GenCache - Cached objects : 286 Data: Managers\_S\_581a472b-5016-479a-b5b5-0a9701c2c42c.f6e77718-3721-4655-a8bb-c4bef6a3f636=[groupId=false = UserGroup.1060, groupName(false) = Managers\_S\_581a472b-5016-479a-b5b5-0a9701c2c42c.f6e77718-3721-4655-a8bb-c4bef6a3f636, displayName(false) = Managers, parentGroupId(false) = null, groupType(false) = 1, description(false) = Managers, groupState(false) = 0, participantId(false) = Participant.581a472b-5016-479a-b5b5-0a9701c2c42c, state = RECORD\_STATE\_UP\_TO\_DATE, saveSyncId = null], Process Owner\_T\_53b76f8a-9bb5-479b-ac3d-4571163c7a9f.3150cc36-f109-43a8-b81f-770074bd9f57=[groupId(false) = UserGroup.1050, groupName(false) = Process Owner\_T\_53b76f8a-9bb5-479b-ac3d-4571163c7a9f.3150cc36-f109-43a8-b81f-770074bd9f57, displayName(false) = Process Owner, parentGroupId(false) = null, groupType(false) = 1, description(false) = Process Owner, groupState(false) = 0, participantId(false) = Participant.53b76f8a-9bb5-479b-ac3d-4571163c7a9f, state = RECORD\_STATE\_UP\_TO\_DATE, saveSyncId = null], tw\_authors=[groupId(false) = UserGroup.4, groupName(false) = tw\_authors, displayName(false) = tw\_authors,

- \_\_ d. Click **Close** to close the window.



- \_\_ e. Click **Reset** for **E@GroupInfoCache**. The group information cache is reset. You can click **Show** again to verify that the cache is cleared.

## IBM BPM Admin > Manage Caches

| Name             | Description                                                   | CA      | UCA | UCP | Last A. | Status | Actions        |
|------------------|---------------------------------------------------------------|---------|-----|-----|---------|--------|----------------|
| E@GroupInfoCache | Stores UserGroup objects by GroupName and GroupId             | 7,702   | 0   | 0%  | 1:54 AM | ON     | (Show) (Reset) |
| E@UserInfoCache  | Stores UserInfo objects by UserName and UserId                | 558,161 | 18  | 0%  | 1:55 AM | ON     | (Show) (Reset) |
| GroupCache       | Caches group information and list of groups with information. | 0       | 0   | Inf | 7:00 PM | ON     | (Show) (Reset) |
| E@GroupMembers   | Stores group members (User IDs and Group IDs)                 | 66      | 4   | 0%  | 1:54 AM | ON     | (Show) (Reset) |



### Information

To control the frequency of cache refresh, use the `cache-refresh-interval` setting in the `IBM_BPM_home/process-server/config/system/00Static.xml` properties file.

## Part 8: Manage Process Instances with Process Inspector

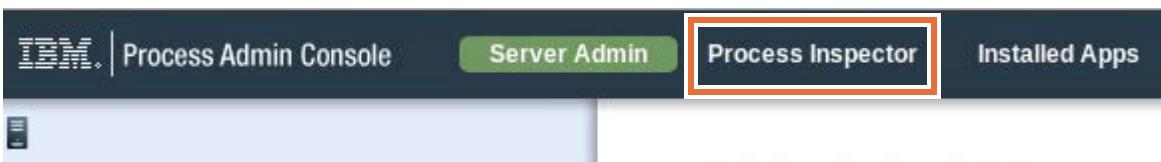


### Information

The Process Inspector feature can be started from inside the Process Admin Console. Process Inspector is a tool that can be used to view and manage process instances, running on a specific Process Server. You can use the Process Inspector to search for process instances on a Process Server by specifying different filtering criteria such as status, process application name, person, date range, or by searching for specific text.

- \_\_ 1. Use Process Inspector to manage the process instances.

- \_\_ a. Click the **Process Inspector** tab.



- \_\_\_ b. The Process Inspector opens in a separate tab in the same browser window. You can filter the process instances based on the process status, the severity type, and the process application name. You can also filter by entering the last modified date and the user name.

The screenshot shows the 'IBM. | Process Admin Console' interface. At the top, there's a search bar with a magnifying glass icon and a 'Search' button. Below it, a section titled 'Filter process instances by' contains several filtering options:

- Status:** Active, Completed, Failed, Suspended, Terminated.
- Severity type:** Overdue, At risk.
- Process applications:** Person (with a 'Name or user name' input field).
- Last modified date:** From/To date/time inputs with calendar icons.

A large blue 'Search' button is located at the bottom left of the filter area. To the right, the main content area has a heading 'Welcome to the Process Ins...' and a descriptive paragraph followed by a 'Learn More...' link.

**Welcome to the Process Ins...**

Use the Process Inspector to view the task, activity, and data for process instances.

Start by filtering the search so that it shows only the process instances you're interested in, and then click **Search**. In the results area, select one or more instances. You can narrow the results by applying more filters and then click **Refresh**.

If you select one process instance, you can see the details for that instance. The tasks and activities areas show the actions that you can perform. If you select multiple process instances, you can see the common details for those selected instances. The tasks and activities areas show the actions that you can perform on all of the selected process instances.

[Learn More...](#)

- \_\_\_ c. Under the **Filter process instances by** options on the left side of the window, expand **Process applications** and select **Claims Project (CP812)**. Click **Search**.

The screenshot shows the 'Process Admin Console' interface. At the top, there's a header bar with the IBM logo and the title 'Process Admin Console'. Below it is a search bar with a placeholder 'Search' and a magnifying glass icon. On the left, there's a sidebar titled 'Filter process instances by' with several filter options: 'Status' (plus sign icon), 'Severity type' (plus sign icon), 'Process applications' (minus sign icon), 'Claims Project (CP812)' (checkbox checked, highlighted with a red box), 'Verification Project (VP821)' (checkbox unselected), 'Mortgage Application Process (MAP)' (checkbox unselected), 'Hiring Sample (HSS)' (checkbox unselected), 'Saved Search Admin (SSA)' (checkbox unselected), and 'Process Portal (TWP)' (checkbox unselected). Below the sidebar are sections for 'Person' (with a 'Name or user name' input field) and 'Last modified date' (with 'From' and 'To' fields each containing a 'Date' and 'Time' input and a calendar icon). At the bottom of the sidebar is a large blue 'Search' button, also highlighted with a red box.

**Welcome to the Process Ins**

Use the Process Inspector to view the task, activity, and data for process instances.

Start by filtering the search so that it shows only the processes you're interested in, and then click **Search**. In the results area, select one or more instances. You can narrow the results by applying more filters or click **Refresh**.

If you select one process instance, you can see the details for that instance, and the tasks and activities areas show the actions that you can perform. You can also see the data for that instance.

If you select multiple process instances, you can see the common details for the selected instances. The tasks and activities areas show the actions that you can perform on all of the selected process instances.

[Learn More...](#)

- \_\_\_ d. All of the process instances for the Claims Process process app are displayed. Click the first **Claims Process** instance.

Select shown instances | Select all instances | Clear selection

► **Claims Process:155** **Claims Process**

Last modified Nov 16, 2015 Due Nov 30, 2015

► **Claims Process:154** **Claims Process**

Last modified Nov 16, 2015 Due Nov 30, 2015

► **Claims Process:153** **Claims Process**

Last modified Nov 16, 2015 Due Nov 30, 2015



### Note

The process instance ID is different in your environment.

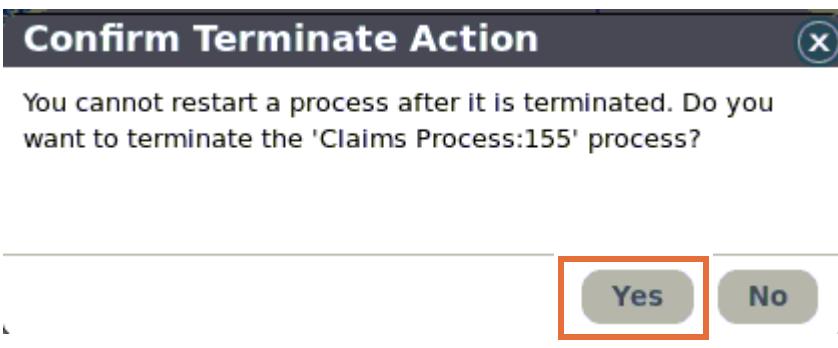
- \_\_\_ e. The information about this process instance is displayed. Note the set of actions that you can perform on this process instance. Click **Terminate** to terminate this process instance.

The screenshot shows a process instance details page. At the top, there's a circular icon with a blue arrow pointing left and a white arrow pointing right, followed by the text "Claims Process:155". Below it is a tree view with three nodes: "Claims Process" (with a blue plus sign), "Claims Project" (with a blue plus sign), and "Tip" (with a green plus sign). The main content area displays the following information:

- Instance ID: 155
- Status: Active
- Start time: Nov 16, 2015 8:04 AM (43 minutes ago)
- Last action: Nov 16, 2015 8:04 AM (43 minutes ago)
- Due date: Nov 30, 2015 8:04 AM (14 days from now)

Under the "Actions" section, there are several options: Refresh, Edit data, Modify due date, Suspend, and Terminate. The "Terminate" button is highlighted with a red rectangle. Below the actions, there's a "Tasks" section showing one task: "File Claim". A note states: "The task is assigned to All Users. It is due 17 minutes from now." At the bottom, there's a "Data" section with a plus sign icon.

- \_\_\_ f. Click **Yes** for the Confirm Terminate Action window.



- \_\_\_ g. The Claims Process process instance is terminated.

The screenshot shows the IBM BPM Process Portal interface. At the top, there's a navigation bar with a logo and the text "Claims Process:155". Below it is a tree view with nodes: "Claims Process", "Claims Project", and "Tip". A "Tip" icon is highlighted with a red box. The main content area displays the following details for instance ID 155:

Instance ID: 155  
Status: Terminated  
Start time: Nov 16, 2015 8:04 AM (2 hours ago)  
Last action: Nov 16, 2015 9:38 AM (less than a minute ago)  
Due date: Nov 30, 2015 8:04 AM (14 days from now)

Below these details are several sections with expandable/collapsible icons:

- Actions**: Contains "Refresh" and "Delete" buttons.
- Tasks (1)**: Sub-options include "Active", "Completed", and "All". Under "All", there's a "File Claim" button, which is described as being assigned to All Users and due 33 minutes ago.
- Data**: This section is currently collapsed.

- \_\_\_ h. Click **Logout**.

The screenshot shows the Process Portal after logging in. The top navigation bar displays the message "Logged in as bpmadmin (bpmadmin)". To the right of this message is a "Logout" button, which is highlighted with a red box. Below the navigation bar is the same tree view and instance details as in the previous screenshot, with the "Tip" node still highlighted.

- \_\_\_ i. Log out of the Process Portal.

The screenshot shows the Process Portal with the user profile dropdown menu open. The menu has two items: "User Profile" and "Logout", with the "Logout" button highlighted by a red box. The rest of the interface is visible in the background.

## Part 9: Configure the Business Process Definition queue size and worker thread pool

You can set the BPD Queue Size and Worker Thread Pool parameters to larger values than their defaults. Higher settings can be useful when your system is running at high throughput rates. These values are defined in the `80EventManager.xml` file in the configuration directory for the Process Server or Process Center. The default values are 20 for the Business Process Definition queue size, and 40 for the worker thread pool.

- \_\_\_ 1. Stop the Process Servers.
  - \_\_\_ a. Open a terminal window and enter `cd /opt/IBM/BPM/profiles/PCenterCustom/bin` to change the directory.
  - \_\_\_ b. Enter the following command to stop the node:  
`./stopNode.sh`  
Wait for approximately 2 minutes for the message that indicates that the node agent is stopped.
  - \_\_\_ c. In the terminal window, enter `cd /opt/IBM/BPM/profiles/PCenterDmgr/bin` to change the directory.
  - \_\_\_ d. Enter the following command to stop the deployment manager:  
`./stopManager.sh`  
Wait for approximately 2 minutes for the message that indicates that the deployment manager is stopped.
- \_\_\_ 2. Create the backup of the `100Custom.xml` file.
  - \_\_\_ a. In the terminal window, enter `cd /opt/IBM/BPM/profiles/PCenterDmgr/config/cells/PCenterCell/nodes/PCenterNode01/servers/PCenter_DE.AppCluster.member1/process-center/config` to change the directory.
  - \_\_\_ b. List the contents of the folder by entering the `ls` command.
  - \_\_\_ c. Create the backup of the `100Custom.xml` file by entering the following command:  
`cp 100Custom.xml 100Custom.bak`
- \_\_\_ 3. Edit the `100Custom.xml` file.
  - \_\_\_ a. Open the `100Custom.xml` file by entering the following command:  
`gedit 100Custom.xml`

- \_\_\_ b. In the 100Custom.xml file that is open, scroll to the bottom, place your cursor immediately before the </properties> tag, and press **Enter** twice.

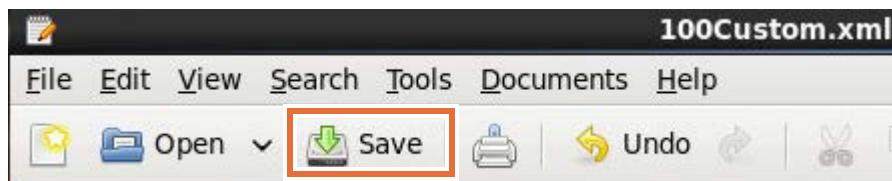
```
certificate>
 Also contains server1 cert
</webservice-security>
</server>
-->
</properties>
```

- \_\_\_ c. In the 100Custom.xml file, enter the following tags and press **Enter**:

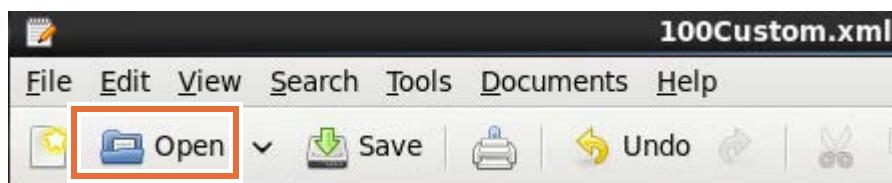
```
<event-manager merge="mergeChildren">
 <scheduler merge="mergeChildren">
 </scheduler>
 </event-manager>
```

```
</server>
-->
<event-manager merge="mergeChildren">
 <scheduler merge="mergeChildren">
 </scheduler>
 </event-manager>
</properties>
```

- \_\_\_ d. Click the **Save** icon on the top to save the file and leave the file open for use in next steps.

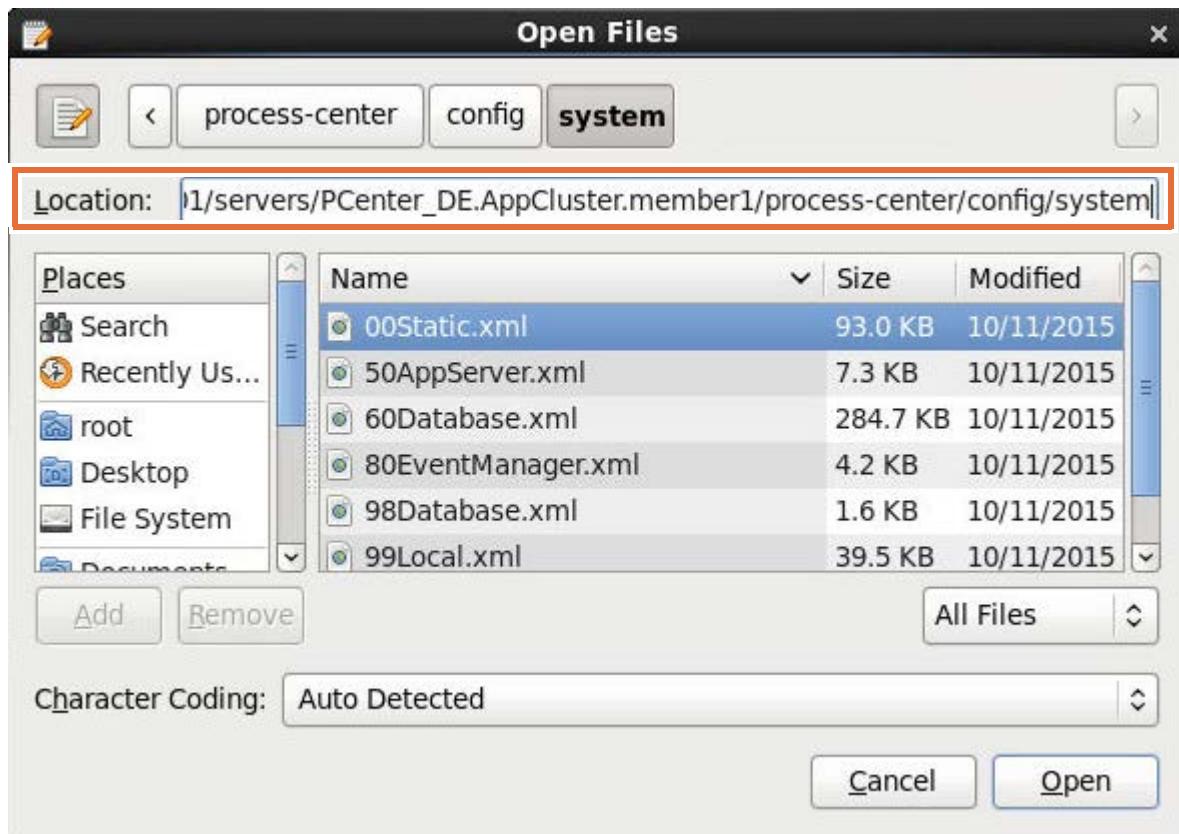


- \_\_\_ e. Click **Open** in the toolbar.

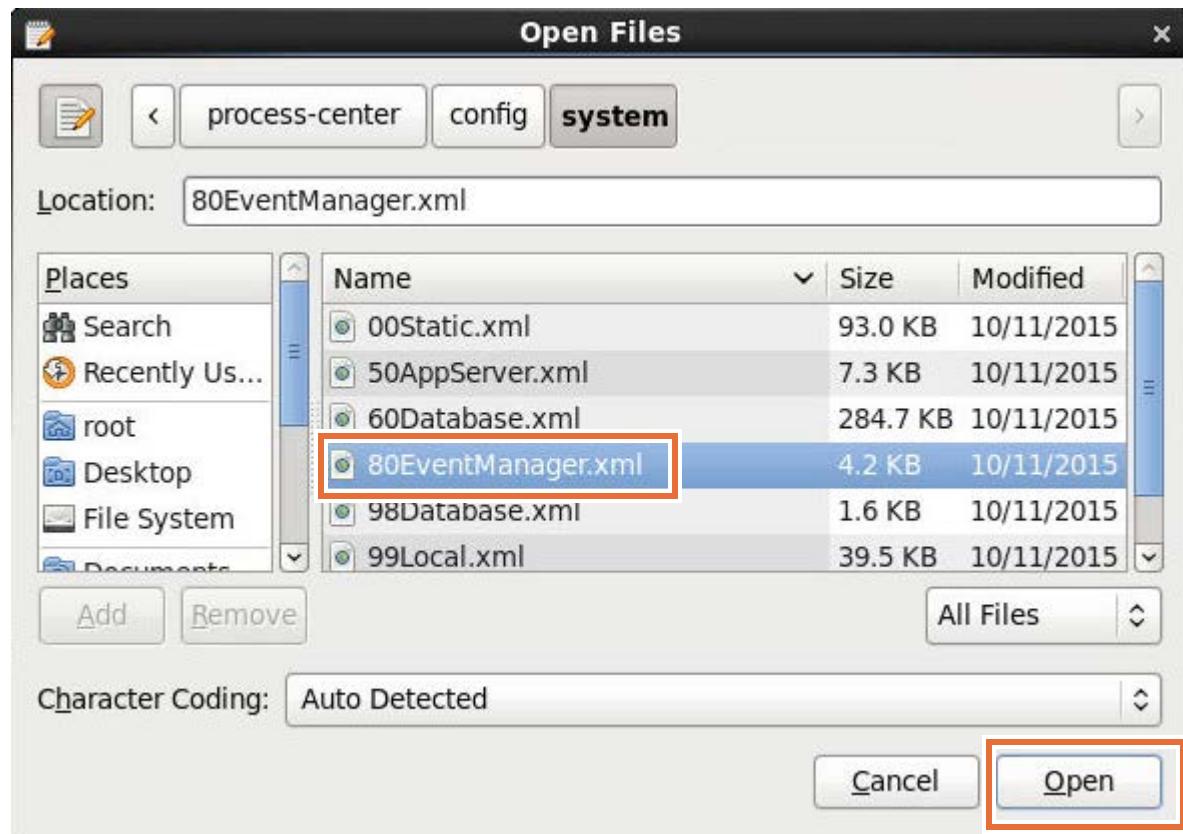


- \_\_ f. In the Location field, enter

/opt/IBM/BPM/profiles/PCenterDmgr/config/cells/PCenterCell/nodes/PCenterNode01/servers/PCenter\_DE.AppCluster.member1/process-center/config/system  
to change the directory.



- g. Select the 80EventManager.xml file and click **Open**.



- \_\_ h. Copy the following section from the 80EventManager.xml file.

```
<!-- Number of simultaneous tasks that can execute on the system queue -->
<system-queue-capacity>10</system-queue-capacity>
```

```
<!-- Number of simultaneous tasks that can execute on the async queue -->
<async-queue-capacity>10</async-queue-capacity>

<!-- Number of simultaneous tasks that can execute on the BPD queue -->
<bpd-queue-capacity>40</bpd-queue-capacity>

<!-- Number of simultaneous tasks that can execute on the system queue -->
<system-queue-capacity>10</system-queue-capacity>

<!-- Minimum number of threads for the engine's thread pool -->
<min-thread-pool-size>5</min-thread-pool-size>

<!-- Maximum number of threads for the engine's thread pool -->
<max-thread-pool-size>70</max-thread-pool-size>
```

- \_\_ i. Paste the text that you copied from the previous step between the </scheduler> tags in the 100Custom.xml file.

```
<!-- Number of simultaneous tasks that can execute on the system queue -->
<system-queue-capacity>10</system-queue-capacity>
```

```
</server>
-->

<event-manager merge="mergeChildren">
 <scheduler merge="mergeChildren">
 <!-- Number of simultaneous tasks that can execute on the system queue -->
 <system-queue-capacity>10</system-queue-capacity>
 </scheduler>
</event-manager>
</properties>
```

- \_\_\_ j. Add the merge="replace" property to change the **system-queue-capacity** tag and change the value of the system-queue-capacity from 10 to 20. Confirm that the tag looks as follows:

```

<system-queue-capacity merge="replace">20</system-queue-capacity>

</server>
-->

<event-manager merge="mergeChildren">
 <scheduler merge="mergeChildren">
 <!-- Number of simultaneous tasks that can execute on the system queue -->
 <system-queue-capacity merge="replace">20</system-queue-capacity>
 </scheduler>
</event-manager>
</properties>

```

- \_\_\_ k. Click **Save** to save your changes.
- \_\_\_ l. Close both the `100Custom.xml` file and the `80EventManager.xml` file by clicking **File > Quit**.

\_\_\_ 4. Start the Process Servers.

- \_\_\_ a. In the terminal window, enter `cd /opt/IBM/BPM/profiles/PCenterDmgr/bin` to change the directory.

- \_\_\_ b. Enter the following command to stop the deployment manager:

```
./startManager.sh
```

Wait for approximately 2 minutes for the message that indicates that the deployment manager is started.

- \_\_\_ c. Open a terminal window, enter `cd /opt/IBM/BPM/profiles/PCenterCustom/bin` to change the directory.

- \_\_\_ d. Enter the following command to stop the node:

```
./startNode.sh
```

Wait for approximately 2 minutes for the message that indicates that the node agent is started.

\_\_\_ 5. Verify the Process Center `100Custom.xml` file changes in the running server.

- \_\_\_ a. The cluster must be restarted for the running `TeamWorksConfiguration.running.xml` file to be listed. Open a web browser and go to the following URL:

```
http://bpmsstdhost:9060/ibm/console
```

- \_\_\_ b. In the login area, enter `bpmsadmin` as the user ID and `websphere` as the password. Click **Login**.

- \_\_ c. Click **Servers > Clusters > WebSphere application server clusters**.



- \_\_ d. Select the check box for **PCenter\_DE\_AppCluster** and click **Stop**.

| Select                              | Name                                  | Status |
|-------------------------------------|---------------------------------------|--------|
| <input checked="" type="checkbox"/> | <a href="#">PCenter_DE.AppCluster</a> |        |

Wait for the cluster to completely stop. Refresh by clicking **Servers > Clusters > WebSphere application server clusters** to check the status change.

- \_\_ e. Start the cluster by selecting the check box for **PCenter\_DE.AppCluster** and click **Start**. Wait for approximately 2 minutes for the cluster to start. Refresh by clicking **Servers > Clusters > WebSphere application server clusters** to check the status change.
- \_\_ f. Return to the terminal and enter  
`cd /opt/IBM/BPM/profiles/PCenterCustom/config/cells/PCenterCell/nodes/PCenterNode01/servers/PCenter_DE.AppCluster.member1/process-center` to change the directory.
- \_\_ g. Verify that the `TeamWorksConfiguration.running.xml` file is listed.

**Hint**

If the TeamWorksConfiguration.running.xml file is not listed, then make sure that the cluster is restarted.

- \_\_ h. Enter gedit TeamWorksConfiguration.running.xml to open the file in the gedit editor and confirm that the system-queue-capacity for the running server is changed to 20.

```

<topic-name>jms/EventMgrControlTopic</topic-name>
<name>PCenterNode01_PCenter_DE.AppCluster.member1</name>
<start-paused>false</start-paused>
<heartbeat-period>30000</heartbeat-period>
<heartbeat-expiration>240000</heartbeat-expiration>
<loader-long-period>15000</loader-long-period>
<loader-short-period>2000</loader-short-period>
<loader-advance-window>15000</loader-advance-window>
<reaper-period>120000</reaper-period>
<sync-queue-capacity>10</sync-queue-capacity>
<async-queue-capacity>10</async-queue-capacity>
<hdq-queue-capacity>10</hdq-queue-capacity>
<system-queue-capacity>20</system-queue-capacity>
<max-thread-pool-size>70</max-thread-pool-size>
<use-was-work-manager>true</use-was-work-manager>
<was-work-manager>wm/BPMEventManagerWorkManager</was-work-manager>
<re-execute-limit>5</re-execute-limit>
<kick-on-schedule>true</kick-on-schedule>
</scheduler>
```

- \_\_ i. Close the file by clicking **File > Quit**.

**Note**

If you fail to confirm the changes that you made in the TeamWorksConfiguration.running.xml file even after restarting the clusters, it is possible that your 100Custom.xml file contains errors. Check your changes again in the 100Custom.xml file, and compare it with the 100Custom.xml file that has the correct changes and is in your /usr/labfiles/ex10 directory. You can use the following command to check the differences between two files:

```
diff -p
/opt/IBM/BPM/profiles/PCenterDmgr/config/cells/PCenterCell/nodes/PCenterNode01/servers/PCenter_DE.AppCluster.member1/process-center/config/100Custom.xml
/usr/labfiles/ex10/100Custom.xml
```

## **Part 10: Gather logs, heap dumps, and other resources for troubleshooting**

Sometimes you might have a performance problem with IBM Business Process Manager V8.5.6 Standard. Before you contact IBM Support, collect the required information to help diagnose your problem. If you gather this documentation before you contact support, it expedites the troubleshooting process.

### **Gather general diagnostic information**

All resources for support must contain a basic set of general diagnostic information. This information includes a description of your environment:

- Operating system and version
- Database vendor and version
- Information about other involved software
- Type of environment (production, test, QA, or another type)
- If you are running in a cluster, a description of the topology that you have in place
- The version of IBM Business Process Manager you are using

To obtain the version of IBM Business Process Manager, use the following commands:

- \_\_\_ 1. Open a terminal window and enter the following command:

```
cd /opt/IBM/BPM/bin
```

2. Type the following command:

```
./versionInfo.sh -fixpacks -ifixes
```

```
[root@bpmsstdhost bin]# ./versionInfo.sh -fixpacks -ifixes
WVER0010I: Copyright (c) IBM Corporation 2002, 2012; All rights reserved.
WVER0012I: VersionInfo reporter version 1.15.1.48, dated 2/8/12

IBM WebSphere Product Installation Status Report

Report at date and time November 5, 2015 7:35:43 AM EST

Installation

Product Directory /opt/IBM/BPM
Version Directory /opt/IBM/BPM/properties/version
DTD Directory /opt/IBM/BPM/properties/version/dtd
Log Directory /var/ibm/InstallationManager/logs

Product List

ND installed
BPMSTD installed
IBMJAVA7 installed
```



#### Hint

When you submit information to IBM Support, redirect the output of this command to a file by using the following command:

```
./versionInfo.sh -fixpack -ifixes > BPMVersionInfo.txt
```



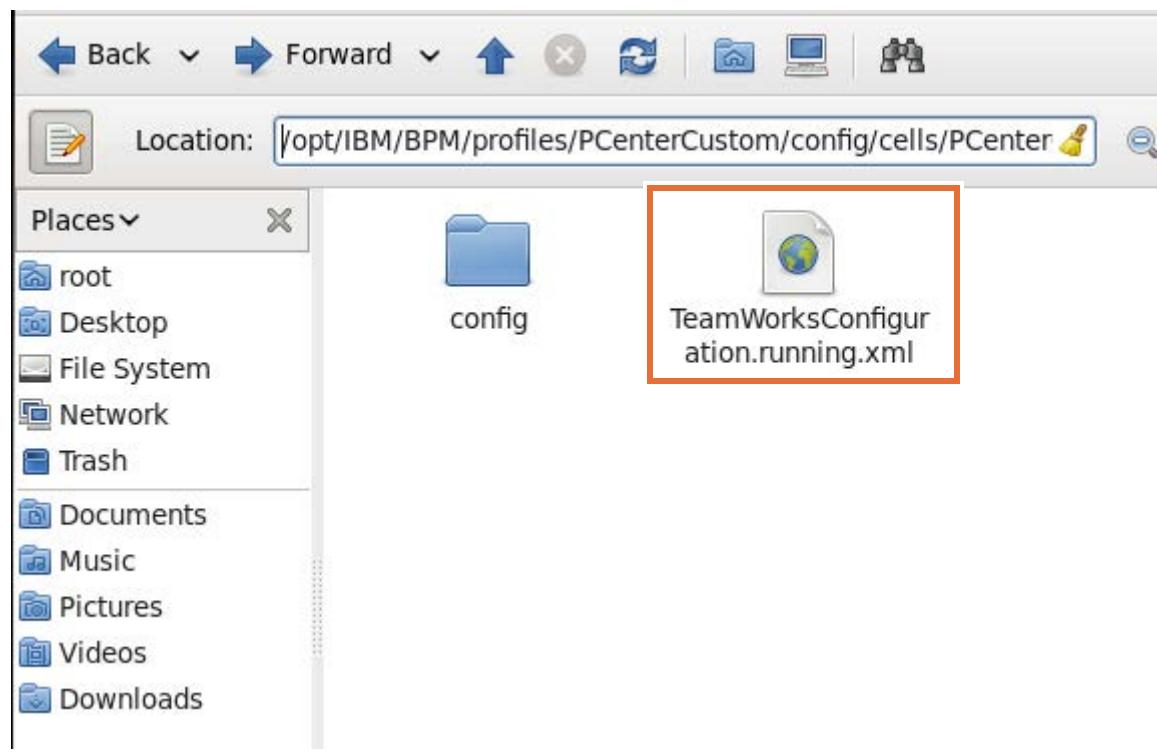
### Information

You must also include detailed information about the symptoms and nature of your problem, and all content of the following folders:

```
/opt/IBM/BPM/profiles/PCenterDmgr/logs/dmgr
/opt/IBM/BPM/profiles/PCenterCustom/logs/nodeagent
```

Provide the configuration files:

```
/opt/IBM/BPM/profiles/PCenterCustom/config/cells/PCenterCell/nodes/PCenterNo
de01/servers/PCenter_DE.AppCluster.member1/process-center/TeamWorksConfigura
tion.running.xml
```



### Important

This list is not a complete list of all of the files and information that are necessary to send to IBM Support. Always research problems thoroughly before you submit a case.

## Report performance problems

Collect the troubleshooting information for performance problems in IBM Business Process Manager. Gathering this information before you call IBM support helps in understanding the problem and saves time when they analyze the data.

- \_\_\_ 1. Enable SQL tracing.

- \_\_\_ a. Open the Integrated Solutions Console in a browser window.

`https://bpmsstdhost:9043/ibm/console`

- \_\_\_ b. Log in as the administrative user:

- **User name:** bpadmin
- **Password:** web1sphere

- \_\_\_ c. Click **Troubleshooting > Logs and trace**.



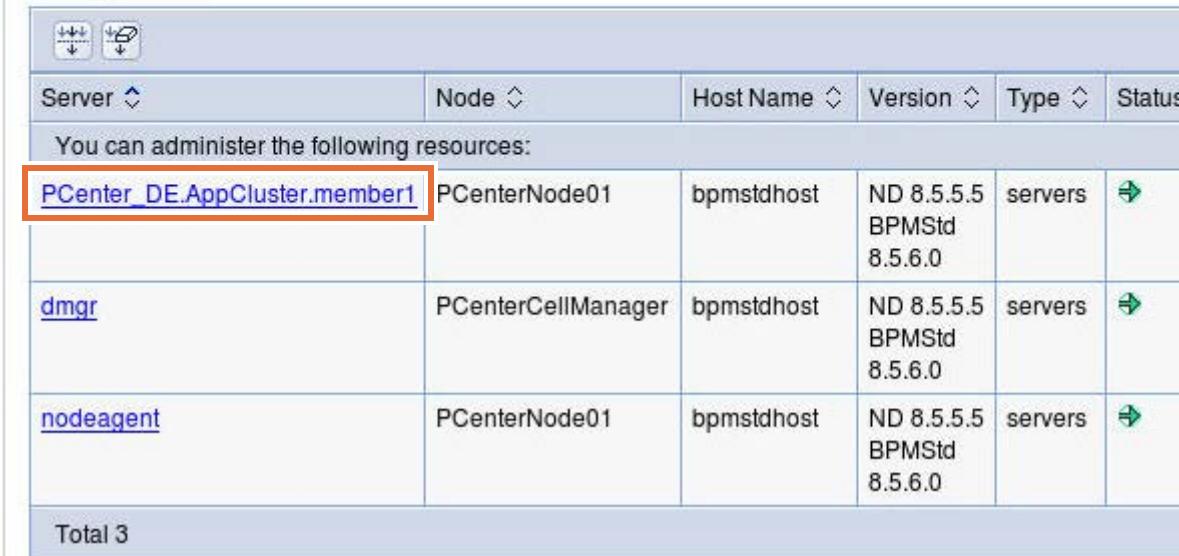
- \_\_ d. Click **PCenter\_DE.AppCluster.member1**.

### Logging and tracing

#### Logging and tracing

Use this page to specify how the server handles log records. You can select an application server to enable or disable a system log for that server, specify where log data is stored, and choose a format for log content. You can also specify a log detail level for components and groups of components.

##### ⊕ Preferences



| Server                                        | Node               | Host Name  | Version                         | Type    | Status |
|-----------------------------------------------|--------------------|------------|---------------------------------|---------|--------|
| You can administer the following resources:   |                    |            |                                 |         |        |
| <a href="#">PCenter_DE.AppCluster.member1</a> | PCenterNode01      | bpmstdhost | ND 8.5.5.5<br>BPMStd<br>8.5.6.0 | servers |        |
| <a href="#">dmgr</a>                          | PCenterCellManager | bpmstdhost | ND 8.5.5.5<br>BPMStd<br>8.5.6.0 | servers |        |
| <a href="#">nodeagent</a>                     | PCenterNode01      | bpmstdhost | ND 8.5.5.5<br>BPMStd<br>8.5.6.0 | servers |        |
| Total 3                                       |                    |            |                                 |         |        |

- \_\_ e. Click **Change log detail levels**.

### Logging and tracing

#### Logging and tracing > [PCenter\\_DE.AppCluster.member1](#)

It is recommended that you switch to High Performance Extensible Logging (HPEL) if your existing procedures that prevent you from taking advantage of it.

##### [Switch to HPEL Mode](#)

ir

Use this page to select a system log to configure, or to specify a log detail level for components and groups of components. Use log levels to control which events are processed by Java logging.

#### General Properties

- [Diagnostic Trace](#)
- [JVM Logs](#)
- [Process Logs](#)
- [IBM Service Logs](#)
- [Change log detail levels](#)
- [NCSA access and HTTP error logging](#)

- \_\_\_ f. In the log detail levels editor, type: \*=info:WAS.clientinfopluslogging=all

The screenshot shows the 'Runtime' tab selected in the top navigation bar. Below it, the 'General Properties' section is visible. Under 'Change log detail levels', there is a text input field containing the value `*=info: WAS.clientinfopluslogging=all`, which is highlighted with a red rectangular box.

- \_\_\_ g. Scroll to the bottom, and click **Apply**.

The screenshot shows the 'Components and Groups' section expanded. At the bottom of the page, there is a large blue rectangular button labeled 'Components and Groups'. A red rectangular box highlights this button.

### Correlation

Enable log and trace correlation so entries that are serviced by more than one thread, process, or server will be identified as belonging to the same unit of work.

- Enable log and trace correlation
  - Include request IDs in log and trace records
  - Include request IDs in log and trace records and create correlation log records
  - Include request IDs in log and trace records, create correlation log records, and capture data snapshots

The screenshot shows the 'Apply' button in the bottom left corner of the dialog, highlighted with a red rectangular box.

\_\_ h. Click **Save**.

Messages

**Note:** your specified trace string was optimized

**Changes have been made to your local configuration. You can:**

- [Save](#) directly to the master configuration.
- [Review](#) changes before saving or discarding.

An option to synchronize the configuration across multiple nodes can be disabled in [Preferences](#).

**The server may need to be restarted for these changes to take effect.**

\_\_ i. Click **OK** when you see the configuration synchronization complete message.

## Logging and tracing

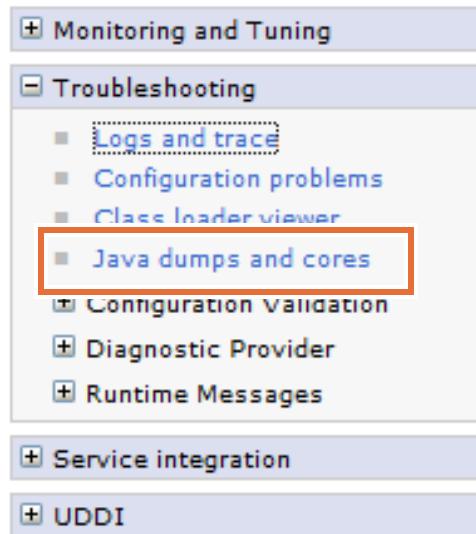
[Logging and tracing](#) > [PCenter DE.AppCluster.member1](#) > [Change log detail levels](#) > [Synchronize changes](#)

The current status of the Nodes being synchronized.

- i**- ADMS0200I: The configuration synchronization started for cell.
- i**- ADMS0202I: Automatic synchronization mode is disabled for node: PCenterNode01.
- i**- ADMS0201I: The configuration synchronization started for node: PCenterNode01.
- i**- ADMS0205I: The configuration synchronization completed successfully for node: PCenterNode01
- i**- ADMS0203I: The automatic synchronization mode is enabled for node: PCenterNode01.
- i**- ADMS0208I: The configuration synchronization complete for cell.

**OK**

2. Collect Java virtual memory (JVM) thread dumps and cores from the main application server every 30 seconds.
- a. Click **Troubleshooting > Java dumps and cores**.



- b. Select the **PCenter\_DE.AppCluster.member1** check box.
- c. Click **Heap dump**.

**Java dumps and cores**

Use this panel to generate heap dumps, Java cores or system dumps for a running process. The files resulting from local file system.

**Preferences**

**Heap dump** (highlighted with a red box)   **Java core**   **System dump**

| Select                              | Server                        | Node               | Host Name  | Version      |
|-------------------------------------|-------------------------------|--------------------|------------|--------------|
| <input checked="" type="checkbox"/> | PCenter_DE.AppCluster.member1 | PCenterNode01      | bpmstdhost | ND 8.5 BPMSt |
| <input type="checkbox"/>            | dmgr                          | PCenterCellManager | bpmstdhost | ND 8.5 BPMSt |
| <input type="checkbox"/>            | nodeagent                     | PCenterNode01      | bpmstdhost | ND 8.5 BPMSt |

Total 3

- \_\_\_ d. It takes approximately 2 minutes for the utility to create the heap dump and save it to the server.

Messages

1 Heap dump request was sent successfully to server PCenter\_DE.AppCluster.member1.  
1 The output file for the operation is /opt/IBM/BPM/profiles/PCenterCustom  
./hepdump.20151105.080158.20452.0001.phd.

- \_\_\_ e. Select **PCenter\_DE.AppCluster.member1** and click **Java core** to obtain a log of the Java threads.

#### Java dumps and cores

Use this panel to generate heap dumps, Java cores or system dumps for a running process. The files resulting from local file system.

Preferences

Heap dump **Java core** System dump

| Select                                      | Server ◊                      | Node ◊             | Host Name ◊ | Version         |
|---------------------------------------------|-------------------------------|--------------------|-------------|-----------------|
| You can administer the following resources: |                               |                    |             |                 |
| <input checked="" type="checkbox"/>         | PCenter_DE.AppCluster.member1 | PCenterNode01      | bpmstdhost  | ND 8.5<br>BPMSt |
| <input type="checkbox"/>                    | dmgr                          | PCenterCellManager | bpmstdhost  | ND 8.5<br>BPMSt |
| <input type="checkbox"/>                    | nodeagent                     | PCenterNode01      | bpmstdhost  | ND 8.5<br>BPMSt |
| Total 3                                     |                               |                    |             |                 |

- \_\_\_ f. You get the message that the Java core request was sent successfully.

Messages

1 Java core request was sent successfully to server PCenter\_DE.AppCluster.member1.

- \_\_\_ 3. Locate the core dump logs on the server.

- \_\_\_ a. Enter `cd /opt/IBM/BPM/profiles/PCenterCustom` in the terminal window to change the directory.

- \_\_\_ b. Verify the presence of core dump logs by entering the `ls` command.

```
[root@bpmsstdhost system]# cd /opt/IBM/BPM/profiles/PCenterCustom
[root@bpmsstdhost PCenterCustom]# ls
bin hepdump.20151117.091157.5543.0001.phd servers
BusinessSpace installedApps
BusinessSpace.system installedApps
config installedConnectors
configuration installedFilters
etc javacore.20151117.091242.5543.0002.txt
expandedBundles logs
FileNet properties
firststeps searchIndex
[root@bpmsstdhost PCenterCustom]#
```



### Information

You are not able to view the contents of the heap dump without a viewing utility, such as the IBM Support Assistant. IBM Support Assistant is available as a free download from the IBM Support portal:

<http://www.ibm.com/software/support/isa/>

You can view the contents of the Java thread core log, but the contents might be large. Use `grep` commands to effectively filter the contents.

**End of exercise**

## Exercise review and wrap-up

In this exercise, you gathered performance metrics for troubleshooting and support. You worked with the instrumentation file and cleaned up the deleted tasks in the IBM Business Process Manager Process Admin console.

# Exercise 11. Implementing IBM Business Process Manager security

## What this exercise is about

This exercise covers aspects of implementing IBM Business Process Manager security in an IBM Business Process Manager V8.5.6 Standard environment.

## What you should be able to do

After completing this exercise, you should be able to:

- Federate a repository with LDAP
- Access the deployment manager administrative console by using an LDAP user and group
- Synchronize LDAP users
- Access LDAP users in Process Admin Console

## Introduction

In IBM Business Process Manager, a user registry authenticates a user and retrieves information about users and groups to complete security-related functions, including authentication and authorization.

A user registry or a repository, such as a federated repository, authenticates a user and retrieves information about users and groups to complete security-related functions, which include authentication and authorization. In IBM Business Process Manager, you can use all registries that are available for WebSphere Application Server because IBM Business Process Manager relies on the WebSphere security mechanism to authenticate users and authorize access.

IBM Business Process Manager provides implementations that support multiple types of registries and repositories. To use an external security provider, you must add the provider to the federated repository. Several types of repositories are supported, including the local operating system registry, a stand-alone Lightweight Directory Access Protocol (LDAP) registry, a stand-alone custom registry, and federated repositories.

In this exercise, you configure IBM Tivoli Directory Server as the LDAP user repository.

## Requirements

To complete this exercise, you must have:

- IBM Business Process Manager Standard installed
- The Process Server profiles created
- The Process Server deployment environment created

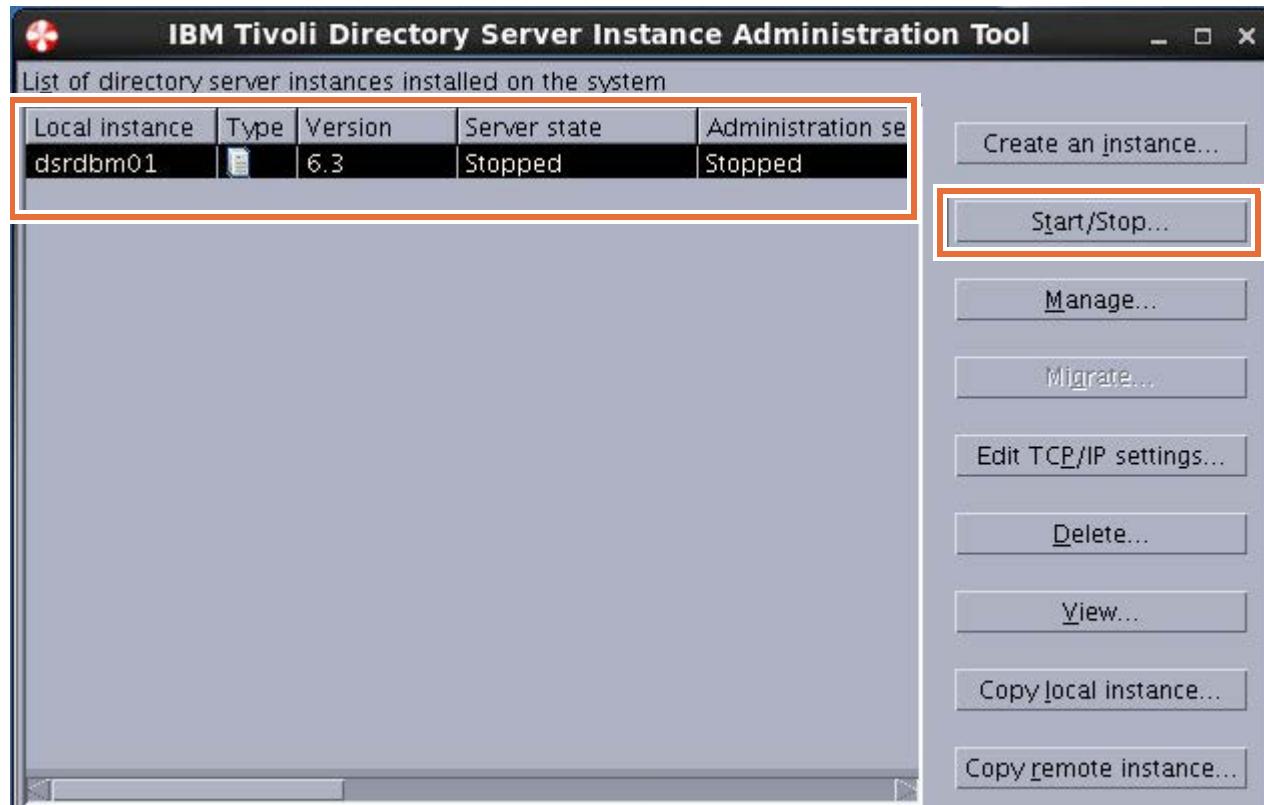
## Exercise instructions

IBM Tivoli Directory Server is the IBM implementation of the Lightweight Directory Access Protocol (LDAP). IBM Tivoli Directory Server V6.3 is already installed in your lab environment. IBM Tivoli Directory Server implements the Internet Engineering Task Force (IETF) LDAP V3 specifications. It also includes enhancements added by IBM in functional and performance areas. This version uses IBM DB2 as the backing store to provide LDAP operation transaction integrity, high performance operations, and online backup and restore capability.

### **Part 1: Start IBM Tivoli Directory Server**

- 1. Start the LDAP server.
  - a. In a terminal window, enter `cd /opt/IBM/ldap/V6.3/sbin` to change the directory.
  - b. Enter the following command to start IBM Tivoli Directory Server Instance Administration Tool:
 

```
./idsxinst
```
  - c. When the Administration Tool window opens, you can see the current state of the server. The server and the Administration server are stopped. To start the servers, click **Start/Stop**.

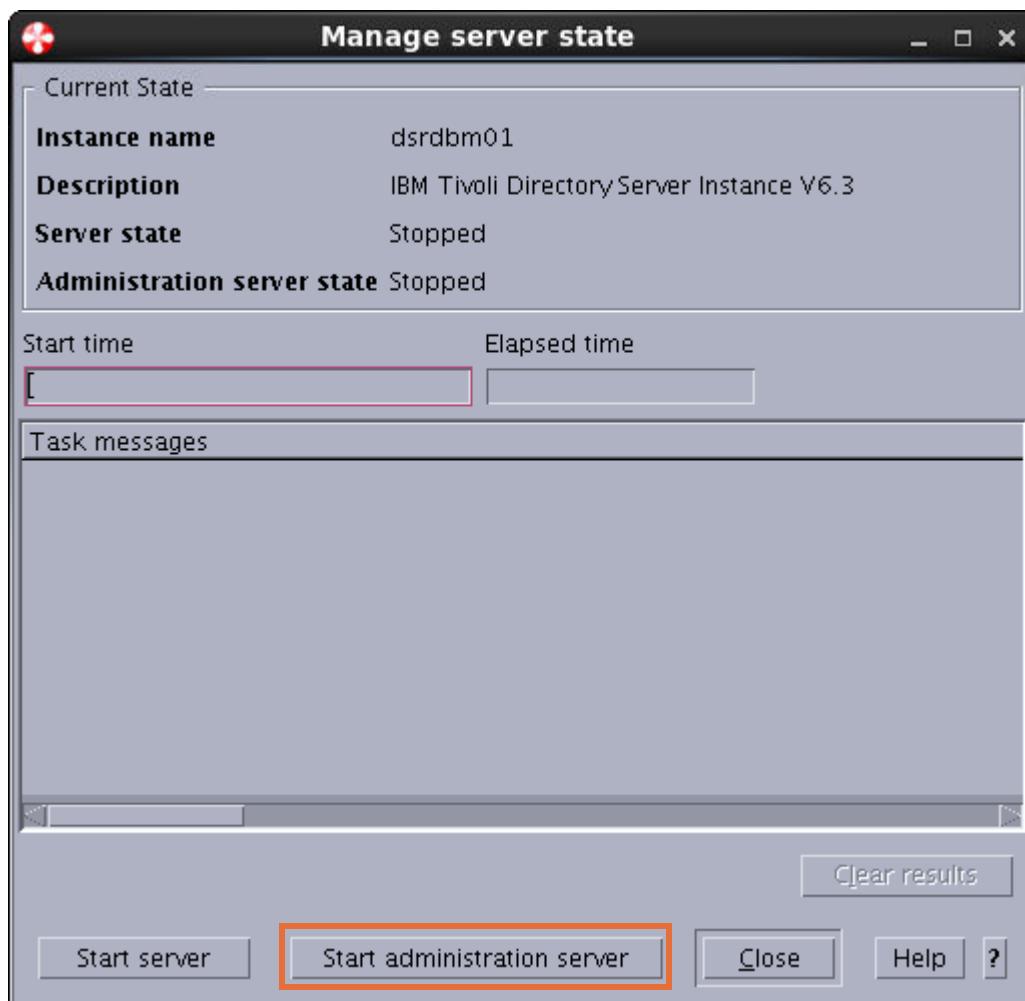




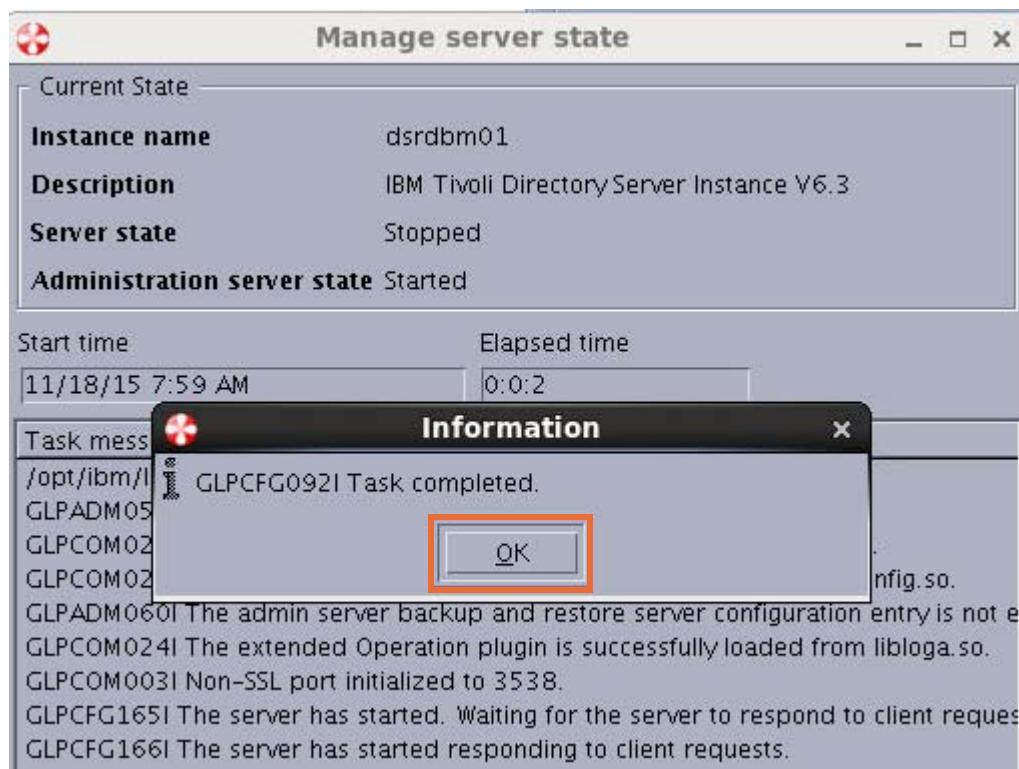
## Information

The Instance Administration Tool (idsxinst) is a graphical user interface that you can use to create and manage directory server instances. You can use the Instance Administration Tool to create, view, copy, change information about, and delete instances. You can also use this tool to create or edit the users who own directory server instances and to move instances from some previous versions of IBM Tivoli Directory Server. You can use the Instance Administration Tool to start or stop the server or the administration server for your instances. In addition, you can start the Configuration Tool from the Instance Administration Tool.

- \_\_ d. For the “Manage server state” dialog box, click **Start administration server** to start the LDAP administration server.



- \_\_\_ e. Click **OK**, when a dialog is displayed with a task completed message. The administration server is now started.

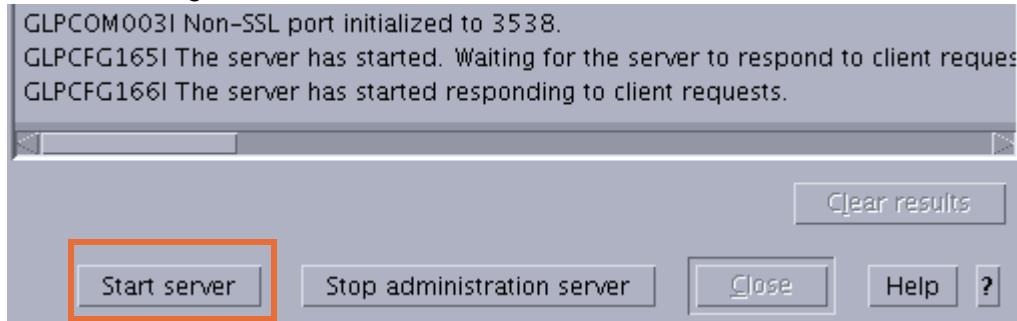


### Information

You can also start the server by using the following command:

```
/opt/IBM/ldap/V6.3/sbin/ibmdiradm -I dsrdbm01 -t
```

- \_\_\_ f. In the “Manage server state” window, click **Start server** to start the LDAP server.



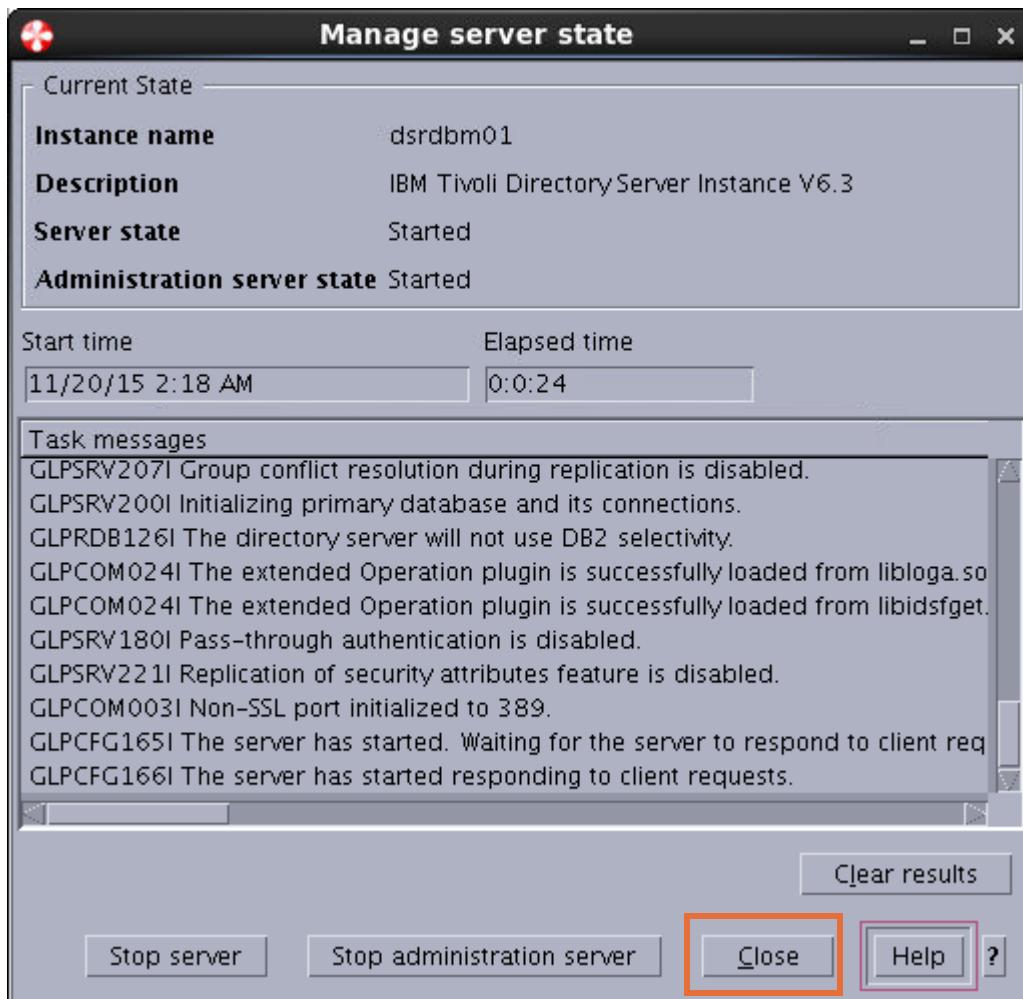
- \_\_\_ g. Click **OK**, when a dialog is displayed with a task completed message. The Server is now started.

**Information**

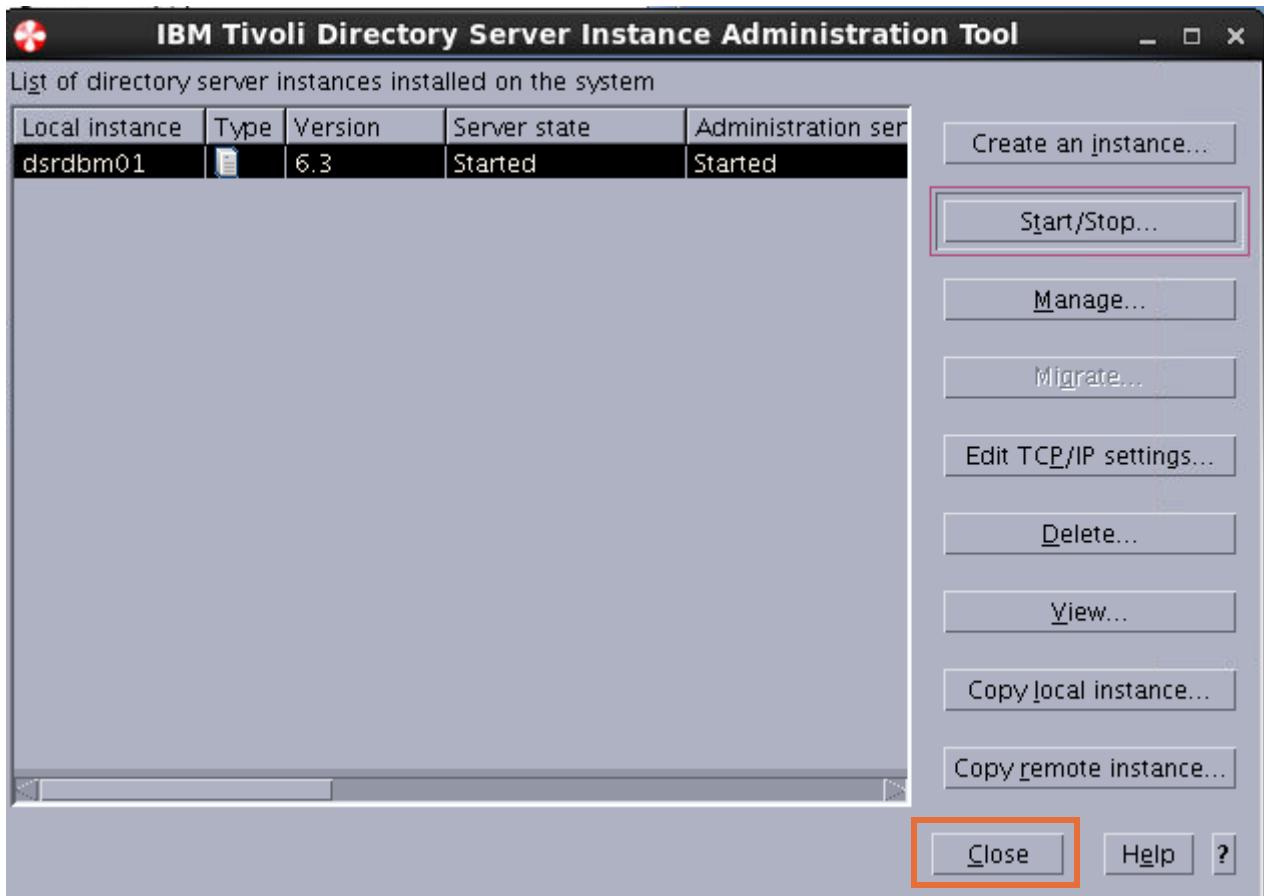
You can also start the server by using the following command:

```
/opt/IBM/ldap/V6.3/sbin/ibmslapd -I dsrdbm01 -t -n
```

- h. Click **Close** to close the “Manage server state” window.



- \_\_ i. Click **Close** to close the IBM Tivoli Directory Server Instance Administration Tool.



- \_\_ j. Click **Yes** to confirm the closing of the tool.



## **Part 2: Configure a federated repository with LDAP**

In this part of the exercise, you configure the federated repository and then configure the deployment manager to use the LDAP user IDs as a console user.

In federated repositories, you can connect any mixture of heterogeneous repositories, including flat file and LDAP servers, or multiple LDAP servers. Now that you started the LDAP registry, you can use LDAP as a federated user repository for the Process Server cell.

- \_\_ 1. Start the administrative console for the deployment manager.
  - \_\_ a. Open a web browser and go to the following URL:  
`http://bpmsstdhost:9062/ibm/console`
  - \_\_ b. In the login area, enter `bpmsadmin` as the user ID and `web1sphere` as the password. Click **Login**.

\_\_ 2. Add the LDAP server to the federated repository.

\_\_ a. Select **Security > Global security**.



- \_\_\_ b. Under User account repository, note the defaultWIMFileBasedRealm realm, which is a flat file repository. The file-based repository is the default repository that is created (o=defaultWIMFileBasedRealm). Click **Configure**.

Cell=bpmhostPSCell, Profile=PServerDmgr

## Global security

Use this panel to configure administration and the default application security policy. This is administrative functions and is used as a default security policy for user applications. Secure security policies for user applications.

[Security Configuration Wizard](#) [Security Configuration Report](#)

### Administrative security

Enable administrative security [Administrative user roles](#) [Administrative group roles](#) [Administrative authentication](#)

### Application security

Enable application security

### Java 2 security

Use Java 2 security to restrict application access to local resources  Warn if applications are granted custom permissions  Restrict access to resource authentication data

### User account repository

|                             |                                                                                                                  |
|-----------------------------|------------------------------------------------------------------------------------------------------------------|
| Realm name                  | defaultWIMFileBasedRealm                                                                                         |
| Current realm definition    | Federated repositories                                                                                           |
| Available realm definitions | Federated repositories <input type="button" value="Configure..."/> <input type="button" value="Set as current"/> |

- \_\_ c. Scroll to the bottom. Under Related Items, click **Manage repositories**.

Additional Properties

Related Items

- [Property extension repository](#)
- [Entry mapping repository](#)
- [Supported entity types](#)
- [User repository attribute mapping](#)
- [Custom properties](#)

■ [Manage repositories](#)

■ [Trusted authentication realms - inbound](#)

- \_\_ d. Click **Add > LDAP repository** to add a repository.

Cell\bpn\hostPSCell, Profile=PServerDmgr

Global security

Global security > Federated repositories > Manage repositories

Repositories that are configured in the system are listed in the following table. You can add or

[ Preferences ]

| Add ▾             | Delete |
|-------------------|--------|
| LDAP repository   |        |
| Custom repository |        |
| File repository   |        |

Select repository identifier Repository Type

You can administer the following resources:

|                                         |      |
|-----------------------------------------|------|
| <a href="#">InternalFile Repository</a> | File |
|-----------------------------------------|------|

Total 1

\_\_ e. In the General Properties pane, enter the following information:

- Repository identifier: `ldap`
- Directory Type: IBM Tivoli Directory Server
- Primary host name: `bpmstdhost`
- Bind distinguished name: `cn=ldapadmin,o=ibm,c=us`
- Bind password: `websphere`

[Global security](#) > [Federated repositories](#) > [Manage repositories](#) > [New...](#)

Specifies the configuration for secure access to a Lightweight Directory Access Protocol (LDAP) repository with optional failover support.

#### General Properties

Repository identifier

`ldap`

Repository adapter class name

`com.ibm.ws.wim.adapter.ldap.LdapAdapter`

#### LDAP server

\* Directory type

`IBM Tivoli Directory Server`

\* Primary host name

`bpmstdhost`

Port

`389`

Failover server used when primary is not available:

[Delete](#)

[Select](#)

Failover Host Name

Port

`None`

[Add](#)

#### Security

Bind distinguished name

`cn=ldapadmin,o=ibm,c=us`

Bind password

`*****`

Federated repository property mapping

`uid`

LDAP attribute for Kerberos principal

`cn`

Certificate mapping

`EXACT_DN`

Certificate filter

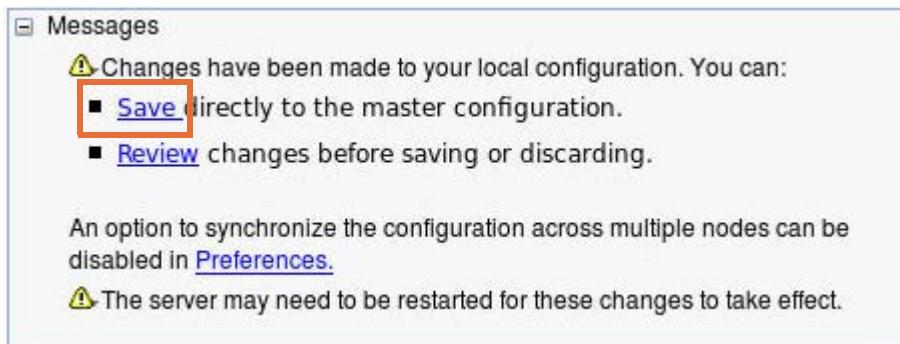
\_\_ f. Leave the remaining default values and click **OK**.

#### Additional Properties

- Performance
- Federated repositories entity types to LDAP object classes mapping
- Federated repositories property names to LDAP attributes mapping
- Group attribute definition

[Apply](#) **OK** [Reset](#) [Cancel](#)

- \_\_ g. Save the changes.



- \_\_ h. Click **Federated repositories** in the breadcrumb trail.

| Select                   | Repository Identifier                  | Repository Type |
|--------------------------|----------------------------------------|-----------------|
|                          | <a href="#">InternalFileRepository</a> | File            |
| <input type="checkbox"/> | <a href="#">ldap</a>                   | LDAP:IDS        |

- \_\_ i. Now that the LDAP definition exists, it must be added as a part of the Federated repositories. In the Repositories in the realm section, click **Add repositories (LDAP, custom, etc)**.

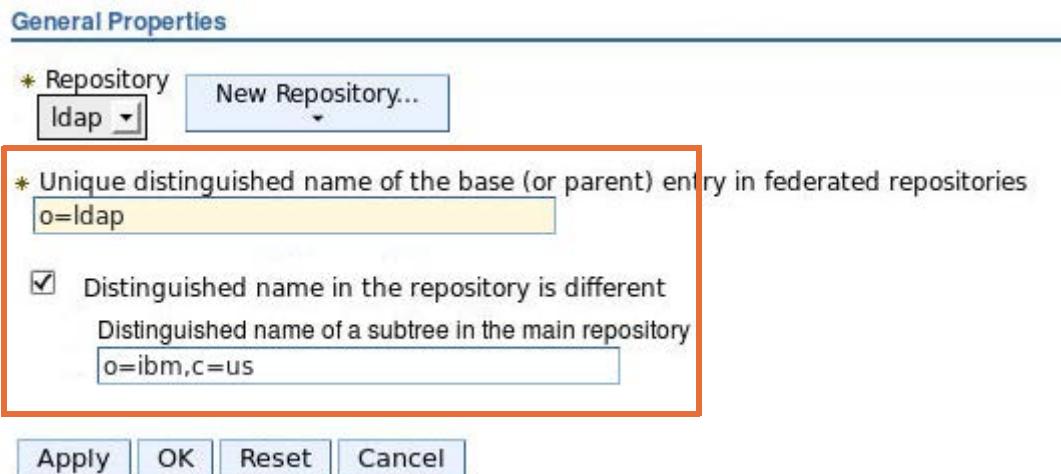
Repositories in the realm:

| Add repositories (LDAP, custom, etc)...     | Use built-in repository    | Remove                 |                 |
|---------------------------------------------|----------------------------|------------------------|-----------------|
| Select                                      | Base Entry                 | Repository Identifier  | Repository Type |
| You can administer the following resources: |                            |                        |                 |
| <input type="checkbox"/>                    | o=defaultWIMFileBasedRealm | InternalFileRepository | File            |

\_\_ j. Enter the values for the following entries:

- Unique distinguished name of a base (or parent) entry in federated repositories as `o=ldap`
- Select **Distinguished name in the repository if different**
- Distinguished name of a subtree in the main repository as `o=ibm,c=us`

These entries allow the virtual member manager (VMM) to identify the repository and know where it should start searching.



\_\_ k. Click **OK**.

\_\_ l. Click **Save** to save the changes.

\_\_ 3. Create the search criteria to access user records in ldap.

\_\_ a. Select **Security > Global security**.



- \_\_ b. Click **Configure** to the right of Federated repositories within the Available realm definitions.

- \_\_ c. Click **ldap** under the Repository Identifier column.

Repositories in the realm:

| Add repositories (LDAP, custom, etc)...     |                            | Use built-in repository | Remove          |
|---------------------------------------------|----------------------------|-------------------------|-----------------|
| Select                                      | Base Entry                 | Repository Identifier   | Repository Type |
| You can administer the following resources: |                            |                         |                 |
| <input type="checkbox"/>                    | o=defaultWIMFileBasedRealm | InternalFileRepository  | File            |
| <input type="checkbox"/>                    | <a href="#">o=ldap</a>     | <a href="#">ldap</a>    | LDAP:IDS        |
| Total 2                                     |                            |                         |                 |

- \_\_ d. Click **Federated repositories entity types to LDAP object class mapping** under Additional Properties.

#### Additional Properties

- [Performance](#)
- [Federated repositories entity types to LDAP object classes mapping](#)
- [Federated repositories property names to LDAP attributes mapping](#)
- [Group attribute definition](#)

[Apply](#) [OK](#) [Reset](#) [Cancel](#)

- \_\_\_ e. The entity type configuration page is listed. Click **Group**.

**Global security**

[Global security > Federated repositories > ldap > Federated repositories entity types to LDAP object classes](#)

Use this page to list federated repositories entity types that are supported by the LDAP repository, to select an entity type or to add or remove the entity type.

+ Preferences

| New...                                      | Delete                        |                                 |
|---------------------------------------------|-------------------------------|---------------------------------|
| <input checked="" type="checkbox"/>         | <input type="checkbox"/>      |                                 |
| <input type="checkbox"/>                    | <input type="checkbox"/>      |                                 |
| Select                                      | Entity Type ▾                 |                                 |
| You can administer the following resources: |                               |                                 |
| <input type="checkbox"/>                    | <a href="#">Group</a>         | groupOfNames                    |
| <input type="checkbox"/>                    | <a href="#">OrgContainer</a>  | organization;organizationalUnit |
| <input type="checkbox"/>                    | <a href="#">PersonAccount</a> | inetOrgPerson                   |
| Total 3                                     |                               |                                 |

- \_\_\_ f. Keep the default values for **Entity type** and **Object classes** and enter the Search bases as: o=ibm,c=us

Click **OK**.

**Global security**

[Global security > Federated repositories > ldap > Federated repositories entity types to LDAP](#)

Use this page to manage the entity type that is supported by the LDAP repository.

**General Properties**

\* Entity type

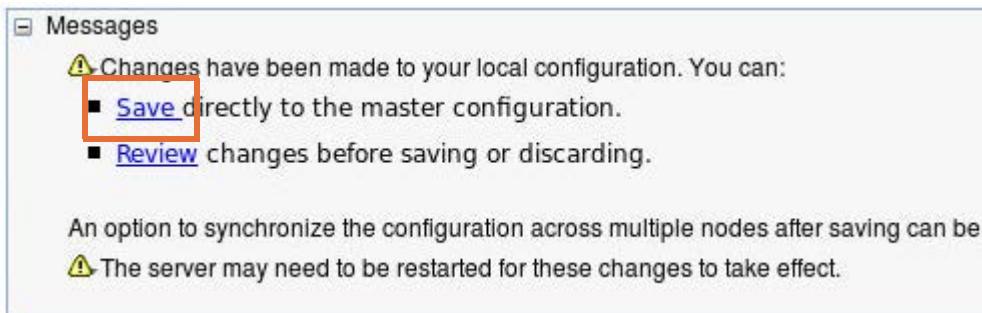
\* Object classes

Search bases

Search filter

**Apply** **OK** **Reset** **Cancel**

- \_\_ g. Click **Save** to save the configuration.



- \_\_ h. Click **OrgContainer**.

The screenshot shows the 'Global security > Federated repositories > ldap > Federated repositories entity types to LDAP object classes' page. The page title is 'Global security'. The breadcrumb navigation is 'Global security > Federated repositories > ldap > Federated repositories entity types to LDAP object classes'. The main content area has a heading 'Use this page to list federated repositories entity types that are supported by the LDAP repository, to select an entity type to administer or to add or remove the entity type.' Below this is a 'Preferences' section with 'New...' and 'Delete' buttons, and icons for creating, deleting, and modifying entities. A table lists entity types and their corresponding LDAP object classes:

| Select                   | Entity Type                   | Object Classes                  |
|--------------------------|-------------------------------|---------------------------------|
| <input type="checkbox"/> | <a href="#">Group</a>         | groupOfNames                    |
| <input type="checkbox"/> | <a href="#">OrgContainer</a>  | organization;organizationalUnit |
| <input type="checkbox"/> | <a href="#">PersonAccount</a> | inetOrgPerson                   |

Total 3

- \_\_\_ i. Keep the default values for **Entity type** and **Object classes** and enter the value for **Search bases** as: o=ibm,c=us  
Click **OK**.

**Global security**

[Global security](#) > [Federated repositories](#) > [ldap](#) > [Federated repositories entity types to LDAP](#)

OrgContainer

Use this page to manage the entity type that is supported by the LDAP repository.

**General Properties**

\* Entity type  
OrgContainer

\* Object classes  
organization;organizationalUnit;domain;container

Search bases  
o=ibm,c=us

Search filter

Apply **OK** Reset Cancel

- \_\_\_ j. Click **Save** to save the configuration.  
\_\_\_ k. Click **PersonAccount**.

**Global security**

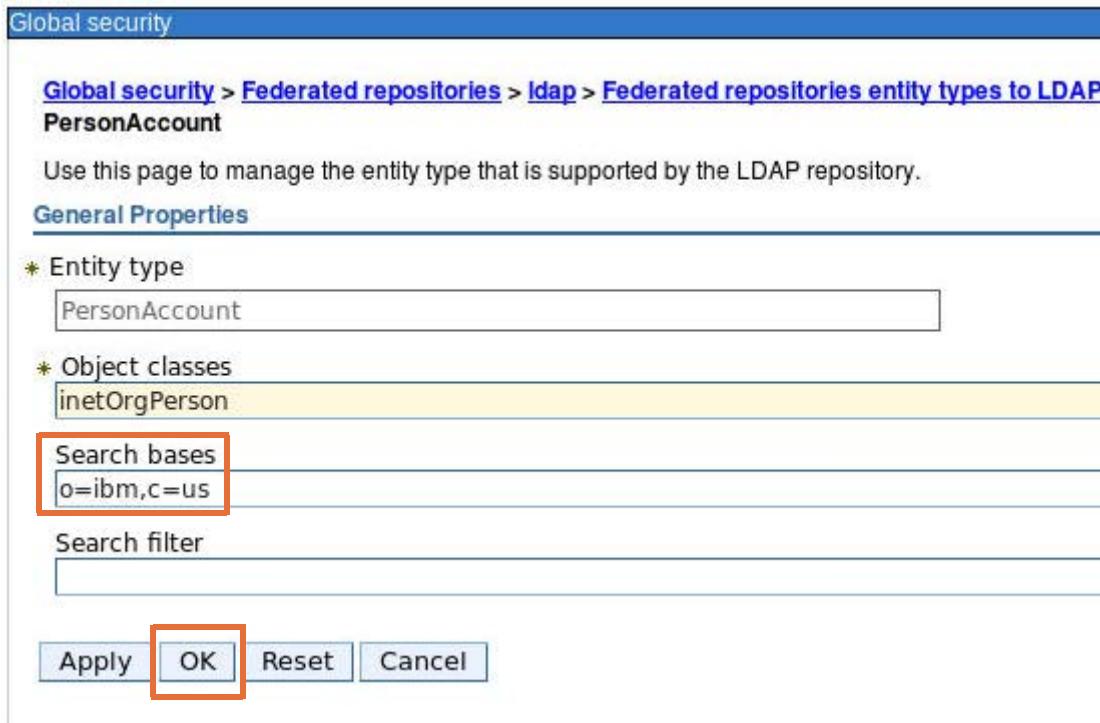
[Global security](#) > [Federated repositories](#) > [ldap](#) > [Federated repositories entity types to LDAP object classes](#)

Use this page to list federated repositories entity types that are supported by the LDAP repository, to select an entity type or to add or remove the entity type.

⊕ Preferences

| New...                                      | Delete                        |                                 |
|---------------------------------------------|-------------------------------|---------------------------------|
| <input checked="" type="checkbox"/>         | <input type="checkbox"/>      |                                 |
| <input type="checkbox"/>                    | <input type="checkbox"/>      |                                 |
| Select                                      | Entity Type ◄                 |                                 |
| You can administer the following resources: |                               |                                 |
| <input type="checkbox"/>                    | <a href="#">Group</a>         | groupOfNames                    |
| <input type="checkbox"/>                    | <a href="#">OrgContainer</a>  | organization;organizationalUnit |
| <input type="checkbox"/>                    | <a href="#">PersonAccount</a> | inetOrgPerson                   |
| Total 3                                     |                               |                                 |

- \_\_ l. Keep the default values for **Entity type** and **Object classes** and enter the value for **Search bases** as: `o=ibm,c=us`  
 Click OK.



Global security > Federated repositories > ldap > Federated repositories entity types to LDAP PersonAccount

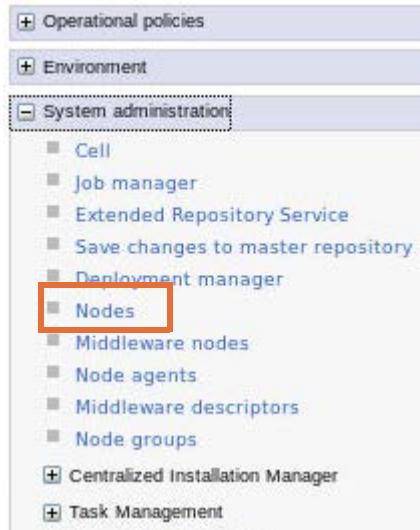
Use this page to manage the entity type that is supported by the LDAP repository.

**General Properties**

- \* Entity type: PersonAccount
- \* Object classes: inetOrgPerson
- Search bases: o=ibm,c=us
- Search filter:

Buttons: Apply, OK, Reset, Cancel

- \_\_ m. Click **Save** to save the configuration.  
 \_\_ 4. Complete a full resynchronize of the nodes.  
 \_\_ a. Click **System administration > Nodes**.



- \_\_\_ b. Select **PServerNode01** and click **Full Resynchronize**.

The screenshot shows the 'Nodes' management interface. At the top, there is a toolbar with buttons for 'Add Node', 'Remove Node', 'Force Delete', 'Synchronize', 'Full Resynchronize' (which is highlighted with a red box), and 'Stop'. Below the toolbar is a section titled 'You can administer the following resources:' containing a table. The table has columns for 'Select' (with a checkbox), 'Name' (with dropdown arrows), 'Host Name', 'Version', 'Discovery Protocol', and 'Status'. Two rows are listed: 'PCenterCellManager' and 'PCenterNode01'. The 'PCenterNode01' row has its 'Select' checkbox checked (highlighted with a red box). The table footer says 'Total 2'.

- \_\_\_ c. When synchronization is complete, you get the successfully initiated message.

A message box is displayed with the following content:

- Messages**
- [i] Successfully initiated synchronization of the repository on node PCenterNode01 with the deployment manager's repository.**
- [i] Refresh the page to see the current synchronization status.**

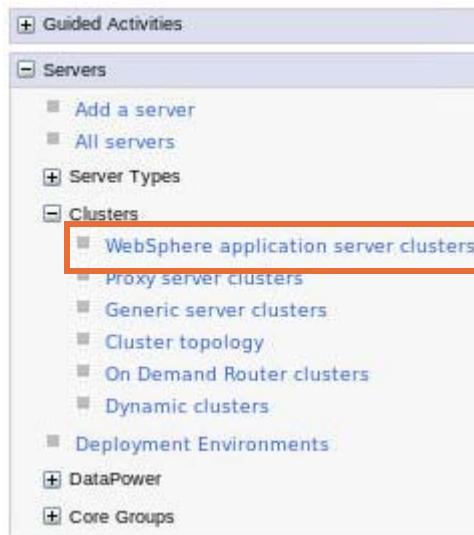


### Information

The full resynchronize is important because the nodes should be updated (while the previous security configuration is still in effect) with the most recent configuration information before the deployment manager is restarted. Otherwise, after the deployment manager starts, the unsynchronized nodes are no longer able to communicate with the deployment manager.

- \_\_\_ 5. Stop the clusters, node, and deployment manager.

- \_\_ a. Click Servers > Clusters > WebSphere application server clusters.



- \_\_ b. Select the check box for all clusters and click Stop.

The screenshot shows the 'WebSphere application server clusters' configuration page. At the top, there's a toolbar with 'New...', 'Delete', 'Start', 'Stop' (highlighted with a red box), 'Ripplestart', and 'ImmediateStop' buttons. Below the toolbar is a search bar with icons for filter, sort, and refresh. A table lists clusters: 'Select', 'Name' (with a dropdown arrow), and 'Status' (with a help icon). The table shows three rows: 'AppCluster' (selected), 'MECluster' (selected), and 'SupCluster' (selected). Each row has a green 'Edit' icon. The total count is 'Total 3' at the bottom. On the left side of the table, there's a vertical column with checkboxes for each cluster, which are also highlighted with a red box.

- \_\_\_ c. Verify that all of the clusters are stopped. Refresh the page by clicking **Servers > Clusters > WebSphere application server clusters**. It takes approximately 10 minutes to completely stop the clusters.

|                          | Name                       | Status |
|--------------------------|----------------------------|--------|
| <input type="checkbox"/> | <a href="#">AppCluster</a> | ✗      |
| <input type="checkbox"/> | <a href="#">MECluster</a>  | ✗      |
| <input type="checkbox"/> | <a href="#">SupCluster</a> | ✗      |

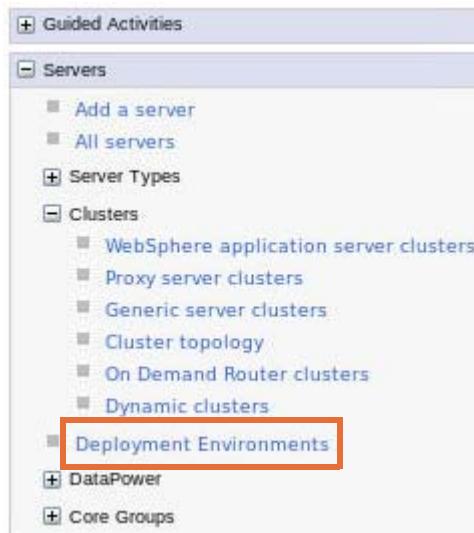
Total 3

- \_\_\_ d. Log out of the administrative console.



- \_\_\_ e. Open a terminal window and enter `cd /opt/IBM/BPM/profiles/PServerNode01/bin` to change the directory.
- \_\_\_ f. Stop the node agent by entering the following command:  
`./stopNode.sh`
- \_\_\_ g. In a terminal window, enter `cd /opt/IBM/BPM/profiles/PServerDmgr/bin` to change the directory.
- \_\_\_ h. Stop the deployment manager by entering the following command:  
`./stopManager.sh`
- \_\_\_ 6. Start the deployment manager, node, and clusters.
- \_\_\_ a. In the same terminal window, enter the following command to start the deployment manager.  
`./startManager.sh`
- \_\_\_ b. Enter `cd /opt/IBM/BPM/profiles/PServerNode01/bin` to change the directory.
- \_\_\_ c. Start the node agent by entering the following command:  
`./startNode.sh`
- \_\_\_ d. Log back in the administrative console with `bpmadmin` for the user name and `websphere` for the password.

- \_\_ e. Click **Servers > Deployment Environments.**



- \_\_ f. Select **PServer\_DE** and click **Start**. It takes approximately 10 minutes to start the deployment manager.

The screenshot shows the 'Deployment Environments' management screen. At the top, there are three buttons: 'Start', 'Stop', and 'New...'. Below them is a toolbar with icons for selecting, deleting, and sorting. A table lists deployment environments. The first row contains: a checkbox, a green arrow icon, the name 'PServer\_DE' (which is underlined and blue), 'IBM BPM Standard Process Server' in the 'Features' column, and 'Application, Remote Messaging, and Remote Support' in the 'Pattern' column. The table footer shows 'Total 1'.

| Select                   | Status | Deployment Environment Name | Features                        | Pattern                                           |
|--------------------------|--------|-----------------------------|---------------------------------|---------------------------------------------------|
| <input type="checkbox"/> | →      | <a href="#">PServer_DE</a>  | IBM BPM Standard Process Server | Application, Remote Messaging, and Remote Support |

### Part 3: Testing the LDAP user registry

After the processes are restarted, you can test the LDAP user registry. As before, with only the file-based federated repository, the administrative console challenges you for access. You test both the old user ID and the new LDAP-based user ID.

- \_\_\_ 1. Verify the LDAP user registry.
- \_\_\_ a. Click **Users and Groups > Manage Users**.



- \_\_\_ b. Verify that the LDAP users are also listed along with the file-based registry users.

| 5 users matched the search criteria. |              |              |              |        |                                          |
|--------------------------------------|--------------|--------------|--------------|--------|------------------------------------------|
| Select                               | User ID      | First name   | Last name    | E-mail | Unique Name                              |
| <input type="checkbox"/>             | bpmadmin     | bpmadmin     | bpmadmin     |        | uid=bpmadmin,o=defaultWIMFileBasedRealm  |
| <input type="checkbox"/>             | ldapadmin    | ldapadmin    | ldapadmin    |        | cn=ldapadmin,o=ldap                      |
| <input type="checkbox"/>             | ldapbpmuser1 | ldapbpmuser1 | ldapbpmuser1 |        | cn=ldapbpmuser1,o=ldap                   |
| <input type="checkbox"/>             | ldapbpmuser2 | ldapbpmuser2 | ldapbpmuser2 |        | cn=ldapbpmuser2,o=ldap                   |
| <input type="checkbox"/>             | psdeadmin    | psdeadmin    | psdeadmin    |        | uid=psdeadmin,o=defaultWIMFileBasedRealm |

Page 1 of 1      Total: 5

- \_\_\_ 2. Add an LDAP user as a console user.
- \_\_\_ a. Click **Users and Groups > Administrative user roles**.

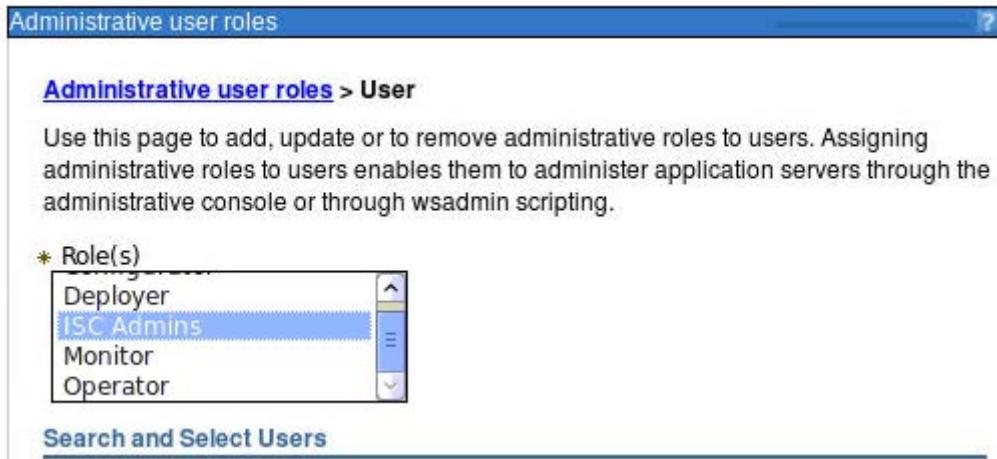
- \_\_ b. Click Add.



The screenshot shows the 'Administrative user roles' page. At the top, there is a toolbar with buttons for Logout, Add..., Remove, and Refresh all. The 'Add...' button is highlighted with a red box. Below the toolbar is a section titled 'Administrative user roles' with a descriptive text about managing administrative roles. A table lists three users: 'bpmadmin' (Primary administrative user name, Active), 'bpma... (Administrator, Active), and 'psdeadmin' (Administrator, Deployer, Operator, Not Active). At the bottom of the table, it says 'Total 3'.

| Select                   | User                      | Role(s)                           | Login Status |
|--------------------------|---------------------------|-----------------------------------|--------------|
|                          | bpmadmin                  | Primary administrative user name  | Active       |
| <input type="checkbox"/> | <a href="#">bpma...</a>   | Administrator                     | Active       |
| <input type="checkbox"/> | <a href="#">psdeadmin</a> | Administrator, Deployer, Operator | Not Active   |

- \_\_ c. Under Role(s), while holding the **Ctrl** key, select **Admin Security Manager**, **Administrator**, and **ISC Admins**.



The screenshot shows the 'Administrative user roles > User' page. It has a heading 'Administrative user roles > User' and a descriptive text about managing administrative roles for users. Below that is a section labeled 'Role(s)' with a dropdown menu containing 'Deployer', 'ISC Admins' (which is selected and highlighted in blue), 'Monitor', and 'Operator'. At the bottom, there is a 'Search and Select Users' button.

- \_\_\_ d. Under Search and Select Users, click **Search** to list the available users.

[Administrative user roles > User](#)

Use this page to add, update or to remove administrative roles to users. Assigning roles to users enables them to administer application servers through the administ or through wsadmin scripting.

\* Role(s)



Admin Security Manager  
Administrator  
Auditor  
Configurator

[Search and Select Users](#)

Decide how many results to display, enter a search string (use \* for wildcard), and Select users from the Available list and add them to the Mapped to role list. Users already been mapped to a role will not be returned in the search results.

Search string

\*

Search

Maximum results to display 20



- \_\_\_ e. Select **Idapadmin** from the Available list and click the **right arrow** button to move the user to the **Mapped to role** list.

#### [Administrative user roles > User](#)

Use this page to add, update or to remove administrative roles to users. Assigning roles to users enables them to administer application servers through the administ or through wsadmin scripting.



#### [Search and Select Users](#)

Decide how many results to display, enter a search string (use \* for wildcard), and Select users from the Available list and add them to the Mapped to role list. Users' already been mapped to a role will not be returned in the search results.

Search string

Maximum results to display

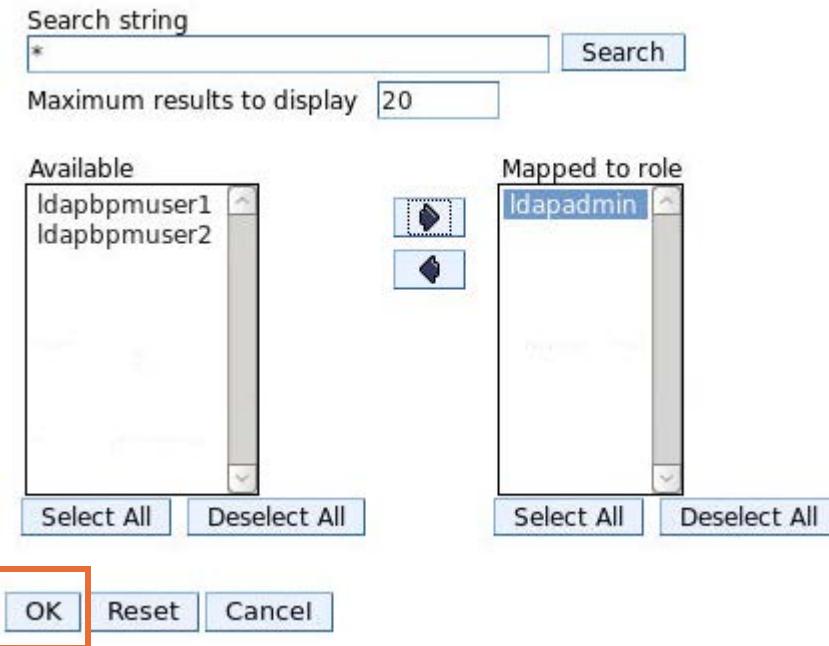
| Available                    | Mapped to role |
|------------------------------|----------------|
| Idapbpmuser1<br>Idapbpmuser2 | Idapadmin      |



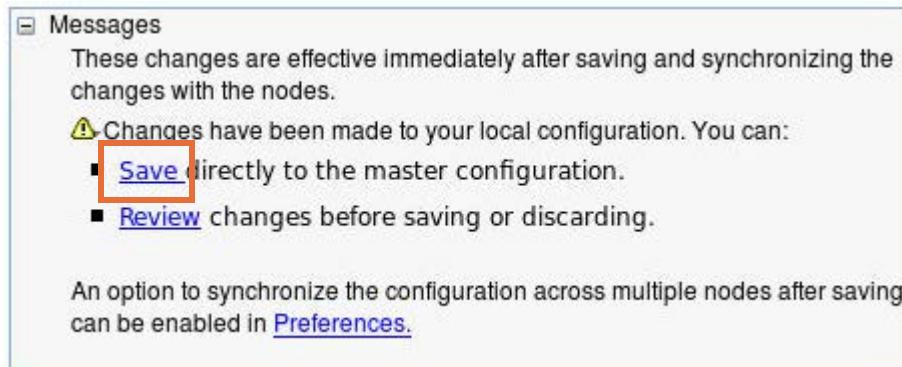
#### Information

The **Admin Security Manager** role allows the user to grant administrator rights to other users. The **ISC Admins** role allows the user to create more users in the VMM.

\_\_\_ f. Click **OK**.



\_\_\_ g. Click **Save** to save the changes.



- \_\_\_ h. The `ldapadmin` user is added in the list.

**Administrative user roles**

Administrative user roles

Use this page to add, update or to remove administrative roles to groups. Assigning administrative roles to groups allows you to administer application servers through the administrative console or through wsadmin scripting. The administrator must be notified when groups are added to or removed from an administrative user group. Click Refresh all to synchronize administrative authorizer after the changes have been saved and synchronized.

| Logout                   | Add...                    | Remove                                            | Refresh all |
|--------------------------|---------------------------|---------------------------------------------------|-------------|
|                          |                           |                                                   |             |
| Select                   | User                      | Role(s)                                           |             |
|                          | bpmadmin                  | Primary administrative user name                  |             |
| <input type="checkbox"/> | <a href="#">bpmadmin</a>  | Administrator                                     |             |
| <input type="checkbox"/> | <a href="#">ldapadmin</a> | Administrator, ISC Admins, Admin Security Manager |             |
| <input type="checkbox"/> | <a href="#">psdeadmin</a> | Administrator, Deployer, Operator                 |             |
| Total 4                  |                           |                                                   |             |

- \_\_\_ 3. Test the administrative console access.

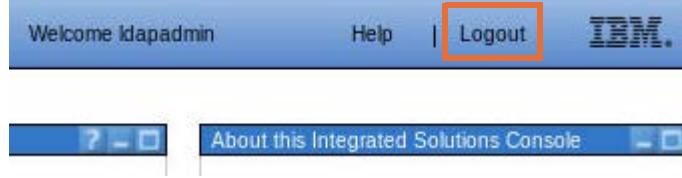
- \_\_\_ a. Log out of the administrative console.



- \_\_\_ b. Log in to the administrative console again by entering `ldapadmin` in the **User ID** field and `web1sphere` in the **Password** field.
- \_\_\_ c. Verify that you are successfully logged in to the administrative console as: `ldapadmin`



- \_\_\_ d. Click **Logout**.



- \_\_\_ e. Log in to the administrative console by entering `ldapbpmuser1` in the **User ID** field and `websphere` in the **Password** field.
- \_\_\_ f. You do not have access to the administrative console as `ldapbpmuser1`. Logging in as `ldapbpmuser1` to the administrative console is expected to fail. It fails because that ID is not added as a console user. The user `ldapbpmuser1` is meant to be a user, and might not need administrative console access.



- \_\_\_ 4. Use a group to define the administrative console access.
  - \_\_\_ a. Log in to the administrative console by entering `bpmadmin` in the **User ID** field and `websphere` in the **Password** field.
  - \_\_\_ b. Click **Users and Groups > Manage Groups**.
  - \_\_\_ c. If the groups are not listed, click **Search**. Note the `ldapbpmusers` group that you created earlier.

**Search for Groups**

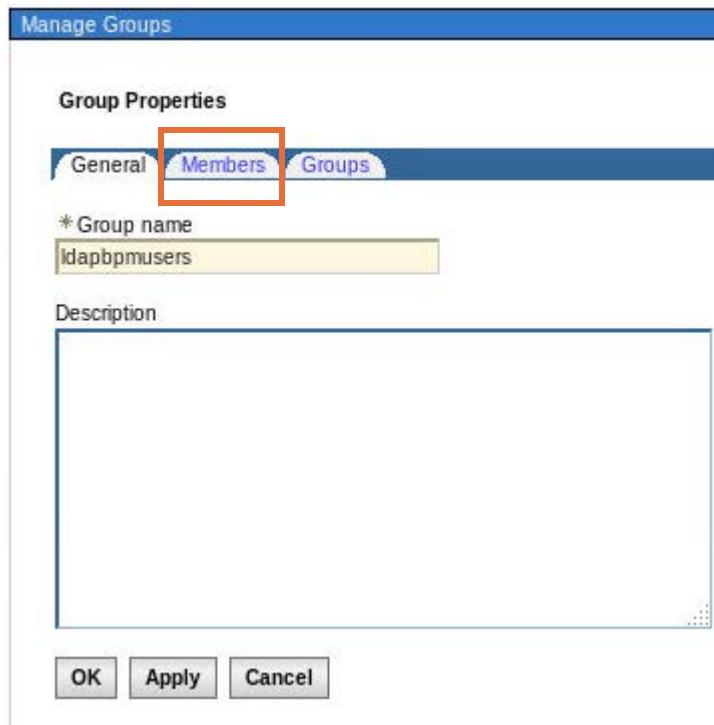
Search by      \* Search for      \* Maximum results  
 \*

1 groups matched the search criteria.

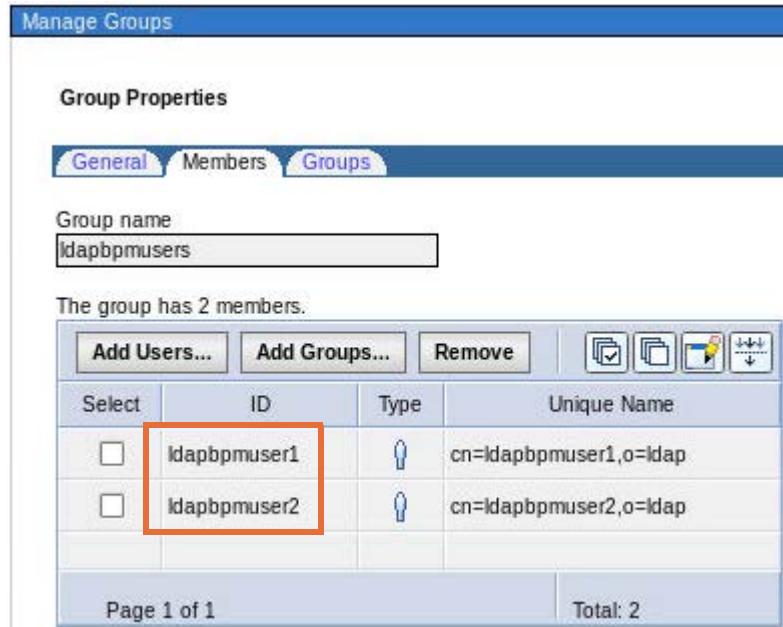
| Create...                | Delete                       | Select      | Select an action...    |  |  |          |  |
|--------------------------|------------------------------|-------------|------------------------|--|--|----------|--|
| Select                   | Group name                   | Description | Unique Name            |  |  |          |  |
| <input type="checkbox"/> | <a href="#">ldapbpmusers</a> |             | cn=ldapbpmusers,o=ldap |  |  |          |  |
|                          |                              |             |                        |  |  | Total: 1 |  |

- \_\_\_ d. Click **ldapbpmusers**.

- \_\_\_ e. In the Manage Groups pane, click the **Members** tab.

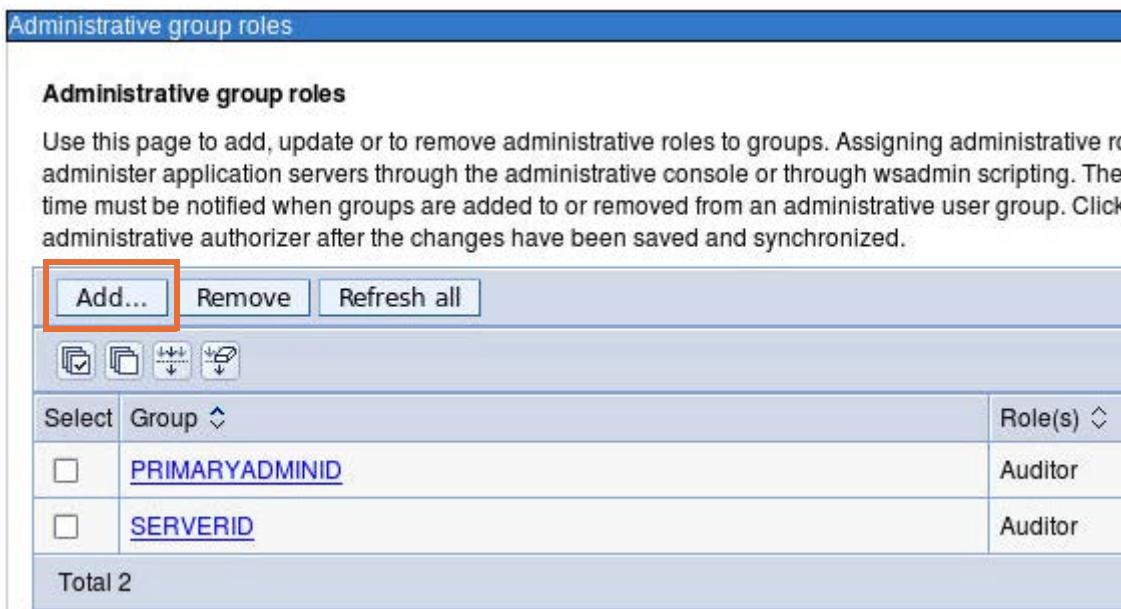


- \_\_\_ f. The two users that are members of this group are listed.



- \_\_\_ g. For demonstration purposes, you assign this group an administrator role. Click **Users and Groups > Administrative group roles**.

- \_\_ h. Click **Add**.



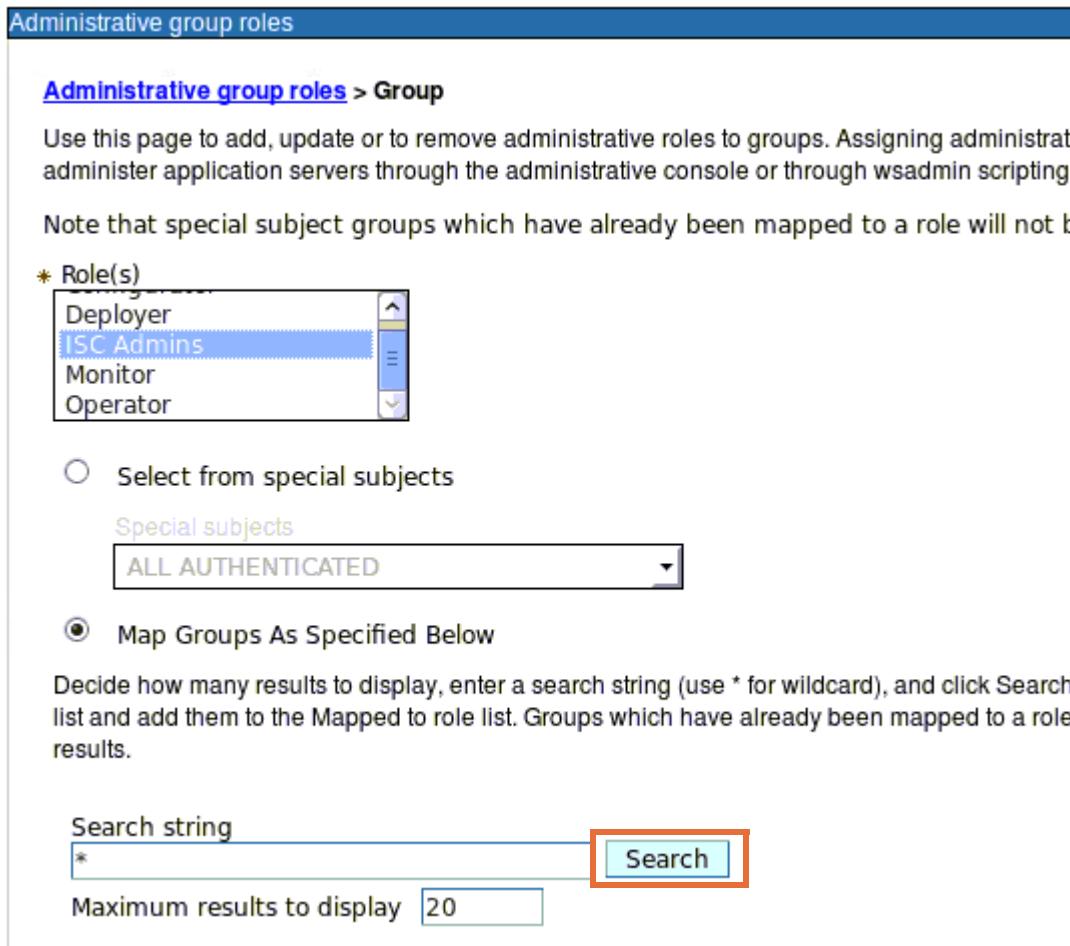
**Administrative group roles**

Administrative group roles

Use this page to add, update or to remove administrative roles to groups. Assigning administrative roles to groups allows you to administer application servers through the administrative console or through wsadmin scripting. The time must be notified when groups are added to or removed from an administrative user group. Click the administrative authorizer after the changes have been saved and synchronized.

|                          |                                | Add...                   | Remove                   | Refresh all              |
|--------------------------|--------------------------------|--------------------------|--------------------------|--------------------------|
| <input type="checkbox"/> | <input type="checkbox"/>       | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Select                   | Group                          | Role(s)                  |                          |                          |
| <input type="checkbox"/> | <a href="#">PRIMARYADMINID</a> | Auditor                  |                          |                          |
| <input type="checkbox"/> | <a href="#">SERVERID</a>       | Auditor                  |                          |                          |
| Total 2                  |                                |                          |                          |                          |

- \_\_ i. Under **Role(s)**, while holding the **Ctrl** key, select **Admin Security Manager**, **Administrator**, and **ISC Admins**.
- \_\_ j. Click **Search** to list the available users.



**Administrative group roles**

**Administrative group roles > Group**

Use this page to add, update or to remove administrative roles to groups. Assigning administrative roles to groups allows you to administer application servers through the administrative console or through wsadmin scripting.

Note that special subject groups which have already been mapped to a role will not be listed.

\* **Role(s)**

- Deployer
- ISC Admins**
- Monitor
- Operator

Select from special subjects

Special subjects

ALL AUTHENTICATED

Map Groups As Specified Below

Decide how many results to display, enter a search string (use \* for wildcard), and click Search. List and add them to the Mapped to role list. Groups which have already been mapped to a role will not be listed.

Search string

\*

Search

Maximum results to display 20

- \_\_ k. Select **Idapbpmusers@defaultWIMFileBasedRealm** from the Available list, and click the **right arrow** button to move the user to the **Mapped to role** list.
- \_\_ l. Click **OK**.

Map Groups As Specified Below

Decide how many results to display, enter a search string (use \* for wildcard), and click Search. Select list and add them to the Mapped to role list. Groups which have already been mapped to a role will not appear in the results.

Search string  
\*

Maximum results to display 20

| Available                             | Mapped to role                        |
|---------------------------------------|---------------------------------------|
| Idapbpmusers@defaultWIMFileBasedRealm | Idapbpmusers@defaultWIMFileBasedRealm |

Select All Deselect All

Select All Deselect All

OK Reset Cancel

- \_\_ m. Click **Save** to save the changes. The Idapbpmusers group is now added in the list.

### Administrative group roles

Use this page to add, update or to remove administrative roles to groups. Assigning administrative roles to groups enables you to administer application servers through the administrative console or through wsadmin scripting. The administrative roles must be notified when groups are added to or removed from an administrative user group. Click Refresh all to synchronize the administrative authorizer after the changes have been saved and synchronized.

| Add...                   | Remove                                                | Refresh all                                       |
|--------------------------|-------------------------------------------------------|---------------------------------------------------|
| <input type="checkbox"/> | <input type="checkbox"/>                              | <input type="checkbox"/>                          |
| Select                   | Group                                                 | Role(s)                                           |
| <input type="checkbox"/> | <a href="#">PRIMARYADMINID</a>                        | Auditor                                           |
| <input type="checkbox"/> | <a href="#">SERVERID</a>                              | Auditor                                           |
| <input type="checkbox"/> | <a href="#">Idapbpmusers@defaultWIMFileBasedRealm</a> | Administrator, ISC Admins, Admin Security Manager |
| Total 3                  |                                                       |                                                   |

- 
- \_\_\_ 5. Test the administrative console access.
    - \_\_\_ a. Log out of the administrative console.
    - \_\_\_ b. Log in to the administrative console by entering `ldapbpmuser1` in the **User ID** field and `websphere` in the **Password** field.
    - \_\_\_ c. Verify that you are successfully logged in to the administrative console as `ldapbpmuser1`. It works this time since `ldapbpmuser1` is a member of the `ldapbpmusers` group, and this group is defined to have administrative console access.
    - \_\_\_ d. Click **Logout**.
    - \_\_\_ e. Close all open browsers.

## **Part 4: Working with LDAP users in Process Admin Console**

IBM Business Process Manager implicitly synchronizes external users and groups between the WebSphere Application Server user registry and the IBM Business Process Manager database in response to certain triggers. You can use administrative scripts or the Process Admin Console to trigger synchronization explicitly.

- \_\_\_ 1. Synchronize LDAP users by using an administrative script.
  - \_\_\_ a. Open the terminal window and enter `cd /opt/IBM/BPM/profiles/PServerDmgr/bin` to change the directory.
  - \_\_\_ b. Enter the following command to synchronize the user `ldapadmin`:

```
./usersSync.sh -u bpmadmin -p websphere -host bpmstdhost -port 8884
ldapadmin
```

```
[root@bpmstdhost bin]# ./usersSync.sh -u bpmadmin -p websphere -host bpmstdhost
-port 8884 ldapadmin
```

```
WASX7209I: Connected to process "AppClusterMember1" on node PServerNode01 using
SOAP connector; The type of process is: ManagedProcess
```

```
WASX7303I: The following options are passed to the scripting environment and are
available as arguments that are stored in the argv variable: "[ldapadmin]"
```

```
CWLLG0798I: Synchronizing the following users from user registry: ldapadmin
CWLLG0819I: 1 user(s) synchronized
CWLLG0821I: 1 user(s) added
```

Complete

It takes approximately 5 minutes to complete.

- \_\_\_ c. Enter the following command to synchronize the user `ldapbpmuser1`:

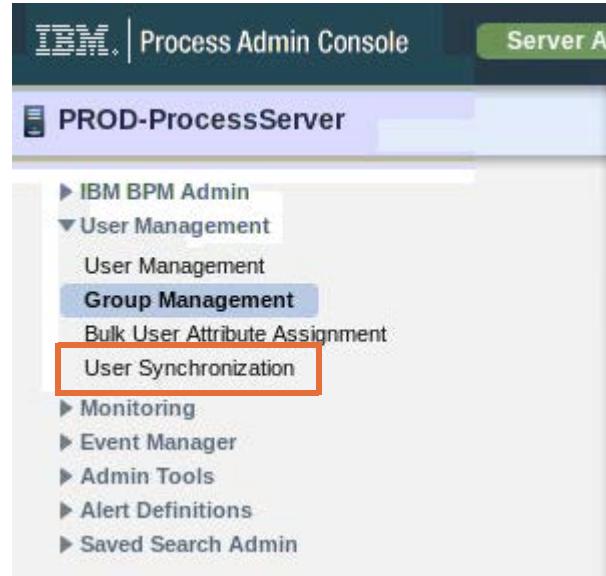
```
./usersSync.sh -u bpmadmin -p websphere -host bpmstdhost -port 8884
ldapbpmuser1
```

- \_\_\_ d. Enter the following command to synchronize the user `ldapbpmuser2`:

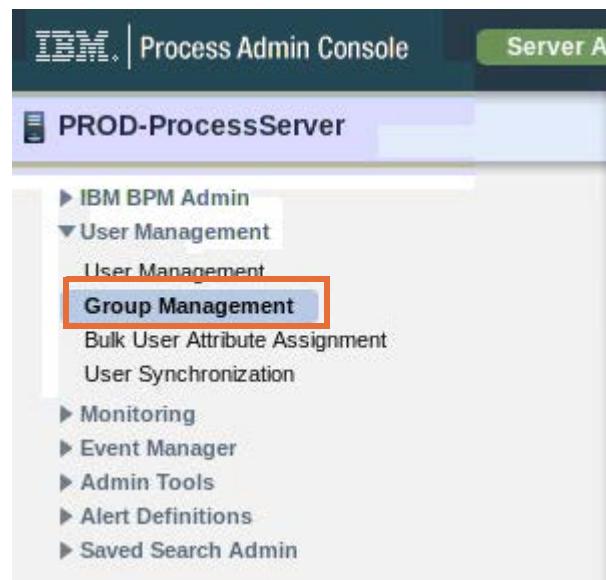
```
./usersSync.sh -u bpmadmin -p websphere -host bpmstdhost -port 8884
ldapbpmuser2
```

**Information**

You can also synchronize the external users with IBM Business Process Manager by using the **User Synchronization** utility in Process Admin Console.



- e. Exit the terminal window.
- 2. Work with LDAP users in the Process Admin Console.
  - a. Open the web browser and goto the URL:  
`http://bpmsstdhost:9082/ProcessAdmin`
  - b. In the login area, enter `bpmsadmin` as the user ID and `websphere` as the password.  
Click **Login**.
  - c. Expand **User Management** and click **Group management**.



- \_\_\_ d. Enter %% in the Select Group to Modify field to list all of the groups. Notice that the ldapbpusers group is also listed.

- \_\_\_ e. Click the tw\_managers group.

- \_\_\_ f. On the right pane, click Add Users.

### tw\_managers

Team Manager Group (deprecated): No Team Manager Group

[Add Users](#) [Add Groups](#)



tw\_allusers

- \_\_\_ g. In the Add Users window, enter: ldap

The users with prefix `ldap` are listed:

The screenshot shows the 'Add Users' interface. In the search bar, 'ldap' is typed. Below the search bar, the text 'Start typing to view matching results' is visible. Under the heading 'Results:', three user entries are listed: 'ldapadmin (ldapadmin)', 'ldapbpmuser1 (ldapbpmuser1)', and 'ldapbpmuser2 (ldapbpmuser2)'. Each entry consists of a small user icon followed by the name and parentheses containing the original identifier.

- \_\_\_ h. Select the user **ldapadmin** to add in the `tw_managers` group. Click **Add Selected**.

This screenshot shows the same 'Add Users' window as above, but with a user selection. The 'ldapadmin (ldapadmin)' entry has a checked checkbox to its right, indicated by a red rectangular highlight. At the bottom right of the window, the 'Add Selected' button is also highlighted with a red rectangle.

- \_\_\_ i. Notice that the user `ldapadmin` is added in the `tw_managers` group.

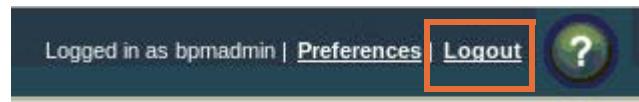
#### tw\_managers

Team Manager Group (deprecated): No Team Manager Group

[Add Users](#) [Add Groups](#)

- 
- The screenshot shows the 'tw\_managers' group page. At the top, it says 'Team Manager Group (deprecated): No Team Manager Group'. Below that are two buttons: 'Add Users' and 'Add Groups'. A list of users is shown, with 'ldapadmin (ldapadmin)' highlighted by a red rectangle. Another user, 'tw\_allusers', is also listed below it.

- \_\_ j. Click **Logout** to log out of the Process Admin Console.



**End of exercise**

## Exercise review and wrap-up

This exercise explored how to configure the Process Server cell to use a Lightweight Directory Access Protocol (LDAP) server as the user registry. You used an administrative script to synchronize WebSphere Application Server user registry with IBM Business Process Manager database. You worked with LDAP users in Process Admin Console.

# Appendix A. List of Linux commands

|                |                                                                                                                                                                                                                                                             |
|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>alias</b>   | Creates an alias for a command                                                                                                                                                                                                                              |
| <b>apropos</b> | Provides a list of man pages relevant to a particular subject                                                                                                                                                                                               |
| <b>cat</b>     | Type file out<br><br>cat <file>                                                                                                                                                                                                                             |
| <b>cd</b>      | Change directory to absolute or relative path<br><br>cd /home/waslocal<br><br>cd .. (Change directory up one level)                                                                                                                                         |
| <b>chgrp</b>   | Change file group ownership                                                                                                                                                                                                                                 |
| <b>chmod</b>   | Change access mode bits on files<br><br>chmod 744 <file> (Change mode for user=all, group=rw, and other=rw)<br><br>chmod g+rwx <file> (Change mode for group to have all permissions)<br><br>chmod a=x <file> (Change mode and give all execute permission) |
| <b>chown</b>   | Change file owner                                                                                                                                                                                                                                           |
| <b>clear</b>   | Clear the screen                                                                                                                                                                                                                                            |
| <b>cp</b>      | Copy files                                                                                                                                                                                                                                                  |
| <b>date</b>    | Display or set date                                                                                                                                                                                                                                         |
| <b>df</b>      | Show free disk space<br><br>df -k (Shows the free space in kilobytes)<br><br>df -m (Shows the free space in meg)                                                                                                                                            |
| <b>diff</b>    | Show differences between two files                                                                                                                                                                                                                          |
| <b>du</b>      | Show disk usage                                                                                                                                                                                                                                             |
| <b>echo</b>    | Show output status text to the screen or a file<br><br>echo \$DISPLAY (Shows the value for the DISPLAY variable)<br><br>echo \$PATH (Shows the value for the PATH variable)                                                                                 |
| <b>emacs</b>   | Start an emacs edit session                                                                                                                                                                                                                                 |
| <b>env</b>     | Display the list of current environment variables                                                                                                                                                                                                           |
| <b>exit</b>    | Exit a shell script                                                                                                                                                                                                                                         |
| <b>export</b>  | Set the value of one or more shell variables<br><br>export DISPLAY=:0.0                                                                                                                                                                                     |
| <b>find</b>    | Finds and locates files                                                                                                                                                                                                                                     |

|                       |                                                                                                                                          |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------|
|                       | find / -name <file>                                                                                                                      |
| <b>firefox</b>        | Launch a Firefox browser window<br>firefox -p <profile-name> -no-remote                                                                  |
| <b>ftp</b>            | File transfer protocol                                                                                                                   |
| <b>gedit</b>          | Start a gedit editing session, text editor for the GNOME desktop<br>gedit <file>                                                         |
| <b>gnome-terminal</b> | Launch a GNOME terminal window                                                                                                           |
| <b>grep</b>           | Search files for text patterns<br>grep <string> <file><br>grep localhost /etc/hosts                                                      |
| <b>groups</b>         | Show the groups that a user belongs to                                                                                                   |
| <b>gzip</b>           | Compress and uncompress<br>gzip <file>                                                                                                   |
| <b>head</b>           | Show the first few lines of a file                                                                                                       |
| <b>help</b>           | Access help for shell commands                                                                                                           |
| <b>history</b>        | Show the list of previous commands                                                                                                       |
| <b>hostname</b>       | Show the host name                                                                                                                       |
| <b>ifconfig</b>       | View, enable, and disable a network interface, IP address, broadcast address, and subnet mask                                            |
| <b>jobs</b>           | Lists child processes of current process                                                                                                 |
| <b>kill</b>           | Terminate a running command/process<br>kill <PID><br>kill 1423                                                                           |
| <b>ln -s</b>          | Creates a symbolic link<br>ln -s <file/directory> <link>                                                                                 |
| <b>ls</b>             | List files or directories<br>ls -l (Long format listing)<br>ls -la (Long format list all files, including normally hidden files)         |
| <b>man</b>            | Get information about a command by using online reference manuals (man pages)<br>man mkdir (Displays the man page for the mkdir command) |
| <b>mkdir</b>          | Create a directory                                                                                                                       |

---

|                 |                                                                                                                                                                            |
|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>more</b>     | Types out a file by one screen at a time<br><br>more SystemOut.txt                                                                                                         |
| <b>mount</b>    | Instructs the operating system a file system is ready to use, and associates it with a particular point in the file system hierarchy                                       |
| <b>mv</b>       | Move or rename files or directories<br><br>mv <from> <to>                                                                                                                  |
| <b>passwd</b>   | Set password                                                                                                                                                               |
| <b>ps</b>       | Show processes<br><br>ps -ef (Show all processes and do a full listing)<br><br>ps -ef   grep java (Search the list of all processes for the word java)                     |
| <b>pwd</b>      | Print your present working directory                                                                                                                                       |
| <b>reboot</b>   | Reboot system                                                                                                                                                              |
| <b>rm</b>       | Remove files<br><br>rm /tmp/myfile                                                                                                                                         |
| <b>rmdir</b>    | Remove directories                                                                                                                                                         |
| <b>sed</b>      | Stream editor - edit one or more files without user interaction                                                                                                            |
| <b>ssh</b>      | Secure shell, a network protocol that allows data to be exchanged using a secure channel between two networked devices                                                     |
| <b>su</b>       | Become a substitute user<br><br>su - db2inst1                                                                                                                              |
| <b>shutdown</b> | Allow a user to change system state, taking system down<br><br>shutdown -h (Halt after shutdown)<br><br>shutdown -P (Halt action is to turn off power)                     |
| <b>source</b>   | Read and execute commands from a file in the current shell script.                                                                                                         |
| <b>tail</b>     | Show the last few lines of a file<br><br>tail SystemOut.txt (Shows the last 10 lines of the file)<br><br>tail -f SystemOut.txt (Show output as it is appended to the file) |
| <b>tar</b>      | Create or expand archive files<br><br>tar cvf myfile.tar <directory> (Create tar file from directory)<br><br>tar xvf myfile.tar . (eXpand tar file here)                   |
| <b>telnet</b>   | Connect to another system                                                                                                                                                  |
| <b>time</b>     | Display and set time                                                                                                                                                       |

|                 |                                                                                                                         |
|-----------------|-------------------------------------------------------------------------------------------------------------------------|
| <b>top</b>      | Dynamically display process information                                                                                 |
| <b>touch</b>    | For one or more files, update the access time and modification time to current date and time                            |
| <b>vi</b>       | Visual text editor                                                                                                      |
| <b>wc</b>       | Print a character, word, and line count for files                                                                       |
| <b>whereis</b>  | Locate files                                                                                                            |
| <b>which</b>    | Used to identify the location of executables within the path                                                            |
| <b>whoami</b>   | Print the effective user name                                                                                           |
| <b>xterm</b>    | Launch an xterm window                                                                                                  |
| <b>~</b>        | HOME directory of the current user<br>cd ~/temp                                                                         |
| <b> </b>        | Pipe<br>ps -ef   grep java (Pipes the ps command into the grep command)                                                 |
| <b>&lt;</b>     | Redirect                                                                                                                |
| <b>&gt;&gt;</b> | Append<br>date >> /tmp/mylog                                                                                            |
| <b>!</b>        | Recall<br>! 34 (Recalls the 34th command from the history list)<br>!ps (Recalls the last command that begins with 'ps') |
| <b>./</b>       | Execute file in current working directory<br>. ./startManager.sh                                                        |



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