WebSphere Application Server Version 6.1
Sales and Technical Enablement Workshop
Lab 01 – Install and Configuration

Introduction

WebSphere Application Server Version 6.1 provides centralized administration of multiple nodes, allowing you to administer multiple nodes on the same machine or multiple machines. This lab will guide you through configuring a Network Deployment installation by creating a profile with an already federated node (cell profile). You will configure and manage the web server through the WebSphere Administrative Console.

The Profile Management Tool (PMT) used in this version of WAS has changed from the Profile Creation Tool used in WAS 6.0.x. The PMT is Eclipse based and provides more flexibility. It is enhanced with an additional profile for creating a pre-configured cell with a single node. It also has additional options for fine-grained control over the profile creation process.

You will investigate the WebSphere Installation Factory. The Installation Factory combines the installation image for a version or release of a WebSphere software product with applicable maintenance packages, a configuration archive, one or more enterprise archive files, customization scripts, and other files, to create a customized installation package.

Lab Requirements

This lab assumes that the following setup is complete prior to starting the lab:

- VMware Player 1.0.x or VMware Workstation v5.5.x installed on your machine. A free VMware player is available from http://www.vmware.com/products/player/
- A machine with 2 GB is RAM is preferred.
- The STEW VMware image is available.

What you should be able to do after you complete this lab

- Configure WebSphere Application Server v6.1 Profiles
- Install and Configure IBM HTTP Server (IHS) and WebSphere plug-ins
- Create a Custom Install Package and Build definition using the Installation Factory.

## Reference variables and locations used during the lab

Some instructions in this lab may be Linux operating-system specific. If you plan on running the lab on a different operating system, you will need to execute the appropriate commands, and use appropriate files (.sh vs. .bat) for your operating system. The directories and pertinent file locations are specified in the lab instructions as follows:

| Reference Variable	Location
<WAS_HOME>	/opt/IBM/WAS61/AppServer
Installation Factory	/opt/IBM/InstallationFactory
WebSphere Plug-in	/opt/IBM/HTTPServer/Plugins
<IHS_HOME>	/opt/IBM/HTTPServer
WAS 6.1 installation image	/wasv61image

Part 1: Configure a WebSphere Profile

After installing the core product files for the Network Deployment product, you must create a profile. It can be a deployment manager profile, a cell profile, an application server profile, or a custom profile. This procedure describes how to create a **cell profile** with the Profile Management tool, which is a graphical user interface. A cell profile contains a deployment manager profile and a federated Application Server node profile. You can federate additional Application Server node profiles into this deployment manager profile after initial creation of the cell profile.

____ 1.   Start the Profile Management Tool (PMT)

        __ a. From the SLES desktop, click on the **terminal window** icon
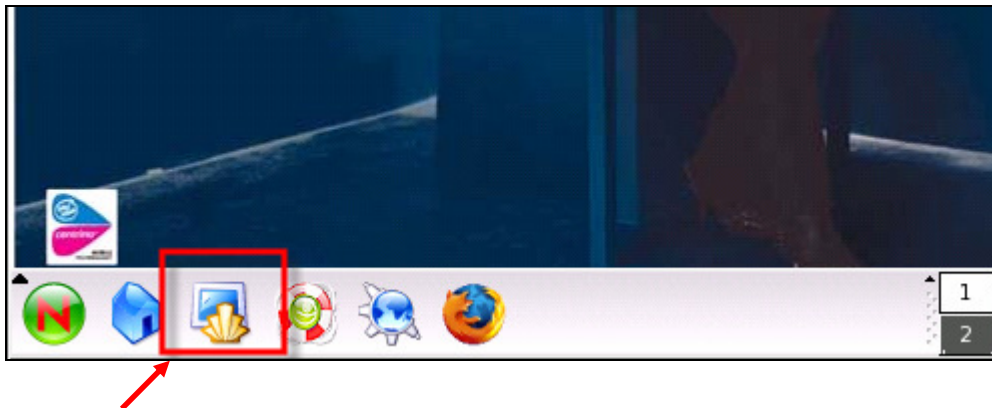
        __ b. Enter the command: `cd /opt/IBM/WAS61/AppServer/bin/ProfileManagement`

                        `(Tip: The TAB key is the file completion character)`

        __ c. To start the Profile Management Tool, enter the command: `./pmt.sh`

        __ d. Click **Next** in the Welcome window

        __ e. Select the **Cell** profile and click **Next**
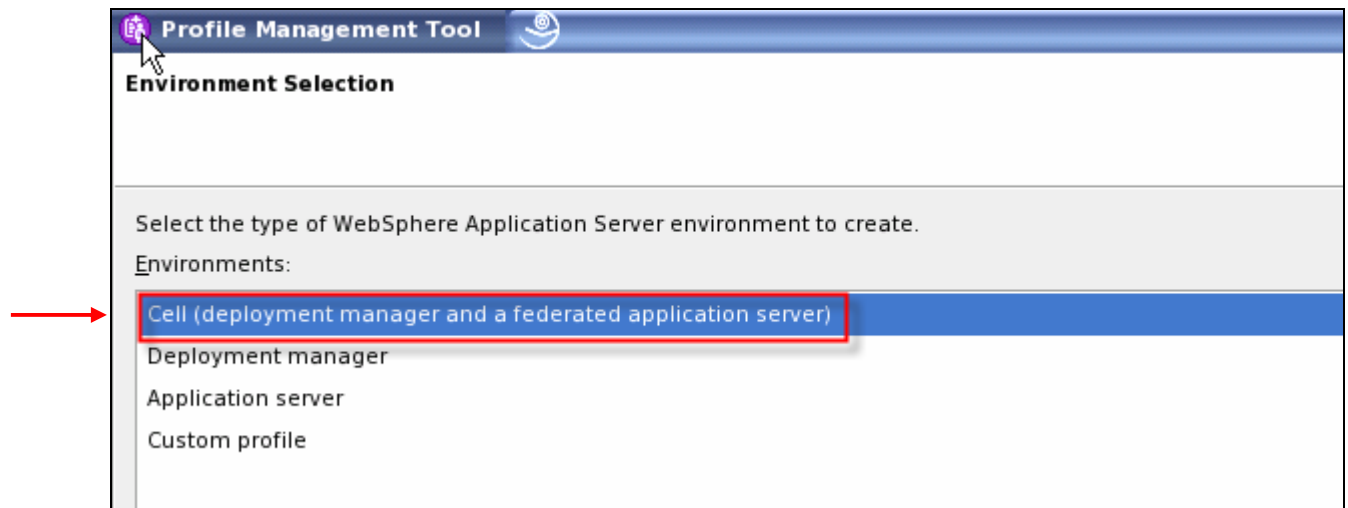
__ f. Select **Typical profile creation** to have default values generated for this profile. Click **Next**

__ g. Ensure the **Enable administrative security** box is checked

__ h. Enter the following values in the spaces provided. **Do not use copy and paste here. Prevent any mistakes by using the keyboard to enter every value.**

User name: 	 **jdoe10**
Password: 	 **jdoe10**
Confirm password: 	 **jdoe10**

__ i. Click **Next**

__ j. Examine the information in the **Profile Creation Summary**
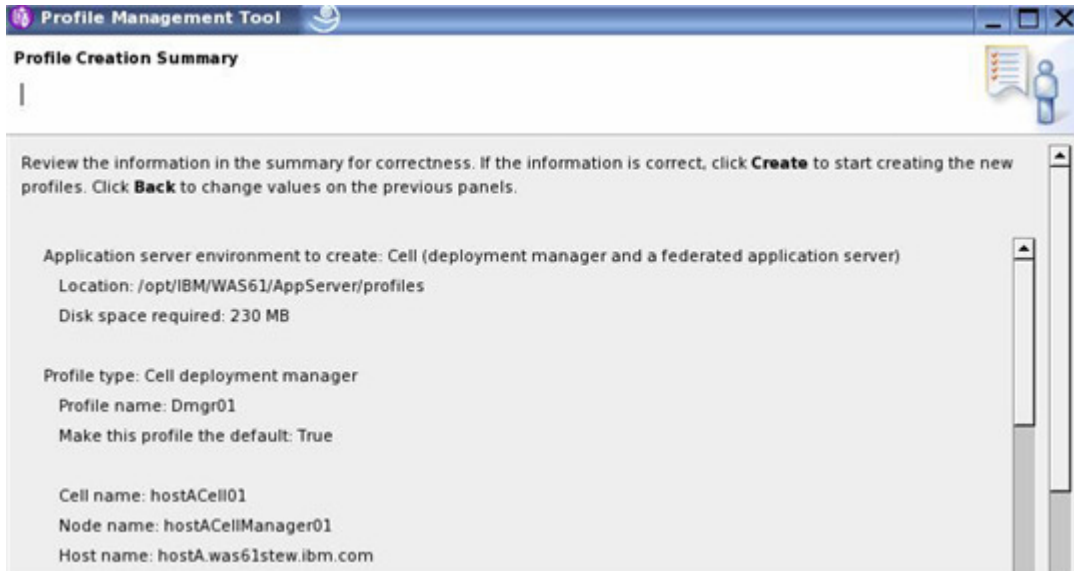
__ k. Click **Create** and wait while the profile is created.

__ l. **Uncheck** *Launch the First steps console* and click **Finish**

____ 2. **Testing the Profile Configuration**

In this section of the lab, you will start the WebSphere Application Server components and test the newly created cell profile.

__ a. Follow instructions from the Common Tasks in **Appendix A** (at the end of this document) to start the Deployment Manager. The Deployment Manager profile is **Dmgr01**.

__ b. Follow instructions from the Common Tasks in **Appendix A** to start the Node Agent. The Node Agent is member of the **AppSrv01** profile.

__ c. Start a **browser** window from the desktop

__ d. Enter the address **http://localhost:9060/ibm/console** or **http://hosta:9060/ibm/console**
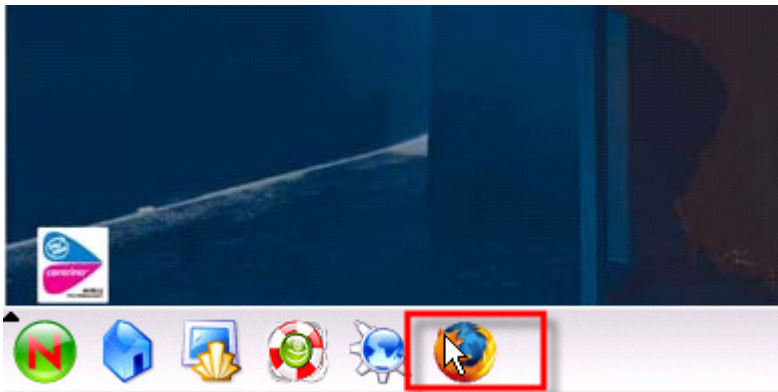
__ e. Because global security is enabled, you will be redirected to a secure page. There will be a prompt to accept a certificate. Select **Accept this certificate permanently.** Click **OK**
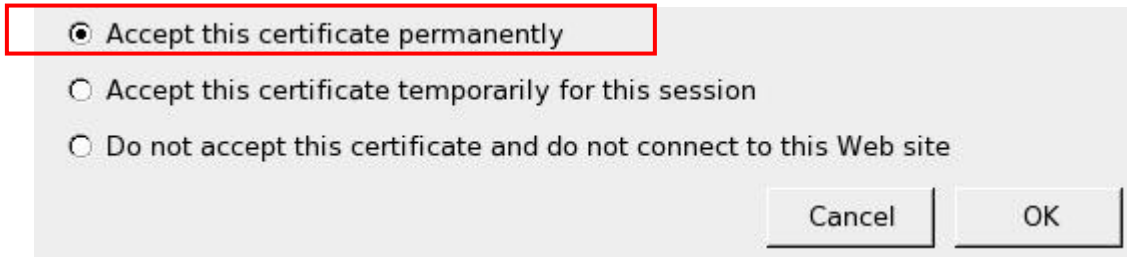
__ f. Select **OK** for any Domain Name warning.

__ g. Select **OK** for the Security Warning

__ h. Enter `jdoe10` for both **User ID** and **Password.** Please do not use copy and paste for the password**.** Click the **Log in** button.
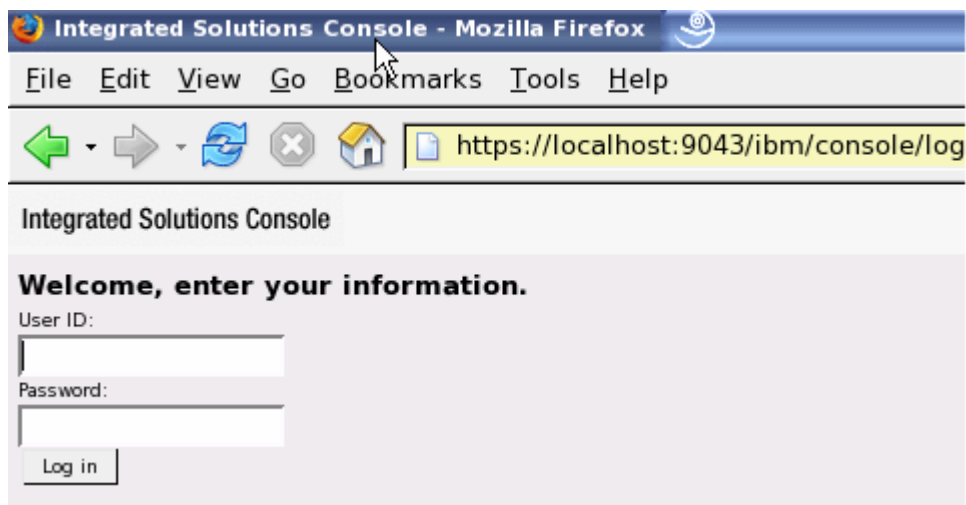
__ i. Enter **Never for the Site** to remember the password
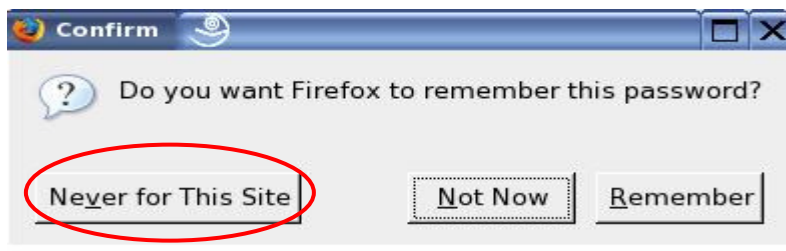
__ j. In the Navigation panel, click on **Servers →Application Servers**
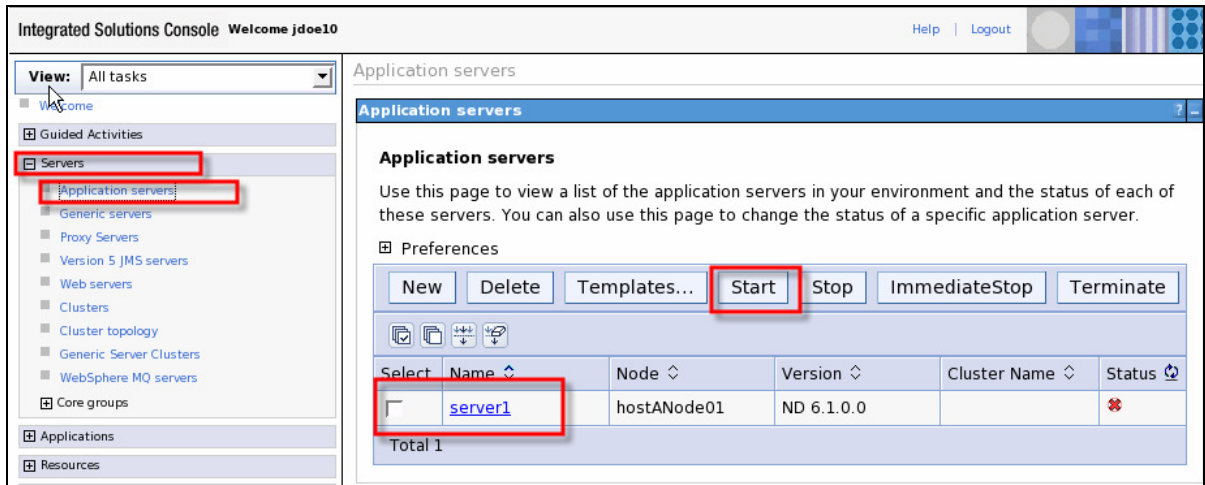
__ k. **Start server1.** Follow the instructions from **Appendix A - Common Tasks** if you are not familiar with this activity.

__ l. Open another browser window and enter **http://localhost:9080/snoop**. The snoop servlet should display if the configuration was successful.
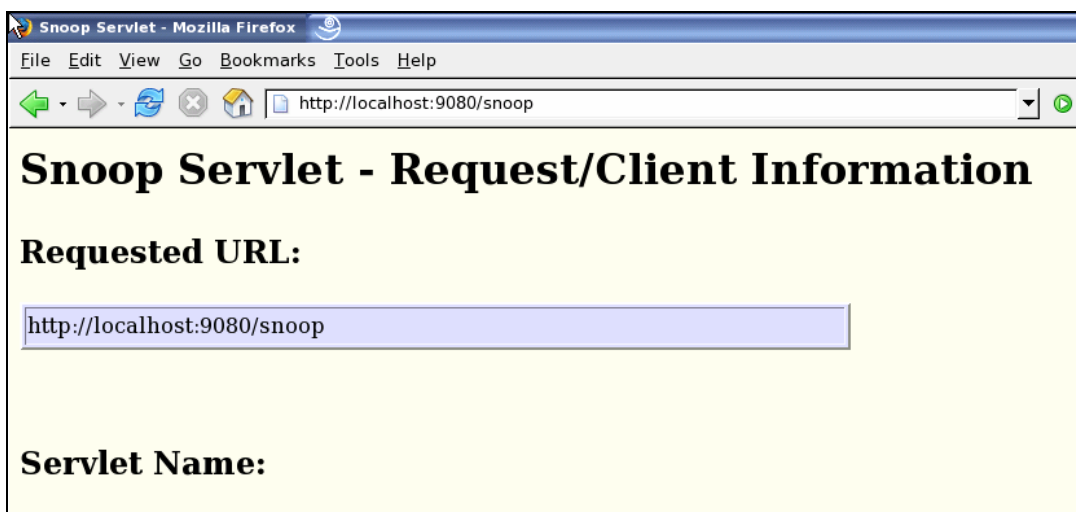
Part 2: Web Server and Plug-in Configuration

The lab image comes with IBM HTTP Server v6.1 and the WAS 6.1 Plug-in installed. In this section, you will configure a Web Server instance to be administered through the WebSphere Administrative Console and enable requests for the snoop servlet to be routed through the Web Server.

____ 1.   Configure the IBM HTTP Server

    __ a. Open the Administrative Console and navigate to **Servers → Web servers**
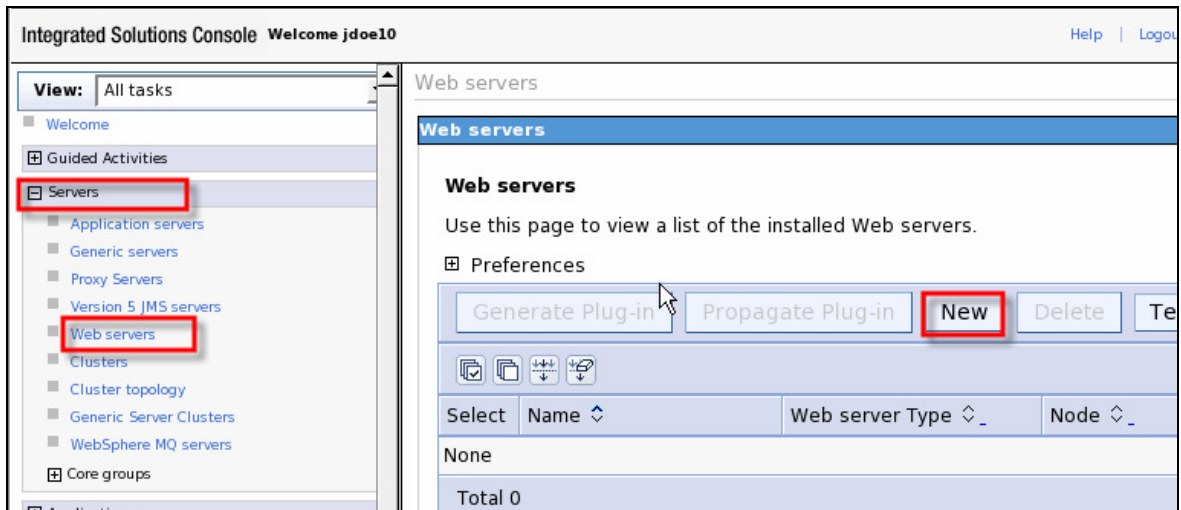
    __ b. In the Workspace, click **New**

    __ c. Enter **webserver1** for **Server name**
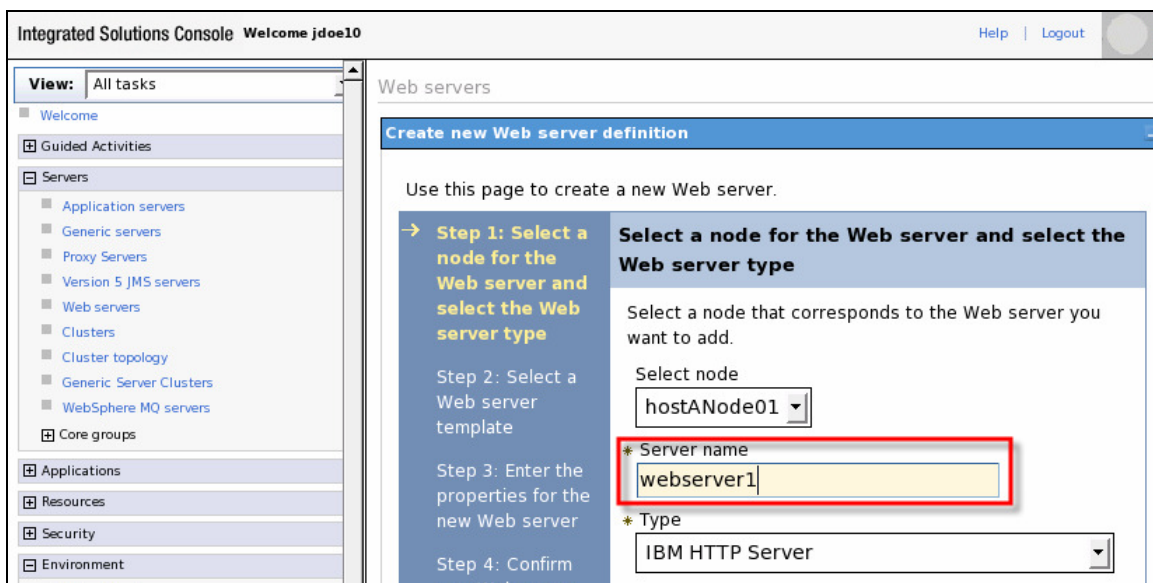
    __ d. Leave the default node of **hostANode01**. Ensure **Type** is **IBM HTTP Server**

    __ e. Click **Next**

    __ f. Ensure the IHS template is selected and click **Next**

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__ g. Verify the **Port** is set to **80**

__ h. Verify the Web server installation location is `/opt/IBM/HTTPServer`

__ i. Verify the Plug-in installation location is `/opt/IBM/HTTPServer/Plugins`

__ j. Ensure the **Application mapping to the Web server** is set to **All**

Use this page to create a new Web server.

Step 1: Select a node for the Web server and select the Web server type	**Enter the properties for the new Web server**
	Enter the Web server properties.
Step 2: Select a Web server template	* Port
	80
→ **Step 3: Enter the properties for the new Web server**	Web server installation location
	/opt/IBM/HTTPServer
	* Plug-in installation location
	/opt/IBM/HTTPServer/Plugins
Step 4: Confirm new Web server	Application mapping to the Web server
	All

Previous | Next | Cancel

__ k. Click **Next**

__ l. Click **Finish**

__ m. Locate the **Messages** section. By default with WAS v6.1, the **Save** command does **not** synchronize changes across nodes. Change this option by clicking on **Preferences**

☐ Messages

ℹ New server is created successfully.

ℹ Modify variables, resources, and other server configuration settings, such as message broker queue names before running the newly created server.

⚠ 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 after saving can be enabled in Preferences.

⚠ The server may need to be restarted for these changes to take effect.

__ n. In the Console Preferences section, select **Synchronize changes with Nodes**

Web servers > **Save** > **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

Apply   Reset

__ o. Click **Apply**

__ p. In the Messages section, click **Save**

☐ Messages
   ℹ Your preferences have been changed.
   ⚠ 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.

__ q. The Node synchronization should complete successfully. Click **OK**

Web servers > Synchronize changes with Nodes

The current status of the Nodes being synchronized.

ADMS0201I: The configuration synchronization started for node: hostANode01.

ADMS0205I: The configuration synchronization completed successfully for node: hostANode01.

ADMS0203I: The automatic synchronization mode is enabled for node: hostANode01.

ADMS0208I: The configuration synchronization complete for cell.

OK
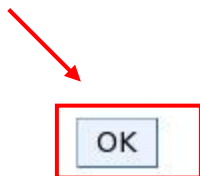
__ r. Click on the **Web servers** breadcrumb.

Web servers

Web servers > Console Preferences

Specify user preferences for the administrative console workspace.
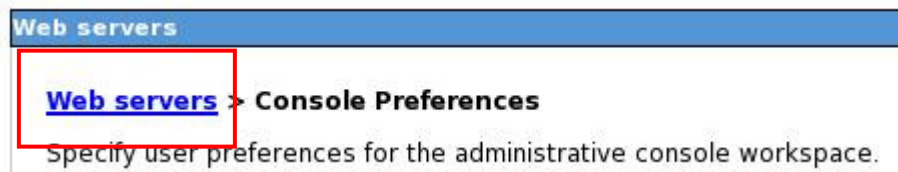
____ 2.   Test the Web Server/Plug-in Configuration

__ a. **Start webserver1**. Refer to Appendix A if you are not familiar with this task.

Web servers

Use this page to view a list of the installed Web servers.

⊞ Preferences

| Generate Plug-in | Propagate Plug-in | New | Delete | Templates... | Start | Stop | Terminate |

Select	Name ◇	Web server Type ◇	Node ◇	Version ◇	Status ◎
☑	webserver1	IBM HTTP Server	hostANode01	ND 6.1.0.0	✖

Total 1

__ b. Open a web browser and enter **http://localhost/**. The IBM HTTP Server v6.1 home page displays.

__ c. Enter the URL **http://localhost/snoop** . The snoop servlet should display if the HTTP Server configuration was successful. Note: Previously you used **http://localhost:9080/snoop** to access the Snoop Servlet.
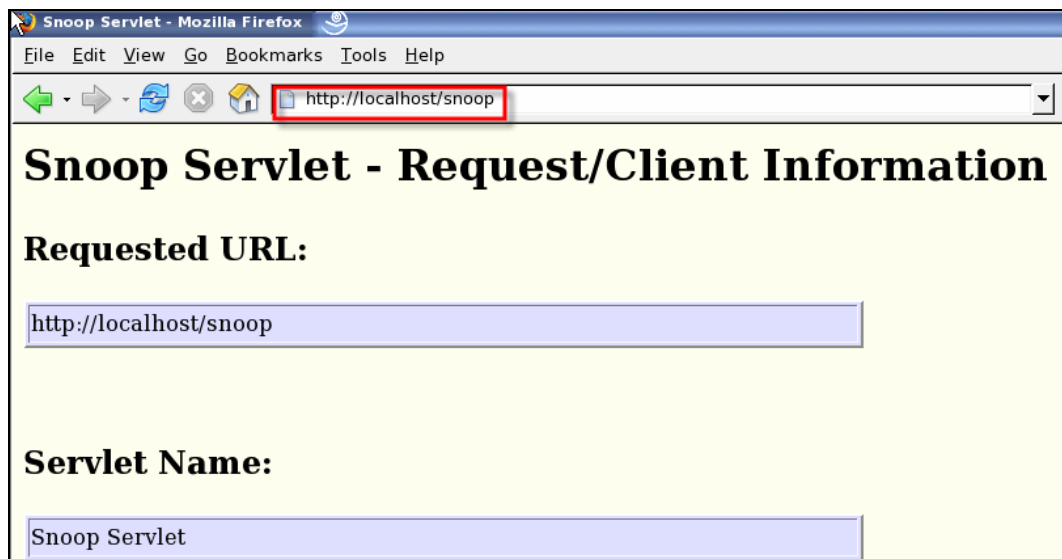
_____ 3.   **Test the IBM HTTP Server using mod_status**

IBM HTTP Server v6.1 contains new functionality. The **mod_status** module allows a server administrator to find out how well their server is performing.

__ a. Open the Administrative Console and navigate to **Servers → Web servers**

__ b. In the Workspace, click on **webserver1**

__ c. Locate the **Configuration file name**. Click the **Edit** button

__ d. **Resize** the browser to show **both** the httpd.conf editor scrollbar and the browser scrollbar. Refer to the picture below for details.
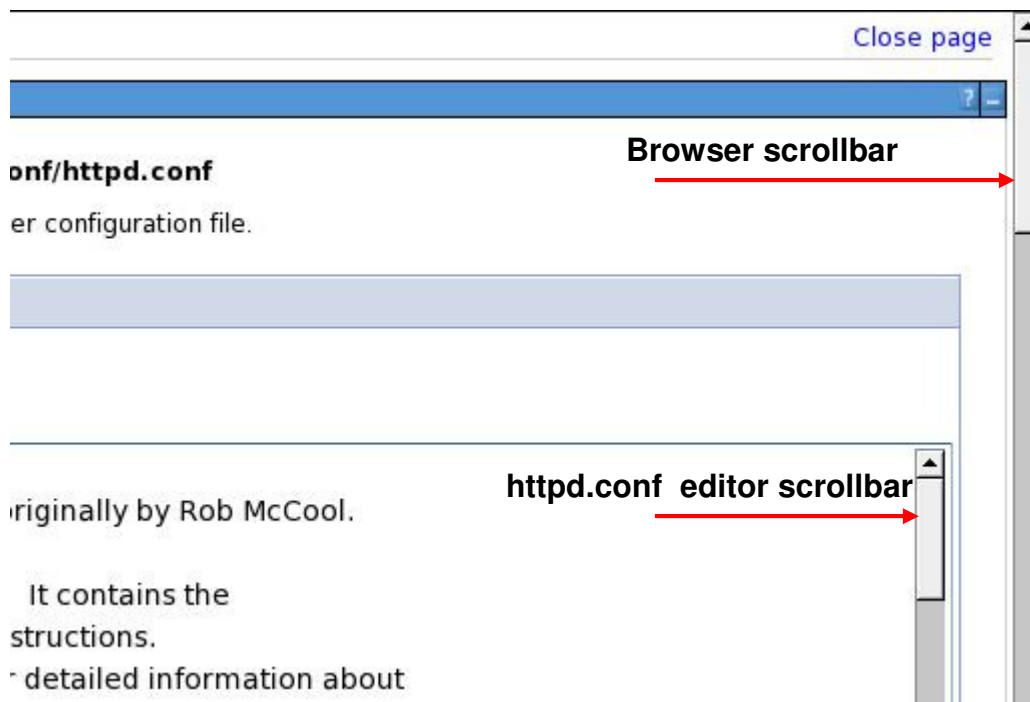
__ e. In the httpd.conf editor, locate the stanza shown below. It is approximately on line number 175 or 20% into the file.

```
# ExtendedStatus controls whether Apache will generate "full" status
# information (ExtendedStatus On) or just basic information (ExtendedStatus
# Off) when the "server-status" handler is called. The default is Off.
#
#LoadModule status_module modules/mod_status.so
<IfModule mod_status.c>
ExtendedStatus On

</IfModule>
```

__ f. Remove the leading **#** from the **#LoadModule status_module modules/mod_status.so** line

__ g. The stanza should now read:

```
# ExtendedStatus controls whether Apache will generate "full" status
# information (ExtendedStatus On) or just basic information (ExtendedStatus
# Off) when the "server-status" handler is called. The default is Off.
#
LoadModule status_module modules/mod_status.so
<IfModule mod_status.c>
ExtendedStatus On

</IfModule>
```

__ h. Locate the stanza shown below. It is approximately on line number 750 or 90% into the file:

```
#
# Allow server status reports generated by mod_status,
# with the URL of http://servername/server-status
# Change the ".example.com" to match your domain to enable.
#
#<Location /server-status>
#    SetHandler server-status
#    Order deny,allow
#    Deny from all
#    Allow from .example.com
#</Location>
```

__ i. Enable this stanza by making the changes shown below.

```
#
# Allow server status reports generated by mod_status,
# with the URL of http://servername/server-status
# Change the ".example.com" to match your domain to enable.
#
<Location /server-status>
    SetHandler server-status
</Location>
```

__ j. Click the **OK** button at the bottom of the editor

__ k. Click the **OK** button again, below the Configuration file name

* Configuration file name

${WEB_INSTALL_ROOT}/conf/httpd.conf   [Edit]

[Apply] [OK] [Reset] [Cancel]

__ l. **Save** your changes.

__ m. Click **OK** when the changes have synchronized.

__ n. **Stop** webserver1

__ o. **Start** webserver1

__ p. Open a browser and enter **http://localhost/server-status**

Apache Status - Mozilla Firefox

File Edit View Go Bookmarks Tools Help

http://localhost/server-status

Apache Server Status for localhost

Server Version: IBM_HTTP_Server
Server Built: Apr 20 2006 07:36:40

Current Time: Tuesday, 30-May-2006 17:40:23 PDT
Restart Time: Tuesday, 30-May-2006 17:39:43 PDT
Parent Server Generation: 0
Server uptime: 39 seconds
Total accesses: 0 - Total Traffic: 0 kB
CPU Usage: u0 s0 cu0 cs0
0 requests/sec - 0 B/second -
1 requests currently being processed, 49 idle workers

__ q. Access **http://localhost/snoop** with multiple requests and then return to
http://localhost/server-status to examine the results. The **Total accesses:** row should
increase, along with the number of requests.

__ r. **Logout** of the WebSphere Administration Console and **close** all browsers when you are finished

__ s. Stop the **NodeAgent** and the **Deployment Manager**. Refer to Appendix A if you are not
familiar with this task.

Part 3: IBM Installation Factory for WebSphere Application Server

This section introduces the IBM Installation Factory for WebSphere Application Server, which you can use to create a customized installation package (CIP).

A customized installation package (CIP) is a customized WebSphere Application Server installation image that can include one or more maintenance packages, a configuration archive from a stand-alone application server profile, one or more enterprise archive files, and scripts and other files that help customize the resulting installation. The IBM Installation Factory for WebSphere Application Server creates CIPs.

____ 1. Get started by creating a build definition for the CIP using the Installation Factory console.

  __ a. Open a shell window and navigate to **/opt/IBM/InstallationFactory/bin**

  __ b. Enter the command **./ifgui.sh**
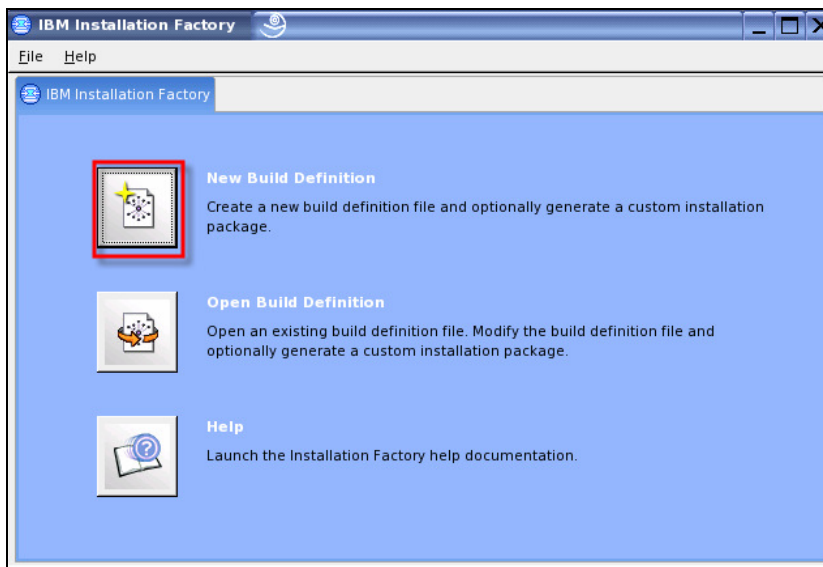
  __ c. Click the **New Build Definition** button

  __ d. Make sure **IBM WebSphere Application Server 6.1.0** is selected in **Products**
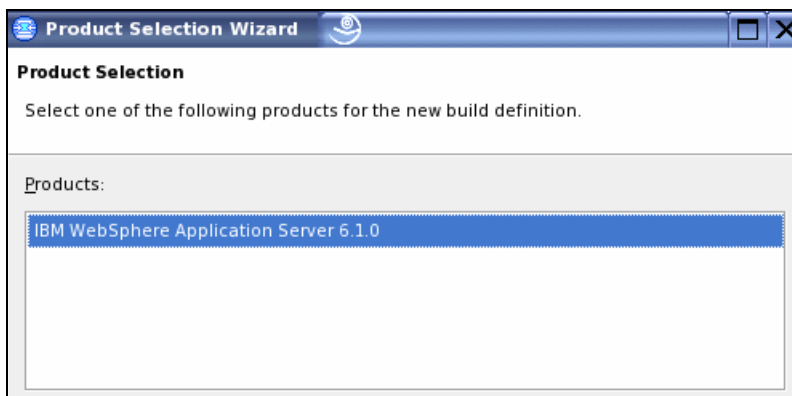
  __ e. Click **Next**

__ f. Select **Network Deployment,** the edition we are using for this lab.
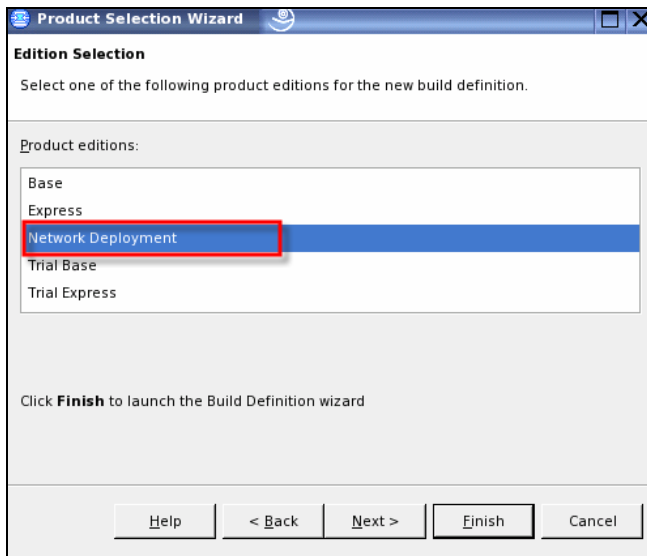
__ g. Click **Finish**

__ h. In the Mode Selection dialog, select **Connected Mode**. Ensure the platform is **Linux – Intel IA32**.   When the Build Definition wizard has access to the product installation image, maintenance packages, and other components required to create the CIP, you can use it in "connected mode." In this mode, the Build Definition wizard can validate the files that are provided as input and optionally generate the CIP in addition to creating the build definition file.
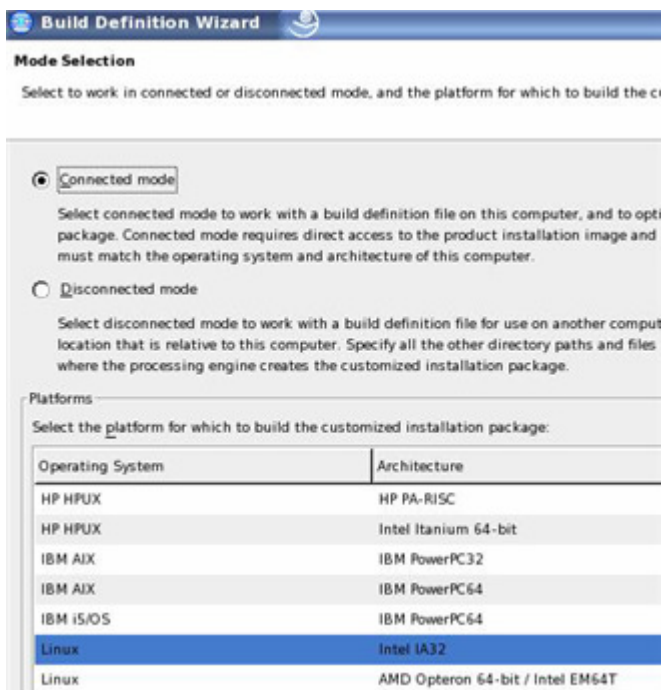
__ i. Click **Next**

__ j. Create a unique identifier for your CIP. The identifier you select will be combined with a version number to create a full package identifier. Enter an **Identifier** of **com.ibm.was61stew.myproduct** (Type over the highlighted **myproduct)**

Package Identification

Specify an identifier and version for the customized installation package.

Specify a universally unique identifier for the customized installation package. This identific
identifier. During installation, the full package identifier is used to create a directory that c

To create an identifier, use a reverse domain naming scheme. Start with a top-level domain
division, and product name, all separated by periods, for example: com.mycompany.mydivis

Identifier:

com.ibm.was61stew.myproduct

Version:

1.0.0.0

Full package identifier:

com.ibm.was61stew.myproduct_1.0.0.0

__ k. Click **Next** (if the **Next** button is not enabled, you did not make a change in the **Identifier** field)

__ l. Accept the defaults for **Build Definition** and **Customized Install Package** and click **Next**

__ m. Enter an installation image location of **/wasv61image** (Use the **Browse** button or type in the textbox). This is the location of an Intel Linux IA32 WAS Network Deployment installation image. Click **Next.** The wizard will reject the location if it does not contain a valid WAS installation image.

Build Definition Wizard

Product Installation Image

Provide the location of the installation image for the customized installation package.

Provide the location of the IBM WebSphere Application Server 6.1.0 Network Deployment edition installation image to include in the customized installation package.

Product installation image directory path:

/wasv61image

Browse...

__ n. The build definition file must identify product features to include in the customized installation package (CIP). Features that you include in the CIP are displayed when an installer uses the CIP to install the product. Optional features that you do not include in the CIP are not available when an installer uses the CIP to install the product. Select **Application Server Samples** to include in your CIP and click **Next**
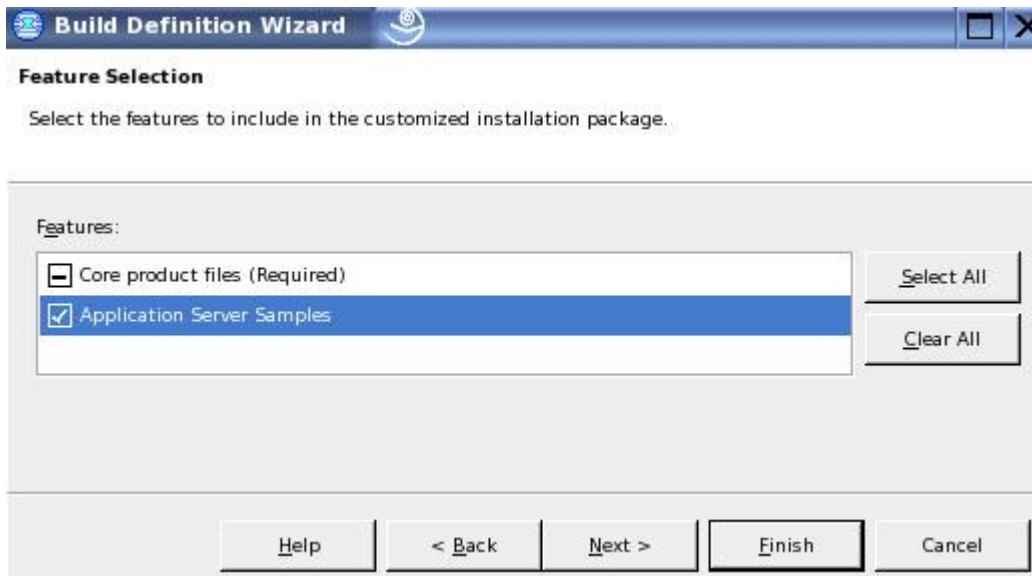
__ o. In the Maintenance packages panel, you would include all necessary maintenance. Since this lab is based on the initial WAS v6.1 release, there is no available maintenance to use for this lab. Click **Next**
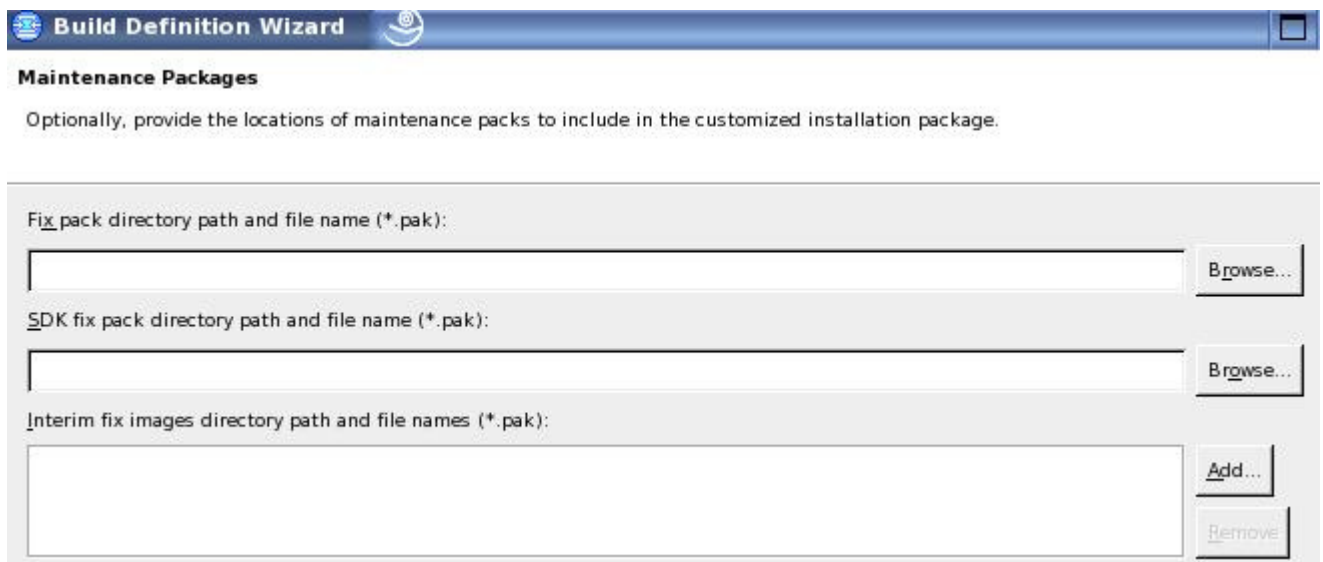
__ p. In the **Install and Uninstall Scripts** panel, you can enter scripts to customize your installation. The scripts will be run in the order listed. There are no scripts included in this lab. Click **Next**
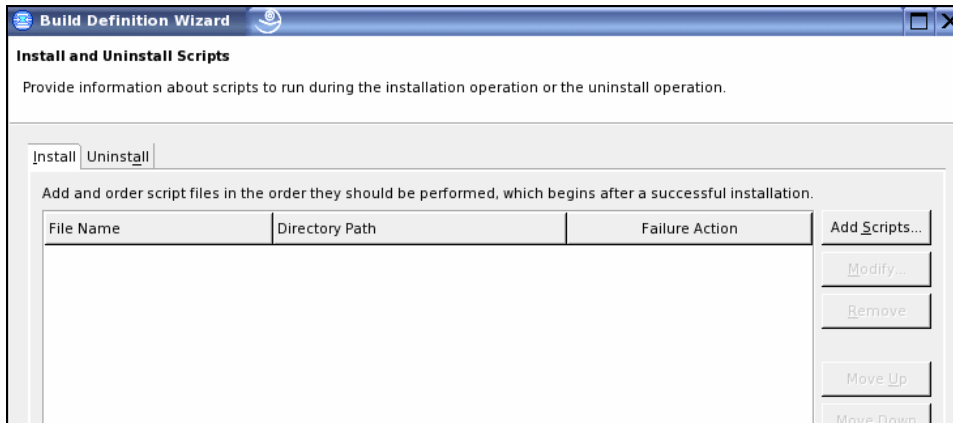
__ q. In the **Profile Customization** panel, you can include artifacts to customize your installation by including Configuration Archives (CARs), EARs or scripts to customize profiles. This lab will not include any customizations. With a Profile type of **Deployment Manager**, the **Add Scripts** button is active.
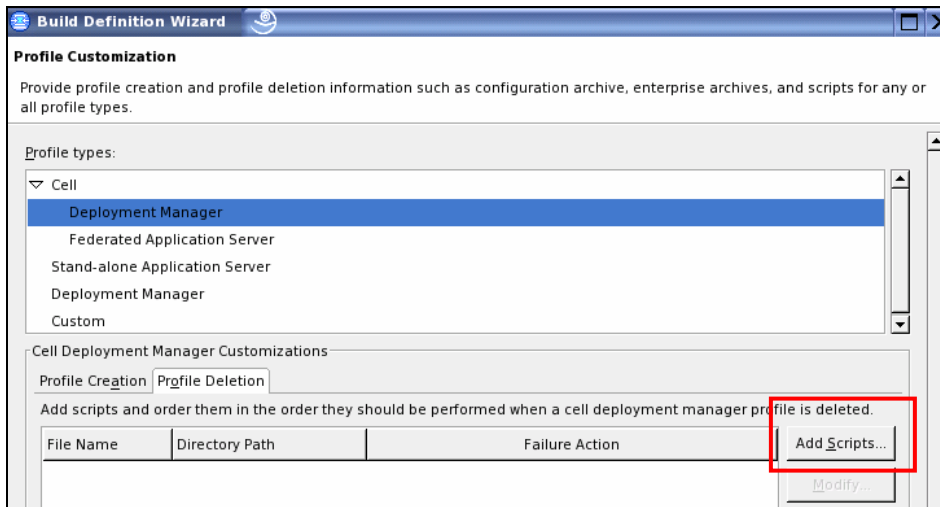
__ r. Now select a Profile type of **Stand-alone Application Server**. Notice the **Add Scripts**, **Add Enterprise Archives**, and **Add Configuration Archive** buttons are now active. Use a Configuration Archive to help configure a new stand-alone application server profile. You can also deploy EAR files on stand-alone application server profiles.
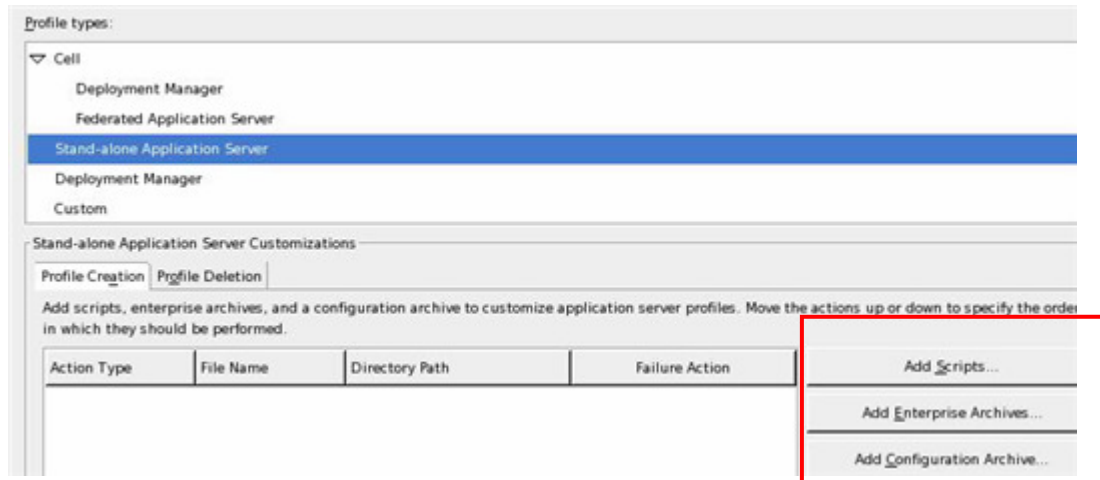
__ s. Click **Next**

__ t. In the **Additional Files** screen, you can select additional files for the CIP to install. Click **Add Files…**. Select the file **/root/sylvia_lg.jpg** (this file has no importance, it's just for demonstration purposes)
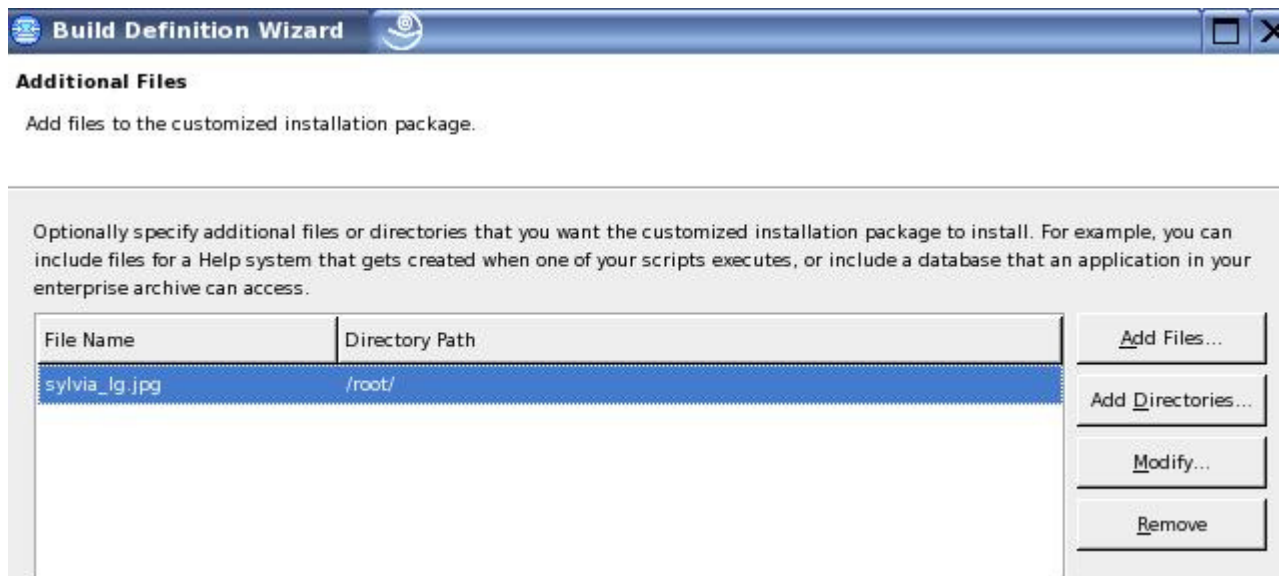
__ u. Click **Next**

__ v. This Authorship screen gives the author of the CIP the option to add information about the CIP.
For the Organization, enter **IBM.** For a Description enter: **This is a custom
installation package built by J. Doe.**

Authorship

Optionally, provide additional information about the package.

The person who performs the installation can use the customized installation pac
panel. Use the following fields to provide additional information to the person pe

Organization:

IBM

Description:

This is a custom installation package built by J. Doe.

__ w. Click **Next**

__ x. In the Preview screen, the author has the option to generate a Build definition file only or to
create a full CIP. **Click** on the **Estimate Size and Available Space** button.

Customized Installation Package Preview

The following information describes the contents of the customized installation package.

⦿ Save build definition file only

◯ Save build definition file and generate customized installation package

Estimate Size and Available Space

Estimated size of the customized installation package:	667	MB
Required free space:	1695	MB
Available free space:	15417	MB

Customized installation package information:

Build definition: /opt/IBM/InstallationFactory/builddefs/com.ibm.was61stew.myproduct_1.0.0.0.xml
CIP build location: /opt/IBM/InstallationFactory/

Universally unique installation package identifier: com.ibm.was61stew.myproduct_1.0.0.0

__ y. In the interest of time, we will not create the CIP. Click **Cancel** to terminate the Build Definition
Wizard and answer **Yes** to exit from the wizard.

__ z. **Close** the IBM Installation Factory

_____ 2.   **The Installation Factory Installation Wizard**

The Installation Factory installer for WebSphere Application Server is based on the Version 6.x full installer program. The Installation Factory installer program is sometimes referred to as the **CIP Installation wizard** or the Installation Factory Installation wizard.

The Installation wizard has the capability to perform a new product installation, an incremental installation by adding features to an existing installation, or an update to an existing installation that updates the installation to a new service level. The term slip install is sometimes used to describe an update to an existing installation that updates the installation to a new service level.

In this section of the lab, you will investigate installing a Custom Installation Package with the information provided in the previous section.

__ a. Open a shell window and navigate to **/opt/IBM/InstallationFactory/ifpackage/WAS**

__ b. Enter the command: **./install**. The CIP Installation wizard for WAS v6.1 starts.


__ c. Click on **About this custom installation package…**

__ d. Examine Custom installation package information. The **Description** contains the information you entered in the previous section of the lab. Click **OK**

__ e. Click **Next**

__ f. Select **I accept both the IBM and the non-IBM terms**. Click **Next**

__ g. After you accept the licensing terms, the Installation wizard checks for a supported operating system and prerequisite patches. Click **Next**

__ h. The Installation wizard checks for a previous installation at the same product level. Specifically, the wizard looks for an existing Version 6.1 installation. In this lab, WAS v6.1 is already installed. Select **Install a new copy of IBM WebSphere Application Server Network Deployment.** Click **Next**

Detected IBM WebSphere Application Server Network Deployment

The installation wizard detected an existing installation of IBM WebSphere Application Server Network Deployment. You can apply maintenance and add new features to an existing copy, install a new copy or create a new profile that runs from the core product files already installed on your computer.

⦿ Install a new copy of IBM WebSphere Application Server Network Deployment

◯ Create a new WebSphere Application Server profile using the Profile management tool

__ i. The Install Sample Applications panel is available. This panel is available because during the Build Definition of the CIP, **Application Server Samples** was chosen.   As a reminder, a picture of the Feature Section page from the Build Definition is shown below.
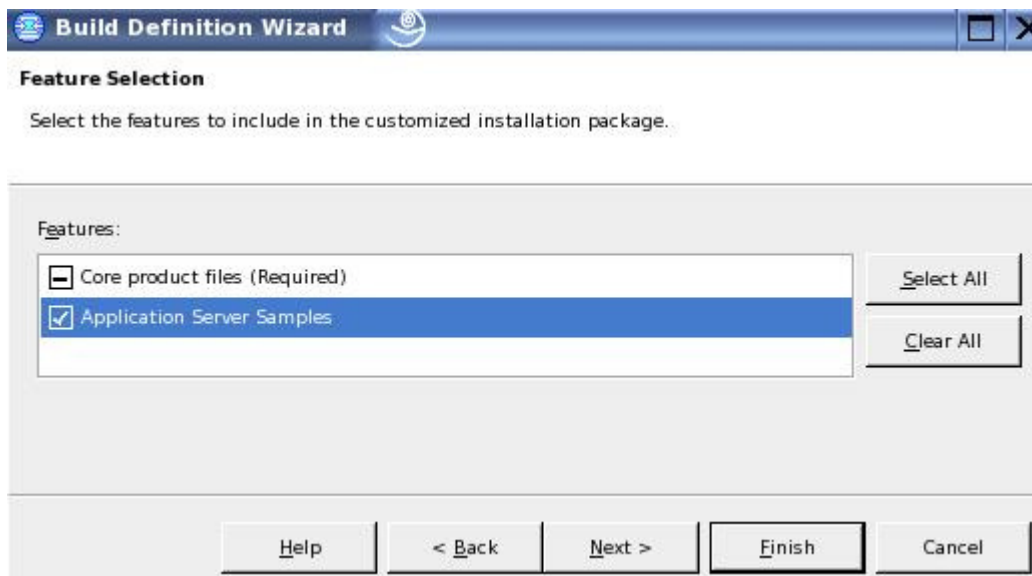
__ j. To save time, you will not complete the CIP installation. Click **Cancel.**   Answer **Yes** to exit.

__ k. Finish the exploration of the Installation Factory. WAS v6.1 was installed in this VMware image using the **CIP Installation wizard**. Explore how this appears in the filesystem.

1) From the SLES Desktop, locate the KDE Panel at the bottom of the workspace. Click on the **Personal Files** icon.

2) From the left-hand icon bar, click on the **Root Folder** icon.
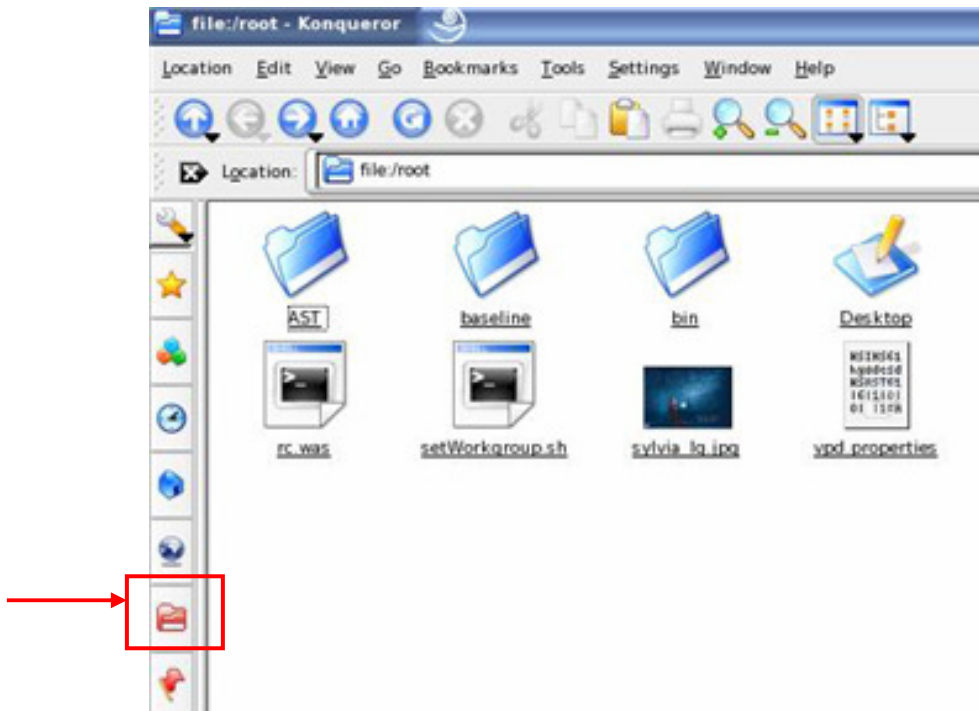
3) Navigate to `/opt/IBM/WAS61/AppServer/cip`

4) You should see two files. Click on `com.ibm.was61stew.myproduct_1.0.0.0`

5) Click on **userFiles**. You will see the **sylvia_lg.jpg** file specified during the CIP build. As a reference, the Additional Files panel from the Build Definition Wizard is shown below.
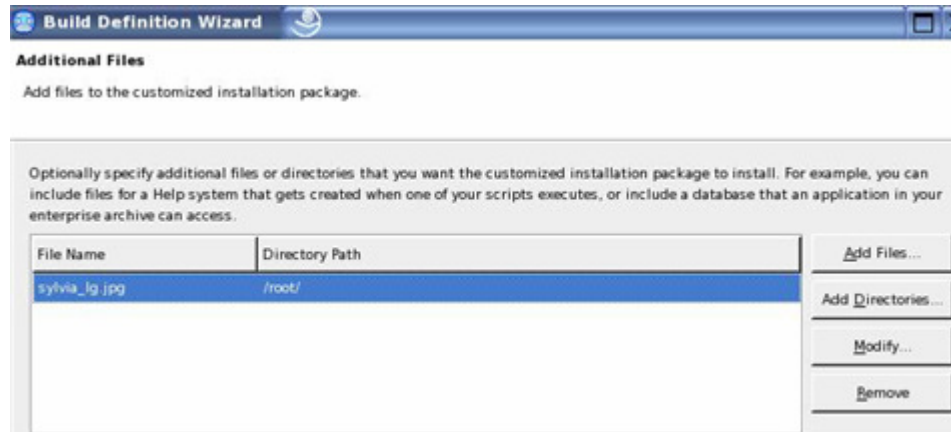
After creating the customized installation package, you have now seen that installing and configuring a WebSphere software product is a one-step process: install the customized installation package.

What you did in this exercise

In this exercise, you configured WebSphere Application Server 6.1 environment using the Profile Management Tool. You learned how to configure a web server instance to be administered through the WebSphere administration tools. You also configured the web server for routing of requests for the snoop servlet. You walked through a basic scenario of creating a custom installation package using the Installation Factory.

Appendix A: Common Tasks Used Throughout the Exercise

This section contains instructions for simple tasks that are done many times during this lab exercise. References to these tasks from other parts of the exercise are made when they need to be performed.

Common Task 1: Start a Process

____ 1.   The task of starting server processes is done from a command window, which will differ depending on which operating system is in use. This example illustrates the Linux/Unix case.

__ a. Open a Terminal Program / Linux Shell.
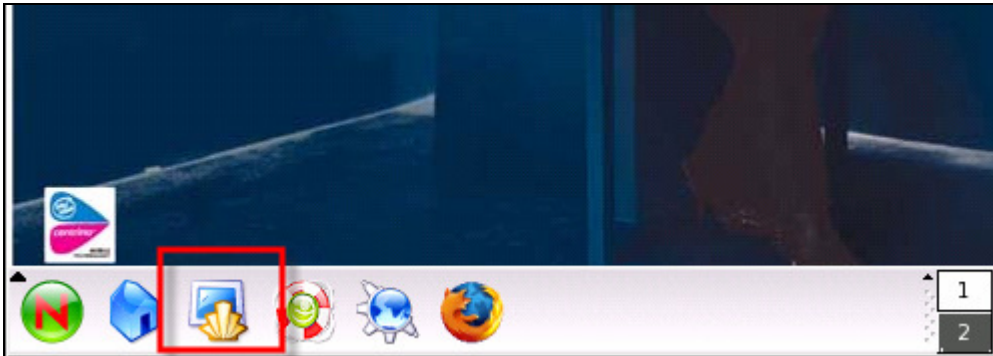
__ b. Navigate to the **bin** directory of the relevant profile.

For example, if your profile is **Dmgr01** --
`cd /opt/IBM/WAS61/AppServer/profiles/Dmgr01/bin`

__ c. To start a process, the command varies depending on the server type.

For a Deployment Manager, enter the command `./startManager.sh`
For a Node Agent, enter the command `./startNode.sh`
For an Application Server, enter the command `./startServer.sh <server name>`

__ d. Server start is successful when the following line appears in the terminal window
ADMU3000I: Server <server name> open for e-business; process id is XXX

Common Task 2: Stop a Process

_____ 2.   The task of starting server processes is done from a command window, which will differ depending on which operating system is in use. This example illustrates the Linux/Unix case.

_____ a. Open a Terminal Program / Linux shell

_____ b. Navigate to the **bin** directory of the relevant profile. For example, if your profile is **Dmgr01** --
   `cd /opt/IBM/WAS61/AppServer/profiles/Dmgr01/bin`

_____ c. To stop a process, the command varies depending on the server type.

   If global security is not enabled:

   For Deployment Manager, enter the command `./stopManager.sh`
   For Node Agent, enter the command `./stopNode.sh`
   For an Application Server, enter the command `./stopServer.sh <server name>`
   To stop all servers on a node use `./stopNode.sh –stopservers`

_____ d. If global security is enabled:

   Use the options `–username <user name>` and `–password <password>` with the commands in __**c.** above

_____ e. Server stop is successful when the following line appears in the terminal window
   ADMU4000I: Server <server name> stop completed.


Common Task 3: Save the Configuration

_____ 3.   The task of saving your configuration changes to the Master Configuration is done using the **Save to Master Configuration Panel.** This panel can be reached in a several different ways, depending upon what configuration activities you have been doing. These instructions will document the most common ways to access the panel.

__ a. Click **Save** in the Taskbar

__ b. Click **Save** in Message(s) panel
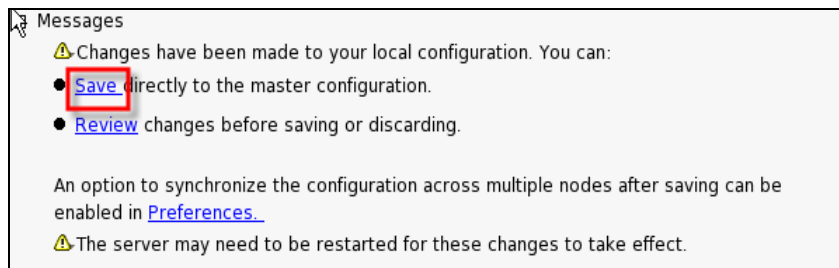
__ c. Click **Save to Master Configuration** after installing an application.
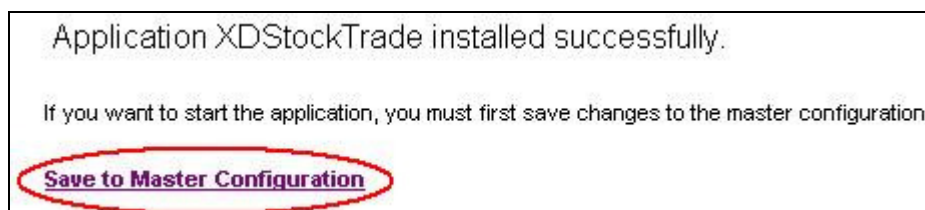
__ d. Ensure that the **Synchronize changes with Nodes** checkbox is checked
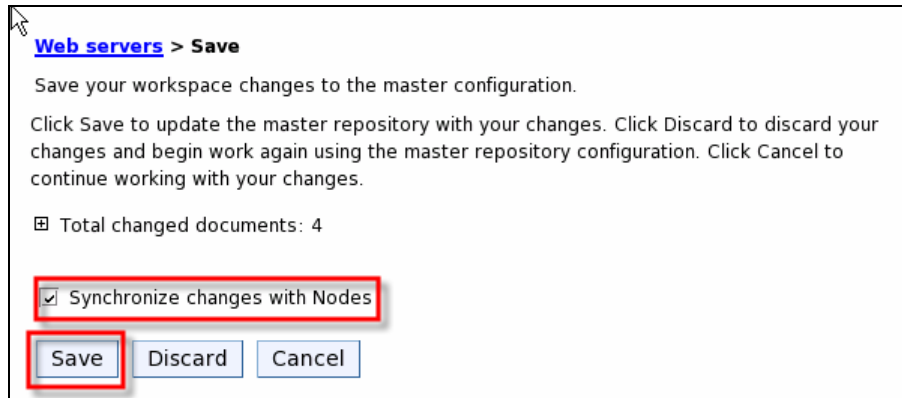
__ e. Click **Save** and wait for the Home Panel to be displayed, which indicates the save is complete.

Common Task 4: Start Server = <servername>

____ 4. This task is used to start a single server named <servername>.

__ a. In the Navigation Tree, open **Servers** and select **Application Servers**

__ b. Select the checkbox to the left of **<servername>** in the servers list

__ c. Click **Start**
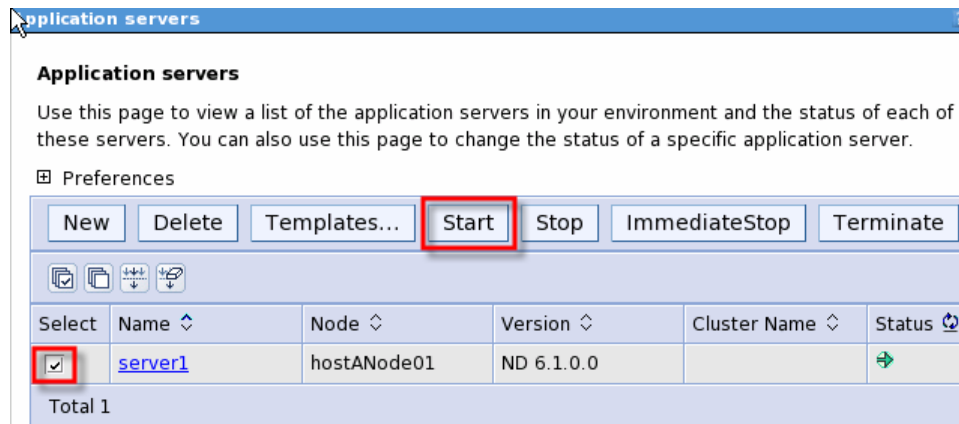
__ d. Wait until <servername> shows a status of Started (indicated by the green arrow). This may take about a minute. You may have to hit the **Refresh View** icon if the status doesn't update automatically.

Common Task 5: Stop Server = <servername>

_____ 1.   This task is used to stop a single server named <servername>.

   __ a. In the Navigation Tree, open **Servers** and select **Application Servers**

   __ b. Select the checkbox to the left of **<servername>** in the servers list

   __ c. Click **Stop**

   __ d. Wait until <servername> shows a status of Stopped (indicated by the red **X**). This may take about a minute. You may have to hit the **Refresh View** icon if the status doesn't update automatically.