IBM® WEBSPHERE® APPLICATION SERVER V6.0.2 – LAB EXERCISE

WebSphere Application Server Network Deployment V6.0.2 Installation Guide - includes IPv6 setup
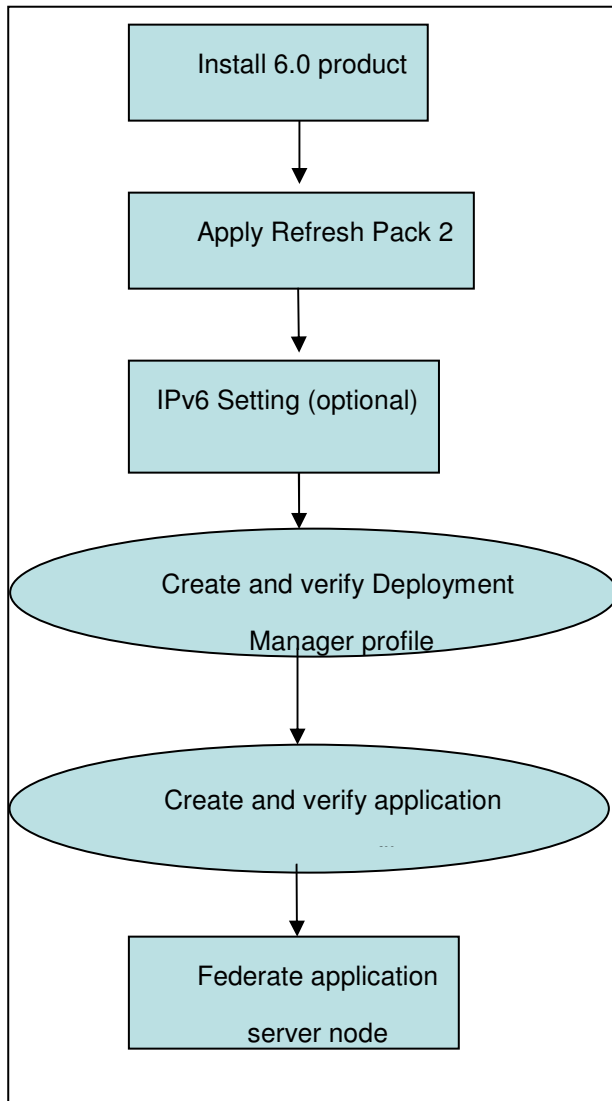
NOTE: Education materials and other documentation as applicable including programming manuals, operating guides, physical planning manuals and installation manuals related to the IBM Products may be subject to change.

What this exercise is about

The objective of this lab is to show you how to install WebSphere Application Server V6 ND edition. This lab will guide you through a basic install, applying refresh pack, creation of an Application Server profile and Deployment Manager Profile. It will also show the federation of the Application Server profile into Deployment manager's cell. Additionally, it will show a number of the options when creating a new profile as well as demonstrate a number of command line tools for working with profiles.

Basic Installation Flow

Install 6.0 product

↓

Apply Refresh Pack 2

↓

IPv6 Setting (optional)

↓

Create and verify Deployment Manager profile

↓

Create and verify application

↓

Federate application server node

Part 1: Install WebSphere Application Server Product

In this part of the exercise you will install WebSphere Application Server product version 6.0

Part 2: Update with Refresh Pack

Service Pack 2 will be applied to the product to upgrade the product to V6.0.2

Part 3: IPv6 Setting (optional)

This section will show you how to set up Windows Operating System for IPv6. ***Note: if you are not using IPv6, please skip this section***

Part 4: Working with Profiles

In this section, you will do the following:

1. Create a Deployment Manage profile **dmgr**

2. Verify installation of Deployment Manager

3. Create Application Server profile **inst1**

4. Verify installation of the Application Server profile

Part 5: Federating a Node

The node for the application server will be federated into **dmgr** using the **addNode** command

Lab Requirements

Instructions and subsequent documentation use symbolic references to directories, which are listed as follows:

Reference Variable	**Windows** Location	**Linux** **UNIX** Location
<WAS_HOME>	C:\WebSphere\AppServer	**Linux** /opt/WebSphere/AppServer **AIX** /usr/WebSphere/AppServer
<TEMP>	C:\temp	/tmp
<hostname>	Host name or host address for the machine where the profiles are	Host name or host address for the machine where the profiles are

You will need the appropriate operating system WAS60 CD or the install images to complete this lab.

Space Requirements

If you are going to download the CD images from the website, make sure that you have enough space on your file system.

Temporary Disk Space for install Image: approximately 550MB and additional 650 Meg for unzip

Disk space for product and profile creation: approximately 1GByte

Unzipping the Installation images

1. Create a directory under <TEMP> namely was60

Windows Example: C:\temp\was60

Download the appropriate install images and Refresh Pack from the website to <TEMP>/was60.

For Example:

The following are WAS60 Install Images on the different operating systems

For **AIX** : was.cd.6000.nd.aix.ppc32.tar.gz

For **Solaris** : was.cd.6000.nd.solaris.sparc.tar.gz

For **HP-UX** : was.cd.6000.nd.hpux.parisc.tar.gz

For **Windows** : was.cd.6000.nd.windows.ia32.zip

For **Linux** : was.cd.6000.nd.linux.ia32.tar.gz

2. Navigate to the new directory (<TEMP>/was60) and unpack the file.

Use the gzip to unpack the install image.

Linux **UNIX** Example**: gzip –cd ../ was.cd.6000.nd.linux.ia32.tar.gz | tar –xvf –**

3. Unzip the product image.

Use the unzip utility to unzip the product image.

Windows Example: **unzip ../ was.cd.6000.nd.windows.ia32.zip**

Note: Latest unzip utility can be found at http://www.info-zip.org/pub/infozip/UnZip.html . Latest gzip can be obtained from http://www.gzip.org/#exe

The following screen shot shows the directory structure of the unpacked CD image.

What you should be able to do

At the end of this lab you should be able to:

- Install WebSphere Application Server V6 Network Deployment and apply 6.0.2 Refresh Pack

- Create and configure an application server profile and Deployment Manager and federate Application Server profile into Deployment Manager Cell.

Introduction

Installation of WebSphere has undergone some significant changes in version 6 compared to v5 with the addition of server profiles. Application Server installation is simplified and faster with the introduction of profiles. Profiles allow administrators to manage the server configurations independently from the product binary files.

The biggest improvement to installation is that now you can install one copy of the core files (binary system files and such) on a machine, then use *profiles* to define multiple application server runtime environments -- each with its own administrative interfaces -- that share the core files. This has many positive ramifications for preparing, installing, maintaining, and removing installations, including a decreased footprint.

The Network Deployment product lets you create unlimited numbers of the same stand-alone application. However, the real strength of the Network Deployment product is to create and manage a multimachine environment, where you have installed managed application server nodes on different machines. You can manage all of the application servers as a group, or *cell* by using the administrative console of the deployment manager. Use the Profile creation wizard to create deployment manager profiles, application server profiles, and custom profiles. A deployment manager manages the configuration for all of the managed nodes in its cell and deploys applications to any managed node in the cell. All of the profiles share command files and other product binaries that are created during the installation.

You can propagate the configuration from one profile to another by exporting a profile to a configuration archive and importing it to another profile. This mechanism works between profiles of the same installation or different installations. A restriction is that this mechanism only works for an unfederated profile.
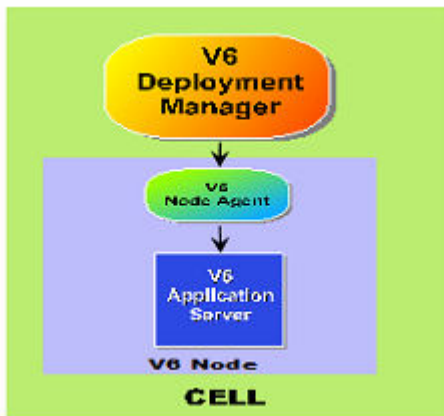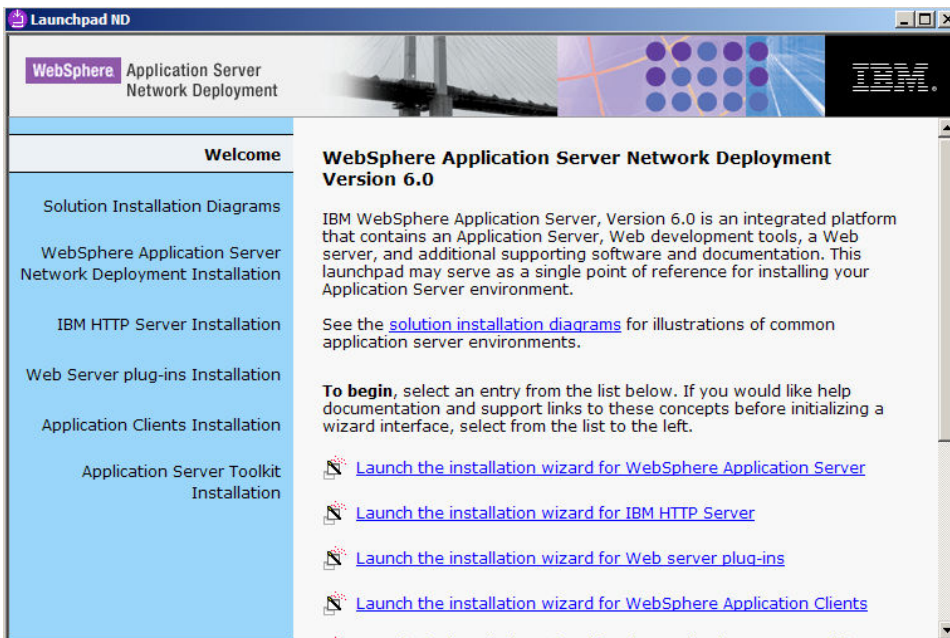
Part 1: Installing WebSphere Application server Product

_____ 1. Open the command prompt, browse to the directory where the installation images are present and issue the command

For **Windows**   **launchpad.bat**

For **Linux** **UNIX**   **./launchpad.sh**

_____ 2.   The following Launchpad ND screen appears. Select **Launch the installation wizard for WebSphere Application Server**


_____ 3. Review the information on the Welcome screen and click **Next**.

_____ 4. Accept the license agreement and click **Next**.

_____ 5. Verify that your system passes the prerequisite check and click **Next**.

_____ 6. If another copy of Application server installation is present on the system, the following screen is displayed. Select **Install new copy of the V6 Application Server product** and Click **Next**
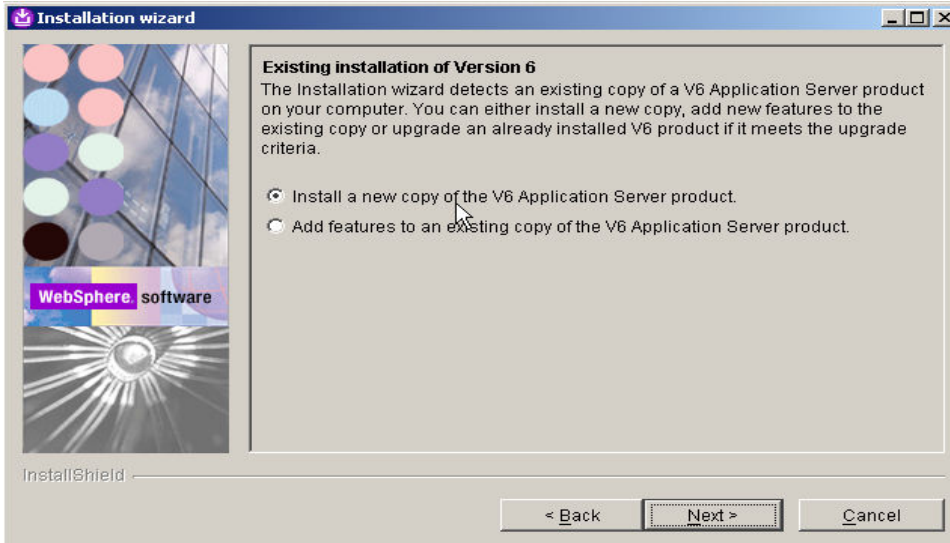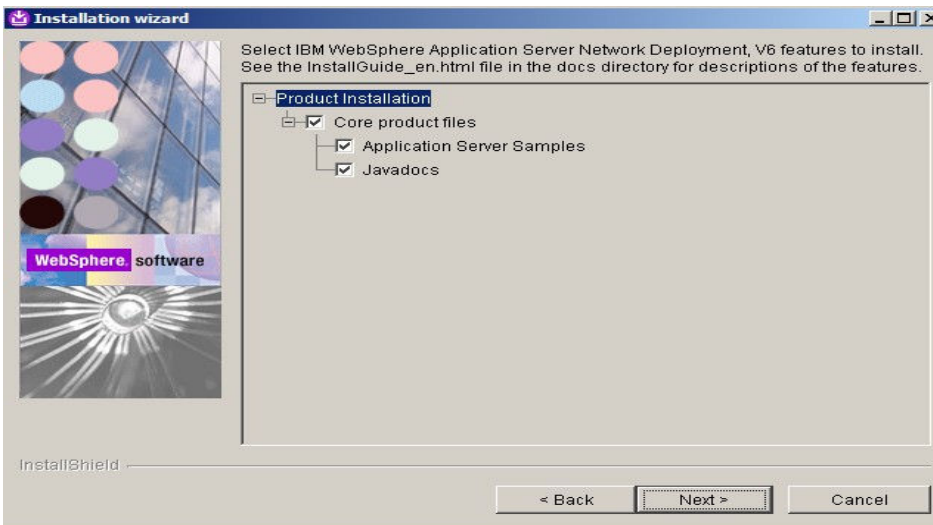
_____ 7. Select the installation directory.

For **Windows** Type **C:\WebSphere\AppServer** as installation path

For **Linux** **HP-UX** Type /**opt**/ **WebSphere**/**AppServer** for Linux and HP

For **AIX** Type /**usr**/**WebSphere**/**AppServer** for AIX

_____ 8. Click **Next**

_____ 9. On this screen you can select the components to be installed. For this lab, accept the defaults and click **Next**


_____ 10. The next screen lists all the features that will be installed. Confirm the features and click **Next**.

_____ 11. The installation of IBM WebSphere Application Server Network Deployment V6 will now begin. Installation time may vary depending on the features you have selected and the resources available on your computer.

____ 12. The Next screen confirms the installation of core product files of **WebSphere Application Server Network Deployment V6.**

At this point, only the core files of the WebSphere Application Server Network Deployment V6 are installed. We also need to create profiles. Before creating profiles it is recommended to update the product with RefreshPack2
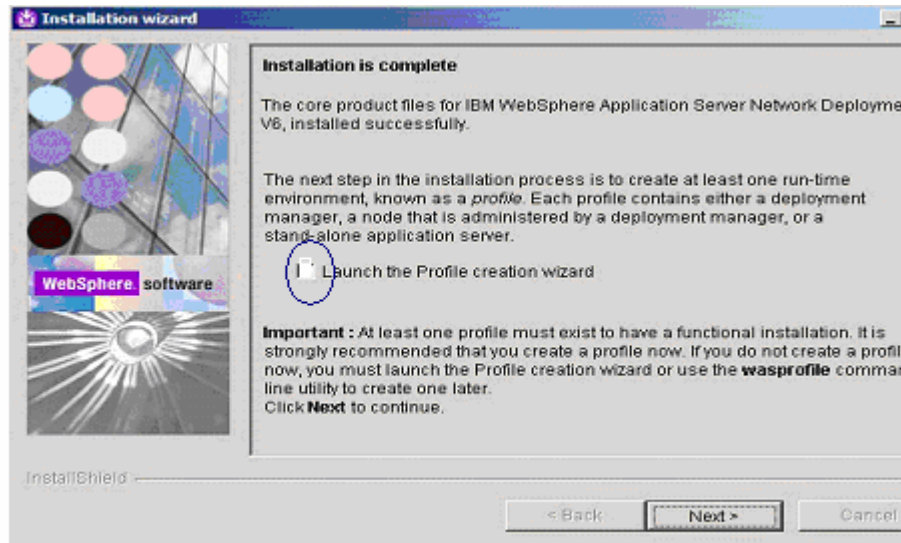
____ 13. You may receive a warning about the installation not being operational; you can ignore this since you will create a profile later.

____ 14. Uncheck the **Launch the Profile creation wizard** and select **finish**, which completes the product installation.

Part 2: Update with Refresh Pack

The Update Installer is the tool used to install updates (interim fixes, fix packs and refresh packs) to WebSphere® software, including WebSphere Application Server V6.0 releases.

Download appropriate Refresh Pack to a temporary directory for your operating system.

For example, the following are WAS602 Refresh Pack images for the different operating systems

- For **AIX** : 6.0-WS-WAS-AixPPC32-RP0000002.zip   for AIX

- For **Solaris** : 6.0-WS-WAS-SolarisSparc-RP0000002.zip for Solaris/Spark

- For **Windows** : 6.0-WS-WAS-WinIA32-RP0000002.zip for windows/Intel 32bit

- For **Linux** : 6.0-WS-WAS-LinuxIA32-RP0000002.zip   for Linux/Intel 32bit

_____ 1.   Extract the Refresh Pack archive directly under WAS_HOME directory

> **Note:** Refresh Pack archive includes update Installer tool . If you already have a previous update installer directory under <WAS_HOME> you should backup and delete the directory before unzipping the new Refresh Pack

Example

For **Linux Solaris** : at the terminal prompt,

    cd   /opt/WebSphere/AppServer

    unzip /<tmp>/ 6.0-WS-WAS-LinuxIA32-RP0000002.zip

For **AIX** : at the terminal prompt

    cd /usr/WebSphere/AppServer

For **Windows** :   use unzip utility like winZip

    - extract 6.0-WS-WAS-WinIA32-RP0000002.zip under <WAS_HOME>

    - enable Use folder names in the folder options of windows explorer

_____ 2.   Start the update installer Wizard

For **Windows**: <WAS_HOME>\updateinstaller\update.exe

For **Linux UNIX** : <WAS_HOME>/update installer/update
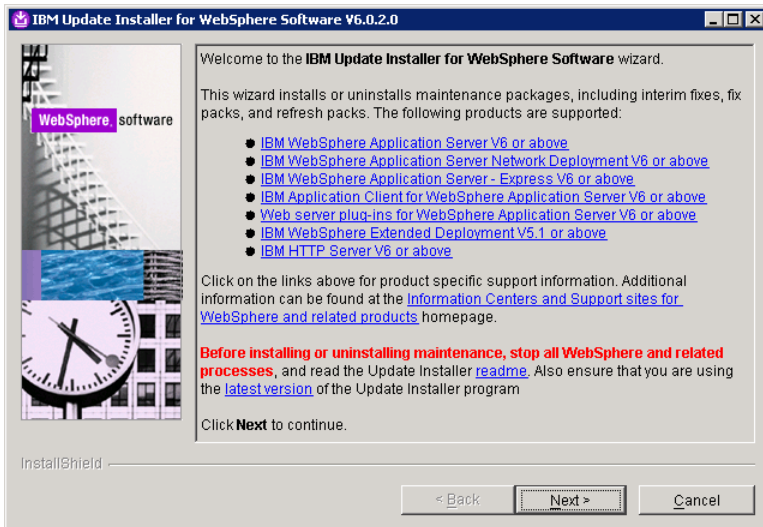
_____ 3.   Click **Next**

_____ 4.   Select the install location you want to update, which should match the location you installed
WebSphere Application Server Network Deployment V6 to.

_____ 5.   Select **Install maintenance package** and click **Next**
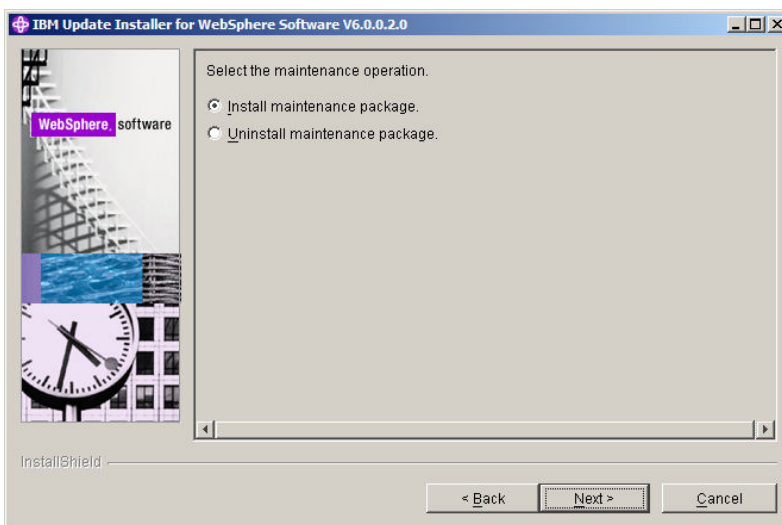
_____ 6.   You will be prompted to enter the name for the maintenance package you are installing; you can
keep the default and click **Next**.

_____ 7.   You may then receive a message that this update requires changes to the JDK being used by the
installer; this will copy the JDK and then restart the installer. Click **Next**.

_____ 8.   When the copy completes, select the button to **Relaunch** the installer.

_____ 9.   When the installer launches you will need to reselect the option to install a maintenance pack.

_____ 10.   You will be prompted again to enter the name for the maintenance package you are installing; you
can keep the default and click **Next**.

_____ 11.   At the summary slide for the maintenance back installation click **Next**.

____ 12. The installation of the package will now start. Note that depending on the hardware resources this operation may take 30 to 45 minutes to complete.

____ 13. The following panel will tell you that installation has been completed click **Finish**.

Part 3: IPv6 Setting (optional)

* This section is intended for those using IPv6 addresses. Please skip this section if you are not using IPv6 addresses and proceed to Part 4.

Internet Protocol Version 4 is no longer viable for many businesses because it is based on 32-bit architecture. There is a growing shortage of Internet Protocol Version 4 (IPv4) addresses. Internet Protocol Version 6 (IPv6) is based on 128-bit architecture, which allows a far greater number of addresses to be available for use over the Internet.

WebSphere Application Server Version 6.0.1 supports a *dual mode* environment in which you can have older legacy applications running on IPv4 and IPv6-enabled applications running on IPv6.

In a dual mode cell, mixed IPv4 and IPv6 communications are supported. By default, a cell is set to dual mode when it is created. Note, however, that only nodes running WebSphere Application Server Version 6 are valid in a dual mode cell.

Host Name consideration

During installation of WebSphere Application Server, you are asked to provide the host name or IP address of the machine on which the installation is being done in the **Host Name** or *IP address* field. The host name or IP address that you specify is used to advertise this installation to all other WebSphere Application Server installations in the cell configurations. All nodes in the cell will use the host names or IP addresses that are defined in this way to reach each other.

In general, it is best to always use a host name to identify a WebSphere Application Server installation. By using a host name, there will be no confusion as to which IP address is being used (32-bit versus 128-bit), whether it runs on IPv4 or IPv6, and so on. As long as the DNS service is properly configured, the nodes should all be able to work together.

JVM System properties for IPv6

IPv6 support was introduced at Java at 1.4.0 level. Two new Java system properties were introduced:
- java.net.preferIPv4Stack=<true|false>
- java.net.preferIPv6Addresses=<true|false>

java.net.preferIPv4Stack (default: *false*, except on Windows where default: *true*)
The original purpose of this system property is to disable IPv6 support. By default, on operating systems where IPv6 is available, the underlying native socket used will be an IPv6 socket. On IPv6 network stacks that support IPv4-mapped addresses, IPv6 sockets can be used to connect to and accept connections from both IPv4 and IPv6 hosts (this is known as "dual-stack").

java.net.preferIPv6Addresses (default: false)
This system property determines the behavior when there is a choice of addresses. For instance, if a host "MyHost" had both IPv4 and IPv6 addresses, when "MyHost" is used in a Java application this system property would determine whether the IPv4 or IPv6 address is used. By default, for backwards compatibility reasons, IPv4 addresses will be used in preference over IPv6 addresses. By setting this system property to true, IPv6 addresses will be preferred over IPv4 addresses. If "MyHost" has no IPv6 addresses, then only IPv4 addresses can be used for "MyHost". Similarly if "MyHost" has no IPv4 addresses, only IPv6 addresses can be used for "MyHost".

This system property has no effect if the **java.net.preferIPv4Stack** system property (see above) has been set to true, since this implies IPv4-only for which IPv6 addresses are not valid.

In general except for windows operating system, setting these properties is not recommended. In particular, setting java.net.perferIPv4Stack to true will disable the dual mode support in the JVM which might, in turn, disrupt normal WebSphere Application Server functions. Therefore, it is important to understand the full implications if you are contemplating using this setting.

Windows Operating System Requirement

I Windows operating System IPv6 network stack does not support IPv4-mapped addresses. This means that there is no native dual-stack behavior on Windows operating systems; Dual-stack behavior on Windows has to be emulated in the JDK. This is achieved by using an IPv4 socket to connect to and accept connections from IPv4 hosts, and an additional IPv6 socket to connect to and accept connections from IPv6 hosts. Due to this emulation, in the worst-case scenario, up to twice as many sockets may be used when compared to running on other operating systems. For this reason the default behavior for Windows is default to IPv4 only. To enable the dual-stack IPv4/IPv6 emulation on Windows, you must explicitly set java.net.preferIPv4Stack system property to *false*.

Table indicates dual-stack IPv4/IPv6 emulation for various combinations.

preferIPv4Stack	preferIPv6Addresses	ServerSocket binds to	Server listens on
False	True	0.0.0.0 or ::0	both IPv4 and IPv6 stacks
		Hostname with both IPv4 and IPv6 addresses	IPv6 only
		Hostname with IPv4 address only or literal IPv4 address (e.g. 127.0.0.1)	IPv4 only
		Hostname with IPv6 address only or literal IPv6 address (e.g. ::1)	IPv6 only
False	False	0.0.0.0 or ::0	both IPv4 and IPv6 stacks
		Hostname with both IPv4 and IPv6 addresses	IPv4 only
		Hostname with IPv4 address only or literal IPv4 address (e.g. 127.0.0.1)	IPv4 only
		Hostname with IPv6 address only or literal IPv6 address (e.g. ::1)	IPv6 only
True (Default for Windows)	This Property has NoEffect	0.0.0.0	IPv4 only
		Hostname with both IPv4 and IPv6 addresses	IPv4 only (IPv6 not 'seen' by the JDK)
		Hostname with IPv4 address only or literal IPv4 address (e.g. 127.0.0.1)	IPv4 only
		Hostname with IPv6 address only or literal IPv6 address (e.g. ::1) or ::0	bind will fail with SocketException

Setting IPv6 Variables for Windows Operating System

Since default behavior for Windows is to default to IPv4 only, it is necessary to add the following variables to the system property in order to see the Server in duel stack mode.

Following instructions are for setting the server in duel stack mode. You can customize them for your need using the table shown above.

_____ 1.   From Windows desktop right click on "My Computer" properties

_____ 2.   Under Advance Tab , select "Environment Variables"
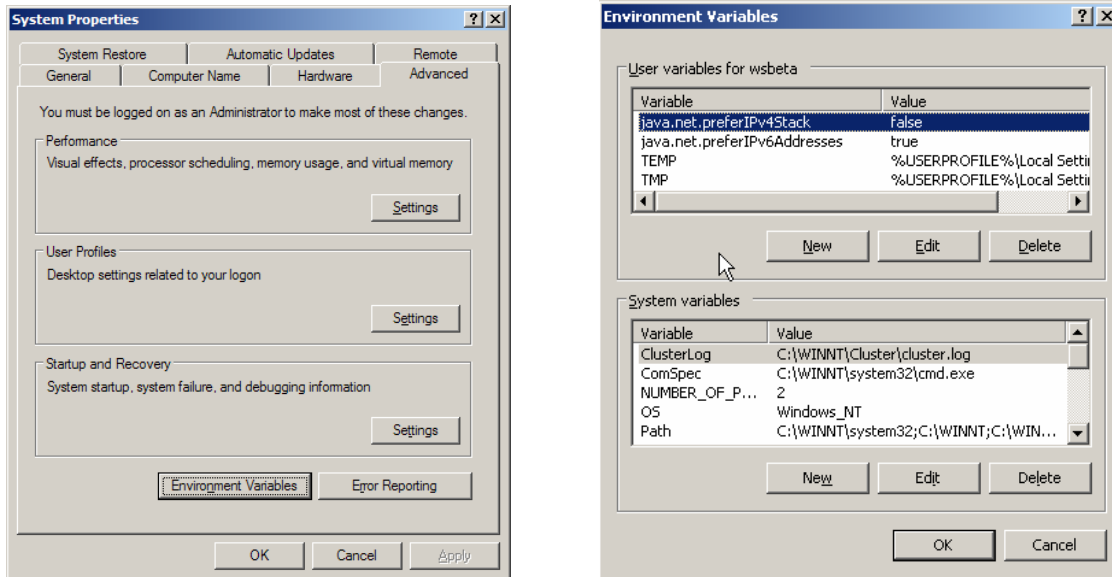
_____ 3.   Click on **New** to add the following properties

    __ a. java.net.preferIPv4Stack=false

    __ b. java.net.preferIPv6Addresses=true

_____ 4.   Click **OK** when done

_____ 5.   Restart all the processes including the profiles (Dmgr, etc) the node agents, node and the Application Servers.

Part 4: Working with Profiles

_____

Version 6 simplifies the object model for WebSphere Application Server .The V6 tool creates a run-time environment in a separate set of files called a *profile*. The profile is the file set that defines the Application Server environment and the file set that the process can change. The *profile creation tool* and its graphical user interface (*Profile creation wizard)* and wasprofile are the only ways to create Application Server environments in V6.

The **wasprofile** command line tool defines each Application Server instance of a Version 6 product. You must run the wizard or the command line tool each time that you want to create a stand-alone Application Server. A need for more than one stand-alone Application Server on a machine is common. Administration is greatly enhanced when using V6 profiles instead of multiple products installs. Not only is disk space saved, but updating the product is simplified when you only maintain a single set of product core files. Also, creating new profiles is faster and less prone to error than full product installs, allowing a developer to create new disposable profiles of the product for development and testing.

Profile templates are part of the shared product files. A template exists for each type of profile. A copy of the template is used to create that particular type of profile.

_____

Profile Creation Tool (PCT)

You can create additional profiles using the Profile Creation Tool (PCT)

To launch profile creation tool (PCT)

You can start the profile creation tool (PCT) using one of the following two options:

____ 1.   From **First Steps** Console (as in the case for this lab)

____ 2.   **Using the Command Prompt:**

- Open a Command window and navigate to the following directory:

    Windows   **<WAS_HOME>\bin\ProfileCreator**

    Linux   UNIX   **<WAS_HOME>/bin/ProfileCreator**

- Use the appropriate command to launch the profile creation tool (PCT) :

    For Example:

    Windows   **pctWindows.exe**

    Linux   **pctLinux.bin**

____ 3.   **Using the Start Menu (for Windows only):**

- Select **Start →All Programs → IBM WebSphere → Application Server Network DeploymentV6.0 → Profile creation wizard**

Creating Deployment manager profile

_____ 1.   Each profile is a run-time environment that includes configuration files, the default location for deployed applications, logs, and other data. In order to create a profile, click on **Profile Creation wizard** on the First Steps screen. (Note that more details of working with profiles is provided later in the document in the section Working with Profiles using wasprofile)

_____ 2.   **Profile creation wizard** should open with a welcome screen. Click **Next** to continue.

_____ 3.   The following Profile Type Selection screen appears where you can select the type of profile you want to create.

The types of profiles that you can choose are

a) Deployment Manager:

A Deployment manager administers Application Servers that are federated into its cell.

b) Application Server or Standalone profile:

The Application Server or the Standalone profile can be used to host your enterprise applications. The Server can be managed from its own Administrative Console independent of other such profiles and deployment managers or it can be federated into deployment manager cell and managed by the deployment manager

c) Custom profile:

A custom profile is profile that has no server. It is an empty node. It is typically federated to the deployment manager and the deployment manager can be used to create server or cluster of servers within its node.
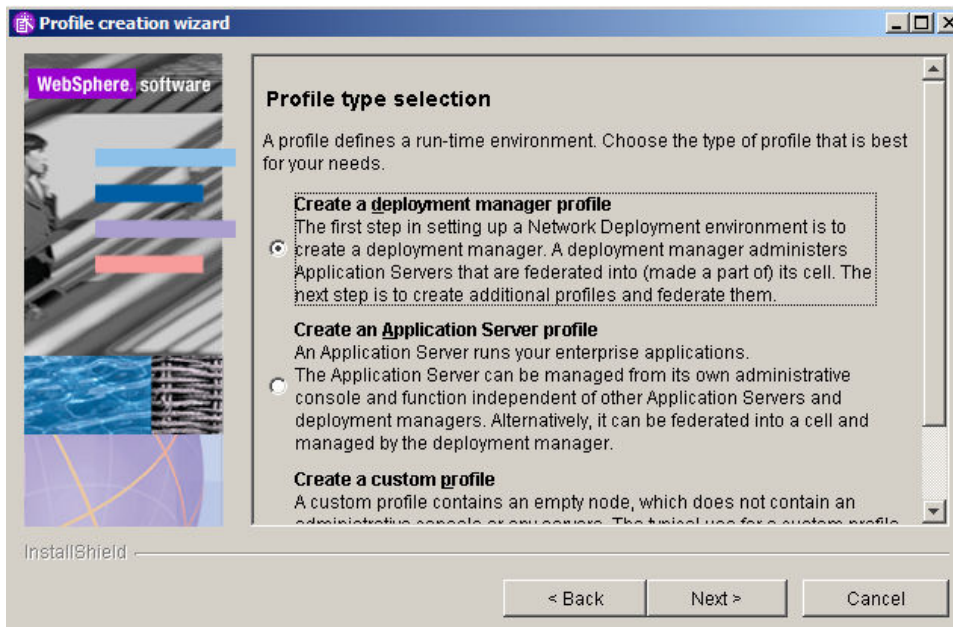
Since we are creating the Deployment Manager profile Select **Create a deployment manager profile** radio button and click **Next**.

_____ 4. In the next screen you are prompted to enter a name for the profile you are about to create. Type in **dmgr** and click **Next** to continue.

_____ 5. In this screen you are prompted to choose the directory to place files that define the runtime environment such as commands, configuration files and log files. Use the default path that is specified and click **Next** to continue.

_____ 6. On this screen you enter the Host,node name and cell name for the profile you are about to create, making sure to match the criteria for uniqueness. The profile creator should generate unique names for you.

The node name generated by the profile creator for deployment manager profiles uses your **hostname+"CellManager"+ numericalvalue**. The numerical value is incremented each time a new profile is being created.

The cell name generated by the profile creator for deployment manager profiles uses your **hostname+"Cell"+ numericalvalue**. The numerical value is incremented each time a new profile is being created.

In this example keep the default values and click **Next**.
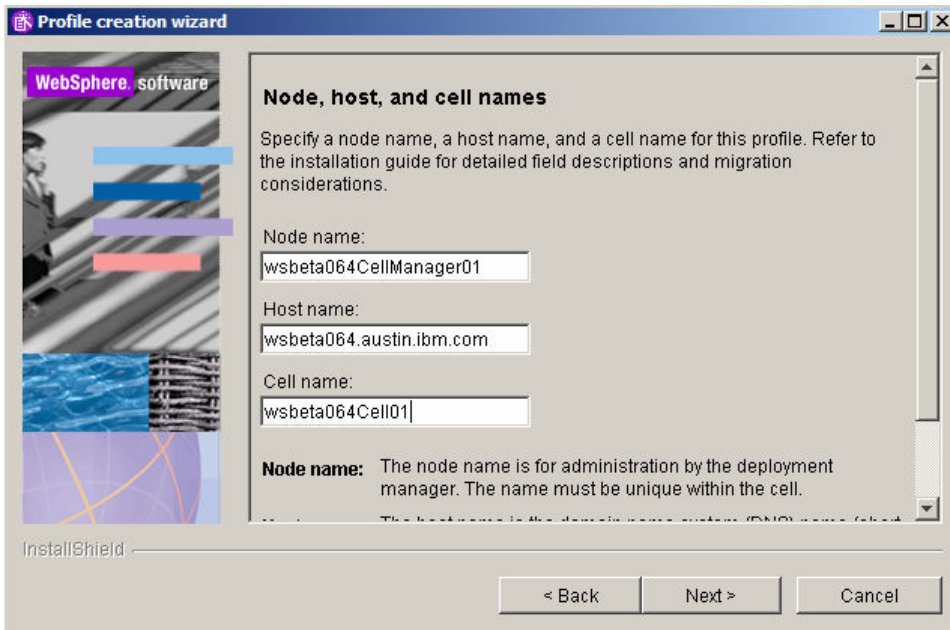
_____ 7. The next screen presents a summary of the ports that will be used by the profile. If the installer detects multiple Profiles, ports will automatically be incremented to resolve port conflicts. But make sure that the other installations of WebSphere do not have any conflicts with the ports that are being assigned. Click **Next** to continue.

2005 July, 14   IBM WebSphere 6.0.2 – Lab Exercise   Page 17 of 37

WASv602_Install_ND_IPV6.doc
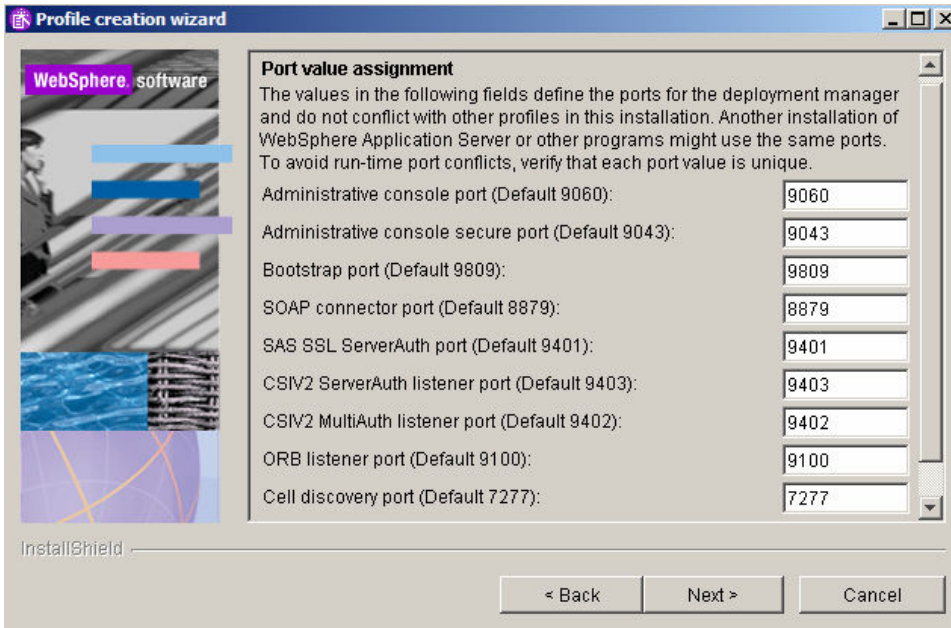
____ 8.   **Select** the checkbox next to **Run the Application Server process as a Windows service** and click **Next**. If you want to select the option Log on as specified user account, make sure that the user account information you provide must have the following rights

Act as part of operating System

Log on as service

Note : For Linux   UNIX **This screen does not appear.**
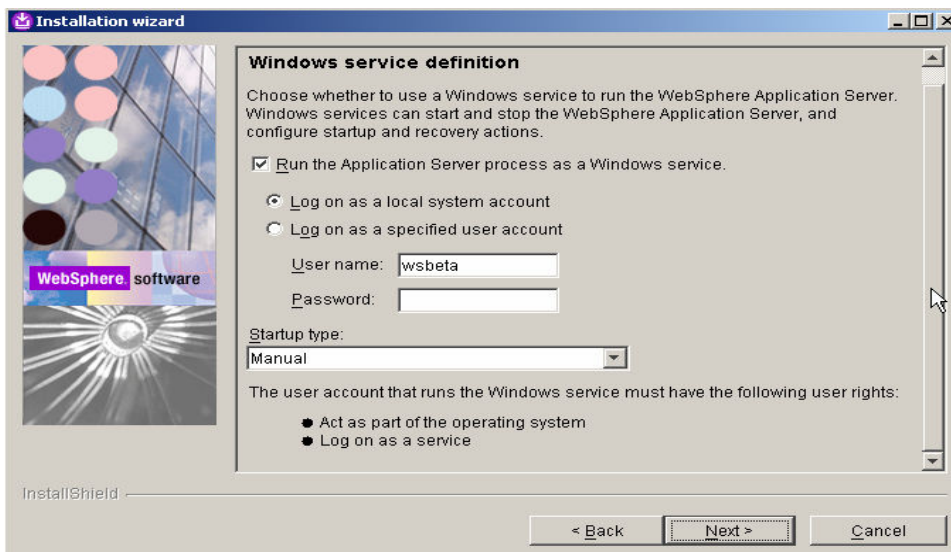
____ 9.   The next screen will provide a summary of the profile you are about to create. Review the information and click **Next** to begin the profile creation.

____ 10. After the profile has been created you will be presented with the option to launch the First steps console. Leave the check box selected and click **Finish**.

At this particular point, a profile has been created for you. The profile name is **dmgr** and it should appear under <WAS_HOME>/profiles.

In order to create additional profiles, refer to the section <u>Working with Profiles</u>

____ 11. Now verify that the installation was successful. You can do this from the First Steps window. In the **First Steps** window, select **Installation Verification**.

____ 12. Verify that your install passes verification and close the window.

____ 13. Close the Launchpad window by clicking the **X** in the upper right corner.


Creating Application Server profile

____ 14. On First steps console, click on **Profile creation wizard.** Wizard should open with a welcome screen. Click **Next** to continue.

____ 15.   The following Profile Type Selection screen appears where you can select the type of profile you want to create.
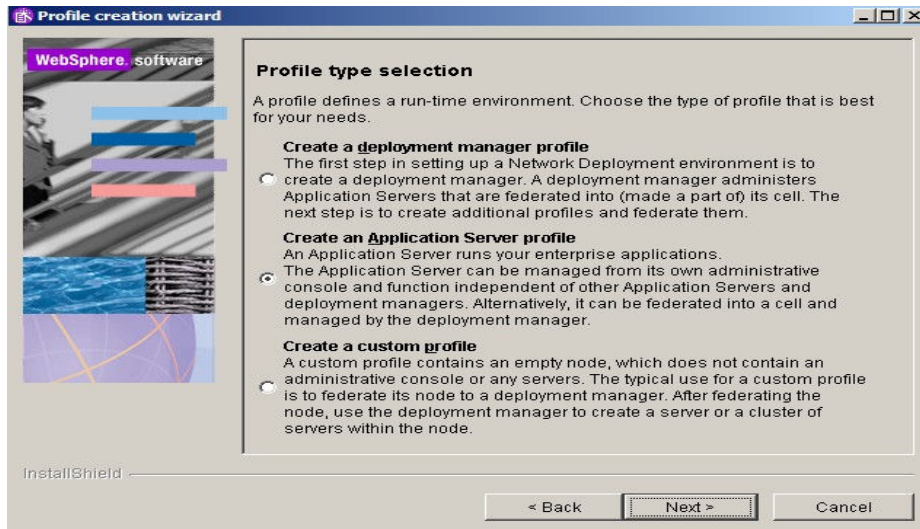

Since we are creating an Application Server profile, Select **Create an Application Server profile** radio button and click **Next**.

____ 16.   In the next screen you are prompted to enter a name for the profile you are about to create. Type in **inst1** and click **Next** to continue.

____ 17.   In this screen you are prompted to choose the directory to place files that define the runtime environment such as commands, configuration files and log files. Use the default path that is specified and click **Next** to continue.

____ 18.   On this screen you enter in the Host and node name for the profile you are creating making sure to match the criteria for uniqueness. The profile creator should generate unique names for you.

The node name generated by the profile creator uses your **hostname+"Node"+ numericalvalue** as a template. The numerical value is incremented each time a new profile is being created. In this example keep the default values and click **Next**.
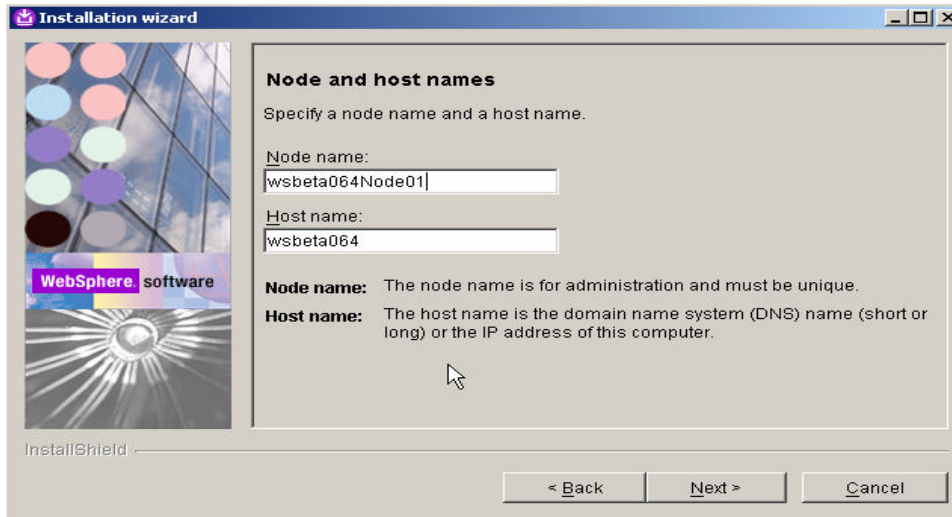
____ 19.   The next screen presents a summary of the ports that will be used by the profile. If the installer detects multiple Profiles, ports will automatically be incremented to resolve port conflicts. But make sure that the other installations of WebSphere do not have any conflicts with the ports that are being assigned. Notice in the following screen that some of the ports have been incremented automatically. Click **Next** to continue.
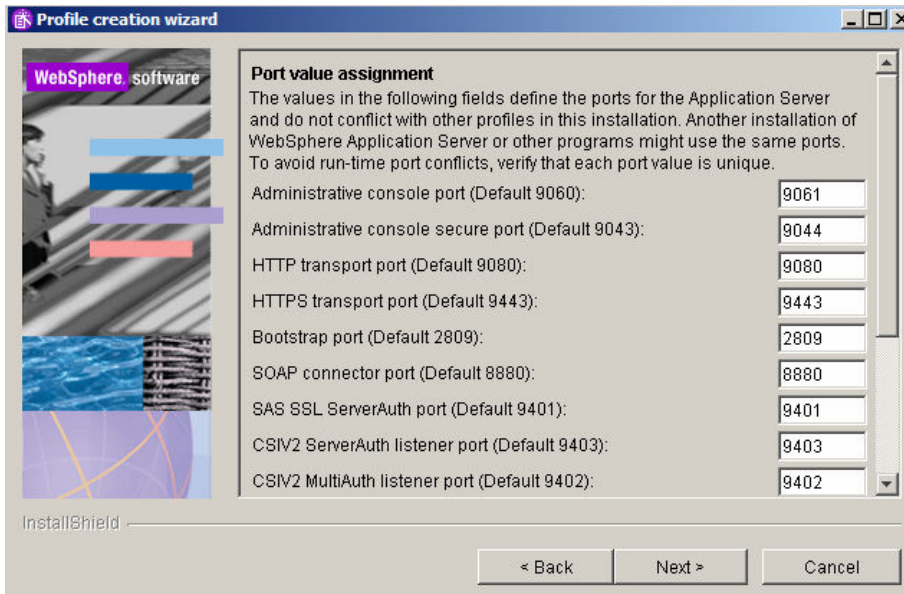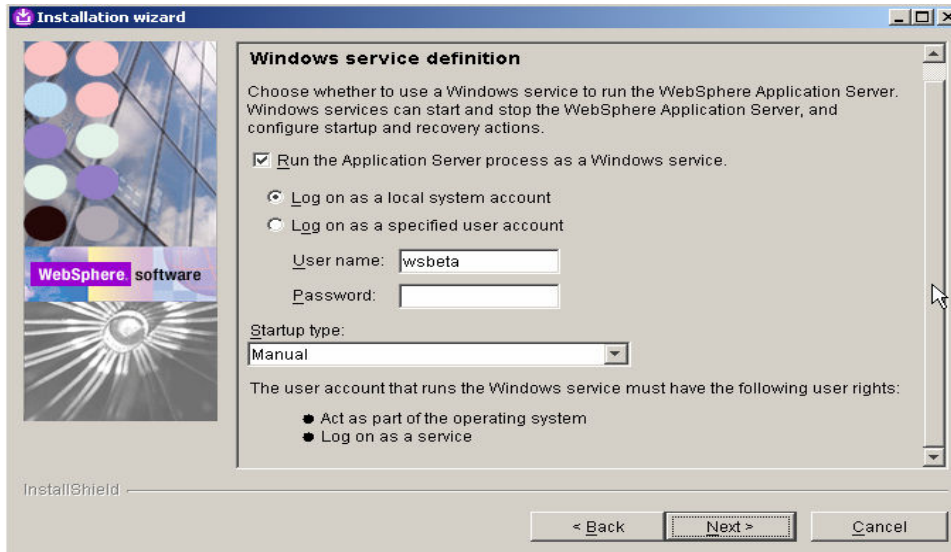

____ 20.   **Select** the checkbox next to **Run the Application Server process as a Windows service** and click **Next**. If you want to select the option Log on as specified user account, make sure that the user account information you provide must have the following rights

Act as part of operating System

Log on as service

Note: This screen will only appear on ▶ Windows

____ 21.   The next screen will provide a summary of the profile you are about to create. Review the information and click **Next** to begin the profile creation.

____ 22.   After the profile has been created you will be presented with the option to launch the First steps console. Leave the check box selected and click **Finish**.

____ 23.   First Steps window for the stand alone profile will come up.

____ 24.   Now verify that the installation was successful. You can do this from the First Steps window. In the **First Steps** window, select **Installation Verification**. This will trigger the starting of the server associated with this profile [refer **to the Part 6: Optional (Managing servers**) for more information on servers]. When the server is successfully started, the final two lines displayed will read:

Server launched. Waiting for initialization status.

Server server1 open for e-business; process id is 1932

Note that these lines will be displayed on the install verification window. The verification will continue after the server has started. When it's completed everything listed will say – **Passed**

____ 25.   Verify that your install passes verification and close the window.

____ 26.   Close the Launchpad window by clicking the **X** in the upper right corner.

____ 27.   At this particular point, a profile has been created for you. The profile name is **inst1** and it should appear under <WAS_HOME>/profiles

Note: **There is a server associated with the node where the application server profile has been created.** Refer to the section **Part 6: Optional (Managing Servers)** for more detail on the servers.

Part 5: Federating a Node

The **addNode** operation federates a WebSphere Application Server into a cell. The operation must be executed from the **<WAS_HOME>\profiles\<profilename>\bin** directory of a WebSphere Application Server base installation.
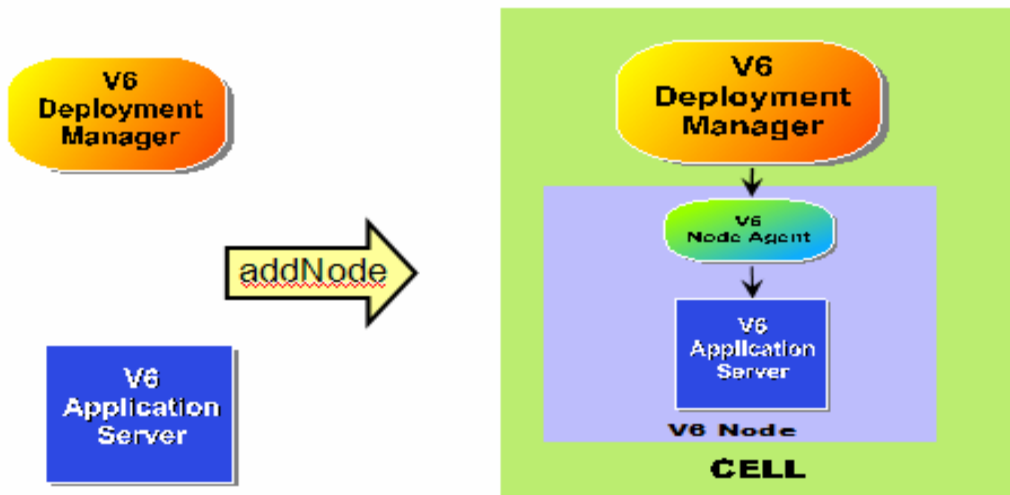
AddNode operation does the following:

- Copies the base WebSphere Application Server configuration to a new cell structure. This new cell structure matches the structure of Deployment Manager.
- Creates a new node agent definition for the node being incorporated into the cell.
- Send commands to the Deployment Manager to add the configuration files from the incorporated node to the cell repository.
- Launches the node agent process for the incorporated node.
- Performs the initial configuration synchronization for the new node, and verifies that this node is synchronized with the cell.
- Updates the **setupCmdLine.bat** or **setupCmdline.sh** and the **wsadmin.properties** files to point to the new cell structure.

addNode command

We are now going to federate the application server we created earlier.

At this point your Deployment manager and the application server should be already started (you started them earlier when you did the install verification test). **Please note that Deployment manager (dmgr) must be started before proceeding with this section.** If the Deployment Manager appears stopped, please restart it before proceeding. **Refer to Part 6: Optional (Managing Servers) on how to restart the deployment manager.**

_____ 1.   Stop the Application server that is being federated into a Network Deployment cell. Refer to the section Starting and Stopping Application Server

_____ 2.   Ensure the Deployment Manager is up and running. If it appears stopped, refer to the section on Starting and Stopping Deployment Manager.

_____ 3.   To federate the node, navigate to the bin directory of the stand alone application server instance

        <WAS_HOME>\profiles\inst1\bin. Run the command:

Windows   **addNode.bat <deployment manager hostname> <SOAP port>**

Linux   UNIX   **./addNode.sh <deployment manager hostname> <SOAP port>**

For Example:

If the base and the Deployment Manager are on the same machine and SOAP port of Deployment Manager profile is 8879 (which is the case with this lab), you will use the following command

Windows   **addNode.bat localhost 8879 -includeapps**

Linux   UNIX   ./addNode.sh localhost 8879 –includeapps

Note:

SOAP Port: You can get the SOAP port of the deployment manager by opening the Administrative Console of the deployment manager.
Go to System Administration → Deployment Manager → Ports
You should see it under SOAP_CONNECTOR_ADDRESS

includeapps : By default, applications that are installed on the node will not be copied to the cell. To force the **addNode** operation to do so, you will need to specify the -**includeapps** option. If there are existing applications with the same name in the cell, these will not be copied.

Federating a node to a cell using the **addNode** command does not merge any cell-level configuration files. Any changes made to the standalone cell-level files prior to the **addNode** operation must be repeated on the new cell. For example, virtual host information**.**

_____ 4.   Federation of the node will start.

____ 5.   When the node has been successfully federated, the final line displayed will read:

Node <nodeName> has been successfully federated.

This can also be verified in the log file **addNode.log** in the **<WAS_HOME>\profiles\inst1\logs**\ directory.

Node Agent:

_____

Node agents are administrative agents that route administrative requests to servers.A Node agent is created during the federation process. The deployment Manager communicates with the federated node(Application Server profile) with the help of Nodeagent.

A node agent is a server that runs on every host computer system that participates in the WebSphere Application Server Network Deployment product. It is purely an administrative agent and is not involved in application serving functions. A node agent also hosts other important administrative functions such as file transfer services, configuration synchronization, and performance monitoring.

_____

Starting the node agent

____ 1.   During federation, node agent is started automatically. Incase you want to start a node agent manually at later time when it is in stop state, you can start the node agent using the following command:

__ a. Open a Command window and navigate to the following directory:

> Windows   **<WAS_HOME>\profiles\inst1\bin**

> Linux > UNIX   **<WAS_HOME>/profiles/inst1/bin**

__ b. Use the following command below to start the nodeagent :

> Windows   **startNode.bat**

> Linux > UNIX   **./startNode.sh**

__ c. When the node agent has started successfully, the final two lines displayed will read:

Server launched. Waiting for initialization status.

Server nodeagent open for e-business; process id is 21288

Note: The process id may vary. The above pid is just an example .

____ 2.   **Stopping the node agent**

The **stopNode** command reads the configuration file for the Network Deployment node agent process and sends a Java Management Extensions (JMX) command telling the node agent to shut down. By default, the **stopNode** command waits for the node agent to complete shutdown before it returns control to the command line.

__ a. Open a Command window and navigate to the following directory:

Windows   **<WAS_HOME>\profiles\inst1\bin**

Linux UNIX   **<WAS_HOME>/profiles/inst1/bin**

__ b. Use the following command below to stop the nodeagent :

Windows   **stopNode.bat**

Linux UNIX   **./stopNode.sh**

__ c. When the node agent has stopped successfully, the final two lines displayed will read:

Server stop request issued. Waiting for stop status.

Server nodeagent stop completed

_____ 3.   The next section is setting the Operating System to IPv6. Read the section carefully to get a better understanding. If your Operating system is Windows, make sure you do the steps given under **Setting IPv6 Variables for Windows Operating System** to enable IPv6 setting.

This is the end of the lab. Please go to the next sections to revise the topics and to get a better understanding on the topics not covered in the lab. It is recommended you try out the exercises given to learn more.

Part 6: Optional Sections (with some exercises)

The following sections are optional sections with steps and exercises to help you understand the material better. These sections are good reference points for "how to" for some of the parts done in the lab. Others are informational.

Managing Servers

Starting and Stopping Deployment Manager

The following instructions show how to start and stop the deployment manager. Follow these directions accordingly whenever you need to start or stop deployment manager

____ 4.   To start the manager

You can start the Server using the following steps:

a)   Using Command Line

- Open a Command window and navigate to the following directory:

    <WAS_HOME>\profiles\dmgr\bin

- Use the following command below to start the server:

    >Windows   **startManager.bat**

    >Linux >UNIX   **./startManager.sh**

When the server has started successfully, the final two lines displayed will read:

Server launched. Waiting for initialization status.

Server dmgr open for e-business; process id is 1932

Note: The process id may vary. This can also be verified in the log file **startServer.log** in the <**WAS_HOME**>**profiles\dmgr\logs\dmgr** directory.

Progress can be monitored by viewing the **SystemOut.log** file in the <**WAS_HOME**>**profiles\dmgr\logs\dmgr** directory.

b) Alternative way to start the server if it is registered as service (for ▶Windows only):

Go to Start Menu->settings->Control Panel.

Double click Administrative tools.

Double click services

This should open a new window with list of applications registered as services. Right click on the service that says IBM WebSphere Application Server V6 - <hostname>CellManager01 and select start.

____ 5.   **To stop the manager**

a)   Using Command Line:

You can stop the Server using one of the following steps:

- Open a Command window and navigate to the following directory:

    <WAS_HOME>\profiles\dmgr\bin

For example:

Windows   **C:\WebSphere60\AppServer\profiles\dmgr\bin**

- Use the command below to stop the server.

    Windows   **stopManager.bat**

    Linux   UNIX   **./stopManager.sh**

When the server has been successfully stopped, the final two lines displayed will read:

Server stop request issued. Waiting for stop status.

Server dmgr stop completed.

This can also be verified in the log file **stopServer.log** in the **WAS_HOME>\profiles\dmgr\logs\dmgr** directory

b) Alternative way to stop the server if registered as service (for Windows only):

Go to Start Menu->settings->Control Panel.

Double click Administrative tools.

Double click services

This should open a new window with list of applications registered as services. Right click on the service that says IBM WebSphere Application Server V6 - <hostname>CellManager01 and select stop.

Starting and Stopping Application Server

The following instructions show how to start and stop the standalone application server. Follow these directions accordingly whenever you need to start or stop Application server

____ 1. **To start the Server**

 __ **a. Using Command Line**

You can start the Server using the following steps:

- Open a Command window and navigate to the following directory:

    <WAS_HOME>\profiles\inst1\bin

- Use the following command below to start the server:

    Windows   **startServer.bat server1**

    Linux   UNIX   **./startServer.sh server1**

When the server has started successfully, the final two lines displayed will read:

Server launched. Waiting for initialization status.

Server server1 open for e-business; process id is 1932

Note: The process id may vary. This can also be verified in the log file **startServer.log** in the <**WAS_HOME>\profiles\inst1\logs\server1** directory.

Progress can be monitored by viewing the **SystemOut.log** file in the
<**WAS_HOME**>**profiles****inst1****logs****server1** directory.

__ **b. Alternative way to start the server if it is registered as service (for Windows only):**

Go to Start Menu->settings->Control Panel.

Double click Administrative tools.

Double click services

This should open a new window with list of applications registered as services. Right click on the service
that says IBM WebSphere Application Server-<hostname>Node01 and select start.

_____ 2. **To Stop The Server**

You can stop the Server using one of the following steps:

__ **a. Using Command Line**

- Open a Command window and navigate to the following directory:

  <WAS_HOME>\profiles\inst1\bin

  For example:

  Windows **C:\WebSphere\AppServer\profiles\inst1\bin**

- Use the command below to stop the server.

  Windows   **stopServer.bat server1**

  Linux **UNIX**   **./stopServer.sh server1**

When the server has been successfully stopped, the final two lines displayed will read:

   Server stop request issued. Waiting for stop status.

   Server server1 stop completed.

This can also be verified in the log file **stopServer.log** in the
WAS_HOME>**profiles****inst1****logs****server1** directory

__ **b. Alternative way to stop the server if registered as service (for Windows only):**

Go to Start Menu->settings->Control Panel.

Double click Administrative tools.

Double click services

This should open a new window with list of applications registered as services. Right click on the
service that says IBM WebSphere Application Server-<hostname>Node01 and select stop.
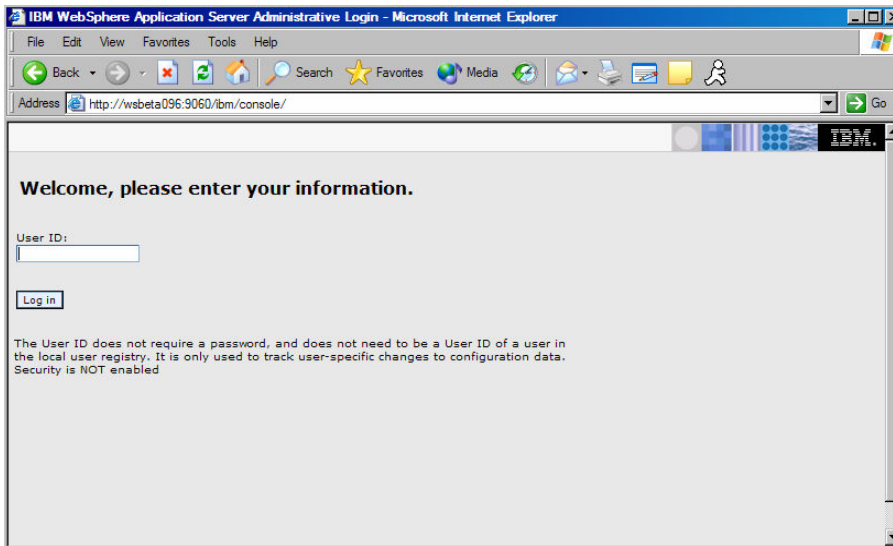
Administrative Console

The Deployment Manager and Application server profiles can be managed using the Administrative Console.

The administrative console port is made use of to access the administrative console of a corresponding profile.

Before federation of a profile into the Deployment Manager cell, the Application Server profile (Standalone) has its own Administrative Console, but once you federate this profile into the Deployment Manager cell, the Deployment Manager Administrative Console is made use to manage the federated Application Server profile. The federated profile can no longer be managed from its own Administrative console.

_____ 1.   Open an administrative console by using the URL **http://<hostname>:9060/ibm/console**

Make sure that the server is running in order for the administrative console to work

_____ 2.   Type admin as username and click **Log in** button
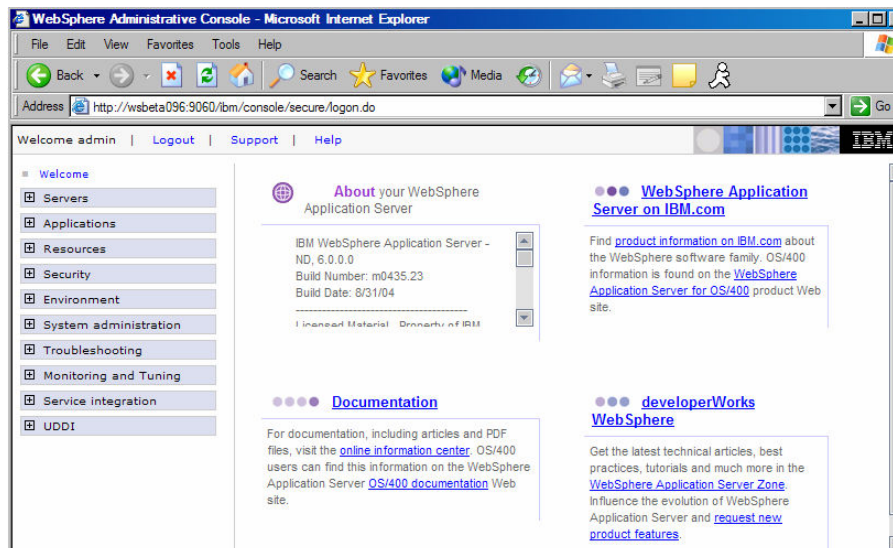
_____ 3.   Logout of the Administrative Console by clicking **Logout** on the top of the screen in Administrative Console.
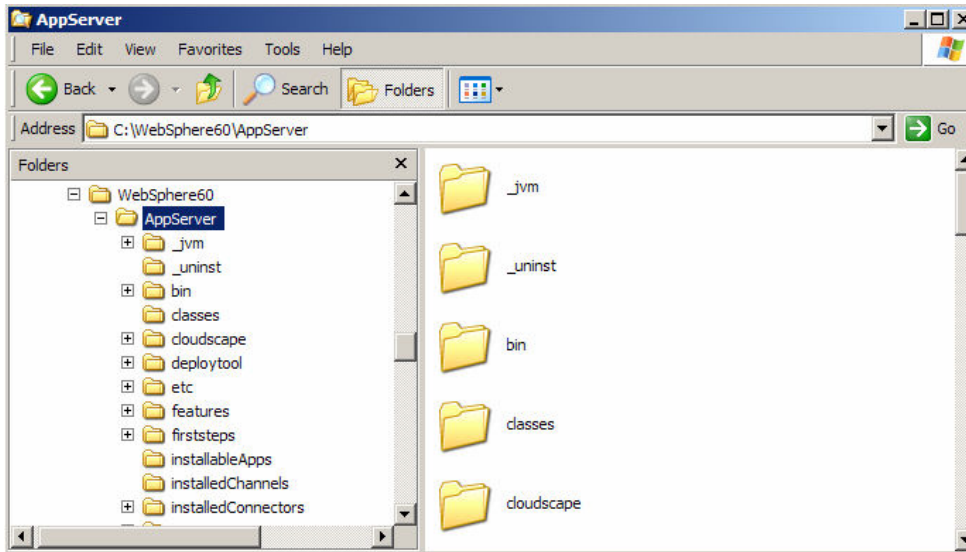
Directory Structure

Installation Directory

The Application server binary is installed in <WAS_HOME>

For example:

> **Windows**   **C:\WebSphere60\AppServer**

The profiles are created under <WAS_HOME>/profiles directory. The profiles that are created using the same binary are placed under <WAS_HOME>/profiles distinguished by the profile name.

For Example:

The path to the profile **inst1** that you created during the installation is:

C:\WebSphere60\AppServer\profiles\inst1

If you create a new profile called inst2, then there would be another additional folder called inst2 under this directory
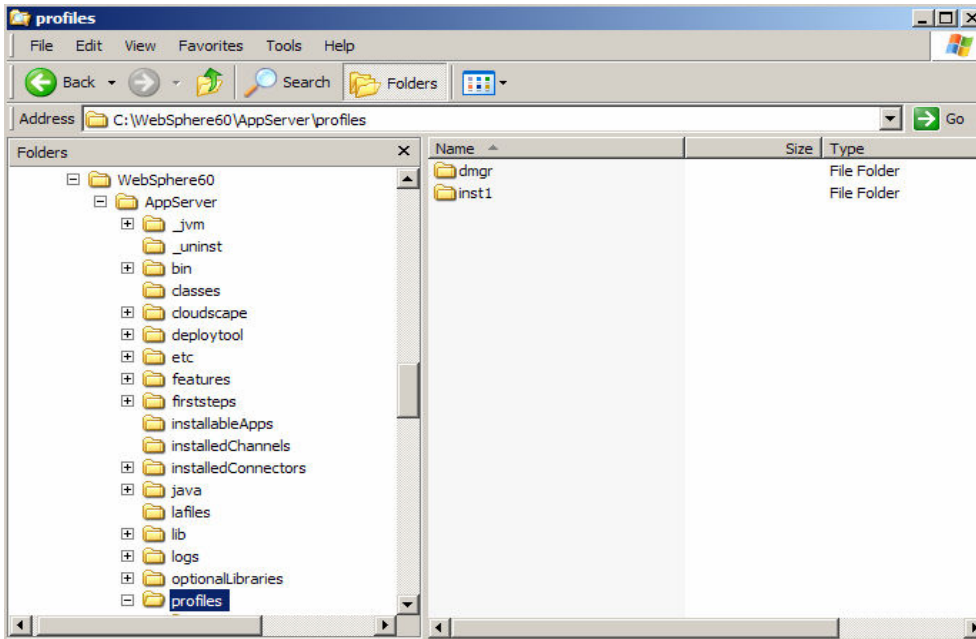
The bin directory under <WAS_HOME>/profiles/inst1 contains scripts like **startServer.bat, stopServer.bat, serverStatus.bat** and many other scripts.

For [Linux] [UNIX] environment the file extension is **.sh** instead of **.bat**

Note: It is recommended that you use the scripts under <WAS_HOME>/profiles/<profilename>/bin when working with a particular profile instead of using scripts under the <WAS_HOME>/bin directory.
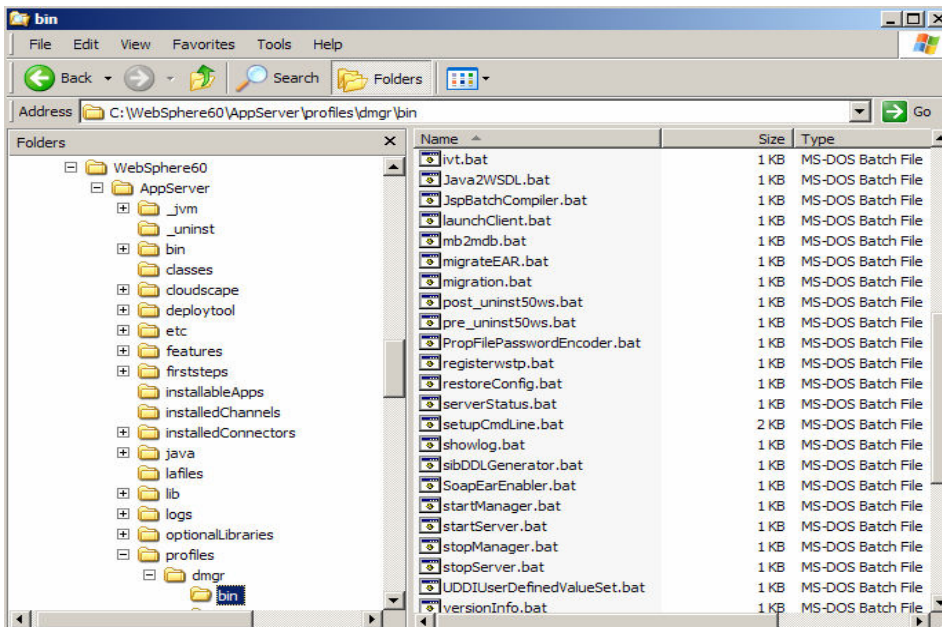
Working with profiles using wasprofile

Some of the tasks that can be done using **wasprofile** are

Open a command prompt. Navigate to the **C:\WebSphere\AppServer\bin** directory.

_____ 1. **List Profiles:**

The listProfiles command allows you to see all of the profiles currently on this machine. On the command prompt issue the **wasprofile –listProfiles** command. You should see the profile **inst1** that you created during installation.

_____ 2. **Get Path of Profile:**

You can learn the path associated with a profile as well. Issue the command **wasprofile –getPath –profileName inst1** and this will display the path for **inst1**.

_____ 3. **Creating and Deleting profiles:**

You also have the option of creating a new profile from the command line.

> Linux   > UNIX   wasprofile.sh

> Windows   wasprofile.bat

```
wasprofile.sh -create

        –profileName profile_name
        –profilePath profile_path
        -templatePath template_path
        -nodeName node_name
        -cellName cell_name
        -hostName host_name
        [-startingPort starting_port | –portsFile port_file]
        [-registry registry_name]
        [-debug]
```

The templates to be used with the –templatePath variable are located in;
`was_home/profileTemplates/default for a stand-alone application server.`

The –startingPort variable is important so that this new profile doesn't conflict with the ports already used by the existing profile, profile1. You can either provide a starting port number to be used or create a ports file listing the various ports for the profile. You can find the ports used by an existing profile by looking at the file located in:

<WAS_HOME>>\profiles\<profile_nama>\config\cells\<cell_name>\nodes\<node_name>\serverindex.xml

__ **a. Creating Profile:**

Create a new profile using the command line interface. Issue the following command(Note this is all one line), this command will take a few minutes to complete:

Example:

wasprofile -create -profileName inst2 -profilePath C:\WebSphere\AppServer\profiles\inst2 - templatePath C:\WebSphere\AppServer\profileTemplates\default -nodeName testNode - cellName testCell -hostName localhost

Note:

Inlcude the path to profile and template in quotes if the path has spaces.

You can get your hostname by using the hostname command in the command prompt. In the above example, localhost is used to create profile on the same host you are running the command.

__ **b. Listing all Profiles:**

While still in **C:\WebSphere\AppServer\bin** in the command prompt.

Issue the **wasprofile –listProfiles** command. You should see dmgr, inst1 and inst2.

__ **c. Delete Profile:**

Now delete inst2 using the wasprofile command. Issue the command wasprofile **-delete –profileName inst2.**

Uninstalling the WebSphere Application Server V6

Before uninstalling IBM WebSphere Application Server v6, make sure you **stop** all the application servers. Navigate to the following directory:

<WAS_HOME>_uninst

Run **uninstaller.exe** for ▶ Windows or **./uninstaller.bin** for ▶ Linux ▶ UNIX

The wizard will guide you through the uninstall process.

After the uninstall process is complete, you will notice that some of the directories still exist within the directory. Manually delete the **<WAS_HOME>** directory and then reboot your computer if you have a Windows operating System. You have now successfully uninstalled the IBM WebSphere Application Server Network Deployment V6.

Troubleshooting the Installation

The successful installation of the Network Deployment product is a two-part process:

The first step is using the installation wizard to install a shared set of core product files.
The second step is using the *Profile creation wizard* to create a *deployment manager profile*, an *Application Server profile*, or a *custom profile*.

The *<WAS_HOME>*/logs/log.txt file, the *<WAS_HOME>*/logs/wasprofile/wasprofile_create_*profile_name*.log file, and the *profiles_root*/*profile_name*/logs/pctLog.txt file record installation status.

The installer program records the following indicators of success in the logs:

INSTCONFSUCCESS

INSTCONFPARTIALSUCCESS

INSTCONFFAILED

If the error happens early in the installation, look for the log.txt file in the system temporary area. The installation program copies the log from the temporary area to the logs directory at the end of the installation.

Perform the following procedure to troubleshoot an installation.

Steps for this task

Check the installation log files for errors after installing:

During installation, a single entry in the *<WAS_HOME>*/logs/log.txt file points to the temporary log file, either %TEMP%\log.txt on Windows platforms, or /tmp/log.txt on Linux and UNIX platforms. The installation program copies the file from the temporary directory to the *<WAS_HOME>*/logs/log.txt location at the end of the installation.

If the installation fails and the *<WAS_HOME>*/logs/log.txt has only this one pointer to the temporary directory, open the log.txt file in the temporary directory. The log might have clues to the installation failure. Uninstalling creates the *<WAS_HOME>*/logs/uninstlog.txt file.

Using a machine with a DHCP IP address can cause problems if the IP address changes subsequently. It is recommended to use a fixed IP address.

A minimum of 80Mb free disk space in the temporary directory is necessary in order for the Administrative Console application to be installed successfully.

IBM WebSphere Application Server can write system messages to several general-purpose logs. These include the JVM logs, the process logs and the IBM service log.

Table 1. Installation logs for WebSphere Application Server products		
Log	**Content**	**Indicators**
<WAS_HOME>/logs/log.txt	Logs all installation events	**INSTCONFFAIL** Total installation failure. **INSTCONFSUCCESS** Successful installation. **INSTCONFPARTIALSUCCESS** Installation errors occurred but the installation is still usable. Additional information identifies the errors
<WAS_HOME>/logs/wasprofile/wasprofile_create_*profile_name*.log	Traces all events that occur during the creation of the named profile Created when using the Profile creation wizard or the **wasprofile** command	**INSTCONFFAIL** Total profile creation failure. **INSTCONFSUCCESS** Successful profile creation. **INSTCONFPARTIALSUCCESS** Profile creation errors occurred but the profile is still functional. Additional information identifies the errors.
<WAS_HOME>/logs/wasprofile/wasprofile_delete_*profile_name*.log	Traces all events that occur during the deletion of the named profile Created when using the Profile creation wizard or the **wasprofile** command	**INSTCONFFAIL** Total profile deletion failure. **INSTCONFSUCCESS** Successful profile deletion. **INSTCONFPARTIALSUCCESS** Profile deletion errors occurred but the profile is still deleted. Additional information identifies the errors.
<WAS_HOME>/profiles/*profile_name*/logs/pctLog.txt	Logs all profile creation events that occur when using the Profile creation wizard	**INSTCONFFAIL** Total profile creation failure. **INSTCONFSUCCESS** Successful profile creation. **INSTCONFPARTIALSUCCESS** Profile creation errors occurred but the profile is still functional. Additional information identifies the errors.

What you did in this exercise

In this lab you installed WebSphere Application Server v6, applied Refresh Pack, set up the Windows Operating System for IPv6 and created deployment manager and Application server profiles. You also federated the Application Server profile into the Deployment Manager cell. Additionally, you worked with the new command line tools provided for creating and managing profiles.