

IBM WebSphere Web Multi-Platform Configuration

WebSphere Application Server Installation



Installation Process



- Decide desired configuration
 - Understand requirements
 - ▲ Hardware
 - ▲ Software
 - Pre-installation
 - ▲ Install and configure prerequisite software
 - ▲ Configure TCP/IP networking
 - ▲ Create user IDs
 - Install WebSphere Application Server
 - Post-installation
 - ▲ Create the Administrative Repository
 - ▲ Start the WebSphere administrative server
 - ▲ Start the WebSphere administrative console
 - ▲ Verify product is working
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Components and Configurations



- A WebSphere installation consists of the following components:
 - ▲ Web Server + WebSphere Plug-in
 - ▲ Administrative Server
 - ▲ Administrative Repository
 - ▲ Administrative Console
 - ▲ Application Server

- Typical configurations (topologies) include:
 - ▲ Single Machine
 - ▲ Remote Administrator Console or Repository
 - ▲ Multiple Application Servers and Web Servers
 - ▲ Multiple Application Servers and Single Web Server

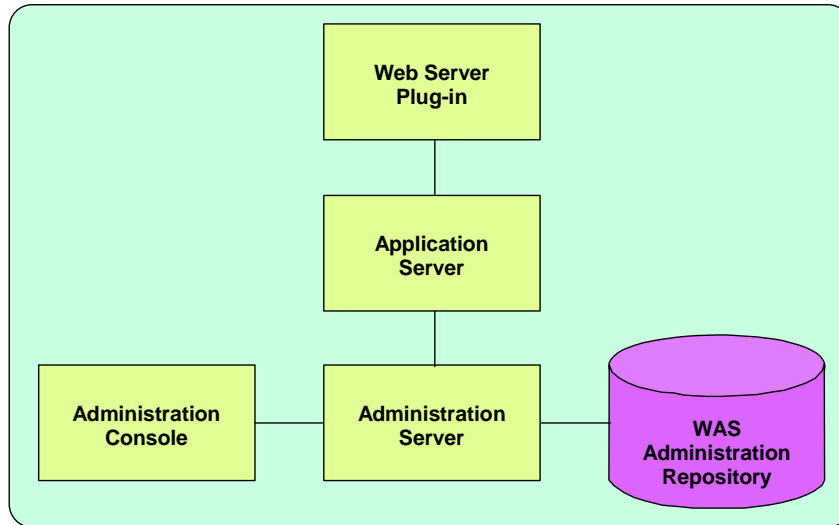


The components of a WebSphere Application Server installation are:

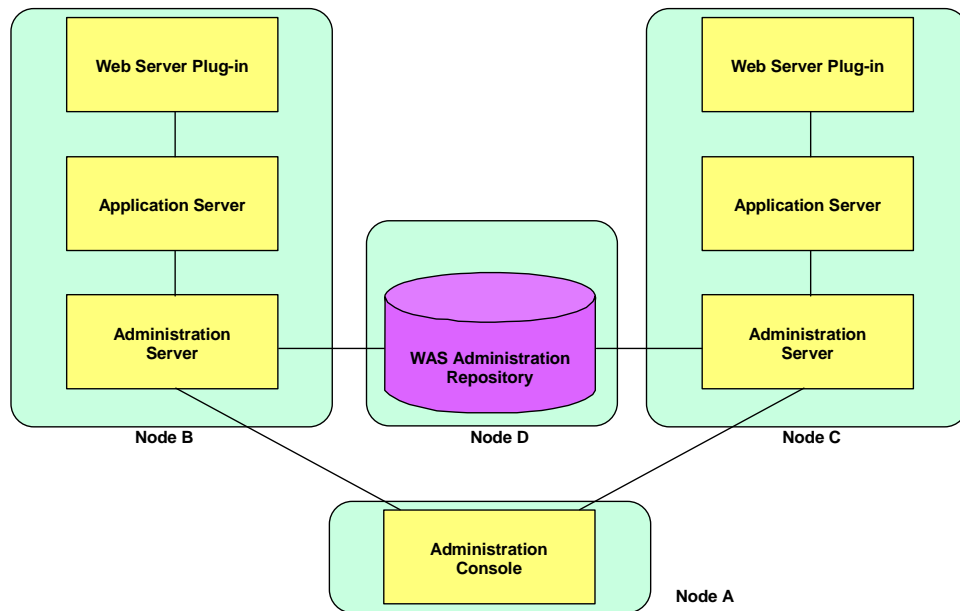
- Web Server, for example, IBM HTTP Server.
- Web Server Plug-in - this module runs within the Web Server (using its native APIs) and forwards requests to WebSphere Application Server.
- Administrative Server - this must be running on every node that is running a WebSphere Application Server component.
- Administrative Repository - this is a relational database containing configuration information.
- Administrative Console - this is used to manage the administrative repository.
- Application Server - provides the enterprise Java services including EJB containers and servlet engines.

Single Machine Configuration

Single Machine

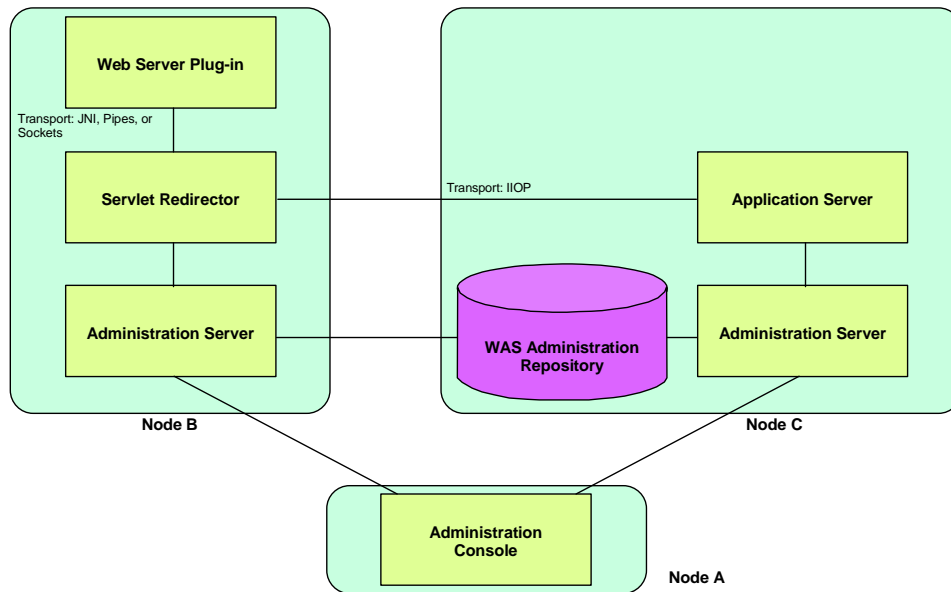


Multiple Machines - 1



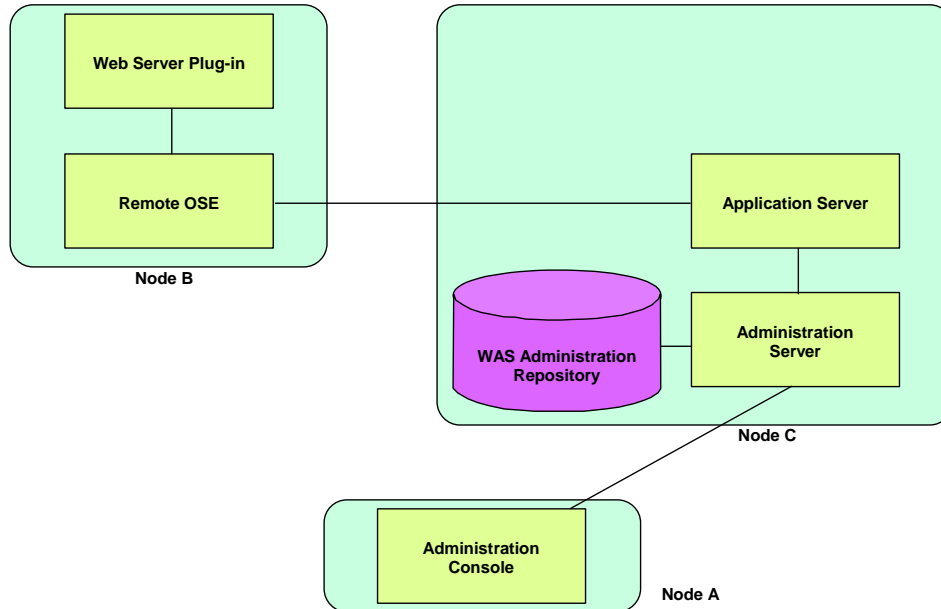
- A multiple machine configuration may consist of a number of similar nodes (Nodes B and C) providing application services, each of which would have their own Web server, application server(s) and administration server. These nodes would need a database client to access the administrative repository and application specific data.
- The administrative repository could be installed on a dedicated database server (Node D).
- The administrative console could be run on a dedicated management workstation (Node A).
- To route requests from the Internet to Nodes B and C, a load balancing router such as IBM Network Dispatcher would be used.

Multiple Machines - 2



- It is also possible to have more complex configurations where some components only exist on certain nodes.
- In the example, the Web server only runs on Node B. Requests that arrive at Node B will be forwarded to the application server on Node C by a component called the Servlet Redirector. The Internet Inter-ORB Protocol (IIOP) is supported for this type of configuration.
- Note: If there was also an application server on Node B, the Servlet Redirector would still use IIOP to forward the request. This is because the Servlet Redirector must receive all requests so that it can perform load balancing on the requests.

Multiple Machines - 3



- When installing WebSphere in a production Internet environment, WebSphere may have to live in a complex environment of firewalls, demilitarized zones (DMZ), and multiple separate machines with specific purposes.
- What is the Remote OSE Link? The OSE link is the link between whichever web server you are using and WebSphere. The OSE link is a proprietary protocol which is used to make the link between the webserver (written mainly in C) and WebSphere, written in Java.
- WebSphere has three different connection types for the OSE link - local pipes, sockets, and a pure Java implementation of sockets. The pure Java implementation is only used for debugging. The default on NT and AIX is to use the local pipes, while on Solaris you must always use sockets.

Hardware Requirements



- Minimum requirements:
 - ▲ 512MB memory (more recommended)
 - ▲ 75MB disk space for install (300MB to install from Web download)
 - ▲ 300MB disk space for product
 - ▲ Network adapter

 - Amount of memory required depends on which components will run on the same machine

 - Disk space requirements do not include the Operating System, Paging space, Database server, Web server or Web browser.

 - Allow additional disk space for the deployed content, log files and the repository database.
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- For NT, a minimum 200MHz Pentium II processor is recommended

Software Requirements - 1



- Operating System
 - ▲ Windows NT Server Version 4.0 with Service Pack 4, 6A, or later
 - ▲ Windows 2000 Server/Advanced Server
 - ▲ Sun Solaris Version 2.6 or 7 April 2000 maintenance level or later
 - ▲ AIX Version 4.3.3 or later (maintenance level 4330-02)
 - ▲ HP-UX Version 11.0

- Java Development Kit
 - ▲ IBM Java Development Kit 1.2.2 with PTF 7 for Windows NT *
 - ▲ IBM Java Development Kit 1.2.2 with PTF -5a-4330104 for Solaris*
 - ▲ IBM Java Development Kit 1.2.2 with PTF 7 for AIX*

- Web browser that supports HTML 4 & Cascading Style Sheets
 - ▲ Netscape Navigator 4.07 or higher
 - ▲ Netscape Communicator 4.7 or higher
 - ▲ Microsoft Internet Explorer 4.01 or higher (NT only)

* On Product CD-ROM



- For other platform information, see the online documentation.
- Supported hardware, software, and APIs for Version 3.5:
<http://www.ibm.com/software/webservers/appserv/doc/v35/prereq.html>

Software Requirements - 2



- One of the following Web servers:
 - ▲ IBM HTTP Server Version 1.3.12 *
 - ▲ Apache Server Version 1.3.12
 - ▲ Domino Enterprise Server Version 5.0.2B and 5.05
 - ▲ Microsoft Internet Information Server Version 4.0 (NT only; V5.0 for Windows 2000)
 - ▲ Netscape Enterprise Server Version 3.51 or Version 3.6.3
 - ▲ iPlanet Web Server, Enterprise Edition Version 4.0

- One of the following database applications:
 - ▲ IBM DB2 Universal Database Version 6.1 with fixpack 4*
 - ▲ InstantDB Version 3.1.3*
 - ▲ Oracle Version 8i Release 2
 - ▲ Sybase Adaptive Server Enterprise Version 12.0

* On Product CD-ROM



- InstantDB is a pure Java database that can be used in place of a relational database for the administrative repository

Pre-Installation Checks

- Make sure TCP/IP networking is correctly configured
 - ▲ Hostname of node should be in DNS or local hosts file
 - ▲ Hostname of node should remain fixed (do not use DHCP)

 - NT: Make sure NT networking is enabled
 - ▲ NT Workstation service is required for Admin Server
 - ▲ NT Server service is required for DB2 server

 - Make sure you have created a user ID to connect to the database
 - ▲ ID must satisfy DB2 naming restrictions

 - Make sure you have created a user ID to start services

 - Stop the Web server
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- DB2 has restrictions on user names and passwords that are used to access DB2 resources. User names and passwords should be no longer than 8 characters and should only include alphanumeric characters.
- You should create a user ID for use with DB2 and a separate user ID which WebSphere will use to authenticate with the local operating system. (These can be the same ID but using different IDs gives additional security.)
- If you will use a laptop PC for a demo machine running Windows NT, make sure the TCP/IP stack is always up by configuring the "MS Loopback" adapter, which provides software emulation of a LAN adapter. Configure a private IP address for this adapter and make sure the hostname resolves to this address by editing the `\winnt\system32\drivers\etc\hosts` file. Note: The MS loopback adapter should not be confused with the TCP/IP loopback interface (on IP address 127.0.0.1).

Start Installation



- NT
 - ▲ Run **setup.exe** on product CD-ROM
 - ▲ InstallShield wizard guides you through the installation
- UNIX, two install methods provided:
 - ▲ Java-based GUI installer
 - Mount CD-ROM
 - Change to the subdirectory for your operating system (AIX or Sun)
 - Run the install script file **./install.sh**
 - Note: If the **JAVA_HOME** environment variable is not set, you will be prompted for the Java path (e.g., /usr/jdk_base)
 - A series of panels guides you through the installation
 - Native UNIX installer (smit on AIX, admintool on SUN)



On UNIX (AIX or Solaris), there are two choices for installation. You can use the Java-based GUI installer which provides a similar interface to InstallShield on Windows NT, or you can use the native operating system tools.

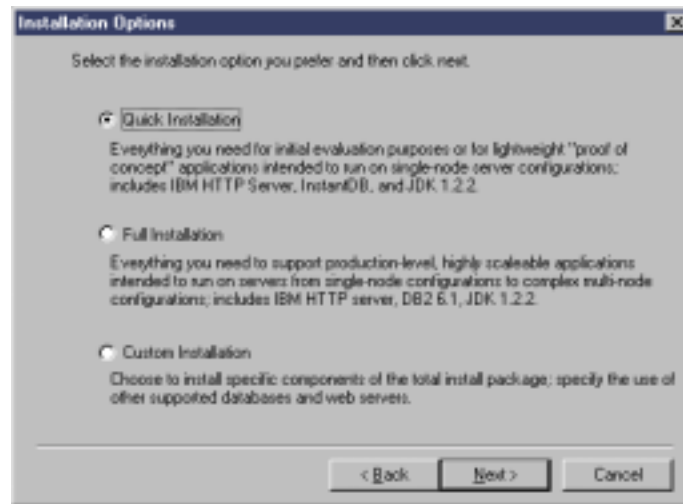
On AIX, you can use SMIT.

- First make sure the **JAVA_HOME** variable is set to the correct value for your current shell. You may also need to set additional variables for non-IBM web servers.
- Mount the CD-ROM.
- Start smit.
- Select Software Installation and Maintenance, then Install and Update Software, then Install and Update from ALL available software. For the Input device/directory, click List, then select the CDROM drive. Click OK, and then click List next to Software to Install.
- Select the desired file sets from the SMIT file list panel.

On Solaris, you can use admintool.

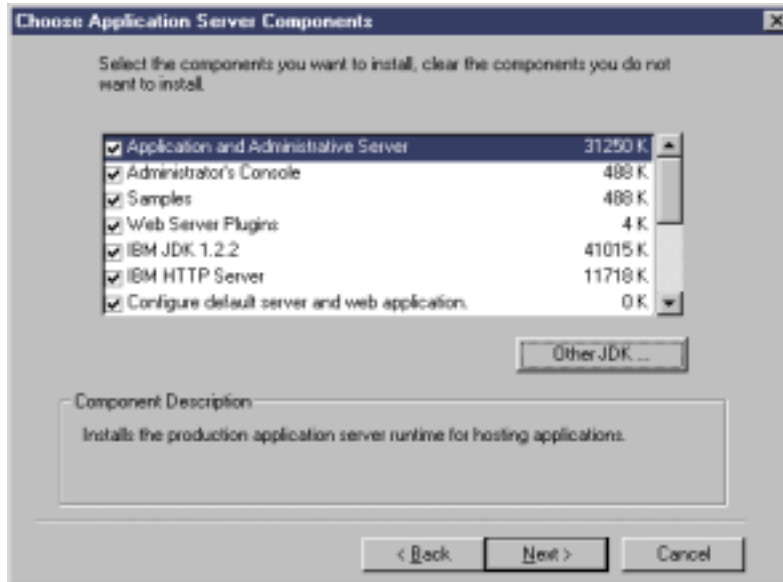
- Mount the CD-ROM.
- Start admintool.
- From the Browse menu, select Software, Edit, and then Add. For the Input device/directory, click List, then select the CDROM drive. Click OK, and then click List next to Software to Install.
- Select the desired file sets from the Admin Tool file list panel.

Select Components to Install



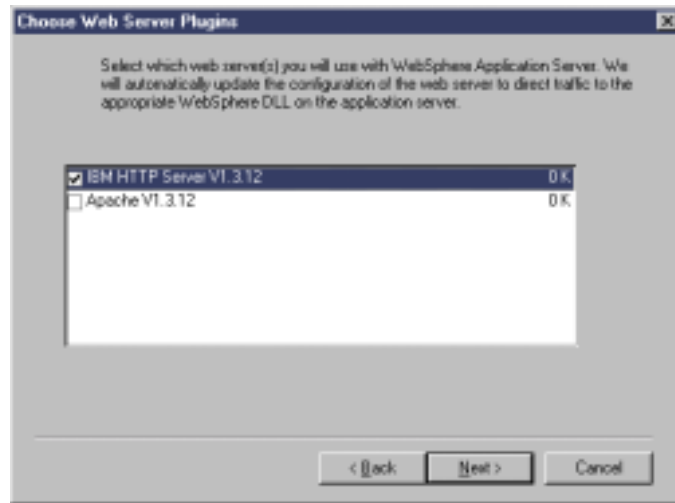
- Quick Installation - Installs what you need for lightweight "proof of concept" applications intended to run on single-node server configurations. Installs IBM HTTP Server, InstantDB, and JDK 1.2.2.
- Full Installation - installs all components, including the application server, Web server plug-ins, console, help, developer's client files, documentation, and samples.
- Custom Installation - select the components you want. Use this if you want to choose other supported Web servers or databases. This option also allows you to have a default server pre-configured with an EJB container and a servlet engine with sample servlets.

Custom Installation



- You can select which components to install.
 - Administrator's Console - the Java GUI
 - Samples - installs sample applications.
 - Web Server Plugins: The library modules for the plugin will be installed and the Web server configuration will be updated to load the plugin.
 - IBM HTTP Server - installs the Web server if it isn't already installed.
 - Configure default server and web application - creates an application server instance the first time the administrative console is started. This server has an EJB container and a servlet engine with sample servlets. This can be used to run the samples and distribute the console to other clients.
- If you wish to use a JDK other than IBM JDK 1.2.2, use the Other JDK . . . button to make your selection.

Choose Your Plugin



Specify Security Options

Security Options

Select an existing username and password to use for security and starting the WebSphere Application Server service. This username must have administrative authority.

Username: db2admin

Password: [masked]

Confirm Password: [masked]

Advanced Key Ring Settings...

< Back Next > Cancel



Security options control the user ID WebSphere will use to access the local operating system.

- User: A valid user on the underlying operating system
- Password: The password of the specified user

Depending on your configuration, you may wish to modify Advanced Key Ring Settings

- Use demo key ring file: Indicates whether a dummy key ring file shipped with the product will be used for security keys
- Client Key Ring: The class file for the client security key ring
- Client Key Ring password: The password for the client key ring
- Server Key Ring: The class file for the server security key ring
- Server Key Ring password: The password for the server key ring

The user ID and password must be for a valid user account that you have already created in the Windows NT user registry. This account should be a member of the Administrators group and must have the rights to "Log on as a service" and to "Act as part of the operating system."

Note: WebSphere security is not enabled by default, so any user can use an Administrative Console to connect to the Administrative Server. Enabling security is discussed in a later topic.

Specify Database Options

Database Options

IBM WebSphere Application Server uses a database repository to store information. Indicate the type and name of the database you would like to use, along with the location, user name, and password for the database.

Database Type: DB2

Database Name: was

Path: C:\SQLLIB

URL: jdbc:db2:was

Database User ID:

Password:

Confirm Password:

< Back Next > Cancel



Database options specify how the WebSphere Administrative Server connects to the repository database:

- Type: The database to use for the administrative server data repository (DB2, Oracle, Sybase).
- Name: The database name for the administrative server repository. The default name for DB2 is **was**.
- Path: The path where the database product is installed. For example, for DB2 the path might be C:\SQLLIB for NT, /home/db2inst1 for AIX or /export/home/db2inst1 for Sun; and, for Oracle, the path might be d:\oracle for NT (Oracle root directory).
- URL: The JDBC URL used to connect to the database from the administrative server. For example, the DB2 URL is jdbc:db2:was. The Oracle URL is jdbc:oracle:thin:@hostname:1521:orcl, where hostname is the TCP/IP host name of the server, 1521 is the service port you defined, and orcl is the database name.
- Database User ID: The ID for connecting to the database. DB2 has an 8-character limit. For Oracle, the user is EJSADMIN.
- Password: A valid password associated with the database user ID. For Oracle, the password is EJSADMIN.

Files Installed



<as_root> (= C:\WebSphere\AppServer - default on NT)

/bin
/classes
/deployableEJBs
/deployedEJBs
/hosts
/jdk
/lib
/logs
/properties
/servlets
/temp
/theme
/tivready
/tranlog
/web
/WS Samples
/WS Samples IDB



- The bin directory contains the product executable files
- The hosts directory is where the content for deployed Web Applications is normally located
- The lib directory contains all of the jar files for the standard classes used by WebSphere Application Server
- The logs directory contains the log and trace files for the Admin Server and the application servers
- The temp directory contains working files including the servlets generated from JSP pages
- The web directory contains static content including on-line documentation and XML schemas
- * The theme and WebSphereSamples directories are copied to the HTTP server document root directory (for example, C:\Program Files\IBM HTTP Server\htdocs)

Post-Install Configuration

- NT: System restart needed before starting the Web server
- Selected Web server configuration file is updated
 - ▲ Load Application Server plug-in
 - ▲ Enable Application Server samples
 - ▲ Example for IBM HTTP Server (in httpd.conf):

```
LoadModule ibm_app_server_module C:/WebSphere/AppServer/bin/mod_ibm_app_server.dll
Alias /IBMWebAS/samples/ C:/WebSphere/AppServer/samples/
Alias /IBMWebAS/ C:/WebSphere/AppServer/web/
NcfAppServerConfig BootFile C:\WebSphere\AppServer\properties\bootstrap.properties
```

- Application Server configuration files are updated
 - ▲ contain settings needed by the Application Server runtime
 - ▲ <as_root>/bin/admin.config
 - ▲ <as_root>/properties/sas.server.props, sas.client.props, etc



- Once the files have been copied, a number of configuration changes will be made to the system, Web server and WebSphere configuration files.
- On Windows NT, you need to reboot so that changes to system environment variables will be picked up by the Web server and other system processes.
- The WebSphere plug-in is registered in the configuration file for the selected Web servers. For IBM HTTP Server, the configuration file is <http_root>/conf/httpd.conf.
- Similar changes are made for other Web servers.

Database Configuration (Local/Server)

- NT
 - ▲ DB2 instance is correctly configured after install
- UNIX
 - ▲ Create a DB2 instance using **db2setup**
 - ▲ Configure the db2profile for the instance owner ID
 - ▲ Add DB2 server ports to /etc/services file
 - ▲ **db2 update dbm cfg using svcename db2cdb2inst1**
 - ▲ **db2set DB2COMM=tcpip**
 - ▲ **db2start**
- Create the database identified in the database URL
 - ▲ Start DB2 Command Window
 - ▲ **db2 create database was**
 - ▲ **db2 update db cfg for was using applheapsz 256**



NOTE: In most cases, these steps are completed by the install wizard.

- Once WebSphere is installed you must create the database for the Administration Repository.
- This can either be a DB2 or Oracle database stored on a local or remote database server.
- For NT, DB2 is correctly configured after installation and has TCP/IP server functionality enabled. For AIX and Solaris, you should follow the process in the DB2 Installation Guide to create a DB2 instance and start DB2. If you want to have the database on a remote server, you must perform the additional steps on the server to configure the database for TCP/IP.
- Once the database server is configured, you must create the **WAS** database and increase its application heap size.

Database Configuration (Remote Client)

■ NT

- ▲ Use DB2 Client Configuration Assistant to add the remote WAS database and test the connection
- ▲ Start **DB2 Security Service** from Services

■ UNIX

- ▲ Create a DB2 instance using **db2setup***
- ▲ Configure the db2profile for the instance owner ID*
- ▲ Add DB2 server ports to /etc/services file*
- ▲ **db2 catalog tcpip node mynode remote myhost server <svcname>**
- ▲ **db2 catalog database was at node mynode**
- ▲ Test the connection to the database



***NOTE:** In most cases, these steps are completed by the install wizard.

- If you will be using a remote database server, you must configure the database client to connect to the database on the remote server.
- You will need to know the TCP/IP hostname and DB2 ports on the server, the database name and the user ID and password to connect to the database.
- For NT, you can use the DB2 Client Configuration Assistant which steps you through the process of connecting to a remote database. For AIX and Solaris, you should follow the process in the DB2 Installation Guide to create a DB2 instance. Then you must perform the additional steps on the client to configure the TCP/IP connection to the server node and catalog the remote database.
- **svcname** is the name found in the /etc/services file; For example, db2cdb2inst1

Start WebSphere Application Server

- To start the Administration server
 - ▲ NT
 - Start **IBM WS AdminServer** from Services
 - Set this to Automatic if you want it started after a reboot
 - ▲ UNIX: login as root and enter:
 - **cd <as_root>/bin**
 - **./startupServer.sh**

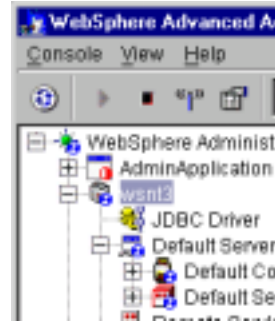
- To start the Administration Console
 - ▲ NT
 - Start--<Programs-->IBM WebSphere-->Application Server V3.5-->Administrator's Console
 - ▲ UNIX
 - **cd <as_root>/bin**
 - **./adminclient.sh**



- Ensure that the database server and Web server have started correctly.
- On Windows NT:
 - You must reboot after installation to ensure all processes pick up changes to system variables.
 - The NT Workstation service must be running otherwise the Admin server will fail to start.
 - You can also control the Admin Server service from a command prompt or batch file using the following commands:
 - net start "IBM WS AdminServer"
 - net stop "IBM WS AdminServer"
 - For Debugging purposes, you can also start the Admin Server in a command window to see its debug messages.
 - C:\WebSphere\AppServer\bin\debug\adminserver.bat

Verify Installation

- Make sure system has been restarted (NT)
- Start the database server
- Start the Administration Server
- Start the Administrative Console
- Start the default server
 - ▲ Select Topology view
 - ▲ Expand the WebSphere Administrative Domain tree
 - ▲ Expand your server node
 - ▲ Select Default Server
 - ▲ Click the Start button on the toolbar
- Run a sample servlet
 - ▲ <http://localhost/servlet/snoop>



- To verify the installation, you should first ensure that you can start the Administration Server.
- Next, start the Administration Console. Check the messages and examine the Topology view to ensure the default server instance was created correctly.
- In the Topology view select the Default Server and start it. This will start a new JVM for the new server and you should now be able to run the servlets configured in it.
- From a browser run a sample servlet, such as the Snoop servlet, to prove that the server is running correctly.

Silent Installation



- NT
 - ▲ Modify response file (setup.iss on product CD-ROM)
 - specify install directory
 - specify JDK/JRE location
 - specify components and plugins to install
 - ▲ Invoke setup program with response file
 - `setup.exe c:\mydir\setup.iss -s`
- AIX
 - ▲ Create shell script
 - set environment variables (e.g., `JAVA_HOME`)
 - run `installp` command for required filesets



- **To perform silent installation, you should copy the installation images to a file server and create a response file or script to perform the installation.**
- **For Windows NT, you can customize a copy of the sample setup.iss file on the CD-ROM and supply the required path and component information.**
- **For AIX, you can create a shell script to run the installp command to configure the required components. You can look at the smit.script file from a successful SMIT installation to see the commands that it used.**

Summary



- Preparation
 - ▲ Decide on topology
 - ▲ Understand prerequisites

- Installing WebSphere Application Server
 - ▲ Make sure TCP/IP is working
 - ▲ Stop Web server
 - ▲ Install product from CD-ROM
 - ▲ Create administrative repository
 - ▲ Start administrative server
 - ▲ Start administrative console
 - ▲ Test



IBM WEBSHERE WORKSHOP - LAB EXERCISE

Installing WebSphere on Solaris Lab

What This Exercise is About

In the following lab you will install a single configuration of WebSphere on a single node of a Solaris server. The lab covers preparing, installing, and securing the WebSphere install.

User Requirement

For this lab, you will need the following software:

- Sun Solaris Version 2.6 at the latest maintenance level
- Sun Java Development Kit 1.2.2_05a (Comes with WebSphere 3.5)
- One of the following Web servers: IBM HTTP Server Version 1.3.12 (Comes with WebSphere 3.5), Apache Server Version 1.3.12, Netscape Enterprise Server Version 3.5.1 or 3.6.3, iPlanet Web Server, (Enterprise Edition) 4.0, Lotus Domino Enterprise Server 5.0.2B, or Lotus Domino Go Webserver Version 4.6.2.5 or 4.6.2.6.
NOTE: For this lab, we will be using IBM HTTP Server Version 1.3.12
- DB2 6.1 fix pack 4 or Oracle Version 8.1.6
NOTE: For this lab we will be using Oracle Version 8.1.6
- DB2 client software or Driver Manager JDBC-thin/100% Java for JDK1.2.x version of the JDBC driver for Oracle 8i available on technet.oracle.com.
- WebSphere Application Server 3.5 Advanced Edition Gold Master

The above software will be supplied by the instructor.

These are the minimum hardware requirements for installing and operating WebSphere Application Server on the Solaris operating system:

- 75 MB of free disk space for product installation [for installation from a compact disc](#).
- 300 MB disk space to install product from a Web download:
 - 100 MB installation image
 - 100 MB to unzip files
 - 75 -100 MB to install
- 300 MB disk space for product (footprint)
- 20 MB of free disk space for IBM HTTP Server installation
- 150 MB of free disk space for Universal Database (DB2) installation
- 512 MB of memory minimum
- Network interface
- CD-ROM drive

What You Should Be Able to Do

After completing this lab, you should know all the steps required to install and test a WebSphere Application Server on a Solaris server. You should also know how to troubleshoot problems if they arise.

Introduction

The lab consists of the following parts:

- Part One: Preparing for the Install
- Part Two: Installing the WebSphere Application Server
- Part Three: Configuring and Testing the Install

Exercise Instructions

To complete this lab use the Solaris lab computer. Estimated time: 2 hours.

All of the UNIX commands are to be typed in a terminal window. To access the terminal window on Solaris, click the small triangle located above the icon that looks like a computer. A popup window should appear. Select **Terminal** to start a terminal window. You should see a “#” prompt.

For help with UNIX commands, see Appendix B.

Part One: Preparing for the Install

Before beginning the installation steps, make sure you meet the minimum hardware and software requirements to perform the install. Follow the steps that are outlined below to ensure that the computer meets the minimum requirements.

__1. UserID/Password

During the installation process, you will need to log in as **root**. The root password will be provided to you on the lab cheat sheet.

Ensure you are running as the root user. Type **who am i** or **whoami** from a terminal window. It should report that you are **root**.

__2. Solaris V2.6 or greater

From a terminal window, type **uname -a**. You should see version 5.6 or greater listed.

```
# uname -a
SunOS wssun# 5.6 Generic_105181-21 sun4u sparc SUNW,Ultra-250
```

__3. 75 MB of free disk space for installation

From a terminal window, type **df -k**. Confirm that at least 40 MB is free space is available mounted on **/export/home**.

```
# df -k
Filesystem          kbytes  used  avail capacity  Mounted on
/dev/dsk/c0t0d0s7   7648072 2660374 4911218    36%    /export/home
```

__4. 256 MB of memory (512 MB recommended)

From a terminal window, type **prtconf | grep Memory**. Confirm that at least 256 MB of memory is available.

```
# prtconf | grep Memory
Memory size: 2048 Megabytes
```

__5. CD-ROM drive

Usually this is mounted in the **/cdrom** directory. Insert the WebSphere CD-ROM and type **mount | grep websphere**.

```
# mount | grep websphere
/cdrom/websphere on /vol/dev/dsk/c0t6d0/websphere read only/nosuid on
Tue Jan 18 17:19:39 2000
```

__6. WebSphere Repository Database

WebSphere Application Server requires an Administrative Server Repository. This database is used to store setup, configuration, and state information about the WebSphere Application Server. The database type can be DB2 , Oracle, or Sybase.

For this lab exercise, each lab group will be using an Oracle database which has already been set up for you. Each lab setup will be connecting to the same Oracle server and using unique instance names. The lab cheat sheet lists the server and database names. These will be referred to as **<db_host>** and **<instance_name>** for the rest of this lab.

To connect to Oracle, you must be using the JDBC driver for Oracle 8i. This file is already on your machine. To locate it, type **find / -name classes12.zip** in a terminal window.

Make a note of the portion of the path before **jdbc/lib/classes12.zip**. This will be referred to as **<db_home>** for the rest of this lab. For example, if **find** reports **/export/home/oracle/jdbc/lib/classes12.zip**, then the path for **<db_home>** would be **/export/home/oracle**.

Part Two: Installing the WebSphere Application Server

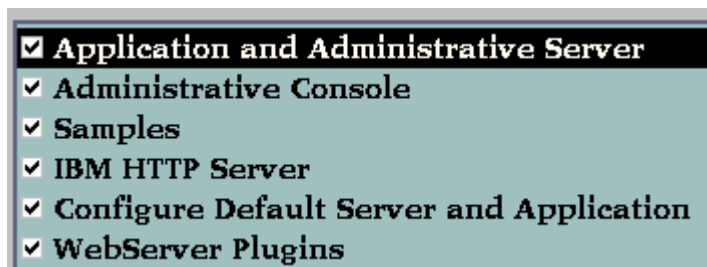
- __1. Make sure the WebSphere Application Server installation CD has been inserted.

In the event that the WebSphere 3.5 CD-ROM is not available for the class, the installation program has been copied to the **/export/home/WebSphere35** directory on your Solaris lab computer. If this directory is to be used, you need to type **cd /export/home/WebSphere35** instead of **cd /cdrom/websphere/sun** when referring to the **<install_home>** directory. The instructor will indicate if the CD-ROM is available.

- __2. From a terminal window, go to the mount point for the CD-ROM for your operating system. (**cd /cdrom/websphere/sun**)
- __3. Run the install script file by typing **./install.sh**. A welcome screen will display, click **Next**.
- __4. Select the **Custom Installation** radio button and click **Next**.

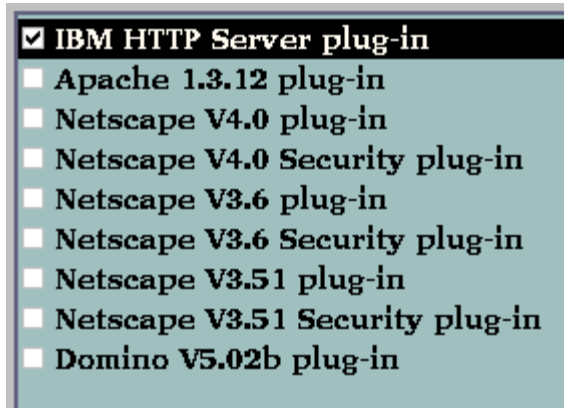


- __5. Ensure that all the options have been checked (except OLT Debugger) and click **Next**.



Note: Choosing the **Configure Default Server and Application** option creates the default application server and some example applications when the administrative server is first started. To re-create this example configuration at a later point, edit the `<as_root>/bin/admin.config` file and change the `install.initial.config` parameter from `false` to `true` and restart the administrative server.

__6. Select the *IBM HTTP Sever plugin* and click **Next**.



__7. Complete the fields on this screen as shown below:

- __ Database Type: **Oracle**
- __ Database Name: **<instance_name>** (Refer to the lab cheat sheet)
- __ DB Home: **<db_home>** (/export/home/oracle)
- __ DB URL: **jdbc:oracle:thin:@<db_host>:1521:<instance_name>**
- __ Database User ID: **ejsadmin**
- __ Database Password: **ejsadmin**

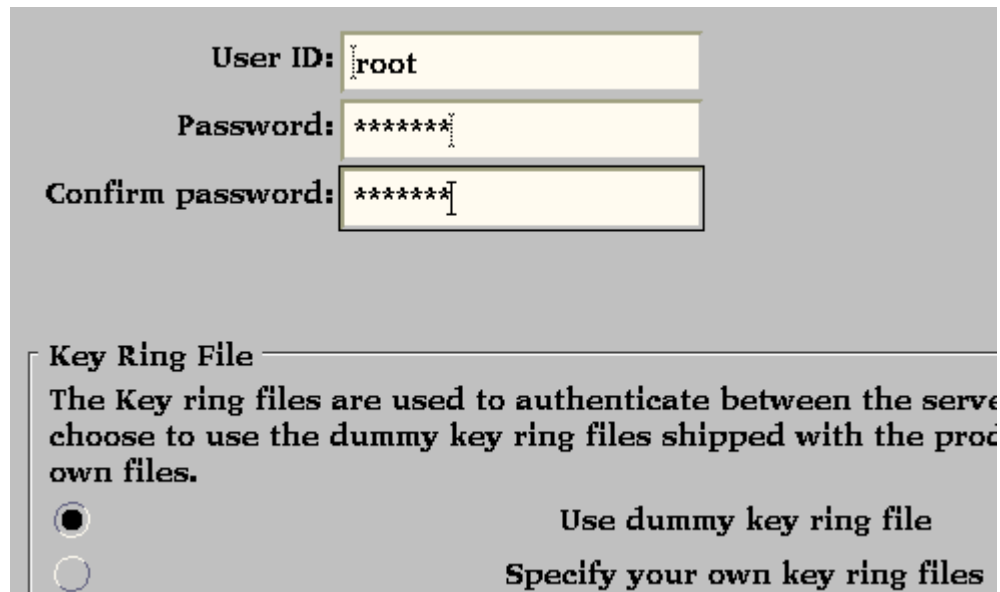
Database Type:	Oracle
Database Name:	was2
DB Home:	/export/home/oracle
DB URL:	jdbc:oracle:thin:@cloracle1:1521:was2
Database User ID:	ejsadmin
Database Password:	*****
Confirm Password:	*****

Note: Replace **<instance_name>** with the name of the Oracle instance that is assigned to your group. Replace **<db_host>** with the name of the Oracle Server.

For **Database User ID**, enter the User ID that is specified when installing Oracle 8i.

__8. Click **Next**.

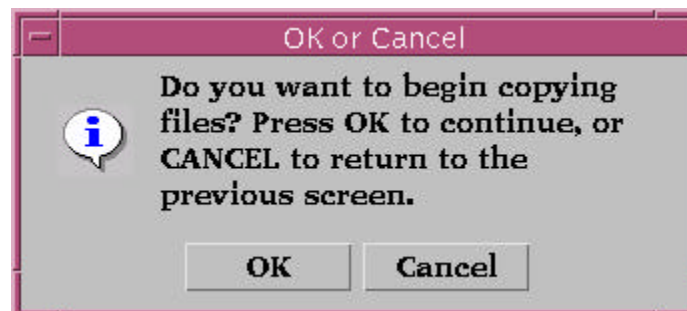
__9. Enter the *User ID* and password for **root**, and verify that the radio button to use the dummy key ring is selected. Click **Next**.



The screenshot shows a form with three input fields: "User ID:" containing "root", "Password:" containing "*****", and "Confirm password:" containing "*****". Below these fields is a section titled "Key Ring File" with the text: "The Key ring files are used to authenticate between the server and the client. You can choose to use the dummy key ring files shipped with the product or specify your own files." There are two radio buttons: the first is selected and labeled "Use dummy key ring file", and the second is unselected and labeled "Specify your own key ring files".

__10. Accept the Destination Directory defaults and click **Next**.

__11. Review the Install Options Selected screen and click **Next**. You will receive a confirmation window. Click **OK**.



__12. Wait for completion window then click **Finish** to return to main Solaris screen.

Part Three: Configuring and Testing the WebSphere Install

You are now ready to test the installation.

__1. Open the text editor by clicking on the computer icon on the Solaris desktop, then click *Text Editor*. Edit the `<as_root>/bin/setupCmdLine.sh` file. Verify that **WAS_HOME** is set to `<as_root>`.

__2. Close the text editor.

__3. You are now ready to start the WebSphere Administrative Server. From a terminal window, type:

```
cd <as_root>/bin
./startupServer.sh&
```

__4. Monitor the tracefile for the **A WebSphere Administration Server open for e-business** message by typing `tail -f ../logs/tracefile` on a command line.

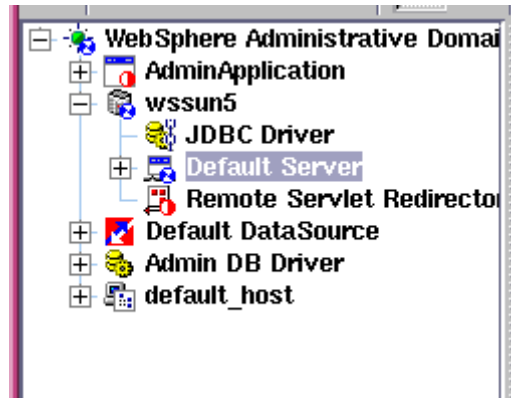
Note: For additional information on debugging the administrative server, see the deployment lab. You can also view the `nanny.trace` file by using `more <as_root>/logs/nanny.trace`.

__5. When the expected message is displayed, press the **Control** and **C** keys at the same time to end the trace and return to the normal “#” command prompt.

__6. Start the Administrative Console by typing `./adminclient.sh&`.

NOTE: Wait until the **Console Ready** message displays in the "Console Messages" portion of the WebSphere Advanced Administrative Console GUI.

- __7. Start the **Default Server** by clicking the "+" of the *WebSphere Administrative Domain* and the node (wssun#). Then right click **Default Server** and click **Start**.



- __8. You will receive a **Command "Default Server.start" completed successfully.** dialog window. Click **OK** to return to the console.
- __9. Open the **/opt/IBMHTTPD/conf/httpd.conf** file in a text editor and find the **#ServerName new.host.name** line.
- __10. Delete the "#" and change **new.host.name** to **<machine_name>.<domain_name>**, for example, *wssun3.rchland.ibm.com*.
- __11. Save and close the file.
- __12. Stop and restart the HTTP Web server by typing the following commands:
- ```
cd /opt/IBMHTTPD/bin
./apachectl stop (You should receive a "/apachectl stop: httpd stopped" message)
./apachectl start (You should receive a "/apachectl start: httpd started" message)
```
- \_\_13. Type **netscape&** at a command prompt.

\_\_14. Enter the following URL in Netscape: `http://<machine_name>/servlet/snoop`.



Two sample applications (servlet groups) are installed under the Application Server hosts folder. The applications are **default\_app** (which included snoop) and **examples**. To serve servlets from these applications, use your browser to open the servlet URL. To view the servlet URL, use the WebSphere Administrative Console to display the servlet attributes.

**Note:** The preferred method of stopping the administrative server on Solaris is to right click the node and select **Stop**. However, if you cannot load the Administrative Console, you can stop the java process by using the Solaris "kill" command.

Type `ps -ef | grep java` to see a list of running java processes.

Type `kill <process_number_1> <process_number_2> ...`

You must kill the administrative server process before or at the same time as any running application server, or the administrative server will attempt to restart the application servers.

You must kill the nanny process at the same time as the administrative server, or the nanny process will attempt to restart the administrative server.

## **Summary**

While completing this lab you installed a WebSphere Application Server on Solaris. You prepared for the install, installed WebSphere Application Server, secured the installation, configured, and tested the install.

**END OF EXERCISE**