Installation Overview

IBM WebSphere Application Server

This document describes the WebSphere Application Server (WAS) CDs you have received from SAS and the general workflow for them on your mid-tier for the SAS 9.1.3 platform. This document is not intended to be a detailed WAS reference source but should contain enough information to get you started. This document is not a problem diagnosis guide, and you should have a WAS administrator who will have in-depth knowledge of WebSphere and the mid-tier environment.

SAS 9.1.3 supports three WebSphere platforms, Windows, AIX, and Solaris at this time.

CDs in Package

If you will be running your mid-tier on Windows, you should have received the following CDs:

1. Application Server and IBM HTTP Server 1.3.28 (Windows) – referred to as WAS Base, a fully functional J2EE 1.3 certified application server.

2. Deployment Manager (Windows) – referred to as WAS ND and adds the ability to manage multiple application servers, handle clustered environments, and allow for scalability. ND in this case stands for "network deployment".

3. Edge Components (Windows) – referred to as Edge Components and extends WAS ND by providing Load Balancer and Caching Proxy components.

4. Applications Client (Windows) – referred to as WAS Application Client and provides a client environment for typically accessing EJB programs running on the Application Server.

5. IBM HTTP Server 2.0.47 (Windows, AIX, & Solaris) – referred to as IHS, IBM's Web server. The version on this CD (2.0.47) is more recent than the IBM HTTP Server bundled with WAS Base (1.3.28).

6. IBM WebSphere Application Server 5.1 Cumulative Fix 2 (5.1.1.5) (Windows) – referred to as cumulative fixes and contains the applicable fix pack, cumulative fix, scripts, and update installers to bring WAS Base and WAS ND up to the supported 5.1.1.5 level.

7. IBM WebSphere Application Client 5.1 Cumulative Fix 2 (5.1.1.5) (Windows) – referred to as cumulative fixes and contains the applicable fix pack, cumulative fix, scripts, and update installers to bring the WebSphere Application Client up to the supported 5.1.1.5 level.

If you will be running your mid-tier on AIX, you should have received the following CDs:

1. Application Server and IBM HTTP Server 1.3.28 (AIX) – referred to as WAS Base, a fully functional J2EE 1.3 certified application server.

2. Deployment Manager (AIX) – referred to as WAS ND and adds the ability to manage multiple application servers, handle clustered environments, and allow for scalability. ND in this case stands for "network deployment".

3. Edge Components (AIX) – referred to as Edge Components and extends WAS ND by providing Load Balancer and Caching Proxy components.

4. Applications Client (Windows) – referred to as WAS Application Client and provides a client environment for typically accessing EJB programs running on the Application Server.

5. IBM HTTP Server 2.0.47 (Windows, AIX & Solaris) – referred to as IHS, IBM's Web server. The version on this CD (2.0.47) is more recent than the IBM HTTP Server bundled with WAS Base (1.3.28).

6. IBM WebSphere Application Server 5.1 Cumulative Fix 2 (5.1.1.5) (AIX) – referred to as cumulative fixes and contains the applicable fix pack, cumulative fix, scripts, and update installers to bring WAS Base and WAS ND up to the supported 5.1.1.5 level.

7. IBM WebSphere Application Client 5.1 Cumulative Fix 2 (5.1.1.5) (Windows) – referred to as cumulative fixes and contains the applicable fix pack, cumulative fix, scripts, and update installers to bring the WebSphere Application Client up to the supported 5.1.1.5 level.

If you will be running your mid-tier on Solaris, you should have received the following CDs:

1. Application Server and IBM HTTP Server 1.3.28 (Solaris) – referred to as WAS Base, a fully functional J2EE 1.3 certified application server.

2. Deployment Manager (Solaris) – referred to as WAS ND and adds the ability to manage multiple application servers, handle clustered environments, and allow for scalability. ND in this case stands for "network deployment".

3. Edge Components (Solaris) – referred to as Edge Components and extends WAS ND by providing Load Balancer and Caching Proxy components.

4. Applications Client (Windows) – referred to as WAS Application Client and provides a client environment for typically accessing EJB programs running on the Application Server.

5. IBM HTTP Server 2.0.47 (Windows, AIX, & Solaris) – referred to as IHS, IBM's Web server. The version on this CD (2.0.47) is more recent than the IBM HTTP Server bundled with WAS Base (1.3.28).

6. IBM WebSphere Application Server 5.1 Cumulative Fix 2 (5.1.1.5) (Solaris) – referred to as cumulative fixes and contains the applicable fix pack, cumulative fix, scripts, and update installers to bring WAS Base and WAS ND up to the supported 5.1.1.5 level.

7. IBM WebSphere Application Client 5.1 Cumulative Fix 2 (5.1.1.5) (Windows) – referred to as cumulative fixes and contains the applicable fix pack, cumulative fix, scripts, and update installers to bring the WebSphere Application Client up to the supported 5.1.1.5 level.

What Should You Install?

Everyone needs to install WAS Base which runs supported SAS applications. WAS Base also includes embedded MQ (which you will most likely want unless you have the external IBM MQ product) and IHS 1.3.28. IHS is not required because you can go to the application server directly. In a production environment, HTTP servers are normally used, and WAS has plug-ins for multiple HTTP server products.

WAS ND is optional but does provide added functionality—management of multiple application servers from a single administrative console and clustering and scalability. The management functionality may be exploited immediately, but you will need to understand cells, nodes, and servers. Clustering and scalability is more complicated, and you will need someone with expertise in this area to start building this more complex configuration.

The Edge Components are also optional and work in conjunction with WAS ND to provide scalability. Again, someone with expertise in scalability would need to be involved with this type of configuration.

Certain types of SAS clients will need the WAS Application Client to be installed, and the installation instructions for those clients will indicate the necessity of the WAS Application Client. Please note that the WAS Application Client should be installed on the Windows machine where the client will run rather than the mid-tier.

The IHS is also optional and can be installed if you want a more recent IHS version (2.0.47) than was bundled with WAS Base. You also may decide after the initial installation that you want to use an HTTP server and can then install the IHS.

The cumulative fixes should be applied to WAS Base, WAS ND (if it was also installed) and the WebSphere Application Client to bring you to the 5.1.1.5 level.

Before You Install

There are a few items you need to be aware of before you install WAS Base.

- Make sure your mid-tier hardware and software meet the minimum requirements. Refer to http://www-306.ibm.com/software/webservers/appserv/doc/latest/prereq.html for this information.

- There are many good IBM WebSphere Application Server links available to obtain information. Three of the more important ones are:

   o http://publib.boulder.ibm.com/infocenter/ws51help/index.jsp is the WebSphere Application Server Version 5.1 information center. The information center also refers to many other good online sources.

   o http://www-306.ibm.com/software/webservers/appserv/was/library/ is the WebSphere Application Server Library.

   o http://publib-b.boulder.ibm.com/Redbooks.nsf/RedpieceAbstracts/sg246195.html?Open is the *IBM WebSphere Application Server V5.1 System Management and Configuration Handbook*. It is a huge book but has chapters that detail multiple platform installation steps.

   o The WAS Windows platform install is the simplest and "normally" no prerequisite tasks are required. This is not so with the UNIX platforms. It is important to read the UNIX platform specific instructions before installing WAS. You can find these specific sections in the information center listed above. Below are specific links to the supported platforms:

      ▪ The Windows section can be found at http://publib.boulder.ibm.com/infocenter/ws51help/index.jsp?topic=/com.ibm.websphere.base.doc/info/aes/ae/tins_installwindowsb.html

      ▪ The AIX section can be found at http://publib.boulder.ibm.com/infocenter/ws51help/index.jsp?topic=/com.ibm.websphere.base.doc/info/aes/ae/tins_installunixb.html

      ▪ The Solaris section can be found at http://publib.boulder.ibm.com/infocenter/ws51help/index.jsp?topic=/com.ibm.websphere.base.doc/info/aes/ae/tins_installsolarisb.html

Installing WebSphere Application Server

As mentioned above, you should refer to the *IBM WebSphere Application Server V5.1 System Management and Configuration Handbook* for complete information about your installation. However, the steps below will show you the flow of how to install WAS Base.

1. **UNIX only**: For the embedded messaging component to work correctly, you must define the operating system groups mqm and mqbrkrs and the user IDs needed for WebSphere embedded messaging. Your AIX administrator should be able to do this for you. Refer to the *IBM WebSphere Application Server V5.1 System Management and Configuration Handbook* for details.

2. Start the Installation Wizard by invoking the installation executable from the applicable platform directory (install.exe from win or install from UNIX) and click **Next**.

3. The wizard will check your system for prerequisites. If the requirements are met, the wizard will prompt you for either a Full or Custom installation. If you select **Full**, the application server, the embedded messaging component and the IBM HTTP server will be installed, along with some miscellaneous tools. If you don't want everything installed, choose **Custom** and a dialog will be displayed with a list of features to install. For this list, we assume you are performing a full installation. If you do choose custom, make sure you install the WebSphere Embedded Messaging component.

4. Accept the storage location defaults or choose your own, and click **Next**.

5. A screen prompting you for a node name and hostname will be displayed. These should already be filled in. Click **Next**.

6. **Windows only**: You are asked if you want to install the WebSphere Application Server and the HTTP server as services. To do so, you will need to be logged into your machine as a local user, not as a network user. That user must also be an administrator. Make your selections and then click **Next**.

7. A list of the features to be installed is displayed. Click **Next**.

8. The Installation Wizard begins installing your software. Installation might take several minutes. After installation has completed, a screen will be displayed giving you various options. See the "Post-Installation Steps" below for details.

Post-Installation Steps

These steps will verify that your WAS Base installation was successful.

1. **AIX only**: There may be a potential port conflict between the administrative console and the WebSM system management console. The AIX WebSM system management server listens on port 9090 by default. If you suspect you have a port conflict, issue the command

   ```
   netstat -an | grep 9090
   ```

   If you get a match, another process is already listening on port 9090. If you want the WebSM server and WebSphere Application Server to coexist, change the WebSphere Application Server administrative console port. Although not recommended, you can disable the WebSM server by issuing the command

   ```
   /usr/websm/bin/wsmserver –disable
   ```

   This command permanently disables WebSM server startup. A better option is to change the WAS Admin Port number from 9090. If you change the WAS Admin Port number, you also need to update the WAS `virtualhosts.xml` file and the `server.xml` file with the new port number 9090.

2. Click **Start the server**. If the server has been installed correctly, after a few moments you should see a message similar to the following:

   ```
   Server server1 open for e-business; process id is 2264.
   ```

3. Click **Verify Installation**. You should begin to see a series of verification messages, followed by the message

   ```
   Installation Verification is Complete
   ```

4. Click **Administrative Console**. You will be prompted for a user ID. No ID is actually required, so click on **OK**. The **WebSphere Administrative Console** window will open.

5. In the left-hand pane are displayed a list of items. Expand **Servers**.

6. Click **Application Servers**. The server should be displayed in the right-hand pane; you will see "server1" listed.

7. Click on **Logout** to exit the Administrative Console.

8. Once you know you have a functioning Web Application Server, you should apply the applicable cumulative fixes to bring WAS, WAS ND, and the WebSphere Application Client up to the supported service level for SAS 9.1.3. Refer to the `readme.txt` on the applicable cumulative fix CD for instructions.

Some General WAS Information

This section contains basic directories and commands for the WAS Base product. The information is from a Windows perspective but can be applied to UNIX accordingly. The section refers to `WAS_HOME`, which is the directory where the application server is installed. On Windows, the default location of `WAS_HOME` is `C:\Program Files\WebSphere\AppServer`.

- On Windows, navigate through **Start→Programs→IBM WebSphere→Application Server V5.1** to stop and start the server.

- The default port that the application server listens on is 9080.

- Browse to `http://hostname:9090/admin/` to display the WAS administrative console. Remember on AIX, you most likely have changed this port to something other than 9090 so you would use that port number instead.

- `C:\WAS_HOME\logs\server1` is where the server logs reside. The main log is `SystemOut.log` but if there are errors, take a look at `SystemErr.log`. These logs will grow so it is a good practice to delete these on occasion.

- `C:\WAS_HOME\properties` contains WAS property files.

- `C:\WAS_HOME\config` contains many of the configuration files for cells, nodes, servers, and applications.

- `C:\WAS_HOME\bin` is where the WAS commands reside; for Windows they are `.bat` files and for UNIX they are `.sh` files. Below are some of the more common commands you might execute. In the examples below, substitute "`bat`" with "`sh`" to execute the commands on UNIX. For any command, you can provide the `-h` option to display a short help usage statement.

  - `startServer server1` starts the server1 application server

  - `stopServer server1` stops the server1 application server

  - `serverStatus.bat -all` shows you the state of your servers

  - `backupConfig.bat` backs up the node configuration to a zip archive file

  - `restoreConfig.bat backup_file` restores the node configuration to the `WAS_HOME/config` directory structure

- WAS ND is similar to WAS Base but there are differences in the installation process. Refer to the *IBM WebSphere Application Server V5.1 System Management and Configuration Handbook* for details.

30 June 2006