



IBM Software Group

IBM WebSphere Application Server V6.1

Installation Overview



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This presentation will give an overview of the Installation process for WebSphere® Application Server version 6.1.

Agenda

- Install overview and enhancements
- WebSphere Application Server V6.1 packaging
- WebSphere Application Server runtime installation
- Non root installation
- Uninstall
- Problem determination
- Summary and References



This presentation will cover an installation overview, various components included with the WebSphere Application Server Network Deployment package, and WebSphere Application Server runtime installation enhancements. It will also cover non-root installation, uninstallation and details on problem determination. Other presentations will explain specific packages such as IBM HTTP server and Web Server plug-ins in greater detail.

Section

Installation overview



This section is an installation overview, including enhancements and packaging.

Installation overview

- WebSphere Application Server V6.1 is a full install
- Installer uses ISMP (InstallShield Multi-platform)
- All packages support graphical and silent installation
 - ▶ Can be invoked from the Launchpad or from *install* application in the <install_Image>/WAS directory
 - ▶ Silent installation uses a response file as input
 - ▶ Checks for other local V6 runtime installations
- Common logging and tracing strategy is used across all installers



The installation process for WebSphere Application Server V6.1 uses InstallShield Multi-platform (ISMP). It is a full installation and not an upgrade-style installation from previous versions. Migration from previous versions will be discussed in the migration presentation. All packages in WebSphere Application Server V6.1 continue to offer graphical and silent installation options, and also use common logging and tracing, for consistency across packages.

Installation enhancements

- **Simplified installation flow**
 - ▶ Faster and easier to install and setup
 - ▶ Profiles can be created directly by the installer
 - ▶ Can create a cell (deployment manager + federated node) at installation time
- **Enhanced port detection**
 - ▶ Automatically defaults to unoccupied ports
 - ▶ Can only detect ports in use by WebSphere Application Server installations
- **Option to enable administrative security during installation**



The version 6.1 installer provides a streamlined installation process that makes it faster and easier to setup a complete environment. Profiles can now be created directly by the installer, rather than requiring you to launch the profile management tool after installation. You even have the option to create a deployment manager and an already-federated node in a single step during installation. The installation and profile creation tools also have improved port conflict resolution capabilities, automatically detecting ports that are configured for use by other WebSphere Application Server V6.0 or 6.1 installations, and suggest default port values that are not in use. You also now have the option to enable administrative security during installation, to create a secure environment “out of the box”.

Installation enhancements (cont.)

- Single response file for silent installation and profile creation
- Support for non-root installations
- Enhanced logging and tracing
 - ▶ Easier troubleshooting for support teams
- Enhanced OS integration
 - ▶ Menu entries created for Linux[®]
 - ▶ New support for Linux services
- Installation verification utility (installver)



Silent installation uses a response file similar to that of previous releases but now uses a single response file for both installation and profile creation. Option names have been changed to be consistent across all packages and have more user-friendly names. All options that are available during profile creation can be accessed during a silent installation. The installer has been enhanced on Linux platforms to create menu entries and startup scripts. The installation verification utility, introduced in version 6.0.2, helps to detect inconsistency and corruption in the installed image.

Packaging

Platform	CD Image	Includes
Distributed	Primary was.cd.6100.nd.<platform>	<ul style="list-style-type: none"> ▪ WebSphere Application Server
	Installation Tools was.cd.6100.installtools.nd.<platform>	<ul style="list-style-type: none"> ▪ IBM HTTP Server ▪ Web server plug-ins ▪ Application client ▪ Update installer ▪ Installation Factory ▪ Migration tools ▪ IBM Support Assistant ▪ World Type fonts (Linux only)
	WebSphere Application Server Toolkit was.cd.6100.ast.nd.<platform>	Eclipse-based tool for building, deploying, and debugging applications (Windows and Linux only)



This table describes the various software packages included on the V6.1 CD images. The Primary CD contains the WebSphere Application server runtime installer. The Installation Tools disk contains IBM HTTP Server, Web server plug-ins, Application client, Update installer, Installation Factory, Migration tools and IBM Support Assistant. The Application Server Toolkit, the Eclipse-based environment for building, deploying, testing, and debugging Java™ 2 Enterprise Edition (J2EE) applications, is provided on a separate disk.

Packaging (cont.)

Platform	CD Image	Includes
i5/OS®	Primary	<ul style="list-style-type: none"> WebSphere Application Server Network Deployment for i5/OS
	Installation Tools	<ul style="list-style-type: none"> Web server plug-ins Application Client Update Installer Installation Factory Migration tools
z/OS®	waszv61.h28w610.relfles.XMIT	<ul style="list-style-type: none"> Profile Management Tool has been extended to generate scripts that will create profiles and required configuration on z/OS



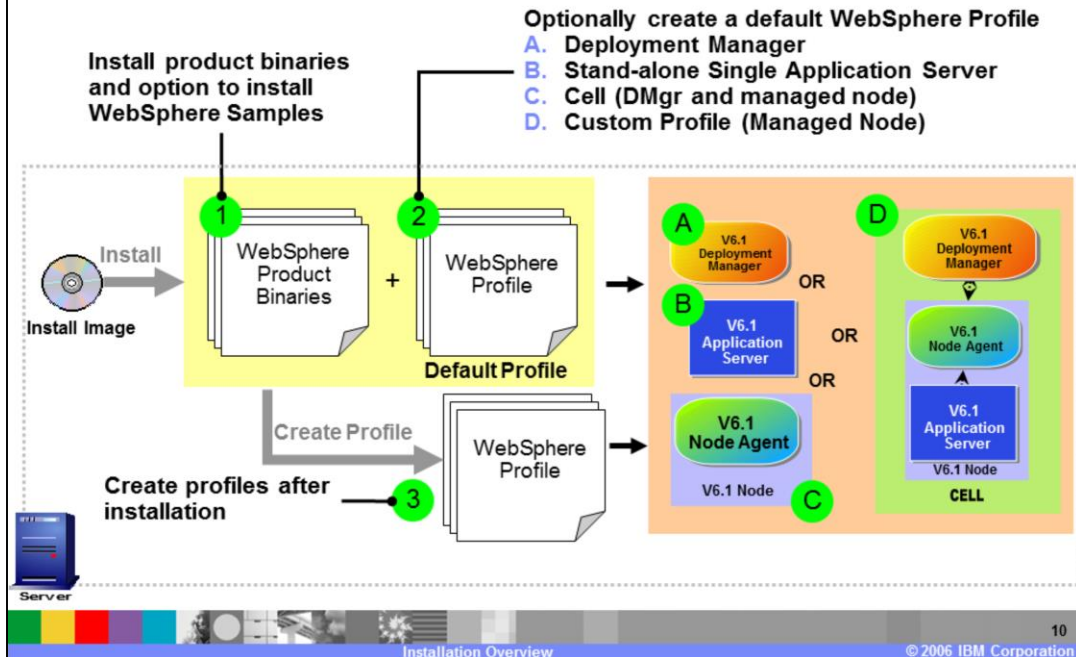
This table shows the packaging for i5/OS and z/OS platforms. The i5/OS release is packaged in a manner similar to the distributed platforms. The z/OS image is available electronically or on tape.

Section

Installation

This section covers the WebSphere Application Server installation process.

Installation options



The WebSphere Application Server V6.1 installer provides the capability to install the binary image and also optionally create profiles. Profile creation choices are: deployment manager, stand-alone application server, custom profile, and cell. The cell template will create two profiles, a deployment manager and a pre-federated node, to quickly build a simple cell on one machine, which can be very useful in development and test environments. Profile creation is covered in more detail in a separate presentation.

The graphical installation wizard creates profiles using the most commonly selected options. If you need a more customized profile, choose the “no profile” option during WebSphere Application Server installation and use the Profile Management Tool after installation to access more advanced options.

Launchpad console

Product launchpad

Install other product components

Click this link to launch the Application Server installation wizard

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In V6.1 a common Launchpad console is used to install all of the included components. Invoke the Launchpad by running “launchpad.exe” (or .sh) from the installation image.

Command-line installation

- **Installer binary location:**
 - ▶ <IMAGE_DIR>\WAS\install.exe **Windows™**
 - ▶ <IMAGE_DIR>/WAS/install **LINUX® / UNIX®**
- **Silent installation option uses a single response file for options to install product binary and to create a profile.**
 - ▶ <IMAGE_DIR>/WAS/install –options
“response_file_name” –silent
 - ▶ Sample file: <IMAGE_DIR>/WAS/responsefile.nd.txt
 - ▶ License acceptance must be changed to “true”

The WebSphere Application Server V6.1 installer can be directly invoked by using the “install” command from the “WAS” directory on the CD image. During a silent installation, a response file is used to obtain the input for the installation process. A sample response file is provided to help you get started and to show you the available options. An important thing to remember is that you must indicate your agreement with the license agreement by changing the `silentInstallLicenseAcceptance` option from “false” to “true” in the sample response file. In V6.1 this response file is used to provide options for both installation and profile creation. V6.0 required two separate response files, one for product installation and another for profile creation.

Command-line installation (cont.)

- V6 Installer option format
 - ▶ Exposed internal bean and property names
 - ▶ Long and not user friendly names
 - ▶ Vulnerable to internal changes from release to release
 - ▶ Examples: (-W <option>=<value> and -P <option>=<value>)
 - -W websphereLocationWizardBean.wasExistingLocation="C:\WebSphere\AppServer"
 - -P pluginSettings.webServerSelected="ihs"
- V6.1 uses new "-OPT" option format
 - ▶ Less vulnerable to change from release to release
 - ▶ Examples:
 - -OPT installLocation="C:\WebSphere\AppServer"
 - -OPT installPlugin="true"



In version 6.1, WebSphere Application Server is moving away from the standard InstallShield options format. This format exposes internal details of the installation program such as bean names and property names, which made the set of options less user-friendly and also fragile, since these names sometimes change from release to release. Instead, there are now options specified by "-OPT" which takes "sub-options", and the names of the sub-options are more meaningful than the bean and property names, and less subject to change from one release to the next.

Prerequisite checking

- The installer checks the following prerequisites
 - ▶ Operating System level
 - ▶ Sufficient disk space
 - ▶ User authority (permissions)
- Users can choose to ignore warnings and continue
- Silent install will stop installation if the check fails
 - ▶ Use `-OPT disableOSPrereqChecking="true"` to override



During installation, the installer automatically checks for supported Operating Systems, required disk space and user permissions. The install wizard will allow you to continue with the installation with warnings about prerequisite check failures. The silent installer will stop the installation if the prerequisite check fails, and write an explanation to the log file. You can override this behavior by specifying “disableOSPrereqChecking=true” in the response file.

i5/OS installation

- The i5/OS platform uses the same ISMP-based install wizard used on distributed platforms
 - ▶ Wizard runs on Windows® and performs a remote install on the i5/OS system
- Additional panel in the wizard prompts for System i name and user profile information
- You can also specify a default profile location
 - ▶ By default, this value is set to
/QIBM/UserData/WebSphere/AppServer/V61/<edition>
- Local and remote silent installation are also available
- The Profile Management Tool is not supported on i5/OS



Installing WebSphere Application Server on System i is very similar to installing on distributed platforms. The i5/OS installation package uses the same underlying wizard as the distributed platforms with some very minor changes. Since the wizard is running on a Windows system, you will need to supply the system name and your user profile information in order to connect to your System i. You also have the option to change the default profile location. Local and remote silent installation are also available. Like on all 64-bit platforms, the Profile Management Tool is not supported on i5/OS. You can create a default profile at install time, and you can use the `manageprofiles` command to create additional profiles.

Section

Uninstallation



This section will cover uninstalling WebSphere Application Server

Uninstallation overview

- Uninstallation uses InstallShield Multi Platform (ISMP)
- Located under “uninstall” directory
 - ▶ <Install_root>/uninstall/uninstall.exe(.bin)
- Silent uninstallation is supported
 - ▶ <Install_root>/uninstall/uninstall –silent
- New option: removeProfilesOnUninstall
 - ▶ Removes all profiles during uninstallation
 - ▶ Examples:
 - -OPT removeProfilesOnUninstall="true"

Default behavior is different on distributed and i5/OS



Uninstallation of WebSphere Application Server V6.1 is similar to previous versions. On distributed platforms, both the graphical wizard and silent uninstallation options are available. i5/OS only supports silent uninstallation. During the installation process, an uninstaller will be created under the “uninstall” directory. Invoking the uninstallation process will completely remove WebSphere Application Server. During uninstallation you have the option to remove all existing profiles. Note that the default value differs between distributed platforms and i5/OS. By default the profiles are deleted on distributed platforms, whereas for i5/OS, they are left in place.

Section

Non-root installation



This section will discuss non-root installation support and limitations.

Non-root installation

- WebSphere Application Server V6.1 provides support for non-root installation
- Silent installation requires option
 - ▶ `-OPT allowNonRootSilentInstall="true"`
- Installer verifies the specified location is writable
- After prerequisite check, a panel displays any restrictions due to non-root install



Non-root installation is supported in both silent and interactive mode. A panel is displayed in the graphical installer after prerequisite checking, summarizing exactly what limitations will exist due to the lack of root privileges. You then have the choice to continue despite these limitations or cancel the installation. For non-root silent installation, change the option “allowNonRootSilentInstall” to “true” in the response file.

Non-root installation limitations

- Product cannot be registered using the native OS mechanisms
 - ▶ But the vpd.properties file will be created on all platforms, including Solaris and HP-UX
- Installation Registry saved under user's home
- Port conflicts cannot be detected against other users' installations
- Ports must use values greater than 1024
- Uninstallation and update installation can only be performed by original user, group member, or root
 - ▶ If root performs an update install or incremental install on top of a non-root install then from that point onwards only root can update the image further
- Windows Services will not be created during installation
- Windows start menu entries will be created in the menu for the particular user instead of being applicable to all users



On Solaris and HP-UX, the installer uses only native OS registration mechanisms when installing as root, and does not create a vpd.properties file. When installing as non-root user, a vpd.properties file is created on all platforms, including Solaris and HP-UX. In V6.1, the profile creation process attempts to avoid port conflicts by examining the ports being used by other installations. On a system where multiple users have installed the product, the ability to detect and avoid port conflicts diminishes because the installations are visible only to the user who installed the product. Since the installation registry is not available to other users, port conflicts cannot be detected during installation. Care must be taken to allocate non-conflicting ports during installation.

The full installer and the Update Installer (UPDI) will implement a check to make sure the account of the person performing any subsequent installation operations is either root, the owner of the installed files or a member of the group associated with the files, AND the owner/group has write access to the installed files. Note that if the root user performs an update installation or incremental installation on top of a non-root installation, then from that point forward only root can update the image further.

Other caveats include: windows services cannot be created as a non-administrator and Start menu items will be created for the installing user and not applied to all users.

Default installation location

- Default location starts with "IBM/WebSphere/" for all install packages
- Non-root install package will be installed under user's home directory

Operating System	User	Default Install Location
AIX	Root	/usr/IBM/WebSphere/AppServer
	Non-Root	~/IBM/WebSphere/AppServer
Solaris/HP-UX/Linux	Root	/opt/IBM/WebSphere/AppServer
	Non-Root	~/IBM/WebSphere/AppServer
Windows	Root	C:\Program Files\IBM\WebSphere\AppServer
	Non-Root	C:\IBM\WebSphere\AppServer
i5/OS	N/A	/QIBM/IBM/WebSphere/AppServer/V61/<edition>



This table shows the default locations for root and non-root installations. On Windows, the current user's "home" directory is not always an appropriate place to install software. Further, non-Administrative users cannot by default write to C:\Program Files\ which is the default installation location when an administrative user is running the installation. For these reasons, the default installation location for non-administrative users on Windows is C:\IBM\WebSphereAppServer.

Section

Problem determination

This section will discuss installation problem determination.

Exit codes

- All V6.1 installers, including IHS and plug-in installers use a common logging strategy, including exit codes
- Linux / Unix Platforms echo “\$?” Command after install completion will display
 - 0 – Success, 1 – Failed, 2 – Partial Success
- Exit codes are not set on Windows platforms due to an Install Shield limitation
 - ▶ Consult **log.txt** for information on success or failure
 - INSTCONFSUCCESS implies successful install and profile creation
 - INSTCONFFAILED implies a failed install.
 - INSTCONFPARTIALSUCCESS usually implies a successful install, but some configuration action failed

All of the installation packages in V6.1 will follow a common logging and tracing strategy, meaning they use a consistent location for log and trace files, and a consistent format for those files.

The installers set exit codes to indicate success or failure on all Linux and Unix platforms. A user or program can check the exit code after the installation has completed. “Partial success” means that some portion of the installation failed but the installation is still at least partially usable and the failure may be recoverable to make the installation completely usable. You will need to consult the log, to determine the exact failure and what, if any, corrective actions can be taken.

Log file locations

- Log files for installation and uninstallation for all packages can be found under the <install_root>/logs/ directory
- If the logs directory can not be accessed during installation, the logs are saved under <user home>/<productID>/logs
 - ▶ Application server :<user home>/waslogs
 - ▶ IHS :<user home>/ihslogs
 - ▶ Plugins :<user home>/plglogs
 - ▶ Client :<user home>/cltlogs
- If there is a JDK related problem and if you can not find the logs look under <OS temp directory>/niflogs
 - ▶ /tmp/niflogs on UNIX and %TEMP%/niflogs on Windows
- If you see “A suitable JVM could not be found”, the following command will help diagnose the problem by catching the ISMP launcher log:
 - ▶ install.exe -is:log catchinstallerlogs.txt



Log files contain information about installing, configuring and updating WebSphere Application Server V6.1 components. The log file will initially be created in the current user's "temp" directory and then copied into the <Install Home>/logs/install directory. If the install is terminated before the file is copied, then it will remain in the current user's "temp" directory.

Installation log files

Group	Log Files (default)	Description
Application Server installation logs	<Install_root>/logs/install/ log.txt	This is the primary ISMP install log. Look for one of the following messages: <ul style="list-style-type: none"> ▪ INSTCONFSUCCESS – All configuration actions executed successfully ▪ INSTCONFPARTIALSUCCESS – Implies some non-fatal configuration actions failed ▪ INSTCONFFAILED – Indicates total failure,
	<install_root>/logs/install/ installconfig.log.gz	XML-based file contain Logs the activities of ANT configuration scripts that run at the end of the installation procedure

<install_root> = WebSphere install directory

This slide can be used as a reference; it lists the different log files that can contain information obtained from the WebSphere Application Server installation process. These logs should be used during problem determination of an unsuccessful installation.

Installation log files (cont.)

Group	Log Files (default)	Description
Profile Creation	Under <install_root>/logs/manageprofiles/: pmt.log, <profile_name>_create.log, <profile_name>/<component>.log	Problems when launching the PMT and creating profiles – used by the installer and also when creating profiles outside the installation process
Application Deployment	Under <install_root>/logs/manageprofiles/<profile_name>: <app_name>_deploy.log, <app_name>_config.log	Deployment and configuration logs for each of the enterprise applications installed by the WebSphere installer (Admin console, samples, etc)
Default Server	<install_root>/logs/manageprofiles directory, logs for servers	Logs for creating default server (server1), Service integration bus, and others



This slide is also for reference, listing the different log files that can contain information obtained during profile creation process. In V6.1 all the profile creation logs are also saved under the <install_root>/logs directory, which will help resolve profile creation problems, and remain in the install_root even after profile has been deleted.

Section

Summary and reference

And, in summary...

Summary

- WebSphere Application Server V6.1 is a full installation
 - ▶ Both wizard and command line installation options
- Installation enhancements include the ability to
 - ▶ Create a default profile without launching the profile management tool
 - ▶ Enable administrative security during installation
 - ▶ Perform a non-root product installation



WebSphere Application Server 6.1 is a full installation, rather than an upgrade. It gives you the ability to create a profile, and enable security during the installation process. This presentation also covered some problem determination steps for troubleshooting issues that may arise during an installation.

Reference

- WebSphere Application Server V6.1 information center and release notes
 - ▶ <http://www.ibm.com/software/webservers/appserv/was/library/>
- WebSphere V6.1 System Requirements
 - ▶ <http://www.ibm.com/software/webservers/appserv/doc/latest/prereq.html>
- WebSphere support web site
 - ▶ <http://www-306.ibm.com/software/webservers/appserv/was/support/>
- MustGather for install problems
 - ▶ <http://www.ibm.com/support/search.wss?rs=180&tc=SSEQTP&tc1=SSCVS24&q=MustGatherDocument>
- IBM Internal link for install logging tips
 - ▶ <https://xdwiki.rtp.raleigh.ibm.com/twiki/bin/view/Install/InstallInfomation>

Section

Appendix

Installation Verification Utility: installver.bat/sh

- Installation verification utility can be used to detect and diagnose initial installation issues
- Computes the actual checksum value for the installed files and compares them to the shipped bill of materials list
- Shows missing or changed files
- Can be used even after applying Refresh Pack or FixPack
- Utility can be used for testing
 - ▶ Application Server/Deployment Manager
 - ▶ Application Client
 - ▶ IBM HTTP Server
 - ▶ Web Server Plug-ins
 - ▶ Update Installer



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Installation Overview

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A new install verification tool was introduced in V6.0.2, called the Install Verification Utility or “IVU” (the actual command name is “installver”). This tool uses checksums to verify that the product files have not been altered since they were installed. Application Server also has an IVT application which is available from the First Steps console to validate that the server is functioning properly. This is very different from the file checksum verification provided by IVU. .

Installver.bat –help

-log Enable the log file. Use this to re-direct the output of this program to a log file.

-createtemplate

Create template. Use this option to create a template file in your profile directory. A profile template is used to

-include component1;component2

Include. This options includes only certain components as part of its verification process. This overrides the

-exclude component1;component2

Exclude. This option excludes certain components as part of its verification process. Combining this option with

Installation: product configuration

- Once files have been installed, the install program typically performs series of configuration actions
 - ▶ Create Windows Start Menu Entries, Shortcuts
 - ▶ Create Windows Services
 - ▶ Create Linux menu entries (Gnome and KDE)
 - ▶ Configure Ports
 - ▶ Modify File Permissions
 - ▶ Modify Contents of Installed Files (e.g. replacement to insert install location)



Once files have been installed, the install program typically performs some series of configuration actions to make the installation usable. The configuration actions can vary depending on needs of each install package and platform.

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