Oracle® Smart Update

Applying Patches to Oracle WebLogic Server

Release 3.3.0

E14143-12

October 2013

This document describes how to use the Smart Update tool to apply patches to a WebLogic Server installation.

ORACLE®

Oracle Smart Update Applying Patches to Oracle WebLogic Server, Release 3.3.0

E14143-12

Contents

4   Applying Patches

5   Activating Applied Patches in Your Installations and Applications

6   Patching Individual Applications, Domains, or Servers

7   Uninstalling Patches

8   Using the Command-Line Interface

9   Best Practices for Distributing Patches

10 Known Limitations in Smart Update

11 Frequently Asked Questions

A Smart Update Quick Reference

Glossary

Preface

This preface describes the document accessibility features and conventions used in this guide–*Smart Update Applying Patches to Oracle WebLogic Server*.

Documentation Accessibility

For information about Oracle's commitment to accessibility, visit the Oracle Accessibility Program website at
http://www.oracle.com/pls/topic/lookup?ctx=acc&id=docacc.

Access to Oracle Support

Oracle customers have access to electronic support through My Oracle Support. For information, visit
http://www.oracle.com/pls/topic/lookup?ctx=acc&id=info or visit
http://www.oracle.com/pls/topic/lookup?ctx=acc&id=trs if you are hearing impaired.

Related Documents

For more information, see the following documents in the Oracle Fusion Middleware 11*g* Release 1 documentation set:

- *Installation Guide for Oracle WebLogic Server*

- Document ID 1294294.1 on My Oracle Support

- Document ID 1302053.1 on My Oracle Support

Conventions

The following text conventions are used in this document:

Convention	Meaning
boldface	Boldface type indicates graphical user interface elements associated with an action, or terms defined in text or the glossary.
italic	Italic type indicates book titles, emphasis, or placeholder variables for which you supply particular values.
monospace	Monospace type indicates commands within a paragraph, URLs, code in examples, text that appears on the screen, or text that you enter.

1

Introduction

This section contains the following topics:

- Section 1.1, "What is New in Smart Update Version 3.3.0"
- Section 1.2, "Products Supported by Smart Update Version 3.3.0"
- Section 1.3, "Downloading and Installing Smart Update 3.3.0"
- Section 1.4, "Quick Reference Information"
- Section 1.5, "How Smart Update Simplifies Patch Management"
- Section 1.6, "Resources Available from My Oracle Support"
- Section 1.7, "Overview of Applying Patches"

1.1 What is New in Smart Update Version 3.3.0

As of Smart Update 3.3.0, the **Get Patches** tab has been removed, and you can no longer use Smart Update to download patches, service packs, maintenance packs, or version upgrades. You must first download the appropriate patch or patches directly from My Oracle Support. Once downloaded, you can use Smart Update to apply the patches.

You can use Smart Update 3.3.0 only to install patches. You cannot use Smart Update 3.3.0 to install service packs, maintenance packs, or version upgrades. To upgrade a version of an installed product, you must download an Upgrade installer from My Oracle Support and run the installer independently of Smart Update. For more detailed information, enter the following document ID in the Knowledge Base search filed on My Oracle Support:

```
1294294.1
```

Smart Update 3.3.0 no longer prompts you to register for security updates from Oracle Configuration Management (OCM). OCM registration for security updates is still available when installing WebLogic Server or using an Upgrade installer to upgrade an existing WebLogic Server installation to version 10.3.2 or higher. OCM registration is also available directly from My Oracle Support by selecting the **Collector** tab from any My Oracle Support page.

For information about limitations of Smart Update, see Chapter 10, "Known Limitations in Smart Update."

1.2 Products Supported by Smart Update Version 3.3.0

You can use Smart Update 3.3.0 to apply patches for the following products:

- Oracle WebLogic Server 9.1.0, 9.2.0, 9.2.1, 9.2.2, 9.2.3, 9.2.4, 10.0.0, 10.0.1, 10.0.2, 10.3.0, 10.3.1, 10.3.2, 10.3.3, 10.3.4, 10.3.5, 10.3.6, 12.1.1

- Oracle Workshop for WebLogic Platform 9.2.1, 9.2.2, 9.2.3, 10.0, 10.0.1

- Oracle Workshop 10.1.0, 10.2.0, 10.2.1, 10.3.0, 10.3.1

- Oracle WorkSpace Studio 1.1.0

- Oracle WebLogic Integration 9.2.0, 9.2,1, 9.2.2, 9.2.3, 10.2.0, 10.2.1, 10.3.0, 10.3.1

- Oracle WebLogic Portal 9.2.0, 9.2,1, 9.2.2, 9.2.3, 10.0.0. 10.0.1, 10.2.0, 10.2.1, 10.3.0, 10.3.2

- Oracle WebLogic Event Server 2.0.0

- Oracle Complex Event Processing 10.3.0, 11.1.1.1, 11.1.2.0, 11.1.3.0, 11.1.4.0

- Oracle WebLogic Operations Control 1.0.0, 10.3.0

- Oracle Communications Converged Application Server 5.0

- Oracle Communications Services Gatekeeper 4.1.0, 4.1.1, 5.0.0

- Oracle Service Bus 10.3.0, 10.3.1

- Aqualogic Service Bus 2.1, 2.5, 2.6, 2.6 RPI, 3.0

- Oracle AquaLogic Data Services Platform 3.2.0

- Oracle AquaLogic Enterprise Repository 3.0.0

- Oracle Communications Marketing and Advertising 5.0.0.1

- Oracle Communications Presence 5.0.0

- Oracle Data Service Integrator 10.3.0

- Oracle WebLogic Communications Services 10.3.1

- Oracle WebLogic Communications Server 10.3.0

- Oracle WebLogic Network Gatekeeper 4.0.0

1.3 Downloading and Installing Smart Update 3.3.0

Systems with internet access will automatically be updated to Smart Update 3.3.0.

To update offline machines:

1. Download patch 12426828 from My Oracle Support to a system with internet access.

2. Extract the downloaded ZIP file to a directory. The ZIP file contains a standalone installer for Smart Update 3.3.0.

3. Refer to the instructions in the patch README file for patch 12426828. If you want to install Smart Update in silent mode, see the next section.

1.3.1 Installing Smart Update 3.3.0 in Silent Mode

If you want to use silent mode to install Smart Update 3.3.0, after extracting the downloaded the ZIP file, complete the following steps:

1. Create a silent installation XML file (for example, `silent.xml`) with the following contents and store it in the same directory in which the Smart Update 3.3.0 installer is located:

```
<?xml version="1.0" encoding="UTF-8"?>

<domain-template-descriptor>
   <input-fields>
       <data-value name="BEAHOME" value="MW_HOME" />
       <data-value name="COMPONENT_PATHS" value="Common Infrastructure
 Engineering|Oracle WebLogic Smart Update" />
   </input-fields>

</domain-template-descriptor>
```

For the `BEAHOME` data value, replace `MW_HOME` with your Middleware Home directory (for example, C:\Oracle\Middleware).

2. Open a command prompt window.

3. Enter the following command:

```
java -jar patch-client-installer330_generic32.jar
-mode=silent -silent_xml=xml_file_name
```

Replace `xml_file_name` with the name of your silent installation XML file.

For more information on silent mode installation, refer to the WebLogic Server installation guide for your WebLogic Server version.

1.4 Quick Reference Information

To start using Smart Update right away, refer to the sections listed in Table 1–1. These sections summarize the steps required to perform basic Smart Update tasks.

Table 1–1   Smart Update Quick Reference Information

Quick Reference Information	Contents
Section A.1, "How to Generate a Maintenance Snapshot"	Procedure for creating a *maintenance snapshot*, a simple text file containing detailed information about the maintenance level of the product installation. This file is requested by My Oracle Support whenever you contact them for assistance.
Section A.2, "How to Create a Custom Patch Profile"	Procedure for creating a custom *patch profile*, which you use to point an individual WebLogic domain or one or more servers at patches that are not intended to be in effect for all servers that run on the product installation.
Section A.3, "Smart Update GUI Glossary"	Definitions of the icons and labels used in the Smart Update graphical interface.
Section 8.2, "bsu Command Reference"	Reference for the `bsu` command, the Smart Update command-line interface to Smart Update.

1.5 How Smart Update Simplifies Patch Management

Smart Update is a standalone Java application that you can run independently of any software to apply available patches to your current software installations quickly and easily. You can use it to apply patches that you download from My Oracle Support.

When you install a product for the first time, Smart Update is automatically installed in *MW_HOME*/utils/bsu.

Smart Update is enhanced from time to time with new features, and is made available on My Oracle Support as a patch. For more information, see Section 1.3, "Downloading and Installing Smart Update 3.3.0."

When you start Smart Update at a later point, the updated version is invoked.

1.5.1 Patch Validation and Conflict Checking

Each patch created for a particular version of a product is validated against all existing patches for that version. When you run Smart Update to view downloaded patches, you automatically leverage the validation data provided by My Oracle Support to eliminate the chances of applying a patch with a known conflict with any other patch that has been properly applied to the product installation.

For example, when you attempt to apply one patch that depends on another that has not been applied, Smart Update notifies you of the dependency. You can download the prerequisite patch from My Oracle Support and then use Smart Update to apply it before proceeding. Patch validation is performed automatically whenever you apply a patch.

Occasionally My Oracle Support may provide a replacement for a patch, or invalidate a patch, that you have previously applied. When you download any patch from My Oracle Support, the patch contains a copy of the patch catalog, which reflects the current state of the Smart Update repository. Therefore, after downloading a patch, you may notice that you have obsolete patches installed. If this happens, check My Oracle Support for the replacement to the obsolete patch.

1.5.2 Command-Line Interface

A command-line interface to Smart Update enables you to apply patches and obtain information about patches that have been downloaded or applied. You can perform these functions directly, from the command line, or indirectly, by writing scripts that include Smart Update commands.

1.5.3 Support for Distributed Patching

Smart Update supports a model in which patches that you have downloaded from My Oracle Support to a central location in an organization can be distributed through a script to machines in a production environment on which products have been installed. This model enables you to adapt Smart Update to your business practices that govern how patches are distributed and applied to machines, especially those in a production environment from which a direct connection to My Oracle Support for downloading patches is not appropriate or possible.

1.5.4 Support for Patching Machines That Cannot Connect to My Oracle Support

Smart Update does not require each machine being updated to connect directly to My Oracle Support or to the internet. Smart Update can be used in GUI or command-line mode to apply, remove, and view patches and patch information.

At least one Internet-connected machine is required for downloading patches from My Oracle Support. These machines can be made available to offline machines within the enterprise. On the offline machines, set the Smart Update download directory to the directory to which you downloaded the patches.

1.5.4.1 Smart Update Client

The updated Smart Update client installers that apply the latest version are provided free. For more information, see Section 1.3, "Downloading and Installing Smart Update 3.3.0."

1.5.4.2 Patches and the Patch Catalog

On machines with internet access, when you download a new patch, the patch contains a copy of the latest patch catalog, which reflects the current state of the Smart Update repository. When you run Smart Update, it detects and uses the latest local version of the patch catalog.

To obtain and apply patches to offline machines:

- Log in to My Oracle Support on a machine with internet access, and download patches to this machine. For detailed information about how to locate and download WebLogic Server patches, enter the following document ID in the Knowledge Base search field on My Oracle Support:

  `1302053.1`

- Unzip the patch ZIP file to a directory.

- Copy the entire directory to which you extracted the patch ZIP file to a location that can be accessed by the offline machines.

- Run Smart Update and apply the patches that have been made available by other means, such as e-mail, FTP, or physical media delivery.

1.5.5 Simplified Maintenance Rollback

Smart Update makes it easy to remove patches that have been applied, enabling you to restore earlier maintenance levels accurately and reliably. For more information, see Chapter 7, "Uninstalling Patches."

- As part of its patch validation process, when you run Smart Update, it checks the current local patch catalog, and notifies you if any currently installed patches are obsolete. If the current patch catalog is outdated, however, you will not be notified if My Oracle Support has since issued a patch that supersedes an earlier one that you have applied to your installation. Oracle also recommends that you always check My Oracle Support for replacement patches.

- Based on the information in the current local patch catalog, if any patch in your download directory that has been superseded or deprecated, Smart Update highlights the entry for it in the list of applied patches, and marks it as invalidated. Information about a replacement patch, if available, is added to the description of the invalidated patch.

1.5.6 Scoping a Patch to Specific Applications, Domains, or Servers

To support complex production environments, Smart Update enables you to point an individual WebLogic domain or server at a patch that is not automatically in effect installation-wide; for example, a patch for the WebLogic system classpath that you want to use only in a single test domain. Using this feature is recommended if you have multiple products installed in a given Middleware home directory, and your WebLogic domains are based on specific products.

For example, if you have a domain that is based on Oracle Service Bus, you should scope any Oracle Service Bus classpath patches to only that domain. This way, servers in other domains that do not use Oracle Service Bus do not run with Oracle Service Bus classes in their classpath.

Similarly, you may also want to apply a patch to only selected applications and not all applications for a given WebLogic domain.

1.6 Resources Available from My Oracle Support

If you have a valid My Oracle Support login ID, you can view and download patches by logging in to My Oracle Support directly.

For information about creating a My Oracle Support account, see Section 2.1, "Before You Begin."

1.7 Overview of Applying Patches

Smart Update makes it easy to view and install maintenance patches for a target product installation. Smart Update also helps you organize patches by providing a list of the patches that you have downloaded and applied.

In the main Smart Update window you can view lists of downloaded and applied patches on the **Manage Patches** tab. The **Manage Patches** tab displays two lists of patches. These include a list of patches applied to the target product installation and a list of patches that have been downloaded for the target installation and are ready to be applied.

The process of applying patches consists of the following steps:

1. From a web browser, log into My Oracle Support.

2. Locate and download the SU patches you want to apply to your product installation.

3. Extract the contents of each downloaded ZIP file into the Smart Update download directory.

4. Run the Smart Update tool.

5. Select the product installation to which you want to apply patches.

6. Apply the patches

7. Resolve any validation conflicts.

For information about how to locate and download SU patches using My Oracle Support, see Chapter 2, "Downloading Patches."

For information about using Smart Update to apply patches, see Chapter 4, "Applying Patches."

1.7.1 Providing Maintenance to Distributed Machines

The command-line interface to Smart Update is especially convenient for maintaining large numbers of distributed machines in a carefully controlled, reliable, and reproducible state. For example, suppose you are involved in the following business scenarios:

- You have a tightly controlled production environment in which you must run multiple installations of products at highly specific maintenance levels.

- The business practices for your IT environment require that software maintenance updates are distributed to all machines from a central, internal source.

The following steps provide an example of using Smart Update command-line interface to apply a specific set of patches to multiple machines:

1. From a machine with internet access, log in to My Oracle Support to download the required patches.

2. Copy the patches and an updated patch catalog into a location that can be accessed by each machine to which the patches are to be applied.

3. Create a shell script that contains the Smart Update commands for applying those patches.

4. Run the script on each machine on which the products are installed.

> **Note:** The machine to which you download patches from My Oracle Support must have a target installation selected that matches the distributed target installations to be updated.

For an example of distributing patches to multiple product installations in a production environment, see Chapter 9, "Best Practices for Distributing Patches."

1.7.2 Maintaining Machines That Do Not Have Access to My Oracle Support

Under some circumstances, it is not desirable or possible to establish a direct connection from a particular machine to My Oracle Support. For example:

- You urgently need to download and apply a critical patch, but the internet connection for your business is temporarily unavailable due to a system failure.

- You need to provide regularly scheduled maintenance updates to production machines that reside in a DMZ, or behind a firewall, where connecting to My Oracle Support is permanently disabled.

Smart Update supports a variety of methods for providing patches to such machines. Smart Update enables you to obtain patches from sources such as remotely mounted disks or removable media. By taking advantage of this flexibility, you can adapt Smart Update to your organization's IT practices and create a controlled, reliable, and reproducible process for maintaining your product installations.

If your environment includes at least one machine from which you can log in to My Oracle Support, you can obtain and distribute patches to all product installations in your environment that are supported by Smart Update. Download the patches to the Smart Update download directory on the machine with internet access. The default download directory is `MW_HOME`\utils\bsu\cache_dir\.

For information on downloading patches, see Chapter 2, "Downloading Patches."

For information on applying patches, see the following chapters:

- If using the GUI in offline mode, see Section 3, "Starting Smart Update," and Section 4, "Applying Patches."

- If using the command line, Chapter 8, "Using the Command-Line Interface."

1.7.2.1 Patching New Versions of Smart Update Manually

You can view the version number of the Smart Update installation by choosing **Help** > **About** from the GUI or by using the `-version` option in command-line mode. When you update Smart Update on a machine that can connect to My Oracle Support, you must also update all other machines on which you use Smart Update. All machines must have the same version of Smart Update installed.

If an incompatible version of Smart Update is used to apply a patch, there can be errors. These errors usually do not indicate that the cause is mismatched Smart Update versions. In such cases, My Oracle Support can confirm that there is a mismatch and supply a standalone Smart Update installer. The mismatch can be ascertained from the

log files; see Section 8.1, "About the bsu Command," for information on the `-log` option.

You can use the standalone installer that is available from My Oracle Support to install either to an empty *MW_HOME* or to an existing *MW_HOME* containing installed products. See Section 1.3, "Downloading and Installing Smart Update 3.3.0," for information on how to obtain Smart Update 3.3.0. When it is installed in an existing *MW_HOME*, the installer creates the necessary directories and replaces any existing version of Smart Update.

The standalone installer does not touch the contents of the existing `cache_dir` directory, and should not affect any of the previously applied patches. It also does not replace an existing `patch-catalog.xml` file.

1.7.2.1.1 Ensuring Smart Update Matches the Latest Version Used on the Connected Machine

To ensure that you have the latest version of all the required files, copy all the patches and all `patch-*.xml` files in the download directory, including the `patch-catalog.xml` from the connected machine to the offline machine.

The default patch download directory is *MW_HOME*`\utils\bsu\cache_dir`. This can be changed from the **Preference** menu or by using the parameter `patch_download_dir` in command-line mode.

The encoded patch catalog, `patch-catalog.xml`, contains metadata about a patch and the patch dependencies and conflicts.

In a complete offline environment, contact My Oracle Support to obtain the latest copy of the patches and patch catalogs.

Figure 1–1 illustrates an example of providing patches to machines that are not connected directly to My Oracle Support.

Figure 1–1 Example of Patching a Machine that is not Connected to My Oracle Support
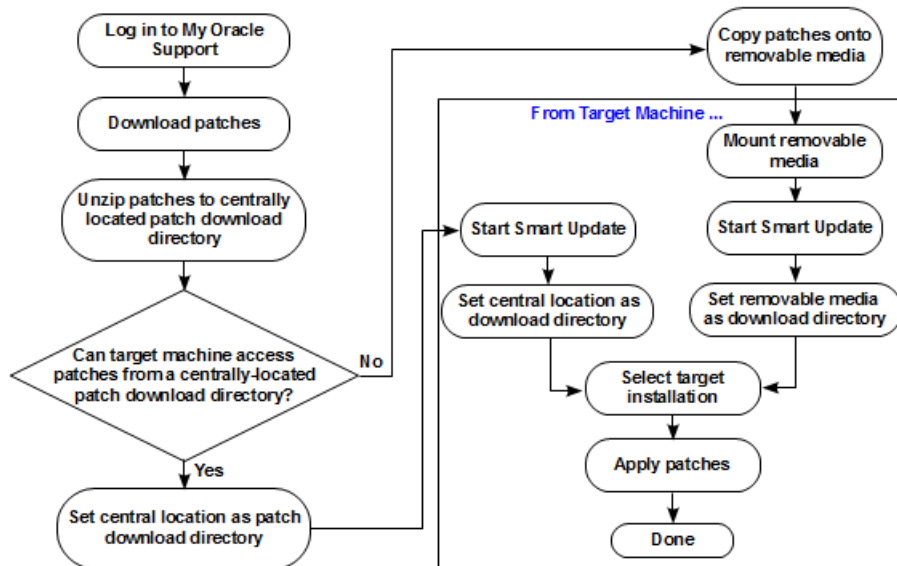
For more information, see Section 9.2, "Providing Patches to Systems that Cannot Connect to My Oracle Support."

2

Downloading Patches

As of Smart Update 3.3.0, you can no longer use Smart Update to download patches. You must instead log in to My Oracle Support directly to download the appropriate patches. This chapter describes how to do this.

2.1 Before You Begin

Prior to downloading patches from My Oracle Support:

- Have a valid My Oracle Support login and password available. If you do not have a My Oracle Support account, go to `https://support.oracle.com`, click the **Register** link, and follow the instructions.

- Determine the directory to which you want to download patches. If all machines have internet access, you should download patches to the same directory path on each machine (although this is not required). If you have machines that do not have internet access, download patches to a centralized location, such as a remotely mounted disk or removable media.

- Make a note of the version number of your current product installation. You will need this information when searching for available patches on My Oracle Support.

2.2 Downloading Patches From My Oracle Support

This section describes how to download patches from My Oracle Support. For additional information, enter document ID **1302053.1** in the Knowledge Base search field on My Oracle Support.

To download patches from My Oracle Support:

1. Open a web browser and enter the following URL:

   `https://support.oracle.com/CSP/ui/flash.html`

2. Click the **Sign In** button and log in using your My Oracle Support login name and password.

3. Click the **Patches and Updates** tab. From this tab, you have two options for downloading patches:

   - Enter the patch number and platform to download a single patch. See Section 2.2.1, "Downloading a Single Patch Using the Oracle Patch Number."

   - Search for all available patches for your current product installation. See Section 2.2.3, "Searching for and Downloading All Available Patches."

> **Note:** As of Smart Update 3.3.0, you can download and apply only those patches for which the description starts with **SU Patch**.

2.2.1 Downloading a Single Patch Using the Oracle Patch Number

If you know the Oracle patch number for the patch you want to download:

1. In the **Patch Search** section, click the **Patch Name, Number, or Sun CR ID** link.

2. Select the appropriate entries for the following fields:

   - **Patch Name or Number**—Enter the patch number.

   - **Platform**—Select up to five platforms for the specified patch number. You can also change to another search criteria. For example, to find the patch for your language, change **Platform** to **Language** and then enter one or more languages.

3. Click **Search**. The **Patch Search Results** are displayed.

4. Select the check box for the patch.

5. Click **Download**.

6. Click the patch file name, and then click **Save**.

7. Select the download location and click **Save**.

8. Click **Close** to close the dialog box.

2.2.2 Downloading a Single Patch Using the Smart Update Patch ID

If you know the Smart Update patch ID (for example, CX138) for the patch you want to download:

1. In the **Patch Search** section, click the **Product or Family (Advanced Search)** link.

2. Select the appropriate entries for the following fields:

   - **Product**—Select one or more products from this drop-down list. To select multiple products, press the **Ctrl** key while clicking on each product name.

   - **Release**—Select one or more release version numbers for the specified product.

   - **Platform**—Change **Platform** to **Description** and then enter the Smart Update patch ID as the search text.

3. Click **Search**. The **Patch Search Results** are displayed.

4. Select the check box for the patch.

5. Click **Download**.

6. Click the patch file name, and then click **Save**.

7. Select the download location and click **Save**.

8. Click **Close** to close the dialog box.

2.2.3 Searching for and Downloading All Available Patches

If you want to search for all available patches for your production installation, and download one or more of those patches:

1. In the **Patch Search** section, click the **Product or Family (Advanced Search)** link.

2. Select the appropriate entries for the following fields:

   - **Product**—Select one or more products from this drop-down list. To select multiple products, press the **Ctrl** key while clicking on each product name.

   - **Release**—Select one or more release version numbers for the specified product.

   - **Platform**—Select up to five platforms for the selected product. You can also change to another search criteria. For example, to find all bugs that contain SU Patch in the description, change **Platform** to **Description** and then enter **SU Patch** as the search text.

3. Click **Search**. The **Patch Search Results** are displayed.

4. Select the check box for each patch that you want to download.

5. Click **Download**. A dialog box appears listing all of the patches that you selected.

6. For each patch in the list, click the patch file name, and then click **Save**.

7. Select the download location and click **Save**.

8. When done downloading all patches, click **Close** on the dialog box.

3

Starting Smart Update

This section provides the following topics:

- Section 3.1, "Before You Begin"
- Section 3.2, "How to Start Smart Update"
- Section 3.3, "Setting Preferences"

3.1 Before You Begin

Before you start Smart Update to apply updates to your product installations, read the following sections:

- Section 3.1.1, "Unzipping Downloaded Patches"
- Section 3.1.2, "Obtaining Required Access"

3.1.1 Unzipping Downloaded Patches

All SU Patch files that you download from My Oracle Support are compressed ZIP files. Before you run Smart Update to apply the patches, you must decompress these ZIP files using the appropriate tool for your environment (such as 7-Zip or WinZip for Windows, or tar or gunzip for Linux).

When you unzip each file, the patch JAR file and a README.txt file are extracted. When extracting the files, note that you must extract the files into the directory from which you intend to apply the patches. This is the location that you set as the **Patch Download Directory** of Smart Update, as described in Section 3.3, "Setting Preferences." Alternatively, you can extract the files to a subdirectory, and then move the patch JAR file to the patch download directory.

3.1.2 Obtaining Required Access

Before you start Smart Update, ensure that you have access to all required resources. Specifically:

- Ensure that you have proper write privileges for the patch download directory, particularly if this directory resides on a remote disk drive or computer.

- Ensure that you have the privileges required to access the target product installation directories. The ability to access these directories is especially important if you are patching product installations on networked or remotely mounted disk drives.

3.2 How to Start Smart Update

Table 3–1 provides instructions for starting the Smart Update graphical interface on Windows and UNIX systems.

Table 3–1   Starting Smart Update

To start Smart Update on this platform	Perform the following steps
Windows	From the Start Menu, choose: **Start > Programs > Oracle WebLogic > Smart Update** Or, from an MS-DOS command prompt window: **1.** Go to the *MW_HOME*\utils\bsu directory, where *MW_HOME* is the host directory for the product installation that you want to update. **2.** At the prompt, enter the following command: `bsu.cmd` The Smart Update main window is displayed.
UNIX **Note:** If you want to run Smart Update on a UNIX system, the console attached to the system on which you are upgrading the software must support a Java-based GUI.	**1.** Log in to the UNIX system. **2.** Go to the *MW_HOME*/utils/bsu directory, where *MW_HOME* is the host directory for the product installation that you want to update. **3.** At the prompt, enter the following command: `bsu.sh` The Smart Update main window is displayed.

After starting Smart Update for the first time, set the Patch Download Directory to the appropriate location; see Section 3.3.1, "Choosing a Patch Download Directory."

3.3 Setting Preferences

From the **Preferences** dialog box, you can set the following options:

- Location of the patch download directory
- Display mode for patch sets in the **Downloaded Patches** panel of the Smart Update window
- HTTP proxy or perimeter security authentication information. This applies only to the Smart Update client self-update mechanism.

3.3.1 Choosing a Patch Download Directory

Before you apply patches that you have downloaded from My Oracle Support, Oracle recommends that you choose an appropriate location to serve as the patch download directory. Store all downloaded patches in this directory.

The patch download directory is a single-level directory or folder that Smart Update uses to determine which patches are available to be applied. Before you start applying patches, ensure that you have designated a directory to serve this function, as described in this section.

A patch download directory is created automatically when you upgrade to Smart Update 3.3.0, but you may not want to use it in its default location. For example, your organization might encourage or require you to use a particular location for storing patches that are downloaded from software vendors. This location might be a

centralized repository, or a set of cache directories labeled for certain configurations. By taking advantage of the flexibility of Smart Update for storing updates, you can adapt Smart Update to business practices in which software maintenance is administered centrally or in which the maintenance image must be replicated easily for promotion to QA, staging, and production environments.

To designate a patch download directory, complete the following steps:

1. Start Smart Update.

2. From the main Smart Update window, choose **File** > **Preferences**.

   The **Preferences** dialog box is displayed.

3. In the **Patch Download Directory** section of the **Preferences** dialog box, specify the path of the patch download directory.

   Note the following information about the patch download directory:

   – The directory *MW_HOME*\utils\bsu\cache_dir is created as the default patch download directory when you install Smart Update 3.3.0.

   – Until you specify a different directory, the default patch download directory is used for storing downloaded patches for all products on your system; the directory used for this purpose is not changed when additional Middleware home directories are created.

   – If you have multiple Middleware home directories, Oracle recommends that you change the **Patch Download Directory** to point to the *MW_HOME*\utils\bsu\cache_dir for the installation target to which the patches apply. By doing so, the patches will be available if you need to apply them when running Smart Update from the Middleware home for the target installation.

3.3.2 Displaying Patch Sets in the Downloaded Patches Panel

Smart Update lets you select a display mode for Smart Update patch sets shown in the **Downloaded Patches** panel of the main Smart Update window. Smart Update patch sets are a group of patches that are bundled into a single patch. These should not be confused with Oracle Patch Set releases (version upgrades) for WebLogic Server, which can only be installed using an Upgrade installer.

- Choose **Display patch sets and all constituent patches** if you want to display an entry for each patch in a patch set you have installed, and an entry for the patch set itself. (This is the default setting.)

- Choose **Hide constituent patches when patch set is present and complete** if you want to display only the entry for the patch set that you have installed, hiding entries for individual patches that belong to the set.

3.3.3 Setting HTTP Proxy Information

If the system on which you are running Smart Update is located behind a firewall, you might need to specify one of the following options so that you can download patches. These settings apply only to the Smart Update client self-update mechanism. Smart Update can check to see if an updated version of the Smart Update client is available, and if so, prompts you to download it. Smart Update then updates itself to the new version.

- **Use HTTP Proxy**

Select this option if you want to use an HTTP Proxy server for the download. To use an HTTP Proxy server, you must specify the following settings in Smart Update, before logging into the download server for the first time. Subsequently you do not need to change the settings.

In the Login dialog box, click **Work Offline**, and specify the following:

–   **Host**—The name or IP address of the proxy server

–   **Port**—The port number of the proxy server

■   **Use Authentication**

Select this option if the HTTP Proxy server you are using requires server-side authentication. If you select this option, you must specify:

–   **Username**—A valid username required by the proxy server

–   **Password**—A valid password for the user

4

Applying Patches

This chapter describes how to apply the patches that you have downloaded from My Oracle Support and stored in the patch download directory.

This section includes the following topics:

- Section 4.1, "Choosing a Target Installation"
- Section 4.2, "Viewing Patch Information"
- Section 4.3, "Applying and Managing Patches"
- Section 4.4, "Resolving Patch Conflicts"
- Section 4.5, "Creating and Using Maintenance Snapshots"
- Section 4.6, "Applying a Patch to the Client"

4.1 Choosing a Target Installation

Smart Update displays a **Target Installation** panel, shown in Figure 4–1, that shows all of the WebLogic product installations that were detected on the system on which you started Smart Update. In this example, WebLogic Platform 10.3 MP2 (that is, 10.3.2) is the currently selected target installation.

Figure 4–1   Target Installation Panel
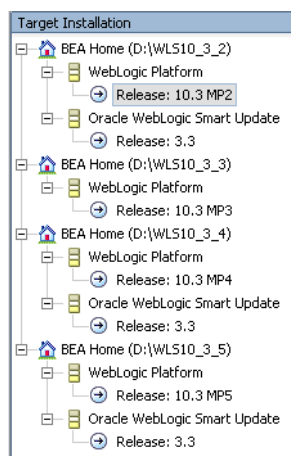
The subsequent operations you can perform with Smart Update are specific to the installation you have selected as the target installation. For example:

- The set of patches that are listed in the **Downloaded Patches** panel are specific to the selected target installation. Smart Update prevents you from applying a patch created for a product other than the one that is currently selected as the target installation.

- Patch validation, which is the built-in ability of Smart Update to use the validation data provided by My Oracle Support to eliminate the chances of applying a patch with a known conflict, is specific to the selected target installation.

Patches that you apply to one target installation are not applied to any other installation listed in this panel. For example, if you have duplicate installations of one product, either in the same Middleware home directory or in a different Middleware home directory, you can apply patches to only one of those installations at a time. Note that having multiple Middleware home directories on a system is generally not recommended.

When selecting a target installation, keep the following information in mind:

- The set of Middleware home directories displayed in this panel is not restricted to those detected on the current system. If you have used the current system to install products on remotely mounted disks hosted on other systems, the Middleware home directories for those remote products are displayed as well. This complete listing makes it easy to install maintenance updates on remote systems.

  > **Note:** The Smart Update graphical interface does not detect Middleware home directories created by systems other than the one from which you are running Smart Update.

- You can install patches on only one target installation at a time; patches cannot be installed on multiple installations in a single step. You can, however, install patches to multiple target installations in a single Smart Update session. After installing patches on one target installation, you do not have to restart Smart Update before installing patches to another target installation.

- The most recently selected target installation is saved when you exit Smart Update, and is highlighted the next time you start Smart Update. When a single Middleware home directory hosts multiple product installations, you may update those installations in any sequence you like.

- The list of product installations in a Middleware home directory can be expanded or collapsed, as preferred. By default, it is expanded.

- If you are using the Smart Update command-line interface, be sure to include the -prod_dir=path parameter to set the target installation directory when you start Smart Update. See Chapter 8, "Using the Command-Line Interface."

4.1.1 Specifying Other Middleware Home Directories

You can also specify other Middleware home directories that are not listed in the **Target Installation** panel.

> **Note:** The Middleware home can only be a directory on a local drive, or a locally mounted volume.

If there is no valid installation target when you start Smart Update, a dialog box is displayed in which you must specify a Middleware home before proceeding.

To specify the Middleware home directory:

1. Choose **File** > **Target Installation** > **Find Other BEA Home**

2. Specify a valid Middleware home directory navigate the hierarchy and select a directory, or type the path in the **Location** field.

3. Click **OK**. The new directory is added to the **Target Installation** panel.

If the directory you specified does not include a valid installation target, an error message is displayed.

4.2 Viewing Patch Information

Smart Update offers you the option of reading detailed information about a patch before applying it. Specifically, Smart Update provides this option for patches in two categories. These categories are those that are publicly available for download from My Oracle Support and those that have been downloaded by you, either to your system or to a networked disk drive that you can access.

> **Note:** To obtain a list of patches that are publicly available for download, you must be logged in to My Oracle Support.

4.2.1 How to Display Patches

The **Manage Patches** tab lists all patches that are currently residing in the patch download directory.

- Patches that have been applied to the target installation through the currently selected patch profile are listed in the top panel. Patch profiles are described in Section 4.3.1, "About Patch Profiles."

- Patches that have not been applied to the target installation within the context of the currently selected patch profile are listed in the **Downloaded Patches** panel.

For an explanation of the information displayed in the **Downloaded Patches** panel, see Section 4.2.3, "Viewing Currently Downloaded Patches."

You can also view lists of patches that have been downloaded into a directory other than the current patch download directory by specifying the desired directory in the **Preferences** dialog box. For more information, see Section 3.3.1, "Choosing a Patch Download Directory."

4.2.2 About Patches Displayed in the Manage Patches Tab

Table 4–1 describes the information displayed in each column of the top and bottom panel of the **Manage Patches** tab. Some columns are not available in each panel.

Table 4–1   Information about Patches Available for Download

Column Title	Description
Patch ID	The *patch identifier* is a unique string that is associated with a patch. The following information icon is displayed beside the patch identifier:
Bug	The Oracle bug number that is associated with the patch identifier.
Description	A brief description of the patch.

Table 4–1   (Cont.) Information about Patches Available for Download

Column Title	Description
Product	The name of the product to which the patch applies, such as WebLogic Server, Workshop for WebLogic, WebLogic Portal, JRockit, or Oracle Service Bus.
Category	The product category to which the patch applies. For example: ■ JMS—A patch for WebLogic Java Message Service ■ Security—A patch for the WebLogic Security Service ■ Console—A patch for the WebLogic Administration Console
Remove	To remove an installed patch, click the icon in the **Remove** column.
Apply	To apply a downloaded patch, click the icon in the **Apply** column.

4.2.3 Viewing Currently Downloaded Patches

The **Manage Patches** tab displays a list of the patches that are available in the current patch download directory for the currently selected target installation. It contains the following panels:

■ **A patch profile panel**—Displays a list of the patches that have already been applied to the current target installation. The Default patch profile, which lists the patches that have been applied to the entire target installation, is described in Section 4.3.1, "About Patch Profiles." This panel also contains one additional tab for each custom profile you created.

> **Note:**   Custom profiles have been deprecated as of Smart Update 3.3.0. Oracle recommends that you no longer use custom profiles. Custom profiles increase the complexity of installing installation-wide WebLogic Server patches.

■ **Downloaded Patches**—Displays a list of the patches that currently reside in the patch download directory but have not yet been applied to the current target installation for the currently selected patch profile. After you apply a patch to the target installation, the entry for that patch is removed from the list in the downloaded patch panel of the **Manage Patches** tab for the appropriate patch profile. For more information, see Section 4.3.2, "Applying a Patch to the Target Installation."

If you designate a different directory as the patch download directory, the list of patches shown in the **Downloaded Patches** panel updates accordingly. If patches have been downloaded to multiple locations in your system environment, and those locations are accessible through networked disk drives, you can access those patches simply by designating a new patch download directory. For more information about designating a different patch download directory, see Section 3.3.1, "Choosing a Patch Download Directory."

4.2.4 Viewing Details About a Patch

For detailed information about a patch, click the information icon beside the appropriate patch identifier. A Patch Details dialog box, similar to what is shown in Figure 4–2, "Patch Details Dialog Box", is displayed.

Figure 4–2   Patch Details Dialog Box
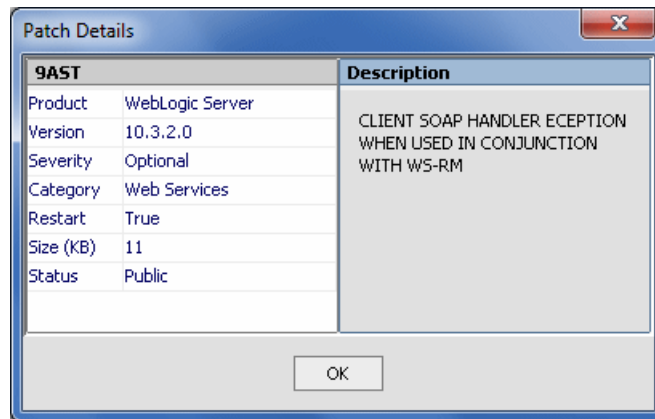
Smart Update displays a dialog box with the details defined in Table 4–2.

Table 4–2   Key to Patch Details

This detail	Specifies
Product	The product to which the patch applies.
Version	The version of the product for which the patch is intended.
Severity	Whether the patch is critical or optional.
Category	The product category to which the patch applies.
Restart	The software component that must be restarted after the patch is applied.
Size (KB)	Identifies the size, in kilobytes, of the patch.
Status	Availability of the patch. All patches that you download from My Oracle Support have a status of Public.
OS	The operating system on which the patch is designed to run.
Description	A brief description of the issued that the patch resolves.

When done viewing the patch details, click **OK** to close the Patch Details dialog box and return to the main Smart Update window.

4.3 Applying and Managing Patches

After you download patches into the patch download directory, you can apply them to a target installation. The following sections explain how to apply and manage patches:

- Section 4.3.1, "About Patch Profiles"

- Section 4.3.2, "Applying a Patch to the Target Installation"

- Section 4.3.3, "Removing a Patch From the Target Installation"

4.3.1 About Patch Profiles

Smart Update uses the notion of a *patch profile* to help manage sets of patches. A patch profile contains a list of patches that have been applied. Every target installation has a default patch profile defined. Patches listed in the default patch profile are in effect installation-wide, and are also in effect, by default, for all applications, WebLogic domains, and WebLogic Server instances that run from that installation.

To meet typical maintenance requirements, the default patch profile is the only profile that most users need to work with. The default patch profile is available out-of-the-box and does not need to be configured.

You may also choose to create *custom* patch profiles. Custom patch profiles enable you to associate specific servers, domains, or applications in an installation with a set of one or more patches that are not intended to be in effect installation-wide. However, the use of custom patch profiles raises the level of complexity of maintaining your product installations. Custom patch profiles are described in Chapter 6, "Patching Individual Applications, Domains, or Servers."

> **Note:** Custom profiles have been deprecated as of Smart Update 3.3.0. Oracle recommends that you no longer use custom profiles. Custom profiles increase the complexity of installing installation-wide WebLogic Server patches.

4.3.2 Applying a Patch to the Target Installation

To apply a patch to the target installation, click the **Apply** icon next to that patch in the **Downloaded Patches** panel.

> **Note:** To avoid unexpected errors, stop the server when applying a patch.

When you apply a patch to the target installation, the following events occur:

1. The patch is validated against patches in the current patch profile.

> **Note:** If you have multiple patch profiles for the target installation, and you apply a patch that affects installation-wide resources, Smart Update displays a warning popup to alert you. Examples of patches that are in effect for an entire installation include those that replace system resources, or that address a security advisory. If you choose to proceed, Smart Update automatically applies the patch to all patch profiles defined in the target installation.

2. If there are no patch conflicts, the patch is applied.

   If there are conflicts, the Patch Installation Validation dialog box is displayed, summarizing conflicts. The patch is not applied.

3. If the patch is applied, the patch is added to the current patch profile. The patch is no longer listed in the **Downloaded Patches** panel of the **Manage Patches** tab for this profile.

If conflicts are detected during validation, you must resolve those conflicts before you can apply the patch. For more information, see Section 4.4, "Resolving Patch Conflicts."

For certain patch types, the applied maintenance may not get activated automatically in the user applications and WebLogic domains. Depending on the patch type, regardless of whether it was applied to the default profile or a custom profile, and the

system environment and configuration, administrators may need to do one or more of the following:

- Start or restart a server

- Start or restart an application

- Undeploy/deploy an application

- Edit a WebLogic domain or server start script

- Deploy a library module to an application

- Edit a domain configuration file

- Edit an application descriptors file

4.3.3 Removing a Patch From the Target Installation

If you have applied a patch that you need to remove from the target installation—for example, the patch does not correct the problem as expected, the patch is not needed, or the patch creates new problems and you are awaiting a replacement patch from My Oracle Support—click the **Remove** icon next to the listing of that patch in the corresponding patch profile.

> **Note:** To avoid unexpected errors, stop the server when removing a patch.

When you remove a patch from the target installation, the following events occur:

1. The removal operation is validated, similar to the validation that occurs when you apply a patch. When you remove a patch from the target installation, Smart Update checks the current patch profile to determine if any other patches depend on the one you are removing.

2. If a conflict is detected, Smart Update displays the Patch Removal Validation dialog box and identifies the specific conflict. If you have a conflict, you must resolve it before you can remove the patch.

3. If no removal conflict is detected:

   a. The patch is removed from the target installation and from the current patch profile.

   b. The patch is added to the list displayed in the **Downloaded Patches** panel, in the **Manage Patches** tab, under the current patch profile list.

When removing patches, note that:

- If you have multiple patch profiles for the target installation and you remove a patch that affects installation-wide resources, Smart Update displays a warning popup to alert you. If you choose to proceed, Smart Update automatically removes the patch from all patch profiles defined in the target installation.

- If you remove a patch that is not installation-wide, that patch is removed from the current patch profile.

- After removing a patch that affects the run-time behavior of server instances in the product installation, restart the servers for the patch removal to take effect.

For information about correcting removal conflicts, see Section 4.4, "Resolving Patch Conflicts."

4.4 Resolving Patch Conflicts

Smart Update protects your system by validating the compatibility of any patch that you want to apply or remove with the other patches that have been applied to the target installation. Any validation problem that occurs is reported as a patch conflict, which you can resolve before completing the patch operation.

This section describes the types of conflicts that may be identified during the following validation processes:

- Section 4.4.1, "Validation When Applying Patches"
- Section 4.4.2, "Validation When Removing Patches"

Each section also provides instructions for resolving each type of conflict.

4.4.1 Validation When Applying Patches

During the process of applying a patch, various conflicts may be reported. Once a conflict has been reported, it must be resolved before you can apply the patch.

Table 4–3 describes the types of conflicts that may be reported when a patch is being validated when you attempt to apply it, and it provides procedures for correcting each type.

Table 4–3   Conflict Conditions When Applying a Patch

If this conflict is reported	The patch you have selected to apply	To resolve this conflict and apply the selected patch
Prerequisite not met	Cannot be applied until you apply one or more other patches	1. Note the identifiers of the prerequisite patches. 2. Click **Cancel** to terminate the process of applying the selected patch. 3. Download and apply the prerequisite patches identified in step 1. 4. Apply the patch you originally selected.
Out of sequence	Cannot be applied until you remove one or more patches that you applied earlier	1. Note the identifiers of the patches that must be removed. 2. Click **Cancel** to terminate the process of applying the selected patch. 3. Remove the patches identified in step 1. 4. Apply the patch you originally selected. 5. Re-apply the patches removed in step 3.
Mutually exclusive	Cannot coexist with one or more patches that you applied earlier	Choose the patch that you want applied to the target installation and, if necessary, apply it.

4.4.2 Validation When Removing Patches

Table 4–4 describes the conflict that may be identified when you attempt to remove a patch, and a procedure for resolving that conflict.

Table 4–4   Conflict Condition When Removing a Patch

If this conflict is reported	The patch you have selected for removal	To resolve this conflict and remove the selected patch
dependency violated	Is required by one or more patches that have been applied	1. Note the identifiers of the dependent patches. 2. Click **Cancel** to terminate the download process. 3. As appropriate, remove the dependent patches. 4. Remove the patch that you originally selected for removal.

4.5 Creating and Using Maintenance Snapshots

To make it easy for you to provide the information needed by My Oracle Support to help you resolve problems, Smart Update provides a way to capture information about the patches that have been applied to a specific patch profile. This is called a *maintenance snapshot*, a plain ASCII file that contains information about the patch profile selected in the **Manage Patches** tab, including the identity of each patch that has been applied to that profile.

If you report a problem, My Oracle Support requests this snapshot as the first step in providing you with a solution. Therefore, if you experience a problem, Oracle strongly recommends that you prepare a maintenance snapshot before contacting Customer Support.

It takes only a moment to create a maintenance snapshot, using the Smart Update graphical interface:

1. In the **Target Installation** panel in the main Smart Update window, select the product installation for a problem that is being reported.

2. From the **Manage Patches** tab, select the patch profile with which you are reporting a problem.

3. Choose **Patches** > **Patch Profiles** > **Save Snapshot**

   A dialog box prompts you to specify the name and location of the maintenance snapshot. By default, the maintenance snapshot file is created in `MW_HOME\utils\bsu`. If you specify a different location, ensure that you have the privileges required to access a file there.

You can also use the Smart Update command-line interface to create a maintenance snapshot. For an example, see Section 8.3, "Command-Line Interface Examples."

Oracle recommends that you observe the following practices whenever you create a maintenance snapshot:

- Save all maintenance snapshots for a particular product installation in a place where you can find them easily.

- Use a file name for the maintenance snapshot that helps you distinguish among other snapshots. For example, indicate the patch profile name, such as `MyCustomProfile.txt`.

Whenever you send a maintenance snapshot to My Oracle Support, keep a log of your support-related activities.

4.6 Applying a Patch to the Client

WebLogic Server patches can be applied to the server, client, or both. This section describes what you must do to apply the patch to the client.

1. Download the patch as described in Chapter 2, "Downloading Patches."

2. Extract the patch JAR file as described in Chapter 3.1.1, "Unzipping Downloaded Patches."

3. Copy the class files that are in the patch JAR file to the appropriate directory, or reference the class JAR in the JMS client environment by placing the path of the directory in which it is located at the beginning of the classpath.

5

Activating Applied Patches in Your Installations and Applications

This section includes the following topics:

5.1 Overview

After you apply patches that contain classes to be loaded into a classpath, such as the WebLogic system classpath or the classpath of an application deployed on WebLogic Server, you must ensure that those classes are properly inserted into the appropriate classpath; otherwise they do not take effect. Likewise, if a patch contains library files to be inserted into the library path, you must ensure that the paths for those files are properly handled when the server instances or applications by which they are used are started.

Smart Update does not use a single method to apply all patches to a product installation; the method used depends on the type of patch and its contents. Patches may contain any of the following:

- Replacements for resources within a product installation

- Class files that can be used by a classloading mechanism, such as a classpath and files in an extension directory

- Library files that can be included in a library path

  Patches that contain library files may not necessarily replace existing files in the target installation. Therefore they must be loaded explicitly by a start script.

- Shared archives that must be deployed and referenced by applications

- Patch JAR files that update entities referred to as modules

Review the following sections to learn how patches are applied and how Smart Update organizes those patches on your system. Understanding these processes is necessary to determine whether and how your start scripts should be modified:

- Section 5.1.1, "Patches That Must Be Referenced By Start Scripts"
- Section 5.1.2, "Patches That Replace Resources For All Applications, Domains, and Servers"
- Section 5.1.3, "Patches That Must Be Deployed and Referenced By Applications"
- Section 5.1.4, "How Patch Files Are Stored on Your System By Smart Update"
- Section 5.1.5, "Structure of the Installation-Level Patch Directories"

This section also introduces the basic tasks that you must perform to ensure that the patches you apply to your WebLogic domains become effective:

- Section 5.1.1, "Patches That Must Be Referenced By Start Scripts"
- Section 5.1.2, "Patches That Replace Resources For All Applications, Domains, and Servers"
- Section 5.1.3, "Patches That Must Be Deployed and Referenced By Applications"

5.1.1 Patches That Must Be Referenced By Start Scripts

If a patch contains class or library files that are loaded by a start script, those classes or files are stored, by Smart Update, in a central, installation-level patch directory on the system. These classes and library files are then available for loading when the WebLogic Server instances by which they are used are started.

Examples of patches in this category are those that contain

- Class files that are loaded into the WebLogic Server system classpath
- Class files that are loaded into the classpath of an application that is deployed on WebLogic Server
- Library files that are loaded into the library path for WebLogic Server.

> **Note:** Although a patch may be validated and applied to a target installation at any time, some patches do not become effective immediately. Any patch that contains either (a) classes to be loaded into a classpath, or (b) native library files to be loaded into a library path, does not become effective until you (a) modify the appropriate WebLogic domain or server start scripts, if necessary, so that they point to the patch and (b) restart the corresponding domains or servers.

5.1.2 Patches That Replace Resources For All Applications, Domains, and Servers

Patches that replace existing resources in a product installation become effective, automatically, throughout the installation, as soon as they are applied; they are not enabled by a start script. Therefore, you do not need to change start scripts for patches that contain replacements for system resources.

Examples of patches that typically contain replacement artifacts include the following:

- Resources for Web server plug-ins
- Socket multiplexers

■   Dynamically linked libraries

> **Note:**   Smart Update stores files that have been replaced in the backup subdirectory of the installation-level patch directory. If you subsequently remove the patch in which a replacement was delivered, the original resource is restored from backup. (For details about backup, see Table 5–1.) For optimal security, however, Oracle recommends that you create a backup of any system resource that you plan to replace before applying the patch that replaces it.

5.1.3 Patches That Must Be Deployed and Referenced By Applications

Shared archive patches must be explicitly deployed and referenced by applications that require them. If a Shared Archive patch is to be applied to selected applications and not all applications, you must create a custom patch profile for each unique patch level.

5.1.4 How Patch Files Are Stored on Your System By Smart Update

When you download a patch from My Oracle Support, a *patch container* is placed in the patch download directory. A patch container holds the following:

■   A patch

A patch may contain several files. These files may include

–   Classes delivered as replacements for classes, with the same name, that are inserted into the WebLogic system classpath at server start time

–   Native library files to be inserted into the system path

–   Configuration files.

■   Metadata about each patch in the patch container

Metadata is information used by Smart Update to validate each patch against all other patches applied to the same product installation. (When you apply a patch, metadata is placed in a patch registry in a directory on your system that is maintained by Smart Update. For details, see Section 5.1.5, "Structure of the Installation-Level Patch Directories.")

When you apply a patch to a given patch profile, each file in the patch is handled as follows:

■   If the patch contains a replacement for a system resource, such as a WebLogic Server plug-in module, the existing resource is automatically updated with the replacement.

■   If the patch contains a patch JAR file, that is, a set of classes to be loaded into a classpath as updates for existing classes with the same names in the target installation, the following events occur:

–   The patch JAR file is placed in the installation-level patch directory. For a description of this directory, see Section 5.1.5, "Structure of the Installation-Level Patch Directories."

–   Smart Update creates a file, called the *patch manifest JAR*, which contains pointers to the classes in the patch JAR file. If a patch manifest JAR for the current profile exists, it is updated with pointers to the classes in the patch JAR

file. The patch manifest JAR file is described in Section 5.1.5.1, "Patch Manifest JAR Files."

- If the patch contains native library files to be loaded into the system library path, through either the PATH or LIBPATH environment variable, Smart Update verifies the existence of a subdirectory called native that is specific to the currently selected patch profile. If Smart Update does not find such a subdirectory, it creates one. For a description of the native subdirectory, see Section 5–5, " Open Start Script Dialog Box Icons."

5.1.5 Structure of the Installation-Level Patch Directories

After you install the products and run Smart Update, the patch directories are created. Each product (for example, WebLogic Server, Workshop for WebLogic, WebLogic Integration, and WebLogic Portal) has its own patch directory structure (for example, patch_wls1001, patch_wlw1020, patch_wli1020, and patch_wlp1020) under the Middleware home directory.

> **Note:** Custom profiles have been deprecated as of Smart Update 3.3.0. Oracle recommends that you no longer use custom profiles. Custom profiles increase the complexity of installing installation-wide WebLogic Server patches.

The product-specific patch directory structure provides clean demarcation of patch maintenance on a product basis. It also provides more flexibility for future products to interoperate with separate or common versions of WebLogic Server.

Figure 5–1 shows the structure of the *MW_HOME*\patch_*product* directories.

Figure 5–1   Installation-Level Patch Directories
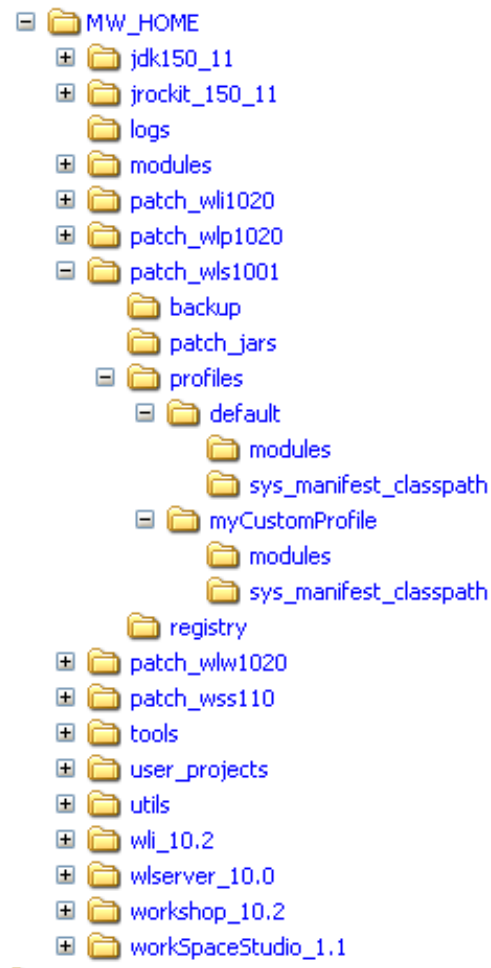
Table 5–1 describes the contents of each patch directory.

Table 5–1   Directories and Files in the Installation-Level Patch Directory

This directory	Contains
patch_*product*\backup	Contains the patch backup manifest, which includes files and information required to restore an earlier patch level on your system.
	This directory is created when you apply an installation-wide patch that contains files to be placed in the product installation directory.

Table 5–1   (Cont.) Directories and Files in the Installation-Level Patch Directory

This directory	Contains
patch_*product*\patch_jars	Patch JAR files, under each product patch directory (for example, `patch_wlp1020`, `patch_wls1001`, and `patch_wlw1020` as shown in Figure 5–1), contain the class JAR files from patches that have been applied to the product installation on the system. A patch JAR file under each product patch directory may contain one or more of: ■ Classes intended as replacements for classes with the same names in the installation. These classes must be inserted into the WebLogic system classpath. ■ Classes required by a product. These classes must be inserted into applications deployed on WebLogic Server. **Note:** Patch JAR files containing replacements for system resources are not stored in this directory (`patch_jars`). **Note:** It is good practice to ensure that your system contains enough disk space for the patch JAR files being added. For information about the size of a patch containing a JAR file, see Section 4.2, "Viewing Patch Information."
patch_*product*\profiles\default	Directory for the default patch profile. When you apply a patch, one or more of the following subdirectories may be created: ■ `profiles\default\sys_manifest_classpath` Holds the patch manifest JAR file named `weblogic_patch.jar`. This file contains references to classes in patch JAR files (in the `patch_jars` directory) that are to be inserted into the WebLogic system classpath. Patch manifest JAR files are described in Section 5.1.5.1, "Patch Manifest JAR Files." **Note:** The majority of patches issued by My Oracle Support are referenced by `weblogic_patch.jar`. ■ `profiles\default\sysext_manifest_classpath` Holds the WebLogic extension directory patch manifest JAR file named `weblogic_ext_patch.jar`. This file contains references to classes in patch JAR files that are required by a product and that must be inserted into the classpaths of applications deployed on WebLogic Server based on that product. Patch JAR files referenced by `weblogic_ext_patch.jar` are also stored in the `patch_jars` directory. **Note:** The `sysext_manifest_classpath` directory is not used by WebLogic Server 9.1. ■ `profiles\default\native` Holds native library files that are to be inserted into the system library path and that supersede (not replace) existing, same-named libraries in the installation. For details, see Section 5.1.5.2, "Native Library Files." ■ `profiles\default\modules` Holds module files that are used by Open Services Gateway initiative (OSGi)-based products. The contents of this directory are not used with WebLogic Server-based products, which load modules through the classpath. For details, see Section 5.1.5.3, "Module Patch Files."

Table 5–1 (Cont.) Directories and Files in the Installation-Level Patch Directory

This directory	Contains
patch_ *product*\profiles*custom-profile-name*	Directory for a custom patch profile. The directory takes the name of the custom patch profile. For every custom patch profile created, a directory named for the profile is created automatically. Each custom patch profile directory may contain one or more of the following subdirectories: ■ `profiles\custom-profile-name\sys_manifest_ classpath` Holds the patch manifest JAR file, `weblogic_patch.jar`, which contains references to classes in patch JAR files inserted into the WebLogic system classpaths for server instances that point to this custom patch profile. ■ `profiles\custom-profile-name\sysext_ manifest_classpath` Holds the WebLogic extension directory patch manifest JAR file, `weblogic_ext_patch.jar`, which contains references to classes in patch JAR files in the `patch_jars` directory that are inserted into the classpaths of applications deployed on WebLogic Server instances that point to this custom patch profile. **Note:** The `sysext_manifest_classpath` directory is not used by WebLogic Server 9.2. ■ `profiles\custom-profile-name\native` Holds native library files that are to be inserted into the system library path for server instances that point to this custom patch profile. ■ `profiles\custom-profile-name\modules` Holds module files that are used by OSGi-based products. ■ `profiles\custom-profile-name\archives` Holds shared archive files that are to be deployed and referenced by the applications that point to this custom patch profile.
patch_*product*\registry	Contains information about ■ All patches that have been applied to the product installation ■ Product installation files that have been replaced by patches. This information is used internally by Smart Update to perform tasks such as patch validation.

5.1.5.1 Patch Manifest JAR Files

Patches that contain classes that supersede existing, same-named classes when they are inserted into a classpath are referenced by a patch manifest JAR. When you apply a patch that contains such classes to a patch profile, the patch manifest JAR file of that profile is automatically updated by Smart Update to reference the classes in the patch.

For example, if a patch containing a JAR file called `Bug10131320_1032.jar`, which contains WebLogic system-level classes, is applied to the default patch profile, Smart Update performs the following tasks:

- Adds `Bug10131320_1032.jar` to the *MW_HOME*\patch_wls1032\patch_ jars directory.

- Creates the following file, if it does not exist already:

```
MW_HOME\patch_wls1032\profiles\default\sys_manifest_classpath\weblogic_
patch.jar
```

- In `weblogic_patch.jar`, adds the following reference to the WebLogic system classes in `Bug10131320_1032.jar`:

    ```
    Class-Path: C:\Oracle\Middleware\patch_wls1032\patch_jars\Bug10131320_1032.jar
    ```

- Updates the patch registry information in the `MW_HOME\patch_wls1032\registry` directory.

5.1.5.2 Native Library Files

If a patch contains native library files that are to be loaded into the system library path when the corresponding WebLogic Server instance is started, those library files are stored in the `native` subdirectory for the patch profile to which the patch has been applied.

For example, if the patch contains the file `libmuxer.so`, which is to be loaded into the system library path when the server is started, and the patch is applied to the default patch profile, Smart Update does the following:

- Creates the following directory, if it does not exist already:

    ```
    MW_HOME\patch_wls1032\profiles\default\native
    ```

- Puts `libmuxer.so` in the following directory:

    ```
    MW_HOME\patch_wls1032\profiles\default\native
    ```

- Updates the patch registry information maintained in the following directory:

    ```
    MW_HOME\patch_wls1032\registry
    ```

5.1.5.3 Module Patch Files

When a module patch is applied, whether it is a common module patch or product-specific module patch, Smart Update adds the patch to the `MW_HOME\patch_product\profiles\profileName\modules` directory. The original module JAR file is not modified. This approach is implemented to limit the scope of applied patch.

For example, if a module patch for WebLogic Event Server contains updated classes to `MW_HOME\wlevs20\modules\com.bea.wlevs.processor.monitor_2.0.0.0.jar`, and that patch is applied to the default patch profile, Smart Update performs the following tasks:

1. Creates the following directory, if it does not exist already:

    ```
    MW_HOME\patch_wlevs20200\profiles\default\modules
    ```

2. Adds the updated `com.bea.wlevs.processor.monitor_2.0.0.0.jar` in the `MW_HOME\patch_wlevs20200\profiles\default\modules` directory

3. Updates the patch registry information in the `MW_HOME\patch_wlevs20200\registry` directory.

When WebLogic Event Server starts, it uses the patched module located in the `MW_HOME\patch_wlevs20200\profiles\default\modules` instead of using the original module that still exists in the `MW_HOME\wlevs20200\modules` directory.

5.2 Classpath, Extended Classpath, and Native Library Patches

You can assume that your classpath and library path patches are picked up properly when the WebLogic domain servers are started, without your having to modify any start scripts, if:

- Your WebLogic domains use the default scripts generated by the Configuration Wizard for starting the Oracle product server instances configured for those domains.

- You do not need to limit the scope of a patch to a specific WebLogic domain or server instance.

Under other conditions, however, you must take additional steps to ensure that patches are inserted into the appropriate classpath or library path when the product servers are started. These additional steps are necessary if the environment in which you have applied patches to the products matches either of the following:

- To start the servers in your WebLogic domains, you use custom scripts that do not invoke the default `commEnv` script:

  Windows:

  WL_HOME\common\bin\commEnv.cmd

  UNIX:

  WL_HOME/common/bin/commEnv.sh

- You need to limit the scope of a patch to a specific WebLogic domain or server, instead of applying it universally to all domains and servers that run on a particular product installation.

This section provides information on the use of scripts, and how to modify start scripts using the Smart Update Start Script Editor. This section also describes custom scripts that you can use to point all WebLogic domains and servers at patches of classpath, extended classpath, and native library files.

> **Note:** Workshop for WebLogic (10.1 and later releases) does not enable run-time WebLogic Server patches automatically. After applying patches by using Smart Update, you must also specify the patch profile for the run-time WebLogic Server in Workshop IDE. For more information, see the Workshop for WebLogic documentation.

5.2.1 About Pointing Start Scripts at Patches

To ensure that a patch is loaded into a classpath or the system library path when a WebLogic Server instance is started, you might need to add a pointer to the patch to the start script for that server. The following sections explain how Smart Update works and describe the changes that you might need to make to your start scripts:

- Section 5.2.1.1, "Default Script that Defines Class and Library Paths for All WebLogic Domains and Servers"

- Section 5.2.1.2, "Default Patch Path Environment Variables"

- Section 5.2.1.3, "How Patch Path Variables Are Inserted into Class and Library Paths"

- Section 5.2.1.4, "About Setting a Patch Path Variable in a Server Start Script"

5.2.1.1 Default Script that Defines Class and Library Paths for All WebLogic Domains and Servers

When a WebLogic Server instance is started, several startup scripts are executed. One of the tasks performed by these scripts is to define class and library paths used by the system, including the WebLogic system classpath. By default, all WebLogic Server instances use the class and library path definitions set in one of the following scripts:

Windows:

WL_HOME\common\bin\commEnv.cmd

UNIX:

WL_HOME/common/bin/commEnv.sh

> **Note:**   In UNIX environments, if you want to run `commEnv.sh` manually from the command line or invoke it from a custom server startup script, you must use the following syntax:
>
> `.` *WL_HOME*`/common/bin/commEnv.sh`
>
> or
>
> `.` `./commEnv.sh` (if you are already located in the bin directory)

5.2.1.2 Default Patch Path Environment Variables

The `commEnv` script includes default definitions for the environment variables described in Table 5–2. By default, these *patch path variables* are in effect for every WebLogic Server instance that is started, and they point at patches that are to be inserted into class and library paths.

Table 5–2   Patch Path Variables Defined in the commEnv Script

This variable	Is set to the location of
PATCH_CLASSPATH	The patch manifest JAR file for the default patch profile (`weblogic_patch.jar`)
	This JAR file contains references to classes in the patch JAR files to be loaded into the WebLogic system classpath. For example, the default definition in the `commEnv` script for Windows is specified as follows:
	`if "%PATCH_CLASSPATH%" == "" set PATCH_CLASSPATH=` `%WLS_PATCH_CLASSPATH%;%WLW_PATCH_CLASSPATH%`
	Note: Most patches provided by My Oracle Support are WebLogic system classpath patches referenced by PATCH_CLASSPATH.

Table 5–2   (Cont.) Patch Path Variables Defined in the commEnv Script

This variable	Is set to the location of
WEBLOGIC_ EXTENSION_DIRS	The WebLogic extension directory patch manifest JAR file for the default patch profile (`weblogic_ext_patch.jar`)
	This file contains references to classes in the patch JAR files to be loaded into the classpath of an application deployed on WebLogic Server. For example, the default definition in the `commEnv` script for Windows is specified as follows:

	`if "%WEBLOGIC_EXTENSION_DIRS%" == ""`
	 `set WEBLOGIC_EXTENSION_DIRS= %BEA_HOME%\`
	 `patch_wls1030\profiles\default\sysext_manifest_classpath`

	Note: This variable is reserved for use by products that require the classes in a patch JAR file to be loaded into the classpath of an application that is deployed on WebLogic Server. Currently, this mechanism for patching deployed applications is not used with WebLogic Server 9.1.
PATCH_LIBPATH (UNIX only)	The `native` folder in the installation-level directory for the default patch profile
	This folder contains files to be loaded into the system library path through the `LIBPATH` environment variable. For example, the default definition in the `commEnv` script for UNIX is specified as follows:

	`if [ "${PATCH_LIBPATH}" = "" ];`
	 ` then PATCH_LIBPATH=${BEA_HOME}`
	 ` /patch_wls1030/profiles/default/native`

PATCH_PATH (Windows only)	The native folder in the installation-level patch directory for the default patch profile
	This folder contains files to be loaded into the system path through the `PATH` environment variable. For example, the default definition in the `commEnv` script for Windows is specified as follows:
	`if "%PATCH_PATH%" == "" set PATCH_PATH=` `%BEA_HOME%\patch_wls1030\profiles\default\native`

5.2.1.3 How Patch Path Variables Are Inserted into Class and Library Paths

Within the `commEnv` script, the patch path variables described in Table 5–2 are inserted into statements that set the system classpath, library path, and so on, as appropriate. For example, the following default statement in the `commEnv` script sets the WebLogic system classpath. The variable PATCH_CLASSPATH, at the beginning of the classpath definition, is shown in **bold**.

```
set WEBLOGIC_CLASSPATH=%PATCH_CLASSPATH%;%JAVA_HOME%\lib\tools.jar;
%WL_HOME%\server\lib\weblogic_sp.jar;%WL_HOME%\server\lib\weblogic.jar;
%WL_HOME%\server\lib\webservices.jar
```

When the `commEnv` script is executed at server start time, the classes and library files referenced by these patch path variables are loaded, overriding any classes or library files of the same name that are listed later in the classpath or path statement.

Figure 5–2 shows a patch JAR file that contains classes referenced through the PATCH_ CLASSPATH environment variable and loaded into the WebLogic system classpath by the `commEnv` script.

Figure 5–2   Patch JAR File Classes Referenced by PATCH_CLASSPATH Variable

5.2.1.4 About Setting a Patch Path Variable in a Server Start Script

If the patch path variables described in Section 5.2.1.1, "Default Script that Defines Class and Library Paths for All WebLogic Domains and Servers" were defined in a script, such as startWebLogic or setDomainEnv, that you executed earlier to start instances of WebLogic Server, the existing definitions for those server instances are retained; they are not overridden by the variable definitions in commEnv.

For example, if the setDomainEnv script for the MyTestDomain domain contains a definition for the PATCH_CLASSPATH variable that is used by all WebLogic Server instances in MyTestDomain, the definition of PATCH_CLASSPATH in the commEnv script is overridden for those server instances. For this reason, it is important that if you add a patch path variable definition to a start script, that the definition is placed *before* the statement that invokes another start script.

It is important for each WebLogic Server instance to start properly with any required patches. If your environment requires you to define one of the patch path variables with which you start your WebLogic Server instances, you must understand the following:

- The sequence in which scripts are executed, by default, in a product installation environment. See Section 5.2.1.4.1, "Sequence in Which Start Scripts Are Executed."

- Placeholders for defining patch path variables in the default start scripts produced by the Configuration Wizard. See Section 5.2.1.4.2, "Placeholders for Defining Patch Path Variables in Default Scripts."

5.2.1.4.1   Sequence in Which Start Scripts Are Executed   After you understand the sequence in which the start scripts in your environment are executed, and the locations from which start scripts are invoked, you can determine the script that must be changed and ensure that the correct values are assigned to all required patch path variables for all target server instances.

A default set of scripts are provided to start WebLogic Server instances and to set variables for each WebLogic domain and the Oracle product installation.

These scripts are executed in a specific order, which is determined by the content of each script.

Table 5–3 identifies:

- The default set of scripts that are created for a server, WebLogic domain, and product installation
- The function of each script
- The order in which the scripts are executed

Table 5–3   Default Set of Scripts in a Product Installation

This script	Performs this function	When Executed

In the `bin` directory of your WebLogic domain:
Windows:
`startManagedWebLogic.cmd`
 	
UNIX:
`startManagedWebLogic.sh`
	Starts Managed Servers in the domain. Patch path variables defined in this script are used by all Managed Servers started by the script.	When a domain is configured with Managed Servers, such as in a cluster, this script is the first one executed by default.
		
		This script invokes the `startWebLogic` script.

In the `bin` directory of your WebLogic domain:
Windows:
`startWebLogic.cmd`
 	
UNIX:
`startWebLogic.sh`
	Starts WebLogic Server instances in a domain. Patch path variables defined in this script are in effect for all domain servers except for those that are started.
	
	For example, if the previously-executed `startManagedWebLogic` script contains patch path variable definitions for Managed Servers, then the patch path variable definitions appearing in the `startWebLogic` script are overridden for Managed Servers started by the `startManagedWebLogic` script.
		If the domain is configured with Managed Servers, this script is invoked, by default, by the `startManagedWebLogic` script.
		
		The `startWebLogic` script invokes the `setDomainEnv` script.

In the `bin` directory of your WebLogic domain:
Windows:
`setDomainEnv.cmd`
 	
UNIX:
`setDomainEnv.sh`
	Sets the domain-wide environment for starting and running WebLogic Server instances. Patch path variables defined in this script are in effect for all domain servers not otherwise started by the `startManagedWebLogic` script, `startWebLogic` script, or other server-specific script.	By default, this script is invoked by the `startWebLogic` script.
		
		The `setDomainEnv` script contains an invocation to the `commEnv` script to define settings for the domain that are not otherwise defined in the server start scripts or in the `setDomainEnv` script.

In the `WL_HOME\common\bin` directory of your installation:
Windows:
`commEnv.cmd`
 	
UNIX:
`commEnv.sh`
	Sets domain-wide environment for starting and running WebLogic Server instances. Patch path variables defined in this script are in effect for all domain servers not otherwise started by the `startManagedWebLogic` script, `startWebLogic` script, or other server-specific script.	By default, this is the final script that is invoked to define settings for servers that are started and that run on the installation.
		
		Note: In UNIX environments, if you want to run `commEnv.sh` manually from the command line or invoke it from a custom server startup script, you must use the following syntax:
		
		`. WL_HOME/common/bin/commEnv.sh`
		
		or, if you are already located in the bin directory:
		
		`. ./commEnv.sh`

5.2.1.4.2 Placeholders for Defining Patch Path Variables in Default Scripts When you create a WebLogic domain using the Configuration Wizard, note the following about the placeholders for defining patch path variables in the scripts that are created for that domain:

- The setDomainEnv script contains the following lines, which are commented out by default:

```
@REM If you want to override the default Patch Classpath, Library Path
and Path for this domain,
@REM Uncomment the following lines and add a valid value for
the environment variables
@REM set PATCH_CLASSPATH=[myPatchClasspath] (windows)
@REM set PATCH_LIBPATH=[myPatchLibpath] (windows)
@REM set PATCH_PATH=[myPatchPath] (windows)
@REM PATCH_CLASSPATH=[myPatchClasspath] (unix)
@REM PATCH_LIBPATH=[myPatchLibpath] (unix)
@REM PATCH_PATH=[myPatchPath] (unix)
```

  The Configuration Wizard provides these commented lines as an aid to helping you place definitions for patch path variables. For example, if you want to point the domain to the patch JARs in the custom profile MyProfile, you might uncomment the placeholder for the PATCH_CLASSPATH variable and define it as follows:

```
PATCH_CLASSPATH=%BEA_HOME%\patch_wls1001\profiles\MyProfile\sys_manifest_
classpath\weblogic_patch.jar
```

  > **Note:**   Custom profiles have been deprecated as of Smart Update 3.3.0. Oracle recommends that you no longer use custom profiles. Custom profiles increase the complexity of installing installation-wide WebLogic Server patches.

  Refer to Table 5–2 for the definitions of these variables that are included by default in the commEnv script.

  To help with adding definitions of patch path variables, Smart Update provides the Start Script Editor, described in Section 5.4, "Using the Start Script Editor."

  > **Note:**   A start script should reference no more than one patch manifest JAR file for WebLogic system-level classes. If a start script references more than one such file, unpredictable behavior may occur at run time.

- The startWebLogic and startManagedWebLogic start scripts produced by the Configuration Wizard do not contain placeholders for defining patch path variables. If you add a definition for one or more of these variables to one of these scripts, be sure that you understand which WebLogic Server instances are affected.

  By minimizing the number of start scripts to which you add patch path variable definitions, you reduce the amount of maintenance required for those scripts if you change or upgrade the maintenance level or version of the installed product.

5.3 Modifying a Start Script

The specific tasks you must perform to ensure that a start script references the classes or library files patches in a profile depend on whether the scope of those patches is intended for all WebLogic domains, and servers running on the product installation, or only for a specific domain, or server in that installation.

If you use custom start scripts, or if you need to limit the scope of a patch to a specific WebLogic domain, server, you must modify your start scripts as follows:

- To insert patches into the system classpath or library path for all server instances that run on a product installation, if you use custom start scripts, you must add references to the default patch profile to those scripts.

- To limit the scope of a patch to a specific WebLogic domain, or server, you must perform two tasks:

  1. Create a custom patch profile, to which the patches are applied for the domain, or server that runs on a product installation.

     > **Note:**   Custom profiles have been deprecated as of Smart Update 3.3.0. Oracle recommends that you no longer use custom profiles. Custom profiles increase the complexity of installing installation-wide WebLogic Server patches.

  2. In the start script(s) for the corresponding WebLogic domain or server, add references to the custom patch profile.

To learn how to modify start scripts so that the class and library path patches you have applied are properly used, see Section 5.1, "Overview," which provides the following information:

- The distinction between patch files that must be dynamically loaded into the system classpath or library path and patches that are automatically in effect installation-wide

- Where, on your system, Smart Update places patch file content when you apply a patch

See also Section 5.2.1, "About Pointing Start Scripts at Patches," to find out how the default scripts created by the Configuration Wizard automatically insert class and library patches into the system classpath and library path. Understanding this process is important if you need to change your scripts so that they reference class and library patches appropriately.

You must modify your scripts in the following situations:

- You do not use the default scripts in your environment.

- You need to limit the scope of a patch to a particular WebLogic domain or server start script.

Table 5–4 provides information about changing a start script.

Table 5–4   Changing Start Scripts

For information about	Read the following topic
Using the Start Script Editor	Section 5.4, "Using the Start Script Editor"

Table 5–4   (Cont.) Changing Start Scripts

For information about	Read the following topic
Opening a start script	Section 5.4.3, "Opening a Start Script"
The modifications required for start scripts to reference the class and library path patches that are in effect for all WebLogic domains and servers	Section 5.5, "Pointing All Domains and Servers at Patches Through Custom Scripts"
The modifications required for starts scripts to reference the class and library path patches that are in effect for a specific WebLogic domain or server	Chapter 6, "Patching Individual Applications, Domains, or Servers"
Creating a custom patch profile, which you must do before modifying scripts to point a WebLogic domain or server at patches	Section 6.3, "Creating a Custom Patch Profile"

5.4 Using the Start Script Editor

The Start Script Editor is a tool, provided by Smart Update, for locating start scripts in your environment and creating definitions for patch path variables in them. Smart Update maintains scripts in multi-product environments with different patch levels as expressed in combinations of default patch profile and custom patch profiles.

> **Note:**   Custom profiles have been deprecated as of Smart Update 3.3.0. Oracle recommends that you no longer use custom profiles. Custom profiles increase the complexity of installing installation-wide WebLogic Server patches.

Accordingly, in the bottom pane, the script snippet shown is also product-specific, and targets myCustomProfile. A different snippet is provided for each type of path. These paths include classpath, WebLogic extended classpath, and native.

5.4.1 Script Snippet for Windows

```
SET PATCH_CLASSPATH=%BEA_HOME%\patch_wls1001\profiles\myCustomProfile\sys_
manifest_classpath\weblogic_patch.jar

SET WEBLOGIC_EXTENSION_DIRS=%BEA_HOME%\patch_
wls1001\profiles\myCustomProfile\sysext_manifest_classpath

SET PATCH_LIBPATH=%BEA_HOME%\patch_wls1001\profiles\myCustomProfile\native
SET PATCH_PATH=%BEA_HOME%\patch_wls1001\profiles\myCustomProfile\native
```

5.4.2 Script Snippet for UNIX

```
export PATCH_CLASSPATH=${BEA_HOME}/patch_wls1001/profiles/myCustomProfile/sys_
manifest_classpath/weblogic_patch.jar

export WEBLOGIC_EXTENSION_DIRS=${BEA_HOME}/patch_
wls1001/profiles/myCustomProfile/sysext_manifest_classpath

export PATCH_LIBPATH=${BEA_HOME}/patch_wls1001/profiles/myCustomProfile/native
export PATCH_PATH=${BEA_HOME}/patch_wls1001/profiles/myCustomProfile/native
```

This procedure describes the steps for using the Start Script Editor for WebLogic Platform 9.x, ALSB 2.5, and ALSB 2.6. To use the Start Script Editor, complete the following steps:

1. In Smart Update, select a target installation from the **Target Installation** panel.

2. Choose **Patches** > **Start Script Editor**.

3. In the Start Script Editor dialog box:

   a. Choose the patch profile to which the WebLogic domain or server will point. For information about using a custom patch profile to scope a patch to a specific WebLogic domain or server, see Chapter 9, "Best Practices for Distributing Patches."

   b. Choose the product for which you are editing a start script. See Figure 5–3.

   > **Note:** If you select Workshop for WebLogic, your WebLogic domain does not automatically download any of the WebLogic Server patches that might exist in that custom profile.

   c. Open the start script you want to modify.

   For detailed instructions, see Section 5.4.3, "Opening a Start Script."

   d. Add the appropriate patch path variable definition to your patch profile.

   The Start Script Editor provides code snippets with suggested definitions for the PATCH_CLASSPATH, WEBLOGIC_EXTENSION_DIRS, PATCH_LIBPATH, and PATCH_PATH variables, all of which are customized for the previously-selected patch profile. You may want to modify these definitions, however, depending on your needs:

   – If you are modifying your script to point to the patches in the *default* patch profile, see Section 5.5, "Pointing All Domains and Servers at Patches Through Custom Scripts," for instructions.

   – If you are modifying your script to point to the patches in a *custom* patch profile, see Chapter 6, "Patching Individual Applications, Domains, or Servers," to learn how to create a custom patch profile and add pointers to that profile to the start script for a WebLogic domain or server.

   e. If your custom patch profile myCustomProfile contains both WebLogic Server and Workshop for WebLogic patches, and you want all of them to be active in a specific domain, you must first edit the domain start script to include a product-specific tokenized path declaration, similar to the snippets, but modeled on the declarations in setPatchEnv.cmd:

   For example:

   ```
   WLS_PATCH_CLASSPATH=  and  WLW_PATCH_CLASSPATH=
   ```

   instead of:

   ```
   PATCH_CLASSPATH=
   ```

   You must also include a concatenation statement similar to the one found in setPatchEnv.cmd:

   ```
   set PATCH_CLASSPATH=%WLS_PATCH_CLASSPATH%;%WLW_PATCH_CLASSPATH%
   ```

   Repeat this for each path type.

f. Save the start script.

> **Note:** When adding a definition of a patch path variable to a start script, ensure that the definition appears before any statement that invokes another start script. For example, if you add a patch path variable definition to the setDomainEnv script, add it before the statement that invokes the commEnv script. This placement ensures that the definition you add is not overridden by a definition appearing in any of the start scripts that are subsequently invoked.

Smart Update does not enforce or control how you modify start scripts. If, however, you use the start scripts that are created by default by standard tools such as the Configuration Wizard, and maintain them in the default locations determined by those tools, Smart Update can provide a more structured and predictable way to locate the appropriate start scripts that must be modified for the purposes of pointing to the patches in a patch profile.

The Start Script Editor dialog box is not a wizard; it does not perform the following tasks:

- Detect all appropriate scripts that must be modified. If you use the start scripts provided, by default, by the Configuration Wizard, the Start Script Editor can help you find them quickly.

  If you have customized your server and domain start mechanisms, you might need to take additional steps beyond working with the Start Script Editor to make all the necessary changes.

- Modify start scripts. The Start Script Editor displays scripts and *suggests* additions to them, but you make the final decisions about which modifications to make and where to save them.

- Create backup copies of your start scripts.

5.4.3 Opening a Start Script

When you open a start script, by clicking **Open** in the Start Script Editor dialog box, Smart Update displays the Open Start Script dialog box. Use this dialog to locate the start script in which you want to add pointers from a WebLogic domain, Managed Servers, a cluster, or an individual server to the patches in a patch profile.

In the Start Script Editor dialog box, the icons described in Table 5–5 are used to guide you to the directory containing the start script you want to modify.

Table 5–5   Open Start Script Dialog Box Icons

This icon	Marks
	The parent directory, within a WebLogic domain, of the bin subdirectory in which, by default, the scripts you need to change reside.
	A domain subdirectory, such as bin, in which script files reside. To open a subdirectory and display the scripts in it, click this icon.

If you use the directory structure created for a domain by the Configuration Wizard, Smart Update guides you to the directories containing the start scripts that you need to change.

For information about locating a specific start script to modify, see the following topics:

- Section 5.4.3.1, "Modifying the Domain Start Script"

- Section 5.4.3.2, "Modifying the Start Script for All Managed Servers or a Cluster"

- Section 5.4.3.3, "Modifying the Start Script for a Specific Server"

5.4.3.1 Modifying the Domain Start Script

To modify the start script for a domain, select the setDomainEnv or startWebLogic script in the domain bin subdirectory. Figure 5–3 shows how to select the setDomainEnv script on a Windows system.

Figure 5–3   Selecting the setDomainEnv Script in the Select Start Script Dialog Box
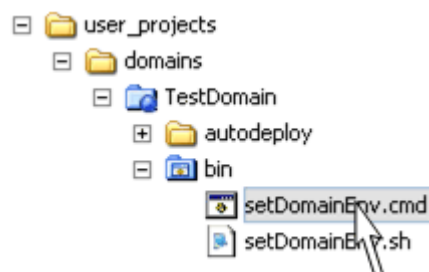
The setDomainEnv script contains placeholders for definitions of the PATCH_CLASSPATH, PATCH_LIBPATH, and PATCH_PATH variables. For information about modifying this script, see Table 5–6.

Table 5–6   Modifying Scripts

For information about modifying	See the following section
The placeholders for definitions of the PATCH_CLASSPATH, PATCH_LIBPATH, and PATCH_PATH variables	Section 5.2.1.4.2, "Placeholders for Defining Patch Path Variables in Default Scripts"
This script to point to the patches in the *default* patch profile	Section 5.5, "Pointing All Domains and Servers at Patches Through Custom Scripts"
This script to point to the patches in a *custom* patch profile	Section 6.4, "Pointing Domains and Servers at a Custom Patch Profile"

5.4.3.2 Modifying the Start Script for All Managed Servers or a Cluster

To modify the start script for all Managed Servers in a domain, which by default includes all servers in a cluster, select the startManagedWebLogic script in the domain bin subdirectory, as Figure 5–4 shows on a Windows system.

Figure 5–4   Selecting the startManagedWebLogic Script in the Select Start Script Dialog Box
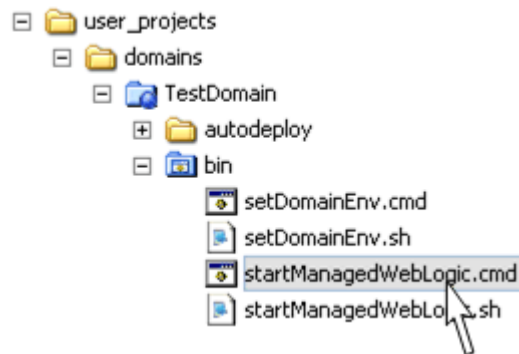
For information about modifying this script, see Table 5–7.

Table 5–7   Modifying Script

For information about modifying this script to	See the following section
Point to the patches in the *default* patch profile	Section 5.5, "Pointing All Domains and Servers at Patches Through Custom Scripts"
Point to the patches in a *custom* patch profile	Section 6.4, "Pointing Domains and Servers at a Custom Patch Profile"

5.4.3.3 Modifying the Start Script for a Specific Server

To modify the start script for a particular server in a domain, select the uniquely-named start script for that server in the domain `bin` subdirectory. Figure 5–5 shows how to select the start script `startWebLogicServer1` on a Windows system.

Figure 5–5   Selecting a Server Start Script in the Select Start Script Dialog Box
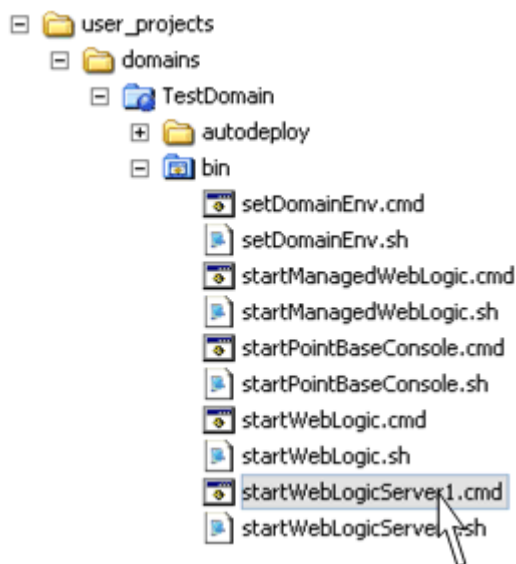
For information about modifying this script, see Table 5–8.

Table 5–8   Modifying Start Script

For information about modifying this script to	See the following section
Point to the patches in the *default* patch profile	Section 5.5, "Pointing All Domains and Servers at Patches Through Custom Scripts"
Point to the patches in a *custom* patch profile	Section 6.4, "Pointing Domains and Servers at a Custom Patch Profile"

5.5 Pointing All Domains and Servers at Patches Through Custom Scripts

It is important to ensure that class and library patches are properly loaded into the class and library paths used in your domains. If the scripts used in your WebLogic domains to start servers or set up the environment do not invoke the default `commEnv` script, as described in Section 5.2.1.1, "Default Script that Defines Class and Library Paths for All WebLogic Domains and Servers," you should modify those scripts as follows:

- Define any environment variables that point to the class and library patches applied to the default patch profile

- Add these environment variables to the following paths:

  – WebLogic system classpath

  – Classpath used by applications deployed on WebLogic Server, as required by a product

  – Library path

Ensure that you add this functionality of the default `commEnv` script to your own scripts through any of the following methods:

- Centralize, in one script, the code that points to patches in the default patch profile. Then invoke this central script from all start scripts. Oracle recommends this approach because it simplifies the task of maintaining the code that points to patches and minimizes the number of changes that must be made to scripts as your environment changes.

- Make a copy, in every start script, of the code that points to the patches you have applied to the default patch profile. By making sure that this code is included in every start script, you guarantee that all servers in your domains point to the patches that have been applied. As you add servers or change the configuration of your environment, however, the task of properly maintaining your start scripts becomes increasingly complex.

5.5.1 Pointing Domains and Servers at Patch JARs in the Default Patch Profile for the WebLogic System Classpath

When the domains and servers in your environment are started, the patch JARs that have been applied to the default patch profile should be inserted into the WebLogic system classpath. To ensure that the patch JARs are inserted into this classpath properly, you must add, to your start script, the code described in this section.

1. Add a default definition of the `PATCH_CLASSPATH` environment variable. For example:

   ```
   if "%PATCH_CLASSPATH%" == "" set PATCH_CLASSPATH=BEA_HOME\patch_
   ```

```
wls1001\profiles\default\sys_manifest_classpath\weblogic_patch.jar
```

This definition enables individual servers or domains to override this definition, if those servers or domains must point to the patches in a custom patch profile. In this definition, *BEA_HOME* represents the Middleware home directory path. You can specify an absolute path, or use an environment variable, which you have previously defined (recommended).

2. Add PATCH_CLASSPATH to the beginning of the statement that sets the WebLogic system classpath. For example:

```
set WEBLOGIC_CLASSPATH=%PATCH_CLASSPATH%;%JAVA_HOME%\lib\tools.jar;
%WL_HOME%\server\lib\weblogic_sp.jar;%WL_HOME%\server\lib\weblogic.jar;
%WL_HOME%\server\lib\webservices.jar
```

This ensures that classes in the patch JARs override existing, same-named classes appearing later in the classpath.

If your default patch profile contains patch JARs for applications that are deployed on WebLogic Server for a product, you can define the WEBLOGIC_EXTENSION_ DIRS environment variable to point to the patch JARs for that application as follows:

```
if "%WEBLOGIC_EXTENSION_DIRS%" == "" set WEBLOGIC_EXTENSION_DIRS=
%BEA_HOME%\patch_wls1001\profiles\default\sysext_manifest_classpath
```

> **Note:** The WEBLOGIC_EXTENSION_DIRS variable is reserved for use by products that require the classes in a patch JAR file to be loaded into the classpath of an application that is deployed on WebLogic Server. This mechanism for patching deployed applications is not currently being used with WebLogic Server 9.1.

5.5.2 Pointing Domains and Servers at Library Patches in the Default Patch Profile

It is important to ensure that the native files that have been applied to the default patch profile are inserted into the system library path, whenever any of the domains or servers in your environment are started. To ensure that these files are inserted properly, add the code provided in this section to the script that you have chosen to point to the patches applied to the default patch profile.

To add this code to your script, follow the appropriate instructions:

- Section 5.5.2.1, "For UNIX Systems"
- Section 5.5.2.2, "For Windows Systems"

5.5.2.1 For UNIX Systems

1. Add a default definition of the PATCH_LIBPATH environment variable. For example:

```
if [ "${PATCH_LIBPATH}" = "" ]; then  PATCH_LIBPATH=${BEA_HOME}/patch_
wls1001/profiles/default/native
```

This definition enables individual servers or domains to override this definition, if those servers or domains must point to the patches in a custom patch profile.

2. Add PATCH_LIBPATH to the beginning of the statement that sets the system library path for your system. To make this script usable for all the operating

systems and hardware architectures supported by products, you can provide individual statements that set the paths for each of those systems. For example:

```
if [ -n "${LIBPATH}" ]; then
LIBPATH=${LIBPATH}:${WL_HOME}/server/native/aix/ppc
else
LIBPATH=${WL_HOME}/server/native/aix/ppc
fi
LIBPATH=${PATCH_LIBPATH}:${LIBPATH}
export LIBPATH
```

This ensures that library file patches in the default patch profile override existing, same-named files appearing later in the path.

5.5.2.2 For Windows Systems

1. Add a default definition of the PATCH_PATH environment variable. For example:

```
if "%PATCH_PATH%" == "" set PATCH_PATH=%BEA_HOME%\patch_
wls1001\profiles\default\native
```

This definition enables individual servers or domains to override this definition, if those servers or domains must point to the patches in a custom patch profile. In this definition, *BEA_HOME* represents the Middleware home directory path. You can specify an absolute path, or use an environment variable, which you have previously defined (recommended).

2. Add the variable PATCH_PATH to the beginning of the statement that sets the system library path. To make this script usable for all the operating systems and hardware architectures supported by products, you can provide individual statements that set the paths for each of those systems. For example:

```
if "%WL_USE_X86DLL%" == "true" set PATH=%PATCH_PATH%;%WL_
HOME%\server\native\win\32;
%WL_HOME%\server\bin;%JAVA_HOME%\jre\bin;%JAVA_HOME%\bin;%PATH%;%WL_
HOME%\server\native\win\32\oci920_8
```

This ensures that library file patches in the default patch profile override existing, same-named files appearing later in the path.

5.6 Module Patching

WebLogic Server (10.0 and later releases) and OSGi-based products (for example, Oracle Enterprise Repository) incorporate a modular approach for developing and distributing the software. Patches are provided to update such modules.

> **Note:** OSGi-based products are built on microServices Architecture (mSA) and they use an Open Services Gateway initiative (OSGi)-based framework to manage services that are provided by modules or feature sets.

Modules can be of two types, common and product-specific. Common modules are shared by multiple products and product-specific modules are used only by a product. Smart Update displays a warning message when you attempt to apply a patch for a common module. You can click **Yes**, if you want to apply a patch to all the products; otherwise, click **No**. Follow the instructions on the dialog box.

A run-time instance of WebLogic Platform can contain only a single version of a module. Therefore, to ensure that a given module version is patched correctly, all products used together should be patched consistently relative to a module associated with more than one of the products.

In WebLogic Server, module patches are added through classpath, but in OSGi-based products, patches are loaded using an OSGi-based launcher.

5.6.1 Module Patching in WebLogic Server

Products such as WebLogic Server load modules to run-time containers through the classpath. For more information about loading patches to a classpath, see Section 5.2, "Classpath, Extended Classpath, and Native Library Patches."

5.6.2 Module Patching in OSGi-Based Products

OSGi-based products load modules to run-time containers through the OSGi-based launcher. The launcher determines the necessary modules and the sequence of modules to be loaded at run time. It also determines whether a module is patched for a given product. If a module is patched, the updated version is loaded and used. The scope of a module patch is specific to the product and to the patch profile. This provides the necessary granularity to ensure that a patch is specific to one product and not to all products in the same Middleware home directory.

In an OSGi-based product installation, you can see two directories for modules—common modules (*MW_HOME*\modules) and product-specific modules (for example, *MW_HOME*\wlevs20\modules). Figure 5–6 shows the structure of these directories.

> **Note:** Starting from the Oracle Fusion Middleware 11*g*R1 release, *MW_HOME* is the new term for *BEA_HOME*.

Figure 5–6 Installation-Level Directory Structure for WebLogic Event Server
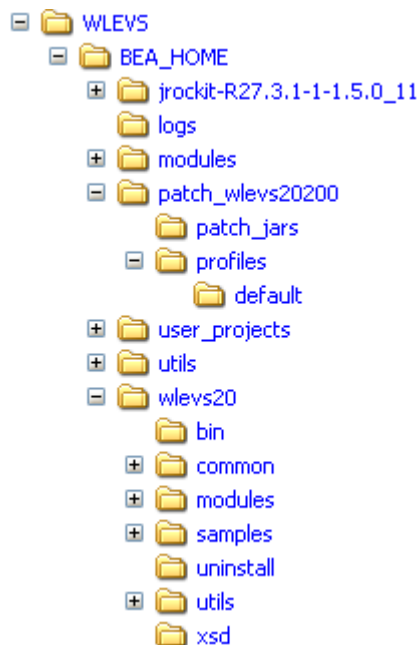
5.7 Native Binaries and Other Artifacts Patches

Native binaries and other artifacts are in effect for all applications, domains and servers, as described in Section 5.1.2, "Patches That Replace Resources For All Applications, Domains, and Servers."

5.8 Shared Archive Patches

This section describes how shared archive patches are deployed and referenced by applications.

5.8.1 Overview

Shared archive patches were introduced to support shared libraries, and in particular WebLogic library modules. Unlike other artifacts installed in the product directory, applications can use shared archives by direct name and version references, rather than relying on a well-known location. This implies that a default installation of a shared archive has an installation-wide (or domain-wide) scope until superseded by a custom installation of the same shared archive into a specified profile.

To activate a shared archive patch after application to the default or a custom profile in Smart Update, you must first deploy the patched archive in the affected domain, and potentially modify the application description to make specific reference to it.

> **Note:** Custom profiles have been deprecated as of Smart Update 3.3.0. Oracle recommends that you no longer use custom profiles. Custom profiles increase the complexity of installing installation-wide WebLogic Server patches.

Shared archive patches can be applied to an entire domain (or all domains running in a given installation) or selected applications in a domain. To affect potentially all domains in an installation, apply the shared archive patch to the default profile in Smart Update.

For more information on this topic, see Section 5.8.2, "Default Application of Shared Archive Patches."

To affect only a specific application, you should apply the patch to a custom profile and update the archive references in the application descriptor. This approach would enable you to maintain unique patch profiles for each application that utilizes shared libraries, if necessary.

For more information on this topic, see Section 5.8.3, "Activating Shared Archive Patches in Custom Profiles with Application Scope."

5.8.1.1 Archive Replacement Compared with Insertion

When a shared archive patch is applied, it either replaces an entire archive (or installs an entirely new archive) or partially updates the archive (by insertion).

Which operation is used is determined by the patch creator. If you are not sure, contact My Oracle Support.

5.8.1.2 Patch Removal

When you remove a patch, you must undeploy the patch explicitly in addition to perform patch removal using Smart Update.

5.8.1.3 For More Information

To learn more about deploying and undeploying shared libraries, see *Deploying Applications to Oracle WebLogic Server*. To learn more about shared libraries, see *Developing Applications for Oracle WebLogic Server*.

5.8.2 Default Application of Shared Archive Patches

When a shared archive patch is applied in Smart Update to the default profile, it is treated by the Patch Management System as applicable to the entire installation. Consequently, when you apply a shared archive patch to the default profile, the patch is applied to all custom profiles (if any) as well. Smart Update warns you that the patch will be applied to the entire product installation. If you click **Continue**, the patch is applied to all profiles.

The actual write location of the patched shared archive is usually relative to the product shared library directory. You may need this information, depending on how you choose to deploy it.

Shared libraries are located under:

- *WL_HOME*/common/deployable-libraries

- *WL_HOME*/portal/lib/modules

- *WL_HOME*/servicebus/lib

- *WL_HOME*/integration/common/lib/installation

Typically, portal-shared archive patches are installed under maintenance/default in the above common and portal shared library directories. Other products may institute differing default patch directory structures. If you need further guidance for a specific patch, consult My Oracle Support.

If the patch is replacing an existing archive and it is already deployed, you just need to restart the server. If the patch contains a new version, or is to be installed under a different directory, you must deploy the patched archive. Deployment can be done using the WebLogic Server console, custom WLST script, or by directly updating config.xml for the target domain.

On successful deployment of the patched archive, it (including the name, specification, and version number) is visible in the WebLogic Server administration console.

If you leave the library module manifest untouched, all references to the library module remain intact and all applications in the domain immediately take advantage of new functionality without additional manual configurations to application descriptors.

5.8.3 Activating Shared Archive Patches in Custom Profiles with Application Scope

In some cases, you may want to control and apply a patch at a certain level to selected applications. To apply a shared archive patch in such a scenario, create a custom profile and apply shared archive patches to that custom profile only.

To distinguish one version of a shared library patch from another and to allow different versions of a shared library to coexist in a single domain, versions can be distinguished by unique names or unique implementation versions, or both.

After applying a shared archive patch to a custom profile in Smart Update, two steps are required to activate it for the application you intend to patch:

1. Deploy the patch in the custom profile.

2. Update the application descriptor to reference the specific version of the patched archive.

The steps to deploy the shared archive patch in a custom profile are the same as those for shared archive patches in the default profile, except that in the custom profile case the patch is located in the following directory:

MW_HOME/patch_
weblogic*version*/profile/*custom-profile-name*/archives

For example: *MW_HOME*/patch_wls1001/profile/customProfile

5.8.3.1 Updating Application Descriptors

To support a variety of application-scoped patch scenarios, shared archive patches may be configured when they are created to force unique naming or unique versioning, or both, when the patch is installed. Smart Update detects this if the patch is applied to a custom profile, and may modify the archive's extension-name or implementation version, or both, in the archive manifest at that time.

If a patch was created to force a unique name, the patch install process appends the string "-patch_*custom-profile-name*" to the manifest extension-name.

If a patch was created to force a unique implementation version, the patch install process decrements the version's last digit and appends a digit *N* where *N* is the patch profile ID as defined in patch-registry.xml. For example, an implementation version of 9.2.0.1 might become 9.2.0.0.1.

In general, application descriptors (weblogic.xml for WAR and weblogic-application.xml for EAR) do not require a specific version. Instead, they look for the most recent (highest) version. To reference a specific version of a shared library, you must set the Boolean *<exact-match>* to **true**.

For example, in the following section of weblogic-application.xml for a 9.2.0.0.1 shared archive patch, note that *<exact-match>* is set to **true**.

```
<weblogic-application xmlns="http://www.bea.com/ns/weblogic/90"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
<library-ref>
<library-name>wlp-tools-admin-app-lib</library-name>
<specification-version> 9.2.0 </specification-version>
implementation-version> 9.2.0.0.1 </implementation-version>
<exact-match> true </exact-match>
</library-ref>
</weblogic-application>
```

6

Patching Individual Applications, Domains, or Servers

Smart Update enables you to point a domain or server at a set of patches that are not necessarily intended for the entire installation by using a custom patch profile.

> **Note:** Custom profiles have been deprecated as of Smart Update 3.3.0. Oracle recommends that you no longer use custom profiles. Custom profiles increase the complexity of installing installation-wide WebLogic Server patches.

This section includes the following topics:

- Section 6.1, "About Patching Domains or Servers"
- Section 6.2, "About Patching Applications, Domains, or Servers"
- Section 6.3, "Creating a Custom Patch Profile"
- Section 6.4, "Pointing Domains and Servers at a Custom Patch Profile"
- Section 6.5, "Managing Custom Patch Profiles in a Node Manager Environment"

6.1 About Patching Domains or Servers

By default, when you download and apply patches, those patches are in effect for the entire target installation. Every domain and server that is configured to run from such an installation runs against the patches applied to it. Sometimes, however, individual servers or domains within a production environment need to run at different patch levels. To accommodate this need, Smart Update enables you to point individual domains, servers, or clusters at specific patches that are not necessarily in effect installation-wide.

For example, if you have (a) multiple products installed in a Middleware home directory, and (b) domains that exclusively use only one of those products, it is recommended that you point those domains at only those patches that have been applied to the specific product used by the domain.

At a high level, the work required to point an individual domain or server at one or more patches that are not intended to be in effect installation-wide can be summarized as a three-step procedure:

1. Create a custom patch profile.

2. In the appropriate start script for the corresponding domain or server, insert a pointer to the custom patch profile.

3. Apply the desired patches to the custom patch profile.

Figure 6–1 provides a detailed version of this procedure.

Figure 6–1   How to Point an Individual Domain, Cluster, or Server at a Custom Patch Profile
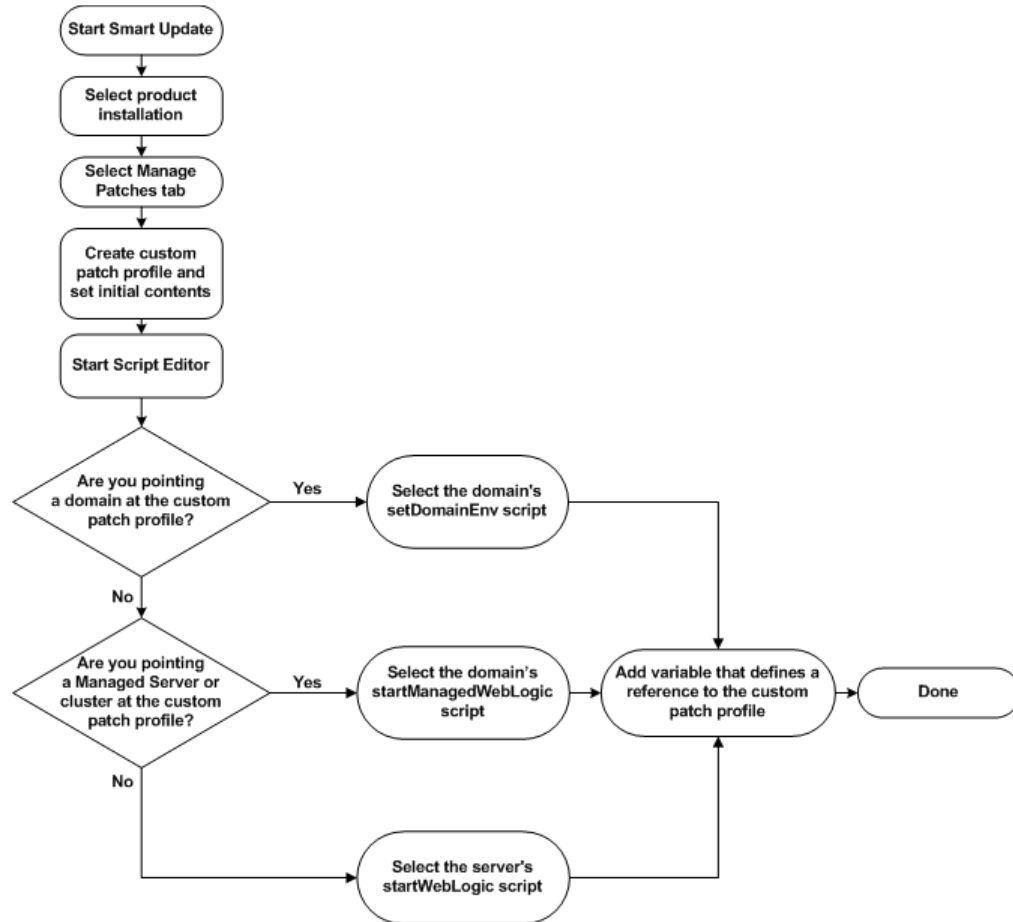
6.2 About Patching Applications, Domains, or Servers

Smart Update enables you to apply Shared Archive patches to specific applications. When you apply a shared archive patch to a default patch profile, it is installed automatically. However, when you apply an application-scoped patch to a custom patch profile, it should be explicitly deployed. See Section 5.8, "Shared Archive Patches."

6.2.1 How Custom Profiles Can Patch Individual Domains, Servers, and Applications

By default, all patches included in the default patch profile are in effect for all domains and servers in an entire installation. The patches in a custom patch profile, however, can be put into effect for any subset of domains or servers within an installation. As noted in Section 5.1.2, "Patches That Replace Resources For All Applications, Domains, and Servers," patches that replace system-wide resources cannot be selectively targeted by a subset of domains or servers. Such selective targeting is possible, however, for patches with classes or library files that are loaded through a start script and thereby supersede existing, same-named resources in the system.

> **Note:** Custom profiles have been deprecated as of Smart Update 3.3.0. Oracle recommends that you no longer use custom profiles. Custom profiles increase the complexity of installing installation-wide WebLogic Server patches.

The following sections provide background information about how custom patch profiles can be used to patch individual domains and servers:

- Section 6.2.2, "How a Domain or Server Can Point to a Patch in a Custom Profile"
- Section 6.2.3, "Best Practices for Using Custom Patch Profiles"

6.2.2 How a Domain or Server Can Point to a Patch in a Custom Profile

When you create a domain using the Configuration Wizard, the Configuration Wizard creates the following scripts for the domain:

- `setDomainEnv`—Script used to set domain-level environment variables, including those used by all servers.
- `startWebLogic`—Start script used by any WebLogic Server instances in the domain that are not Managed Servers.
- `startManagedWebLogic`—Start script used by Managed Servers in the domain, including those in a cluster.

> **Note:** For details, see Section 5.2.1.1, "Default Script that Defines Class and Library Paths for All WebLogic Domains and Servers."

By default, the values of the `PATCH_CLASSPATH`, `WEBLOGIC_EXTENSION_DIRS`, `PATCH_LIBPATH`, and `PATCH_PATH` variables provided in the product installation script, `commEnv`, are used by all the server instances that run on that installation. If, however, you override these values for any of the variables in a domain-level script, the new values are used only by the WebLogic Server instances that are started by those scripts.

> **Note:** The definition of a given patch variable should reference no more than one patch manifest JAR. If multiple patch manifest JAR files are referenced, unpredictable behavior may occur at run time.

Modifying the definition of a patch path variable in a start script is a convenient way of pointing servers started by that script at the patches included in a custom patch profile. For example, if you want to point a server at the WebLogic system classes in a patch that has been applied to a custom patch profile, you simply add a definition of the `PATCH_CLASSPATH` variable to that server start script, setting the variable to the path of the patch manifest JAR file in the custom patch profile. Similarly, you can point a server or domain at a native library file in a custom patch profile by adding a reference to the directory in the custom patch profile that contains that native file. To add this reference, you add a definition of the `PATCH_PATH` or `PATCH_LIBPATH` variable to the start script for the appropriate server or domain.

> **Note:** When adding a definition of a patch path variable to a start script, ensure that the definition appears before any statement that invokes another start script. For example, if you add a patch path variable definition to the setDomainEnv script, add it before the statement that invokes the commEnv script. This placement ensures that the definition you add is not overridden by a definition appearing in any of the start scripts that are subsequently invoked.

Smart Update does not enforce or control how you modify start scripts. But if you use the start scripts that are created, by default, with standard tools such as the Configuration Wizard, and maintain them in the default locations determined by those tools, Smart Update can provide a structured and predictable method of locating the start scripts that need to be modified and suggesting the specific changes that must be made to those scripts.

Figure 6–2 shows two patch profiles used in an installation: the default patch profile and a custom patch profile. In this figure:

- The default patch profile includes patches 1, 2, and 3. By default, all domains and servers running in the sample installation are pointing at it.

- The custom patch profile includes patch 4. One server in the sample domain is pointing at it.

Figure 6–2 How to Point an Individual Domain, Cluster, or Server at a Custom Patch Profile
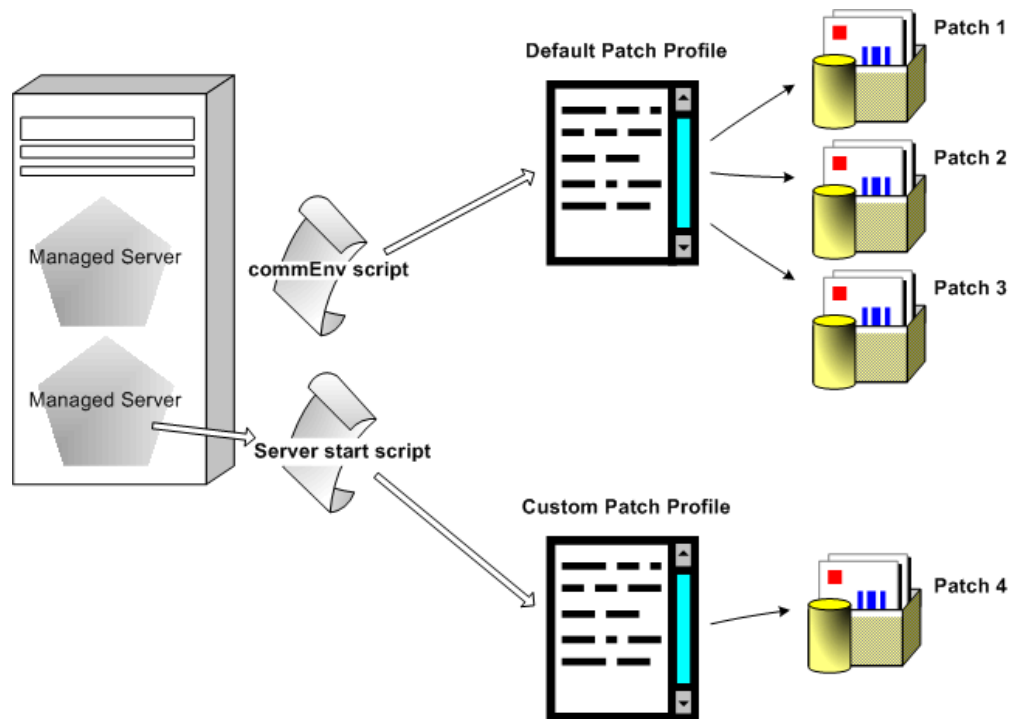
6.2.2.1 Example Use of PATCH_CLASSPATH to Point a Server at Patch Classes

The following PATCH_CLASSPATH variable references the patch manifest JAR file weblogic_patch.jar, located in the custom profile ProductionServer1:

```
set PATCH_CLASSPATH=
```

```
%BEA_HOME%\patch_wls1001\profiles\ProductionServer1
\sys_manifest_classpath\weblogic_patch.jar
```

When the preceding definition is added to the `startWebLogic` script for a given domain, server instances that are started in that domain by that script load the class files into the WebLogic server classpaths that are referenced by the `weblogic_patch.jar` file in the `ProductionServer1` custom profile. This classpath loading occurs when the following line in the `commEnv` script is subsequently executed (`PATCH_CLASSPATH` is shown in **bold**):

```
set WEBLOGIC_CLASSPATH=%PATCH_CLASSPATH%;%JAVA_HOME%\lib\tools.jar;
%WL_HOME%\server\lib\weblogic_sp.jar;%WL_HOME%\server\lib\weblogic.jar;
%WL_HOME%\server\lib\webservices.jar
```

> **Note:** The `weblogic_patch.jar` in the ProductionServer1 profile may reference a set of patch JAR files that is entirely different from the set of patch JAR files referenced in the `weblogic_patch.jar` of the default patch profile.

If you want a server in a domain, or any domain in an installation, to continue to point to patches in the default patch profile, you do not need to change the start script for that server or domain if you use the default scripts for servers and domains provided by the Configuration Wizard. If, however, you want one or more servers or a domain to point at a custom patch profile, ensure that the start script you modify affects *only* the targeted servers or the domains.

For information about the sequence in which start scripts are executed, and how particular definitions of patch path variables affect servers started by scripts with patch path variable definitions, see Section 5.2.1.4.1, "Sequence in Which Start Scripts Are Executed."

6.2.2.2 Pointing to Custom Patch Profiles in OSGi-based Products

In a text editor, open the start script for the server (for example, in a WebLogic Event Server domain, `startwlevs.cmd` on Windows, `startwlevs.sh` on UNIX) and add the `-DBEAPatchProfile` property to this script as follows:

```
if "%1" == "-dgc" goto rundgc

"%JAVA_HOME%\bin\java" -Dwlevs.home="%USER_INSTALL_DIR%" -Dbea.home="%BEA_HOME%"
-Dcom.bea.core.security.username=wlevs -Dcom.bea.core.security.password=wlevs
-DBEAPatchProfile=custProfile
 -jar "%USER_INSTALL_DIR%\bin\wlevs_2.0.jar" %1 %2 %3 %4 %5 %6

goto finish
:rundgc

"%JAVA_HOME%\bin\java" %DGC_ARGS% -Dwlevs.home="%USER_INSTALL_DIR%"
-Dbea.home="%BEA_HOME%" -Dcom.bea.core.security.username=wlevs
-Dcom.bea.core.security.password=wlevs -DBEAPatchProfile=custProfile
-jar "%USER_INSTALL_DIR%\bin\wlevs_2.0.jar" %2 %3 %4 %5 %6
:finish
```

When the modified start script is executed, only those patches applied to the patch profile specified in the script are referenced by the OSGi launcher.

6.2.3 Best Practices for Using Custom Patch Profiles

This section provides important information about the use of custom patch profiles:

-
-
-

> **Note:** Custom profiles have been deprecated as of Smart Update 3.3.0. Oracle recommends that you no longer use custom profiles. Custom profiles increase the complexity of installing installation-wide WebLogic Server patches.

6.2.3.1 Avoiding Proliferation of Custom Profiles

When you want to point a domain or server at a new set of patches you have downloaded, try to apply the patches to an existing patch profile, if possible. To change the set of patches at which a specific domain or server points, change the content of the custom patch profile that contains the patches. This approach is always preferable to creating a new custom patch profile and modifying start scripts so they point to it. Avoid creating a new profile for each patch that you download. By keeping the number of profiles you create to a minimum, you can more efficiently take advantage of the patch validation and dependency checking capabilities built into Smart Update and the My Oracle Support Repository.

In addition, when you minimize the number of custom profiles you use, you minimize the number of start script modifications that you must maintain. As a result, the likelihood of introducing errors in your scripts is reduced. In addition, the work required to remove patches is simplified: you simply update the appropriate patch profile; the need to update scripts is minimized.

6.2.3.2 Modifying Domain and Server Start Scripts

A start script provides a great deal of flexibility. The use of specific names and locations for start scripts is not enforced. However, by staying within the default directory structure that the Configuration Wizard creates for a domain, and by retaining the location and structure of the start scripts that are provided, you maximize your ability to rely on Smart Update to locate and generate suggested changes for start scripts that are required when custom profiles are used.

In general, when pointing a domain or server at a custom patch profile, keep in mind the following guidelines:

- Before modifying a start script, make a backup copy.
- Modify the start script at the most general level possible. For example, to point a domain at a custom patch profile, modify the setDomainEnv script, rather than each script that starts a server within the domain. When you implement this practice, you minimize the number of start scripts that you need to modify and maintain.
- Never point a domain or server at more than one patch profile. Patch validation is performed within the boundaries of a single patch profile; it is never performed for multiple profiles simultaneously.

6.2.3.3 Removing Patches That Affect Installation-Wide Resources

Generally, there are no restrictions on the set of patches that can be added to a custom patch profile or removed from it. Patches that affect installation-wide resources, however, are automatically placed in all existing patch profiles for a target installation.

If you remove a patch that affects installation-wide resources from *any single* patch profile (regardless of whether that profile is the default profile or a custom profile), the patch is automatically removed from *all* patch profiles. If you have multiple profiles in a target installation, and you try to replace or remove a patch that affects installation-wide resources, Smart Update displays a warning.

6.3 Creating a Custom Patch Profile

To create a custom patch profile, complete the steps in this section.

> **Note:** Custom profiles have been deprecated as of Smart Update 3.3.0. Oracle recommends that you no longer use custom profiles. Custom profiles increase the complexity of installing installation-wide WebLogic Server patches.

1. In the **Target Installation** panel, select a product installation.

2. Choose **Patches** > **Patch Profiles** > **New**.

3. In the New Patch Profile dialog box, choose the following:

   a. A name for the custom patch profile

   b. The initial contents of the profile

   > **Note:** When you create a custom patch profile, Smart Update creates a directory for it, using the name you have chosen for the profile. Therefore, to ensure that custom patch profiles can be used with any combination of hardware and operating system supported by products software, only alphanumeric characters may be used in custom patch profile names.

4. Click **Create**.

The following topics provide more information about custom profiles:

- Section 6.3.1, "Initial Contents of a Custom Patch Profile"

- Section 6.3.2, "Cloning a Patch Profile"

- Section 6.3.3, "Adding Patches to a Custom Patch Profile"

- Section 6.3.4, "Deleting a Custom Patch Profile"

6.3.1 Initial Contents of a Custom Patch Profile

Custom patch profiles may contain the following types of patches:

- Classes that can be loaded in the WebLogic system classpath

- Classes that can be loaded in the extended classpath, for applications deployed on WebLogic Server

- Native library files that can be added to the library path

By default, any installation-wide patches that have been applied to the target installation are automatically included whenever you create a new patch profile. Smart Update gives you the option, however, of creating a patch profile that initially contains no patches.

When you clone the contents of an existing patch profile to create a custom patch profile, only a subset of the patches from the existing patch profile are physically duplicated on disk:

- Patch JAR files are not duplicated. A single patch JAR file is shared by all the patch profiles on your system that reference them.

   Replacement patches are not duplicated. When a patch replaces a system resource at the time it is first applied, the system resource is not replaced each time the patch is automatically duplicated in a custom patch profile, nor is a duplicate copy made of the patch container that is referenced by a duplicate entry for the patch in the custom patch profile.

- Native library files from patches that are loaded into the system path at server start time are duplicated in the installation-level patch directory. If disk space is a concern, verify that the amount of space occupied by native library files that are duplicated by a custom patch profile is not causing a problem.

Note: Patches that contain replacements for files or other artifacts are automatically applied to the entire installation.

6.3.2 Cloning a Patch Profile

If you want to create a custom patch profile that includes the same patches in an existing patch profile, you can clone the existing profile and then customize it as needed, by adding or removing patches. This technique is convenient for creating custom patch profiles quickly.

Note: Patches that affect installation-wide resources are included in all patch profiles created in a target installation. You cannot remove this type of patch from one profile without removing it from all patch profiles on the target installation. If you attempt to do so, Smart Update displays a warning message.

6.3.3 Adding Patches to a Custom Patch Profile

After you create a custom patch profile, you can add or remove patches to it, just as you added or removed patches from the default patch profile:

1. From the **Manage Patches** tab, select the custom patch profile you have created.

2. To add a patch to the profile, select the patch you want to add from the **Downloaded Patches** panel, and click **Apply**.

3. To remove a patch from the profile, select that patch from the list that is displayed for the patch profile, and click **Remove**.

When you apply a patch to the target installation, the following events occur:

1. The patch is validated against patches in the *current patch profile*.

2. If there are no patch conflicts, the patch is applied.

> **Note:** Though the patch may be validated and applied to the target installation, any patch containing either classes to be loaded into a classpath or native library files to be loaded into a library path does not take effect until you complete the following steps:
>
> - Modify the appropriate domain or server start scripts, if necessary, to point to the patch.
>
> - Restart the appropriate domains, servers, or applications. Shared archive patches should be explicitly referenced by the application, as described in Section 5.8, "Shared Archive Patches."

If conflicts are detected, the Patch Installation Validation dialog box displays a summary of those conflicts. The patch cannot be applied until the conflicts are resolved. For more information, see Section 4.4, "Resolving Patch Conflicts."

3. When the patch is applied, it is added to the current patch profile. The patch is no longer listed in the **Downloaded Patches** panel of the Manage Patches tab for this profile.

6.3.4 Deleting a Custom Patch Profile

To delete a custom patch profile, complete the following steps:

1. From the **Manage Patches** tab, select the custom patch profile you want to delete.

2. Choose **Patches** > **Patch Profiles** > **Delete**.

A confirmation dialog box is displayed, giving you the option of continuing or canceling the delete operation.

When deleting a custom patch profile, keep in mind that:

- Any start script for a domain or server may fail if it points to a custom patch profile that has been deleted. Instructions for pointing a domain or server at a patch profile are provided in Section 6.4, "Pointing Domains and Servers at a Custom Patch Profile."

- When you delete a custom patch profile, the patches associated with it are not removed.

- You cannot delete the default patch profile. If you try to do so, Smart Update displays an error message.

6.4 Pointing Domains and Servers at a Custom Patch Profile

To point a domain or server at a custom patch profile you have created, complete the steps in this section.

> **Note:** Custom profiles have been deprecated as of Smart Update 3.3.0. Oracle recommends that you no longer use custom profiles. Custom profiles increase the complexity of installing installation-wide WebLogic Server patches.

1. Make a backup copy of each script you plan to modify.

2. In the **Target Installation** panel within Smart Update, select a target installation.

3. Choose the **Patches** > **Start Script Editor** menu option. The Start Script Editor dialog box is displayed.

4. In the Start Script Editor dialog box:

a. Choose the custom patch profile to which the domain or server will point.

b. Open the start script you want to modify. For instructions, see Section 5.4.3, "Opening a Start Script"

c. Add the patch path variables that reference your new custom patch profile. Smart Update provides a code snippet containing suggested definitions for the PATCH_CLASSPATH, WEBLOGIC_EXTENSION_DIRS, PATCH_LIBPATH, and PATCH_PATH variables. These definitions reference patches that contain classes and files to be inserted into the system class and library path. However, depending on the content of the custom patch profile, and the specific patch path variables you need to reference, you might need to make different modifications.

d. Save the start script.

> **Note:** When adding a definition of a patch path variable to a start script, ensure that the definition appears before any statement that invokes another start script. For example, if you add a patch path variable definition to the setDomainEnv script, add it before the statement that invokes the commEnv script. This placement ensures that the definition you add is not overridden by a definition appearing in any of the start scripts that are subsequently invoked.

The default start script for the WebLogic Server product home directory is *WL_HOME*\common\bin\commEnv. It contains default values for the following variables used for inserting patch files into a classpath or library path:

- PATCH_CLASSPATH

- WEBLOGIC_EXTENSION_DIRS

- PATCH_LIBPATH

- PATCH_PATH

For details, see Section 5.2.1.2, "Default Patch Path Environment Variables."

If you add definitions for these variables to a server or domain start script, your new definitions override the default definitions, in the commEnv script, for the corresponding servers or domain. Therefore, whenever you define these variables in a server or domain script, ensure that your new definitions apply to the appropriate server instances.

Also, note the order in which start scripts are executed: after the definition of one of these variables has been set in a script, it is not overridden by any definition in a script that is subsequently executed. For more information, see Section 5.2.1.4.1, "Sequence in Which Start Scripts Are Executed."

6.4.1 Important Note if You Use Custom Scripts

If you use custom scripts in your environment that do not invoke the *WL_HOME*\common\bin\commEnv script, you must change the statements in your scripts that set the class and library paths for your environment so that the environment

variables you have defined are properly inserted into statements such as `Set WEBLOGIC_CLASSPATH` and `Set PATH`.

For example, to set the WebLogic system classpath so that patch JARs in a custom patch profile supersede same-named classes appearing later in the classpath, add the `PATCH_CLASSPATH` variable as follows, shown in **bold**:

```
set WEBLOGIC_CLASSPATH=%PATCH_CLASSPATH%;%JAVA_HOME%\lib\tools.jar;
%WL_HOME%\server\lib\weblogic_sp.jar;%WL_HOME%\server\lib\weblogic.jar;
%WL_HOME%\server\lib\webservices.jar
```

For more information about pointing custom scripts at patch profiles, see Section 5.5, "Pointing All Domains and Servers at Patches Through Custom Scripts."

6.5 Managing Custom Patch Profiles in a Node Manager Environment

If you use the Node Manager in your domain, and all the patches used in your domain are applied to the default patch profile, the servers started by the Node Manager run against those patches automatically. If, however, you use custom patch profiles in a domain that is configured to use the Node Manager, you must complete the additional procedure provided in this section.

> **Note:** Custom profiles have been deprecated as of Smart Update 3.3.0. Oracle recommends that you no longer use custom profiles. Custom profiles increase the complexity of installing installation-wide WebLogic Server patches.

To ensure that all the Managed Servers in a domain cluster point to patches in the custom patch profile at startup time, complete the following steps:

1. Ensure that each Node Manager instance is the Java-based version that runs within a Java Virtual Machine (JVM) process. To ensure that Node Manager is restarted automatically whenever the system is restarted, it is recommended that you run every Node Manager instance as follows:

   - On Windows platforms: as a Windows service

   - On UNIX platforms: as an operating service

   Use of the script-based version of the Node Manager is not supported for the procedures presented in this section.

2. If the custom patch profile that must be referenced by the Managed Servers at start time contains patch JAR files for the WebLogic system classpath, but it does not contain native library files that need to be inserted into the system path, you can set the classpath for the affected Managed Servers through the WebLogic Server Administration Console, as follows:

   a. Start the Administration Server.

   b. Access the WebLogic Server Administration Console by entering the following URL:

      ```
      http://hostname:port/console
      ```

      Here *hostname* represents the DNS name or IP address of the Administration Server, and *port* represents the number of the port on which the Administration Server is listening for requests (port 7001 by default).

   c. In the Change Center of the Administration Console, click **Lock & Edit**.

d. In the left pane of the Console, expand **Environment** and select **Servers**.

e. In the **Servers** table, click the name of each Managed Server you want to configure. For each Managed Server, complete steps (f) and (g).

f. Choose the **Configuration** > **Server Start** menu option.

g. Add the PATCH_CLASSPATH environment variable to the beginning of the **Classpath** field.

h. Click **Save**.

i. To activate these changes, in the Change Center of the Administration Console, click **Activate Changes**.

3. If the custom patch profile that must be referenced by the Managed Servers at start time contains native library files that need to be inserted into the system path, regardless of whether the custom patch profile also contains patch JAR files, you need to edit the Node Manager nodemanager.properties file on each system that hosts a Managed Server in the cluster. Open each such nodemanager.properties file and make the following changes:

a. Set the StartScriptEnabled property to true, as in the following example:

```
StartScriptEnabled=true
```

b. Ensure that the StartScriptName property is set to the WebLogic Server start script used for all server instances in the domain. The default start scripts are operating system-specific:

Windows:

```
startWebLogic.cmd
```

UNIX:

```
startWebLogic.sh
```

For information about modifying the nodemanager.properties file, see "Node Manager Configuration and Log Files" in *Node Manager Administrator's Guide for Oracle WebLogic Server*.

c. In a text editor, open the setDomainEnv script for the domain (setDomainEnv.cmd on Windows, setDomainEnv.sh on UNIX) and define one or more of the patch path environment variables described in Table 6–1.

For each file or directory identified in Table 6–1 that is included in the installation-level patch directory (*MW_HOME*\patch_wls*version*), add a definition to the setDomainEnv script for the corresponding patch path variable so that the variable points to that file or directory. In Table 6–1, *custom-profile* represents the name of the custom patch profile created in the installation-level patch directory.

For example, if your system hosts a JAR file called *MW_HOME*\patch_wls1000\profiles*custom-profile*\sys_manifest_classpath\weblogic_patch.jar, add a definition of the PATCH_CLASSPATH variable to the setDomainEnv script that points to that file.

Table 6–1   Patch Variables to Define in setDomainEnv for Node Manager Environments

Define the following variable	If the following is present in the custom profile directory
PATCH_CLASSPATH	**File**:
	`MW_HOME\patch_wls103\profiles\custom-profile\` `sys_manifest_classpath\weblogic_patch.jar`
	Purpose of variable:
	The `PATCH_CLASSPATH` variable points to classes in patch JAR files that are to be inserted into the WebLogic system classpath used by each Managed Server that is started by the Node Manager in your domain.
	Example:
	`PATCH_CLASSPATH= "%MW_HOME%\patch_wls103\profiles\` `myCustomProfile\sys_manifest_classpath \weblogic_patch.jar"`
	Note: The majority of patches issued by My Oracle Support are referenced by this patch manifest JAR file.
WEBLOGIC_ EXTENSION_DIRS	**File**:
	`MW_HOME\patch_wls103\profiles\custom-profile\` `sysext_manifest_classpath\weblogic_ext_patch.jar`
	Purpose of variable:
	The `WEBLOGIC_EXTENSION_DIRS` variable points to classes in patch JAR files that are to be inserted into the classpath of an application that is deployed on WebLogic Server and required by a product.
	Example:

	`WEBLOGIC_EXTENSION_DIRS="%MW_HOME%\`
	`patch_wls103\profiles\myCustomProfile\`
	`sysext_manifest_classpath\weblogic_patch.jar"`

	Note: Patch manifest JAR files that reference application-level classes are not supported by WebLogic Server 9.1.
PATCH_LIBPATH	**Directory (UNIX only)**:
	MW_HOME/patch_wls103/profiles/custom-profile/native
	Purpose of variable:
	The `PATCH_LIBPATH` variable points to native library files to be inserted into the system path through the `LIBPATH` environment variable.
	Example:
	`PATCH_LIBPATH="${MW_HOME}/patch_wls103/` `profiles/myCustomProfile/native"`
PATCH_PATH	**Directory (Windows only)**:
	MW_HOME\patch_wls103\profiles\custom-profile\native
	Purpose of variable:
	The `PATCH_PATH` variable points to native library files to be inserted into the system path through the `PATH` environment variable.
	Example:
	`set PATCH_PATH=%MW_HOME%\patch_wls103\` `profiles\myCustomProfile\native`

4. Restart the each Managed Server instance. Until you do so, your updates to the Node Manager configuration files and patch path variable definitions do not become effective

7

Uninstalling Patches

At times you may want to uninstall a patch or patches. You can use Smart Update to revert your system installation by removing patches that you have installed:

-
-
-

7.1 Important Note about Uninstalling Products

When you uninstall a product, any patches that may have been applied to that product are not removed. This consideration is important if patches for multiple products in a given Middleware home directory are applied to the same patch profile, and you uninstall one product but continue to use the others. When this situation occurs, products that you continue using run with patches for the product that has been uninstalled.

7.2 Removing a Patch

Smart Update makes it easy to remove a patch that has been applied to a patch profile.

> **Note:** Installation-scoped shared archive patches cannot be removed from a custom profile: they can only be removed in the default profile. In this case, similar to the installation, the patch is removed from the default profile and all custom profiles to which it was initially applied.

7.2.1 Removing a patch or patch set

To remove a patch or patch set, complete the following steps:

1. Start Smart Update.
2. In the **Target Installation** pane, select the product installation hosting the patch you want to remove.
3. Select the **Manage Patches** tab.
4. Select the patch profile containing the patch or patch set you want to remove.
5. Click the **Remove** button with the down arrow, located to the right of the patch or patch set that you want to remove.
6. In the Remove Patch from Profile dialog box, click **OK**.

A validation dialog box is displayed. If you are removing one patch on which another depends, a removal conflict is reported, which you must resolve before proceeding. For information about resolving patch removal conflicts, see Section 4.4.2, "Validation When Removing Patches." The patch removal progress is tracked in the status window. A message is displayed when the removal is complete.

7. Shut down any running WebLogic Server instances, and restart them for the patch removal to take effect.

> **Note:** If you remove a patch that belongs to a patch set, the entry for the patch set is removed from the listing of the patch profile contents from the **Downloaded Patches** panel. However, other member patches of the set that have not been removed continue to be listed in those locations.

7.3 Uninstalling a Service Pack, Maintenance Pack, or Upgrade

You can use Smart Update only to remove individual patches. You cannot use Smart Update to remove a service pack, maintenance pack, or version upgrade that was installed using an Upgrade installer. To remove such upgrades, use the WebLogic Server uninstall program. See "Uninstalling the Software" in the *Installation Guide for Oracle WebLogic Server*.

8

Using the Command-Line Interface

This section describes the Smart Update `bsu` command, which you can use to apply patches, interactively or through a script, that have been downloaded into a patch download directory. When you use `bsu` commands in a script, you can create a mechanism for replicating a specific maintenance level of a product that is installed on multiple systems. This capability is especially valuable in production environments, in which the distribution of software updates to systems must be implemented in a controlled, reliable, and reproducible manner.

The following topics are included:

- Section 8.1, "About the bsu Command"
- Section 8.2, "bsu Command Reference"
- Section 8.3, "Command-Line Interface Examples"

8.1 About the bsu Command

When using the `bsu` command, either interactively or through a script, note that this command:

- Runs the `bsu` script (`bsu.cmd` on Windows systems, `bsu.sh` on UNIX systems) that is located in the *MW_HOME*\utils\bsu directory. When running the `bsu` command, first change to this directory on the system from which you are running it.

- Can be executed from a command file (on Windows) or shell script (on UNIX).

- Contains the subset of Smart Update functionality that enables you to:

  - Apply and remove patches that are located in an accessible patch download directory

  - View patches that are in the download directory, applied to a product installation on the current system, or applied to a specific patch profile for the current system

  - Generate reports listing the patches applied to a product installation

  The `bsu` command can also invoke the Smart Update graphical interface and send messages to a log file.

- Can apply patches to, or view patches on, only those products installed from the system on which this command is run, as follows:

  - If the current system contains a product that was installed by a different system, you cannot apply patches to that installation or view them.

- If the current system was used to install a product located on a remote-mounted disk drive, you can use the `bsu` command with that installation.

  Therefore, the restrictions regarding the specific product installations that can be maintained through the `bsu` command is the same as for Smart Update's graphical interface.

- Cannot be used for the following:

  - Creating custom patch profiles

  - Locating start scripts to modify

  These capabilities are available only from Smart Update's graphical interface.

  > **Note:** If you run the Smart Update command-line interface simultaneously with the graphical interface, changes you make to patch profiles through the command-line interface are not visible from the graphical interface when you refresh the view of those patch profiles.

8.2 bsu Command Reference

This section describes the `bsu` command syntax. Square brackets appearing with a parameter argument indicate that the argument is optional.

The `bsu` command has the parameters and arguments listed and described in Table 8–1.

> **Note:** In Table 8–1, the square brackets, `[..]`, represent arguments that are optional. For example, `[-profile=profile_name]` is an optional argument for the `-install` parameter

Table 8–1   bsu Command Parameters and Arguments

Parameter	Description	Arguments
`-help`	Displays a summary of `bsu` parameters and arguments	None.

Table 8–1   (Cont.) bsu Command Parameters and Arguments

Parameter	Description	Arguments
-install	Applies specified patches to the target installation. You must specify a valid profile name.	[-patchlist=*patch1*[,*patch2*,*patch3*]
		Specifies the identifier of each patch to be applied, represented as `patch1`, `patch2`, and `patch3`.
		[-profile=*profile_name*]
		Specifies the patch profile to which the patches are to be applied, represented as *profile_name*.
		See the note at the end of the table.
		[-patch_download_dir=*path*]
		Specifies the patch download directory from which the patches are to be applied, represented as *path*. If you do not specify a patch download directory, the patch download directory designated in the Preference dialog box in the Smart Update graphical interface is used by default. (If none is designated in the Preference dialog box, `MW_HOME\utils\bsu\cache_dir` is used.)
		[-verbose]
		Displays the full set of details associated with each patch applied.
		[-prod_dir=path]
		Specifies the target installation to which the patches are to be applied, represented as *path*. For example, `MW_HOME\wlserver_10.3` for WebLogic Server and Portal.
-gui	Starts the Smart Update graphical interface.	None.
-log	Creates a file, in the specified location, in which the corresponding `bsu` command logging information is to be sent. **Note:** The -log parameter logs only `bsu` command activity, and not activity related to patches or profiles.	=*path*
		Specifies the file name and location of the log file to be created, represented as `path`.
		[-log_priority= {trace|debug|info|warn|error|fatal}]
		Specifies the priority of log information to be captured. The default priority is `debug`.
-remove	Removes specified patches from the profile.	[-patchlist=*patch1*[,*patch2*,*patch3*]
		Specifies the identifier of each patch to be applied, represented as *patch1*[,*patch2*, and *patch3*.
		[-profile=*profile_name*]
		Specifies the patch profile from which the patches are to be removed, represented as *profile_name*. See the note at the end of the table.
		[-prod_dir=*path*]
		Specifies the target installation from which the patches are to be removed, represented as *path*.
		[-verbose]
		Displays the full set of details associated with each patch applied.

Table 8–1 (Cont.) bsu Command Parameters and Arguments

Parameter	Description	Arguments
-report	Generates a report showing the applied patches and associated file changes in a Middleware home directory.	-BEA_HOME=*path*
		Specifies the target installation where the patches are applied, represented as *path*. If no path is specified, this option generates report for all product installations. Specify the appropriate Middleware home directory.
		[-product_mask=*regexp*]
		Limits the report to the matching product(s), represented by the regular expression *regexp*.
		Note: The regular expression is used to delimit multiple arguments. For example, -product_mask=WebLogic.* filters all products starting with WebLogic.
		[-release_mask=*regexp*]
		Limits the report to the matching product release(s), represented by the regular expression *regexp*.
		[-profile_mask=*regexp*]
		Limits the report to the matching patch profile(s), represented by the regular expression *regexp*.
		[-patch_id_mask=*regexp*]
		Limits the report to the matching patch(es), represented by the regular expression *regexp*.
		[-output_format=text|xml]
		Specifies the format of the report. Options available are text and xml. Default: text.
		[-output_file=*path*]
		Specifies the directory where the report is saved, represented as *path*. If no path is specified for the report output, stdout is used.
-version	Displays version information. For example: Oracle Smart Update. Version: 3.3.3.0	None.

Table 8–1   (Cont.) bsu Command Parameters and Arguments

Parameter	Description	Arguments
-view	Displays the identifiers of patches that are either applied or in the patch download directory	[-profile=*profile_name*]
		Displays identifiers of patches applied to the profile represented as *profile_name*. If you do not specify this argument, the default patch profile is used by default.
		See the note at the end of the table.
		[-patch_download_dir=*path*]
		Displays the identifiers of patches that have been downloaded into the patch download directory represented as *path*. If you do not specify a patch download directory, the patch download directory designated in the Preference dialog box is used by default. (If none is designated in the Preference dialog box, *MW_HOME*\utils\bsu\cache_dir is used.)
		[-status={applied|downloaded}
		Displays the current status of the patches viewed. If you specify applied for this argument, bsu displays identifiers of patches that have been applied to the target installation. Use this argument, with -profile, to create a maintenance snapshot for the specific profile. If you specify downloaded, bsu displays identifiers of patches in the download directory but not yet applied
		.[-verbose]
		Displays the full set of details associated with each patch displayed.
		-prod_dir=*path*
		Displays the identifiers of patches applied to the target installation in the location represented as *path*.

> **Note:**   If profile is not specified, the Default profile is used.
>
> If the profile argument is used and an invalid profile is specified, it is not set to default; it displays the error:
>
> ```
> $ bsu -view -status=applied -prod_dir=C:/10_WLP/wlserver_
> version-profile=profile3
> The specified profile could not be found.[profile_name]
> ```

8.3 Command-Line Interface Examples

This section includes the following bsu command examples:

- Section 8.3.1, "Installation Example"
- Section 8.3.2, "View Patches Example"
- Section 8.3.3, "Another View Patches Example"
- Section 8.3.4, "Display Maintenance Snapshot"
- Section 8.3.5, "Report of Applied Patches"

8.3.1 Installation Example

The following command installs the patch IRZ2 from the patch download directory that has been established for the current system:

```
bsu -prod_dir=c:\Oracle\Middleware\wlserver_10.3 -patchlist=IRZ2 -verbose -install
```

When executed, the preceding command displays the following output showing that the patch was successfully applied:

```
Checking for conflicts.
No conflict(s) detected

Starting installation of Patch ID: IRZ2
Installing C:\Oracle\Middleware\download-dir\IRZ2.jar
Result: Success
```

8.3.2 View Patches Example

The following command displays a list of patches that exist in the patch download directory, c:\patchdir:

```
bsu -view -status=downloaded -prod_dir=C:\Oracle\Middleware\wlserver_10.3
 -patch_download_dir=C:\patchdir
```

When executed, the preceding command generates a display similar to the following:

```
C:\Oracle\Middleware\utils\bsu>bsu -view -status=downloaded
 -prod_dir=C:\Oracle\Middleware\wlserver_10.3 -patch_download_dir=C:\patchdir
ProductName:    WebLogic Platform
ProductVersion: 10.3
Components:     WebLogic Platform/WebLogic Server,WebLogic Platform/Workshop
for WebLogic Platform,WebLogic Platform/WebLogic Portal
BEA_HOME:        C:\Oracle\Middleware
ProductHome:    C:\Oracle\Middleware\wlserver_10.3
PatchSystemDir: C:\Oracle\Middleware\utils\bsu
PatchDir:    C:\Oracle\Middleware\patch_wls_1032
Profile:        Default
DownloadDir:    C:\patchdir
JavaHome:       C:\Oracle\Middleware\jrockit160_14_R27.6.5-32
JavaVersion:    160_14_R27.6.5-32
JavaVendor:     ORACLE
Patch ID:       9A5T (10131320)
Patch ID:       585H (10201173)
Patch ID:       8LU6 (10106400)
Patch ID:       AFJ5 (10111681)
Patch ID:       Q8K5 (10085296)
```

8.3.3 Another View Patches Example

The following command displays the set of patches for a target installation that have been downloaded to the system's designated patch download directory:

```
bsu -view -prod_dir=C:\Oracle\Middleware\wlserver_10.3 -status=downloaded -verbose
```

When executed, the preceding command generates a display similar to the following:

```
ProductName:       WebLogic Platform
ProductVersion:    10.3
Components:        WebLogic Server/Server,WebLogic Server/Server Examples,
AquaLogic Service Bus/Service Bus
BEA_HOME:           C:\Oracle\Middleware
```

```
ProductHome:       C:\Oracle\Middleware\wlserver_10.3
DownloadDir:       C:\Oracle\Middleware\download-dir
JavaHome:          C:\Oracle\Middleware\jrockit160_14_R27.6.5-32
JavaVersion:       160_14_R27.6.5-32
JavaVendor:        ORACLE
Patch ID:          FZN2
PatchContainer:    FZN2.jar
Checksum:          -174938558
Component:         WebLogic Server
Severity:          critical
Category:          Security
CR:                CRxxyyzz
Restart:           false
Description:       ATN fix for xxxx
Patch ID:          GWQR
PatchContainer:    GWQR.jar
Checksum:          1170817068
Component:         AquaLogic Service Bus
Severity:          optional
Category:          Multiple
CR:                CRxxyyzz
Restart:           true
Description:       One more ALSB patch
```

8.3.4 Display Maintenance Snapshot

The following command displays a maintenance snapshot of the default patch profile:

```
bsu -view -status=applied -prod_dir=c:\BEA\wlserver_10.0
```

When executed, the preceding command generates a display similar to the following:

```
C:\Oracle\Middleware\utils\bsu>bsu -view -status=applied
 -prod_dir=C:\Oracle\Middleware\wlserver_10.0
ProductName:       WebLogic Server
ProductVersion:    10.0
Components:        WebLogic Server/Server,WebLogic Server/Server Examples,
WebLogic Server/Server
BEA_HOME:   C:\Oracle\Middleware
ProductHome:       C:\Oracle\Middleware\wlserver_10.0
PatchSystemDir:    C:\Oracle\Middleware\utils\bsu
PatchDir:          C:\Oracle\Middleware\patch_wls1000
Profile:           Default
DownloadDir:       C:\Oracle\Middleware\utils\bsu\cache_dir
JavaHome:          c:\Oracle\Middleware\jdk150_06
JavaVersion:       1.5.0_06
JavaVendor:        Sun
Patch ID:          PBLW (CR838734)

ProductName:       WebLogic Portal
ProductVersion:    10.0
Components:        WebLogic Portal/Portal Server,WebLogic Portal/WebLogic Works
                   WebLogic Portal/Portal Examples
BEA_HOME:   C:\Oracle\Middleware
ProductHome:       C:\Oracle\Middleware\wlserver_10.0
PatchSystemDir:    C:\Oracle\Middleware\utils\bsu
PatchDir:          C:\Oracle\Middleware\patch_wlp1000
Profile:           Default
DownloadDir:       C:\Oracle\Middleware\utils\bsu\cache_dir
Patch ID:          FJTH (CR861234)
```

```
C:\Oracle\Middleware\utils\bsu>
C:\Oracle\Middleware\utils\bsu>bsu -view -status=applied -prod_dir=C:\10_WLP_0
320\workshop_10.0
ProductName:      Workshop for WebLogic
ProductVersion:   10.0
Components:       Workshop for WebLogic Platform/Workshop,Workshop for WebLogic
Platform/Workshop Examples
BEA_HOME:         C:\Oracle\Middleware
ProductHome:      C:\Oracle\Middleware\workshop_10.0
PatchSystemDir:   C:\Oracle\Middleware\utils\bsu
PatchDir:         C:\Oracle\Middleware\patch_wlw1000
Profile:          Default
DownloadDir:      C:\Oracle\Middleware\utils\bsu\cache_dir
Patch ID:         8K9T (CR873456)
```

8.3.5 Report of Applied Patches

The following command generates a report of patches applied to an *MW_HOME*, where the first character of the patch IDs is "6":

```
bsu -report -patch_id_mask=6.*
```

When executed, the preceding command generates a display similar to the following:

```
Patch Report
============
Report Info
Report Option
BEA_HOME ### OPTION NOT SET
product_mask.. ### OPTION NOT SET
release_mask.. ### OPTION NOT SET
profile_mask.. ### OPTION NOT SET
patch_id_mask. 6.*
Report Messages
BEA_HOME D:\Platform92\BEA_HOME
Product Description
Product Name.. WebLogic Platform
Product Version.. 9.2.0.0
Installed Components WebLogic Server, Workshop for WebLogic Platform,
 WebLogic Integration, WebLogic Portal
Product Install Directory. D:\Platform92\BEA_HOME\weblogic92
Java Home.. D:\Platform92\BEA_HOME\jrockit90_150_04
Jave Vendor BEA
Java Version.. 1.5.0_04
Patch Directory.. D:\Platform92\BEA_HOME\patch_weblogic920

Profile. Default

Patch ID 6L1H
CR(s) CR285988
Description Fix P13N processing of Platform Domain Upgrade.
  Intended for use with WLI 9.2
Classpath
Classpath type SYSTEM
Classpath control jar.. weblogic_patch.jar
Jar.. CR285988_920.jar
File.com/BEA/p13n/upgrade/LibraryModuleConfigProcessor.class
File. com/BEA/p13n/upgrade/P13nDatabasePlugIn.class
File. resources/p13n-upgrade.xml
File. resources/P13nCommonPlugIn-definition.xml
File. resources/portal-upgrade.xml
```

```
File. META-INF/MANIFEST.MF

Patch ID 6MK8
CR(s) CR262488
Description Allow WLI Domains to be upgraded by Domain Upgrade Wizard
Classpath
Classpath type SYSTEM
Classpath control jar.. weblogic_patch.jar
Jar.. CR262488_920.jar
File.weblogic/upgrade/domain/directoryselection/DomainDirectorySelectionPlugIn.cla
ss
File.weblogic/upgrade/domain/directoryselection/i18n_
DomainDirectorySelectionPlugIn.properties
File. META-INF/MANIFEST.MF
```

9

Best Practices for Distributing Patches

This section provides the following topics:

- Section 9.1, "Distributing Patches to a Production Environment"
- Section 9.2, "Providing Patches to Systems that Cannot Connect to My Oracle Support"

9.1 Distributing Patches to a Production Environment

This section discusses the following models for distributing patches to a production environment:

- Section 9.1.1, "Using Smart Update Scripts to Promote a Standard Maintenance Level to a Production Environment"
- Section 9.1.2, "Creating and Distributing an Archive of the Product Installation"

These models assume the following about the software maintenance that is provided for systems in the production environment:

- Patches obtained from a vendor are tightly controlled and managed. For example, they might be kept in a secure repository that few individuals are authorized to access. Copying or downloading patches into the repository might be subject to rigorous approval, scheduling, auditing, and logging procedures.

- Patches are promoted to production systems in specific stages during which they are thoroughly tested. For example, a patch might first be installed on a single system, separated from the production environment, in which production applications are tested to ensure that the patch works as expected and does not introduce regressions. Before being rolled out into the production environment, the patches may be tested in an intermediate staging area, where it is subject to loads that mimic expected usage in the production environment.

- When a patch is introduced into the production environment itself, all systems on which the patch is installed must run the updated product software at precisely the same maintenance level. For example, the domain configuration, product version, and patch level of WebLogic Server 9.1 used in all systems is identical.

- Systems in the production environment may not obtain patches from the Internet. In fact, the systems may not be connected to the Internet at all, and possibly not to the same Local Area Network shared by systems that have an Internet connection. Instead, patches are made available only from a specific location, or set of locations, in the enterprise, and downloading of patches to the production systems are regulated by several business practices and procedures.

■ The WebLogic Server instances used in the production environment are started by highly customized scripts.

9.1.1 Using Smart Update Scripts to Promote a Standard Maintenance Level to a Production Environment

This section describes an example scenario of how the features in Smart Update can be leveraged to distribute patches to production systems that are subject to some or all of the conditions described in the preceding paragraphs.

1. My Oracle Support has provided a patch to solve a problem that Avitek has reported with its enterprise applications that run on WebLogic Server 9.1.

2. Bob Jones, in the Avitek IT department, downloads the patch into the patch download directory for his system, which is set to a network disk used by IT to store maintenance updates provided by all of Avitek's software vendors.

3. Rachel Burns works in Avitek's QA department, and her job is to test the patch on her system, which also has a WebLogic Server installation identical to the one used in the production environment. The domain configuration on Rachel's system is similar to the WebLogic domains running in Avitek's production environment. Rachel created the WebLogic Server start scripts used in the production environment, which also run on her system.

   Rachel runs Smart Update in offline mode. She makes sure that the patch download directory is set to the directory used by Bob, and then she applies the patch to her WebLogic Server installation.

4. Rachel realizes that because the production systems use customized WebLogic Server start scripts, the scripts must be modified so that the classes contained in the patch are loaded into the WebLogic system classpath on her system.

   Rachel adds a definition of the PATCH_CLASSPATH variable to the start script so that it points to the default patch profile, then she adds this variable to the beginning of the SET WEBLOGIC_CLASSPATH statement.

5. Rachel successfully tests the patch, and is ready to replicate the patch throughout the 20 product installations that run in Avitek's production environment. Because each production system is nearly identical, Rachel knows that she can create a script that works on every system to apply the patch.

   She creates the script. Its function is very simple: it applies the patch to the default patch profile for the target installation, and it copies an updated start script into the proper location of each system.

6. Rachel uploads the patch to a patch download directory kept on a secure disk that is used by the production systems in Avitek's DMZ. She also uploads the Smart Update script and new WebLogic Server start script onto the secure disk.

7. Dagmar Kohl administers the systems in Avitek's production environment. She downloads the Smart Update script onto each production system and runs it.

8. Because of the patch contents, Dagmar knows that each server must be restarted for the patch to take effect. When the servers are restarted, the maintenance procedure is complete.

9.1.2 Creating and Distributing an Archive of the Product Installation

As an alternative to the scenario described in Section 9.1.1, "Using Smart Update Scripts to Promote a Standard Maintenance Level to a Production Environment," you

can create an archive of a fully patched product image, and replicate that image throughout all the systems in a production environment. If you take this approach, note the following caveats:

- This approach is not recommended. Oracle always recommends the use of product installers for creating a product installation on a system, and of Smart Update to distribute patches.

- If a product installation includes maintenance patches that have been applied using Smart Update, you must include the following directories in the archive image, which exist at the top level of the Middleware home directory:

  - `patch_version`, and all subdirectories

  - `utils`, and all subdirectories

9.2 Providing Patches to Systems that Cannot Connect to My Oracle Support

As mentioned in Section 1.7.2, "Maintaining Machines That Do Not Have Access to My Oracle Support," Smart Update's offline usage mode enables you to install maintenance updates on systems from which it is not possible to connect to My Oracle Support. This section describes the following methods you can use for providing patches to these systems:

- Section 9.2.1, "Patching an Offline System Through a Shared Patch Download Directory"

- Section 9.2.2, "Patching an Offline System Through Removable Media"

- Section 9.2.3, "Additional Means for Patching an Offline System"

For the purposes of describing these techniques in these sections, a system that cannot connect to My Oracle Support is called an offline system.

9.2.1 Patching an Offline System Through a Shared Patch Download Directory

The following topics explain how to patch an offline system through a shared patch download directory:

- Section 9.2.1.1, "Requirements"

- Section 9.2.1.2, "Steps"

9.2.1.1 Requirements

Installing patches on an offline system through a shared patch download directory has the following two primary requirements:

- A system that can establish a connection to My Oracle Support and that has the following:

  - A local installation of a product that matches the product and version of the product installed on the offline system

  - A My Oracle Support user account

- A networked disk that can be accessed by both the system that can connect to My Oracle Support and the offline system

9.2.1.2 Steps

To patch a disconnected system remotely from the system with Internet access, complete the following steps using the system that has Internet access:

1. From the system that can connect to My Oracle Support, log in to My Oracle Support and download the desired patch or patches to the directory from which you will apply the patches. See Chapter 2, "Downloading Patches."

2. Start Smart Update and complete the following steps:

   a. Choose **File > Preferences**, and specify the location to which you downloaded the patches in step 1.

   b. If you downloaded a publicly available patch, choose the product installation in the **Target Installation** panel that matches the product and version of the software installed on the offline system.

3. From the offline system:

   a. Start Smart Update.

   b. Choose **File** > **Preferences**, and set the patch download directory to the location into which the patches were downloaded by the system that connected to My Oracle Support.

   c. In the **Target Installation** panel, choose the target installation to which you want to apply the patches.

   d. On the **Manage Patches** tab, ensure that the appropriate patch profile is selected.

   e. In the **Downloaded Patches** panel, click **Apply** next to the patches you want to apply.

   f. Complete the procedure for applying patches, as described in Section 4.3, "Applying and Managing Patches."

9.2.2 Patching an Offline System Through Removable Media

The following topics explain how to patch an offline system through removable media:

- Section 9.2.2.1, "Requirements"
- Section 9.2.2.2, "Steps"

9.2.2.1 Requirements

Installing patches on an offline system using removable media has the following two primary requirements:

- A system that can establish a connection to My Oracle Support and that has the following:

  – A local installation of a product that matches the product and version of the product installed on the offline system

  – A My Oracle Support user account

- The ability to place patches onto a type of removable media that can be used by both the system connected to Oracle Support and the offline system. For example: a writable CD-ROM or DVD.

9.2.2.2 Steps

To apply patches to an offline system using removable media, complete the following steps.

1. From the system that can connect to My Oracle Support, log in to My Oracle Support and download the desired patch or patches to the directory from which you will copy the patches to removable media. See Chapter 2, "Downloading Patches."

2. Start Smart Update and complete the following steps:

   a. Choose **File > Preferences**, and specify the location to which you downloaded the patches in step 1.

   b. If you downloaded a publicly available patch, choose the product installation in the **Target Installation** panel that matches the product and version of the Oracle software installed on the offline system.

   c. Copy the downloaded patches onto the removable media.

3. From the offline system:

   a. Mount the removable media onto the offline system.

   b. Start Smart Update

   c. Choose **File** > **Preferences** and set the patch download directory as the directory for the removable media that contains the patches.

   d. In the **Target Installation** panel, select the target installation to be patched.

   e. On the **Manage Patches** tab, select the appropriate patch profile.

   f. From the **Downloaded Patches** panel, click **Apply** next to each patch that you want to apply.

   g. Complete the procedure for applying patches, as described in Section 4.3, "Applying and Managing Patches."

9.2.3 Additional Means for Patching an Offline System

My Oracle Support may provide you with alternative means, as appropriate, for providing you with patches if you are unable to make an online connection to My Oracle Support.

10

Known Limitations in Smart Update

This section lists the limitations that have been identified in Oracle Smart Update. Wherever possible, workarounds are provided.

10.1 General Issues and Workarounds

This section describes the following general issues and workarounds associated with Oracle Smart Update.

- Section 10.1.1, "Smart Update 3.1 Exits with an Error if Version Strings of Products that are Not Supported by Smart Update are Present in the Registry"
- Section 10.1.2, "Smart Update Does Not Run on Apple Macintosh Machine"
- Section 10.1.3, "Exceptions are Thrown When You Use Smart Update with Node Manager Running"
- Section 10.1.4, "Patch Application Does Not Enforce Product Check in Command-line Mode"
- Section 10.1.5, "Invalidated Patches List Other Invalidated Patches as Their Replacement"
- Section 10.1.6, "The Patch Profile Maintenance Snapshot Is Poorly Formatted When Viewed in Notepad"
- Section 10.1.7, "Smart Update Graphical User Interface Displays an Exception in Rare Cases"
- Section 10.1.8, "Uninstall Component Does Not Remove Component Patches Automatically"
- Section 10.1.9, "GUI Cannot Refresh Patches Installed from Command Line Without Restart"
- Section 10.1.10, "Issues with Domains Created After Rollback from WebLogic Server 10.3.2 to 10.3.1"

10.1.1 Smart Update 3.1 Exits with an Error if Version Strings of Products that are Not Supported by Smart Update are Present in the Registry

Smart Update 3.1 exits with an error if version strings of products that are not supported by Smart Update (such as Oracle Tuxedo) exist in the registry, and if the unsupported products and WebLogic Server are in the same Middleware home.

This error occurs, for example, when you run Smart Update on a machine that has PeopleSoft, which is dependent on Oracle Tuxedo – an product that Smart Update does not support.

To work around this issue, upgrade to Smart Update 3.2.1, which ignores version strings of unsupported products.

You can upgrade to Smart Update 3.2.1 by performing the following steps:

1. Rename the `beahomelist` file to `beahomelist_`.

   For Windows, the `beahomelist` file is located under the `${SystemDrive}\bea` folder.

   For Linux and UNIX, the `beahomelist` file is located under the `${HOME}\bea` folder.

2. Invoke Smart Update.

   Smart Update downloads the new version of the tool and upgrades itself automatically.

3. Close Smart Update.

4. Rename the `beahomelist_` file back to `beahomelist`.

10.1.2 Smart Update Does Not Run on Apple Macintosh Machine

You cannot run Smart Update on a Macintosh machine because enough heap memory is not allocated by default.

To work around this issue, increase the Java heap memory by modifying the bsu.sh script in the *MW_HOME*/utils/bsu folder.

The following code illustrates the line in the script you must edit to increase the heap memory. The edited value is in bold text.

```
"$JAVA_HOME/bin/java" -Xms64m -Xmx256m -jar patch-client.jar $*
```

10.1.3 Exceptions are Thrown When You Use Smart Update with Node Manager Running

This issue applies only to MS Windows platforms.

Exception `com.bea.plateng.patch.PatchInstallationException` is thrown when you apply or remove patch using Smart Update or during an incremental installation to a Middleware home with Node Manager running.

When Node Manager is running, the process locks the file `weblogic_patch.jar`. As a result, the patch cannot be installed or removed successfully because it fails to update `weblogic_patch.jar`.

To work around this issue, shut down Node Manager when you perform incremental installation or invoke Smart Update from the same Middleware home.

10.1.4 Patch Application Does Not Enforce Product Check in Command-line Mode

If you have installed WebLogic Integration in command-line mode, and opted to apply patches automatically (by selecting option 1) after successful completion of the installation, the installer automatically applies patches to WebLogic Server, Workshop for WebLogic, and WebLogic Portal. The installer does not check whether WebLogic Portal is installed or not; the patches to WebLogic Portal are applied even when WebLogic Portal is not installed.

If WebLogic Portal is installed at a later point, the installer overwrites the patches but Smart Update shows the patches as applied.

To work around this issue, uninstall the patches, then install WebLogic Portal, and then apply the WebLogic Portal patches using Smart Update.

10.1.5 Invalidated Patches List Other Invalidated Patches as Their Replacement

When you display details about an invalidated patch, the ID of the replacement patch may be provided. But if the replacement patch is subsequently invalidated by My Oracle Support, this ID is not updated and refers to an invalidated patch.

Contact My Oracle Support for a workaround for this issue.

10.1.6 The Patch Profile Maintenance Snapshot Is Poorly Formatted When Viewed in Notepad

The patch profile maintenance snapshot file produced by Smart Update cannot be easily viewed in common text editors, such as Notepad. The snapshot file does not contain conventional line breaks, which results in poorly formatted columns that cannot be easily read.

To work around this issue, use a text editor such as WordPad or TextPad to view this file. You do not need to reformat this file when sending it to My Oracle Support.

10.1.7 Smart Update Graphical User Interface Displays an Exception in Rare Cases

In rare cases, when using the Smart Update graphical interface, the following exception may be displayed:

```
java.util.ConcurrentModificationException
at
java.util.TreeMap$PrivateEntryIterator.nextEntry(TreeMap.java:1031)
at java.util.TreeMap$KeyIterator.next(TreeMap.java:1058)
at
com.bea.plateng.patch.gui.PatchStoreTableModel.getRowCount(PatchStoreTableModel.ja
va:199)
```

This exception can be ignored.

10.1.8 Uninstall Component Does Not Remove Component Patches Automatically

If you uninstall any component, the patches associated with that component are not removed automatically. The patched artifacts may have been removed as part of the uninstallation, but the patch is still shown as applied.

To work around this issue, use Smart Update to remove the patches associated with the component before uninstallation.

10.1.9 GUI Cannot Refresh Patches Installed from Command Line Without Restart

If you use the Smart Update graphical and command-line interfaces simultaneously, patches that you apply through the command-line interface are not visible from the GUI when you refresh the view.

To work around this issue, exit and restart the Smart Update GUI to view the new patch.

10.1.10 Issues with Domains Created After Rollback from WebLogic Server 10.3.2 to 10.3.1

After performing an upgrade from WebLogic Server 10.3.1 to WebLogic Server 10.3.2 using an upgrade installer, if you roll back to the 10.3.1 release (using the WebLogic Server uninstaller **Rollback** option), the following issues occur:

- WebLogic Server starts, but validation errors occur

- the Administration Console cannot be accessed (a 500 Error is displayed in the browser)

Note that these issues do not occur when upgrading from 10.3.0 to 10.3.2, and rolling back to 10.3.0.

Workaround

The only known workaround is to restore the original WebLogic Server 10.3.1 installation, if it is backed up.

11

Frequently Asked Questions

This FAQ includes the following questions:

- Section 11.1, "How do I get a Support ID?"
- Section 11.2, "What is a Bug or CR?"
- Section 11.3, "How can I get a fix to a bug? Can I get a patch for a bug?"
- Section 11.4, "How do I obtain security advisory notifications?"
- Section 11.5, "What is a private patch?"
- Section 11.6, "How do I download just a maintenance pack?"
- Section 11.7, "What products can I patch using the Smart Update tool?"
- Section 11.8, "Do I need a support contract to download patches from My Oracle Support?"

11.1 How do I get a Support ID?

To obtain a My Oracle Support account, go to the Oracle Support site, `http://www.oracle.com/support/index.html`, and click **My Oracle Support Login**.

On the My Oracle Support page, follow the instructions to register as a new user.

11.2 What is a Bug or CR?

A bug is a defect in the existing code or functionality not performing as documented. CR is the BEA-equivalent term for bug.

11.3 How can I get a fix to a bug? Can I get a patch for a bug?

Log in to My Oracle Support and download the patch for the bug. Use the Smart Update tool to view and apply available patches. If a patch is not available from My Oracle Support to fix your problem, open a case with My Oracle Support.

11.4 How do I obtain security advisory notifications?

Go to the Critical Patch Updates and Security Alerts page, `http://www.oracle.com/technology/deploy/security/alerts.htm` to see an updated list of advisories and the recommended remedies or patches. You may also register at

http://www.oracle.com/technology/deploy/security/securityemail.html to receive notification of security advisories.

11.5 What is a private patch?

A private patch is one that My Oracle Support makes available to you as part of a custom maintenance solution, and is not generally available from the My Oracle Support Repository to all customers.

11.6 How do I download just a maintenance pack?

Maintenance packs are available individually for download to users with a valid maintenance contract. To obtain a maintenance pack or service pack, log in to the My Oracle Support Web site, http://www.oracle.com/support/index.html, and choose **Patches & Updates** from the menu bar. Select the Oracle product and the version and maintenance pack you want. See "Downloading an Upgrade Installer From My Oracle Support" in *Installation Guide for Oracle WebLogic Server* for detailed instructions.

11.7 What products can I patch using the Smart Update tool?

See Section 1.2, "Products Supported by Smart Update Version 3.3.0."

11.8 Do I need a support contract to download patches from My Oracle Support?

You need a support contract to obtain a My Oracle Support account. You can download patches only if you have a My Oracle Support account.

A

Smart Update Quick Reference

This section guides you through the steps to complete three basic tasks and describes the icons and labels used in the graphical interface:

- Section A.1, "How to Generate a Maintenance Snapshot"
- Section A.2, "How to Create a Custom Patch Profile"
- Section A.3, "Smart Update GUI Glossary"

A.1 How to Generate a Maintenance Snapshot

Smart Update provides a mechanism for capturing information about your Oracle product installation that you can send to My Oracle Support when reporting a problem. This information is called a **maintenance snapshot**. This section guides you through the steps of creating a maintenance snapshot.

To generate a maintenance snapshot, complete the following steps.

1. Launch Smart Update:

   Windows:

   From the Start menu, choose **Start** > **Programs** > **Oracle WebLogic** > **Smart Update**.

   UNIX:

   a. Change to the *MW_HOME*/utils/bsu directory.

   b. Enter the bsu.sh command.

   Note: You do not need to log in to My Oracle Support to generate a maintenance snapshot.

   ---

2. In the Smart Update main window, in the panel labeled **Target Installation**, select the Oracle product installation with which you are reporting a problem.

3. Select a patch profile in the **Manage Patches** tab.

4. Choose **Patches** > **Patch Profiles** > **Save Snapshot**.

5. In the Save Snapshot dialog box, enter a file name for the maintenance snapshot, and click **OK**.

   The maintenance snapshot is a simple ASCII text file.

6. Send the maintenance snapshot file to My Oracle Support. Use of e-mail is preferred. But you can print the file and send it through postal mail, if appropriate.

A.2 How to Create a Custom Patch Profile

If you want to limit the scope of a class or library path patch to a specific domain or server, you need to perform the following steps.

> **Note:** Custom profiles have been deprecated as of Smart Update 3.3.0. Oracle recommends that you no longer use custom profiles. Custom profiles increase the complexity of installing installation-wide WebLogic Server patches.

1. Create a custom patch profile, and apply the patch to it.

2. Modify the start script for the corresponding domain or server to add a reference to the custom patch profile.

This section provides a quick-reference aid that shows how to complete these steps, and uses the example of a test engineer who has downloaded a patch and plans to test the patch in a QA domain before incorporating the patch into a production domain.

To create a custom patch profile and point a domain or server at the patches applied to the profile, complete the following steps:

1. Download the patch from My Oracle Support into the patch download directory.

2. Start Smart Update, log in to My Oracle Support, and select the Oracle product in the **Target Installation** panel.

3. Create a custom patch profile to which the patch is to be applied, using the following steps:

   a. Choose **Patches** > **Patch Profiles** > **New**.

   b. Assign a name for the custom patch profile, and specify the initial set of patches you want in the custom patch profile by cloning the contents of another existing patch profile that exists for the target installation.

      Example: The test engineer wants to run the QA domain at the same patch maintenance level as the production system, but with the addition of the patch downloaded in step 1. Therefore, the engineer creates the custom patch profile, QADomainProfile, and clones the contents of the default patch profile to it. Later, the engineer will apply the downloaded patch to this custom patch profile.

   Note that any existing installation-wide patches that have been applied to the target installation are included in the custom patch profile by default.

   After you click **Create**, the custom patch profile is displayed in a tab adjacent to the tab for the default patch profile.

4. Apply patches to, or remove patches from, the custom patch profile, as appropriate.

   Example: The test engineer now applies the patch that was downloaded in step 1 to the QADomainProfile custom patch profile.

5. Before running the Start Script Editor, make backup copies of any scripts you plan to modify.

   > **Note:** Start Script Editor is not applicable for OSGi-based products such as Oracle Enterprise Repository.

6. Choose **Patches** > **Patch Profiles** to open the Start Script Editor. You can modify the appropriate start script so that it references patches in the custom patch profile.

7. In the Start Script Editor dialog box, choose the custom patch profile you created, the product for which you want to edit the script, and then click **Open**.

8. Open the appropriate start script so that the domain, cluster, or server can run with the patches in the custom patch profile. In the following table, *domain_home* represents the path to the domain root directory.

| To point the following at patches applied to the custom patch profile	Open the following script
Domain	**Windows**:
	domain_home\bin\setDomainEnv.cmd
	UNIX:
	domain_home/bin/setDomainEnv.sh
All WebLogic Server instances in the domain	**Windows**:
	domain_home\bin\startWebLogic.cmd
	UNIX:
	domain_home/bin/startWebLogic.sh
All Managed Servers	**Windows**:
	domain_home\bin\startManagedWebLogic.cmd
	UNIX:
	domain_home/bin/startManagedWebLogic.sh
One server instance	**Windows**:
	domain_home\bin\startServerName.cmd
	UNIX:
	domain_home/bin/startServerName.sh

Example: Because the test engineer needs to point the QA domain to the custom patch profile, the engineer opens the setDomainEnv.cmd script, which sets the environment for all servers in that domain only. Unless you need to limit the scope of a patch to a specific server instance, we generally recommend that you choose the setDomainEnv for pointing to custom patch profiles.

9. In the appropriate start script, create the environment variables that reference the classes, extension directories, or library path patches in the custom patch profile to which you want the script to point.

Patch classpath and other environment variables are set for each product individually. You must set the appropriate variables for each product similar to the variables set in *WL_HOME*\common\bin\setPatchEnv.cmd (Windows) or *WL_HOME*/common/bin/setPatchEnv.sh (UNIX). These environment variables are listed in the following table.

To reference the following patch	Define the following environment variable so it points to the patches in the custom patch profile

Patch JAR containing classes to be interested into the WebLogic system classpath	**Environment variables to define**:
	
	`PATCH_CLASSPATH`
	
	Example:
	
	`set WLS_PATCH_CLASSPATH=`
	`%BEA_HOME%\patch_wls1030\profiles\NewProfile`
	`\sys_manifest_classpath\weblogic_patch.jar`
	`if "%PATCH_CLASSPATH%" == ""`
	`set PATCH_CLASSPATH=%WLS_PATCH_CLASSPATH%;%WLW_PATCH_`
	`CLASSPATH%;%WLP_PATCH_CLASSPATH%`

Patch JAR containing classes to be inserted into the classpath of an application deployed on WebLogic Server	**Environment variables to define**:
	
	`WEBLOGIC_EXTENSION_DIRS`
	
	Example:
	
	`set WEBLOGIC_EXTENSION_DIRS=`
	`%BEA_HOME%\patch_wls1030\profiles\NewProfile`
	`\sysext_manifest_classpath`

Native file to be inserted into the system library path (UNIX)	**Environment variables to define**:
	
	`PATCH_LIBPATH`
	
	Example:
	
	`PATCH_LIBPATH="${BEA_HOME}/patch_wls1030/profiles`
	`/NewProfile/native"`

Native file to be inserted into the system library path (Windows)	**Environment variables to define**:
	
	`PATCH_PATH`
	
	Example:
	
	`set PATCH_PATH=`
	`%BEA_HOME%\patch_wls1030\profiles\default\native`

The figure example shows the snippet used to change the `setDomainEnv.cmd` script.
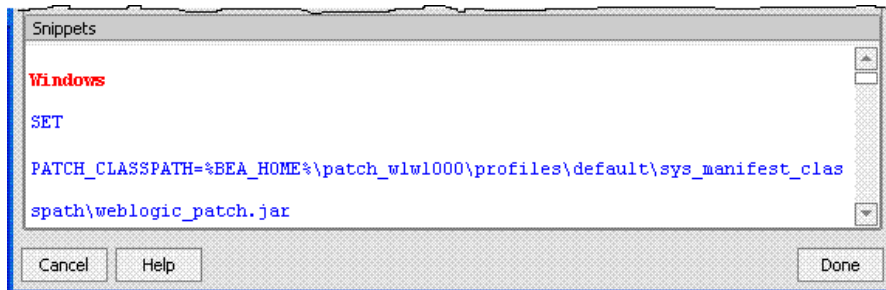
10. Ensure that any patch path variables you add to a start script precedes an invocation to one of the other environment scripts. For example, if you add a patch path variable definition to the `setDomainEnv` script, ensure that it is placed before the invocation of the `commEnv` script.

If you use custom scripts in your environment that do not invoke the *WL_ HOME*\common\bin\commEnv script, or any of the other default scripts produced

by the Configuration Wizard, you also need to modify the statements in your scripts that set the class and library paths for your environment so that the environment variables you have defined are properly inserted into those statements.

For example, to set the WebLogic system classpath so that patch JARs in a custom patch profile supersede same-named classes appearing later in the classpath, add the PATCH_CLASSPATH variable as follows, shown in **bold**:

```
set WEBLOGIC_CLASSPATH=%PATCH_CLASSPATH%;%JAVA_HOME%\lib\tools.jar;
%WL_HOME%\server\lib\weblogic_sp.jar;%WL_HOME%\server\lib\weblogic.jar;
%WL_HOME%\server\lib\webservices.jar
```

11. Click **Save**.

    For the patch to go into effect, each server instance that uses the patch must be restarted.

12. If you subsequently decide to change the scope of a patch so that a different domain or server uses the patch, or so that all servers and domains that run on an installation use the patch, update the appropriate patch profile.

    Example: When the test engineer approves the patch that has been tested in the QA domain, the patch can then be promoted for use in the production domains. To promote the patch, the test engineer does the following:

    a. Runs Smart Update, and selects the product installation used by the production domain.

    b. In the **Manage Patches** tab, selects the default patch profile, and applies the patch.

    c. Restarts the servers in the production domain.

A.3 Smart Update GUI Glossary

Table A–1 provides a key to the graphical symbols and labels used throughout the Smart Update graphical interface.

> **Note:** Starting from the Oracle Fusion Middleware 11*g*R1 release, *MW_HOME* is the new term for *BEA_HOME*.

Table A–1   Smart Update Graphical Interface

Screen or Panel	Symbol	Description
Target Installation	BEA Home (D:\WLS10_3_2)	Represents a Middleware home directory, which may contain multiple Oracle products. When you create a maintenance snapshot, you must select the appropriate Middleware home directory.
		Note that the Smart Update graphical interface can display only those Middleware home directories for products that were installed by the current system. Middleware home directories on remote-mounted disks are visible only if installed from the current system.

Table A–1   (Cont.) Smart Update Graphical Interface
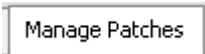
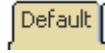| Screen or Panel	Symbol	Description
Target Installation	WebLogic Platform	Represents a product home directory. For example, WebLogic Platform, or Oracle Service Bus.
Target Installation	Release: 10.3 MP2	Represents a specific installation of a product, called the target installation. For example, WebLogic Server Release 9.1. A specific installation must be selected to do the following: ■ View or download a publicly available patch or patch set ■ Apply or remove a patch or patch set ■ Create or remove a custom patch profile
Downloaded Patches panel	Downloaded Patches	Displays the contents of the patch download directory. Only patches not yet applied to a given profile are displayed.
Downloaded Patches panel		When you click a green arrow, it applies the corresponding patch to the current patch profile.
Manage Patches tab	Manage Patches	Displays the contents of each patch profile, which is the set of patches applied to the currently selected target installation. You apply and remove patches from the **Manage Patches** tab. **Note:** To apply a patch and add it to the current profile, click **Apply** next to that patch or patch set in the **Downloaded Patches** panel.
Manage Patches tab	Default	Displays the set of patches scoped to the entire installation in a given Middleware home directory, which corresponds to the currently selected target installation. If you have created additional patch profiles, called custom patch profiles, each has its own tab adjacent to the Default Profile tab.
Manage Patches tab		When you click the red arrow, the corresponding patch is removed from the target installation and from the profile. (Removed patches are listed in the **Downloaded Patches** panel and can subsequently be applied again if needed.
Patch Application Validation dialog box	Patch Application Validation	Displays conflicts that have occurred when applying a patch, identifying the patches that conflict with the one, or ones, being applied. The conflict conditions that can occur when applying a patch are described below.

Table A–1   (Cont.) Smart Update Graphical Interface

Screen or Panel	Symbol	Description
Patch Application Validation dialog box	**Prerequisite not met**	The selected patch cannot be applied until one or more other patches are first applied. To resolve this conflict: 1. Note the identifiers of the prerequisite patches. 2. Click **Cancel**, download and apply the prerequisite patches, then apply the selected patch
Patch Application Validation dialog box	**Out of sequence**	The selected patch requires that you first remove one or more other patches that have been applied. To resolve this conflict: 1. Note the identifiers of the patches that must be removed. 2. Click **Cancel** and remove the identified patches. 3. Download and apply the selected patch. 4. Re-apply the patches removed in step 2.
Patch Application Validation dialog box	**Mutually exclusive**	The selected patch cannot coexist with one or more other patches that have been applied To resolve this conflict, you must choose which patch you want applied to the target installation.

Glossary

BEA_HOME directory

Root directory into which Oracle software products are installed, represented by the environment variable `BEA_HOME`.

Note that starting from the Oracle Fusion Middleware 11*g*R1 release, *MW_HOME* is the new term for *BEA_HOME* (default is `C:\Oracle\Middleware`), and *WL_HOME* is the term used for WebLogic Server home (default is `C:\Oracle\Middleware\wlserver_version`.

bsu command

Command for running the Smart Update command-line interface. To run the command-line interface, you must first change to the *MW_HOME*`\utils\bsu` directory. See Chapter 8, "Using the Command-Line Interface."

custom patch profile

A patch profile the user can create in addition to the default patch profile. The use of a custom patch profile provides a way to scope a set of patches to a subset of the servers that run on a specific Oracle product installation; for example, an individual domain, cluster, or server. Custom patch profiles are described in Chapter 5, "Activating Applied Patches in Your Installations and Applications."

dependency violated

Conflict reported when you attempt to remove a patch upon which an existing patch depends.

installation-level patch directory

Directory created by Smart Update that contains patch JAR files, native patches, profile subdirectories, the patch registry, and the patch manifest JAR files.

invalidated patch

Patch that has been superseded or deprecated by My Oracle Support. Smart Update automatically notifies you if any invalidated patches are detected in your patch download directory. If you have applied an invalidated patch, Smart Update highlights it in among the entries in your patch profile. You can click on the patch icon to get information about replacing an invalidated patch, when a replacement is available.

maintenance pack

A maintenance pack is an update to an existing release that includes solutions to known problems and other product enhancements. A maintenance pack is not a

replacement for an installation of the Oracle product, but a package of changes and additions to it.

Service packs are replaced by maintenance packs starting with WebLogic Platform 9.2 Maintenance Pack 1. Maintenance packs are replaced by version upgrades (Oracle Patch Set releases) starting with Oracle WebLogic Server 10.3.x.

Note that you can no longer use Smart Update to apply or remove maintenance packs, version upgrades, or service packs.

maintenance snapshot

Text file you can generate using Smart Update that contains details about the current maintenance level of a target installation for a specific patch profile.

module patch

Patches that update common modules and product-specific modules.

mutually exclusive

Conflict that is reported when a patch you have selected to download or apply cannot coexist with an existing patch for the target installation. The identifier of the existing patch causing the conflict is provided.

Middleware Home (MW_HOME) directory

Root directory into which Oracle software products are installed, represented by the environment variable *MW_HOME*. Starting from the Oracle Fusion Middleware 11gR1 release, *MW_HOME* is the new term for *BEA_HOME*.

native artifact file

Operating system-specific file, which may be a binary file or other resource.

out of sequence

Patch conflict reported when you are attempting to download or apply multiple patches in the wrong sequence. When this conflict is reported, the proper sequence for the selected patches is provided.

patch manifest JAR

File that references patch JARs that exist in the in the *MW_HOME*\patch_ wls1032\\patch_jars directory

passcode

Alphanumeric string provided by Oracle Support that you use, with a patch identifier, to obtain a private patch. Private patches are no longer available for Smart Update.

patch

Between maintenance packs, patches are issued to provide bug fixes for individual components. A patch does not provide product enhancements.

patch backup manifest

File, stored in the *MW_HOME*\patch_wls1032\backup directory, that contains files that have been replaced as a result of having applied a patch. This directory holds files required to restore an earlier patch maintenance level on your system.

patch conflict

Compatibility problem that Smart Update has detected between the patch you have selected to download, apply, or remove and the other patches that have been applied to the target installation.

patch container

File that you download from Oracle Support that is kept in the patch download directory. Contains patch content and metadata about that patch that is used for validation.

patch JAR file

JAR file containing classes to be inserted into a classpath; for example, in the WebLogic system classpath, or the classpath of an application deployed on WebLogic Server. Patch JAR files are placed in the `patch_jars` subdirectory of the installation-level patch directory. For more information about patch JAR files, see Section 5.1.5, "Structure of the Installation-Level Patch Directories."

patch profile

Set of patches that have been installed in a specific Oracle product installation and that serves as a mechanism for Smart Update to validate patches being applied.

patch set

Set of multiple patches made available for download and installation as a single entity. Patch sets enforce the sequence in which member patches are applied to the target installation; however, individual patches within a set may be selectively removed.

prerequisite not met

Conflict that may be reported when downloading or applying a patch. This conflict occurs when you are attempting to download or apply a patch that requires other patches be installed first. Identifiers of prerequisite patches are displayed when this conflict is reported.

private patch

Patch that My Oracle Support makes available to individual users based on their support requirements. Private patches are no longer available for Smart Update.

publicly available patch

A patch that My Oracle Support makes available anyone with a valid support contract. From My Oracle Support, you can view and obtain detailed information about publicly available patches for a specific Oracle product that is installed on your system.

support ID

ID of the user account you obtain when you register with Oracle.

target installation

The currently selected Oracle product installation in **Target Installation** panel of Smart Update.

validation

The process of determining if a patch has a conflict with other patches that are applied to the target installation.