

# HP OpenView Configuration Management

## Solutions for Servers

for the Windows and UNIX operating systems

Software Version: 5.00

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## Application Management Profiles Guide

Document Release Date: April 2007

Software Release Date: April 2007



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## Revisions

This guide's title page contains the following identifying information:

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Table 1 lists new features added for the Configuration Management v 5.0 release.

**Table 1 New features added for Configuration Management 5.0**

Chapter	Version	Changes
Chapter 2	5.00	Page 19, <a href="#">Installing the CM AMP Editor</a> , the CM AMP Editor is now installed from the HP OVCM Administrator media.
Chapter 3	5.00	Page 26, <a href="#">Search Filters</a> is a new feature used to manage configuration files for server applications.
Chapter 3	5.00	Page 28, The Verify Phase defaults to <a href="#">On error, continue phase</a> . You must set this manually for all other phases and for older profiles.
Chapter 3	5.00	Page 30, <a href="#">Header Information</a> , select the Platform for the profile. This will filter which Commands are available in each phase. Type a language in Document Header.
Chapter 3	5.00	Page 30, <a href="#">To create header information</a> , this procedure has changed.
Chapter 3	5.00	Page 33, <a href="#">To add a parameter to a section</a> , you can mark a parameter as read only, store it encrypted, and add the parameter to the profile's Utility Class.
Chapter 3	5.00	Page 35, <a href="#">Creating Search Filters</a> is a new section for complex file management.
Chapter 3	5.00	Page 38, <a href="#">Adding Commands</a> , the following commands have been added: Delete data, Exit, Insert/Replace, Save data, Scan, WMI, Xquery

<b>Chapter</b>	<b>Version</b>	<b>Changes</b>
Chapter 3	5.00	Page 45, <a href="#">Building a String</a> , the following operands have been added: Null, List search element to use, Search result string, Search result number, Search result Boolean, Search result location, String cell, Number cell, Boolean cell, Number of rows.
Chapter 3	5.00	Page 45, <a href="#">Building a String</a> , help text is now available
Chapter 4	5.00	Page 98, the Tools menu has been replaced with the CM Configuration Server menu.
Chapter 4	5.00	Page 97, the <a href="#">Manage All Utility Class Parameters</a> command has been added.
Chapter 4	5.00	Page 98, the <a href="#">Edit CM Configuration Server Connection Information</a> command has been added.
Chapter 4	5.00	Page 98, the <a href="#">Update Class Connection Information</a> command has been added.
Chapter 4	5.00	Page 98, <a href="#">To synchronize the Utility Class</a> , the command name has changed from Update RCS section from utility class to Synchronize Utility Class with this profile.
Appendix B	5.00	Page 119, <a href="#">Application Management Profiles Standalone Agent</a> is a new appendix. It describes a utility to test your profiles.

Table 2 indicates changes made to this document for earlier releases.

**Table 2 Document changes**

<b>Chapter</b>	<b>Version</b>	<b>Changes</b>
Chapter 3	1.11.0	Page 25, <a href="#">Creating a Custom Application Profile</a> , when creating a Profile, a backup file is saved to the operating system's temp directory with a bak extension.
Chapter 3	1.1	Page 26, <a href="#">Managing Phases</a> , use the Manage phases command to delete, modify, add, and change the order of phases.

Chapter	Version	Changes
Chapter 3	1.11.0	Page 26, <a href="#">Managing Phases</a> , When a Phase is added or modified, all fields are checked for completion.
Chapter 3	1.1	Page 30, <a href="#">Header Information</a> , use Header Information to track the version of the profile, list the profile's features, and list assumptions.
Chapter 3	1.1	Page 33, <a href="#">Configuration Settings</a> , the Add Parameter button has been changed to Manage Parameter.
Chapter 3	1.1	Page 38, <a href="#">Adding Commands</a> , the following commands have been added: Loadbalancer interaction, Create directory, Remove directory, Rename file, Create file, Change UNIX owner/group/permission, Change Windows File/Directory Attributes, Verify UNIX File/Directory Attributes, Verify Windows File/Directory Attributes, Set Environment Variable.
Chapter 3	1.11.0	Page 38, <a href="#">Adding Commands</a> , the following commands have been added: Create a windows service, Set/Get Values from INI file, Generate random numbers, Fetch a URL. Also, the commands are now listed in alphabetical order.
Chapter 3	1.11.0	Page 39, Cut, copy, and past are available to move commands between phases.
Chapter 3	1.11.0	Page 40, <a href="#">Get an attribute value from a client object</a> , you may now use an object in the COP directory (RADSETUP).
Chapter 3	1.11.0	Page 41, <a href="#">Set an attribute in a client object</a> , you may now use an object in the COP directory (RADSETUP).
Chapter 4	1.1	Page 97, <a href="#">Overriding Values in the AMP (Utility Instances)</a> , several new Application Management Profiles have been added.
Chapter 4	1.1	Page 97, <a href="#">Creating the Utility Class</a> , use the CM AMP Editor Update RCS section from utility class command to manage the application's Utility class.
Chapter 4	1.1	Page 98, <a href="#">Creating a Utility Instance</a> , use the CM AMP Editor Manage utility instances command to manage Utility instances.

<b>Chapter</b>	<b>Version</b>	<b>Changes</b>
Chapter 4	1.1	Page 102, <a href="#">Publishing a Profile</a> , use the Publish to Database command in the CM AMP Editor to publish the profile.
Appendix A	1.11.0	Page 115, <a href="#">Environment Variables</a> , this is a new appendix.

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# 1 Introduction

At the end of this chapter, you will:

- Be familiar with capabilities of CM Application Management Profiles.
- Know its terminology.

# Application Management Profiles

The HP OpenView Configuration Management Solutions for Servers - Application Management Profiles includes a set of tools built on top of HP OpenView Configuration Management Application Manager (CM Application Manager) to enable the deployment and management of complex software products that are typically required on servers in a datacenter environment such as Microsoft SQL Server, Oracle, Apache, and Internet Information Server among others. These products often employ their own instrumentation or repositories for deployment and management of their implementation.

Application Management Profiles provides tools to:

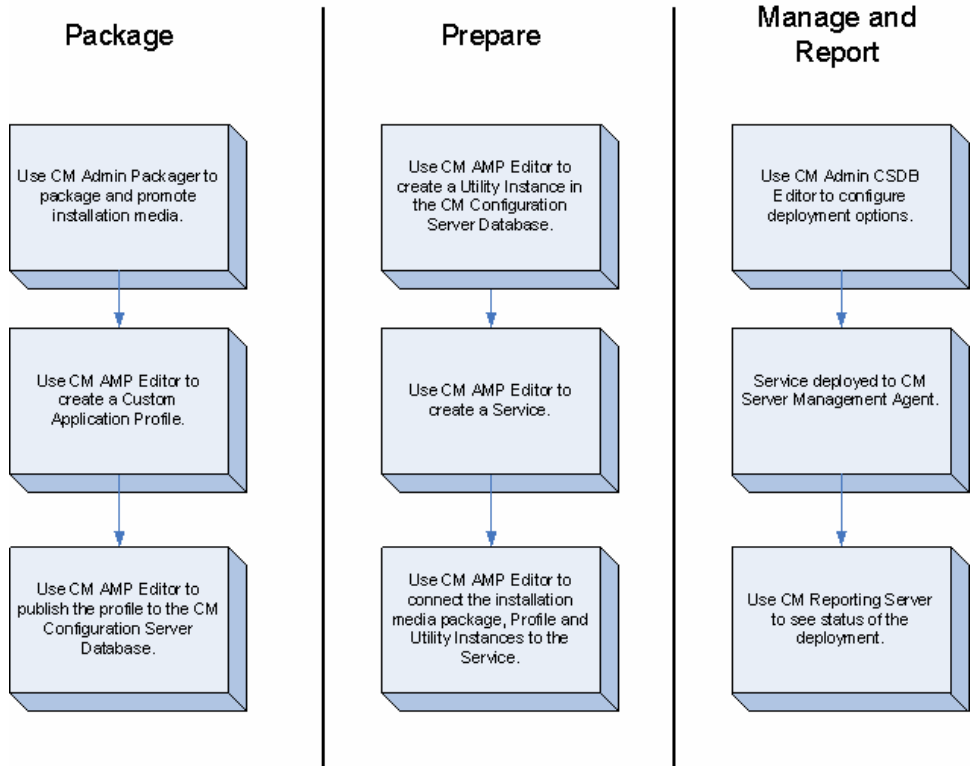
- Analyze and parameterize configuration control data for targeted products.
- Specify values in the form of a model to be used at deployment time.
- Articulate in the model pre-requisites and constraints that qualify the ability to deploy the products.
- Publish the control information and required ancillary tools such as utility programs to the HP OpenView Configuration Management (CM) infrastructure for deployment.
- Deploy and configure the software to targeted devices.
- Interact with the target environment before and after installation to enhance management of the deployment.
- Report on the success of the deployment.

The intent of this book is to provide instruction on how to deploy server applications using these tools. The figure below provides a general workflow.



To use the CM Server Management Agent you must own a Server LTU for CM Application Manager.

**Figure 1 Workflow**



## Terminology

The following terms are used in this guide and are specific to Application Management Profiles:

### CM Application Management Profile Editor (CM AMP Editor)

A tool to create and modify Application Profiles.

### CM Server Management Agent

The software that must be installed on the target device to execute the Application Management Profile.

### Master Application Profile (MAP)

An XML-based specification of a server application's installation parameters. A parameter in the XML might refer to the installation directory of an application.

### Custom Application Profile (CAP)

A MAP that has been customized to your environment.

### Utility Class

A class in the HP OpenView Configuration Management Configuration Server Database (CM Configuration Server DB) specifically used for a particular server application. For example, the Utility Class used for Microsoft SQL Server 2000 is called MSSQL2K.

## Audience

This guide is for administrators of Application Management Profiles. You will learn how to use the tools supplied to deploy server applications.

## Prerequisites

The reader should be familiar with the following products:

HP OpenView Configuration Management Configuration Server

HP OpenView Configuration Management Administrator

HP OpenView Configuration Management Application Manager

HP OpenView Configuration Management Portal



To use CM the Server Management Agent you must own a Server LTU for CM Application Manager.

## Additional Components

In addition to already established CM products, Application Management Profiles use:

- Master application profiles for supported applications
- A set of methods specific to deploy server applications on the target device (CM Server Management Agent)
- The CM Application Management Profiles Editor (CM AMP Editor) to administer the profiles

## Chapters Summary

In addition to this chapter, this book contains the following information

- Installing Application Management Profiles
- Packaging server applications
- Preparing server applications

## Related Documents

*HP OpenView Configuration Management Configuration Server User Guide*

*HP OpenView Configuration Management Portal Installation and Configuration Guide*

*HP OpenView Configuration Management Application Manager Installation and Configuration Guide*





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## 2 Installing Application Management Profiles

At the end of this chapter you will:

- Know how to install the components needed to use Application Management Profiles.

# Installation Media

Application Management Profiles requires the following:

- The CM AMP Editor is installed as part of the CM Administrator.
- *Application Management Profiles* contains one subdirectory for each provided profile. Each subdirectory includes the profile, a descriptive html document, and a Profile Note.
- The APPMGMT Domain for the CM Configuration Server DB is installed by default in the CM Configuration Server 5.00 or above.
- The target device requires the CM Server Management Agent. See [CM Server Management Agent](#).



Note that on 64-bit Windows architectures the agent and profiles will run in 32-bit emulation mode. HP recommends using fully qualified paths in your profiles to make sure that you are able to run 64-bit executables on 64-bit operating systems. The agent and profiles may be affected by registry and file redirection as documented in the Microsoft knowledge base articles, Overview of the compatibility considerations for 32-bit programs on 64-bit versions of Windows Server 2003 and Windows XP. As always, be sure to thoroughly test your profiles before deployment.

## Prerequisites

Before installing the components on the Application Management Profiles media, you will need to complete the following tasks:

- Designate a CM Configuration Server to host your profiles and policy information.
- Install CM Administrator Configuration Server Database Editor (CM Admin CSDB Editor) and CM Administrator Packager (CM Admin Packager), components of the HP OpenView Configuration Management Administrator (CM Administrator), on a computer designated for administration.
- Install CM Application Manager on your target servers.
- Install CM Messaging Server.
- Install CM Reporting Server.



All components of the CM infrastructure must come from the media for release 5.00 at a minimum unless otherwise noted.

## Platform Support

For information about the platforms that are supported in this release, see the accompanying release notes.

## Installation Process

After meeting the prerequisites, you will need to do the following:

- Install CM Configuration Server version 5.00. This is the required version. Be sure to check the box for
- Install the CM Application Management Profiles Editor (CM AMP Editor).

## System Requirements for the CM AMP Editor

The CM AMP Editor is part of the CM Administrator.

- TCP/IP connection to the CM Configuration Server.
- Minimum resolution of 800 x 600.
- For Windows 2000, Server 2003, or XP or Vista, you must have administrator rights to the computer to install the CM Administrator.

## Platform Support

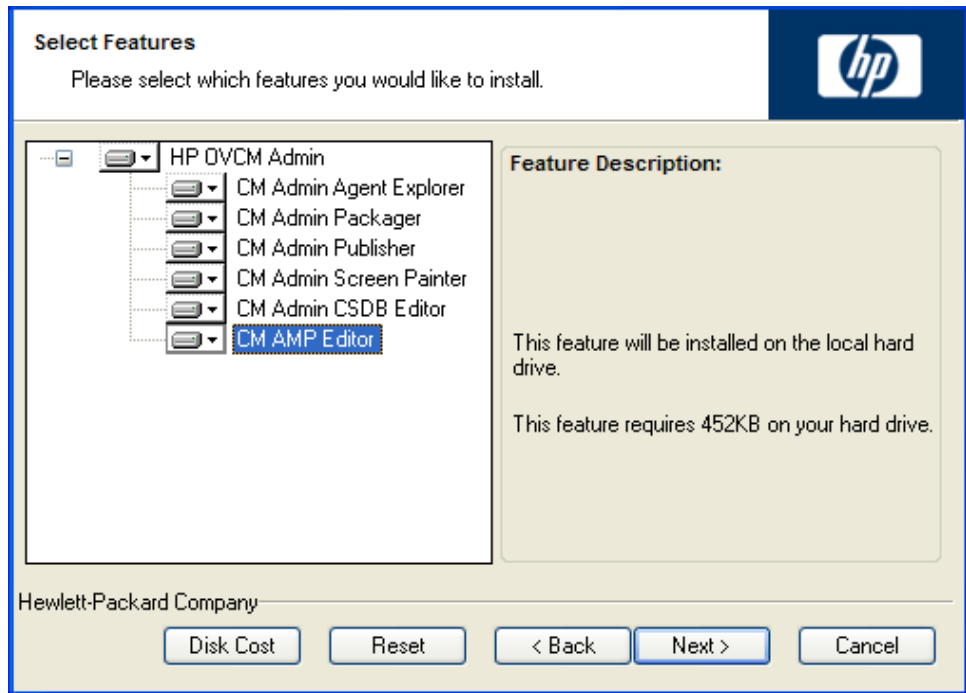
For information about the platforms that are supported in this release, see the accompanying release notes.

## Installing the CM AMP Editor

The CM AMP Editor allows you to modify the profiles provided. The CM AMP Editor is a part of the CM Administrator. For convenience, install the CM

AMP Editor on the same computer as the CM Admin CSDB Editor and CM Admin Packager. From the administrator installation media, click `setup.exe`. Select the CM AMP Editor feature when prompted.

**Figure 2** CM Administrator features



To start the CM AMP Editor

- From the Start Menu, select the **HP OVCM Administrator** group. Click the icon for CM AMP Editor.

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# 3 Packaging Server Applications

At the end of this chapter you will:

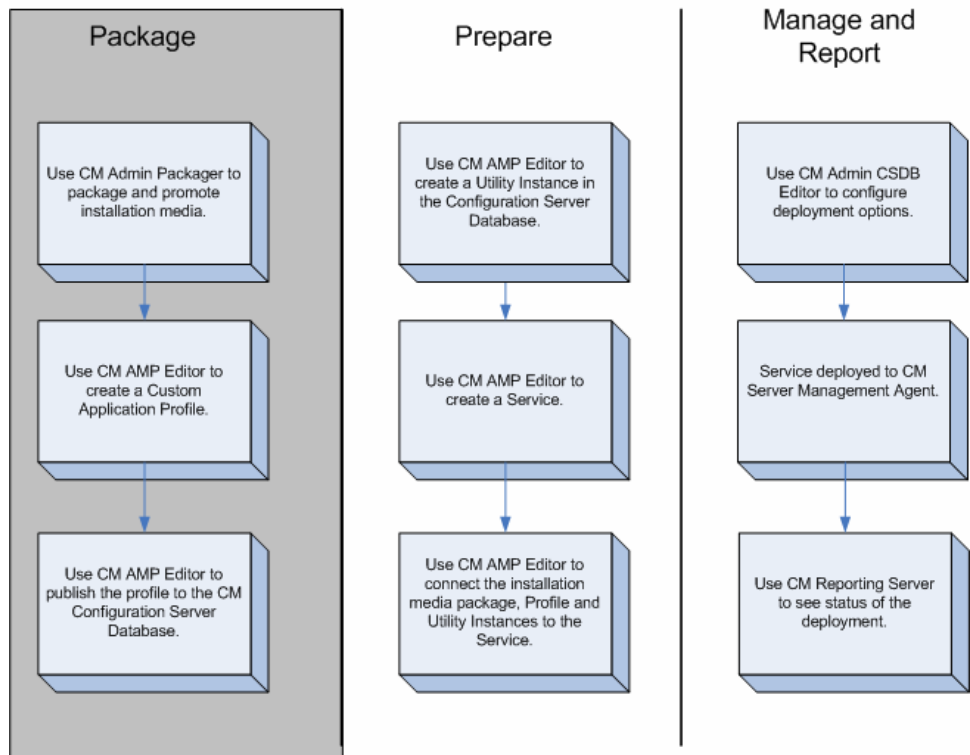
- Know how to package the installation media.
- Be able use the CM AMP Editor to create your Custom Application Profiles (CAP).
- Be familiar with how to publish the CAP to the CM Configuration Server DB.

# Packaging Server Applications

To package the server application, you must perform the following tasks:

- 1 Package the installation media.
- 2 Modify the profile to create your Custom Application Profiles (CAP).
- 3 Package the CAP.

**Figure 3 Package the server application**



# Packaging the Installation Media

You can use the CM Administrator Packager (CM Admin Packager), part of the HP OpenView Configuration Management Administrator (CM Administrator), to create an installation point or access the media from a network share. The Component Selection Mode of the CM Admin Packager might be the simplest approach to use.

## To package the installation media using Component Selection Mode

Use Component Selection Mode to promote the server application's installation media. For complete information on the CM Admin Packager, see the *HP OpenView Configuration Management Application Manager Installation and Configuration Guide*.



Be sure that your CM Configuration Server has adequate space for the installation media.

- Copy the installation media to a directory path where the software will be installed from on the client computer. If you do not package from this directory, you will need to change the Path instance in the CM Configuration Server DB.
- Give the package a meaningful name.
- Promote the package to the APPMGMT Domain, not the SOFTWARE Domain.

**Figure 4 Promote the installation media to APPMGMT Domain.**

The screenshot shows a form with the following fields:


Package Name:	SQL2K_MEDIA
Domain:	APPMGMT
Description:	SQL 2K Media
Release:	2K

## CM AMP Editor

This tool allows you to make an Application Management Profile available to the system for deployment. This interface allows you to:

- Construct or modify a profile for use with a specific software package.
- Open a profile for customization from local file system.
- Create configuration settings.
- Add commands to be run before, during, and after an installation.
- Publish the Application Management Profiles to the CM Configuration Server DB.

Master Application Profiles (MAP) will be provided for each supported application. These will serve as examples that you can use to create your own company specific deployments called Custom Application Profiles (CAP).

 At the time of this writing, the CM AMP Editor is available only on Windows operating systems.



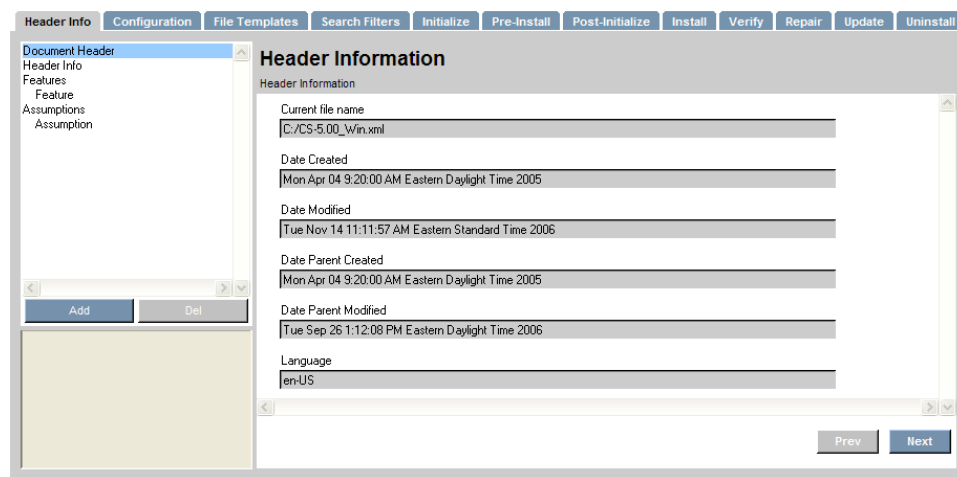
# Creating a Custom Application Profile

Use the CM AMP Editor to create your own Custom Application Profiles from the examples provided by HP. The Application Profiles Editor should be installed on an administrator computer with access to these files. The Application Profiles Editor is organized into tabs. Tabs may vary from one application to another. All of the files have a Header Info, Configuration and File Templates tab. When creating a Profile, a backup file is saved to the operating system's temp directory with a bak extension.

## Tabs and Phases

From the File menu of the Application Profiles Editor, open a profile.

**Figure 5** Tabs of CM Configuration Server sample file



Each profile may or may not have the following tabs included:

- **Header Info**  
Use this tab to specify the version of the profile, and assumptions, and list the profile's features.
- **Configuration**  
Use the configuration tab to edit installation parameters. These values can be referred to in commands that you create.
- **File Templates**  
Shows the files that the profile will modify on the target computer.

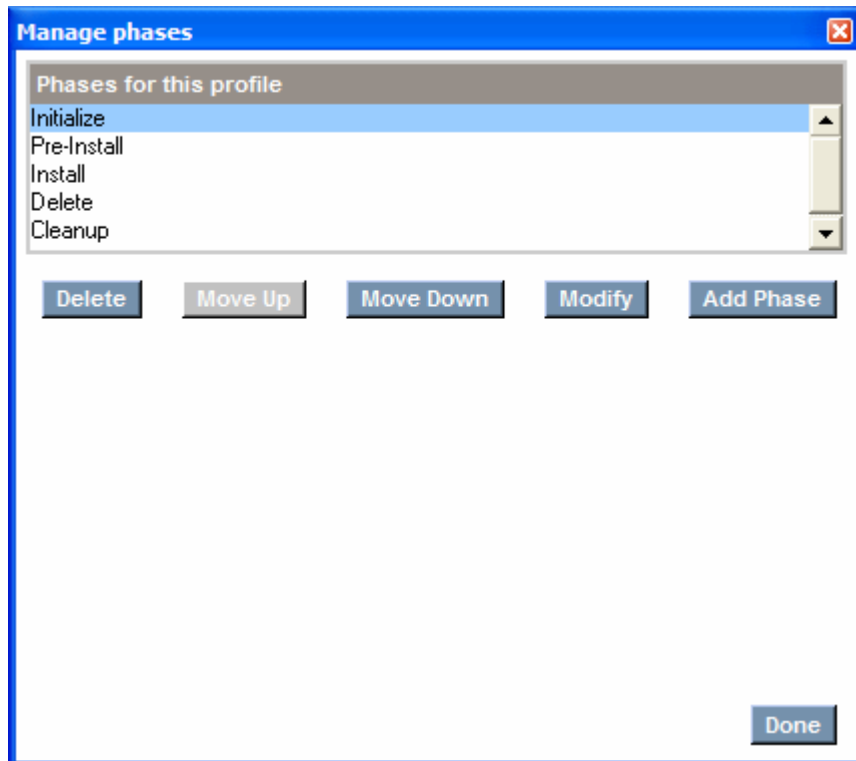
- **Initialize**  
During the Initialize phase, the Application Management Profile Client gets information that will be used during the Install Phase.
- **Search Filters**  
Use this tab to create search elements to be used on data, such as a result of a registry query example, or a text file.
- **Pre-Install**  
Specify any commands that you want to run before the installation such as turning off anti-virus software or checking for disk space.
- **Install**  
Specify the commands to run the installation such as executing the setup file or checking if a computer restart is needed.
- **Verify**  
Specify the commands to run to verify the application is installed correctly.
- **Repair**  
Specify the commands to run if the application needs to be repaired
- **Update**  
Specify the commands to run to update the application.
- **Delete or Uninstall**  
Specify any commands that you want to run when the application is removed from the target computer.

## Managing Phases

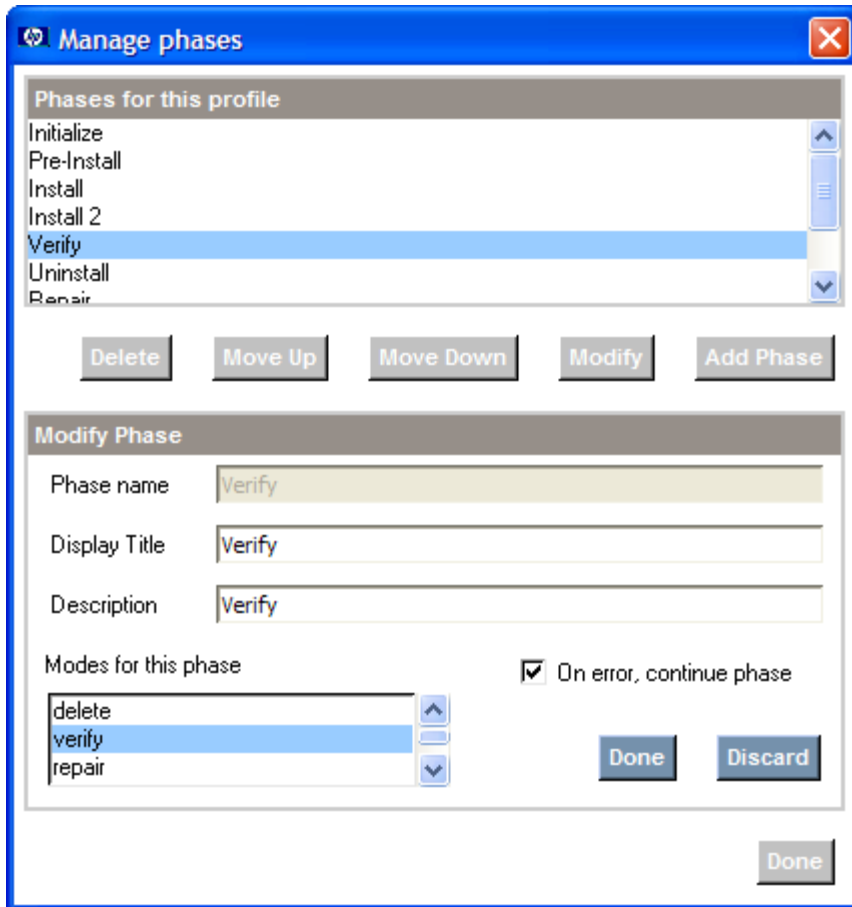
The CM AMP Editor allows you to add and manage the phases in a profile. When a Phase is added or modified, all fields are checked for completion.

### To add a phase

- 1 From the Edit menu, click **Manage Phases**.



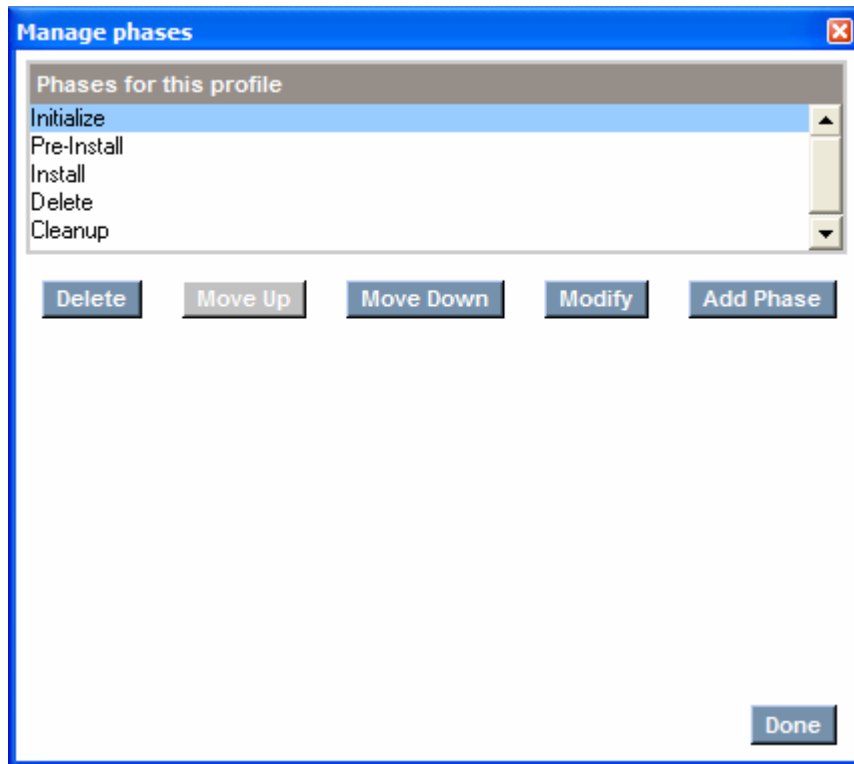
- 2 Click **Add Phase**.



- 3 Type a Phase name, Display Title, and Description. If needed, select a mode for the phase. See [Command Modes](#) on page 47 for more information.
- 4 Select the **On error, continue phase** check box if you want to be able to do all the commands in a phase even if they failed.
  - ▶ For new profiles, the Verify phase defaults to **On error, continue phase**. For all other phases, you must manually set this. In older profiles, you will need to set this as well.
- 5 This will ensure that you catch all the anomalies in one attempt as opposed to one per attempt
- 6 Click **Done** to confirm the settings.
- 7 Click **Done** when you are finished managing phases.

To manage phases

- 1 From the Edit menu, click **Manage Phases**.



- 2 Click on the action you want to perform.
  - Click **Delete** to remove a phase.
  - Click **Move Up** to move a phase up.
  - Click **Move Down** to move a phase down.
  - Click **Modify** to change the Phase Name, Display Title, Description, or Modes for this phase.
  - Click **Add Phase** to add a phase.
- 3 When you have completed your changes, click **Done**.

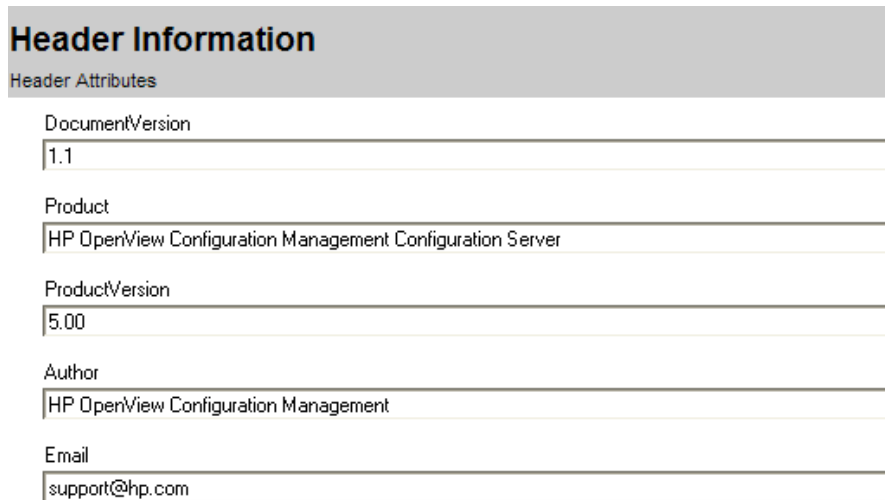
## Header Information

Use header information to track versions, authors, and features of application management profiles. In addition, you select platforms for the profile. This will filter the commands appropriately for your platform.

In the document header, you can type a language for the profile.

To create header information

- 1 From the Header Info tab, click **Header Info**.
- 2 In the Editor, type in the values you want.



The screenshot shows a dialog box titled "Header Information" with a subtitle "Header Attributes". It contains five text input fields, each with a label above it and a horizontal line below it. The labels and their corresponding values are: DocumentVersion (1.1), Product (HP OpenView Configuration Management Configuration Server), ProductVersion (5.00), Author (HP OpenView Configuration Management), and Email (support@hp.com).

- 3 From the **Platform** drop-down list:
  - Select **Windows** to view only the commands usable in Windows when you view the Add Command dialog box.
  - Select **Unix** to view only the commands usable in Unix when you view the Add Command dialog box.
  - Select **Any** to view all commands no matter what platform you are using.

The header information has been added to the application profile's xml file. You may also do this to add a list of Features and set Assumptions for the profile.

## Configuration Settings

Create sections of Configuration Settings to construct your Application Management Profiles. For each section, create instances with the necessary parameters. HP provides a set of sample profiles that you may use to see examples of configuration settings. We recommend the following sections:

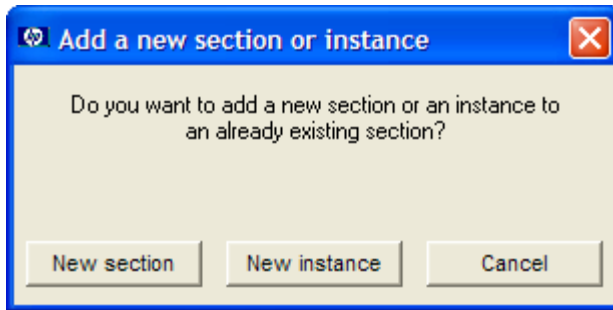
- **Installation Configuration:** Use this for parameters needed during installation such as installation drive and directory.
- **Product Configuration:** Use this for parameters required for product configuration options that can be changed after installation such as parameters required for running a service.
- **Security Configuration:** Use this to define domain accounts and passwords required for installing or running the application.
- **Command Definition:** Use for any custom commands you will use in multiple phases.
- **Requirement Definition:** Use this to specify minimum requirements such as free disk space and operating system.
- **Temporary Storage:** Use this section for items that are populated from local machine information for use in the application management profile. Examples would be the operating system's temporary directory, current operating system, and environmental variables.
- **User Credentials:** Use this section to create specific user credentials for application installation. Not all applications require this. This section is invisible by default.



By design, you will not automatically see a **User Credentials** section in Configuration Settings. To create one, click **Add** on the Configuration settings, and then click **New Instance**, not **New Section**.

To add a section to Configuration Settings

- 1 From the Configuration tab, click **Add** underneath the sections box.



- 2 Click **New section**.

A dialog box with a blue title bar containing a gear icon and the text 'Add a new section' and a close button. The main area is light gray and contains several input fields: 'Section name' (Product Configuration), 'Display title' (Product Configuration), 'Description (help text)' (Application specific configuration parameters), 'Minimum number of occurrences' (1), 'Maximum number of occurrences' (1), and 'Section type' (Normal). At the bottom right, there are two buttons: 'Save' and 'Discard'.

- 3 Type a Section name, Display title, Description, and Minimum and Maximum number of occurrences. In this example, we are creating a section for Product Configuration parameters.
- 4 Click **Save**.

The new section is created. You will need to add parameters to the section.



### To add a parameter to a section

- 1 From the Section, click **Manage parameter**.
- 2 Click **Add** to add a parameter. If you want to change an existing parameter, click **Modify**. To remove a parameter, click **Delete**.
- 3 Type in a Parameter name, Display title, Description, Default value (if needed), Length and Parameter Type. Check the **Read only** check box if you do not want this parameter edited. Check the **Store encrypted** check box to encrypt the parameter. Click **Store in utility class** to add this parameter to the profile's Utility Class.



The default encryption for parameters is AES. This requires nvdkit minimum build 443 on the CM Server Management Agent.

- 4 Click **Done**.
- 5 Add as many parameters as you need.
- 6 Click **Done** when you have added all the parameters.

The parameters are created. Repeat this procedure whenever you need to create parameters in this section. When you have finished, you can add instances of the section. Validation is performed on saving, opening, and deleting a parameter. An hourglass is shown during validation.

### To add an instance of a section

- 1 From the Configuration tab, click **Add** underneath the sections box.
- 2 Click **New Instance**.
- 3 Select a section to add an instance, and type an Instance name.
- 4 Click **Done**.
- 5 Click the new instance name under its Section in the Section list box.
- 6 Type in the required parameters.
- 7 Click **Next** to complete the creation of the new instance.

The new instance is created. You are now able to refer to this instance in your Commands.

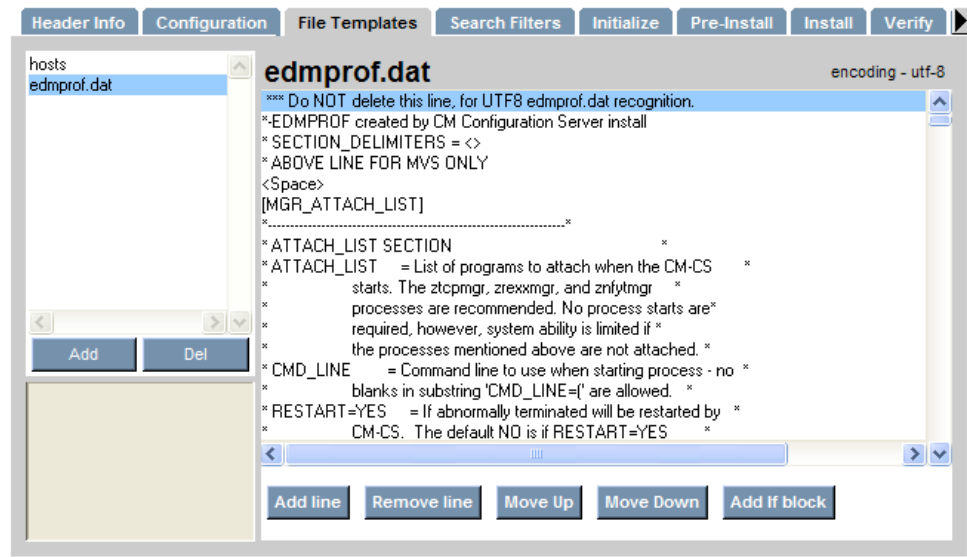


If there is only one instance of a section, that instance will automatically display when you click on the section name. If there are multiple instances, the instance names will be nested under the Section name.

## File Templates

The CM AMP Editor allows you to add and delete lines in File Templates, as well as add If statements. File templates may be used to modify installation files.

**Figure 6** View the File Templates tab



- Click **Add line** to add a line to the file template.
- Click **Remove line** to remove a line from the file template.
- Click **Move Up** to move a line up in the file template.
- Click **Move Down** to move a line down in the file template.
- Click **Add If block** to add an If statement. You will need to include a condition, a value if the condition is true, and a value if the condition is false. If the false value is not needed, simply highlight the line with the <ELSE> and click **Remove line**. The whole else clause will be removed.
- To edit a line, double-click that line.

## Creating Search Filters

Use the Search Filter tab to create expressions to search for in files in the target device. These filters will most likely be used with **Search Result string**, **Search Result number**, **Search Result Location**, and the **Insert/Replace** commands.

- ▶ Starting with version 5.00, the media contains a samples directory. This directory contains examples of how to use the search filters.

## Creating Search Filters

Use the Search Filter tab to define search expressions. These filters can then be used to search files or data for specific information. Searching is performed using the **Scan** command. Other related commands are **Delete Data**, **Insert/Replace Data**, **Read File Data** and **Save Data**.

To create a Search Filter

- 1 Click the **Search Filter** tab.
- 2 Click **Add**. A New Search Element appears.

## New SearchElement

### Search Element

Title

Description

Regular Expression

Case Sensitive

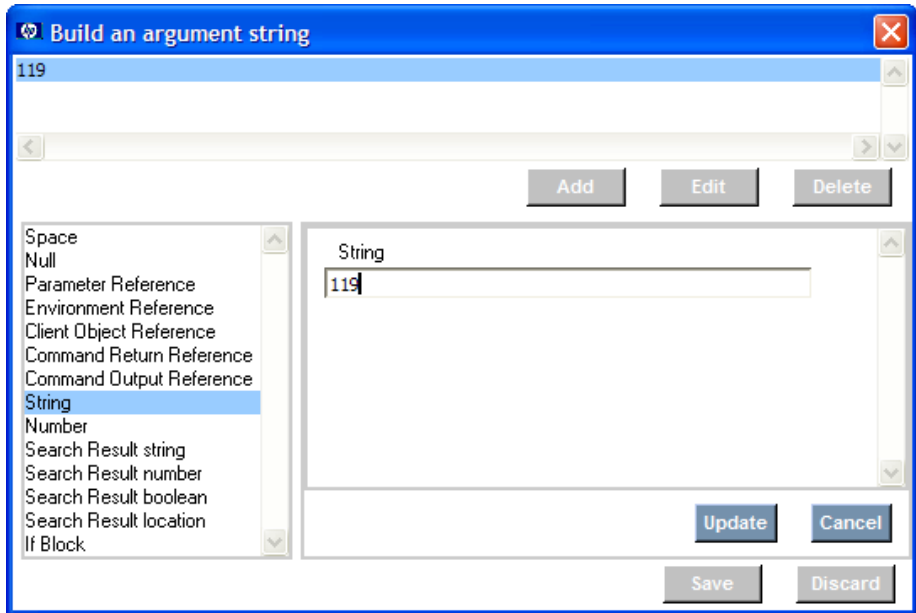
Instance Number

Save Results?

Use

Data type

- 3 Type in a Title and Description for the Search Element.
- 4 Click the ellipsis at the end of the Regular Expression drop-down list to create an expression to search for.
- 5 Click **Edit** to begin creating your expression.
- 6 In the example below, we create a search string of 119.



- 7 Click **Update**, and then **Save**.
- 8 If the search expression is case-sensitive, check the **Case Sensitive** box.
- 9 From the Instance Number drop-down list, select if you would like to find All Matches, just the first match, or just the last match. You can also enter a number to find that particular match. For example, type 5 to find the fifth match.
- 10 If you want to use this Search Filter in the **Insert/Replace Data** and **Delete Data** commands, you must check the **Save Results** box.
- 11 From the **Use** drop-down list, select to use either the **Matched Data** or the **Captured Groups**.
  - Use Matched data to replace all occurrences of a string value with another string value. You are not interested in the parts of what you find, but rather the whole value. For example, you want to replace `\\WIN2KSERVER89` with `\\WIN2KSERVER34`. The parts of the value, WIN2K, SERVER and 89, are not relevant.
  - Now, suppose that you still want to find `\\WIN2KSERVER89` but want to change it to `\\WIN2K89SERVER`. In this case, you would write an expression that searches for these strings and divides them up into groups, `\\WIN2K`, `SERVER`, and `89`. Then, you can switch and replace easily because **Captured groups** lets you reference these parts of a search expression individually.

- 12 From the **Data Type** drop-down list, select the scanned data's type. Below is a complete example.

**Search for all matches of "119"**

Search Element

Title  
Search for all matches of "119"

Description  
A case-sensitive, ungrouped search for all matches of "119"

Regular Expression  
119

Case Sensitive

Instance Number  
All matches

Save Results?

Use  
Matched Data

Data type  
String

## Adding Commands

Create commands to further control your installation. Add a command by clicking on **Add** in an application management phase such as Initialize, Pre-Install, Install, Verify, Update, Repair, or Delete.

Note that on 64 bit Windows architectures the agent and profiles will run in 32 bit emulation mode. HP recommends using fully qualified paths in your profiles to make sure that you are able to run 64-bit executables on 64-bit operating systems. The agent and profiles may be affected by registry and file redirection as documented in the Microsoft knowledge base articles, Overview of the compatibility considerations for 32-bit programs on 64-bit versions of Windows Server 2003 and Windows XP. As always, be sure to thoroughly test your profiles before deployment.

For each command, specify a Command title and a Command description. Each command has its own set of parameters that you will need to specify.

You can use cut, copy, and paste commands. To do this, right-click the mouse on the command you want to perform the action on. Commands can be copied to the same phase or another phase. Note that if you copy and paste a command into the same phase, the name will be copied as well. You may want to change the name of the pasted command to avoid confusion. Be aware of any references to other commands in the original phase.

▶ Starting with version 5.00, the media contains a samples directory. This directory contains examples of many of these commands.

You can choose from the following commands.

**Table 3 Commands and Descriptions**

Command Type	Description
Change State of Windows Service	Use this to change the state of a Windows Service. For example, you may need to stop a Windows Service to install the application, or need to restart a service after installation.
Change UNIX owner/group/permission	Use this command to change ownership, group membership, or permissions of an existing UNIX file or directory.
Change Windows File/Directory attributes	Use this command to modify readonly/archive/system/hidden attributes of an existing Windows file or directory.
Check Registry	Use this to check for the existence of a given registry entry. Returns a value >0 if found. Returns 0 if no entry is found.
Copy file	Specify an existing file to copy.
Create a windows service	Use this to create a Windows service. Specify the name of the service, path to its executable, and any dependencies. You can also decide if you want the service to have the ability to interact with the Desktop.
Create directory	Specify a directory to create. If the intermediate directories don't exist, they will be created. If the directory already exists, then the directory will not be recreated.
Create File	Select a file to create during the phase.

<b>Command Type</b>	<b>Description</b>
Delete data	Use this command to delete data you find using the Search Filter tab.
Exit	Use this to end the current execution of the CM AMP agent on the target device.
External	Select this to run an external command. You will be required to include all necessary information to run the external command.
Fetch a URL	Use this to connect to a URL. Support for http proxies and authentication is included.
File Operations	Use this to normalize file names, use the appropriate characters for your operating system (native), or to delete a file.
Generate random numbers	Use this to generate random numbers with a given range of values. You can specify if you want the numbers want to be unique.
Get an attribute value from a client object	Use this to get the value of an attribute from a CM object. You will need to specify the directory location of the object such as Current Application Directory, Object Directory, COP Directory or Object Model.
Get Disk Space	Get the amount of disk space on the target computer. You have the option of finding either total capacity or free disk space.
Get Registry Value	Use this to get the registry value for a specify key if there is a value. If not, returns an empty string. To check for the existence of a registry key, leave the value blank.
Insert/Replace	Use this with Search Filter to insert or replace data in a file.
Loadbalancer interaction	Use this to add or remove the application from a pool of load balancers. Application Management Profiles supports F5 BIG-IP, Cisco CSS 11500 Series Content Services Switches, and Nortel Application Switch Operating System 22.0.



<b>Command Type</b>	<b>Description</b>
Network Share	Use this to connect or disconnect from a network share. If the installation media is located on your network, you will need to specify a network location and credentials before starting the installation.
Read File Data	Use this command to read data from a file on the target device and assign the data to the command output. The output can then be used by other commands.
Reboot device	Use this to Restart, Power Off, Logoff or Shutdown the target computer.
Remove directory	Use this command to specify a directory to be removed. If the directory does not exist, then no action will be taken.
Rename file	Use this command to rename a file.
Save data	Use this command to saves the scanned and updated data to disk.
Scan	Scans the data using defined Search Filters. The data can be from a file, command output or a parameter reference.
Set an attribute in a client object	Use this to set the value of an attribute of a CM Object. You will need to specify the directory location of the object such as Current Application Directory, Object Directory, COP Directory or Object Model.
Set Environment variable	Use this to set an environment variable. See <a href="#">Environment Variables</a> , on page 115 for a list of possible environment variables.
Set Parameter	Use this to set a parameter's value for an instance from the Configuration tab.
Set Registry Value	Set a value in the Registry using this command.
Set/Get Values from INI files	Use this command to set or get values from an ini file. You will need to specify the path to the ini file.

<b>Command Type</b>	<b>Description</b>
Sleep for seconds and milliseconds specified	Specify a period of time for the process to sleep. Use this to create a pause between commands processing to allow for command clean up.
Validate files used in a manifest	Use this command to validate files based on a list in a file manifest.
Verify UNIX File/Directory Attributes	Check attributes of an existing UNIX file or directory. You can verify the owner, group, permissions, accessed time, size, MD5 signature, or version. Any attribute that is left blank will not be checked.
Verify Windows File/Directory Attributes	Check attributes of an existing Windows file or directory. You can verify readonly, system, hidden, archive, accessed time, size, MD5 signature, or version. Any attribute that is left blank will not be checked.
Windows Service Query	Use this to find if a Windows Service exists or to find if the Service is stopped, started, or disabled.
WMI	This command provides WMI query, notification, and execute on a local or remote device.
Xquery	Run an Xquery to get or set attribute or node values in an XML document.

## Pre-Conditions and Post-Conditions

For each command, you can specify a pre-condition and a post-condition. Use these to control the flow of commands. Pre-condition checks allow or prevent an action to be run if certain criteria are met. Post-conditions are used to abort the entire profile if the status after a command runs does not meet certain criteria. Be sure to provide a descriptive error message to show why the flow of commands may be modified. This error message is displayed in the client computer's `connect.log` and in the CM Reporting Server.

## Using a Pre-Condition

If the pre-condition is false or not met, the command will not run. The command will be skipped, and we will go to the next command in the chain. In other words, the command will run only if the pre-condition is true or met. In the example below, the pre-condition states that the computer should be rebooted only if the **Install MSSQL Server** command returns a 3010 code. If it does, then the computer is restarted. If the return code is not 3010, then a "Reboot not required message" is displayed, and the profile goes to the next command, in this case, **Restart SQL Server**.

**Figure 7** Use a pre-condition.

**Restart Operating System if needed**  
Reboot device  
Use this to Restart, Power Off, Logoff or Shutdown the target computer.

Title  
Restart Operating System if needed

Description  
Restart Operating System if needed

Type  
Restart

Pre-condition expression  
 Check pre-condition  
CmdRetRef(phaseID=3,actionID=350,use=ReturnCode,creator=CmdRetRef) EQ 3010

Error message  
Reboot not required

Post-condition expression  
 Check post-condition

## Using a Post-Condition

If the post-condition is false or not met, the profile will stop. Suppose that the installation requires 350 MB of free disk space. Create a post-condition on the Get Disk Space command that will check if the free disk space is more than 350 MB. In the example, below the free disk space on the target computer is compared to the Free Disk Space parameter in the Requirement Definitions section of the Configuration tab. If the target computer has more than 350 MB free disk space, then the profile continues. If the target

computer has less than or equal to 350 MB free, the profile will stop, and the error message "We need at least 350 MB of free space on the installation drive to install" will display.

- ▶ If there is no post-condition, then the profile will go to the next command regardless of the result of the command.

**Figure 8 Use a Post-condition.**

### Check if Install Drive has over 350 MB in free space

**Get Disk Space**

Get the amount of disk space on the target computer. You have the option of finding either total capacity or free disk space. The amount of free space or disk capacity is in megabytes (MB)

Title  
Check if Install Drive has over 350 MB in free space

Description  
Check free space on install drive

Drive Letter  
ParmRef[section=INSTCONF,instance=1,parameter=INSTDIR] ...

Type  
Free ▾

Pre-condition expression  
 Check pre-condition

Post-condition expression  
 Check post-condition  
CmdOutRef(phaseID=2,actionID=270,use=Output,creator=CmdOutRef) GT ParmRef[section=REQDEF] ...

Error message  
We need at least 350 MB of free space on the installation drive to install

### Condition Processing Summary

The profile will run this command and go to the next command if:

- There is a pre-condition that is met, the command runs, and there is no post-condition.

- There is a pre-condition that is met, the command runs, and there is a post-condition which is met.
- There is no pre-condition, the command runs, and there is no post-condition.
- There is no pre-condition, the command runs, and there is a post-condition that is met.

The profile will skip this command, but go to the next command if:

- There is a pre-condition that is not met. The post-condition is irrelevant in this case.

The profile will abort, and display the post-condition error message if:

- There is a pre-condition that is met, and the command runs, but the post-condition is not met.
- There is no pre-condition, the command runs, but the post-condition is not met.

The profile will abort, and will *not* display the post-condition error message if:

- There is a pre-condition that is met, but the command fails to run.
- There is no pre-condition, but the command fails to run.



If the command fails to run, the post-condition is evaluated for existence only. The CM Server Management Agent aborts the profile. Any error messages that get returned are not part of the post-condition. In addition even if a profile stops due to a failing post-conditions, the AMP will still execute the commands in the Cleanup phase.

## Building a String

Some of the parameters for a command may require building an argument string. To do this, use the String Builder. To start using the string builder, click on the ellipsis at the end of a parameter. Depending on the parameter, the following operands may be available in the String builder.



If you hover over an item in the Edit box in the String Builder, help text will appear at the bottom of the dialog.

**Table 4 Available operands in the String Builder**

<b>Operand</b>	<b>Description</b>
Client Object Reference	Use to reference a client object. This may also be referred to as an agent object.
Command Output Reference	Use to refer to the output of another command from any phase of the application profile.
Command Return Reference	Use to refer to the return code of another command from any phase of the application profile.
Credential Reference	Use this when you need a set of credentials, such as connecting to a network share.
Environment Reference	Use to create an Environment Reference.
File Content Reference	Use to refer to an entry in the File templates section.
If block	Use this when you will need to branch the expression. You will need to provide a condition, a value if the condition is true, and a value if the condition is false. Note you can create nested If statements.
List the search elements to use	Use this to select a defined Search Filter
Null	Use this if you want an empty value.
Number	Use this to type in a numeric value.
Number cell	For WMI, a single cell from a table section array if the parameter in the section is a string.
Number of rows	For WMI, the number of rows in a table section array.
Parameter Reference	Use to reference a parameter from the Configuration tab.
Search Result string	Use this if the result of a Scan command using a Search Filter returns a string.
Search Result number	Use this if the result of a Scan command using a Search Filter returns a number.

Operand	Description
Search Result boolean	Use this if the result of a Scan command using a Search Filter returns a boolean.
Search Result location	Use this as an index if there is more than one search result. For example, if a search returns 5 matches, you can specify the third match (3).
Space	Use to add a space to the string.
String	Use this to type in a string of text. Note: If you are creating a string, that has a tab character in it, the tab will display as <Tab> in the String Builder.
String cell	For WMI, a single cell from a table section array if the parameter in the section is a string.

## Command Modes

Some commands only need to be executed when the client is running in a specific mode. The possible modes are `create`, `delete`, `verify`, `update`, and `repair`. These modes together form life cycle management of an application

This mode is available for the CM AMP agent to use. The mode can be used to control when commands and phases are performed. By default, the mode is blank; this means that the command or phase would be executed in all the life cycle management modes of the CM Server Management Agent. If a phase or command has a specific mode defined, the mode would be compared with the current life cycle management mode. If the life cycle management mode matches the command or phase mode, then the command or phase would be executed. Otherwise, the command or phase would be skipped. For example, if the command or phase should be executed only when the client is doing a `create` or a `verify`, then you would select the `create` and `verify` modes in the Modes for this command section. If the life cycle management mode does not match the phase or command mode, then the phase or command would be skipped.



If the modes for a phase are only `create` and `delete`, then the command modes for commands in a phase will also only be `create` and `delete`.

## Command Examples

The sections below detail some of the commands and how to use the String Builder by example. Find these examples in the CM Application Management Profiles provided by HP on the Server Management media. For parameters and complex parameters within commands, the CM AMP Editor supports a minimum length of zero, and will write NULL when no value is entered.

▶ Examples of almost all of the commands are now included in the samples directory on the installation media. Some of these are shown in this section.

### Change State of Windows Service

In the procedure below, you will start the Apache Service after installation. The Service to start will be specified by creating a parameter reference. You can find this in the Install phase.

#### To change the state of a Windows Service

- 1 In the Add Command dialog box, click **Change State of Windows Service**.
- 2 Type a short, descriptive Command Title, and an explanatory Command Description.
- 3 Click **Done**.




## Start Apache


### Change State of Windows Service

Use this to change the state of a Windows Service. For example, you may need to stop a Windows Server to install the application, or need to restart a service after installation. Returns 0 if the action was successful, if not returns a non zero value.


Title  
Start Apache

Description  
Start Apache


Service Name  
<Space> 

Action  
Stop 

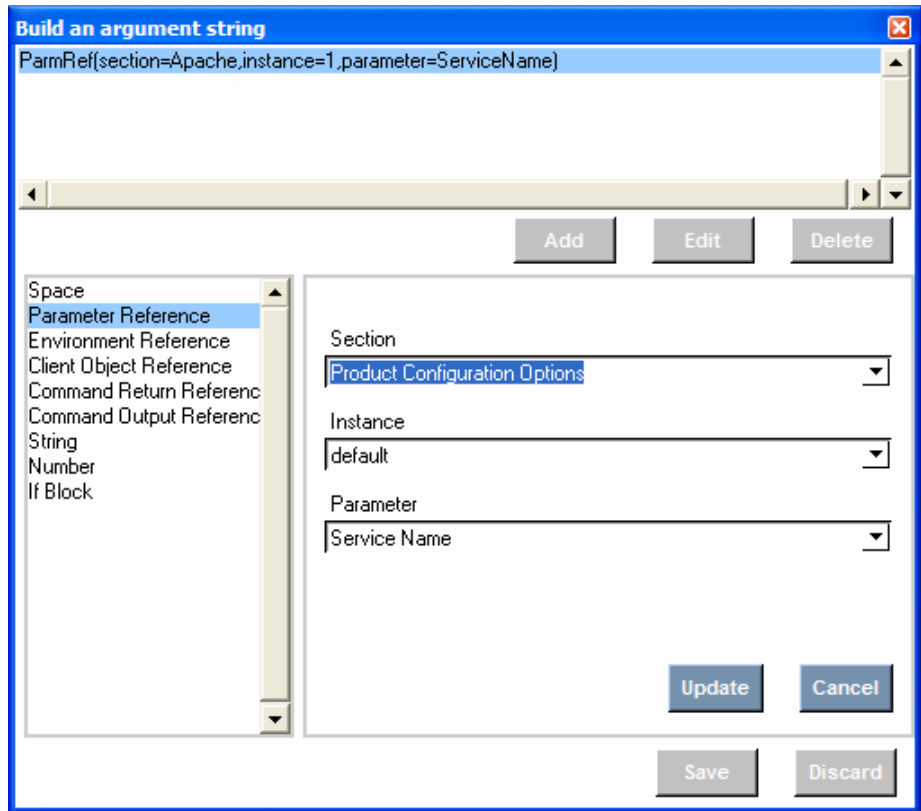
Pre-condition expression  
 Check pre-condition

Post-condition expression  
 Check post-condition  


Error message

Modes for this command  
create 

- 4 Click on the ellipsis at the end of the Service name field to start the String Builder. This is the service you will be changing the state of.
- 5 Click **Edit**.
- 6 From the Operands, click **Parameter Reference**.
- 7 From the drop-down list, click the section you want to get the parameter from. In this case, we select the Service Name from Product Configuration Options.



- 8 Click **Update**, and then click **Save**.
- 9 From the Action drop-down list, click **Start**.

## Start Apache

### Change State of Windows Service

Use this to change the state of a Windows Service. For example, you may need to stop a Windows Server to install the application, or need to restart a service after installation. Returns 0 if the action was successful, if not returns a non zero value.

Title	<input type="text" value="Start Apache"/>
Description	<input type="text" value="Start Apache"/>
Service Name	<input type="text" value="ParmRef(section=Apache,instance=1,parameter=ServiceName)"/>
Action	<input type="text" value="Start"/>
Pre-condition expression	<input type="checkbox"/> Check pre-condition
Post-condition expression	<input type="checkbox"/> Check post-condition
Modes for this command	<ul style="list-style-type: none"><li>create</li><li>delete</li><li>verify</li><li>repair</li><li>update</li></ul>

The results of your new command are displayed.

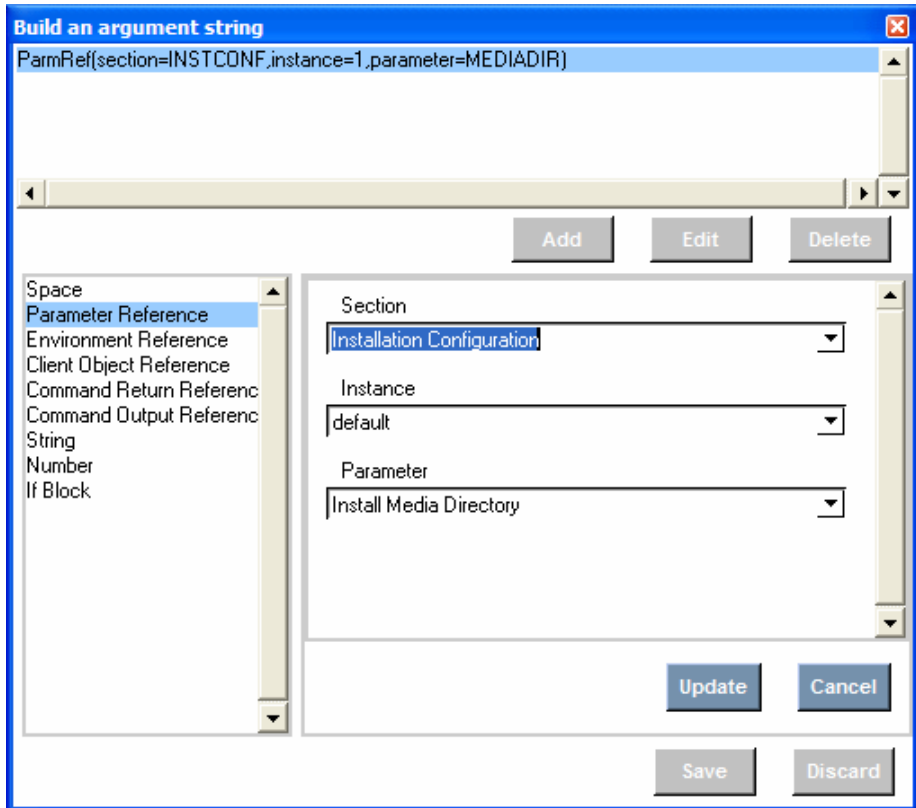
### Change UNIX owner/group/permission

In the example below, we will change the owner of the media directory during the Pre-Install phase of the Oracle profile.

To change the owner, group, or permission of a UNIX file

- 1 In the Add Command dialog box, click **Change UNIX owner/group/permission**.
- 2 Type a short, descriptive Command Title, and an explanatory Command Description.
- 3 Click **Done**. The main screen of the Change UNIX owner/group/permission command displays.

- 4 Click on the ellipsis at the end of the File/Directory Name field to start the String Builder. This is the name of the file or directory that you want to change.
- 5 Click **Edit**.
- 6 From the Operands, click **Parameter Reference**. Enter the appropriate reference.



- 7 Click **Update**, and then **Save**.
- 8 Check the box if you want to recurse subdirectories.

## Change Owner on Install Depot

### Change UNIX owner/group/permission

Change ownership, group membership and permission of an existing file/directory

Title

Description

File/Directory Name  
 ...

Owner Name (optional)  
 ...

Group Name (optional)  
 ...

Permissions (optional)

Recurse sub-directories

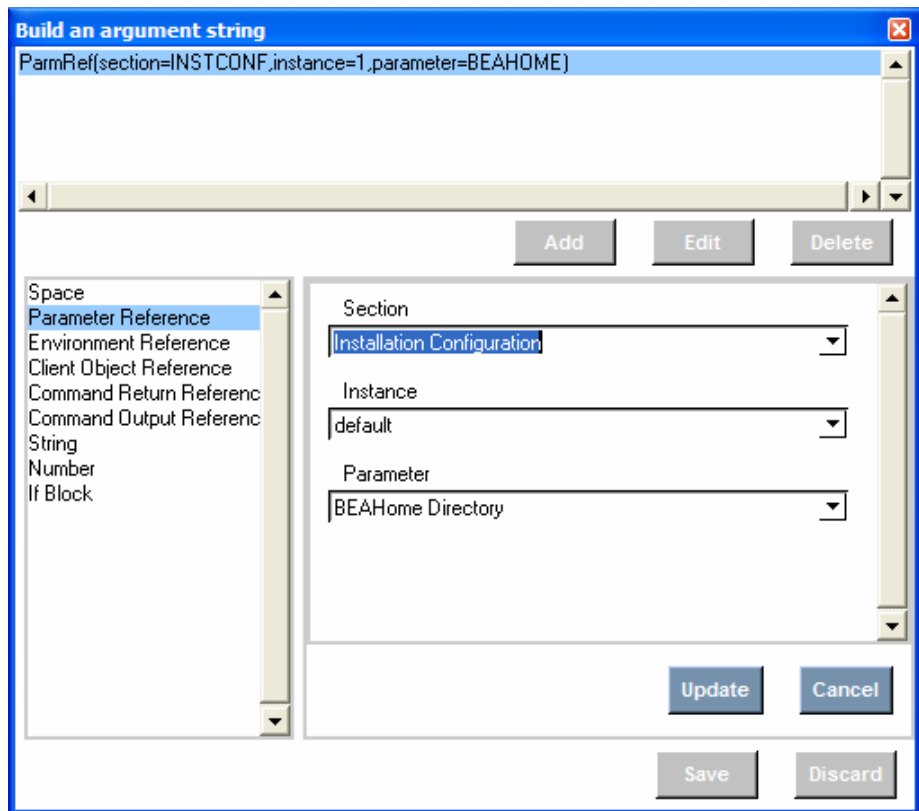
The results of your new command are displayed.

### Create directory

In the example below, we will create the BEA Home directory for WebLogic during the Pre-Install phase.

#### To create a directory

- 1 In the Add Command dialog box, click **Create directory**.
- 2 Type a short, descriptive Command Title, and an explanatory Command Description.
- 3 Click **Done**. The main page of the Create Directory command will display.
- 4 Click on the ellipsis at the end of the Directory Name field to start the String Builder. This is the name of the directory to create. Note that you can also specify an owner, a group, and permissions.
- 5 Click **Edit**.
- 6 From the Operands, click **Parameter Reference**. Select the set of values you need.







- 7 Click **Update**, and then **Save**.

## Create the BEAHome Directory

### Create directory

Specify the directory name, if the intermediate directories don't exist they would be created. If the directory already exists then this command is benign.

Title	<input type="text" value="Create the BEAHome Directory"/>
Description	<input type="text" value="Create the BEAHome Directory"/>
Directory Name	<input type="text" value="ParmRef(section=WebLogic,instance=1,parameter=BEAHome)"/> 
Owner (optional)	<input type="text"/> 
Group (optional)	<input type="text"/> 
Permissions (optional)	<input type="text"/>
Command Output Type	<input type="text" value="String"/> 
Pre-condition expression	<input type="checkbox"/> Check pre-condition

The results of your new command are displayed.

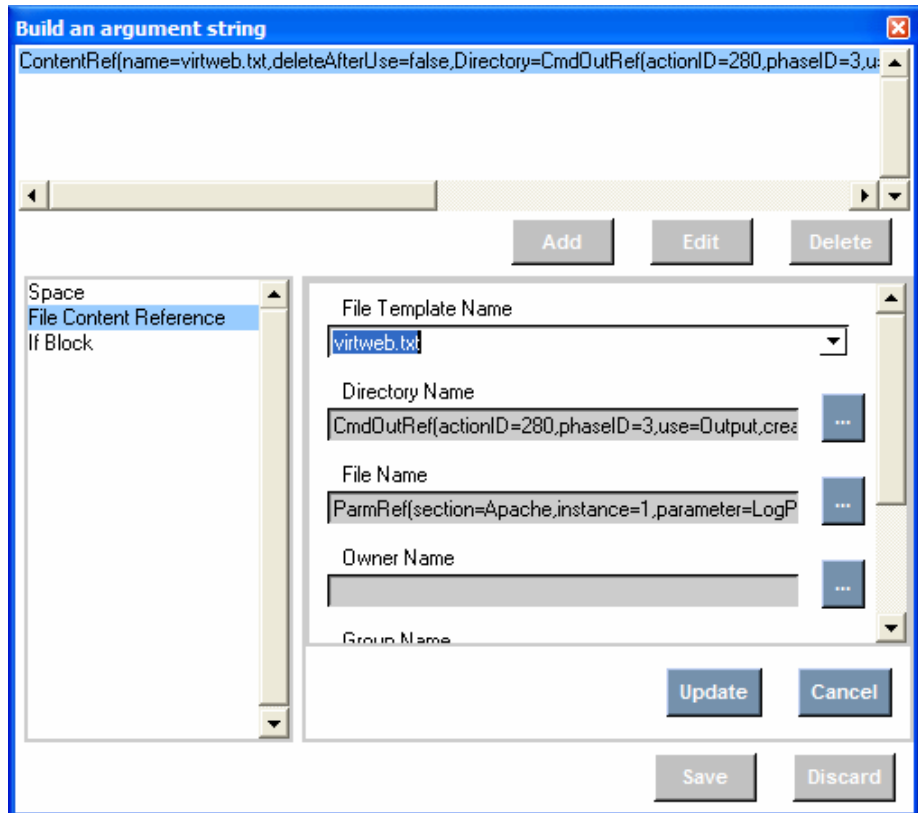
### Create File

In the procedure below, you will create a configuration file, `virtweb.txt`, for Apache Virtual Web during the Install phase. The file information will be retrieved from the File Template.

#### To create a file

- 1 In the Add Command dialog box, click **Create File**.
- 2 Type a short, descriptive Command Title, and an explanatory Command Description.
- 3 Click **Done**. The screen for the Create File command is displayed.

- 4 Click on the ellipsis at the end of the File Name field to start the String Builder. This is the file you will be creating.
- 5 Click **Edit**.



- 6 From the Operands, click **File Content Reference**. Select the file to create. Type a directory and a file name. Check if you want to delete the file after use.
- 7 Click **Update**, and then **Save**.



## Create CONFIG File

### Create File

Create a file on the target device using the contents from the file template.

Title	<input type="text" value="Create CONFIG File"/>
Description	<input type="text" value="Create the Virtual Host config file from the profile"/>
File name	<input type="text" value="ContentRef(name=virtweb.txt,deleteAfterUse=false,Directory=CmdOutRef(actionID=280,phaseID=3,us"/> ...
Command Output Type	<input type="text" value="String"/> ▾
Pre-condition expression	<input type="checkbox"/> Check pre-condition
Post-condition expression	<input type="checkbox"/> Check post-condition

The results of your new command will be displayed.

### Delete Data

In the example below, we find and delete all occurrences of "119" in a file.

#### To use Delete Data

- 1 In the Add Command dialog box, click **Delete Data**.
- 2 Type a short, descriptive Title, and an explanatory Command Description.
- 3 Click **Done**.

## Delete all occurrences of "119"

### Delete data


Deletes the scanned data


Title  
Delete all occurrences of "119"

Description  
Delete all occurrences of "119"

Loop  
 Specify loop reference

Pre-condition expression  
 Check pre-condition

Search Location  
<Space> 

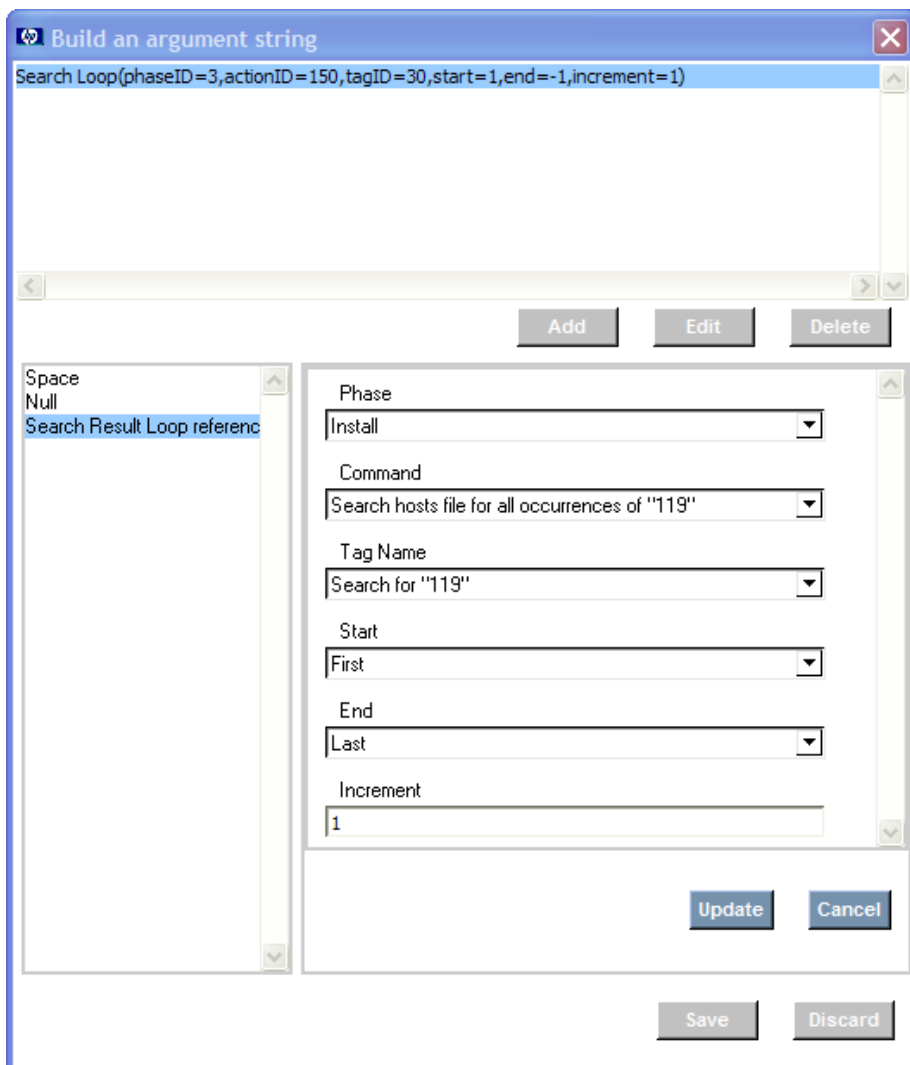
Command Output Type  
Undefined 

- 4 Since we want to find all occurrences of "119", we will select the **Specify loop reference** check box.



Before using the Delete data command, you must have a Scan command which searches for the data you are going to delete.

- 5 Click the ellipsis next to Loop Reference to build an argument string.
- 6 Click **Add** to begin creating the Search Result Loop reference to your Scan command.



- 7 Click **Update** and **Save** when you are finished.
- 8 Click the ellipsis after Search Location to set your search location.
- 9 Set the Command Output Type.

## Delete all occurrences of "119"

### Delete data

Deletes the scanned data

Title  
Delete all occurrences of "119"

Description  
Delete all occurrences of "119"

Loop  
 Specify loop reference  
Loop Reference  
Search Loop(phaseID=3,actionID=150,tagID=30,start=1,end=-1,increment=1) ...

Pre-condition expression  
 Check pre-condition

Search Location  
Search(phaseID=3,actionID=150,tagID=30,subtagID=,index=-3) ...

Command Output Type  
String

The results of your new command are displayed.

### External

In the example below, we need to run an external command. This command runs the installation for Microsoft Internet Information Server during the Install phase.

#### To use an external command

- 1 In the Add Command dialog box, click **External**.
- 2 Type a short, descriptive Command Title, and an explanatory Command Description.
- 3 Click **Done**.


## Install IIS on Windows 2003


### External

Executes an external program or script and hands back the program's or script's return code.


Title  
Install IIS on Windows 2003


Description  
This command will install IIS on Windows 2003


Command  
<Space> 

Arguments (optional)  
<Space> 

Wait for command to end

Working Directory (optional)  
<Space> 

Output File (optional)  
<Space> 

Run As (optional)  
<Space> 

Pre-condition expression  
 Check pre-condition

Post-condition expression  
 Check post-condition

- 4 Click on the ellipsis at the end of the Command field to start the String Builder. This is the external command you want to run.
- 5 Click **Edit**.
- 6 From the Operands, click **Parameter Reference**.
- 7 Click **Update**, and then **Save**.
- 8 Click on the ellipsis at the end of the Arguments field to start the String Builder. Set all arguments for the external command here.
- 9 Click **Update**, and then **Save**.
- 10 Check if you want to wait for the command to end.
- 11 If needed, select a Working Directory, Output File, and user credentials.

- 12 Click **Update**, and then **Save** in the String Builder after you have edited all needed fields.

**Install IIS on Windows 2003**  
**External**  
Executes an external program or script and hands back the program's or script's return code.

Title  
Install IIS on Windows 2003

Description  
This command will install IIS on Windows 2003

Command  
PamRef(section=Radia,instance=1,parameter=setupexefile) ...

Arguments (optional)  
/i:PamRef(section=Global,instance=1,parameter=windir)\inf\sysoc.inf /q /! /u:ContentRef(name=iis6.inf.c) ...

Wait for command to end

Working Directory (optional) ...

Output File (optional) ...

Run As (optional) ...

Pre-condition expression  
 Check pre-condition  
PamRef(section=Radia,instance=1,parameter=ZDS) EQUALS WIN2K3 ...

Error message

The results of your new command will be displayed.

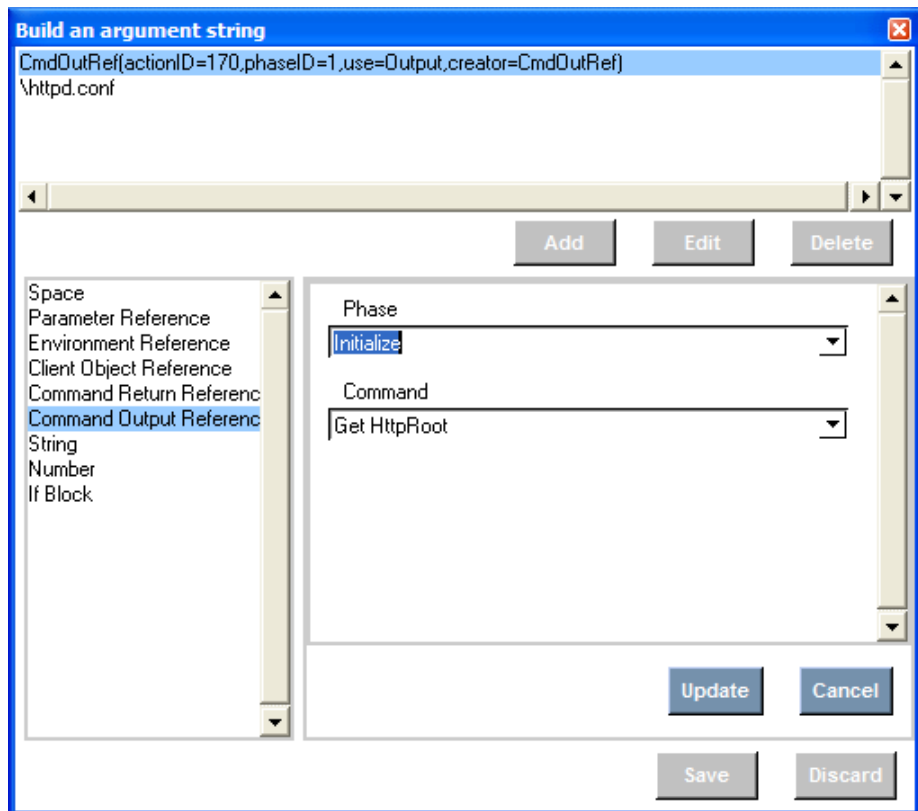
## File Operations

In this example, we want the remove the configuration file for Apache as part of the Delete phase.

### To perform a file operation

- 1 In the Add Command dialog box, click **File Operations**.

- 2 Type a short, descriptive Command Title, and an explanatory Command Description.
- 3 Click **Done**. The main page of the File Operations command is displayed.
- 4 From the Operation drop-down list, select the operation you wish to perform.
- 5 Click on the ellipsis at the end of the File name field to start the String Builder. This is the file name you will be performing the operation on.
- 6 Click **Edit**.
- 7 From the Operands, click **Parameter Reference**.
- 8 From the drop-down list, click the section you want to get the parameter from.



- 9 Click **Update**, and then click **Save**.

## Delete the HTTP Configuration

### File Operations

Use this to normalize file names, use the appropriate characters for your operating system (native), to delete a file, to get the version of the file in Windows

Title	<input type="text" value="Delete the HTTP Configuration"/>
Description	<input type="text" value="This step deletes the Apache configuration file as part of deleting the software"/>
Operation	<input type="text" value="Delete"/>
File name	<input type="text" value="CmdOutRef(actionID=170,phaseID=1,use=Output,creator=CmdOutRef)\httpd.conf"/>
Command Output Type	<input type="text" value="String"/>
Pre-condition expression	<input type="checkbox"/> Check pre-condition
Post-condition expression	<input type="checkbox"/> Check post-condition

The results of your new command will be displayed.

### Get Disk Space

In the procedure below, you will check a drive to see if it has adequate space for the installation of Microsoft Internet Information Server. The drive will be specified by creating a parameter reference to a directory path. Then, the drive where the directory resides will be checked.

#### To get disk space information

- 1 In the Add Command dialog box, click **Get Disk Space**.
- 2 Type a short, descriptive Command Title, and an explanatory Command Description.
- 3 Click **Done**.



## Check if MediaDir drive has over 300 MB in free space

### Get Disk Space

Get the amount of disk space on the target computer. You have the option of finding either total capacity or free disk space. The amount of free space or disk capacity is in megabytes (MB)

Title  
Check if MediaDir drive has over 300 MB in free space

Description  
Check free space on MediaDir drive

Drive Letter  
<Space> ...

Type  
Free

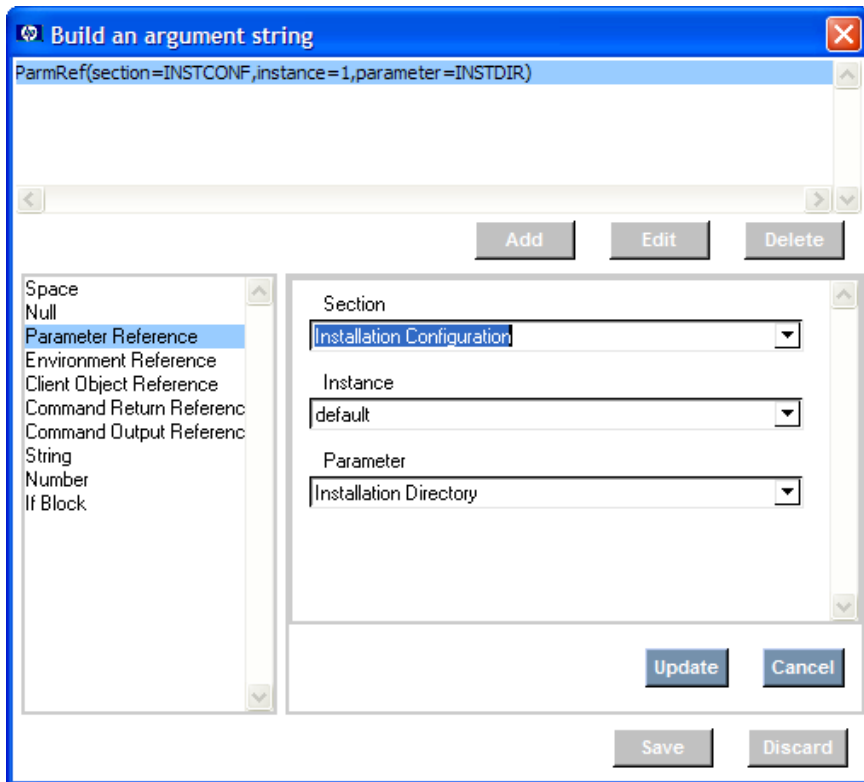
Pre-condition expression  
 Check pre-condition

Post-condition expression  
 Check post-condition  
...

Error message

Modes for this command  
create  
delete  
verify  
repair  
update

- 4 Click on the ellipsis at the end of the Drive Letter field to start the String Builder. This is the drive or path on the drive you will be checking.
- 5 Click **Edit**.
- 6 Click **Parameter Reference**.



- 7 Click **Update**, then click **Save**.
- 8 From the Type drop-down list, click **Free**.

## Get Disk Space

Get the amount of disk space on the target computer. You have the option of finding either total capacity or free disk space. The amount of free space or disk capacity is in megabytes (MB)

Title	Check if Install Drive has over 350 MB in free space
Description	Check Free Disk Space on install drive
Pre-condition expression	<input type="checkbox"/> Check pre-condition
Drive Letter	ParmRef(section=INSTCONF,instance=1,parameter=INSTDIR) ...
Type	Free
Post-condition expression	<input checked="" type="checkbox"/> Check post-condition CmdOutRef(phaseID=2,actionID=30,use=Output,creator=CmdOutRef) GE ParmRef(section=REQD) ...
Error message	We need at least 350 MB of free space on the installation drive to install

The results of your new command will be displayed.

## Get Registry Value

In the procedure below, you will fetch a registry value to get the installation path for Microsoft Windows. This is required for the installation of Microsoft Internet Information Server.

### To get a registry value

- 1 In the Add Command dialog box, click **Get Registry Value**.
- 2 Type a short, descriptive Command Title, and an explanatory Command Description.
- 3 Click **Done**.

## Get Source Path from Registry

### Get Registry Value

This command is used to fetch a registry value.

Title  
Get Source Path from Registry

Description  
Get Source path from registry

Key  
<Space> ...

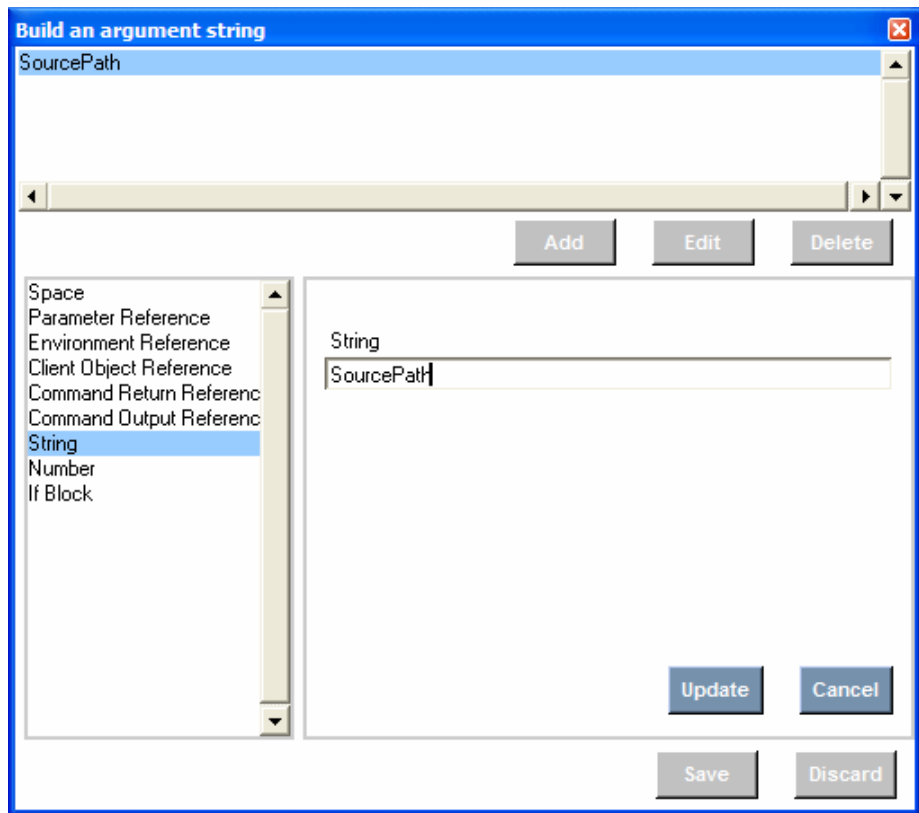
Value  
<Space> ...

Pre-condition expression  
 Check pre-condition

Post-condition expression  
 Check post-condition  
...  
Error message

Modes for this command  
create  
delete  
verify  
repair  
update

- 4 Click on the ellipsis at the end of the Key field to start the String Builder. This is the key you will be getting the information from.
- 5 Click **Edit**.
- 6 From the Operands, click **String**.
- 7 Type the full path to the registry key you are fetching the value from.
- 8 Click **Update**, and then **Save**.
- 9 Click on the ellipsis at the end of the Value field to start the String Builder. This is the registry value you will be getting.



- 10 Click **Update**, and then **Save**.
- 11 The results of your new command will be displayed.

## Get Source Path from registry

### Get Registry Value

This command is used to fetch a registry value.

Title	<input type="text" value="Get Source Path from registry"/>
Description	<input type="text"/>
Key	<input type="text" value="HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows\CurrentVersion\Setup"/> ...
Value	<input type="text" value="SourcePath"/> ...
Pre-condition expression	<input type="checkbox"/> Check pre-condition
Post-condition expression	<input checked="" type="checkbox"/> Check post-condition <input type="text" value="CmdRef[phaseID=1,actionID=210,use=ReturnCode] EQ 0"/> ...
Error message	<input type="text" value="Could not fetch Source Path from registry"/>
Modes for this command	<input type="text" value="create&lt;br/&gt;delete&lt;br/&gt;verify&lt;br/&gt;repair&lt;br/&gt;update"/>

### Insert/Replace Data

In the example below, we will replace all occurrences of "119" with "120" in a hosts file.

#### To use Insert/Replace data

- 1 In the Add Command dialog box, click **Insert/Replace Data**.
- 2 Type a short, descriptive Title, and an explanatory Command Description.
- 3 Click **Done**.

## Replace: all occurrences of "119" with "120"

### Insert/Replace data

Updates the scanned data with new data.

Title

Replace: all occurrences of "119" with "120"

Description

Replace: all occurrences of "119" with "120"

Loop

Specify loop reference

Pre-condition expression

Check pre-condition

Search Element

<Space>

Option

Overwrite the data

Data (optional)

<Space>

Command Output Type

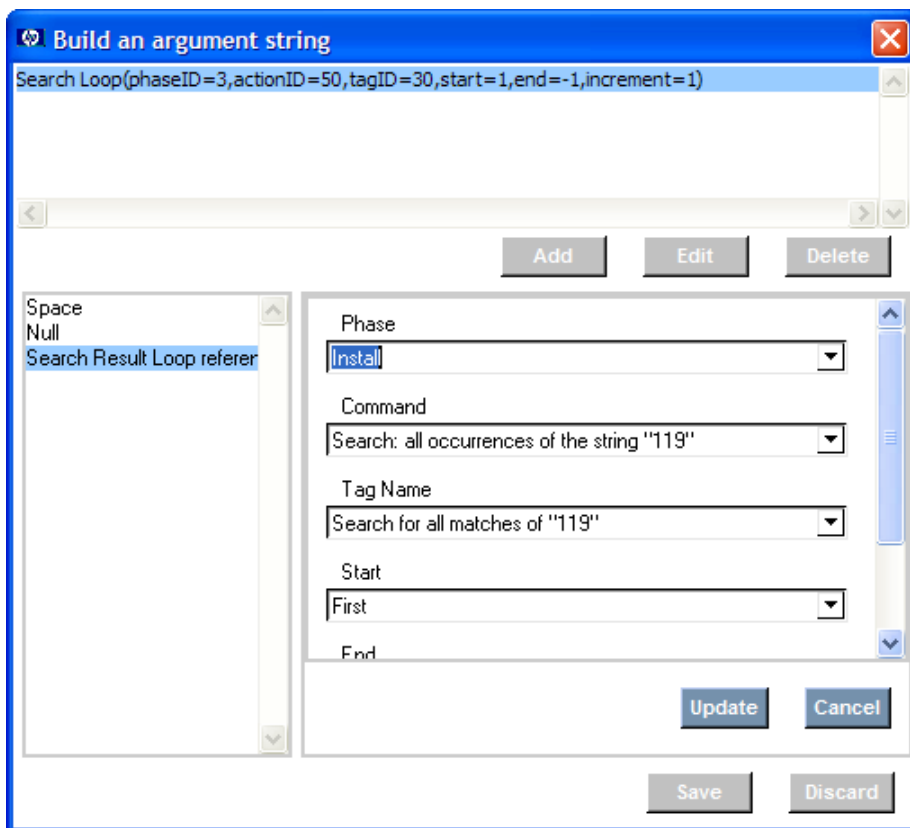
Undefined

- 4 Since we want to find all occurrences of "119", we will select the **Specify loop reference** check box.



Before using the Insert/Replace data command, you must have a Scan command which searches for the data you are going to replace.

- 5 Click the ellipsis next to Loop Reference to build an argument string.
- 6 Click **Add** to begin creating the Search Result Loop reference to your Scan command.



- 7 Click **Update** and **Save** when you are finished.
- 8 Click the ellipsis after Search Location to set your search location.
- 9 In the Option drop-down list, select if you want to overwrite the data, insert in the beginning, or insert in the end.
- 10 Type the Data you want to replace with.
- 11 Set the Command Output Type. In this case, we use string.



## Insert/Replace data

Updates the scanned data with new data.

Title

Replace: all occurrences of "119" with "120"

Description

This will replace all occurrences of "119" that were found in the previous command with "120"

Loop

Specify loop reference

Loop Reference

Search Loop(phaseID=3,actionID=50,tagID=30,start=1,end=-1,increment=1)

Pre-condition expression

Check pre-condition

Search Element

Search(phaseID=3,actionID=50,tagID=30,subtagID=,index=-3)

Option

Overwrite the data

Data (optional)

120

Command Output Type

String

The results of your new command are displayed.

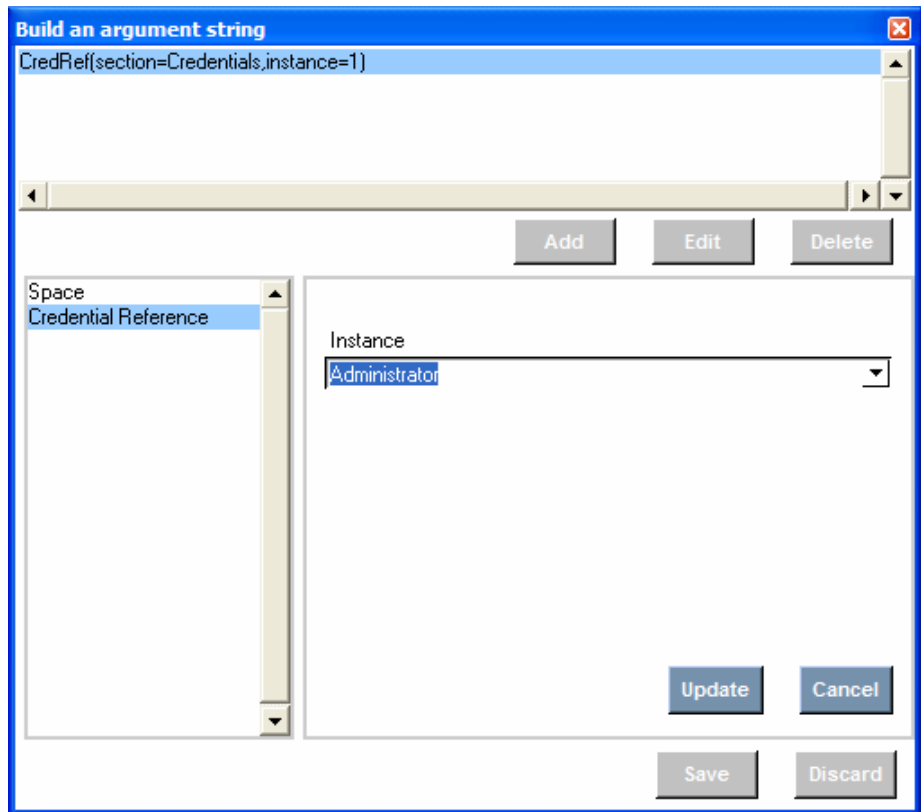
## Network Share

In the procedure below, we need to connect to a network share to install Microsoft SQL Server. Credentials must be supplied during the Install phase.

### To specify information for a network share

- 1 In the Add Command dialog box, click **Network Share**.
- 2 Type a short, descriptive Command Title, and an explanatory Command Description.
- 3 Click **Done**. The main page of the Network Share command is displayed.
- 4 Click on the ellipsis at the end of the Share Name field to start the String Builder. This is the parameter you will be setting the value for.

- 5 Click **Edit**.
- 6 From the Operands, click **Parameter Reference**.
- 7 From the drop-down list, click the section you want to get the share name from.
- 8 Click **Update**, and then **Save**.
- 9 From the Action drop-down list, click **Connect** or **Disconnect**. In this case, we want to connect.
- 10 Click on the ellipsis at the end of the Credentials field to start the String Builder. These are the set of credentials you will use to connect to the network share.
- 11 Click **Edit**



- 12 Click **Update**, and then **Save**.

## Connect to AIP

### Network Share

Use this to connect or disconnect from a network share. If the installation media is located on your network, you will need to specify a network location and credentials before starting the installation.

Title	<input type="text" value="Connect to AIP"/>
Description	<input type="text" value="User defined command"/>
Share Name	<input type="text" value="ParmRef(section=Global,instance=1,parameter=InstallShare)"/> ...
Action	<input type="text" value="Connect"/>
Credentials (optional)	<input type="text" value="CredRef(section=Credentials,instance=1)"/> ...
Pre-condition expression	<input type="checkbox"/> Check pre-condition
Post-condition expression	<input checked="" type="checkbox"/> Check post-condition <input type="text" value="CmdRef(phaseID=2,actionID=250,use=ReturnCode) EQ 0"/> ...
Error message	<input type="text" value="Could not connect to AIP"/>

The results of your new command will be displayed.

### Reboot device

In this example, we will restart the target computer. Note that this contains a pre-condition to see if a reboot is needed. This example is from the Install phase of the Microsoft SQL Server profile.

### To reboot a device

- 1 In the Add Command dialog box, click **Reboot device**.
- 2 Type a short, descriptive Command Title, and an explanatory Command Description.
- 3 Click **Done**. The main page of the Reboot device command is displayed.
- 4 From the Type drop-down list, click the type of reboot you want. Your options are Restart, Power Off, Logoff, and Shutdown.

## Check if a reboot is needed

### Reboot device

Use this to Restart, Power Off, Logoff or Shutdown the target computer.

Title  
Check if a reboot is needed

Description  
Check if a reboot is needed

Type  
Restart

Pre-condition expression  
 Check pre-condition  
CmdRef(phaseID=3,actionID=330,use=ReturnCode) EQ 3010  
Error message  
Reboot required

Post-condition expression  
 Check post-condition

Modes for this command  
create  
delete  
verify  
repair  
update

The results of your new command are displayed.

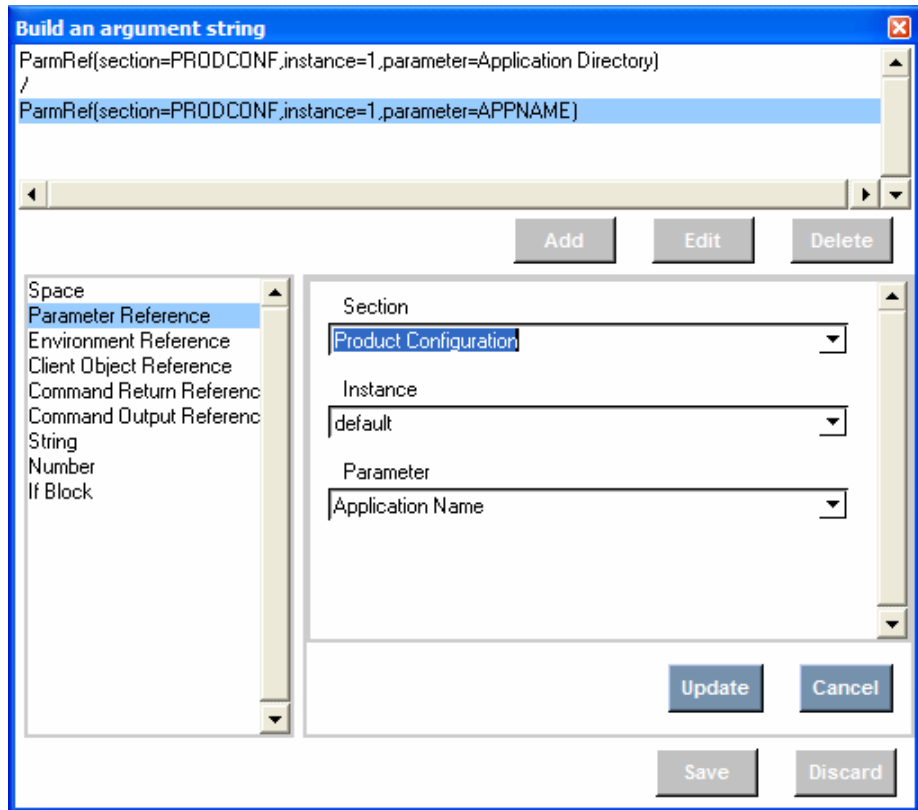
### Remove Directory

In the example below, we remove the domain directories during the Uninstall phase of BEA WebLogic.

#### To remove a directory

- 1 In the Add Command dialog box, click **Remove directory**.
- 2 Type a short, descriptive Command Title, and an explanatory Command Description.
- 3 Click **Done**. The main screen of the Remove directory command is displayed.
- 4 Click on the ellipsis at the end of the Directory Name field to start the String Builder. This is the name of the directory to remove.

- 5 Click **Edit**.
- 6 From the Operands, click **Parameter Reference**. Select the set of values you need.
- 7 Click **Update**, and then **Save**.



- 8 Check the box to delete subdirectories.

## Remove Domain Directories

### Remove directory

Specify the directory name. If the directory doesn't exist then this command is benign.

Title

Remove Domain Directories

Description

Remove Domain Directories

Directory Name

ParmRef{section=PRODCONF,instance=1,parameter=Application Directory}/ParmRef{section=PRODC

Delete files and sub-directories

Command Output Type

String

The results of your new command are displayed.

### Scan

In the example below, we scan for "119" in a file. Usually, this command is used before Delete Data, Insert/Replace or Save data. Note that you need to define a Search Filter before using this command.

#### To use Scan

- 1 In the Add Command dialog box, click **Scan**.
- 2 Type a short, descriptive Title, and an explanatory Command Description.
- 3 Click **Done**.

## Search hosts file for all occurrences of "119"

### Scan

Scans data using predefined filters. The data can be from a file, command output or a parameter reference.

Title  
Search hosts file for all occurrences of "119"

Description  
Search hosts file for all occurrences of "119"

Loop  
 Specify loop reference

Pre-condition expression  
 Check pre-condition

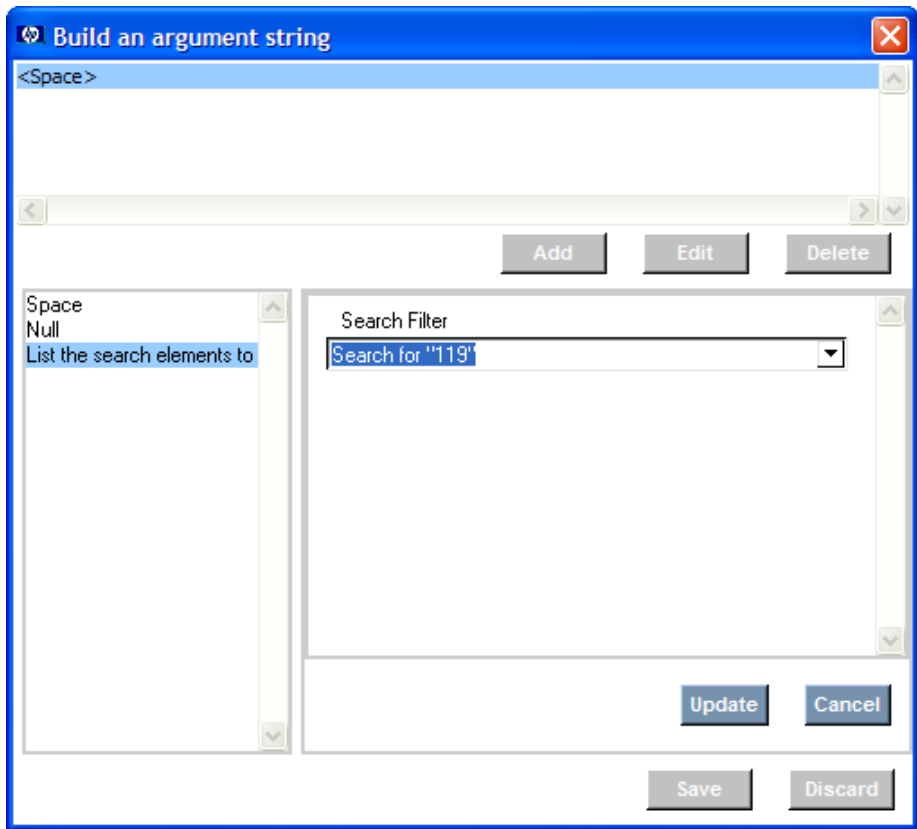
Search ID  
<Space> ...

Scan Mode  
Lines ▼

Save Results

File Name (optional)  
<Space> ...

- 4 Click the ellipsis next to **Search ID** to build an argument string.
- 5 Click Edit.
- 6 Select the List search elements to use operand.
- 7 From the Search Filter drop-down list, select your search filter. In this example, we had already defined "Search for 119" in the Search Filters tab.



- 8 Click **Update** and **Save** when you are finished.
- 9 From the Scan mode drop-down list, select if you want to search by line or treat the data as a single block.
- 10 If you need the data found to be saved after the program ends then enable the save option. Usually, the scanned result data is only available during the execution of the program so that other commands can use it. The results are deleted when the program ends.
- 11 Click the ellipsis after File name to set the file to be scanned. The data to scan can be from a file, parameter reference, or command output.



## Search hosts file for all occurrences of "119"

### Scan

Scans data using predefined filters. The data can be from a file, command output or a parameter reference.

Title	<input type="text" value='Search hosts file for all occurrences of "119"'/>
Description	<input type="text" value='Search hosts file for all occurrences of "119"'/>
Loop	<input type="checkbox"/> Specify loop reference
Pre-condition expression	<input type="checkbox"/> Check pre-condition
Search ID	<input type="text" value="SearchRef(id=30)"/> ...
Scan Mode	<input type="text" value="Block"/> ▼
	<input type="checkbox"/> Save Results
File Name (optional)	<input type="text" value="ParmRef(section=TMPSTOR,instance=1,parameter=TEMPDIR)hosts"/> ...
Data (optional)	<input type="text" value="&lt;Space&gt;"/> ...

The results of your new command are displayed.

### Set Parameter

In the procedure below, you will set the Media Directory for installation using the Set Parameter Command. This example is from the Install phase of the Oracle profile.

#### To set a parameter from a Client Object

- 1 In the Add Command dialog box, click **Set Parameter**.
- 2 Type a short, descriptive Command Title, and an explanatory Command Description.

- 3 Click **Done**. The main screen for the Set Parameter command will display.
- 4 Click on the ellipsis at the end of the Parameter name field to start the String Builder. This is the parameter you will be setting the value for.
- 5 Click **Edit**.
- 6 From the Operands, click **Parameter Reference**.
- 7 From the drop-down list, click the section you want to get the parameter from. In this case we select **Installation Configuration**, the default instance, and Install Media Directory.
- 8 Click **Update**, and then **Save**.
- 9 Click on the ellipsis at the end of the Value field to start the String Builder. This is the value you will be setting the parameter to.
- 10 Click **Edit**.
- 11 Enter the required information. ZDSPM000 is a single instance copy of an object that is currently running a method such as CREATE. This allows the current method to reference information about the instance that spawned it. The current method does need to know the details of the original object, such as the object name or instance number that contains the specific instance data. In this example, ZDSPM000 tells us the MEDIADIR.
- 12 Click **Update**, and then **Save**.

The results of your new command will be displayed.

### Set Registry Value

In the example below, the media directory for Windows must be reset in the registry. This is required in the Install phase for Microsoft Internet Information Server.

#### To set a registry value

- 1 In the Add Command dialog box, click **Set Registry Value**.
- 2 Type a short, descriptive Command Title, and an explanatory Command Description.
- 3 Click **Done**. The main screen for the Set Registry Value command will display.

- 4 Click on the ellipsis at the end of the Key field to start the String Builder. This is the key you will be getting the information from.
  - 5 Click **Edit**.
  - 6 From the Operands, click **String**.
  - 7 Type the full path to the registry key you are going to set.
  - 8 Click **Update**, and then **Save**.
  - 9 Click on the ellipsis at the end of the Value field to start the String Builder. This is the registry value you will be setting.
  - 10 Click **Edit**.
  - 11 From the Operands, click **String**.
  - 12 Type the value you are going to set.
  - 13 Click **Update**, and then **Save**.
  - 14 Click on the ellipsis at the end of the Data field to start the String Builder. This is the data you will set the value to.
  - 15 Click **Edit**.
  - 16 From the Operands, click **Parameter Reference**. In this case, we are setting the Source Directory to the Media Directory.
  - 17 Click **Update**, and then **Save**.
  - 18 From the Type drop-down list, select the data type.
- The results of your new command will be displayed.

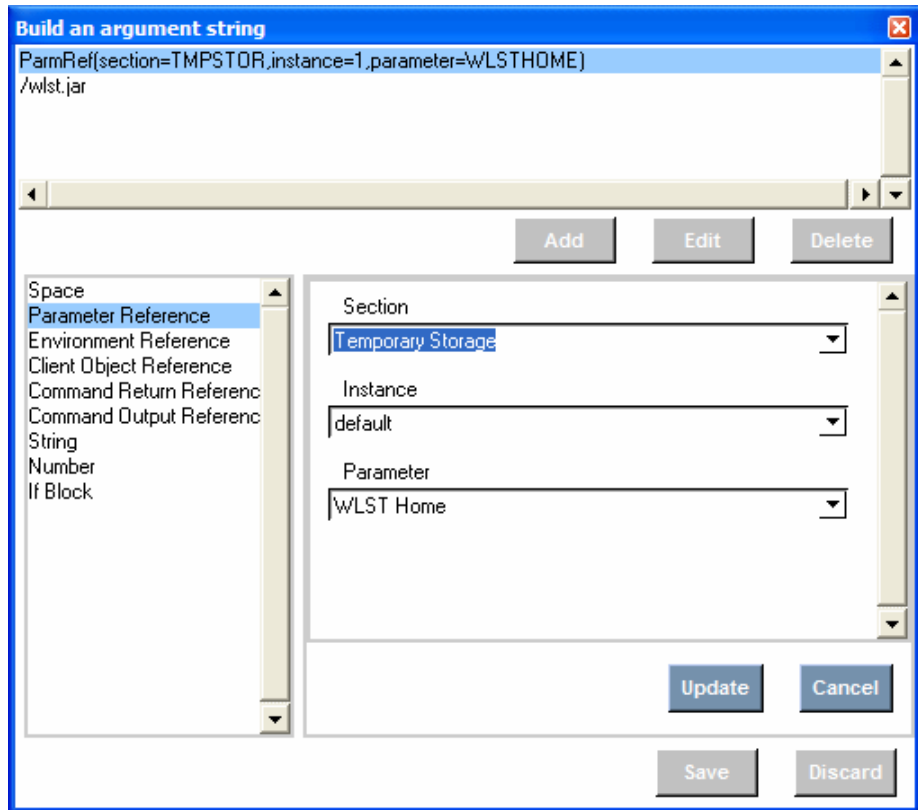
#### Verify UNIX File/Directory Attributes

In the example below, we will use this command to check the existence of the WLST files. These are a requirement for the installation of WebLogic Server.

To verify the attributes or existence of a UNIX files or directory

- 1 In the Add Command dialog box, click **Verify UNIX File/Directory Attributes**.
- 2 Type a short, descriptive Command Title, and an explanatory Command Description.
- 3 Click **Done**. The main screen of the Verify UNIX File/Directory Attributes is displayed.

- 4 Click on the ellipsis at the end of the File/Directory Name field to start the String Builder. This is the name of the file or directory to check.
- 5 Click **Edit**.
- 6 From the Operands, click **Parameter Reference**.



- 7 Click **Update**, and then **Save**.
- 8 In the Type drop-down list select if this is a file or a directory. In this case, we are checking file.
- 9 Edit the attributes as needed.



If no attributes are specified, only the existence of the file or directory will be checked.

## Check if the WLST file exists

### Verify UNIX File/Directory Attributes

Check attributes of an existing file/directory. You can verify owner, group, permissions, accessedtime,size MD5 signature, version. Any attribute that is left blank will not be checked.

Title

Description

File/Directory Name

Type

Access Time (optional)

Create Time (optional)

Modified Time (optional)

The results of your new command are displayed.

### Verify Windows File/Directory Attributes

In the example below, we will check the existence of the WLST file for Weblogic for Windows. This is part of the Install phase.

#### To verify the existence or attributes of a Windows file

- 1 In the Add Command dialog box, click **Verify Windows File/Directory Attributes**.
- 2 Type a short, descriptive Command Title, and an explanatory Command Description.
- 3 Click **Done**. The main screen for Verify Windows File/Directory is displayed.
- 4 Click on the ellipsis at the end of the File/Directory Name field to start the String Builder. This is the name of the directory to remove.
- 5 Click **Edit**.
- 6 From the Operands, click **Parameter Reference**.

- 7 Click **Update**, and then **Save**.
- 8 In the Type drop-down list select if this is a file or a directory. In this case, we are checking a directory.
- 9 Edit the attributes as needed.



If no attributes are specified, only the existence of the file or directory will be checked.

**Check if the WLST file exists**

**Verify Windows File/Directory Attributes**

Check attributes of an existing file/directory. You can verify readonly,system,hidden,archive accessedtime,size MD5 signature, version. Any attribute that is left blank will not be checked.

Title

Description

File/Directory Name

Type

The results of your new command are displayed.

## WMI Commands

The WMI command has three options, WMI Query, WMI Notification, and Execute Method. The command examples are supplied below.

### Execute Method

Use the Execute Method option to execute a method defined in a WMI object. IN the example below, we will run a method on the target device.

#### To use the WMI Execute Method Option

- 1 In the Add Command dialog box, click **WMI**.
- 2 Type a short, descriptive Command Title, and an explanatory Command Description.
- 3 Click **Done**.

- From the Option drop-down list, click **Execute Method**.

**WMI execution with parameters for NOTEPAD.EXE**

WMI  
WMI query/notification/execute support on local or remote device

Title  
WMI execution with parameters for NOTEPAD.EXE

Description  
WMI execution with parameters for NOTEPAD.EXE

Pre-condition expression  
 Check pre-condition

Option  
Execute Method

Object  
<Space>

Method  
<Space>

Input Parameters  
<Space>

Namespace (optional)  
root\CIMV2

- Click on the ellipsis at the end of each of your required parameters. They are described below.

- **Object:** Enter a WMI object for which you would like to execute the method, for example, Win32\_Process.
- **Method:** Name of the method to execute from the WMI object.
- **Input Parameters:** Enter a list of strings with the first element describing the parameter name, and the second its value. These parameters will be passed to the method being executed
- **Namespace:** Enter a namespace, usually root\CIMV2.
- **Server:** Enter a fully qualified server name. The default value of "." means the local computer
- **Credentials:** If the WMI query requires a user and password when running remotely, then you can provide the credentials for the

resource. The Credentials are created in the Credentials section in the Configuration tab. Select a credential instance from the list. If the list is empty, create the Credentials element first.

- **Table:** A WMI query/notification/execMethod can return multiple rows of data. To access the individual properties of WMI result Objects, you need to configure a section that allows you to define the column headings and the column type. This can be done by defining a new section in ConfigSpace and marking it as a table. Select an entry from the list that matches your table definitions. If you want to ignore the result set, select **No Table**.

- 6 Check **Save results** if you would like to save the data for future reference when the program is run again at a later time. The WMI results are available during the execution of the Server Management Agent; when the program ends, the results are discarded by default.

**WMI**  
WMI query/notification/execute support on local or remote device

Title  
WMI execution with parameters: run a local copy of NOTEPAD.EXE without parameters

Description  
Run a local copy of NOTEPAD.EXE without parameters. This shows the use of a LIST() for command line pa

Pre-condition expression  
 Check pre-condition

Option  
Execute Method

Object  
Win32\_Process

Method  
Create

Input Parameters  
List(CommandLine,notepad.exe testfile.txt)

Namespace (optional)  
<Space >

The results of your command are displayed.



## WMI Notification Method

Use the Notification Method option to be notified when certain events occur.

### To use the WMI Notification Method Option

- 1 In the Add Command dialog box, click **WMI**.
- 2 Type a short, descriptive Command Title, and an explanatory Command Description.
- 3 Click **Done**.
- 4 From the **Option** drop-down list, click **WMI notification**.

The screenshot shows a dialog box titled "WMI" with the subtitle "WMI query/notification/execute support on local or remote device". The dialog contains several fields and options:

- Title:** A text box containing "WMI notify: use WMI to wait and be notified if an instance of NOTEPAD.EXE is terminated."
- Description:** A text box containing "You can register for WMI events and be notified when these events occur".
- Pre-condition expression:** A section with a checkbox labeled "Check pre-condition" which is currently unchecked.
- Option:** A dropdown menu with "WMI notification" selected.
- Query:** A text box containing "<Space>" with an ellipsis button to its right.
- Namespace (optional):** A text box containing "root\CIMV2" with an ellipsis button to its right.
- Server (optional):** A text box containing "." with an ellipsis button to its right.
- Credentials (optional):** A text box containing "<Space>" with an ellipsis button to its right.

- 5 Click on the ellipsis at the end of each of your required parameters. They are described below.
  - **Query:** Enter a query in the Windows Query Language format.
  - **Namespace:** Enter a namespace, usually root\CIMV2.

- **Server:** Enter a fully qualified server name. The default value of "." means the local computer
  - **Credentials:** If the WMI query requires a user and password when running remotely, then you can provide the credentials for the resource. The Credentials are created in the Credentials section in the Configuration tab. Select a credential instance from the list. If the list is empty, create the Credentials element first.
  - **Table:** A WMI query/notification/execMethod can return multiple rows of data. To access the individual properties of WMI result Objects, you need to configure a section that allows you to define the column headings and the column type. This can be done by defining a new section in ConfigSpace and marking it as a table. Select an entry from the list that matches your table definitions. If you want to ignore the result set, select **No Table**.
- 6 Check **Save results** if you would like to save the data for future reference when the program is run again at a later time. The WMI results are available during the execution of the Server Management Agent; when the program ends, the results are discarded by default.

## WMI

WMI query/notification/execute support on local or remote device

Title

WMI notify: use WMI to wait and be notified if an instance of NOTEPAD.EXE is terminated.

Description

You can 'register' for WMI events and be notified when these events occur.

Pre-condition expression

Check pre-condition

Option

WMI notification

Query

```
SELECT * FROM __InstanceDeletionEvent WITHIN 2 WHERE TargetInstance ISA 'Win32_Process' and
```

Namespace (optional)

root\CIMV2

Server (optional)

.

Credentials (optional)

<Space>

Table (optional)

TableRef(section=\_NONE\_)

The results of your command are displayed.

### WMI Query Method

Use the WMI Query Method option to run a WMI Query.

#### To use the WMI Query Method Option

- 1 In the Add Command dialog box, click **WMI**.
- 2 Type a short, descriptive Command Title, and an explanatory Command Description.
- 3 Click **Done**.
- 4 From the Option drop-down list, click **WMI Query**.

## WMI

WMI query/notification/execute support on local or remote device

Title  
WMI query: select Primary Owner Name from Win32\_ComputerSystem

Description  
WMI query: select Primary Owner Name from Win32\_ComputerSystem

Loop  
 Specify loop reference

Pre-condition expression  
 Check pre-condition

Option  
WMI Query

Query  
<Space >

Namespace (optional)  
root\CIMV2

Server (optional)  
.

- 5 Click on the ellipsis at the end of each of your required parameters. They are described below.
  - **Query:** Enter a query in the Windows Query Language format.
  - **Namespace:** Enter a namespace, usually root\CIMV2.
  - **Server:** Enter a fully qualified server name. The default value of "." means the local computer
  - **Credentials:** If the WMI query requires a user and password when running remotely, then you can provide the credentials for the resource. The Credentials are created in the Credentials section in the Configuration tab. Select a credential instance from the list. If the list is empty, create the Credentials element first.
  - **Table:** A WMI query/notification/execMethod can return multiple rows of data. To access the individual properties of WMI result Objects, you need to configure a section that allows you to define the column headings and the column type. This can be done by defining a new section in ConfigSpace and marking it as a table. Select an entry

from the list that matches your table definitions. If you want to ignore the result set, select **No Table**.

- 6 Check **Save results** if you would like to save the data for future reference when the program is run again at a later time. The WMI results are available during the execution of the Server Management Agent; when the program ends, the results are discarded by default.

**WMI**  
WMI query/notification/execute support on local or remote device

Title  
WMI query: select Primary Owner Name from Win32\_ComputerSystem

Description  
WMI query: select Primary Owner Name from Win32\_ComputerSystem

Loop  
 Specify loop reference

Pre-condition expression  
 Check pre-condition

Option  
WMI Query

Query  
<Space>

Namespace (optional)  
root\CIMV2

Server (optional)  
.

Credentials (optional)  
<Space>

Table (optional)  
<Space>

Save results

The results of your command are displayed.

## Xquery

Run an Xquery to get or set attribute or node values in an XML document.

To perform an Xquery

- 1 In the Add Command dialog box, click **Xquery**.
- 2 Type a short, descriptive Title, and an explanatory Description.
- 3 Click **Done**.

**Query an attribute value - use absolute path XQuery**  
XQuery  
Run a XQuery to get or set attributes or node values in a XML document

Title  
Query an attribute value - use absolute path XQuery

Description  
Query an attribute value - use absolute path XQuery

Pre-condition expression  
 Check pre-condition

File Name  
Getenv(name=TEMP)\TESTXQUERY.XML

XQuery  
/xml/doc/paragraph

Option  
Get

Fetch  
Attribute Value

Attribute  
id

- 4 Click on the ellipsis at the end of the File Name field to start the String Builder. This is the file will be getting the information from.
- 5 Click **Edit**.
- 6 From the Operands, click **String**.
- 7 Type the full path to the registry key you are fetching the value from.
- 8 Click **Update**, and then **Save**.
- 9 Edit any other parameters you require.
- 10 Click **Update**, and then **Save**.

The results of your new command will be displayed.

---

# 4 Preparing Server Applications

At the end of this chapter, you will:

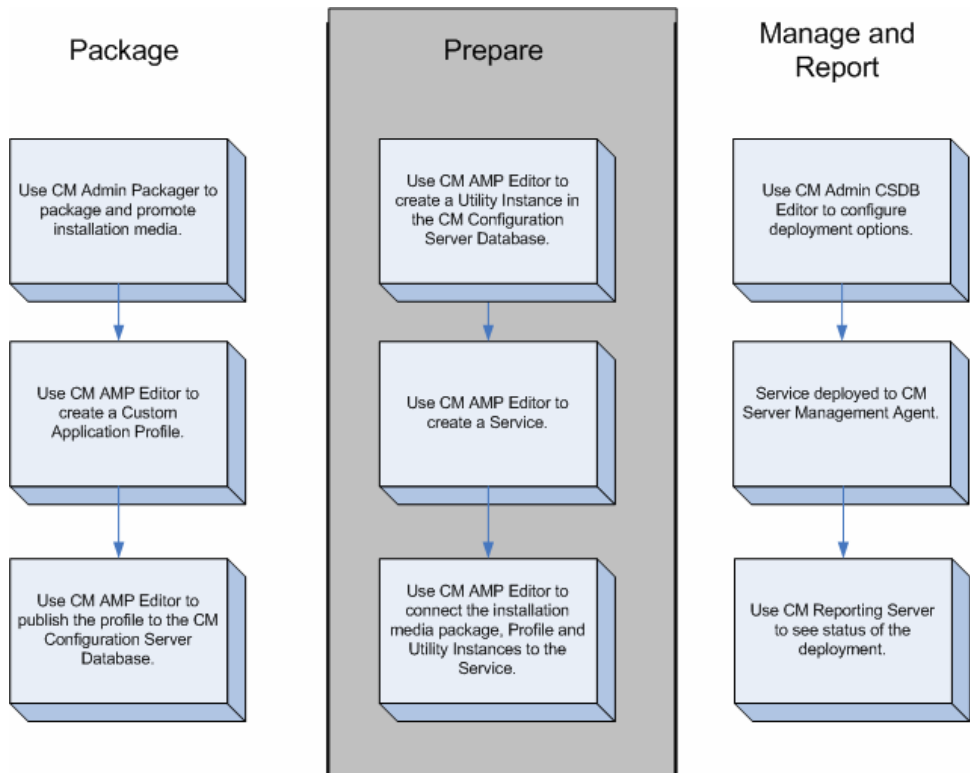
- Be familiar with Utility Classes.
- Know how to create a Service Instance for a server application.
- Be able to connect all required packages to the Service Instance.

# Prepare the Package

After packaging the media and creating the CAP, you will need to prepare the application for deployment. Use the CM AMP Editor to perform the following tasks.

- 1 Create a Utility instance for the Server Application
- 2 Publish the CAP.
- 3 Create a Service instance in the CM Configuration Server DB.
- 4 Connect the media package and utility instances to the Service.

**Figure 9 Workflow**





# Overriding Values in the AMP (Utility Instances)

Utility Classes in the CM Configuration Server DB are used to create server specific overrides for the CAP. Use the Utility instance for a Server Application to override values in the Custom Application Profile. This allows you to use one profile with small variations for each target computer in your enterprise. Use the CM AMP Editor to create and modify Utility instances.

## Creating the Utility Class

Use the CM AMP Editor **Synchronize Utility Class with this profile** command to synchronize the RCS Section of the AMP with the appropriate Utility Class on the Configuration Server.

► Be sure to check **Store in configuration server section** in the Manage Parameters dialog box. You must do this to add the parameter to the Utility Class. To view all parameters that have this checked, use the CM Configuration Server menu's, Manage All Utility Class Parameters command.

- If there is an RCS section in the AMP and no corresponding Utility Class in the CM Configuration Server DB, then the Utility Class will be created on the Configuration Server based on the RCS section in the AMP.
- If there is no RCS section in the AMP and a corresponding Utility Class in the CM Configuration Server DB, then the RCS section will be added to the AMP based on the Utility Class.
- If there is an RCS section in the AMP and a corresponding Utility Class in the CM Configuration Server DB, then the new and updated fields from the RCS section will be merged into the Utility Class in the CM Configuration Server Database. Change management processes must be followed explicitly. We do not advise using the CM AMP Editor against production databases. Use the CM AMP Editor against test or development CM Configuration Server Databases.

Before you can synchronize the Utility Class, you must establish your CM Configuration Server, and the Utility Class the profile will connect to.

### To connect to a CM Configuration Server

- 1 From the CM Configuration Server menu, click **Edit CM Configuration Server Connection Information**. This includes the CM Configuration Server IP address, port, userid, and password.
- 2 Type in all information to connect to your CM Configuration Server.
- 3 Click **Save**.

### To connect to a Utility Class

- 1 From the CM Configuration Server menu, click **Update Class Connection Information**.
- 2 Type in a name for the Utility Class. It must be eight characters or less.
- 3 Click **Save**.

### To synchronize the Utility Class

- 1 Select the **Synchronize Utility Class with this profile** command from the CM Configuration Server menu.  

If the Utility Class does not exist on the CM Configuration Server DB, you will be asked to create it. If it does exist but there are differences, you will be prompted with the changes and asked to accept them.
- 2 Click **Yes** to create the class.
- 3 The class is created. Click **OK**.

## Creating a Utility Instance

In the example, below we will create a Utility instance to override the Oracle Instance name.

### To create a Utility instance

- 1 From the tools menu, click **Manage utility instances**.

Please enter configuration server information

Configuration Server IP Address  
rcsamp

Configuration Server Port  
3464

User ID  
rad\_mast

Password  
xxxxxxxx

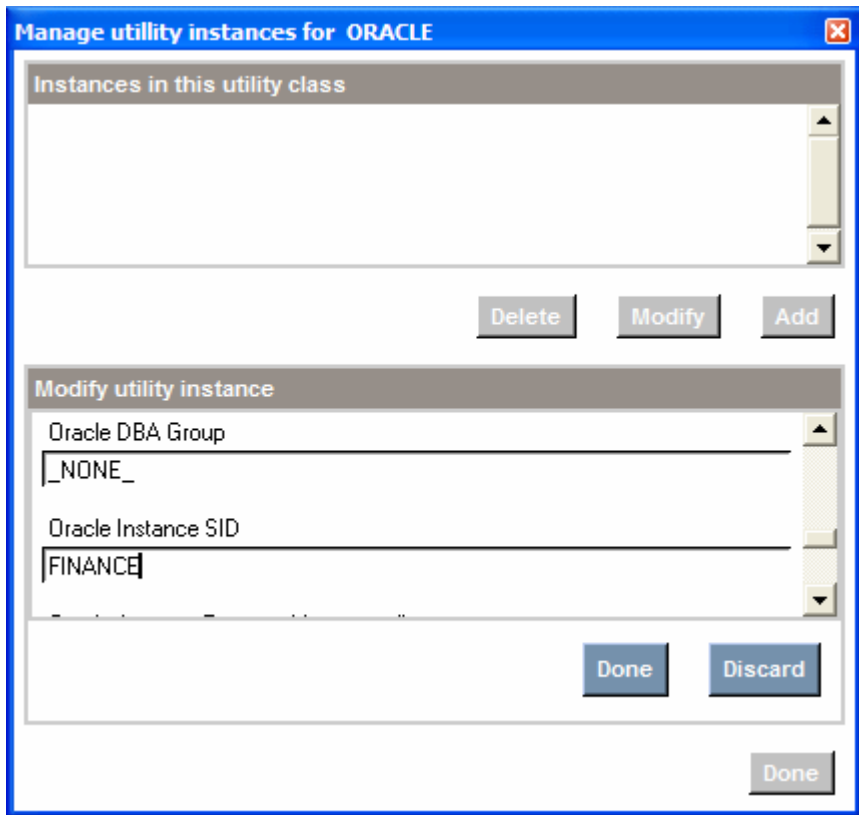
Save Discard

- 2 Click **Save** to confirm the CM Configuration Server Settings.
- 3 Click **Add** to add an instance. If an instance already exists, you can delete or modify it.

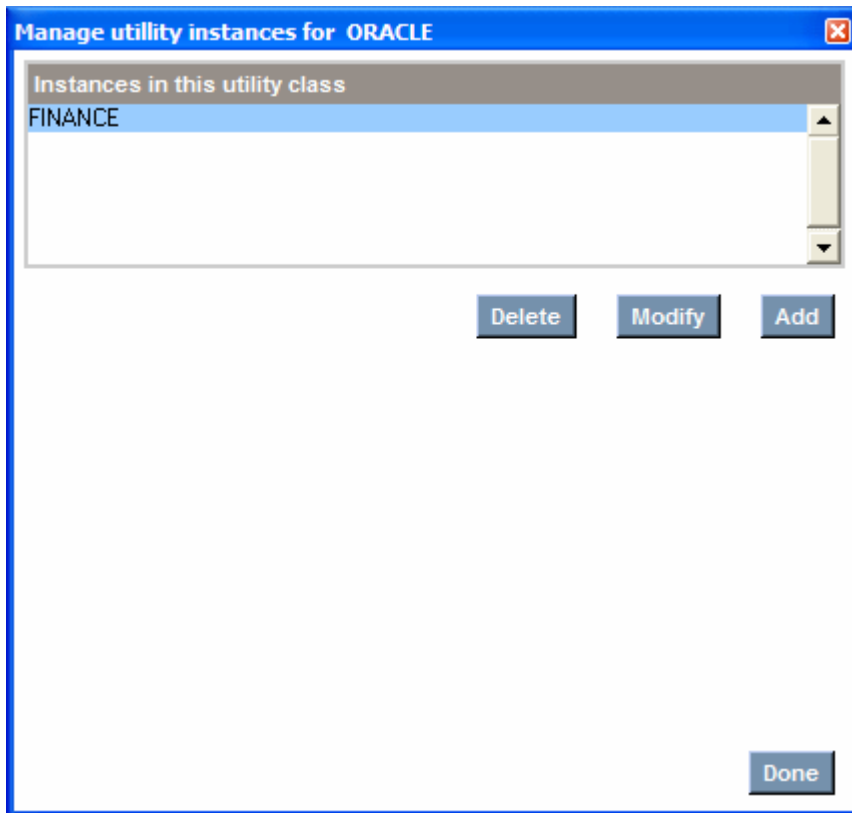


When you modify an instance, the values that are inherited from the base instances will be displayed in red and "\*\*\*" will precede the name of the variable.

In this example, we create an instance called ORASVR\_FINANCE for a computer called FINANCE and change the ORASID to FINANCE.



- 4 Click **Done**. The instance appears at the top of the dialog box.



- 5 When you have finished adding, modifying, or deleting Utility instances, click **Done**.

If a value exists in the Utility Class, the value is used instead of the value in the CAP. Use `_NONE_` to tell the CM Server Management Agent that this variable has no value in the CM Configuration Server DB and the values from the CAP should be used.

## Naming and Connecting the Utility Instance

There are multiple methods for connecting the Utility instance. The Utility instance for an AMP is specified when you create a new Service in the Override value during publishing of the AMP. (If you are using the CM Admin CSDB Editor this corresponds to the `ZSERVICE OVERRIDE` attribute.) Decide on the method that best suits your needs. Then, you will need to use the appropriate naming convention for the Utility instance. The most common methods are described below.



If you do not have a valid Utility instance, the installation will fail. The agent methods for executing the installation of the server applications are part of the Utility instance.

- Multiple computers with identical configurations
  - Use a descriptive name for the Utility instance. For example, create a DEMOWEB instance in the VIRTWEB Class.
  - OVERRIDE Value: APPMGMT.VIRTWEB.DEMO\_WEB
- Each computer with one configuration
  - Create one instance for each target computer in the Utility Class. For example, create two instances in the APPMGMT.APACHE2 class. One named SRV020, and the other named SRV850. When the service is deployed, SRV020 will use APACHE2.SRV020. SRV850 will use APACHE2.SRV850. The computer name is taken from the ZUSERID attribute of the ZMASTER object.
  - OVERRIDE Value: APPMGMT.APACHE2.&(ZMASTER.ZUSERID)
- One computer with multiple instances of the same application
  - Use this naming method when an application supports multiple instances, such as Microsoft SQLServer or Oracle. These server applications allow for multiple instances of the application on one computer.
  - Name the Utility instance using the name of the computer followed by a descriptive suffix. For example, create three instances in the APPMGMT.MSSQL2K Class, SQLSRV\_FINANCE, SQLSRV\_HR, SQLSRV\_DEV. In each of these instances, set the MSSQL2K.INSTNAME to a different value, such as FINANCE, HR, and DEV. Leave the other attributes at the \_NONE\_ value so the Application Management Profile's values will be used. When the service is deployed to SQLSRV, Microsoft SQL Server will be deployed with 3 named instances.
  - OVERRIDE Value:  
APPMGMT.MSSQL2K.&(ZMASTER.ZUSERID)\_\*

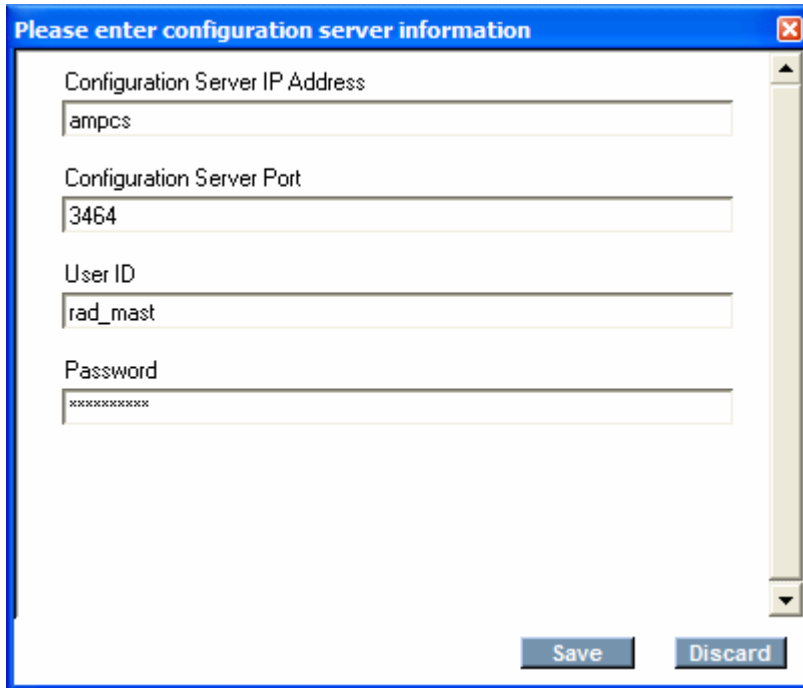
## Publishing a Profile

After you have created your CAP, you are now ready to promote it to the CM Configuration Server DB. During the publishing process, the CM AMP Editor

will rename the CAP to `control.xml`, create an Application (ZSERVICE) instance, connect the ZSERVICE to the designated media packages, and allow you to modify the connection to the Utility instance.

To promote an Application Management Profile

- 1 From the CM AMP Editor, select **CM Configuration Server** → **Publish to Database**.



The image shows a dialog box with a blue title bar that reads "Please enter configuration server information". Inside the dialog, there are four text input fields. The first field is labeled "Configuration Server IP Address" and contains the text "ampcs". The second field is labeled "Configuration Server Port" and contains the text "3464". The third field is labeled "User ID" and contains the text "rad\_mast". The fourth field is labeled "Password" and contains a series of asterisks "xxxxxxxxxx". At the bottom right of the dialog, there are two buttons: "Save" and "Discard".

- 2 If this is the first time that you are publishing in the CM AMP Editor session, you will be asked to confirm the CM Configuration Server settings.
- 3 Verify the CM Configuration Server setting, and click **Save**.

**Publish a CAP to the database**

Please specify the necessary data to create a package for this CAP

Package name ORA\_SOL\_10G\_CAP

Display name ORA\_10\_10G\_CAP

Description Oracle for Solaris

Release 1

Prev Next Cancel

- 4 Type in the required data for the package information, and click **Next**.



**Publish a CAP to the database**

Please specify the necessary data to create a service for this CAP

Create new   
 Use existing   
 No service

Name: ORA\_SQL\_10G

Display name: ORA\_SQL\_10G

Vendor:

URL:

Description:

Author:

Override: APPMGMT.ORACLE.&{ZMASTER.ZUSERID}\_\*

Prev    Next    Cancel

5 Choose one of the following actions:

- Click **Create New** to create a new Application (ZSERVICE) instance in the APPMGMT domain.
- Click **Use existing** to connect to an existing Application (ZSERVICE) instance. If you use an existing service, the Override value will resort to the original default, and will add the xml package to the ZSERVICE connection. If you have had a non-default value when you originally created the service, be sure to change it if required.



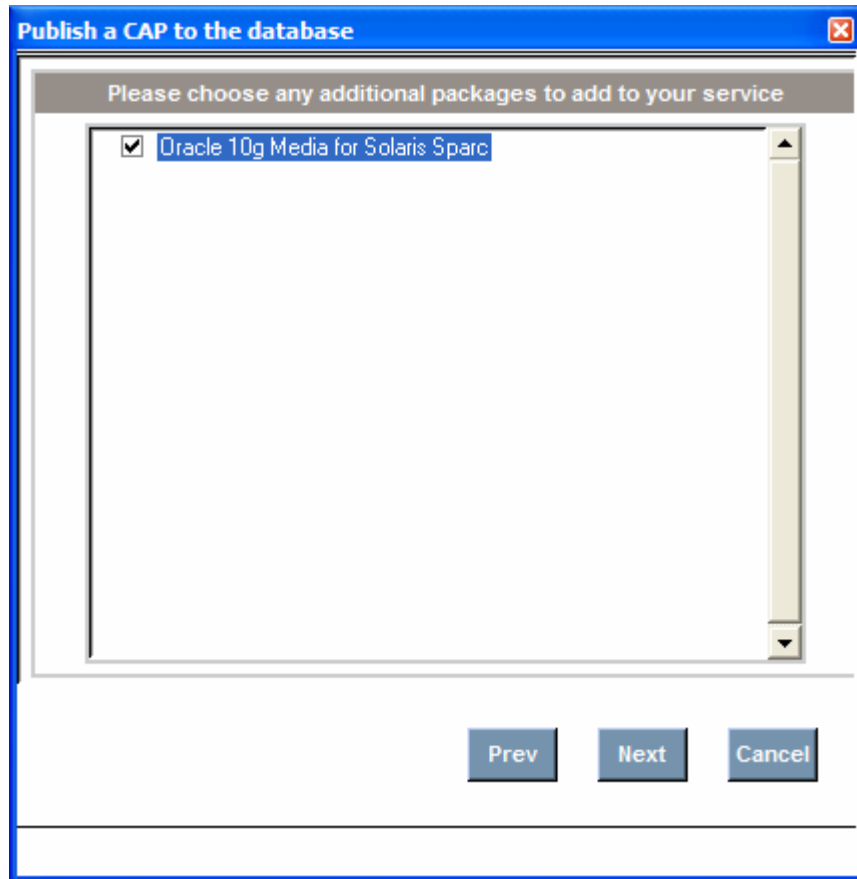
Services should not be reused in production Do not use the CM Amp Editor on a CM Configuration Server Database that is in production.

- Click **No service** to publish the Application Management Profiles only. You will need to connect it to an Application (ZSERVICE) instance using CM Admin CSDB Editor.

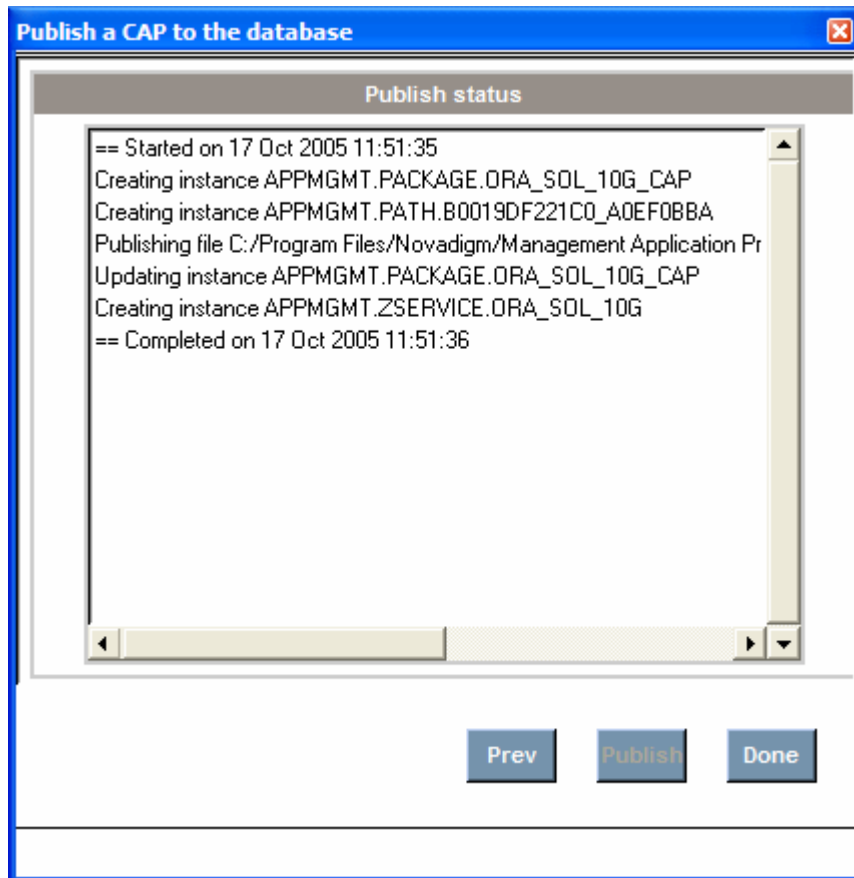
In this example, we will create a new Application (ZSERVICE) instance.

- The Override connects to an instance of the Utility Class. For more information on creating the Utility Class and instances, see [Overriding Values in the AMP \(Utility Instances\)](#) on page 97.

Type in the appropriate values and click **Next**.



- 6 All instances in the Application Packages (PACKAGE) class will be listed. Select the packages to connect to the Application (ZSERVICE) instance in addition to the Application Management Profiles, and click **Next**.
- 7 Click **Publish**. Status will appear in the dialog box.



- 8 Click **Done** after publishing is complete.



---

# 5 Managing and Reporting

At the end of this chapter you will:

- Know how to install the CM Server Management Agent.
- Be able to view reports using the CM Reporting Server.

# CM Server Management Agent

The files required to execute Application Management profiles on a target device are part of the CM Server Management Agent. CM Server Management Agent must be installed on any target computer that you want to deploy server applications to. The CM Server Management Agent logs the nvdkit and agent versions as well as the header information from the profile in use in the `connect.log`, located in the log directory.

► To use the CM Server Management Agent, you must own a Server LTU for CM Application Manager.

Install the CM Server Management Agent from the installation media. For installation instructions and system requirements, refer to the *HP OpenView Configuration Management Application Manager Installation and Configuration Guide (CM Application Manager Guide)* for Windows or Unix.

► Note that on 64 bit Windows architectures the agent and profiles will run in 32 bit emulation mode. HP recommends using fully qualified paths in your profiles to make sure that you are able to run 64-bit executables on 64-bit operating systems. The agent and profiles may be affected by registry and file redirection as documented in the Microsoft knowledge base articles, Overview of the compatibility considerations for 32-bit programs on 64-bit versions of Windows Server 2003 and Windows XP. As always, be sure to thoroughly test your profiles before deployment.

## Reporting

Application Management Profiles uses the HP OpenView Configuration Management Reporting Server (CM Reporting Server) for deployment status. CM Reporting Server version 5.00 is the minimum version required. To use CM Reporting Server with Application Management Profiles, the CM Messaging Server and the CM Reporting Server must be configured.

Before performing these steps, be sure that you have set up a database to store the Application Management Profiles data and that, on the CM Messaging Server and CM Reporting Server, there is an ODBC connection to that database.

## Implementation Details

Refer to the *HP OpenView Configuration Management Reporting Server Installation and Configuration Guide (CM Reporting Server Guide)* for information on installing the CM Reporting Server and the *HP OpenView Configuration Management Messaging Server Installation and Configuration Guide (CM Messaging Server Guide)* for information on installing the CM Messaging Server. You must perform the additional steps listed in this section to enable the Application Management Profiles reports.

### CM Messaging Server Installation

- 1 At the Select Data Delivery Agent window of the CM Messaging Server installation, select **Load the core.dda module to post Core objects via ODBC**. This will enable the posting of data to an SQL database or an Oracle database for the Server Management Reports.



This information is also included in the *CM Messaging Server Guide*.

- 2 When prompted, enter the DSN information.
- 3 Continue with the installation, following the instructions on the remaining dialog boxes.

### CM Reporting Server Installation

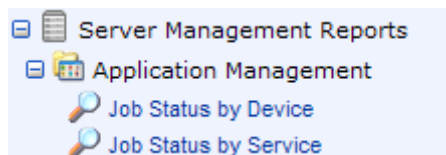
- 1 After installing the CM Reporting Server, go to **<http://<reportingserveripaddress>/reportingserver/setup.tcl>**
- 2 Click **Inventory Manager Configuration**.
- 3 Type in your DSN information in the RIM DSN, RIM DSN User, and RIM DSN Password boxes.
- 4 **Server Management Configuration (SCM)**.
- 5 For Enable SCM Reports, select **1**.
- 6 Click **Apply** and follow the on-screen directions.

## Viewing the Reports

To view the reports, use an internet browser to go to your CM Reporting Server address. Then, click **Server Management Reports** to view the list of

Application Management Reports. Two reports are provided, Job Status by Device and Job Status by Service.

**Figure 10 Application Management Profile Reports**



- **Job Status by Device**  
Use this report to see the status of jobs by device name. The report includes information on status, reboots, and time of the last job's start and end time.

Device	Status	Successful	Warning	Reboot Pending	Failed	Total Jobs	Last Job Started	Last Job Ended
SRVR1	✓	4	0	0	0	4	2005-05-30 13:42:52	2005-05-30 13:42:59
SRVR43	✓	1	0	0	0	1	2005-05-30 11:32:47	2005-05-30 11:32:51

- Click **Successful** to view the successful jobs for the device.
- Click **Warning** to see warnings associated with this device
- Click **Reboot Pending** to see the jobs that require a reboot for completion.
- Click **Failed** to see the list of failed jobs for this device.
- Click **Total Jobs** to see the list of all jobs for this device. From within this report, you can drill down further to see detailed information for each job including installation parameters used.

- **Job Status by Service**  
Use this report to see the status of jobs by Service name. The report includes service description, information on status, reboots, and time of the last job's start and end time.

Service	Description	Status	Devices	Successful	Warning	Reboot Pending	Failed	Total Jobs	Last Job Started	Last Job Ended
APACHE2_WIN	Apache 2.0.52 Profile	✓	2	3	0	0	0	3	2005-05-30 13:42:52	2005-05-30 13:42:59
VIRTWEB_DEMOWEB	Demo Web	✓	1	1	0	0	0	1	2005-05-29 16:51:12	2005-05-29 16:51:22
VIRTWEB_DEMOWEB2	Demo Web 2	✓	1	1	0	0	0	1	2005-05-29 16:50:53	2005-05-29 16:51:03



- Click **Devices** to see the list of devices that received this service.
- Click **Successful** to view the successful jobs for the service.
- Click **Warning** to see warnings associated with this service.
- Click **Reboot Pending** to see the services that require a reboot for completion.
- Click **Failed** to see the list of failed jobs for this service.
- Click **Total Jobs** to see the list of all jobs for this service. From within this report, you can drill down further to see detailed information for each job.



# A Environment Variables

In addition to the standard platform-specific environment variables, such as `windir=C:\WINDOWS` for Windows Operating systems, there are AMP specific environment variables which are listed below. The APPMGMT environment variables, like other environment variables, are usually used in environment references for pre and post conditions. You may also want to set a local variable to the value of an environment variable.

## List of Environment Variables

- APPMGMT\_BYTEORDER Byte Order
- APPMGMT\_MACHINE Processor
- APPMGMT\_OS Operating System
- APPMGMT\_OSCOMMONNAME Common Name of OS
- APPMGMT\_OSSERVICEPACK Windows Service Pack
- APPMGMT\_OSVERSION Operating System Version
- APPMGMT\_PLATFORM Platform
- APPMGMT\_HOSTIP Host IP address
- APPMGMT\_HOSTNAME Fully qualified name of the machine
- APPMGMT\_PID Process Id of AMP agent
- APPMGMT\_STANDALONE If the AMP agent is running under the CM Application Manager agent the value is N, otherwise it is running standalone and the value will be Y.
- APPMGMT\_PHASE\_NAME Phase name, that the AMP is currently executing

The following are examples of Windows XP values:

- APPMGMT\_BYTEORDER = littleEndian
- APPMGMT\_MACHINE = intel
- APPMGMT\_OS = Windows NT
- APPMGMT\_OSCOMMONNAME = Windows XP

- APPMGMT\_OSSERVICEPACK = Service Pack 1
- APPMGMT\_OSVERSION = 5.1
- APPMGMT\_PLATFORM = windows
- APPMGMT\_HOSTIP = 192.168.0.11
- APPMGMT\_HOSTNAME = LBLACK.americas.foods.com
- APPMGMT\_PID = 1800
- APPMGMT\_STANDALONE = Y
- APPMGMT\_PHASE\_NAME = install

The following are examples of Red Hat Linux values:

- APPMGMT\_BYTEORDER = littleEndian
- APPMGMT\_MACHINE = i686
- APPMGMT\_OS = Linux
- APPMGMT\_OSCOMMONNAME = Linux 2.2.14-5.0smp
- APPMGMT\_OSSERVICEPACK = N/A
- APPMGMT\_OSVERSION = 2.2.14-5.0smp
- APPMGMT\_PLATFORM = unix
- APPMGMT\_HOSTIP = 192.168.0.11
- APPMGMT\_HOSTNAME = LBLACK.americas.foods.com
- APPMGMT\_PID = 1900
- APPMGMT\_STANDALONE = Y
- APPMGMT\_PHASE\_NAME = install

The following are examples of HP-UX values:

- APPMGMT\_BYTEORDER = bigEndian
- APPMGMT\_MACHINE = 9000/800
- APPMGMT\_OS = HP-UX
- APPMGMT\_OSCOMMONNAME = HP-UX B.11.00
- APPMGMT\_OSSERVICEPACK = N/A
- APPMGMT\_OSVERSION = B.11.00

- APPMGMT\_PLATFORM = unix
- APPMGMT\_HOSTIP = 192.168.0.11
- APPMGMT\_HOSTNAME = LBLACK.americas.foods.com
- APPMGMT\_PID = 1900
- APPMGMT\_STANDALONE = Y
- APPMGMT\_PHASE\_NAME = install

The following are examples of Solaris values

- APPMGMT\_BYTEORDER = bigEndian
- APPMGMT\_MACHINE = sun4u
- APPMGMT\_OS = SunOS
- APPMGMT\_OSCOMMONNAME = SunOS 5.9
- APPMGMT\_OSSERVICEPACK = N/A
- APPMGMT\_OSVERSION = 5.9
- APPMGMT\_PLATFORM = unix
- APPMGMT\_HOSTIP = 192.168.0.11
- APPMGMT\_HOSTNAME = LBLACK.americas.foods.com
- APPMGMT\_PID = 1900
- APPMGMT\_STANDALONE = Y
- APPMGMT\_PHASE\_NAME = install



## B Application Management Profiles Standalone Agent

A command line utility, standalone agent, is available on the installation media to test a Master Application Profile (MAP) or Custom Application Profile (CAP). Use the standalone agent to execute profiles without the OVCN Infrastructure or to test the profile. The standalone execution runs as the logged on user.

The standalone agent, includes the following arguments:

- The `-xml` parameter is used to specify the profile you want to test.
- The `-mode` parameter is used to specify the phase you want to run in the test. The possible values for mode are `create` (application installation), `delete` (application removal), `verify` (verification of application components), `repair` (repairing broken applications), and `update` (for updating an application). If mode is omitted, it will default to `create`
- The `-idmlib` parameter specifies the location to build the CM objects. If this parameter is not specified, the CM objects are built in the location of the `appcntrl.tkd`. If `idmlib` is omitted it will default to either `IDMROOT`, if the CM agent or CM Administrator is installed, or the current directory, if the CM agent or CM Administrator is not installed. Of course, this also depends on what directory option is chosen in the command itself.
- The `-logfile` parameter allows you to set an alternate log file. The default is `appcntrl.log`.



Be aware that this will not work for all Application Management Profiles. A Profile that is designed to run locally may succeed. However, if the Profile has dependencies between phases, then you will need to run all of those phases to get a reliable result. In other words, this is not guaranteed to work for all Profiles. Always run the Profile in a test environment before moving to production.

### To test a profile

- 1 Load any media that the profile requires to the appropriate directory.

- 2 Copy the profile to the same directory as the CM Server Management Agent on the test device.
- 3 Open a command prompt, and navigate to the directory where the CM Server Management Agent and the profile have been loaded.
- 4 Type the following command:

```
nvdokit appcntrl.tkd -xml filename.xml -mode modetotest
```

The profile runs, and executes any commands that the profile indicates. All actions are logged to `appcntrl.log` in the same directory as `appcntrl.tkd`. Messages are appended to the end of the log with the most recent entries at the end.

For testing the verify phase, you should following these steps:

- Break the application.
- Run this utility with `-mode verify`.
- Confirm that the application was found to be broken by checking `appcntrl.log`. Also check that the log is reporting the correct error.

As an option, run the utility with `-mode repair`.



# C Product Name Changes

If you have used Radia in the past, and are not yet familiar with the newly rebranded HP terms and product names, Table 5 below will help you identify naming changes that have been applied to the Radia brand.

**Table 5 Product Name and Term Changes**

<b>New Name/Term</b>	<b>Old Name/Term</b>
CM agents	Radia clients
CM Application Management Profiles	Radia Application Management Profiles
CM Server Management Agent	Radia Server Management Client
HP OpenView Configuration Management	Radia
HP OpenView Configuration Management Administrator AMP Editor	Radia AMP Editor
HP OpenView Configuration Management Administrator	Radia Administrator Workstation
HP OpenView Configuration Management Admin CSDB Editor	Radia System Explorer
HP OpenView Configuration Management Admin Packager	Radia Packager
HP OpenView Configuration Management Application Manager	Radia Application Manager
HP OpenView Configuration Management Configuration Server	Radia Configuration Server
HP OpenView Configuration Management Configuration Server Database	Configuration Server Database, Radia Database
HP OpenView Configuration Management Portal	Radia Management Portal
HP OpenView Configuration Management Solutions for Servers	Radia Server Management



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