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# 1 Introduction

This chapter includes the following topics:

- [Purpose of this Guide](#) on page 10
- [Audience](#) on page 10
- [Abbreviations and Variables](#) on page 10
- [Overview](#) on page 11
- [Using HPCA to Manage Operating Systems](#) on page 13
- [Terminology](#) on page 13
- [Product Media](#) on page 15
- [Related Documents](#) on page 15

# Purpose of this Guide

This guide contains detailed information about the operating system (OS) management features available in HP Client Automation (HPCA). It provides reference information to supplement the HPCA console online help and the *HP Client Automation Core and Satellite User Guides* (Enterprise and Standard editions).

## Audience

This guide is intended to serve as a reference for HPCA Enterprise Edition administrators who are responsible for capturing, customizing, publishing, and deploying OS images in the enterprise. To use this guide, you should be very familiar with the features and functions of HPCA.

Although this guide is intended primarily for HPCA Enterprise Edition administrators, portions of it also pertain to HPCA Standard Edition.

## Abbreviations and Variables

This guide uses the abbreviations and variables defined in the following tables.

**Table 1 Abbreviations Used in this Guide**

| Abbreviation       | Definition  |
|--------------------|---|
| HPCA               | HP Client Automation  |
| Core and Satellite | HPCA Enterprise environment consisting of one Core server and one or more Satellite servers. All features are installed as part of the Core or Satellite server installation. |
| CSDB               | Configuration Server Database   |
| Portal             | HPCA Portal   |

**Table 2 Variables Used in this Guide**

| <b>Variable</b>    | <b>Description</b>   | <b>Default Values</b>  |
|--------------------|--|--|
| <i>InstallDir</i>  | Location where the HPCA server is installed                  | For a 32-bit OS: C:\Program Files\Hewlett-Packard\HPCA<br>For a 64-bit OS: C:\Program Files (x86)\Hewlett-Packard\HPCA |
| <i>SystemDrive</i> | Drive label for the drive where the HPCA server is installed | C:   |

## Overview

The HPCA OS management features are used to configure and deploy operating systems. HPCA ensures the installation of the appropriate operating system based on the target device's capabilities.

HPCA offers tools that you can use to create images of operating systems that you have prepared on a reference machine—or you can use the native installation media for the operating system.

This guide provides an introduction to OS management terminology and information about capturing, customizing, publishing, and deploying OS images.



HP tests to ensure compatibility with a wide range of HP devices and select devices from other manufacturers. Each version of HPCA is developed using tools that support technologies available at the time of release. In certain situations, adding support for new devices to earlier versions of HPCA is not feasible due to various factors, including introductions of new hardware technologies, availability of hardware device drivers, and general product enhancements. HP makes a reasonable effort to support customers' existing environments, but customers may be required to upgrade HPCA in order to be able to provision and manage new hardware devices.

# Using HPCA to Manage Operating Systems

The following is a simple, high-level description of how you would use HPCA to deploy operating systems:

- 1 If you already have an existing .WIM file, skip to [step 3](#).
- 2 If you need to create an image, first determine the deployment method that you will use, and then use the appropriate tool to create the image. Refer to “Preparing and Capturing OS Images” in the *HP Client Automation Core and Satellite User Guide*.  
After you create the image, it is stored on the HPCA server.
- 3 Use the Publisher to publish the image files in the HPCA database. Refer to “Publishing” in the *HP Client Automation Core and Satellite User Guide*.
- 4 Use the HPCA console to assign operating systems to target devices.  
Alternatively, you can use the CSDB Editor to create, modify, and prepare content for use in production deployments. This is an advanced scenario and should only be used by experienced HPCA administrators, however.
- 5 Use the HPCA console to deploy images to target devices and review the state of your OS deployment.

## Terminology

This section provides a description of operating system management terms. Review these terms in order to better understand the concepts that are discussed in this guide.

### [bare metal machine](#)

A device that does not have a local operating system installed.

### [HP Client Automation agent](#)

The software that runs on a target device and communicates with HPCA.

## HP Client Automation OS connect

An HPCA agent connect operation that is performed for OS management purposes. The `dname` parameter in the Run Once command is set to OS.

## device object

An object that contains information about a target device.

## discovery

The process of a target device booting and communicating with HPCA to determine whether a ROM object exists.

## gold image

A snapshot of an installed OS created with the HPCA OS Image Capture Tool.

## managed device

A device that is recognized and managed by HPCA.

## native installation

An installation in which an operating system is set up using the standard vendor-provided method. For example, for Windows, the `setup` program from the Windows distribution media is used to perform the installation. This type of installation can be completely unattended, using `unattend.txt`.

## OS state

The actual state of the OS, such as invalid, installed, or desired.

## reference machine

A workstation or server on which the OS image that is to be cloned is running.

## ROM object

An object—stored below the level of a device in the HPCA device repository—that contains information specific to OS management.

## Service Operating System (Service OS)

A Service OS is a pre-installation environment that is based on a lightweight operating system such as Linux or the Windows Preinstallation Environment (Windows PE). This environment is used to apply operations to hardware on a target device and to provision target devices.

### target device

A workstation or server where you want to apply operations to hardware or install, replace, or update the operating system.

### unmanaged OS

An unmanaged OS can occur in either of the following scenarios:

- A target device has been discovered by HPCA, but policy has not yet been assigned to it.
- Policy has been assigned to a target device, but you are not yet ready to overwrite the existing OS on that device.

`_UNMANAGED_OS_` is also the name of the service in `OS.ZSERVICE` that is installed by the Application Manager on the target device.

## Product Media

The following DVDs are used for OS management:

- Use `iso\ImageCapture.iso` to create the reference image media.
- Use `iso\ImageDeploy.iso` to create the media used to restore an image.

## Related Documents

*HP Client Automation OS Manager System Administrator Guide for SUSE AutoYaST and Red Hat Kickstart*

*HP Client Automation Core and Satellite User Guides (Enterprise, Standard,  
and Starter Editions)*

*HP Client Automation Administrator Installation and User Guide*



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## 2 Preparing to Deploy Images

This chapter includes the following topics:

- [About Policy on page 18](#)
- [Assigning OSs to Devices and Groups on page 19](#)
- [Advanced Topic: Assigning OSs by Using Policy on page 20](#)
- [Advanced Topic: Preparing Content Using the CSDB Editor on page 22](#)
- [Advanced Topic: Configuring ROM Objects for OS Management on page 53](#)



The information in this chapter pertains only to HPCA Enterprise Edition.

This chapter provides information on how to use the CSDB Editor to prepare your operating system images for deployment to the appropriate target devices. HPCA allows for OS installations on bare metal devices, migration of existing OSs, and disaster recovery of devices.



The following are not supported on thin clients:

- Hardware Configuration Management
- Defining Drive Layouts
- Multicast
- `getmachinename.tcl`
- Deploying OSs from CD or DVD, and
- Sysprep

It is important to be aware of this, because the interface for these features has been disabled. If you use these features, they will simply be ignored on a thin client device.

## About Policy

HPCA uses the following classes in the POLICY Domain for OS management:

- Machine manufacturers (MANUFACT)
- Machine models (MODEL)
- Machine roles (ROLE)
- Machine subnets (SUBNET)

These classes are resolved in the following order: ROLE, MANUFACT, MODEL, and SUBNET. *This order is subject to change.* See [Advanced Topic: Assigning OSs by Using Policy](#) on page 20 for important information about implementing policy.



When using the Machine ROLE, be aware that setting a ROLE value in the device's ROM object must be done through a special script, as this is not currently exposed in the HPCA console. See [Advanced Topic: Configuring ROM Objects for OS Management](#) on page 53 for more information.

## Prerequisites

To deploy Microsoft Windows Vista and above OS with a separate boot partition successfully, set the boot partition size to a minimum of 300 MB or double the size of your `winpe.wim` file. The recommended boot partition size is one GB.

## Assigning OSs to Devices and Groups

Use the OS Management feature in the HPCA console to assign operating systems to individual devices or groups of devices. For instructions, refer to the appropriate topic for your license type:

| License Type | Topic  |
|--------------|--|
| Enterprise   | “Managing Operating Systems” in the HPCA Enterprise Console online help and the <i>HP Client Automation Core and Satellite Enterprise Edition User Guide</i> |
| Standard     | “OS Management” in the HPCA Standard console online help and the <i>HP Client Automation Core and Satellite Standard Edition User Guide</i>                  |

Manufacturer, model, and subnet are based on attributes related to a device. Role is *not* based on a device's attributes. It is simply a grouping of devices, similar to how you might assign policy based on departments. You can set policy based on a device's assigned role—such as server or workstation.

Role is the only criterion that you can use to allow a user to determine the OS that is installed on the device. Note that to allow a user to select an OS, you must set the system behaviors accordingly (see [Setting Behaviors](#) on page 28). After a role is selected by the user, only you, the administrator, can reset it to a different value (or to empty) so that the user may select the role again.

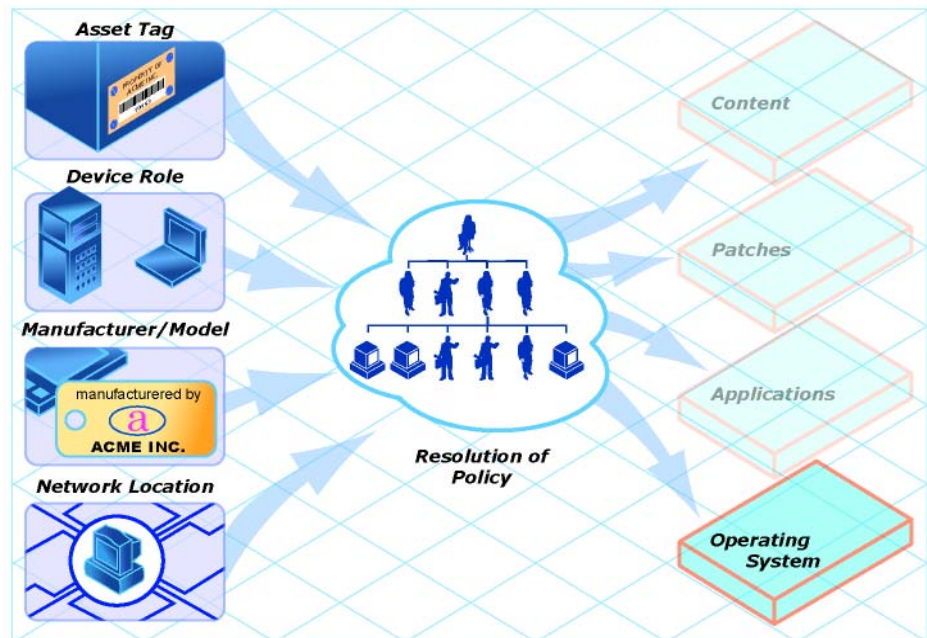
For information about setting the role, see [Advanced Topic: Configuring ROM Objects for OS Management](#) on page 53.

# Advanced Topic: Assigning OSs by Using Policy

As an alternative to using the HPCA console to assign operating systems to managed devices (or groups of devices), you can use policy assignments to determine which OS is installed on a particular device. This is much more difficult than using the console method, however, and should only be attempted by experienced HPCA administrators.

We recommend that you select a single criterion for policy.

**Figure 1 Resolution of Policy**



In order to determine which criterion to use, look at your overall environment. In general, you will probably most often assign policy by subnet.

- If your environment is divided by subnets, you may choose to use the SUBNET criterion. For example, server farms are typically defined by subnets.
- If your environment is a build center, it may make sense to use the ROLE criterion so that users can select what OS should be installed.

For information about setting the ROLE, see [Advanced Topic: Configuring ROM Objects for OS Management](#) on page 53.

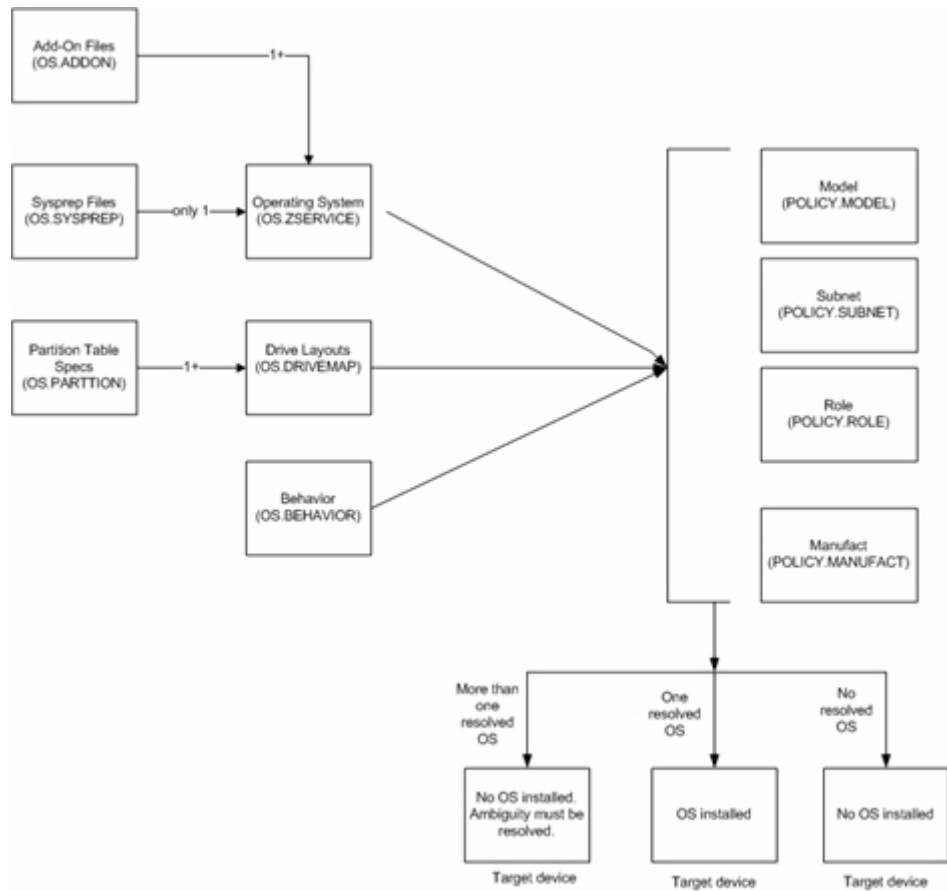
- If your environment is standardized by hardware, then you may choose to use the MANUFACTURER or MODEL criterion. For example, one vendor makes all the laptops in your environment and a different vendor makes all of the workstations in your environment, you may decide to use the manufacturer class. These criteria will probably be used less often than the others because it may be unusual to use a certain model or manufacturer throughout your environment.

If you have followed the recommendation to use one criterion to determine policy, your OSs will deploy as expected.

If more than one criterion was used to determine policy and the machine is a bare metal machine, the user of the target device will be given a list of operating systems from which to choose.

The following is an overview of how the classes relate in order to determine what OS is installed on a target device.

**Figure 2 Determining OS on a target device**



## Advanced Topic: Preparing Content Using the CSDB Editor

Typically, you will use the HPCA console to simply assign an operating system to a set of target devices and initiate the deployment. See [Assigning OSs to Devices and Groups](#) on page 19.

In some cases, however, you may need to make use of advanced HPCA capabilities. You can use the CSDB Editor to create, modify, and prepare content in production environments. You must be familiar with the CSDB Editor to complete these tasks.

Before you begin preparing content, it is recommended that you review some typical scenarios and the procedures that you might follow when preparing to deploy OSs to your target devices. The table below provides sample scenarios and a summary of the tasks that you can use in each of these situations. See the referenced descriptions listed with the individual operations to learn how to use the CSDB Editor to complete the operations.



To use the following scenarios, you must be logged into the CSDB Editor as an administrator.

**Table 3    Advanced Administrative Procedures**

| <b>If you want to...</b>  | <b>Then...</b>   |
|---|--|
| Install an OS on a bare metal machine<br>Note: This does not apply to Local Service Boot implementations. | <ol style="list-style-type: none"> <li data-bbox="535 703 1278 894">1 Use the HPCA Console to create any necessary policy instances.<br/><br/>If you are creating a manufacturer or model policy instance, see <a href="#">Creating a Manufacturer or Model Instance</a> on page 34.</li> <li data-bbox="535 894 1278 963">2 Use the HPCA Console to connect the OS service to the policy instances.</li> <li data-bbox="535 963 1278 1102">3 If you do not want to use the default behavior (the Undefined instance in the DEFAULT_BEHAVIOR class), you can modify the behaviors. See <a href="#">Setting Behaviors</a> on page 28.</li> <li data-bbox="535 1102 1278 1206">4 Boot the target device. When the device boots up, the appropriate OS (according to policy) is installed and a ROM object is created.</li> </ol> |

**Table 3    Advanced Administrative Procedures**

| <b>If you want to...</b>  | <b>Then...</b>  |
|---|---|
| <p>Bring an unmanaged machine with an installed OS under HPCA management and install the appropriate OS as per policy.</p> <p>Reminder: The target device must have the Application Manager with the HPCA OS Manager feature installed.</p> | <ol style="list-style-type: none"> <li>1 Boot the target devices so that discovery occurs. Note that the OS State is set to Desired, and the Current OS and Chosen OS are Unmanaged.</li> <li>2 Use the OS Management Wizard in the HPCA Console.</li> </ol>  |
| <p>Force a re-installation of the current OS without retaining any existing data.</p>   | <p>Use the OS Management Wizard in the HPCA Console. Be sure to check the <b>Emergency Mode</b> check box on the Deployment Options page when executing the OS management Wizard.</p>   |
| <p>Force the installation of a valid OS that you choose without retaining any existing data.</p>  | <ol style="list-style-type: none"> <li>1 Assign policy so that the new OS that you want to install is the <i>only</i> OS connected to policy.</li> <li>2 Use the OS Management Wizard in the HPCA Console . Be sure to check the <b>Emergency Mode</b> check box on the Deployment Options page when executing the OS Management Wizard</li> </ol>  |
| <p>Initiate the installation of a different OS.</p>   | <ol style="list-style-type: none"> <li>1 Set the Select OS (PMACKOVW) behavior to <code>_NEVER_</code> to give the administrator control over policy. See <a href="#">Setting Behaviors</a> on page 28.</li> <li>2 Assign policy so that the new OS that you want to install is the <i>only</i> OS connected to policy.</li> <li>3 Use the OS Management Wizard in the HPCA Console to re-evaluate the state of the OS and install a new one based on policy.</li> </ol> <p>Note that if you do not set the Behavior to NEVER, the user of the target device will be prompted to confirm whether they want to reinstall the OS.</p> |



**Table 3 Advanced Administrative Procedures**

| <b>If you want to...</b>   | <b>Then...</b>  |
|--|---|
| Allow the user to decide which OS to install.                            | <ol style="list-style-type: none"> <li>1 Verify that your policy will result in more than one OS available for the target devices.</li> <li>2 Set the PMSLCTOS behavior to <code>_LOCAL_</code>. See <a href="#">Setting Behaviors</a> on page 28.</li> <li>3 Use the OS Management Wizard in the HPCA Console to re-evaluate the state of the OS and install a new one based on policy.</li> </ol>                           |
| The following are additional options that can be used in many scenarios: |   |
| Use an override Sysprep file.  | Connect a Sysprep instance to the operating system instance. See <a href="#">Using an Override Sysprep File</a> on page 50. When the OS is deployed to the target device, the override Sysprep file will be merged with the Sysprep file that is embedded in the OS   |
| Add partitions.  | <ol style="list-style-type: none"> <li>1 Use the Drive Layouts Class to specify the type of partition. See <a href="#">Defining Drive Layouts</a> on page 35.</li> <li>2 Add a partition. See <a href="#">Adding Partitions</a> on page 48. <i>All existing data will be lost.</i></li> <li>3 Assign the appropriate drive layouts to your target devices. See <a href="#">Assigning Drive Layouts</a> on page 50.</li> </ol> |
| Create a replace, cache, or merge type partition.                        | <ol style="list-style-type: none"> <li>1 Use the Drive Layouts class to specify the type of partition. See <a href="#">Defining Drive Layouts</a> on page 35.</li> <li>2 Assign the appropriate drive layouts to your target devices. See <a href="#">Assigning Drive Layouts</a> on page 50.</li> </ol>  |

## Logging On

To log on to the Client Automation Administrator CSDB Editor

- 1 Go to **Start**→**All Programs**→**HP Client Automation Administrator**→**HP Client Automation Administrator CSDB Editor**.
- 2 In the **User ID** text box, type **admin**.
- 3 In the **Password** text box, type a password. Passwords are case sensitive.

The pre-defined password is **secret**.



Be sure to change your password before moving the CSDB Editor into your production environment.

- 4 Click **OK**.

## About the OS Management Classes

The following are the classes you may need to use when preparing operating system content.



The CSDB Editor is an open system. You must have a comprehensive understanding of how to use the CSDB Editor and the tasks that you want to perform in order to prevent unintended consequences.

Except for specific instance attributes detailed in this guide, do not change, edit, or delete any of the classes in the OS domain.

- Do not change any of the `_BASE_INSTANCE_ wiring`.
- Do not change (or otherwise add) `_NULL_INSTANCE_`.
- Do not change `ZxxxPRI` attribute values.
- Do not re-order the connections in any of the instances.
- Do not change any of the expressions in any of the instances.

Part of the implementation of OS management in HPCA is contained in the classes and instances of the OS domain. Any change to anything other than the instance attributes detailed in this guide may render the system unusable and void support.

### To view the OS Management classes

- 1 Open the CSDB Editor and go to PRIMARY.OS.
- 2 In the list view, the following classes appear.
  - Behavior (BEHAVIOR)  
Lists the settings for how the OS management features behave. You can assign different system behaviors to different target devices. See [Setting Behaviors](#) on page 28.

- Drive Layouts (DRIVEMAP)  
This class lists the types of partitions that you can add or copy, and also allows you to configure new partitions. See [Defining Drive Layouts](#) on page 35.
  - HW Config (LDS)  
Stores instances that contain the information about how a target device's hardware must be configured in order for it to be ready for operating system installation. Refer to the *HP Client Automation OS Manager Hardware Configuration Management Guide*.
  - HW Config Element (LME)  
Stores instances that contain information about the resources required for a Hardware Configuration Management operation, the sequencing of operations, and how the operation is to be carried out. Refer to the *HP Client Automation OS Manager Hardware Configuration Management Guide*.
  - AddOn Resources (ADDON)  
If you use the option **OS Add-ons/Extra POS drivers** in the Publisher, the directories or files that you select will be published to the ADDON class. There is no need (nor any support) to edit these instances directly.
- ▶ OS services published to the CSDB with HPCA 7.50 or later will have a generic connection pointing to the ADDON class. Any directories or files published using the **OS Add-ons/Extra POS drivers** option in the Publisher will be included automatically in the OS deployment.
- If you migrated from HPCA version 5.11 or 7.2x, you will need to manually add the connection to the OS.ZSERVICE instance:
- ```
OS.ADDON.<InstanceNameOfOSService>_*
```
- For example:
- ```
OS.ADDON.WIN7X86_*
```
- Place the value in the 6th `_ALWAYS_` connection field.
- Mobile File Resource (RMMFILE)  
File resources for mobile devices.
  - Operating Systems (ZSERVICE)  
Stores the OS services to be deployed to your target devices.

- OS Packages (PACKAGE)  
Used to combine multiple files into packages.
- OS Path (OSPATH)  
A controlling class used by HPCA. Do not edit.
- ELIGIBLE (ELIGIBLE)  
A controlling class used by HPCA. Do not edit.
- OS Resources (FILE)  
OS resources, such as WIN7 .WIM.
- Partition Table Spec (PARTTION)  
Lists the specifications for the partitions that you may add in addition to the OS boot partition. See [Adding Partitions](#) on page 48.
- STATE (STATE)  
A controlling class used by HPCA. Do not edit.
- Sysprep Files (SYSPREP)  
Lists the Sysprep files and unattend.txt files stored in your database. See [Using an Override Sysprep File](#) on page 50.
- UNIX Config Files (UNIXCFG)  
UNIX configuration resource class. Refer to the *HP Client Automation OS Manager System Administrator Guide for SuSE AutoYaST and Red Hat Kickstart*.

## Setting Behaviors

You can assign system behaviors to your target devices based on policy. If you do not assign a behavior to policy, DEFAULT\_BEHAVIOR is the default.

For example, you may want to configure some managed devices to require that the user acknowledge that this OS is about to change, while others may not require user acknowledgement.



You must be very careful if you are using more than one Behavior instance, because these instances determine the behavior of the system. You may have unintended consequences if this is not performed properly. For example, if you set the wrong policy, you may inadvertently allow users to make policy changes, or an unattended device may become stuck at a prompt.

It is highly recommended that you connect one Behavior instance to one Policy instance only.

One potential way to prevent errors would be to connect Behavior instances to mutually exclusive instances of different policies.

### To set the behaviors

- 1 In the CSDB Editor, go to PRIMARY.OS.BEHAVIOR.
- 2 Create a new instance or modify an existing instance (see [Table 4](#) on page 30).
  - ▶ If you do not know how to create or modify instances, refer to the *HP Client Automation Administrator Installation and User Guide*.
- 3 When you are done making changes, click **OK**.
- 4 Connect the BEHAVIOR instance to a POLICY instance.
  - Connect only one BEHAVIOR instance per POLICY instance.
  - If you are using a Core and Satellite environment, you may need to first remove the DEFAULT\_BEHAVIOR connection from the ROLE base instance.

**Table 4 Attributes of the Behavior Class**

| <b>Attribute</b>      | <b>Description</b>  |
|-----------------------|---|
| Name of this instance | Instance Name   |
| PMROLE                | <p>PMROLE should no longer be used—it cannot be used from the HPCA Console. The following information is provided for historical reference only.</p> <p>Indicates whether the user is allowed to select a machine role.</p> <ul style="list-style-type: none"><li>• <b>_LOCAL_</b><br/>Displays a user interface so a user at the target device can select a role for the device. The list of available roles, determined from the instances in the POLICY.ROLE class in the CSDB, is displayed.</li><li>• <b>_CENTRAL_</b><br/>Disables the ability to select roles. A role selection remains in effect until you (the administrator) void or overrule the selection.</li></ul> <p>Default: <b>_CENTRAL_</b></p> |
| PMSLCTOS              | <p>Specifies whether to provide the user with the choice of Operating Systems, if there are more than one OS/ZSERVICE instances available, to be installed.</p> <ul style="list-style-type: none"><li>• <b>_LOCAL_ (Default)</b><br/>Prompts the user with the choice of OS installation during deployment.</li><li>• <b>_CENTRAL_</b><br/>Chooses the value automatically, based on the policy set by the administrator.</li></ul>   |

**Table 4 Attributes of the Behavior Class**

| <b>Attribute</b> | <b>Description</b>   |
|------------------|--|
| PMACKOVW         | <p>Specifies whether to prompt the user before overwriting or modifying the OS.</p> <ul style="list-style-type: none"><li>• <code>_ALWAYS_</code> (Default)<br/>Prompts the user before a reinstallation.</li><li>• <code>_NEVER_</code><br/>Does not prompt the user, but installs the OS.</li></ul> <p>Caution: <code>NEVER</code> is designed for use with unattended devices. Use this option with caution, as the user will not be prompted before the OS is overwritten.</p> <ul style="list-style-type: none"><li>• <code>_VALID_</code><br/>This option has been deprecated.</li></ul>   |
| PMINITL          | <p>Specifies whether an OS should be installed over an existing file system on a recently discovered, but unmanaged device.</p> <p>The <code>PMINITL</code> attribute is referenced only if there is no <code>rombl.cfg</code> on the device. If there is a <code>rombl.cfg</code>, this indicates that the device is already under management and <code>PMINITL</code> will not be referenced at all.</p> <ul style="list-style-type: none"><li>• <code>_LOCAL_</code> (default)<br/>Prompts the user.</li><li>• <code>_KEEP_</code><br/>Does not prompt the user and keeps the current OS.</li><li>• <code>_REINSTALL_</code><br/>Does not prompt the user and reinstalls the operating system, regardless of what exists.</li></ul> |
| PMDISRCV         | <p>Specifies the action to be taken when there is no valid bootable partition.</p> <ul style="list-style-type: none"><li>• If <code>PMDISRCV = _CONFIRM_</code>, the target device shuts down so that the administrator can recover data from the target device.</li><li>• If <code>PMDISRCV = _AUTO_</code>, the appropriate OS is reinstalled.</li></ul>   |

**Table 4 Attributes of the Behavior Class**

| Attribute | Description   |
|-----------|---|
| RUNPARAM  | <p>Specifies the parameters that are appended to the <code>radskman</code> command line. This command line runs after the OS has been installed, and will install the target device's applications. For additional parameters, refer to the <i>HP Client Automation Application Manager and Application Self-service Manager Installation and Configuration Guide</i> and the HP Software Support web site.</p> <p>Be sure to specify the IP address or DNS name for your Configuration Server. If you do not modify this parameter, your target device will not be able to successfully run an HPCA OS connect.</p> <p>Do not remove the <code>copy=y</code> parameter; it is necessary because COP must be enabled.</p> <p>In the RUNPARAM (RunOnce Parameter String), change <code>IP=RCSSERVER</code> to reference the appropriate HPCA server for your environment. If your server is running on a non-default port, also add:</p> <pre data-bbox="449 859 992 894">,port=ConfigurationServerPortNumber&gt;</pre> <p>The default port is 3464.</p> |
| ROMAPARAM | Typically, use this only if instructed by Technical Support.  |
| BANDWIDTH | <p>The bandwidth throttle used by each target device. For example, 1000K. You can specify bandwidth throttle in Kbs (K), MB/sec (M), or GB/sec (G).</p> <p>The default definition is in bytes/sec.</p> <p>The default value is blank (no bandwidth limitation), which means that the download process will run at the maximum speed of the network interface.</p>   |





































































































































































































































































