IBM System x

IBM Deployment Pack for Microsoft System Center Configuration Manager 2007 Installation and User's Guide

Version 1.4

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Note

Before using this information and the product it supports, read the information in "Notices" on page 111.

This edition applies to version 1.4 of IBM Deployment Pack for Microsoft Configuration Manager 2007 and to all subsequent releases and modifications until otherwise indicated in new editions.

Contents

About this publication

This book provides instructions for installing IBM Deployment Pack for Microsoft System Center Configuration Manager 2007, v1.4 and using the integrated features to deploy operating systems to IBM® servers in your environment.

Conventions and terminology

Paragraphs that start with a bold **Note**, **Important**, or **Attention** are notices with specific meanings that highlight key information.

Note: These notices provide important tips, guidance, or advice.

Important: These notices provide information or advice that might help you avoid inconvenient or difficult situations.

Attention: These notices indicate possible damage to programs, devices, or data. An attention notice appears before the instruction or situation in which damage can occur.

Information resources

You can find additional information about IBM Deployment Pack for Microsoft System Center Configuration Manager 2007, v1.4 in the product documentation and on the World Wide Web.

PDF files

View or print documentation that is available in Portable Document Format (PDF).

Downloading Adobe Acrobat Reader

You need Adobe Acrobat Reader to view or print these PDF files. You can download a copy from the Adobe Reader Web site.

Viewing and printing PDF files

You can view or print any of the PDF files in the following list. The most current version of each document is available online in the information center and on the product download page. Go to the Microsoft Systems Management Solutions for IBM Servers to sign in and locate the download links for the publications, or click any title in the following list to open the version of each book that is in the information center for the IBM System x® and BladeCenter® Tools Center:

Release Notes®

- *IBM Deployment Pack for Microsoft System Center Configuration Manager 2007 Release Notes, v1.4*

Installation and User's Guide

- *IBM Deployment Pack for Microsoft System Center Configuration Manager 2007 Installation and User's Guide, v1.4*

World Wide Web resources

The following Web pages provide resources for understanding, using, and troubleshooting IBM System x, BladeCenter blade servers, and systems-management and systems-deployment tools.

IBM Systems Technical support site

Support for IBM Systems and servers

Locate support for IBM hardware and systems-management and systems-deployment software.

IBM Web site for Microsoft Systems Management Solutions for IBM Servers

Microsoft Systems Management Solutions for IBM Servers

Download IBM systems-management and systems-deployment software.

IBM Systems Management page

IBM Systems Management

Obtain an overview of IBM systems deployment using IBM tools and the IBM Deployment Pack for Microsoft Configuration Manager 2007.

IBM ServerProven® page

IBM ServerProven

Obtain information about hardware compatibility with IBM System x, IBM BladeCenter, and IBM IntelliStation® hardware.

Microsoft System Center Configuration Manager 2007 page

Microsoft TechNet: System Center Configuration Manager

Obtain information about Microsoft System Center Configuration Manager from the home page for the product.

Microsoft TechNet: Configuration Manager Documentation Library

Obtain information about Microsoft System Center Configuration Manager from its library of documentation.

TechNet Blog: Inside ConfigMgr 07 Operating System Deployment

Obtain information about the Operating System Deployment feature of Microsoft System Center Configuration Manager from a Microsoft sponsored blog that provides an inside look at the Operating System Deployment feature.

Microsoft TechNet Forum: Configuration Manager – Operating System Deployment

Discuss the Operating System Deployment feature forMicrosoft System Center Configuration Manager with Microsoft developers and other users.

Chapter 1. Product introduction

The IBM Deployment Pack for Microsoft Configuration Manager 2007 enables customers to tailor and build custom hardware deployment solutions in a convenient way. It provides hardware configuration and Windows operating system (OS) installation for IBM System x, IBM BladeCenter, Blade Servers hardware.

When integrated with the Microsoft System Center Configuration Manager 2007 (SCCM) Operating System Deployment component, the IBM Deployment Pack simplifies the steps in creating and customizing jobs to deploy hardware configurations and Network Operating System (NOS) deployments.

The IBM Deployment Pack, v1.4 supports the following types of deployment:

- Policy-based RAD configuration using PRAID
- Configuration of System settings using the Advanced Settings Utility (ASU)
  - Configuration of BIOS/UEFI settings
  - Configuration of BMC/IMM settings
- Automated deployment of the following Network Operating Systems (NOSs):
  - Windows 2003 32bit/X64
  - Windows 2003 R2 32bit/X64
  - Windows 2008 32bit/X64
  - Windows 2008 R2 X64

For ease of use, the IBM Deployment Pack, v1.4 also provides the following components and functionalities:

- Custom WinPE boot image with all required drivers
- Sample configuration files and scripts
- All IBM-specific drivers for Windows 2003
- All IBM-specific drivers for Windows 2008
- A command-line tool to import System Enablement Pack (SEP) into SCCM server
- Transparent upgrade from IBM Deployment Pack v1.3

Chapter 2. Installing the IBM Deployment Pack

This section describes the steps to install the IBM Deployment Pack. It includes information on prerequisites, instructions for installation, upgrading, removal, and reinstallation.

System enablement packs (SEPs) allow you to add support for hardware released after the current release of IBM Deployment Pack. This chapter includes information on importing and configuring SEPs.

Prerequisites

To install IBM Deployment Pack, the following prerequisites are required:

- SCCM site server or admin console in normal status

  Note: Before installing the IBM Deployment Pack, please check the SCCM server to insure all SCCM components are up and running correctly. If there are errors listed in the SCCM status, resolve those errors first. For more information on how to check SCCM status and resolve possible errors, please refer to Microsoft TechNet: Configuration Manager Documentation Library: http://technet.microsoft.com/en-us/library/bb680651.aspx
- an installation account with the corresponding administrative authority, such as system administrator and SCCM administrator authority
- WAIK already installed
- If SCCM Server is running on Windows 2008, ensure that the hotfix 979492 is installed on the SCCM server. Refer to http://support.microsoft.com/kb/979492 for more information.

The IBM Deployment Pack can be installed on SCCM site server or on an SCCM admin console. Installation on admin console only adds IBM custom interface related components to the console, rather than adding other components into the SCCM site infrastructure. If you only install IBM Deployment Pack on the admin console, the IBM Deployment Pack functionalities cannot be used although there are IBM-related task sequences shown on admin console.

Note: To use the IBM Deployment Pack through admin console, the IBM Deployment Pack has to be installed on the corresponding SCCM site server and SCCM admin console as well.

Installation procedure

Before you begin

Download the IBM Deployment Pack from IBM website: http://www.ibm.com

Procedure

1. Double-click on the setup executable file (.exe) to launch the installation wizard.
2. Follow the installation wizard instructions until the Finish page appears.
3. Invoke the post-install wizard from the Finish page. The post-install wizard allows you to import the IBM Deployment Pack into the SCCM Server.

   Note: Close the SCCM administrator console before running the wizard.

   Note: The wizard can also be launched from **Start -> All Programs -> IBM Deployment Pack v1.4 -> IBM Deployment Pack Import Wizard**.

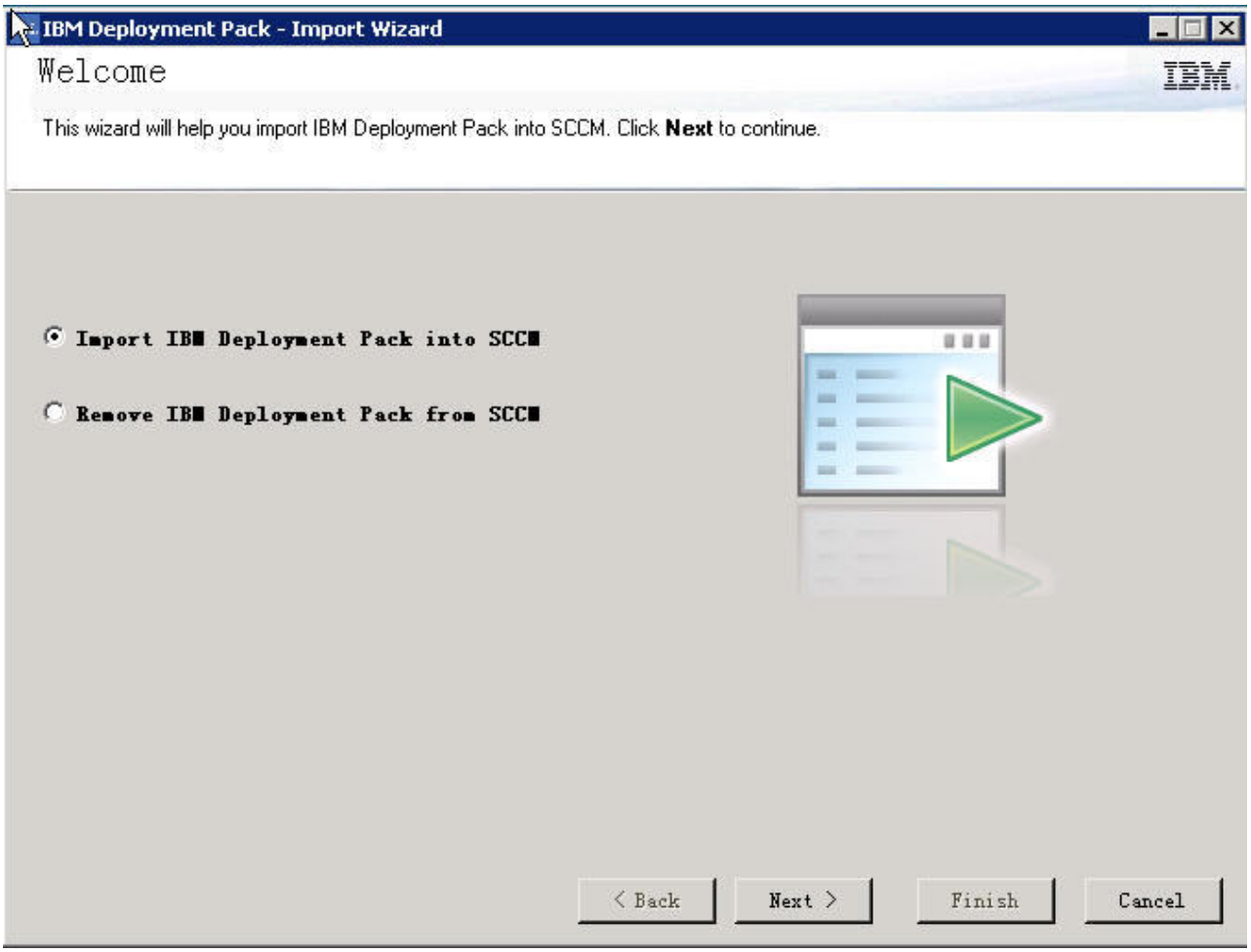

Figure 1. IBM Deployment Pack Import Wizard Welcome page

4. Select **Import IBM Deployment Pack to SCCM** and click **Next**. The Target Systems page appears.

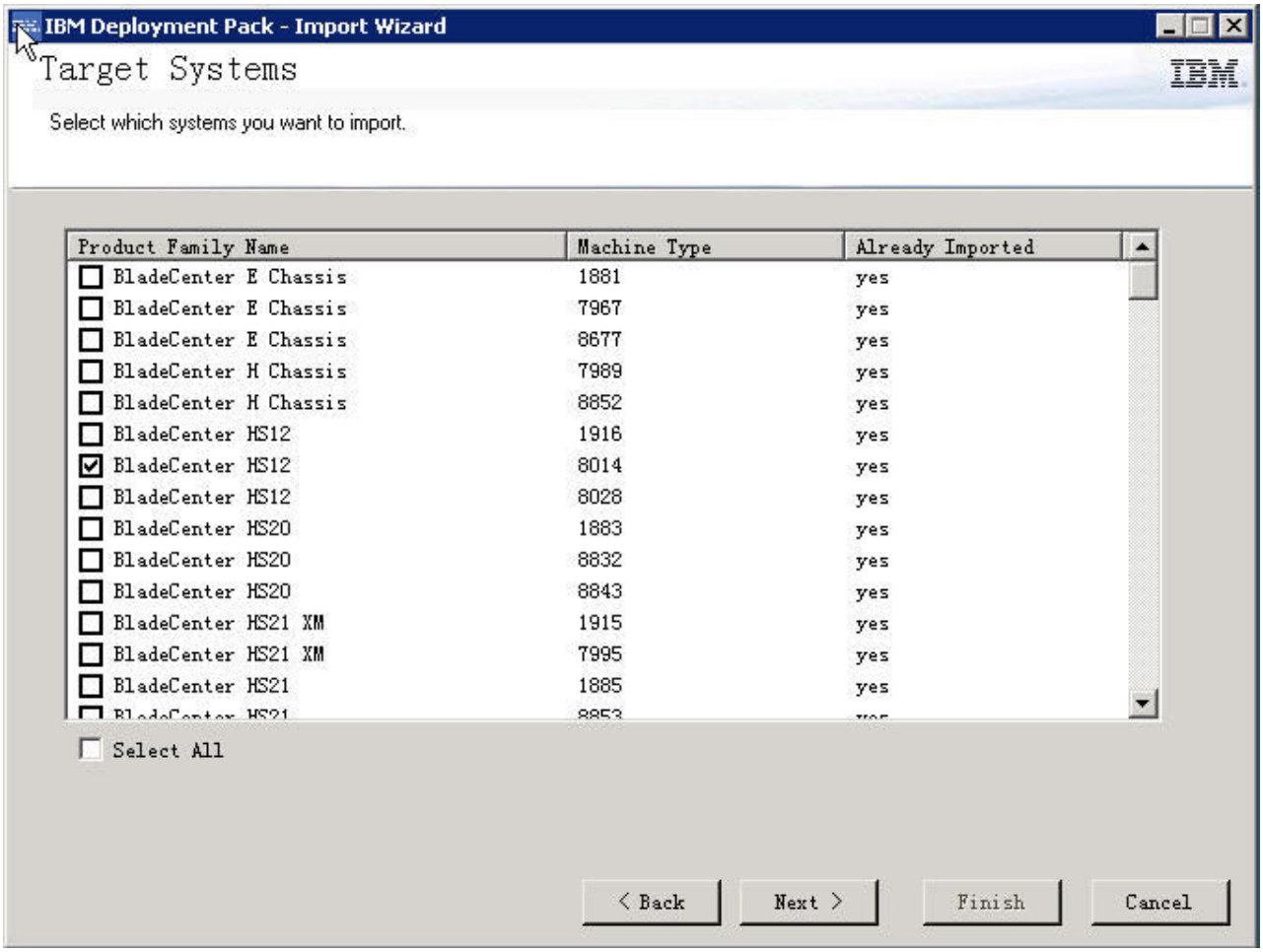

Figure 2. Target Systems page

5. Select the machine type(s) to import, and click **Next**. The Boot Image page appears.

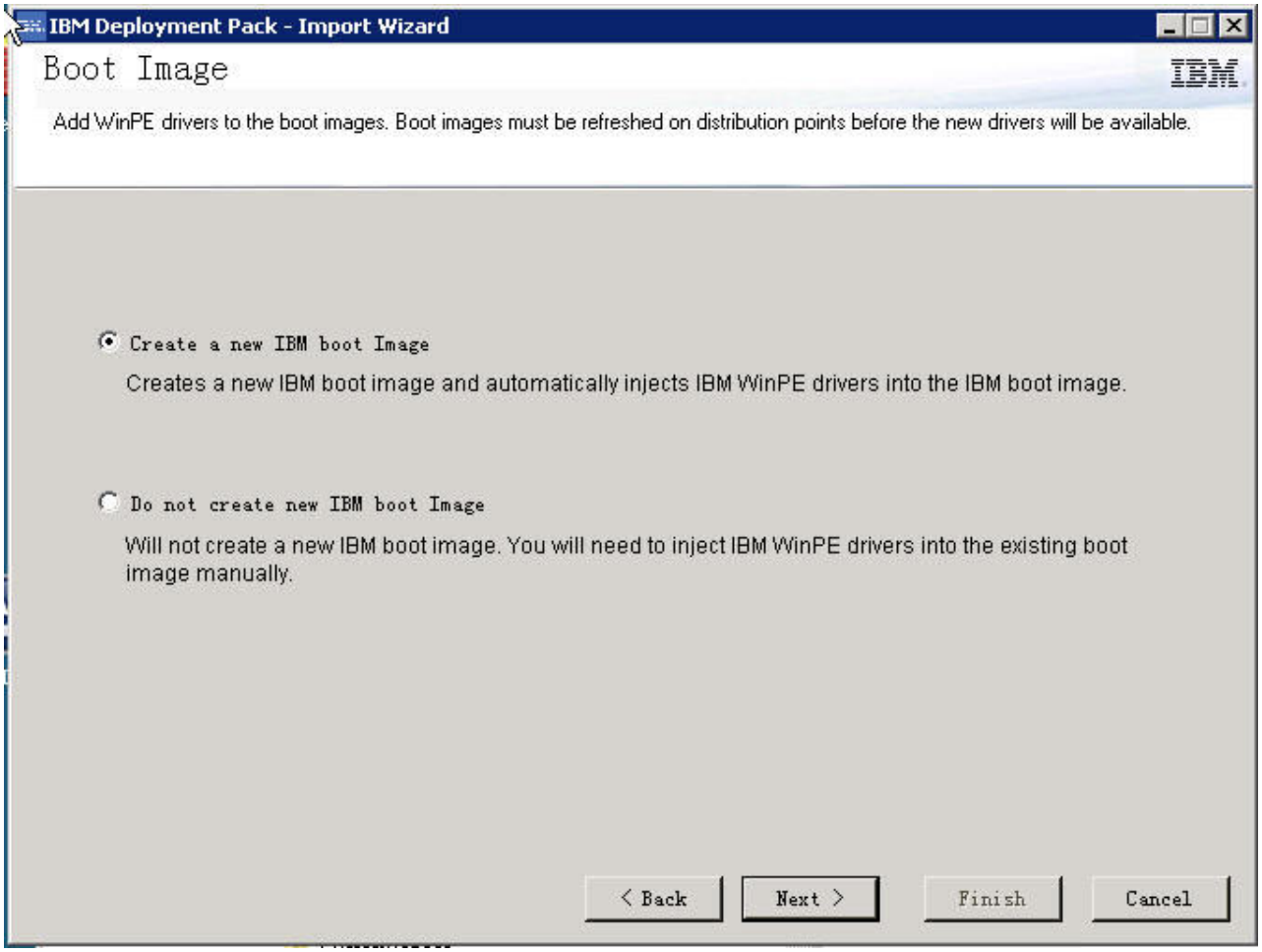

Figure 3. Boot Image page

6. Select whether to create a new IBM boot image and inject IBM WinPE drivers into IBM boot image automatically, and click **Next**.
7. On the Ready to Begin page, confirm your selections and click **Next** to proceed with the import, or **Back** to make corrections if needed.

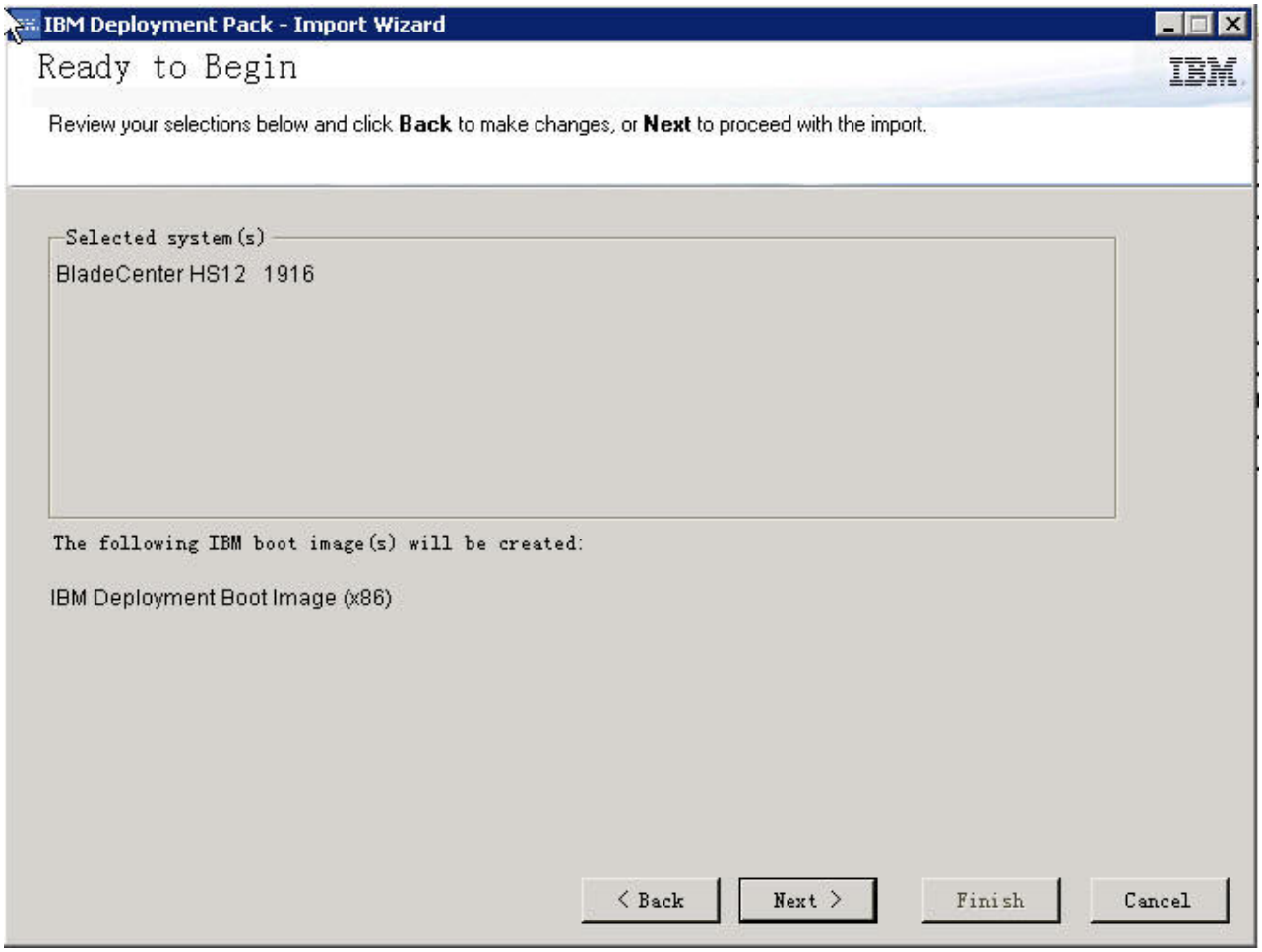

Figure 4. Ready to Begin page

8. After you click **Next**, the Progress page appears and shows the status of the selected actions.

   Note: The "Create boot image 'IBM Deployment Boot Image(x86)'" task takes longer to perform than the others. Be careful not to interrupt this task before it has completed.

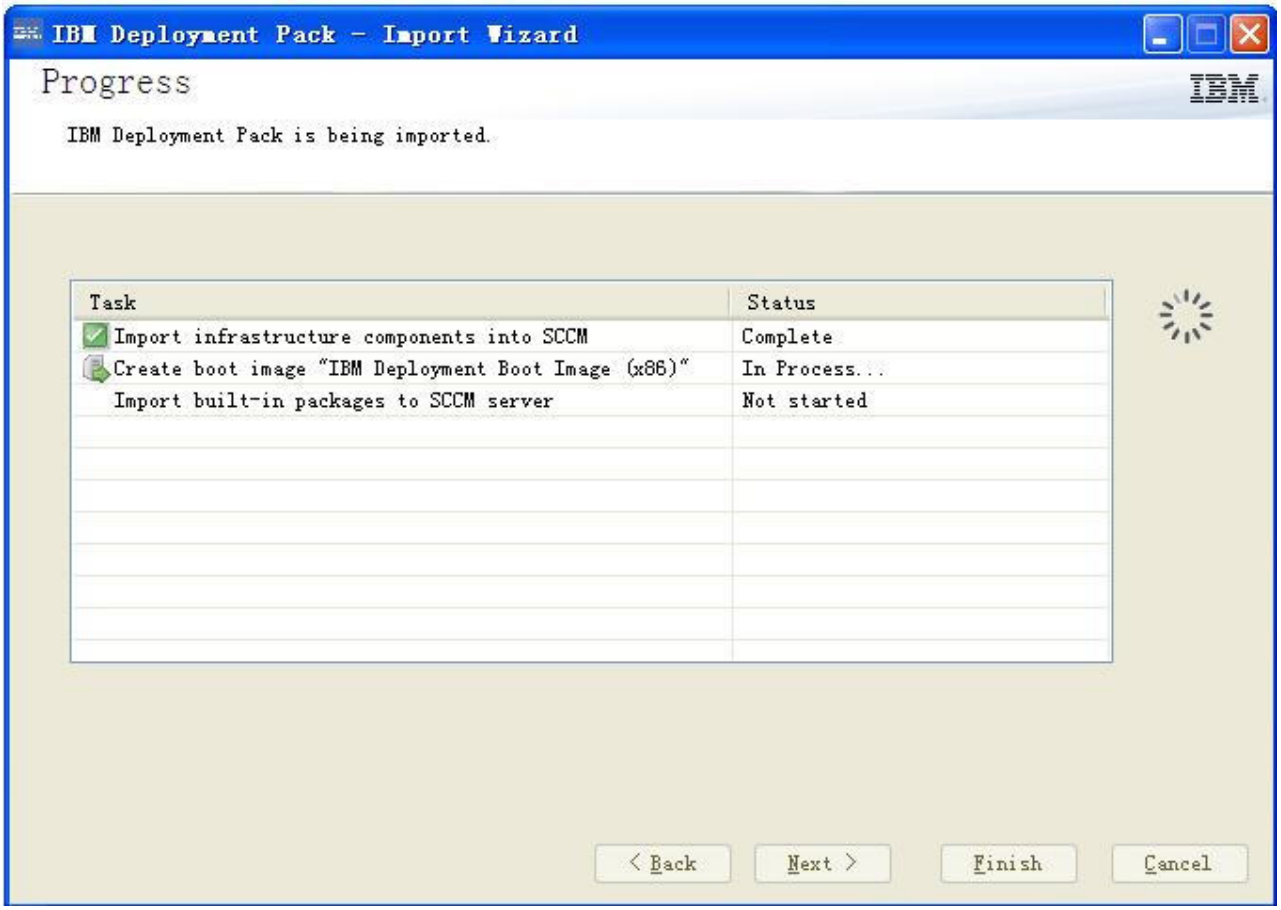

Figure 5. Progress page

9. After all tasks have been executed, the Completed page appears. Click **Finish**.

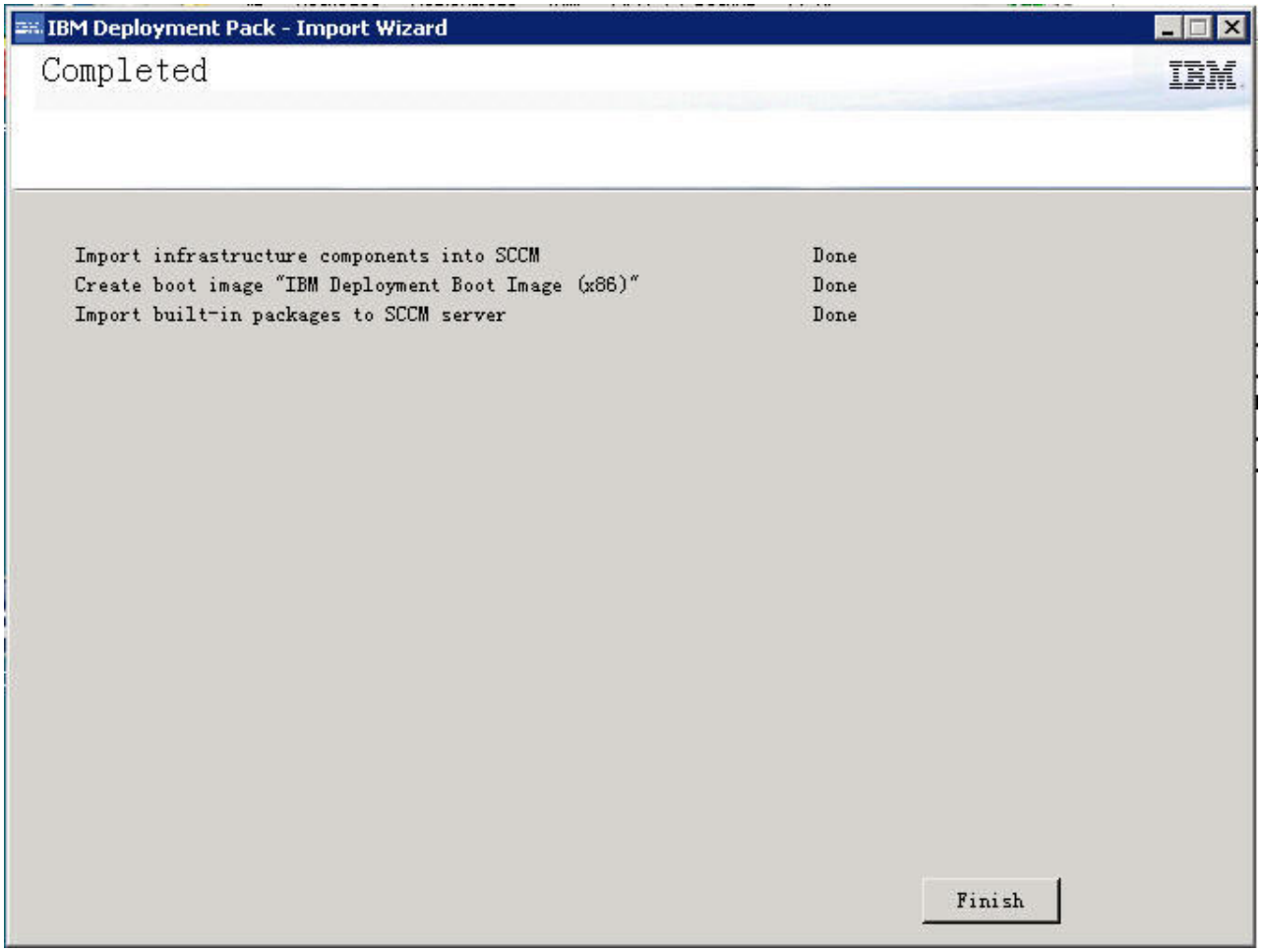

Figure 6. Completed page

Note: You also can use this wizard to remove the built-in and SEP package from the SCCM server. In OSD 1.4, the wizard only supports importing the built-in package. For the SEP package, OSD 1.4 provide a tool named IBMOSDTool instead.

Note: If you want to use the wizard to remove the built-in and SEP package from the SCCM server, ensure that SCCM administrator console is closed before running the wizard.

10. After importing completes, ensure that all components are installed on SCCM Server. (Figure 7 on page 10 shows components that should be added to SCCM site server after importing is completed.)

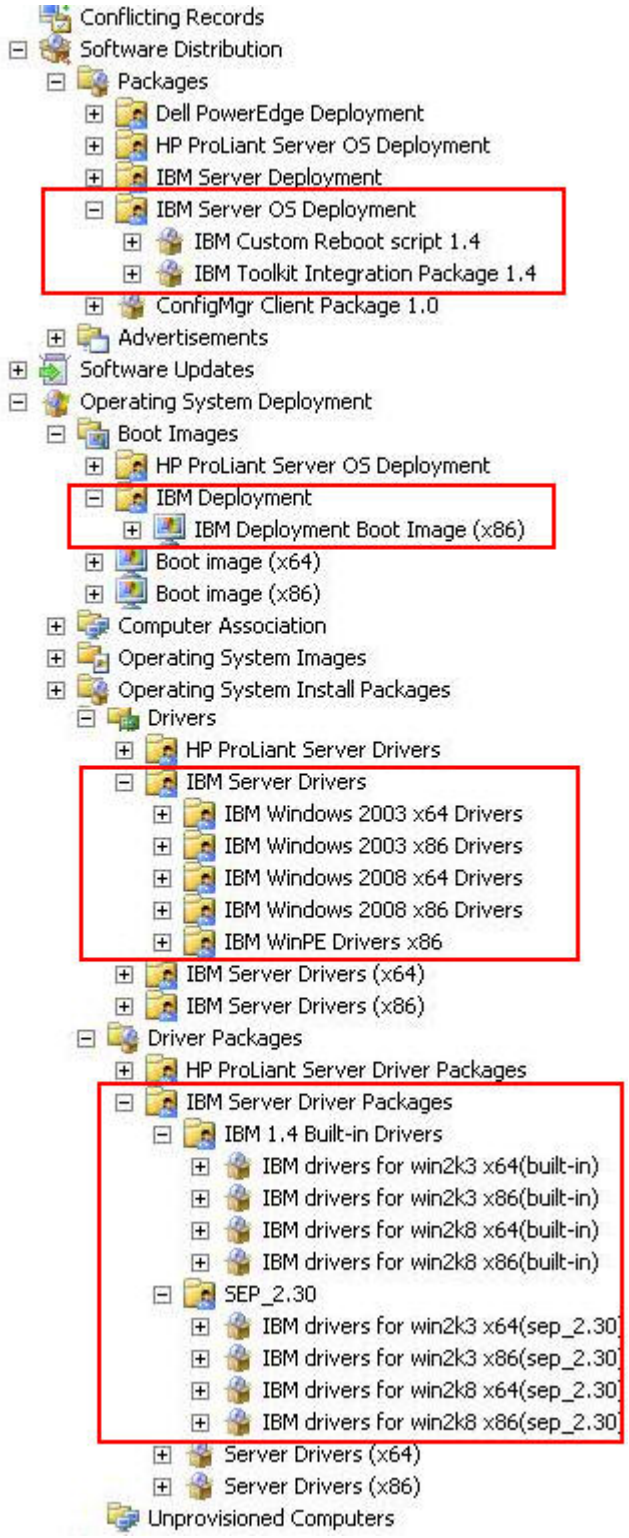

Figure 7. Items added to the SCCM console after installing the IBM Deployment Pack

11. Check to ensure that an IBM Task Sequence has been added to the Task Sequence's Bare Metal Server Deployment pull-down menu item. See Figure 8 on page 11 and Figure 9 on page 11.

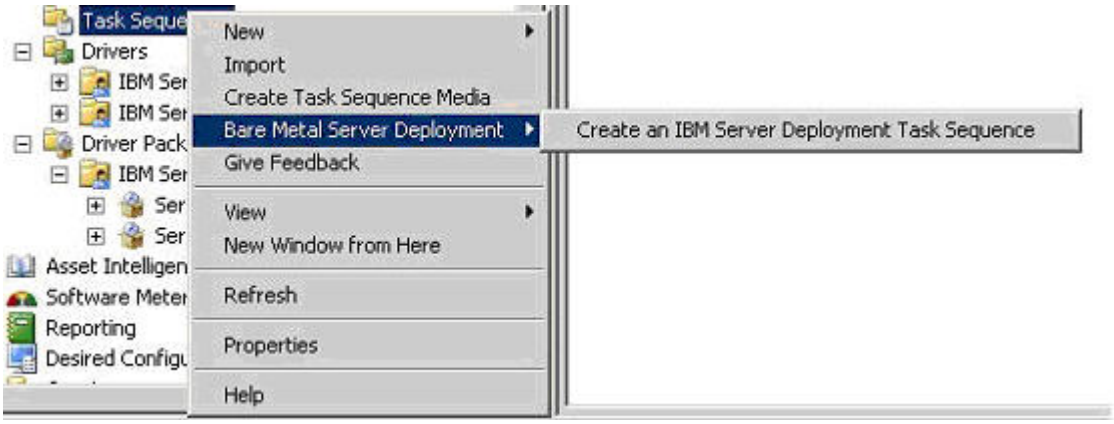

Figure 8. New Bare Metal Deployment option added

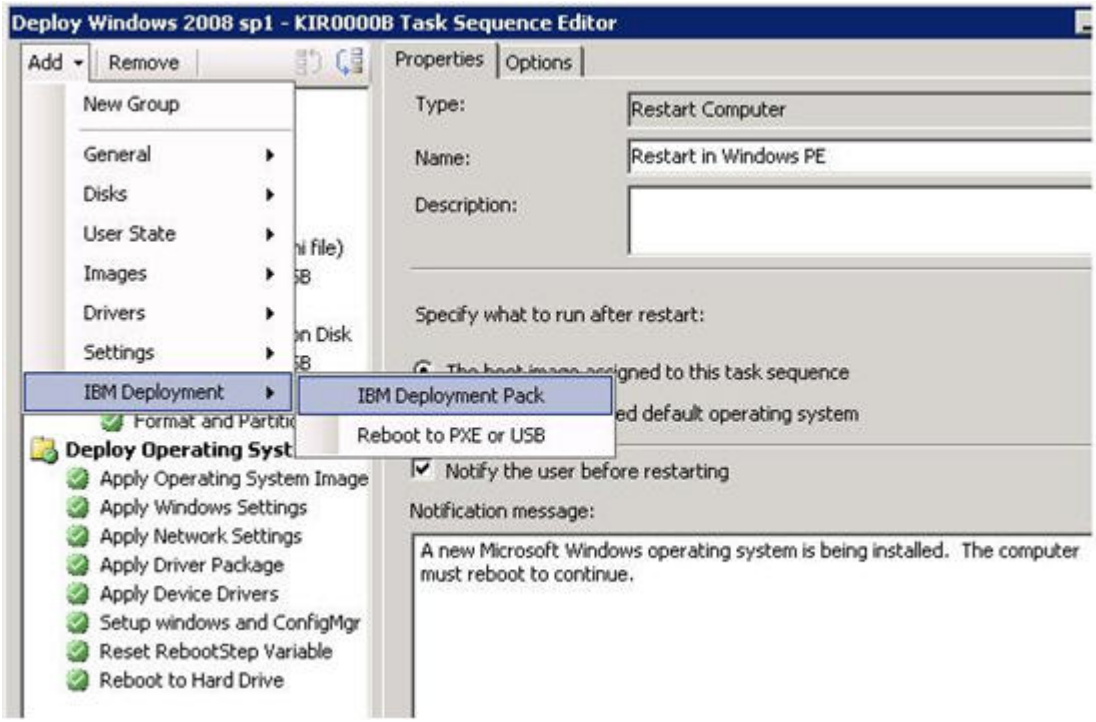

Figure 9. New action in Task Sequence Editor

Upgrading the IBM Deployment Pack from Version 1.3

Before you begin

Download the IBM Deployment Pack from IBM website: http://www.ibm.com

Procedure

1. Double-click on the setup executable file (.exe) to launch the installation wizard.
2. If the previous IBM Deployment Pack version is 1.3, a dialog appears asking whether to retain that version's settings from SCCM.

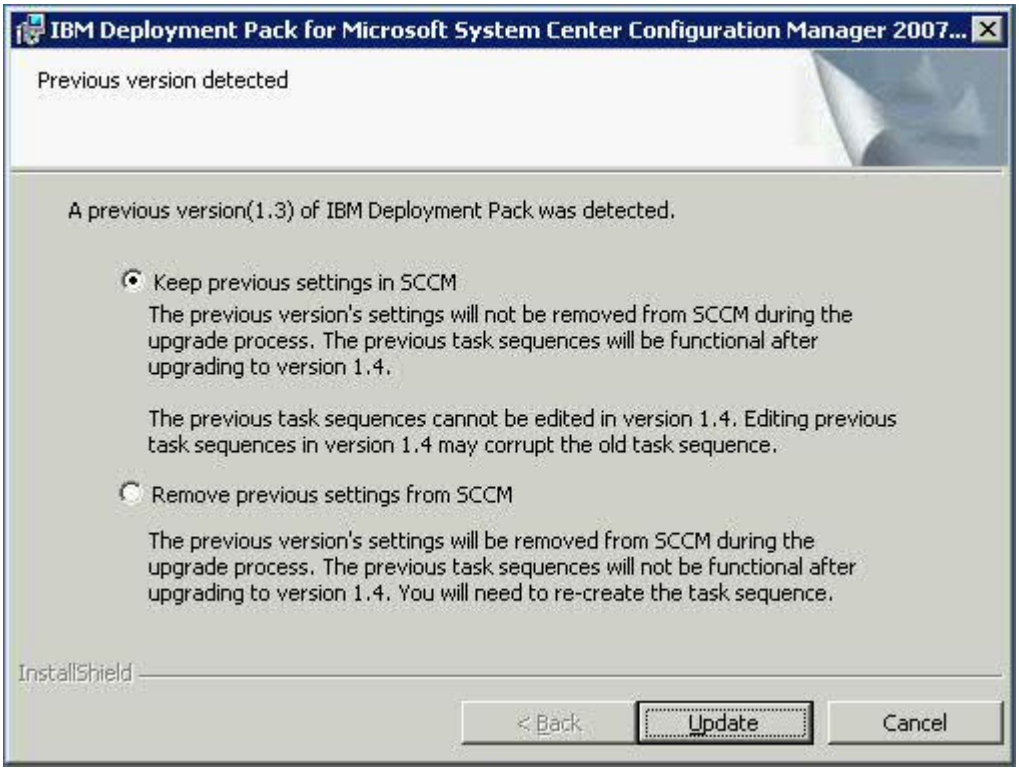

Figure 10. Option to retain settings of previous version

3. IBM Deployment Pack v1.3 is uninstalled and IBM Deployment Pack, v1.4 is installed on the SCCM server. If you selected to remove the settings for IBM Deployment Pack v1.3, all imported packets including the imported packages during installation and manually imported SEP packages will be removed, except the IBM-specific boot image (X86) will remain. If you selected to retain the settings for version 1.3, all packages will be retained.

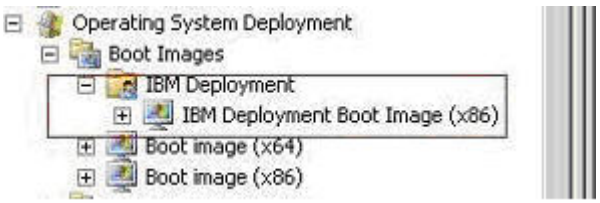

Figure 11. IBM Deployment Boot Image retained from previous version

4. Invoke the post-install wizard from the Finish page You can import the IBM Deployment Pack, v1.4 built-in packages into the SCCM server through it. For more information, please see “Installation procedure” on page 4 steps 3 through 9.

   Note: In previous versions before IBM Deployment Pack v1.3, when upgrading to IBM Deployment Pack, v1.4, the following message box will appear and you will need to uninstall the previous version and install v1.4 again.

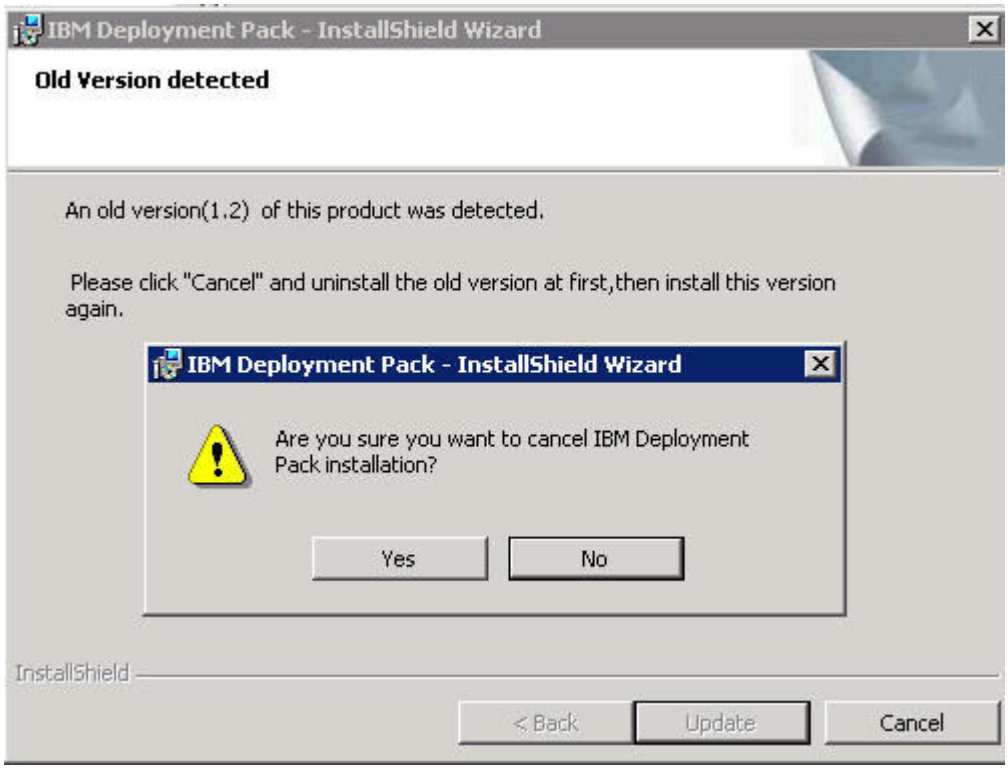

Figure 12. Previous version detected message

Uninstalling IBM Deployment Pack

About this task

The IBM Deployment Pack can be uninstalled through **Control Panel ->Add or Remove Programs** or through the setup.EXE file.

Procedure

1. Click **Next** until the wizard panel appears asking whether you want to keep your current settings from the previous version (see Figure 10 on page 12).

2. If you select to remove the previous version's settings, all imported SEP packages and built-in packages will be uninstalled at the same time, except the IBM-specific boot image (x86) will remain.
3. If you select to keep the settings from the previous version, the settings will remain intact without any modification.

   Note: By design, uninstalling does not remove the IBM-specific boot images that were created during installation. The images are tied to task sequence packages. Removing the boot image might invalidate some workable task sequences that you are using.

Reinstalling the IBM Deployment Pack

Should you decide to reinstall the Deployment Pack after uninstalling it, you must address two issues before you can reuse your existing task sequences.

About this task

Because of the way that the Operating System Deployment feature works with Configuration Manager, task sequences require a few manual steps after the Deployment Pack is reinstalled.

Procedure

1. Right-click a task sequence that you intend to reuse and click **Edit**.
2. Identify the source package for the **Diskpart clean** custom action.

   If the task sequence used the **Diskpart clean** custom action, a Missing Objects dialog is displayed:

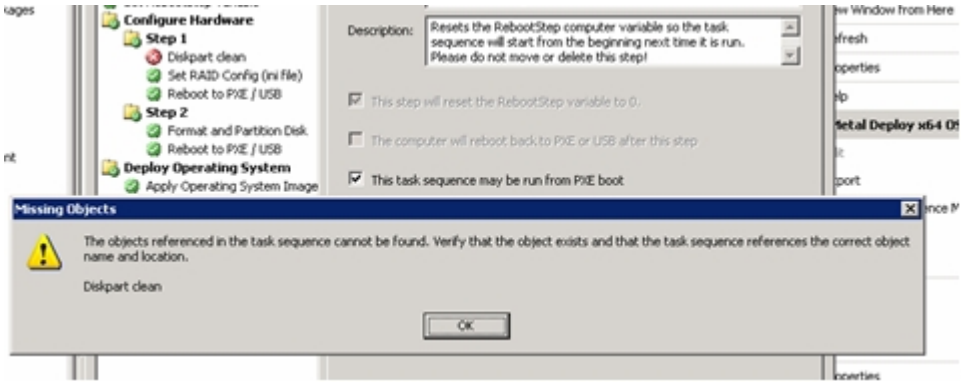

Figure 13. Missing Objects dialog

   Notice that the **Diskpart clean** item is flagged with a red 'X' icon – this is the item that needs attention.

   a. Click **OK** to dismiss the Missing Objects warning.
   b. Click **Diskpart clean** to edit the item.
   c. Click **Browse (for Package)**.
   d. Click the **IBM Custom Reboot Script 1.0** package.

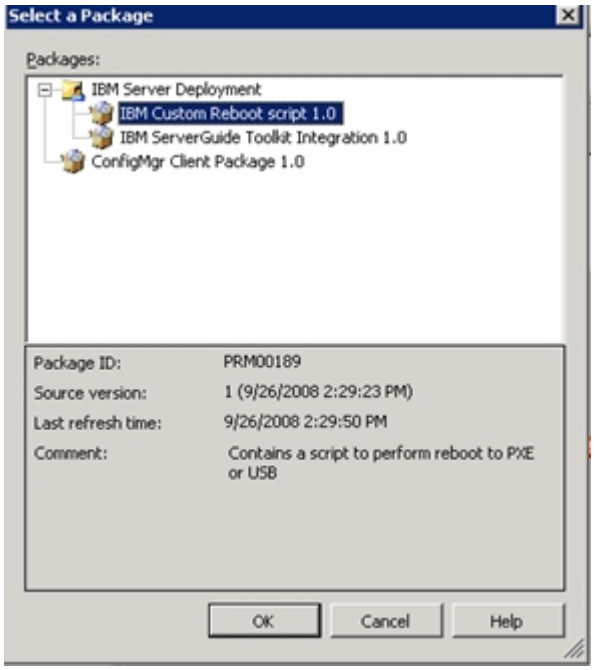

Figure 14. Selecting the IBM Custom Reboot script 1.0 package

After identifying the source package for the **Diskpart clean** custom action, the **Diskpart clean** custom action is flagged with a green icon.

3. Re-import custom drivers that the task sequences might use.

   Uninstalling removes any drivers that were originally imported during installation of the Deployment Pack. Because the drivers are removed from the driver repository, they no longer show up in any existing driver packages.

   a. Re-import the custom drivers into the driver repository.
   b. Check the **Add Driver Package** step in the task sequence to ensure that the correct driver is still selected.

      Unlike the **diskpart clean** step, the Apply Driver Package step might not be flagged with a red X icon. However, even though the icon flag is green, the Apply Driver Package step fails at run-time.
   c. Check the **Apply Driver Package** step in any task sequence that uses the IBM Deployment Pack, if you uninstall and reinstall the Deployment Pack.
   d. Update the Distribution Points with the updated Driver Packages.

Integrating with System Enablement Pack

IBM Deployment Pack

IBM Deployment Pack for Microsoft System Center Configuration Manager 2007, v1.4 leverages IBM ToolCenter Tools in order to provide specific functionality. ToolCenter Tools are changing the means of delivery code. System-specific codes are separated from tools to deliver, which is named as "System Enablement Pack (SEP)." Using this method, it will drastically reduce the need to release a new version of the tools to support new hardware.

System Enablement Pack (SEP)

System Enablement Pack (SEP) are packages that can be downloaded through your network. The packages contain system-specific codes, such as latest drivers, scripts, binaries and other files. To support new systems and hardware, SEP releases occur frequently and in high volume. To support a new workstation in IBM Deployment Pack for Microsoft System Center Configuration Manager 2007, v1.4, you need to import the new SEP package into SCCM.

To support a new workstation in IBM Deployment Pack for Microsoft System Center Configuration Manager 2007, v1.4, you need to import the new SEP package into SCCM. Refer to Appendix E, "Import IBM WinPE SEP package into SCCM," on page 97.

How SEP works in Configuration Manager

To use SEP in Configuration Manager, you must install IBM Deployment Pack first. These topics will show you how to use SEP in Configuration Manager step by step. This diagram illustrates the workflow.

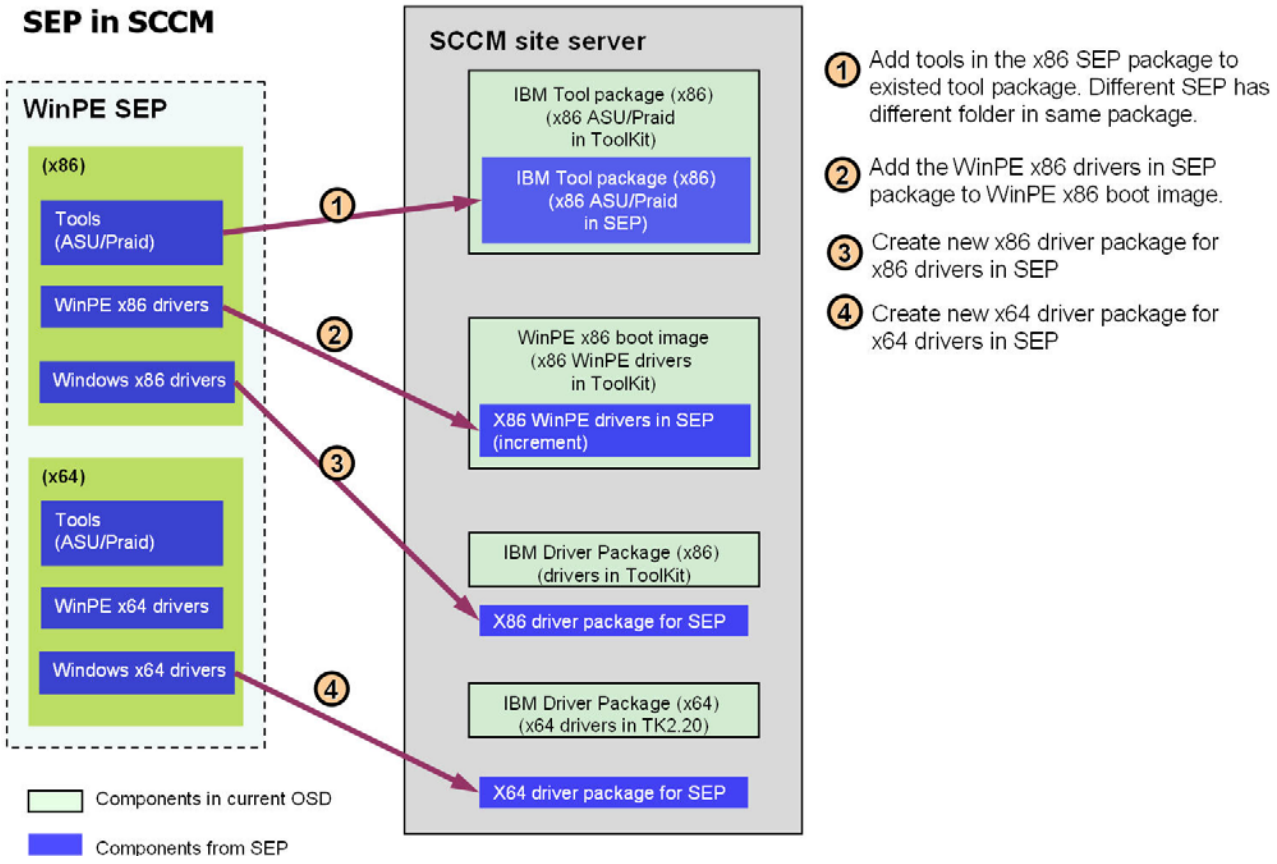

Figure 15. SEP workflow

Chapter 3. Preparing for Deployment

Now that the IBM Deployment Pack is installed, in this section we will cover the configuration steps to prepare for a full deployment. First you must perform a few miscellaneous procedures as follows.

SCCM OSD initial configuration

The following information is provided for reference. For more information, please refer to the Microsoft TechNet: Configuration Manager Documentation Library at http://technet.microsoft.com/en-us/library/bb680651.aspx.

Set network access account

Procedure

1. Launch Microsoft System Center Configuration Manager 2007 to open the Configuration Manager console.
2. 2. Select **Site Database->Site Management->[Site Server Name]->Client Agents**.

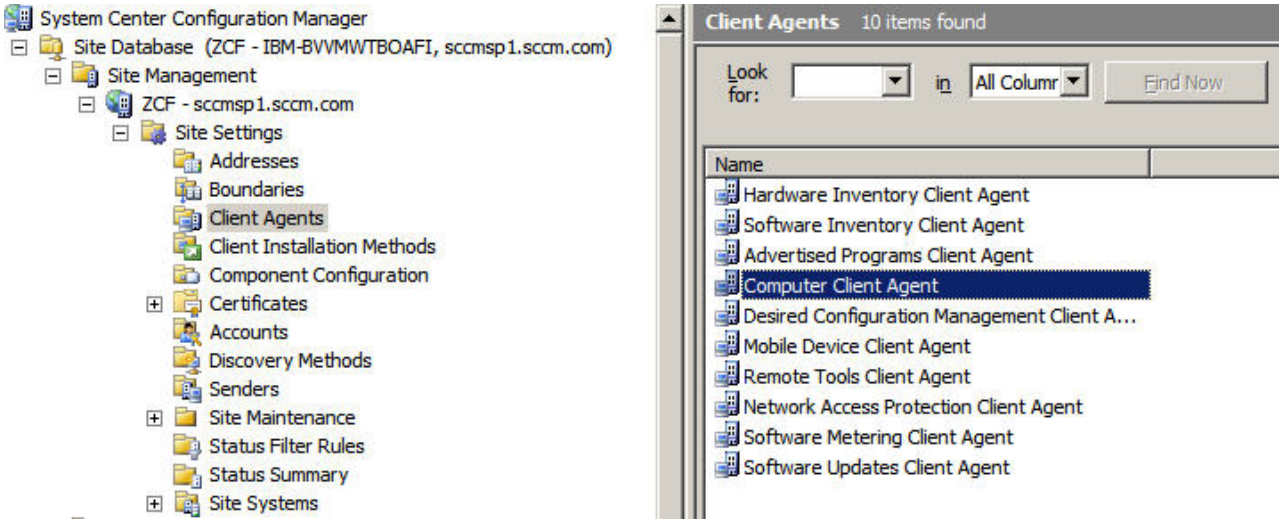

Figure 16. Select Client Agents

3. Double-click **Computer Client Agent** .
4. On the General tab, click **Set...**. The Windows User Account window appears.
5. Complete the fields to set the network access account. The account should have appropriate permissions to access the corresponding resources from site servers.

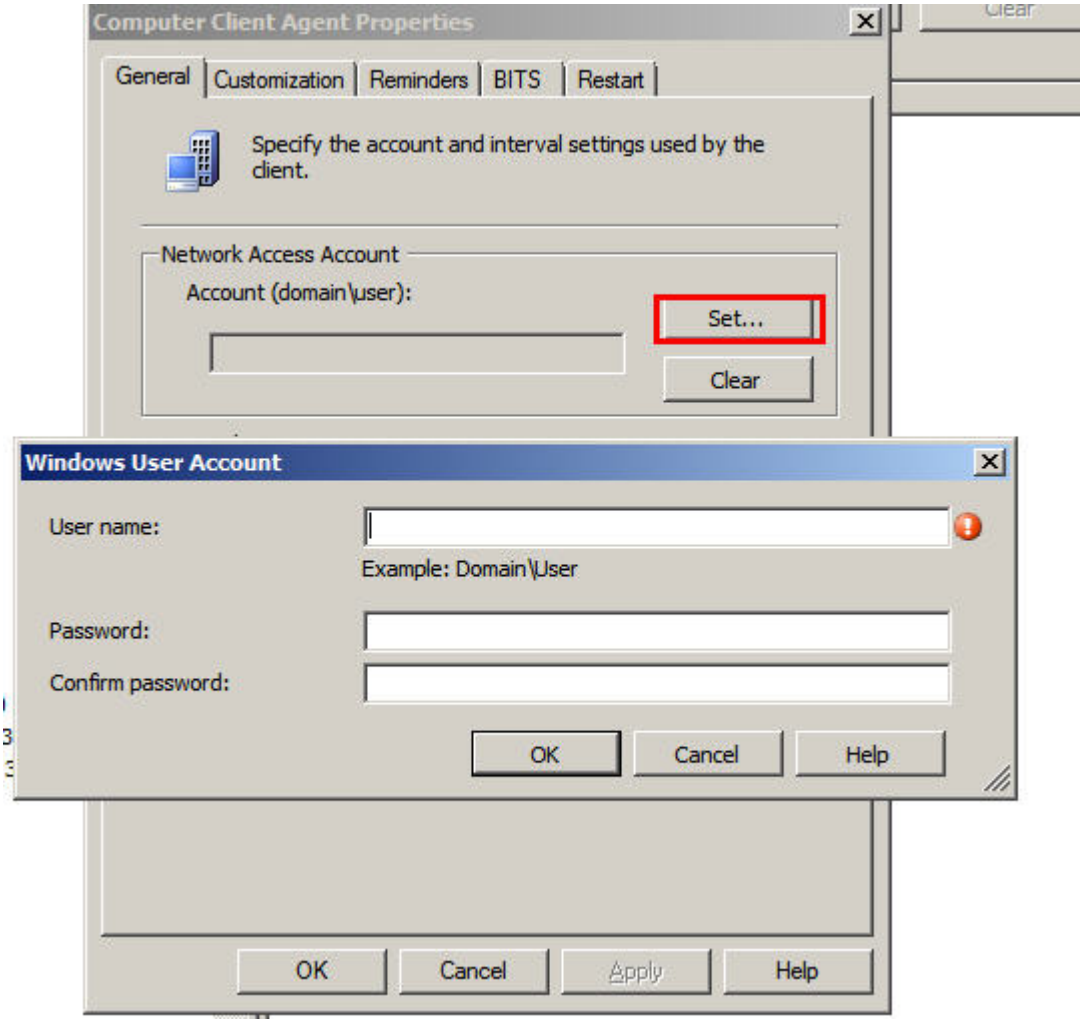

Figure 17. Windows User Account window

Setting up the Pre-boot Execution Environment (PXE) service point

The PXE service point is a site system role that initiates operating system deployments from computers whose network interface card is configured to allow PXE boot requests.

About this task

This service point is required when deploying an operating system using PXE boot requests.

Procedure

1. Launch Microsoft System Center Configuration Manager 2007 to open the Configuration Manager console.
2. Click **System Center Configuration Manager** > **Site Database** > **Site Management** > *site_name* > **Site Settings** > **Site Systems** > **SCCM** > **New Roles**.
3. Create a new PXE service point with the New Roles Wizard.

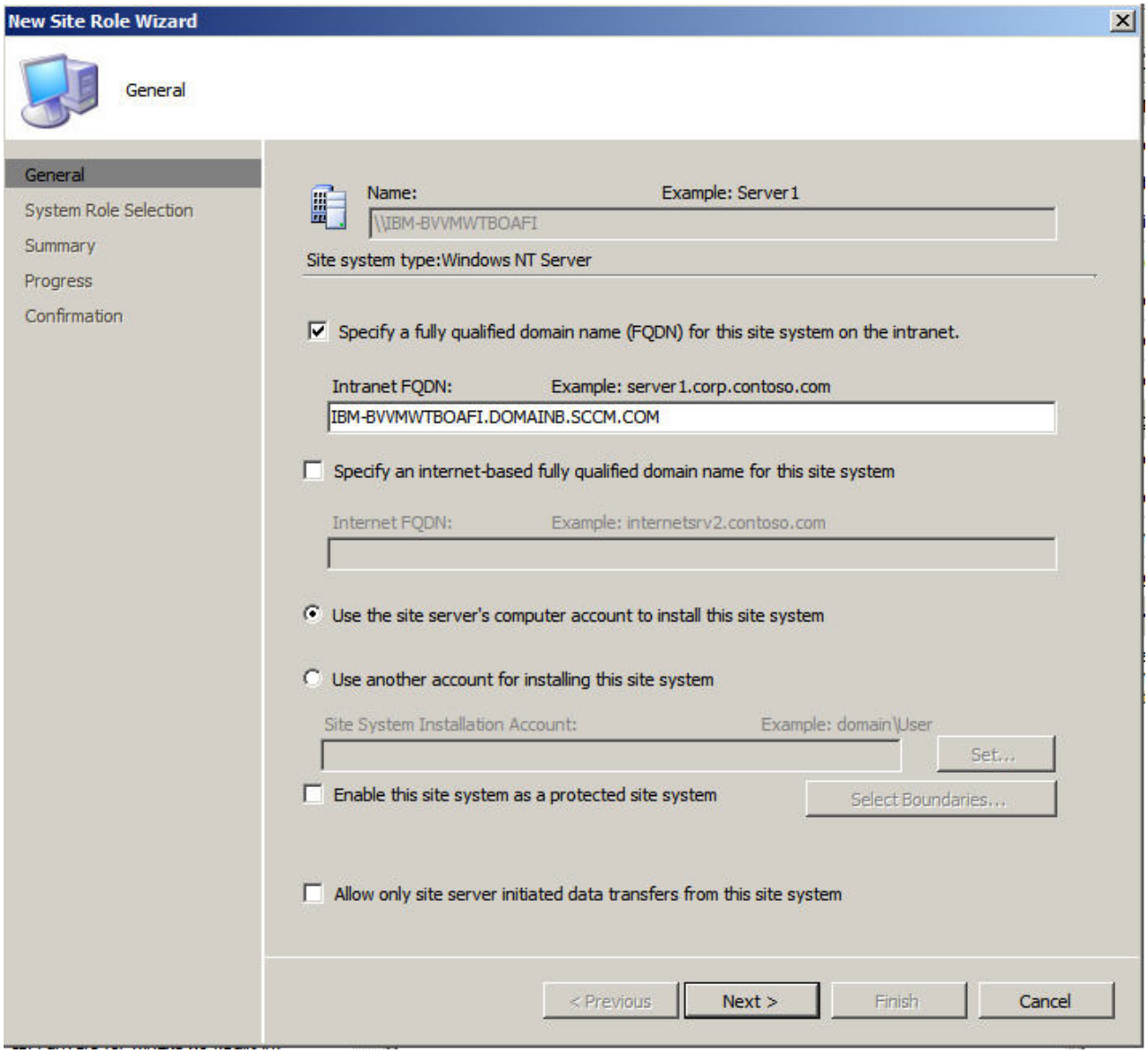

Figure 18. New Roles wizard

4. Select the service point; then right-click the service point to select **Properties** from the context menu.
5. On the General tab, select **Allow this PXE service point to respond to incoming PXE requests** to enable the service point to handle the boot requests that arrive.

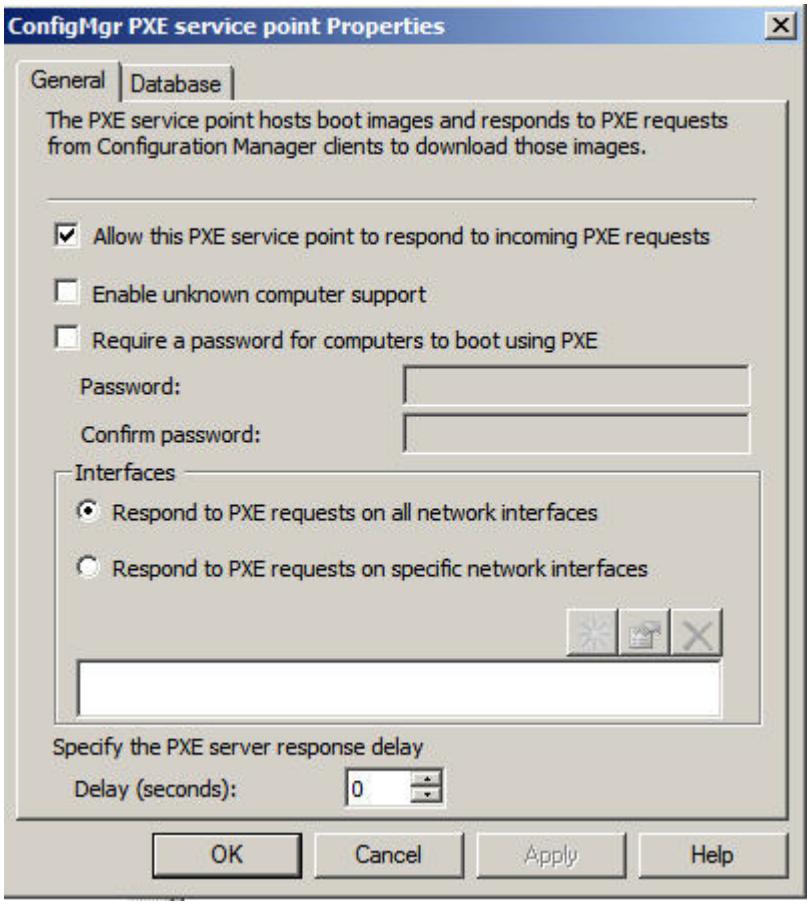

Figure 19. PXE service point Properties-General tab

6. Click the Database tab to specify settings for controlling the user account and certification.

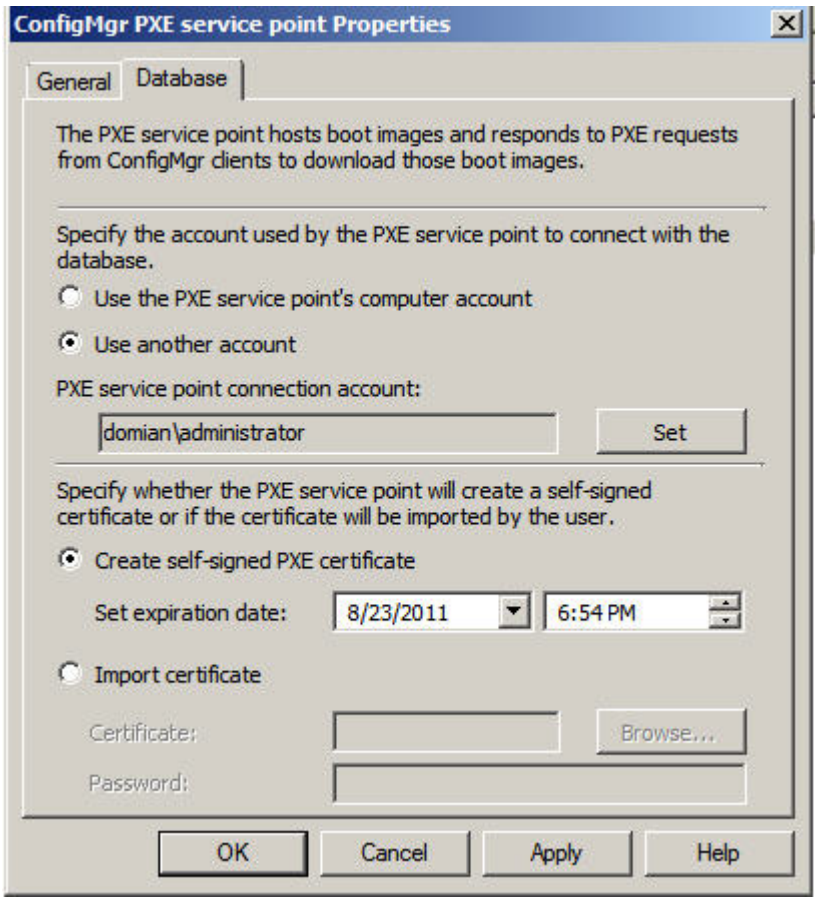

Figure 20. PXE service point Properties-Database tab

Post-installation configuration

After the IBM Deployment Packhas been installed, the new items installed by the package need to be copied to the distribution points so that the items are available for the target machines to be deployed. The following packages should be copied to the distribution points:

- All packages under **Computer Management->Software Distribution->Packages**, including IBM Server Deployment, the Config manager client package, and any SEP packages that have been added.
- IBM boot image is located in **Computer Management->Operating System Deployment->Boot Images**. It is a good idea to update the Generic Boot Image at this time if it has not been done before.
- Driver packages are in **Computer Management->Operating System Deployment->Driver Packages->IBM Server Drivers**.

There are two steps for distribution points copying: "Manage Distribution Point" on page 23 and "Update Distribution Point" on page 24.

Manage Distribution Point

Put your short description here; used for first paragraph and abstract.

Procedure

1. Right click each of the items listed in “Post-installation configuration” on page 22. and select **Manage Distribution Points**.
2. Complete the Manage Distribution Points wizard for each item.

   Note: For the Boot Images package, on the panel labeled "Select the distribution points that you want to copy the package to "in the Manage Distribution Points wizard, select “[site server name]\SMSPXEIMAGES$”. For the other packages, select “[site server name]”.

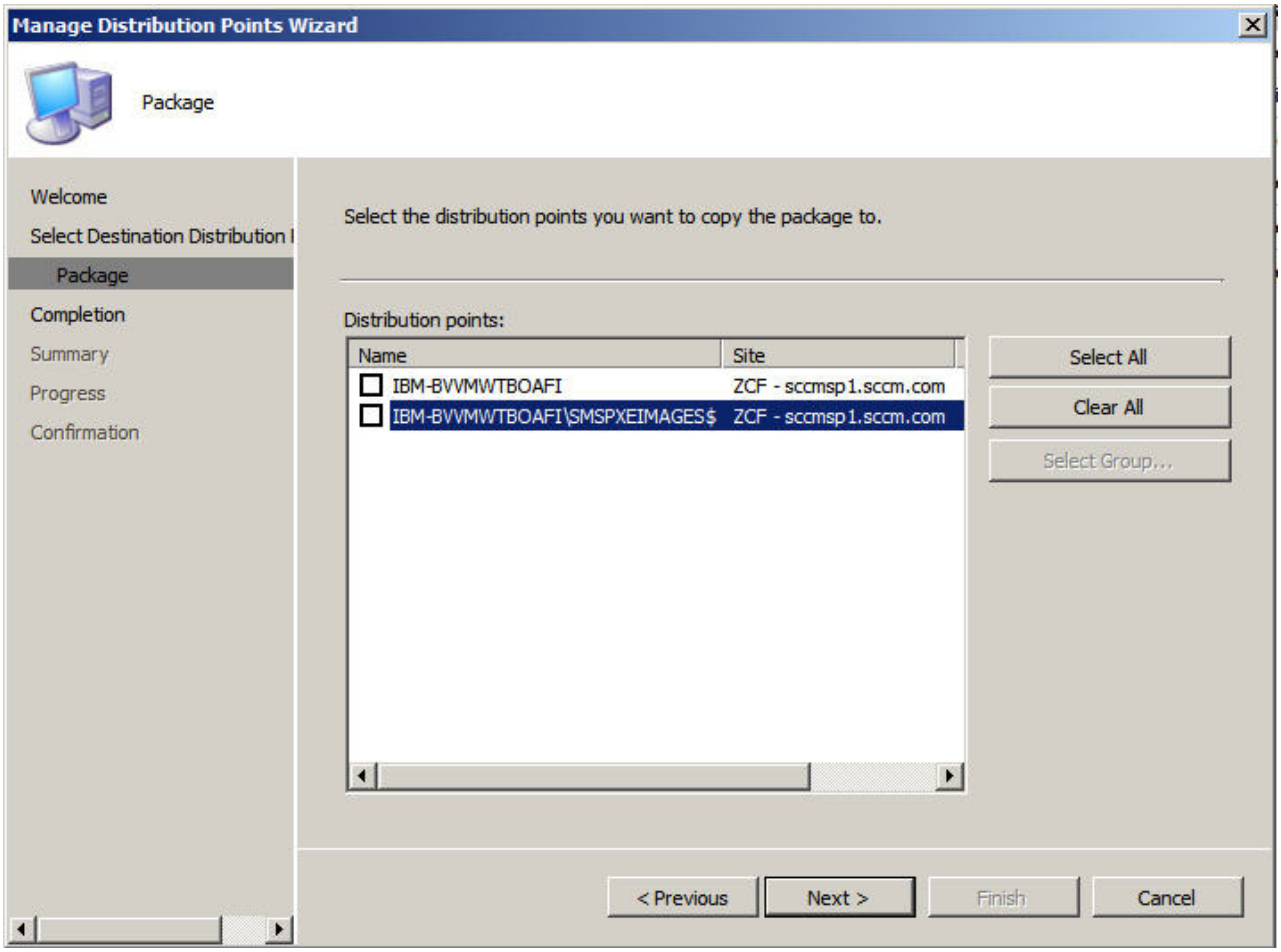

Figure 21. Manage Distribution Points wizard

Update Distribution Point

Procedure

1. After performing the steps in "Manage Distribution Point" on page 23, right click each item and select **Updating distribution points.**
2. Complete the Update Distribution Points wizard for each package.

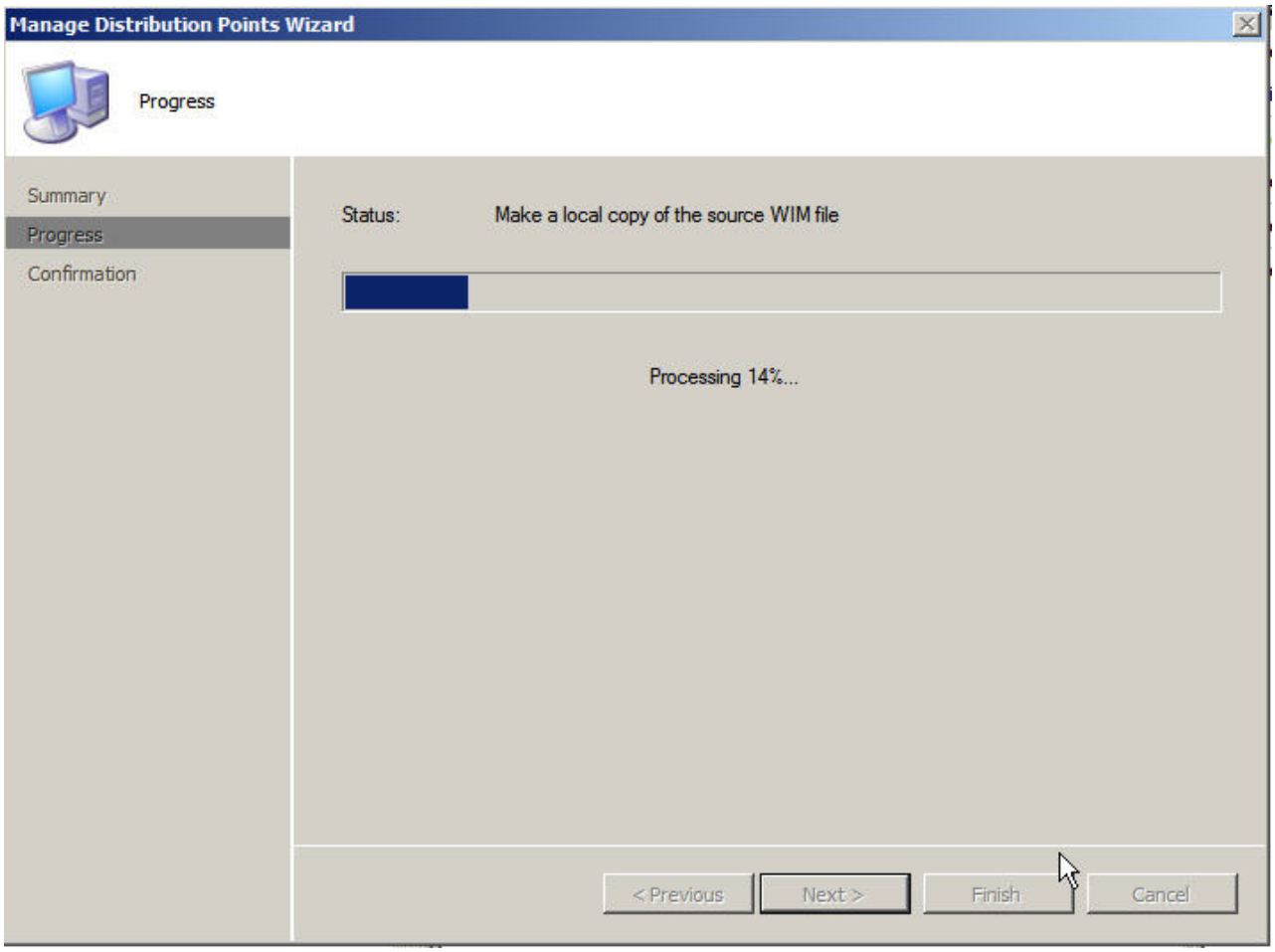

Figure 22. Update Distribution Points wizard

Adding command-line support to the boot images for troubleshooting

About this task

Adding command-line support to a boot image makes it easier to troubleshoot on the target machine and gives you easy access to the task sequence logs.

When a task sequence is running in Windows PE on a target machine, you can open a command shell on the machine by pressing F8. As long as the command shell is open, the task sequence cannot reboot the machine. You can verify components of the boot image and network connectivity. You can also view task log files.

You need to change a property value setting for the boot image to enable the debug command shell.

Procedure

1. Select **System Center Configuration Manager->Site Database->Computer Management->Operating System Deployment->Boot Images->IBM Deployment Boot Image (x86).**
2. Right-click the boot image and select **Properties**.
3. Select the Windows PE tab.
4. Select the **Enable command support (testing only)** checkbox.

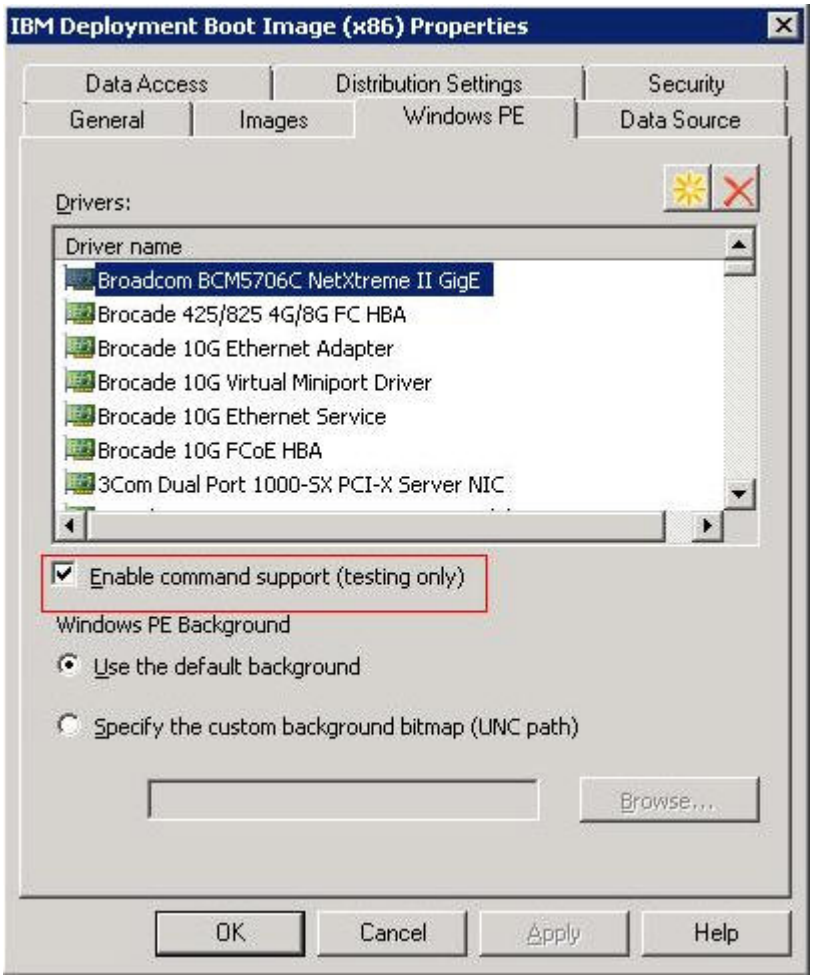

Figure 23. Enabling command-line support

What to do next

You need to update distribution points after completing this procedure. See "Update Distribution Point" on page 24.

Preparing operating system (OS) image

Capturing operating system images

IBM Deployment Pack supports the clone method to install operating systems, so an operating system image should be prepared. Configuration Manager can be used to capture operating system images.

Preparing reference server

Procedure

1. Build the reference server with everything installed that is required for the image. Include everything that a new system might require, such as tools, drivers, agents, service packs, and updates.
2. Run the sysprep /generalize command on the reference server to prepare the image for installation onto other machines, as described in Appendix C, "How to run Sysprep," on page 85.

Add target server to Configuration Manager

About this task

The next step is getting SCCM to recognize the target servers. This is done through the MAC address of the system's primary network interface (the interface used for deployment). SCCM uses collections to group machines together. There are a number of default collections already created based on OS version and other attributes. Use the following procedure to create a new collection used for deployments.

Procedure

1. Right-click **Site Database->Computer Management->Operating System Deployment->Computer Association->Import Computer Information**. The Import Computer Information Wizard appears. Servers can be added to a collection one by one, or multiple servers can be added at the same time from a list.

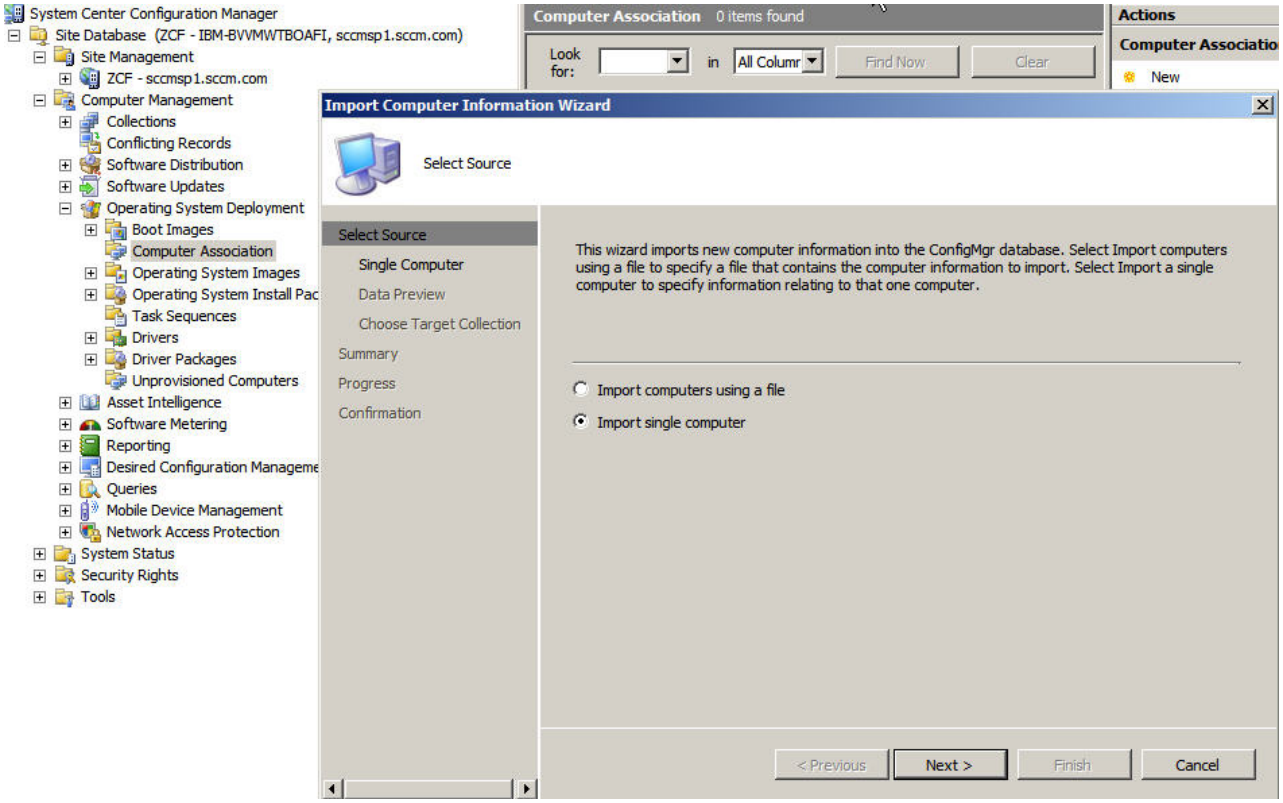

Figure 24. Import Computer Information Wizard

2. Select **Import single computer**, and click **Next**.
3. Enter the computer name and MAC address or GUID information, or click **Search** to navigate to the source computer.

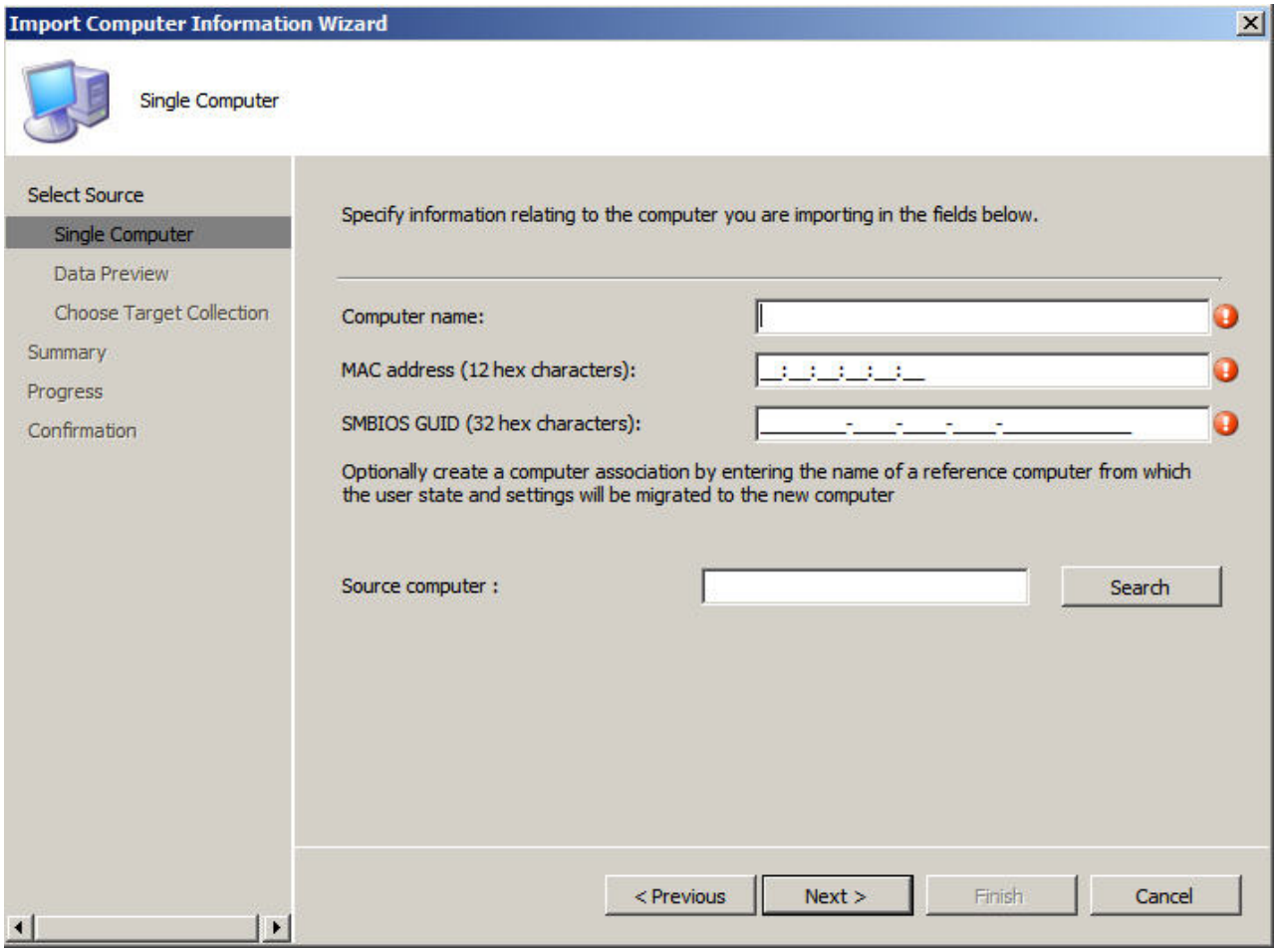

Figure 25. Adding a single computer

4. Click **Next**.
5. Select whether to add the new computer to the All Systems collection, or click **Browse** to select an existing collection to add the computer to.

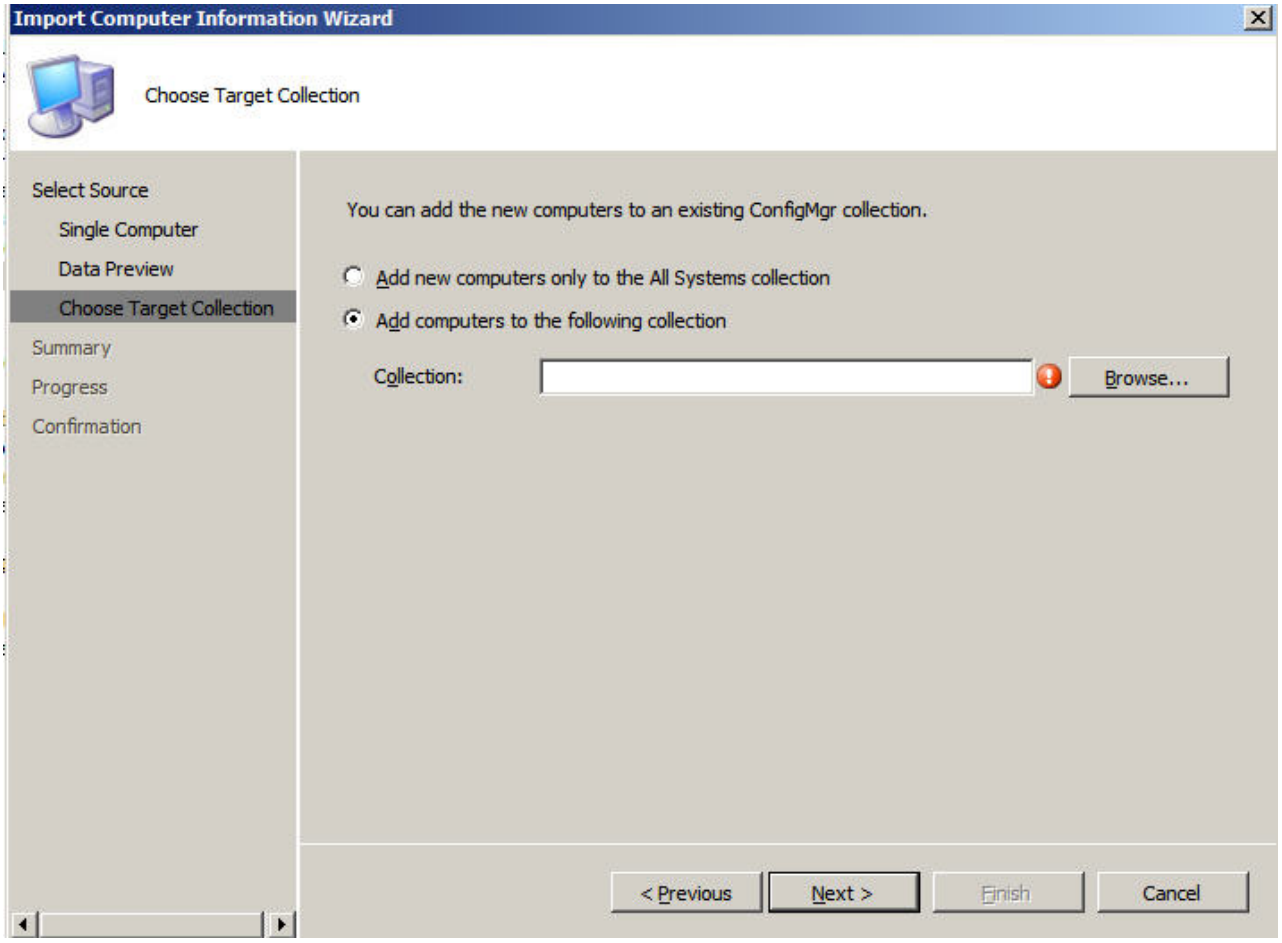

Figure 26. Adding the new computer to a collection

6. Click **Next**.
7. Proceed through the remaining screens and click **Finish**.

Preparing Configuration Manager

Procedure

1. On the target server (the server that is to be captured, in this case), set the variable that contains the location of the operating system to be captured.
   a. Go to the collection with the target reference server. Right-click the sever object, then select the Variables tab.
   b. Set the OSDTargetSystemRoot variable to the system driver, for example: OSDTargetSystemRoot=c:\windows

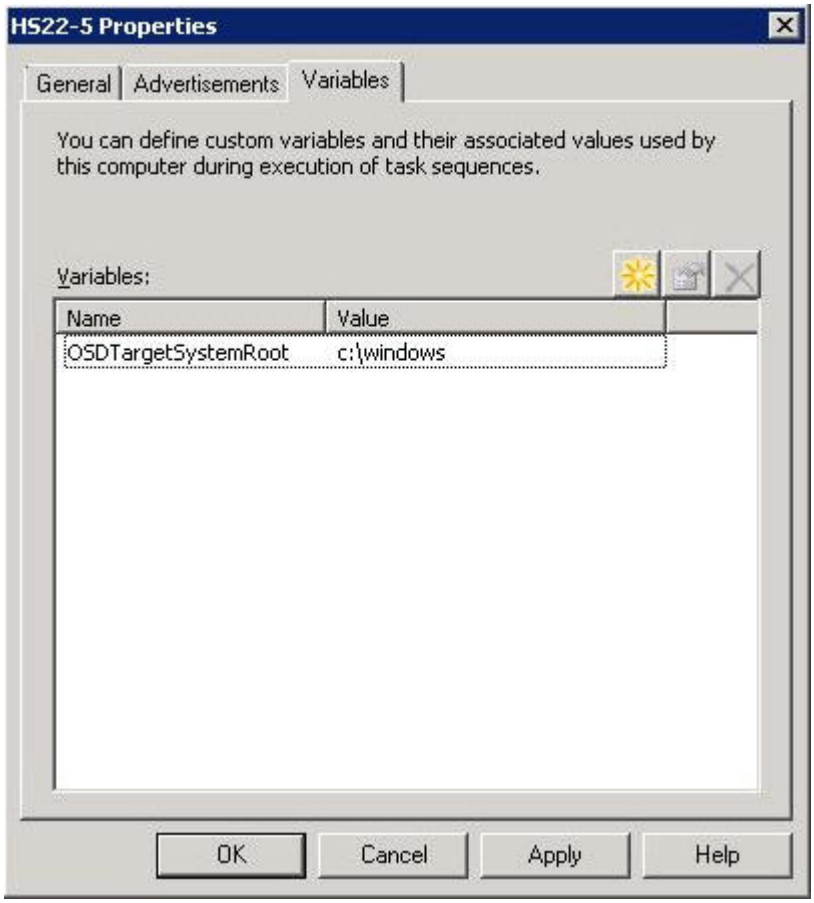

Figure 27. Setting the location variable

2. Set up a share folder on the Configuration Manager site server to store the captured images. For example, create a directory on the Configuration Manager server called c:\images. Create a share and assign everyone Full Control for the share permissions.
3. Create a task sequence for capturing the image.
   a. Go to **Site Database->Computer Management->Operating System Deployment** and right-click on **Task Sequences**.
   b. Select **New** and then select **Task Sequence**.
   c. When the wizard appears, select **New custom task sequence** and follow the prompts. This action creates an empty task sequence.
   d. Make sure to select the IBM custom boot image, and that **PXE media** is selected.

4. Right-click the newly created task sequence and select **Edit** to bring up the task sequence editor.
5. From the Add menu, select **Images->Capture Operating System Image**. A screen similar to the following figure appears. Fill in the destination file name for the image and the access account information and click **OK**. Make sure the folder is shared with the appropriate permissions so the image can be accessed by the task sequence. This simple task sequence can now be used to capture the OS from the reference server built earlier.

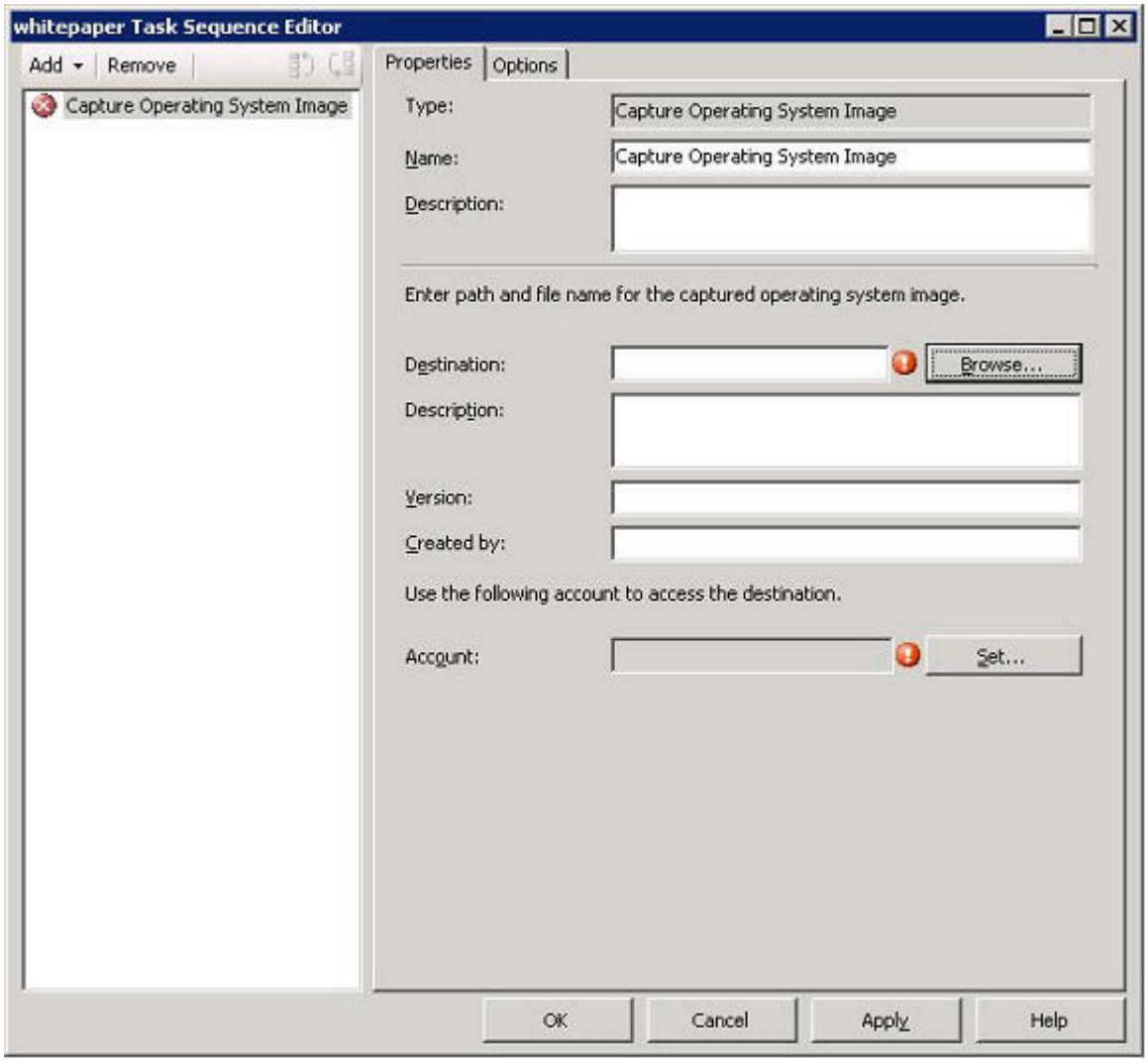

Figure 28. Capture Operating System Inage

6. Now that a capture task sequence exists, it must be advertised to the reference machine. All task sequences in SCCM are advertised to the target or client machines so that the appropriate job can be executed against the intended machines. To create an advertisement right-click on the task sequence, select **Advertise**, and follow the wizard. See the following figures for recommend settings.

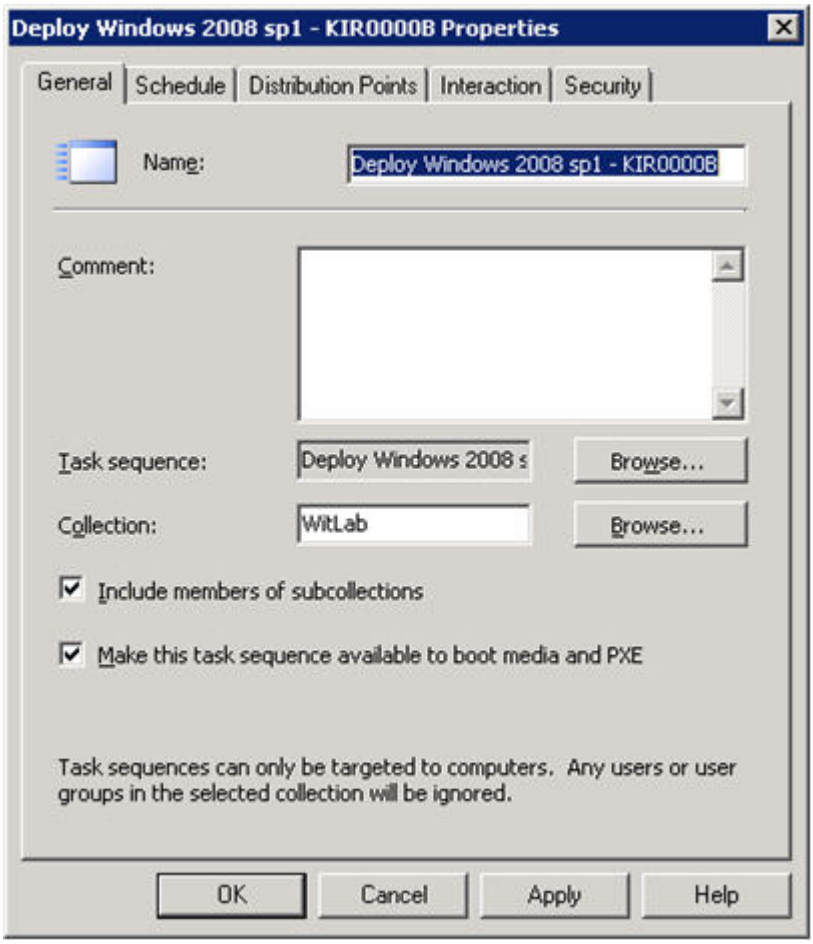

Figure 29. Advertisement settings, General tab

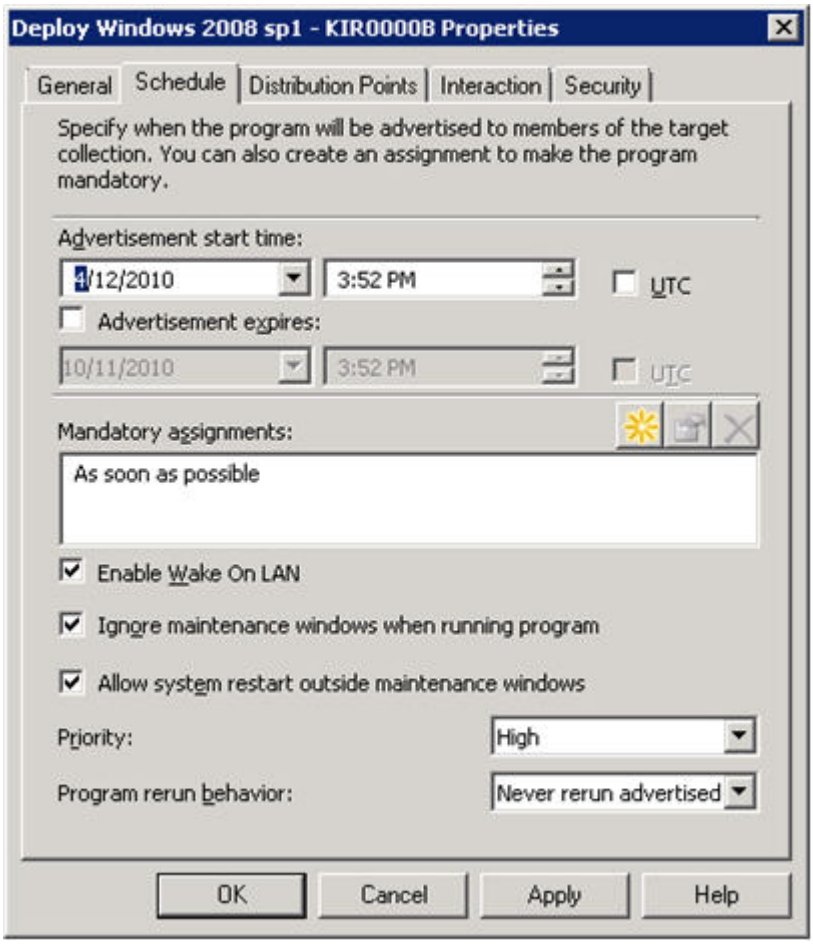

Figure 30. Advertisement settings, Schedule tab

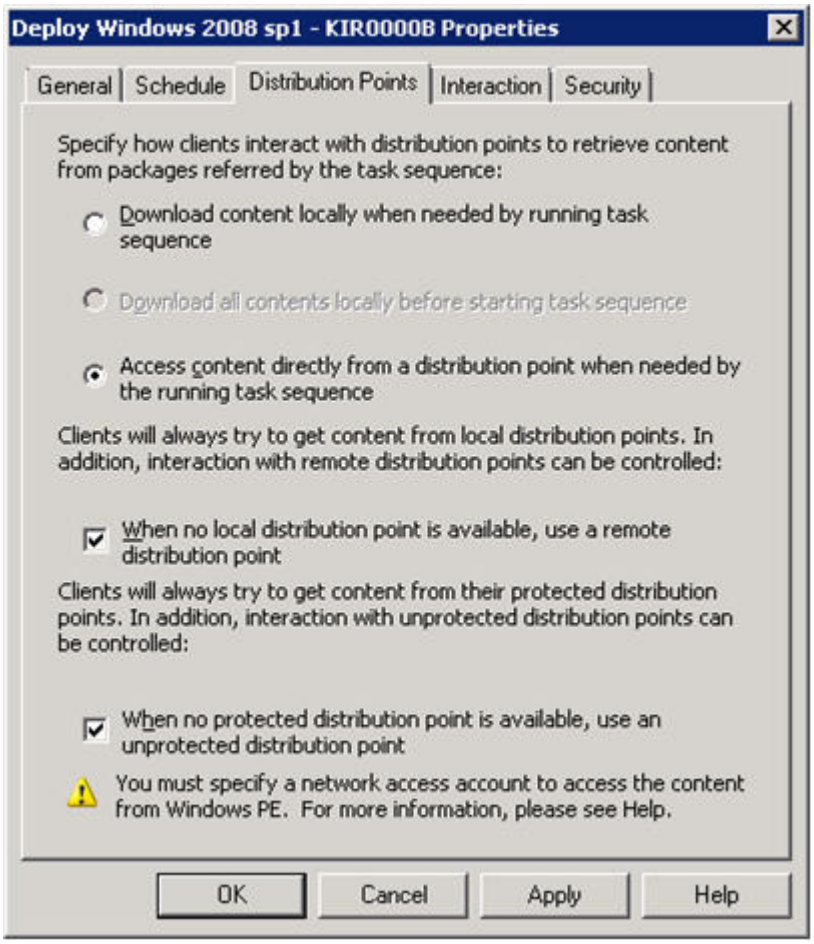

Figure 31. Advertisement settings, Distribution Points tab

Boot at the reference server

Boot the reference server that is being captured. Now that the advertisement is waiting, boot the server that is being captured to PXE. Verify that the site server and the target server make a connection and that the site server transfers the boot image to the site server share. The target server connects to the Configuration Manager site server and loads the boot image from the share. Then, the target server starts the task sequence to capture the operating system image on the target server back to the share on the Configuration Manager site server.

Verify the image at Configuration Manager

Once the capture process has completed, go back to the Configuration Manager server and verify that the image_name.wim file is stored in the shared images directory. At this point, you can use Configuration Manager to deploy the image to other servers.

Note: It is possible to use images captured manually (without using Configuration Manager to do the capture), but using Configuration Manager can prevent future problems when the image is deployed using Configuration Manager. The best practice is to capture the image using Configuration Manager.

Adding, managing and updating operating system images

After the OS image has been captured, it needs to be added into the SCCM distribution point for delivery. The next steps are to add the OS image, and manage and update distribution points.

Add operating system images

Procedure

1. Right-click **Site Database->Computer Management->Operating System Deployment->Operating System Images->Adding Operating System Images**.

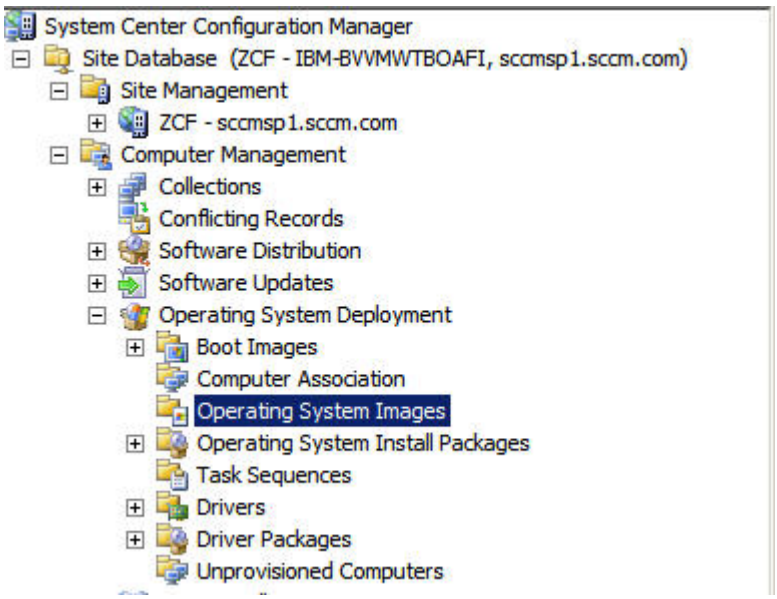

Figure 32. Adding operating system images

2. Click through the wizard.

Managing and updating operating system images

About this task

The procedure for managing and updating operating system images is similar to the procedures in “Manage Distribution Point” on page 23 and “Update Distribution Point” on page 24

Procedure

1. Right click the newly added operating system image and select **Manage Distribution Points**.
2. Complete the Manage Distribution Points wizard for the image.
3. Right click the newly added operating system image and select **Update Distribution Points**.
4. Complete the Update Distribution Points wizard for the image.

Chapter 4. End to End Deployment Scenario

Although IBM Deployment Pack provides several hardware configuration and OS deployment functionalities, the execution process is similar. In this chapter, the end to end deployment scenario will be introduced and this scenario can be used to deploy different scripts to fulfill different deployment pack functions.

Add target server to Configuration Manager

About this task

First of all, you need to add the target server to configuration manager. Refer to "Add target server to Configuration Manager" on page 27.

Preparing task sequence

About this task

The IBM Deployment Pack includes a template to make it quick and easy to create a Task Sequence.

Procedure

1. Open the Configuration Manager console and navigate to **Operating System Deployment ->Task Sequence**.
2. Right-click **Task Sequence->Bare Metal Server Deployment->Create an IBM Server Deployment Task Sequence**. The following figure shows the template.

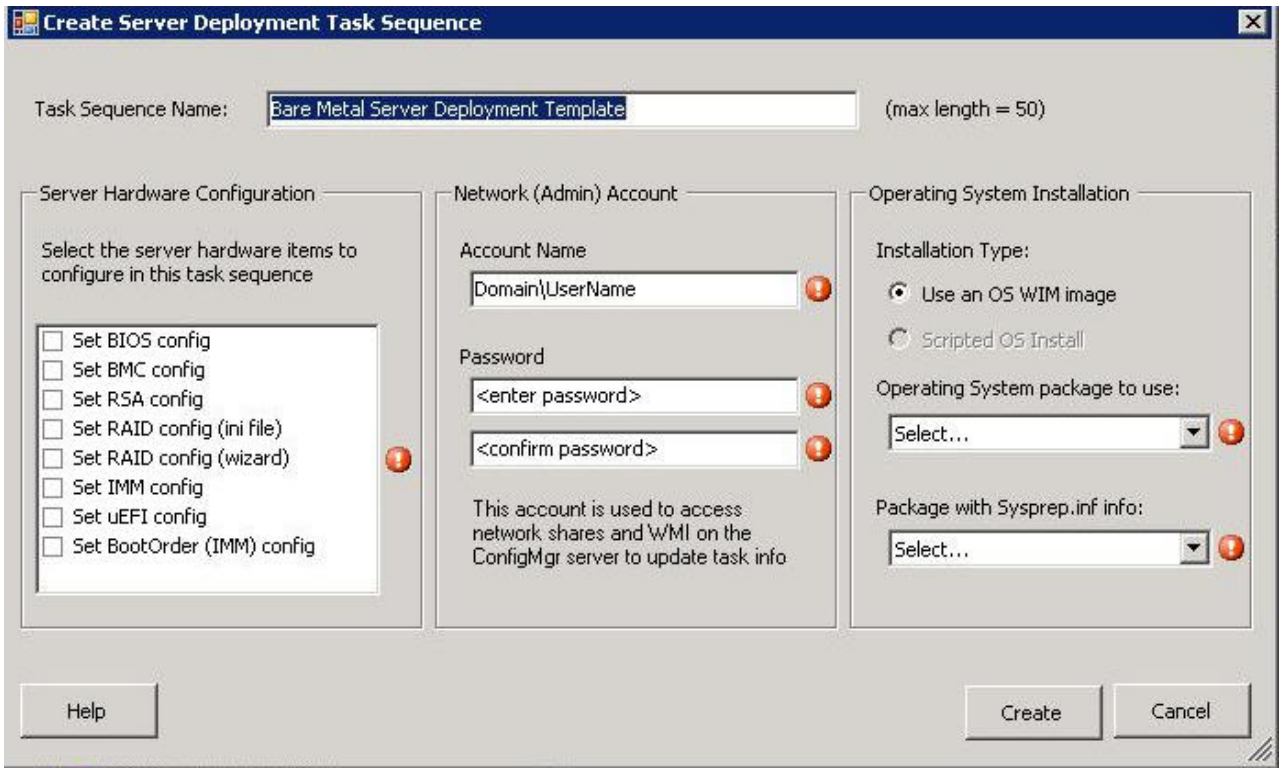

Figure 33. Creating a task sequence

a. On the left side is a list of all of the IBM-specific hardware configuration actions that can be performed on System x servers. Select the hardware items to configure in the task sequence.

b. In the center pane, enter the security information in the **Account Name** and **Password** fields.

c. On the far right, select the OS image to be used for this deployment.

3. When finished, select **Create** to create a task sequence with the information provided.

4. In the left navigation menu, right-click the new task sequence and select **Edit**. A screen similar to the one following appears:

   Note: Disable other Operating System folders except the OS to be deployed. For example, if you want to deploy Windows 2003 32-bit to client, disable folders of “Win2k3x64”, “Win2k8x86” and “Win2k8x64” in the following editor screen.

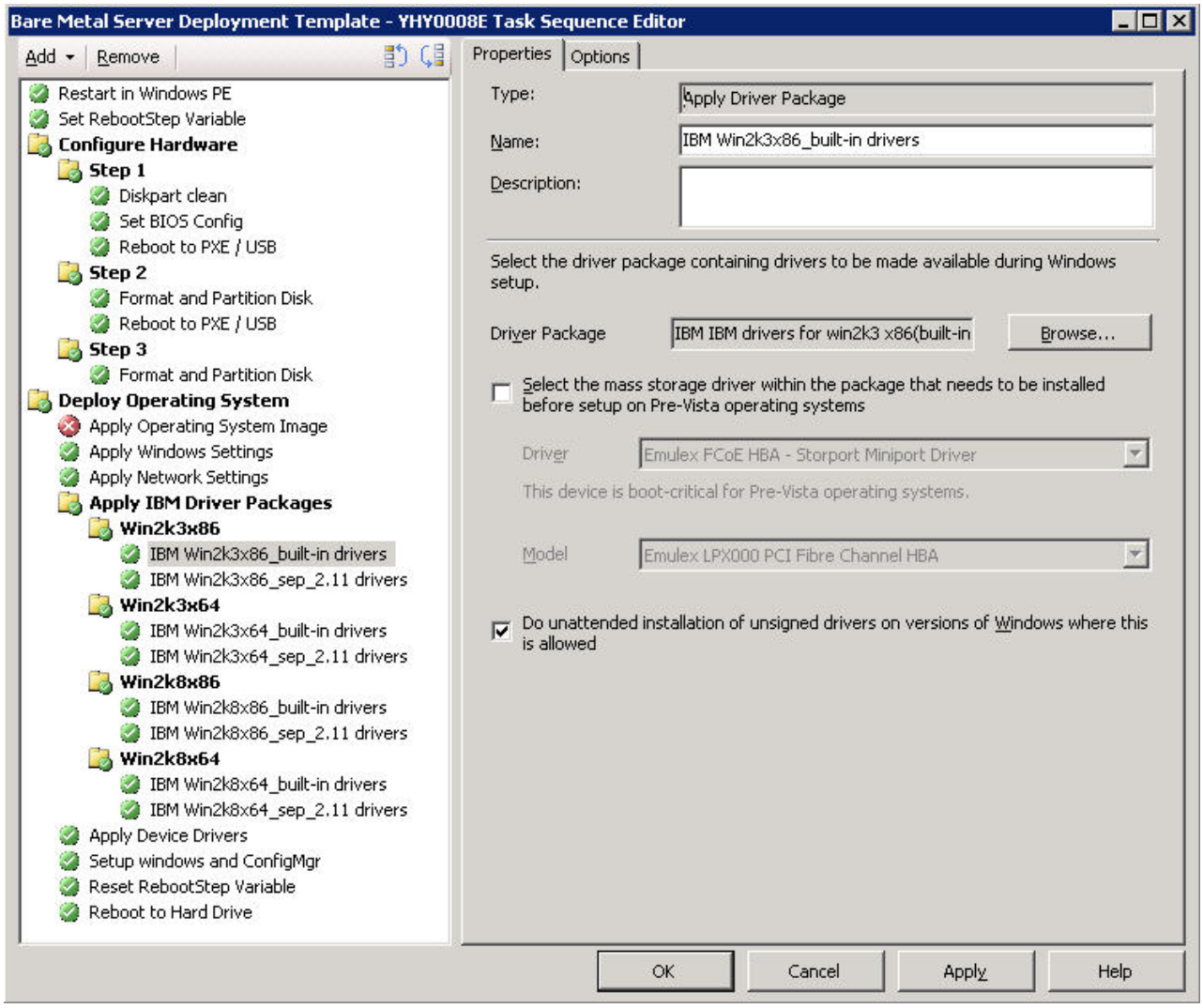

Figure 34. Applying driver package properties

5. If you are going to deploy Windows 2003 to the client, please make sure the mass storage driver is selected from the Windows 2003 driver package. If you are going to deploy other Operating System, the mass storage driver will be selected by OSD transparently.

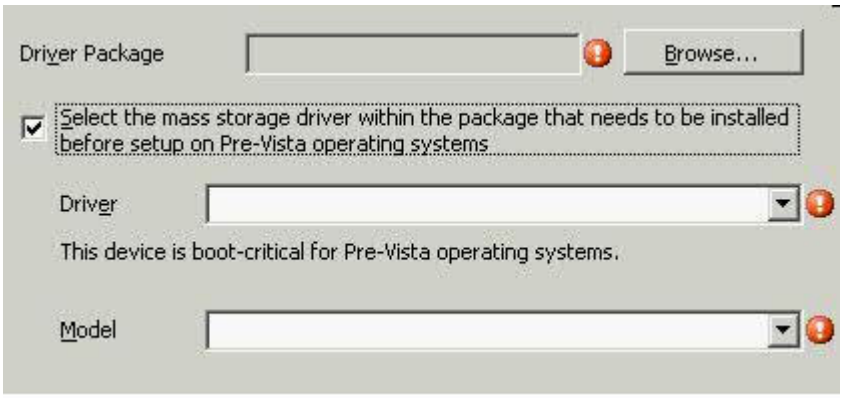

Figure 35. Selecting the mass storage driver

6. The actions in "Configure Hardware" steps 1-3 are provided by the deployment pack, pre-OS load. In these examples, "Deploy Operating System" is a Windows® installation with the IBM driver packages added.
7. Click **OK**.

   Note: For IBM-specific hardware configuration refer to Chapter 5, "IBM Deployment Pack Features," on page 49. The OS deployment image file should be prepared per the instructions in "Preparing operating system (OS) image" on page 26.

Advertising the task sequence

About this task

Once the task sequence has been completed, an advertisement must be made. Advertisements are used in Configuration Manager to assign jobs to particular client servers – in this case, the server that is being captured. Follow these steps to fill out the information for the advertisement.

Procedure

1. Right-click the task sequence and select **Advertise**.
2. Select the collection that contains the target server (which was imported in the previous section).
3. Select **Make this task sequence available to boot media and PXE**.

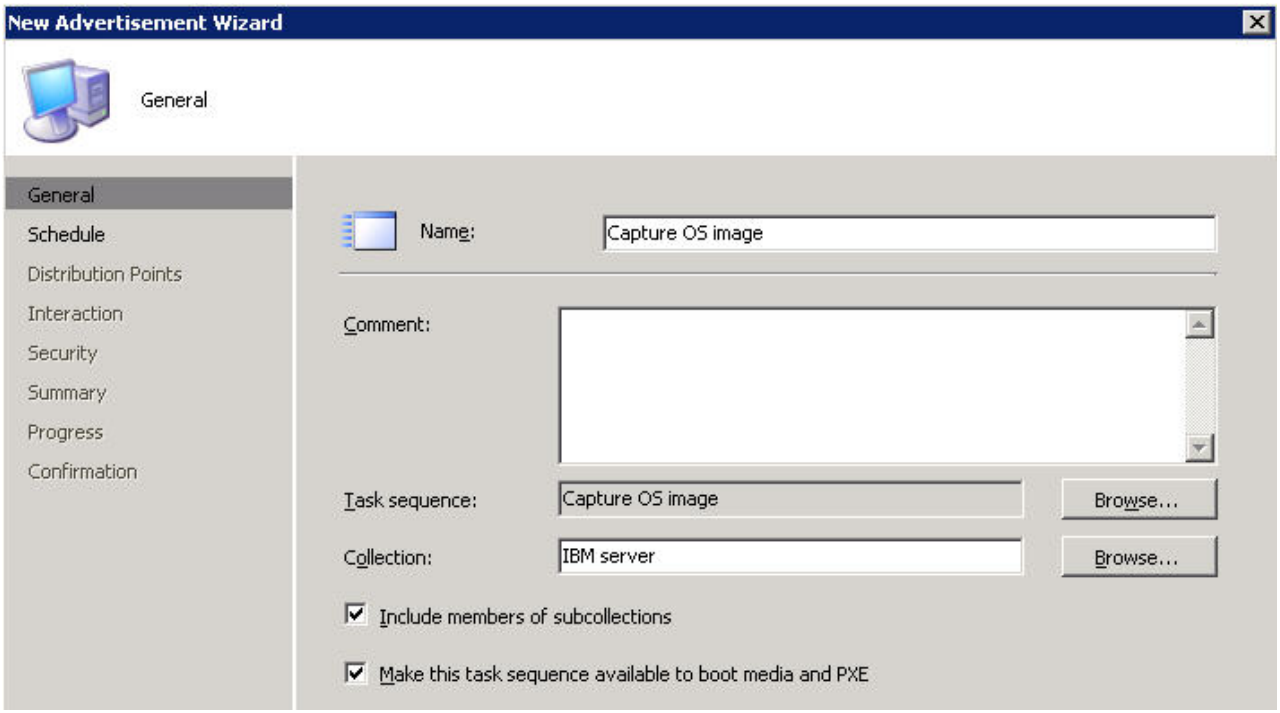

Figure 36. Selecting the collection containing the target server

4. Click **Next**.
5. On the Schedule panel:
   a. Select "As soon as possible" in the **Mandatory assignments** field.
   b. Select all check boxes.
   c. Select "High" from the **Priority** drop-down list.

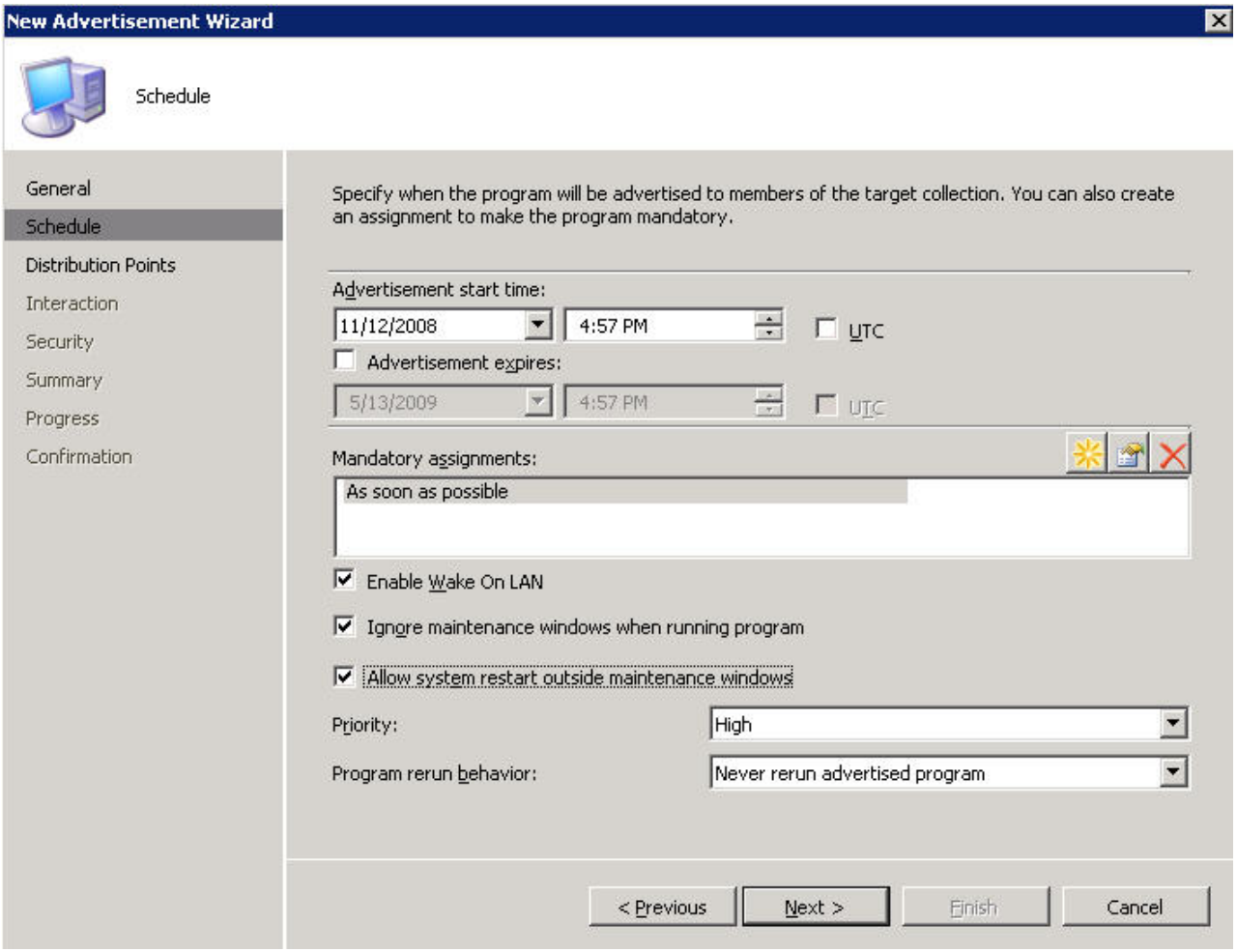

Figure 37. Scheduling the advertisement

6. On the Distribution Points panel:
   a. Select **Access content directly from a distribution point when needed by the running task sequence**.
   b. Select **When no local distribution point is available, use a remote distribution point**.
   c. Select **When no protected distribution point is available, use an unprotected distribution point**.

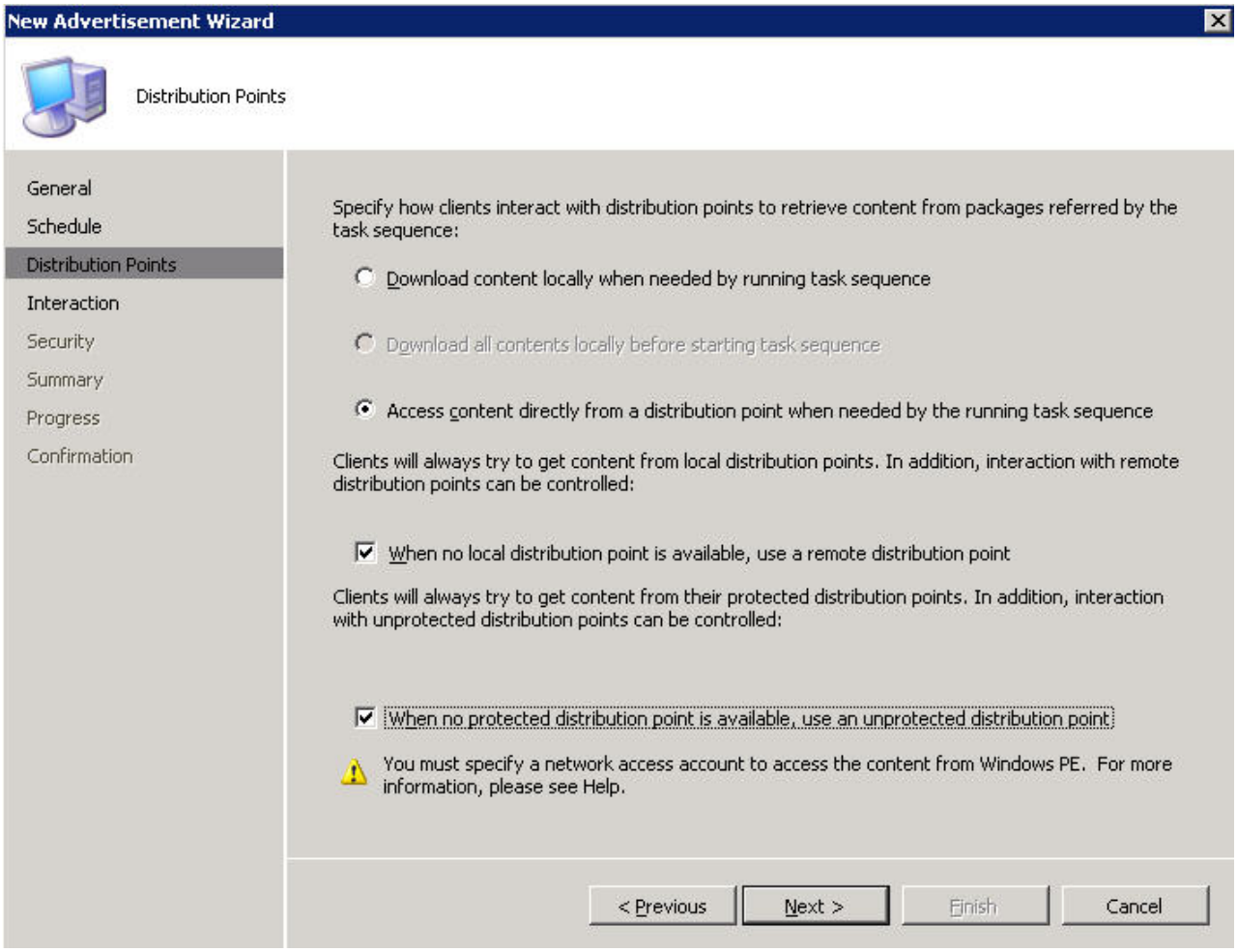

Figure 38. Specifying distribution points options

7. Click **Next**.
8. Click **Finish**.

Check task sequence execution result

About this task

To know whether the task sequence can be executed successfully, perform the following procedure.

Procedure

1. After performing the procedure in "Advertising the task sequence" on page 42, reboot the target server from PXE.

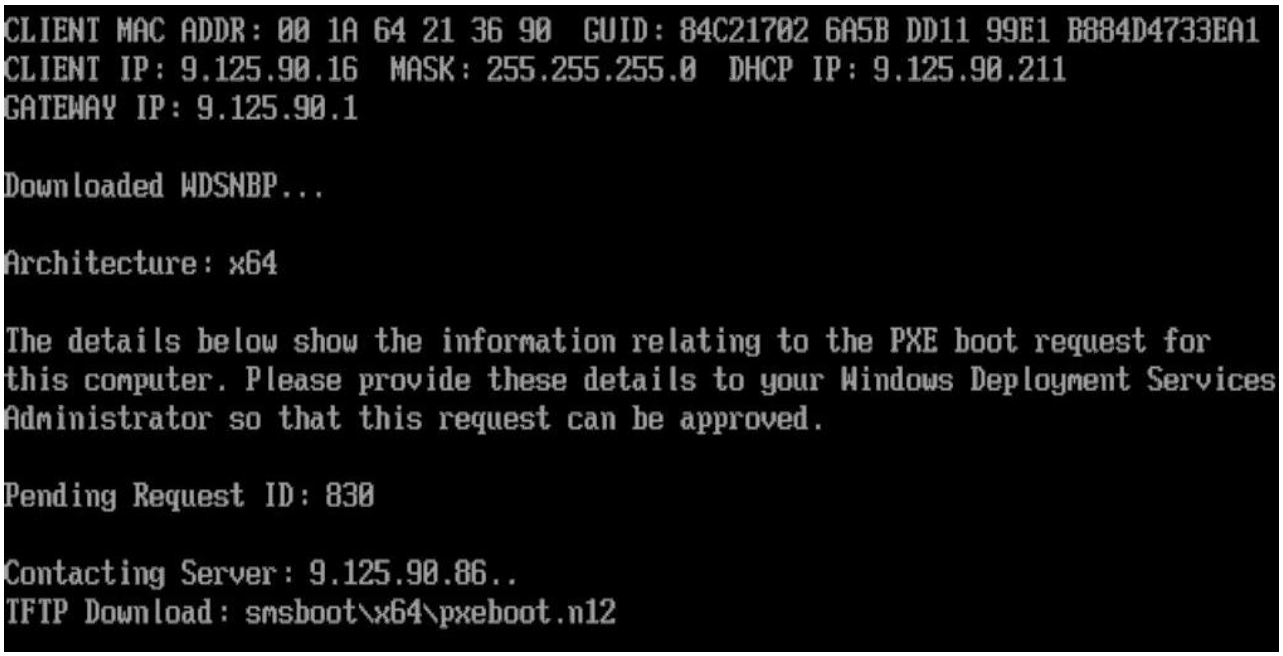

Figure 39. Rebooting target server from PXE

2. Once the target server boots to PXE, the download process will start automatically from SCCM server to target machine.

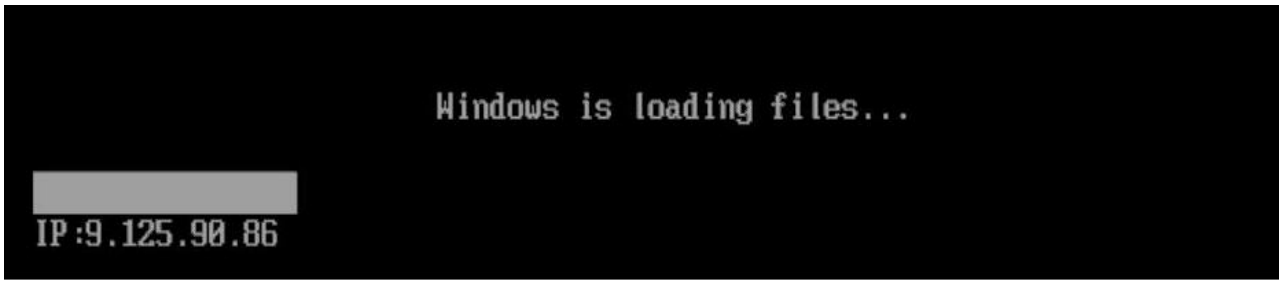

Figure 40. Starting the download process

3. The first action is executed. In this example of the OS deployment task sequence, the Format and Partition Disk action executes.

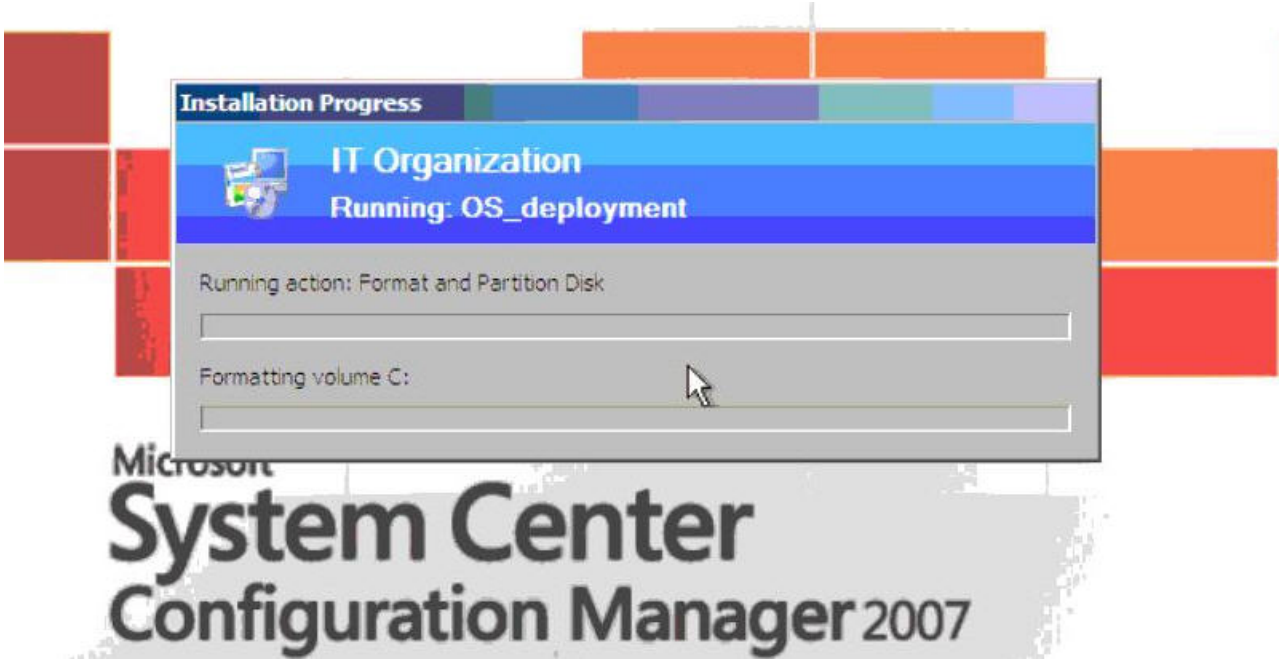

Figure 41. Running the Format and Partition Disk action

4. The second action is executed for the example: Apply Operating System Image. The hardware relative configuration progress is similar.

   Note: Different task sequences may have different actions; the windows are similar to those in the figures except for the different action.

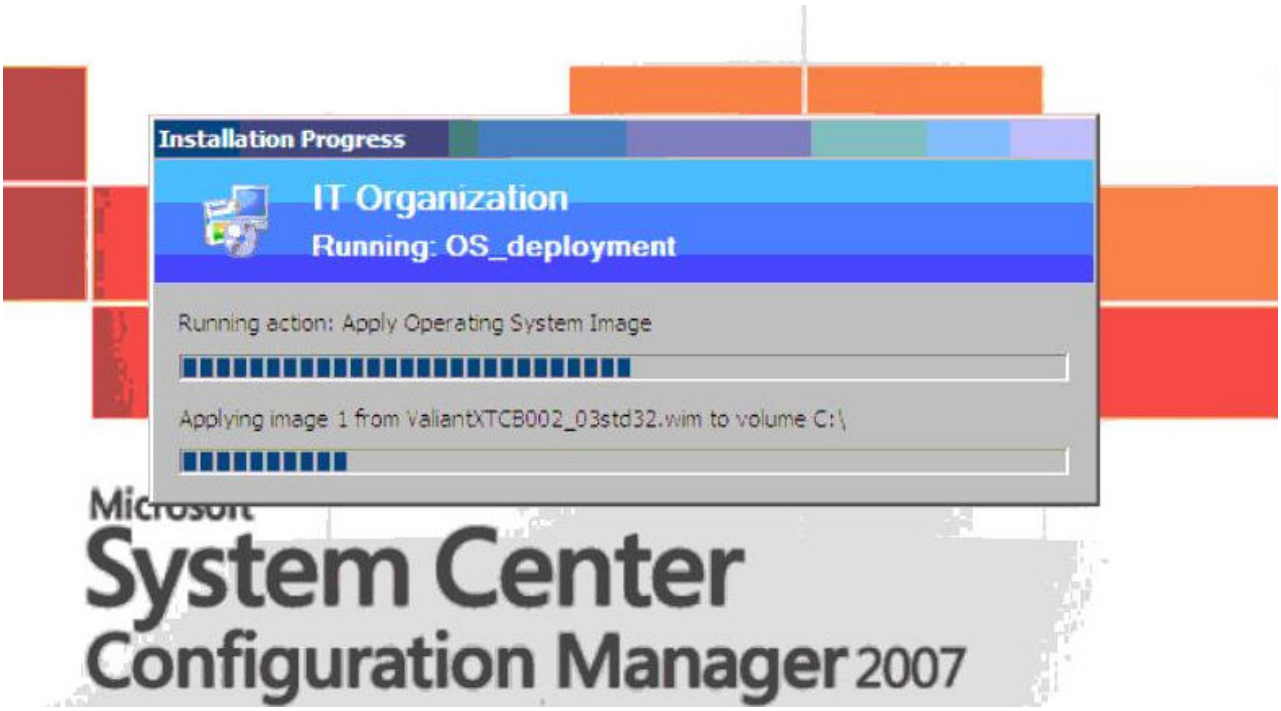

Figure 42. Running the Apply Operating System Image action

5. After the task sequence is finished, the target server restarts to set up Windows, and corresponding hardware is configured successfully.

Chapter 5. IBM Deployment Pack Features

This chapter gives you information on how to customize the tools used by the IBM Deployment Pack to perform the tasks included in a deployment.

The IBM Deployment Pack allows you to do the following configuration:

- "Configuring RAID through PRAID"
-
-

Configuring RAID through PRAID

There are two methods to configure RAID – through the array wizard or through the policy file utility. Both use the PRAID utility to configure the RAID adapter.

PRAID is a scriptable utility that offers a single user interface for both configuring and replicating all RAID controllers supported by the WinPE Scripting Toolkit.

PRAID has three modes of operation:

- Deploy mode: for scripted configuration of RAID controllers
- Capture mode: for replicating RAID controller settings
- Restore-defaults mode: for resetting RAID controllers to factory-default settings

When used in deploy mode, the policies file directs how PRAID configures the RAID controllers in a system using keywords and values that can be customized by the user. In capture mode, PRAID creates or appends to the end of a policies file the parameters that can configure other RAID controllers identically to the ones in the current system.

IBM Deployment Pack leverages PRAID utility provided by IBM WinPE Scripting Toolkit. For more information about policy file and the RAID controllers support matrix, refer to the WinPE Scripting Toolkit User Guide: http://publib.boulder.ibm.com/infocenter/toolsctr/v1r0/topic/sgtk_sa_win/UserGuide.pdf

Configuring RAID through policy file

Put your short description here; used for first paragraph and abstract.

Procedure

1. Go to the new task sequence in the Task Sequence Editor.

2. Right-click the task sequence and select **Edit**. A screen similar to the one in the following figure appears.

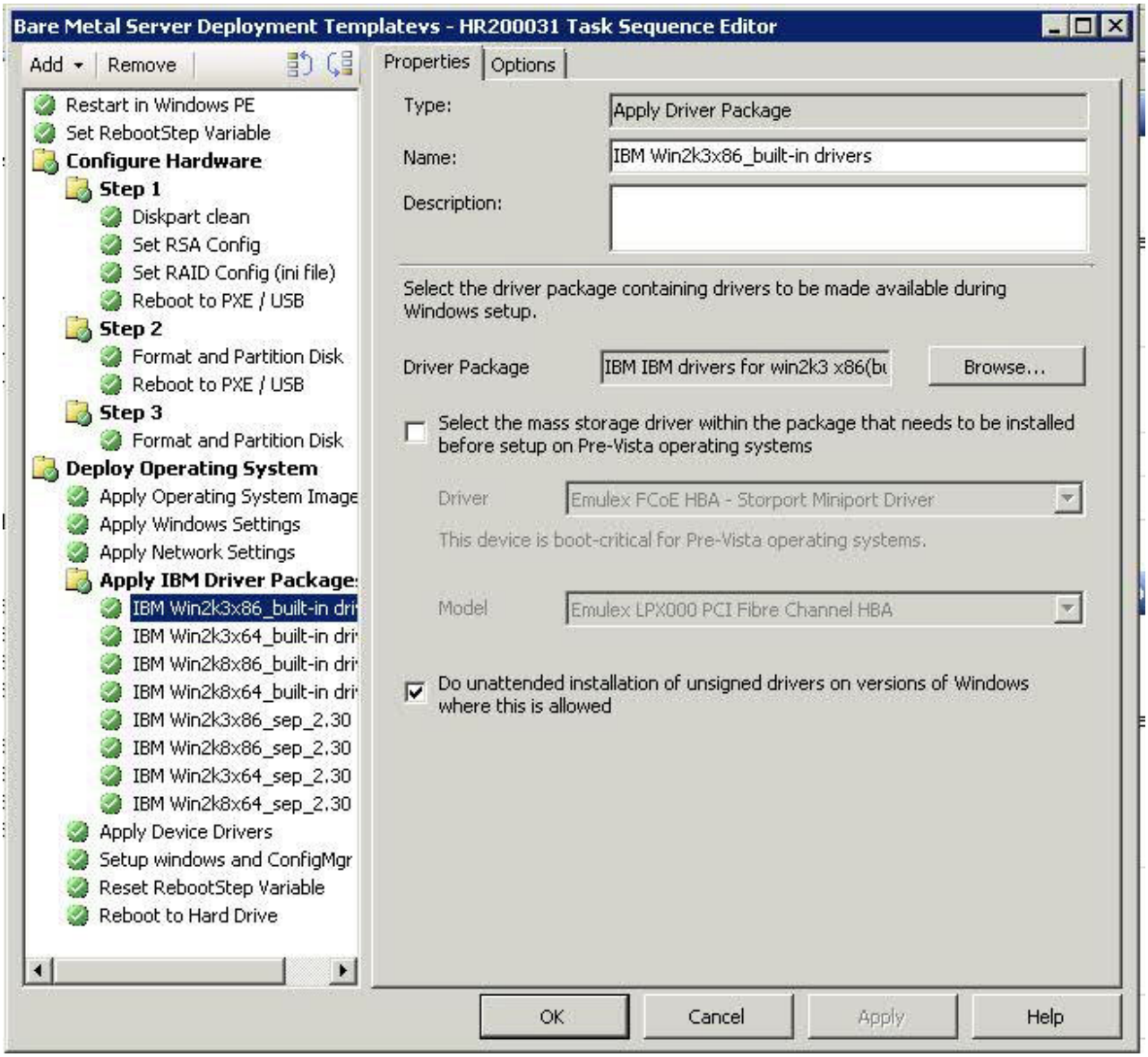

Figure 43. Editing the task sequence

3. Edit the task "Set RAID Config (ini file)." The following will appear:

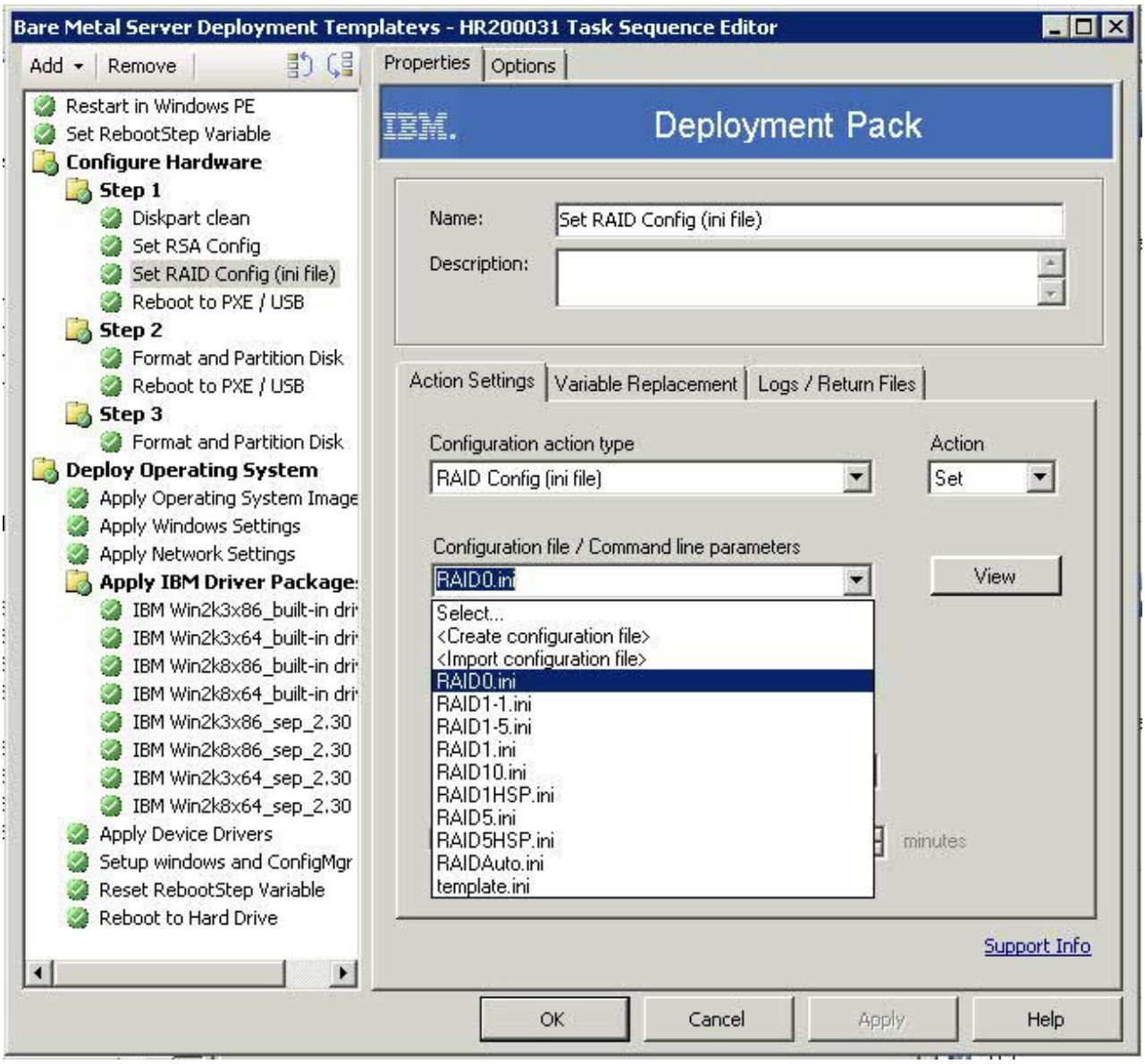

Figure 44. Editing the Set RAID Config (ini file) task

Example

There are preconfigured policy files to handle the different RAID levels, for example:

- RAID0.ini will configure RAID Controller as RAID level 0.
- RAID-auto.ini will select the best option based on the drivers and controller present.
- RAID1-5.ini creates a RAID-1 array using the first two drives, and a RAID-5 array using the remaining drives. Valid for ServeRAID-6M and 8i.
- RAID5HSP.ini creates a single RAID-5 array with a single hot-spare drive using all available drives. Valid for ServeRAID-6M and 8i.
- Template.ini provides a policies file template containing all parameters with details about each parameter.
- Advanced customers can customize the policy file by themselves.

Note:

1. Check the RAID level. The RAID controller supports condition in WinPE Scripting Toolkit User Guide before configuring RAID. IBM Deployment Pack only deploys PRAID and the corresponding policy file to the target server and returns the execution result because IBM Deployment Pack does not recognize the RAID Controller until the task sequence executed in target server.
2. The IBM Deployment Pack software invokes PRAID with the "/r" switch and the "/y" switch for all Set operations using the wizard. The use of these switches tells PRAID to remove the array configuration from all controllers attached to the server being deployed, before applying the new configuration.

   These switches avoid failures due to preconfigured arrays, and operate similarly on older versions of PRAID. You can add these switches manually to RAID configurations done with the command line, or when using INI files. The following graphic shows a page that illustrates how to add the switches when using an INI file. You can also add other switches as well. The other parameters please refer to *WinPE Scripting Toolkit User Guide*.

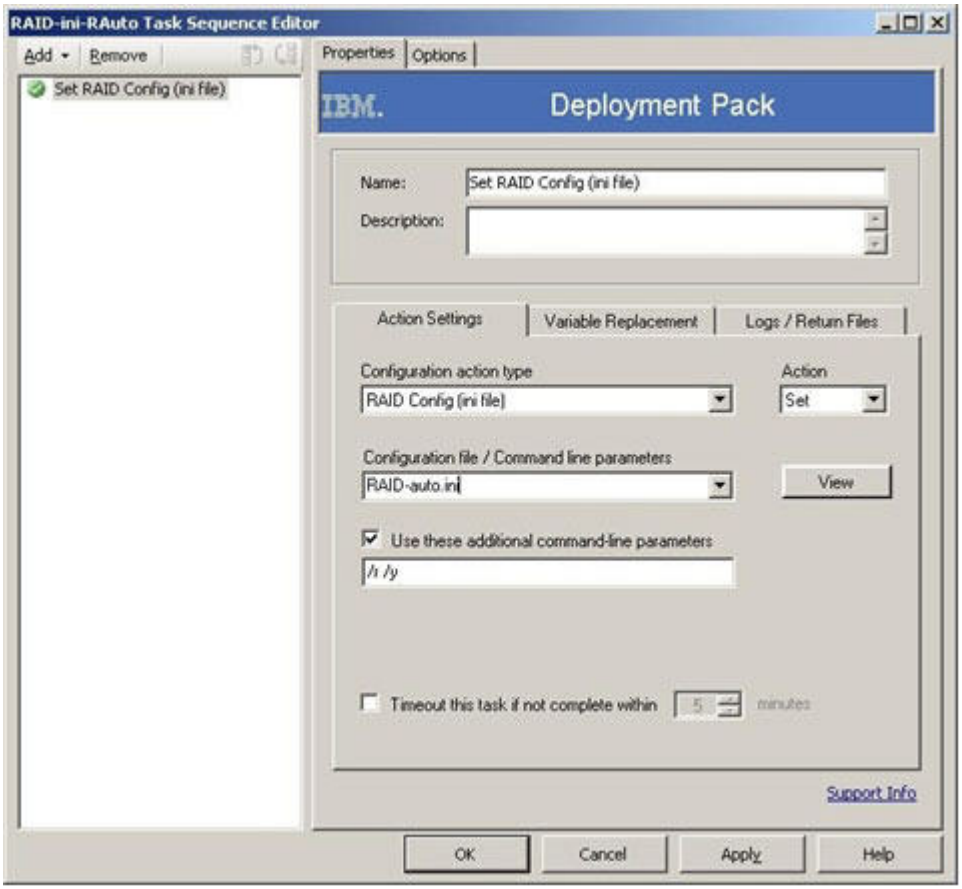

Figure 45. RAID configuration task sequence for INI files

Configuring RAID through Array Wizard

Another way to configure RAID is through the Array Builder Wizard provided by Microsoft SCCM. IBM Deployment Pack will create a policy file according to the input from Array builder and deploy the policy file and PRAID utility to thetarget server to configure RAID.

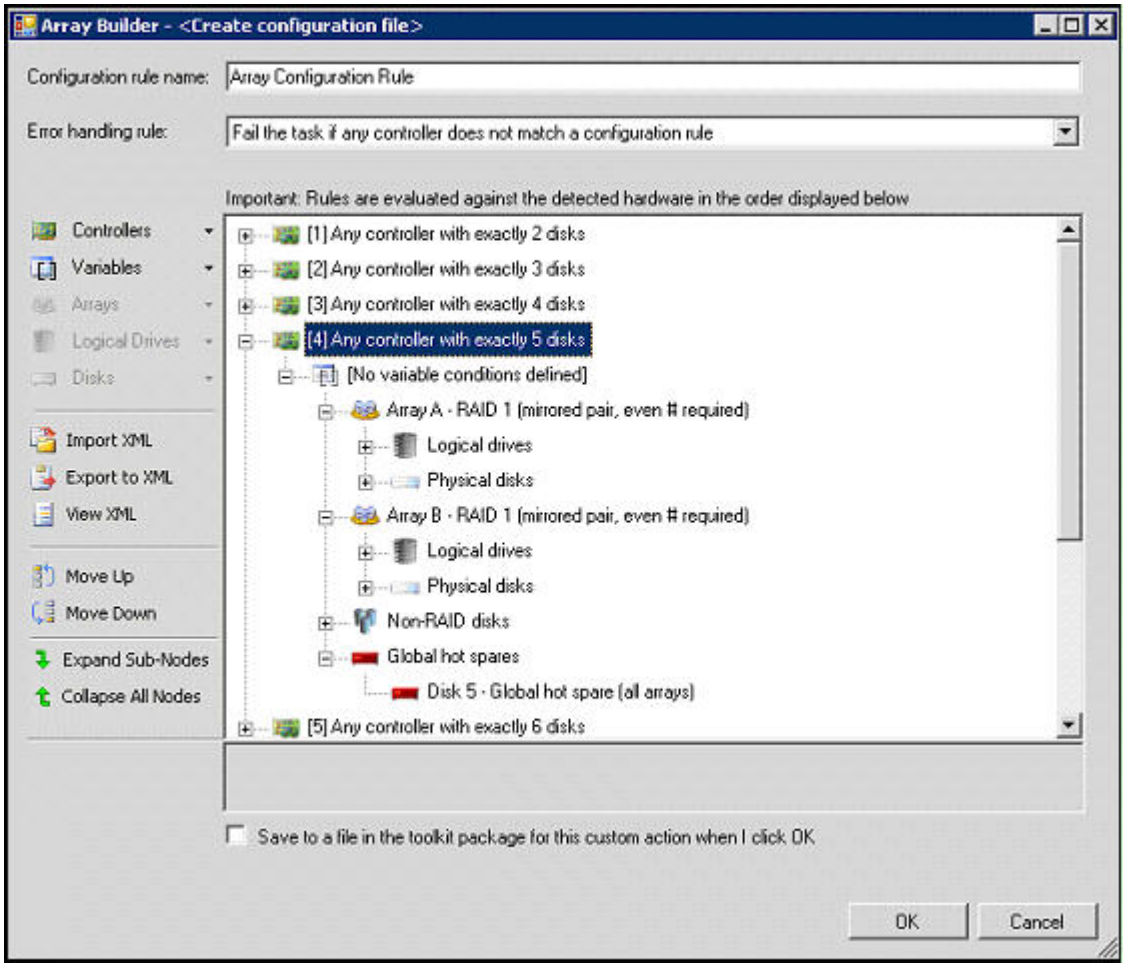

Figure 46. Array Builder Wizard

In IBM Deployment Pack, v1.4, two new features are supported in the RAID Array Builder Wizard:

- Global Hot Spare: You can use RAID Array Builder Wizard to configure Global Hot Spare.
- Dynamic RAID Config: Apply different RAID config dynamically according to the controller slot and disk number.

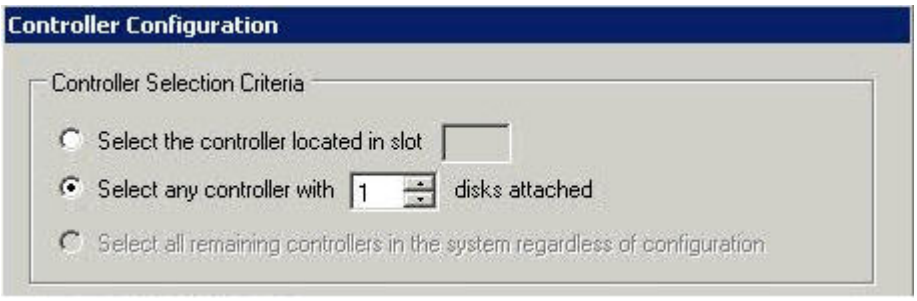

Figure 47. Dynamic RAID config

Configure hardware through ASU

IBM Advanced Settings Utility (ASU) is a utility that can modify hardware settings from the command line on multiple operating-system platforms. The ASU program supports scripting environments through its batch-processing mode.

IBM Deployment Pack leverages ASU to provide the following functions:

- Modify the CMOS settings of the Basic Input/Output System (BIOS) or the settings of Unified Extensible Firmware Interface (uEFI), without having to restart the system to access these settings in the BIOS or uEFI menus. (Usually, you have to press F1 in the beginning of the system startup to access these menus.)
- Set up baseboard management controller (BMC) and Integrated Management Module (IMM).

ASU is, in turn, dependent on internal code for IMM functions, and definition files for BIOS functions; that in turn means that not all hardware can be treated equally. You may have to create hardware-specific task sequences, depending on your specific machine population. Support for BMC settings is consistent across the product line, except for blades, where the Management Module in a given chassis overrides most of the blade BMC settings. The hardware release notes for the IBM Deployment Pack may contain more specific information.

Note: Command lines passed to the ASU program might not return error codes or explanatory feedback, so be careful when creating your commands. For more information about ASU, including a list of the ASU commands and their descriptions, see the *IBM Advanced Settings Utility User's Guide*.

Configuring IMM through ASU

See the following figure for an example of configuring the IMM.

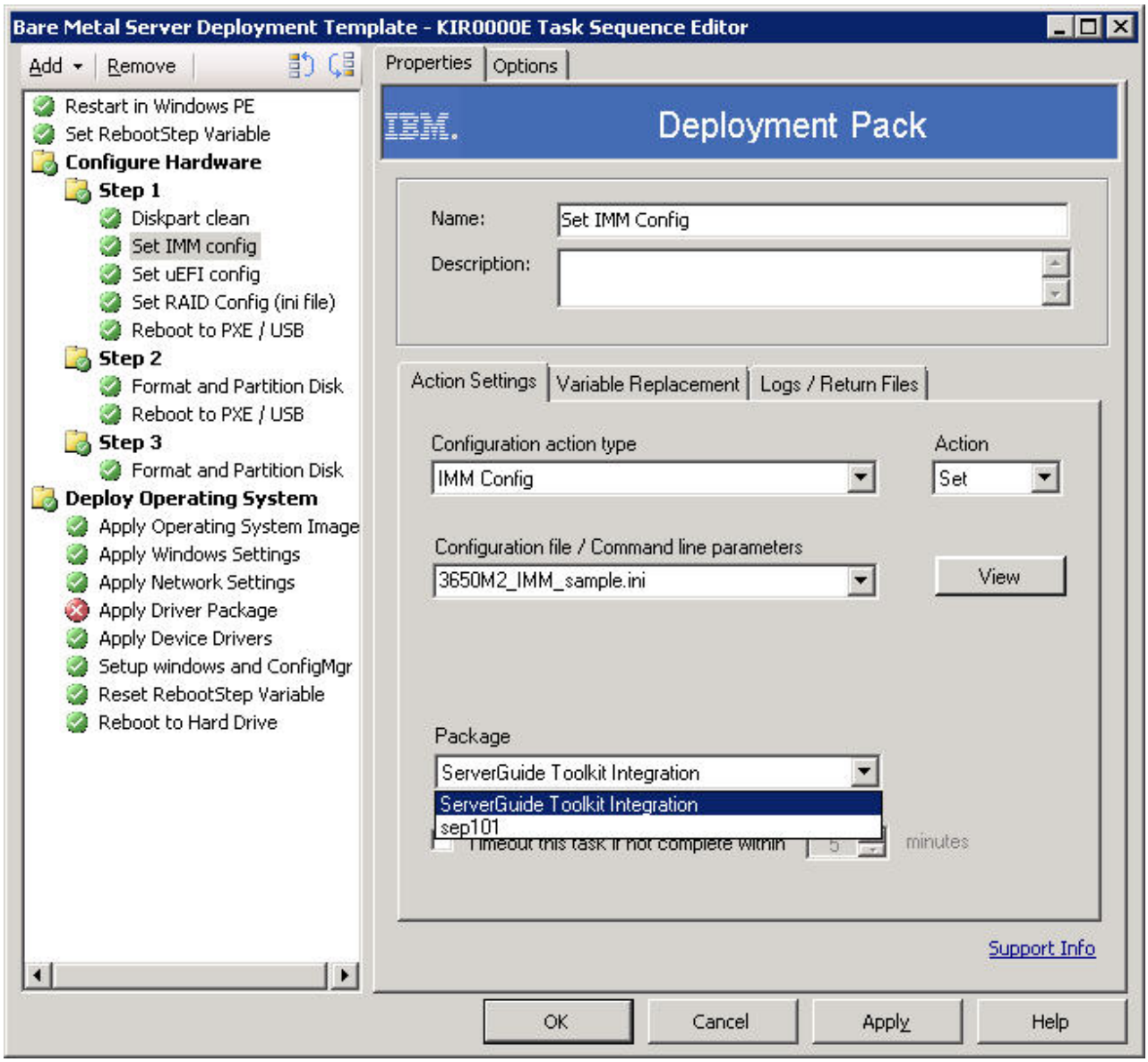

Figure 48. Selecting an IMM ini File

Sample ini files are provided for IMM configuration. To view or modify the available settings for the ini file, click **View**.

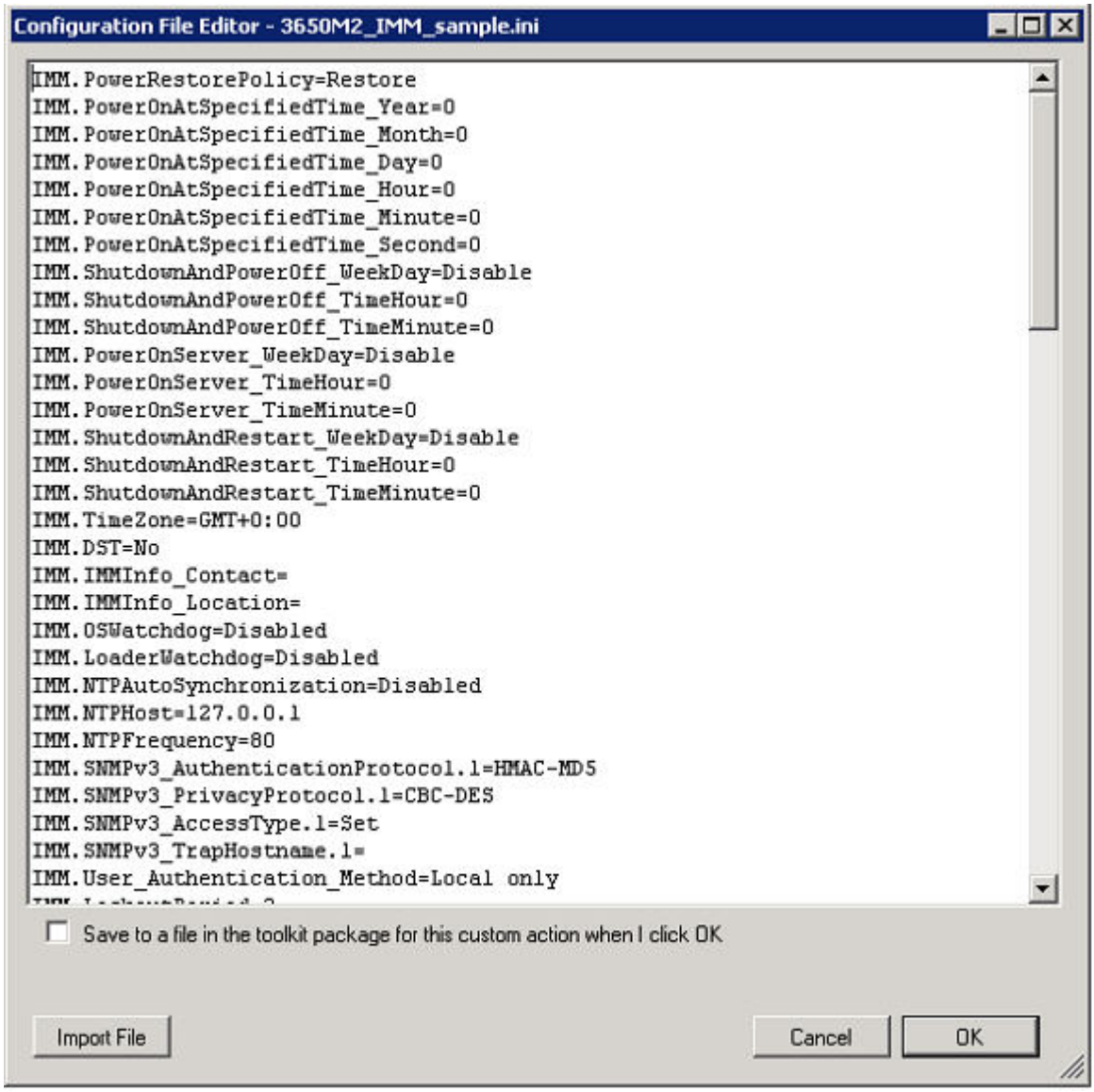

Figure 49. Sample settings in an IMM ini file

You can edit the file or create a new one. If a new ini file is used, or if the sample file has been edited, "Update Distribution Point" on page 24 for the package so the file will be available.

Note: The option to select a package is available. If an SEP has been added, choose the appropriate package for the machine being deployed.

Configuring UEFI through ASU

Similar to IMM, the UEFI action contains sample ini files and those can be modified the same way.

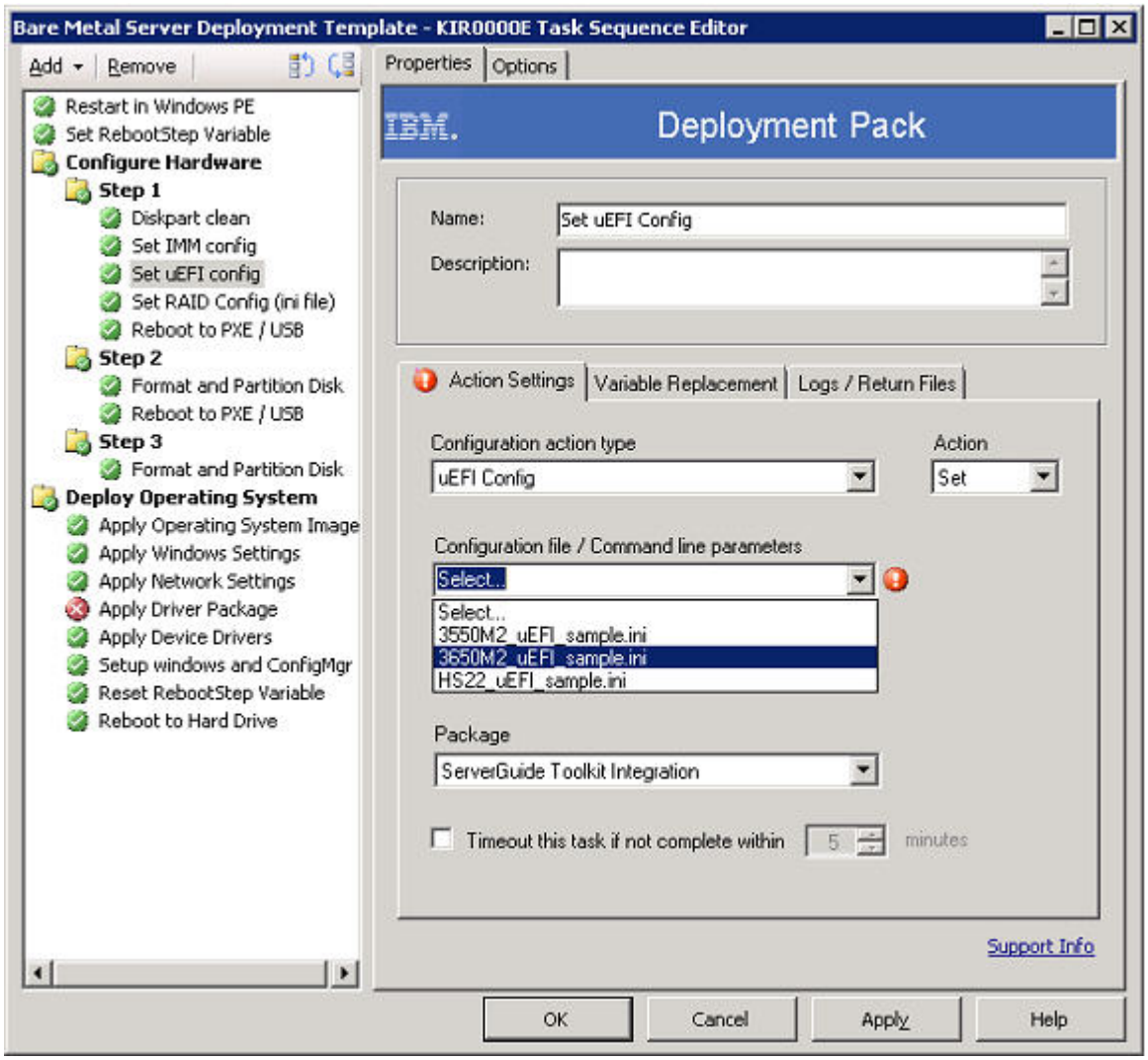

Figure 50. Selecting an UEFI ini File

The configuration of other hardware us similar to configuring the IMM/UEFI.

Supported IBM hardware-specific config list

Summary

The following actions are supported in the IBM Deployment Pack, v1.4

- Set/get BIOS configuration
- Set/get RAID configuration
- Set/get BMC/RSA configuration
- Reboot BMC/RSA/IMM
- Set/get IMM configuration
- Set/get uEFI configuration
- Set/get BootOrder [IMM] configuration
- Set default state for all BIOS/BMC/RSA/IMM/uEFI/BootOrder/RSA configuration
- ASU command line

:

Detail description

Configuration action type	Action	Parameters	Command
RAID Config (wizard)	Set		Using MS array builder
RAID Config (ini file)	Get		Praid.exe /c /f:raid.ini /e2 /e3
	Set	Policy files from toolkit package	Praid.exe /f:policy.ini /r /y /e2 /e3
RAID Config (cmdline)	Set		Custom Praid command
BMC Config	Get		Asu.exe show bmc > bmc.ini
	Set	Generic BMC ini template file	Asu.exe replicate bmc.ini
Reboot BMC	Set		Asu.exe rebootbmc
BIOS Config	Get		Asu.exe show bios > bios.ini
	Set	Generic BMC ini template file	Asu.exe replicate bios.ini
IMM Config	Get		Asu.exe show IMM > imm.ini
	Set	Generic IMM ini template file	Asu.exe replicate imm.ini
Reboot IMM	Set		Asu.exe rebootbmc
uEFI Config	Get		Asu.exe show uEFI > uefi.ini
	Set	Generic uEFI ini template file	Asu.exe replicate uefi.ini

Configuration action type	Action	Parameters	Command
BootOrder (IMM) Config	Get		Asu.exe show BootOrder > bo.ini
	Set	Generic BootOrder ini template file	Asu.exe replicate bo.ini
Set Default State	Set	All, BIOS, BMC, RSA, uEFI, IMM, BootOrder	Asu.exe loaddefault <>
ASU Command Line	Set		Custom command
RSA Config	Get		Asu.exe show rsa >rsa.ini
	Set	Generic RSA ini template file	Asu.exe replicate rsa.ini
Reset RSA	Set		Asu.exe resetrsa
Reboot RSA	Set		Asu.exe rebootrsa

Note: The RSA support will be removed from IBM Deployment Pack, v1.4 because the RSA is an old option that supported only an old generation of IBM servers, currently the RSA has been replaced by IMM in the new generation of IBM servers.

Operating system deployment

About this task

After you have configured RAID on the target server, you can use the task provided by the IBM Deployment Pack to install a supported operating system.

IBM Deployment Pack, v1.4 supports the following operating systems' deployment:

- Windows 2003 32bit/X64
- Windows 2003 R2 32bit/X64
- Windows 2008 32bit/X64
- Windows 2008 R2 X64

IBM Deployment Pack supports to deploy the captured OS image to target server. The process is as follows:

Procedure

1.
2. Conduct an end to end deployment scenarios with the OS selected. Refer to Chapter 4, “End to End Deployment Scenario,” on page 39

Chapter 6. Supported Hardware and Software

This chapter lists the operating systems, adapters, and RAID controllers supported by the IBM Deployment Pack. The most up-to-date support information is contained in the readme.htm file. You can download the latest version of readme.htm file from the IBM Deployment Pack Web page.

Server support

For complete information on supported combinations of servers and operating systems, please visit IBM ServerProven at http://www-03.ibm.com/systems/info/x86servers/serverproven/compat/us/serverproven/index.html

Family	Machine Type
System x3105	4347
System x3850 M2 / x3950 M2	7141 7144
System x3850 M2 / x3950 M2	7233 7234
System x3610	7942
BladeCenter HS21	8853 1885
BladeCenter LS21/LS41	7971 7972
BladeCenter LS22/LS42	7901 7902
BladeCenter HS22V	7871 1949
BladeCenter HS21 XM	7995 1915
BladeCenter LS20	8850
BladeCenter HS12	8014 8028 1916
BladeCenter HS22	7870 1936 7809
System x3650 T	7980
System x3550	7978 1913
System x3550 M2	7946 4198
System x3550 M3	7944 4254
System x3850 X5 / x3950 X5	7145 7146
System x3200 M2	4367 4368
System x3200	4362 4363
System x3200 M3	7327 7328
System x3950	8878 7366
IBM eServer xSeries 346	8840 1880
IBM eServer xSeries 206m	8485 8490
System x3250	4364 4365 4366
IBM System x3800	8866
System x3250 M3	4251 4252 4261
System x3250 M2	4190 4191 4194
System x3755	8877
System x3500	7977

Family	Machine Type
System x iDataPlex dx360 M2 server	7321 6380 7323
System x iDataPlex dx360 M3	6391
System x3650 T	7979 1914 4388
System x3650 M2	7947 4199
System x3650 M3	7945 4255
System x3500 M2	7839
System x3500 M3	7380
System x3400 M2	7836 7837
System x3400 M3	7378 7379
System x3850	8864 7365
System x3655	7985
System x3655	7943
System x3350	4192 4193
BladeCenter HX5	7872 1909
System x3690 X5	7148 7149
System x3630 M3	7377
System x3755 M3	7164

RAID controller support

RAID Controller:
IBM SAS HBA (1068)
ServeRAID 8s
ServeRAID 8k
ServeRAID 8k-l
ServeRAID 8i
ServeRAID-MR10i
ServeRAID-MR10k
ServeRAID-MR10is
ServeRAID-MR10M
ServeRAID-BR10i
ServeRAID-BR10ie/IBM SAS HBA v2
ServeRAID-MR10ie
LSI SCSI (1020/1030)
LSI MegaRAID SAS 8480
LSI SAS (1064/1064E)
ServeRAID B5015
ServeRAID M5015 SAS/SATA Controller, 46M0829
ServeRAID M5014 SAS/SATA Controller, 46M0916
ServeRAID M1015
ServeRAID M1015 R5

RAID Controller:
ServeRAID BR10il
ServeRAID M5025

Appendix A. Hints and tips

Hints and tips can help resolve common issues when installing and using the Operating System Deployment feature.

PXE issues

Recreate the PXE service point to troubleshoot a file not found PXE error. You can also use the Reboot to PXE / USB custom action to circumvent a problem that can occur during multiple rebooting of a target system.

About this task

If you notice the following error in the log file, troubleshoot using these common PXE issues:

```
File not found PXE error #.
```

Assuming that the PXE service was operational at one time usually means that changes to a boot image were not distributed to the PXE service distribution points. Distributing boot image changes is described in Updating the distribution points for a boot image.

Also, it could be there is not a valid advertisement for this machine. Creating an advertisement is described in Advertising task sequences.

You must also add the target server MAC address and GUID to the Configuration Manager database, as described in Importing the servers into the Configuration Manager database.

PXE-initiated deployments require a Pre-boot Execution Environment (PXE) service point role (and some NTFS-formatted disk space), a DHCP server, Windows Deployment Services (WDS), and a firewall port configuration. Using DHCP and WDS on the same machine requires you to configure WDS to listen on a port other than port 67. See Technet: Planning for PXE Initiated Operating System Deployments for more information.

If there are difficulties in getting the PXE service to work from the beginning, check that Windows Deployment Services (WDS) is installed and that it is correctly configured for the environment. If the error still exists, try the following actions:

1. Stop the Windows Deployment Services (WDS).
2. Delete or rename the `windows\Temp` folder and create a new `windows\Temp` folder.
3. Restart the WDS.

If the DHCP server is on the same server as WDS, make sure that DHCP option 60 is enabled. In some cases it might be necessary to restart the DHCP server.

If the prerequisites are met, use the following procedure to recreate the PXE service point.

Procedure

1. From the console, remove the PXE service role.
2. Check the `Program Files\Microsoft Configuration Manager\Logs\PXEsetup.log` to verify that the role is removed successfully.
3. Remove the Windows Deployment Service.
4. Reboot the Configuration Manager site server, if WDS was installed on the site server.
5. Reinstall WDS but do not configure it.

   It is not necessary to import images. However, make sure that WDS is installed correctly.
6. Assuming DHCP and WDS are installed on the Configuration Manager server, make sure that DHCP Option 60 is enabled and choose **Don't listen on port 67**.
7. Reinstall the PXE service role.
8. Check the `PXEsetup.log` to verify that the role was installed successfully.
9. Update the PXE distribution points for the boot images now that the new role is installed.
10. The target client should now be able to PXE boot to the Configuration Manager server.

Tips when rebooting to PXE or USB

When deploying a new, unconfigured server, there are no configured disks from which to boot. This means that the system must boot from other media, such as a CD or DVD drive, from a USB port, or from the network using the Pre-boot Execution Environment (PXE). At times, the installation might reboot the server being deployed during the task sequence to complete initialization of a configuration, such as defining array disks.

In fact, if the disks on a system are defined or redefined after the Windows Preinstallation Environment (WinPE) boots, WinPE does not recognize the new system partition, which means a reboot is necessary in order to successfully complete a deployment.

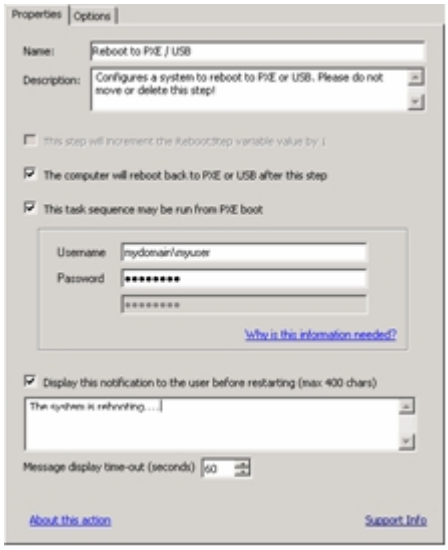

Figure 51. Properties page for a Reboot to PXE / USB action

The primary issue is that when using a "Reboot Computer" standard action within the task sequence editor, the action requires a writeable partition, either to reboot into the existing operating system, or to copy down WinPE to the disk and reboot to WinPE again. If you assign a reboot task to a machine and these conditions do not exist, the task sequence will fail at that action. The capability of rebooting the machine in the middle of a task sequence without a valid boot partition does not exist.

If you use PXE and the machine simply ends the task sequence and reboots on its own, Configuration Manager does not readvertise the PXE boot to the computer. The PXE advertisement must be reset if it is to run the same task sequence again. This means the server would likely reboot into an unknown state and stop at a "No Operating System" prompt. You could assign a second task sequence to the machine, but when the first task sequence ended, the second would start immediately, without a reboot between them.

If you were using boot media such as CD or DVD media or a USB drive, the result would be the same; the task would fail when the reboot task runs because a valid boot partition does not exist. If you simply made the task sequence end instead of using a reboot, the system reboots and starts the task sequence again. Without some sort of conditional flow control, the installation reruns the same tasks.

Tips to resolve problem when executing Deployment Pack

IBM provides a state variable during the task sequence to control which steps are run in the sequence. The installation uses Windows Management Instrumentation (WMI) remote calls to reset the PXE advertisement for the computer so that when it reboots it will rerun the task sequence appropriately.

To control the flow of the task sequence across reboots, groups are created that have conditions set on the state variable. This state variable is a task sequence variable, set via the Configuration Manager server or via a file-based method (in case of a disconnected deployment).

The task sequence flow is similar to the following:

First boot sequence

1. The computer boots WinPE via PXE. The task sequence variable is not set. (RebootStep = null)
2. The "Set RebootStep Variable" action sets the variable to 1.
3. The "Configure Hardware" group runs.
4. The group "Step 1" condition evaluates to TRUE. (RebootStep = 1).
   a. Actions inside this group run.
   b. The "Reboot to PXE/USB" resets the PXE advertisement.
5. The group "Step 2" condition evaluates to FALSE, which skips some steps.
6. The group "Step 3" condition evaluates to FALSE, which skips some steps.
7. The "Deploy Operating System" group condition evaluates to FALSE.
8. The task sequence ends and the computer reboots.

Second boot sequence

1. The computer boots and uses PXE or USB to load WinPE again. (RebootStep = 1)
2. The "Set RebootStep Variable" action sets the variable to 2. (RebootStep = 2)

3. The “Configure Hardware” group runs.
4. The group “Step 1” condition evaluates to FALSE, which skips some steps.
5. The group “Step 2” condition evaluates to TRUE. (RebootStep = 2).
   a. Actions inside group 2 run.
   b. The “Reboot to PXE/USB” resets the PXE advertisement.
6. The group “Step 3” condition evaluates to FALSE, which skips some steps.
7. The “Deploy Operating System” group condition evaluates to FALSE.
8. The task sequence ends and the computer reboots.

Third boot sequence

1. The computer boots and uses PXE or USB to load WinPE again. (RebootStep = 2)
2. The “Set RebootStep Variable” action sets the variable to 3. (RebootStep = 3)
3. The “Configure Hardware” group runs.
4. The group “Step 1” condition evaluates to FALSE, which skips some steps.
5. The group “Step 2” condition evaluates to FALSE, which skips some steps.
6. The group “Step 3” condition evaluates to TRUE. (RebootStep = 3)
   a. Actions inside group 3 run with no reboot at the end.
7. The “Deploy Operating System” group condition evaluates to TRUE.
   a. Actions inside this group run.
   b. The “Reset RebootStep Variable” action sets the variable to 0. (RebootStep = 0)
8. The task sequence ends and the computer reboots to the final operating system loaded on the disk.

Manual workaround method

You can manually work around the PXE reboot issue by creating the task sequence steps and groups and using the procedure that the Deployment Pack uses to solve the problem.

The solution also involves creating a custom script that will connect remotely to the Configuration Manager server (with appropriate credentials), accessing WMI, and resetting the PXE advertisement for the specific computer running the task sequence.

However, there is no need to do this work manually since the **Reboot To PXE / USB** custom action takes care of setting up the task sequence for you.

Related reference

“The Reboot To PXE / USB custom action” on page 69
Insert the PXE / USB custom action to control multiple rebooting when booting to PXE or USB.

The Reboot To PXE / USB custom action

Insert the PXE / USB custom action to control multiple rebooting when booting to PXE or USB.

After installation into the Configuration Manager server, this custom action is inserted into a task sequence by several methods:

1. Right-click the Task Sequences folder to create a sample task sequence that includes all the tasks needed (including reboots) for deploying a server from bare metal.
2. When inserting a new OEM custom action, use the dialog about reboots that displays to create a new task sequence using the current task sequence actions with the appropriate actions.
3. Manually insert the Reboot To PXE / USB action into a task sequence from a selection on the task sequence editor menu to create a new task sequence as in previous method.

Preventing a server from looping during multiple reboot processing

A possible problem that might occur during the multiple reboot processes of an operating system deployment on a server is an improper setting for the state variable that controls the overall installation. The improper setting can occur when an error occurs that does not stop the installation.

About this task

The sample task sequence templates in the IBM Deployment Pack provide for multiple reboots back to USB or PXE and use a computer variable to track the current boot stage in the process.

The computer variable determines which groups or steps are run during each phase of the deployment. If an error occurs during a task sequence, this variable is not automatically reset. When an error occurs, your task sequence might not restart from the beginning or even the current phase of deployment.

Remove the computer variable for any computer that has failed the task sequence to make sure that the computer restarts the sequence from the beginning.

You can reset the computer variable by performing the following procedure.

Procedure

1. Launch **Microsoft Configuration Manager 2007** to open the Configuration Manager console.
2. Click **Computer Management** > **Collections**.

3. Right-click the computer resource in the appropriate collection.
4. Click **Properties** > **Variables**.
5. Select the **RebootStep** variable.
6. Click **Delete**.
7. Click **Apply**.
8. Click **OK**.

Appendix B. Troubleshooting

You can often troubleshoot issues with the IBM Deployment Pack. Troubleshooting involves making sure that you performed certain tasks. The symptoms of a problem that you might have often provide a clear clue to an unintended setup omission or a faulty setting.

Procedure

1. Read the documentation.

   The majority of issues related to the use of this product are covered in the documentation.

   Ensure that you have checked this documentation first before calling support.

   Some related Microsoft TechNet sections of the Configuration Manager documentation that you should be familiar with include:

   - Technet: Troubleshooting Operating System Deployment
   - Technet: Troubleshooting Operating System Image Deployment Using USB Devices

2. Check your action settings.

   The primary cause of task sequence failures is related to the settings you provide in the task sequence steps.

   Be sure to check the task sequence steps for:

   - Valid environment or task sequence variable references
   - Valid file references : You should use DOS 8.3 naming whenever possible. Never use file names with embedded spaces
   - Valid directory references – When capturing files from a target computer, ensure that the destination directory already exists. The process does not automatically create directory structures.

3. Check the log files and possibly, use debug logging.

   The custom actions in this deployment kit provide for capturing the `SMSTS.LOG` file from WinPE and bringing it back to the Configuration Manager server.

   You can also perform extended logging with the custom action to assist with troubleshooting issues. You can enable this logging on the **Logs / Return Files** tab in the sequence action.

4. Gather the appropriate information.

   When you call support, you must have a set of information ready to provide to them so that they can efficiently work your issue. Use the following information as a guide to what to collect.

   a. Export the task sequence you were using, by right-clicking the task sequence and selecting **Export**.

   b. If the issue is visible in the interface, collect screen captures of the relevant portions.

   c. If the issue is related to installation of the product or follows closely after installation:

      1) Gather a copy of the MSI installation log, located in the temporary files directory, which is identified in the %TEMP% environment variable. This file is usually located in a “1” directory and has a random name that is formatted as `MSI`*`random_characters`*`.LOG`.

2) Gather a copy of the _Installer.Log file and the _InstalledComponents.Xml file, which are located in the following directory:

```
{AdminUI Install Directory}
 \XmlStorage\Extensions\bin\Deployment
 \IBM\IBM Deployment Pack\setup
```

d. If the issue occurred while running a task sequence:

1) Gather a copy of the SMSTS.LOG file from WinPE.

The log might be in the X:\Windows\Temp\Smstslog directory for a PXE boot. The log might also be in the \Smstslog directory on the local drive. The format of the log name might be SMSTSLOG*time_based_name*>.LOG.

2) A copy of the custom action logs saved using the "Retrieve the task sequence log file from the client when this action runs" checkbox on the custom action **Logs / Return Files** tab. You should also check the box for **Enable extended/debug logging by this action**.

3) A copy of the files used as input to the configuration task, such as configuration INI or XML files.

e. A complete, detailed explanation of the issue, including:

1) The exact point of failure, such as for example, the action running when the process failed, a description or screen captures of error messages, error codes, and other relevant facts.

2) A detailed description of the computers being configured, such as model, hardware configuration, RAID controllers, and other characteristics.

3) A description of other circumstances, such as:

- Has this task sequence / action ever worked? When did it stop working?
- If it had worked before, what is different now? Is the task sequence being applied to different computer types, is it using different configuration files, different task sequence variables, or has something else been modified?

5. When all else fails, contact support, as described in Appendix D, "Getting help and technical assistance," on page 93.

Troubleshooting installation issues

You can troubleshoot some common installation issues.

A custom action does not appear in the Configuration Manager console

Configuration Manager uses information stored in WMI to load the custom action assemblies from disk. This WMI information is imported into the site system's WMI database during installation through the use of MOF files. If there was an error during importation, or for some reason the WMI information is incorrect, the MMC might hit an exception when trying to load the assembly, likely because the file name or assembly name is not found.

Check WMI under `root\SMS_site_code\SMS_TaskSequenceStep\SMS_TaskSequenceAction` for the appropriate WMI class for the product installed, such as: `IBM_DeploymentPack`.

If the desired class does not exist, the custom action cannot appear in the menu. Try reinstalling the site server files using the installer.

If you are already familiar with the contents of the WMI classes, you can modify the class as appropriate to correct the error. A good tool for viewing and editing WMI information is WMI CIM Studio, which is part of the Microsoft Download Center: WMI Administrative Tools.

The IBM Deployment Pack does not completely uninstall

By design, the uninstall process does not remove boot images. This is because they are tied to task sequence packages, and removing the boot image might invalidate otherwise working task sequences that you are using.

If you are no longer using the boot images created by this product, you can simply delete them from the console.

How to delete some remaining physical folders

1. Locate the SCCM installation folder.
2. Find its sub-folder `AdminUI\XmlStorage\Extensions\bin\Deployment` and delete the folder named `IBM`.
3. Find its sub-folder `OSD\lib\Drivers` and delete the folder named `IBM`.
4. Find its sub-folder `OSD\lib\Packages\Deployment` and delete the folder named `IBM`.

How to Remove components of IBM Deployment Pack 1.3 when upgrading to v1.4

1. Open System Center Configuration Manager.
2. Select **Site Database->Software Distribution->Packages** and check for the folder `IBM Server Deployment`. If it exists, then check whether several packages are under the folder and delete them if they are present.
3. Select **Site Database->Computer Management->Operating System Deployment->Drivers** and check for two folders: `IBM Server Drivers (x64)`and `IBM Server Drivers (x86)`. Delete the drivers in the two folders.
4. Select **Site Database->Computer Management->Operating System Deployment->Driver Packages**, and check for the folder `IBM Server Driver Packages`; check whether several driver packages are in the folder and delete them if they are present.
5. Locate the SCCM installation folder.
6. Find its sub-folder `AdminUI\XmlStorage\Extensions\bin\Deployment` and delete the folder named `IBM`.
7. Find its sub-folder `OSD\lib\Drivers` and delete the folder named `IBM`.
8. Find its sub-folder `OSD\lib\Packages\Deployment` and delete the folder named `IBM`.

Troubleshooting administrator console issues

You can troubleshoot some common administrator console issues.

Enabling user interface debug logging

If you customized the configuration XML, but did not get the XML right, the actions in the user interface might not work properly.

Turn on debug logging on the admin console part of the custom action. Set the **Debug Logging** key, which is the `DWORD` value in the base registry key for the IBM Deployment Pack to a value of 1.

MMC crash, exception, or Property Not Found errors when loading custom action

Configuration Manager uses information stored in WMI to load the custom action assemblies from disk. This WMI information is imported into the site system WMI database during installation through the use of MOF files. If there was an error during importation, or for some reason the WMI information is incorrect, the MMC might hit an exception when trying to load the assembly, likely because the file name or assembly name is not found.

Check WMI under `root\SMS_`*`site_code`*`\SMS_TaskSequenceStep\ SMS_TaskSequenceAction` for the appropriate WMI class for the product installed, such as: `IBM_DeploymentPack`.

If the desired class does not exist, the custom action cannot appear in the menu. Try reinstalling the site server files using the installer.

If you are already familiar with the contents of the WMI classes, you can modify the class as appropriate to correct the error. A good tool for viewing and editing WMI information is WMI CIM Studio, which is part of the Microsoft Download Center: WMI Administrative Tools.

Troubleshooting device driver issues

In many instances, you must import drivers into your WinPE boot image in order for the OEM utilities to function. In some circumstances, the driver packages available from the OEM include an installation program to install the drivers, but not any instructions on how to import the driver into WinPE.

Configuration Manager imports drivers into WinPE using the standard driver injection process available in the WinPE tool set. This requires a driver INF file (or txtsetup.oem file) along with the driver and other necessary files. The INF is used in the standard driver installation process to insert the driver into WinPE. If the INF (or OEM) file.

In addition, trying to automatically import the driver into the Configuration Manager Driver Catalog and then insert the driver into the boot image might fail. This can be due to one or more of the following issues.

File renaming

Some driver files are named differently depending on the operating system to which they apply: `driver_w2k.sys`, `driver_w2k3.sys`, and `driver_w2k3_64.sys`, for example, might apply to Windows 2000, Windows Server 2003, and Windows Server 2003 64-bit.

The installation program might rename the files to base names before installing the driver, such as `driver.sys`. If the installation program renames files before installing them, driver injection into the WinPE image can fail because the correct file names are not present.

Installation program modification of a boot image

During the installation of the IBM Deployment Pack, the installation program performs several modifications to a WinPE boot image to insert drivers and other changes that allow the Deployment Pack utilities to function.

By default, the installation program makes a copy of the Configuration Manager default boot image (`boot.wim`), mounts the file, makes changes, and unmounts the file.

This modified `boot.wim` file contains the base set of changes needed by the Deployment Pack. In addition, network and storage drivers are added for boot devices, such as array controllers, and network drivers to be able to communicate with the network in WinPE.

Drivers should be added through the driver catalog within the **Operating System Deployment** node of the Configuration Manager admin console.

Configuration Manager stores two boot images for distributing to machines booting to PXE. The `boot.wim` file is the base boot image that contains no Configuration Manager specific files.

When you add drivers to a boot image and then update the boot image on a distribution point, Configuration Manager takes the base `boot.wim` file and then adds the drivers from the driver catalog, along with other Configuration Manager files, to create a new WIM file, named `boot.`*`packageID`*`.wim`, such as, for example: `boot.SMS00001.wim`.

The new WIM file is then distributed to the assigned PXE distribution points for your site.

Drivers import, but fail when updating the WinPE boot image.

Many times, several drivers are loaded together in a common directory and contain a `TXTSETUP.OEM` file. This can also occur with only one driver in a directory. By default Configuration Manager chooses the `TXTSETUP.OEM` file for its source of import information for the drivers. If this file is present, Configuration Manager does not display any associated INF files.

This action can sometimes cause an issue. It is better to load drivers individually using their own respective INF files. To do this, rename any `TXTSETUP.OEM` files in the driver directory so that Configuration Manager prompts you to select the INF files and import the drivers individually.

Troubleshooting WinPE and task sequence issues

You can troubleshoot some common WinPE and task sequence issues.

WinPE never starts the task sequence

Check the `SMSTS.LOG` file at `X:\windows\temp\smstslog\smsts.log`. If a package never downloaded, it is likely that you simply do not have the appropriate network drivers installed, which prevents the machine from communicating with Configuration Manager.

Check your driver catalog to ensure you have the right network drivers available and installed into the boot image, and update the boot image to your distribution points.

Additional network or storage drivers might be needed in the boot image to enable the WinPE boot to function correctly. You should add those through **Drivers** in the Operating System Deployment node.

The right drivers have been added to the boot image, but are not loading

The original boot.wim file (WinPE boot image) created during Configuration Manager installation is copied and modified with IBM-specific drivers and other files. Your task sequences that use the IBM Deployment Pack must use this boot image or the tools might not work properly.

Check to make sure the image into which you loaded the drivers is the same image being used by the task sequence.

This is a common error for administrators who maintain multiple boot images.

Servers will not boot using PXE

PXE is an extension of DHCP, which uses a broadcast type of communication. Broadcast communication uses standard timeout values that are not readily changeable. As a result, a computer waits for a default timeframe to receive a DHCP or PXE response before timing out and causing a failure condition.

Each time a server is rebooted, it must renegotiate the connection to the switch. Some network switches arrive configured with default settings that might incur connectivity delays. That is, the settings on the switch might cause a DHCP or PXE timeout because they fail to negotiate a connection in time.

One of the features that can be affected by this issue is Spanning Tree Protocol (STP). STP is a protocol that prevents loops and provides redundancy within a network. A networking device using this algorithm might experience some latency as it collects information about other network devices. During this period of information collection, servers might boot to PXE and time out while waiting for a response from Windows Deployment Services. Disable the STP or enable PortFast on end-node ports for the target server to prevent such occurrences. Refer to the manufacturer's user guide for further information.

Another feature that can be affected by this issue is the EtherChannel or Port Aggregation Protocol (PAgP). EtherChannel allows multiple links between devices to act as one fast link that shares the load between the links. Running the EtherChannel Protocol in automatic mode can cause a connectivity delay of up to 15 seconds. Switch to a manual mode or turn off this feature to eliminate this delay.

Speed and duplex negotiation can also play a role in negotiation timeouts. If auto-negotiation on the switch is set to off, and the server is not configured to that speed and duplex setting, the switch will not negotiate with that server.

For more information, see the Cisco Web site and the following Cisco documents:

- Cisco: *Using PortFast and Other Commands to Fix Workstation Startup Connectivity Delays*
- Cisco: *Configuring and Troubleshooting Ethernet 10/100Mb Half/Full Duplex Auto⌂Negotiation*

Default boot order does not allow PXE to boot when a valid drive exists

When an active partition is created on a hard drive, it automatically becomes a bootable device if a valid operating system has been installed. If your PXE NIC is after the hard drive in the boot order, the hard drive tries to boot before PXE and boots to Windows, or causes an Invalid System Partition error if Windows is not installed.

To resolve this issue, be sure that PXE is placed before the hard drive in the boot order. Keep in mind that even if PXE is first in the boot order, the computer does not actually boot to PXE unless Configuration Manager has a task sequence for it to run.

When using a “Reboot” action after initializing an array controller, the task sequence fails

Configuration Manager 2007 does not allow a task sequence to reboot back to PXE. It can reboot back to WinPE or to an installed operating system, both of which require a disk partition and the appropriate installed software.

Without a disk partition, Configuration Manager will fail when attempting to reboot during a task sequence because it expects to copy WinPE to the disk. Additionally, the management point tracks when a machine has booted to PXE to run a task sequence, and once a machine has booted to PXE for a task sequence, it cannot use PXE as a boot method again for that task sequence unless the advertisement is reset.

To perform a reboot to PXE if you need to within a task sequence, use the custom action called “Reboot To PXE." This custom action, written using C# and VBScript, connects to the Configuration Manager 2007 SDK, and contains custom code to drive actions in the admin console as well as the machine being deployed. This custom action performs all the steps necessary to perform the reboot to PXE and allow for proper program flow when it occurs.

The only other way to accomplish a reboot to PXE is to use more than one task sequence, let the computer “fall off the end” of the first task sequence and manually reset the PXE advertisement for the computer.

Task sequence fails with “Failed to Download Policy” and code 0x80093102 or 0x80004005

This error code typically refers to a certificate validation issue.

The SMSTS.LOG file will show an entry with the following text:

```
CryptDecryptMessage ( &DecryptParams, pbEncrypted,
 nEncryptedSize, 0, &nPlainSize, 0 ), HRESULT=80093102
```

or

```
no cert available for policy decoding
```

Possible causes are:

- Misconfiguration of your domain or a site server, such as DNS not pointing to the site server, or the site server not specifying a valid FQDN (which is referred to by the DNS listing).

  If your site server does not specify a FQDN (and only specifies the NETBIOS name), and your DNS server refers to the FQDN, a faulty lookup might cause this error.
- The certificate being used for PXE and boot media.

  Check the certificates under the Site Settings node and see if any certificates are blocked or missing. Open the certificates and ensure that they are actually installed into the certificate store. If not, install them.

If these actions do not work, try removing the package from the distribution point (via **Manage Distribution Points**) and adding the package again to regenerate the package hash.

Task sequence fails with “Failed to Download Policy” and code 0x80004005

This error code typically refers to a certificate validation issue.

The SMSTS.LOG file will show an entry with the following text:

```
failed to download policy
```

Check the certificates under the **Site Settings** node to if any certificates are blocked or missing. Open the certificates to ensure that the certificates are installed into the certificate store. If not, install the certificates.

Task sequence fails because the package is not downloading

In WinPE, the default option of “Download content locally when needed by running task sequence” will not work. When in WinPE, the task sequence engine will ignore (and fail) all actions that have packages set for this option.

Set all packages needed for use in WinPE to “Access content directly from a distribution point when needed by the running task sequence.”

Task sequence does not run again even after clearing the PXE advertisement

You must set the advertisement to “Always rerun” so that any time you reset the PXE advertisement, the advertisement is applied to the computer regardless of whether it ran the task sequence before.

Task sequences fail or act incorrectly after an upgrade

When upgrading from a previous version of this product, existing task sequences using these custom actions are not automatically updated.

To function correctly, open each task sequence action that uses a custom action in an editor. Add a “.” to the description and remove it to enable the **Apply** button. Click **Apply** to refresh the properties of the custom action and save any new automatic data or formatting that is required to function with the new version.

Files and logs are not being returned from the client

A number of issues can prevent the task sequence from returning files or logs from the client.

Among the possible issues that might prevent the task sequence from returning files or logs from the client are:

- Failure of the client-side script prior to the file copy, which is usually evident in the log file.

  Repeat the task and press **F8** during the task to get to a command prompt, if you selected the check box for **Enable command support** on the **boot image properties** > **Windows PE** page.

  Then open the SMSTS.LOG file. The location varies. In WinPE via PXE, the location is at X:\Windows\Temp\Smstslog\smsts.log.
- Malformed XML in the IBM Deployment Packconfiguration file.
- The command being executed actually has an error but exits with code 0.

This can occur when a severe error is encountered in the script while the script is set to ignore errors and use programmatic error handling. Then the error handling did not catch the same error.

Report such issues to the IBM support site, as described in Appendix D, "Getting help and technical assistance," on page 93.

- The task sequence cannot access the share or mapped drive that is the target drive for copying the files or logs.

Logs are being returned but not output files

A number of issues can prevent the task sequence from returning output files while allowing the task sequence to return log files.

Among the possible issues that might prevent the task sequence from returning output files from the client are:

- No return file parameters are specified in the configuration XML.
- Return file parameters in the configuration XML are incorrect.
- An error is occurring with the operation of the utility that generates the output file.
- A null variable is causing an error in the file name of the file to be returned.

Task step execution does not automatically change after a change to the configuration XML file

If you change the configuration XML, previously existing task steps do not automatically change unless you edit them.

To fix the existing task steps, open the task sequence editor and make a minor edit to each custom action step in the sequence. You can simply add a "." to the description and then delete it to enable the Apply button. Click **Apply**. The task sequence steps are now saved with the automatically updated information from the new XML file.

Task sequence fails at "Apply Operating System" with "Failed to make volume X:\ bootable"

Several problems can cause this error.

This issue is indicated by log content similar to the following text:

```
MakeVolumeBootable( pszVolume ),
HRESULT=80004005
(e:\nts_sms_fre\sms\client\osdeployment\applyos\installcommon.cpp,759)

Failed to make volume E:\ bootable.
Please ensure that you have set an active partition on the boot
disk before installing the operating system.

Unspecified error (Error: 80004005; Source: Windows)

ConfigureBootVolume(targetVolume),
HRESULT=80004005
(e:\nts_sms_fre\sms\client\osdeployment\applyos\applyos.cpp,326)

Process completed with exit code 2147500037
```

This issue can be related to two different scenarios:

- If you are using a **Format & Partition** action in your task sequence to partition the hard drives, make sure that you select the check box for **Make this the boot partition** on one of the partitions.

  If you do not make a drive bootable and the computer has only the single drive, the task sequence engine automatically makes one of the partitions the boot partition. But if there are multiple drives, the task sequence engine cannot determine which drive should be bootable, and you see this error.
- If you upgraded from the Configuration Manager RTM to SP1, you might have a problem if both hard drives are completely raw. If you have never partitioned the drives, a known bug in Windows PE prevents Windows PE from determining the drive where it was booted, and you see this error.

  This situation is likely on a server with a RAID controller where you have just formed two or more RAID sets. The new RAID sets are completely raw because they have never existed before.

  The only workaround to the problem of multiple raw drives is to manually boot into Windows PE and run "diskpart" to partition at least one of the drives. Then run the task sequence again. The task sequence should work.

  The known problem with Windows PE is fixed in Windows Vista SP1 and hence in the Windows PE that is derived from Vista SP1.

Install Configuration Manager 2007 SP1

Configuration Manager 2007 SP1 includes the SP1 version of the Windows Automated Installation Kit (WAIK). Download and install Configuration Manager SP1 to get the new version.

Upgrading to Configuration Manager 2007 SP1 automatically updates your default boot images, but does not automatically upgrade the IBM boot images.

Upgrade the IBM boot images by rerunning the IBM Deployment Pack installer and selecting “Modify”. You must also update your distribution points so that the new images are used. You should also update the distribution points for the default boot images as well.

The product installer detects the version of WinPE that is currently in use by the default boot images. If the default boot images are not Vista SP1, the product cannot install.

How to tell if your boot images are upgraded to Vista SP1

Boot image properties contain an identifier for “OS Version.”

Perform this procedure to see the version of WinPE in your boot images:

1. Click **Computer ManagementOperating System DeploymentBoot ImagesIBM Deployment**.
2. Right-click the boot image and select **Properties**.
3. Click **Images**.
4. Check the OS Version property for a value of 6.0.6001.18000 or greater.

What to do if your boot images are not upgraded to Vista SP1

You can manually recreate your boot images using the Windows AIK and following the steps listed in Technet: How to Add a Boot Image to Configuration Manager.

If your Configuration Manager processes permit, you might find it easier to remove the old boot image packages using the Admin Console, delete the files in the `OSD\boot` directories, and rerun the SP1 upgrade installation.

How to tell if WAIK was upgraded to Vista SP1

1. Click **Start** > **Run**; then run the `Regedit` command.
2. Navigate to **HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\ ComponentStudio**.
3. There should be a single key under this key, which is named with the number of the Windows AIK version.

   Note: Only one version of Windows AIK can be installed. However, an uninstall operation might have failed to remove the registry key.

   In such a case, the registry key with the highest version number should be the correct version number.

What to do if Windows AIK was not upgraded to Vista SP1

Configuration Manager is supposed to automatically upgrade the Windows AIK version during an upgrade to Configuration Manager SP1. If that did not occur, try manually uninstalling Windows AIK and rerunning the Configuration Manager SP1 upgrade.

To download Windows AIK, see the Microsoft Download Center: AIK page.

System environment variables are not carried over to the next action in the task sequence

When a task sequence runs, commands run in a command shell. When the task ends, so does the command shell environment, which causes the loss of any system variables that are defined in the task.

To pass variables between tasks, set the variables as "Task Sequence variables," "Collection variables," or "Machine variables."

Troubleshooting general issues

You can troubleshoot some general installation issues.

When viewing logs with the Trace32 utility, the logs appear to be cut off

The logs do not show everything.

Try viewing the logs using WordPad because notepad does not show tab characters correctly.

For some reason, Trace32 does not always display the entire log file. The log might appear to have lost large slices of time, when in fact the entries are in the log.

Testing WinPE-based sequence actions

Always configure advertisements with the following settings when using PXE:

Table 1. PXE-required settings for advertisements

General page	**Make this task sequence available to boot media and PXE**. Otherwise, the network client cannot receive the intended task from the Configuration Manager server.
General page	Browse to select the collection of the target server.
Schedule page	**Mandatory assignments:** "As soon as possible"
Schedule page	**Program rerun behavior:** "Never rerun advertised program (default)"
Distribution Points page	**Access content directly from a distribution point when needed by the running task sequence**. In WinPE, the default option of "Download content locally when needed by running task sequence" does not work. WinPE cause the task sequence engine to ignore all actions that have packages set for this option.
Interaction page	**Show task sequence progress**

Always configure WinPE boot images with the following setting:

Table 2. WinPE boot image-required settings

Windows PE	**Enable command support (testing only)**.

Restarting a failed PXE-based task sequence

You can troubleshoot a failed PXE-based task sequence.

1. Right-click on the computer you are testing, select **Clear last PXE advertisement**, select the advertisement, and click **OK**.
2. If you updated anything in the package used by the client, find the package under **Software Distribution**, right-click the package, then select **Update Distribution Points**.
3. If you updated any DLL associated with task sequences, go back through the task sequences and edit each step that uses that DLL. Task steps do not change automatically, but require that you edit them to pick up the updated DLL. All that is required is a keystroke in the Description box so that you can click **Apply**.
4. If you updated anything in the WinPE Boot Image, find the boot image under **Operating System Deployment** > **Boot Images**, right-click the image, then select **Update Distribution Points**.

Appendix C. How to run Sysprep

The System Preparation Tool (Sysprep) generalizes the operating system image on the reference computer, to remove machine-identifying data and enable the image to run on other bare metal machines.

Running Sysprep on Windows Server 2003

You can run Sysprep on a reference computer running Windows Server 2003.

About this task

The System Preparation Tool (Sysprep) utility is located on the Windows product CD in the `/Support/Tools/Deploy.cab` file. Extract this CAB file to get `sysprep.exe`, `setupcl.exe`, `setupmgr.exe`, `deploy.chm`, `ref.chm`, and other programs and help files.

Procedure

1. Make sure the operating system and applications are installed and configured on the reference computer, in the way that they should exist in the final installation.
2. Log on to the computer as a local administrator and make sure that the local administrator's password is blank.
3. Extract `Deploy.cab` file (located in the `Support\Tools` folder on the Windows product CD) to the `%SYSTEMDRIVE%\Sysprep` folder, such as `C:\Sysprep`.
4. Create a `Sysprep.inf` file by issuing the `setupmgr.exe` command to start the Setup Manager dialog.

   The `Sysprep.inf` file is used to customize each computer and to specify the information for the prompts during setup. You can also create a `Sysprep.inf` file manually.

   The following page is displayed:

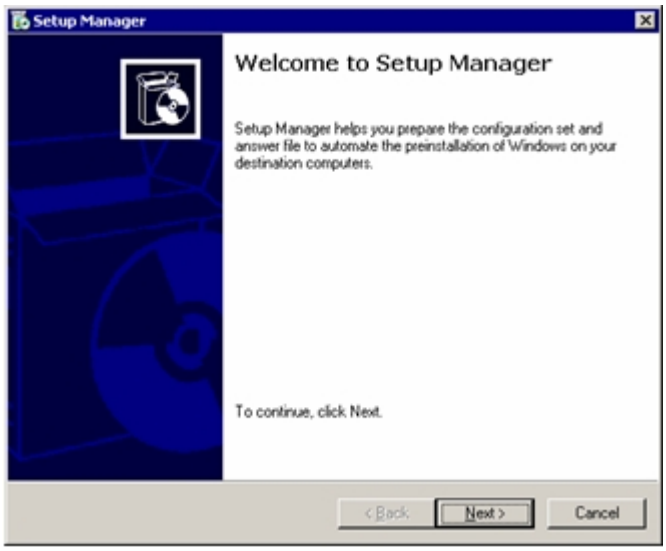

Figure 52. Setup Manager program dialog

5. Click **Next**.
   The following page is displayed:

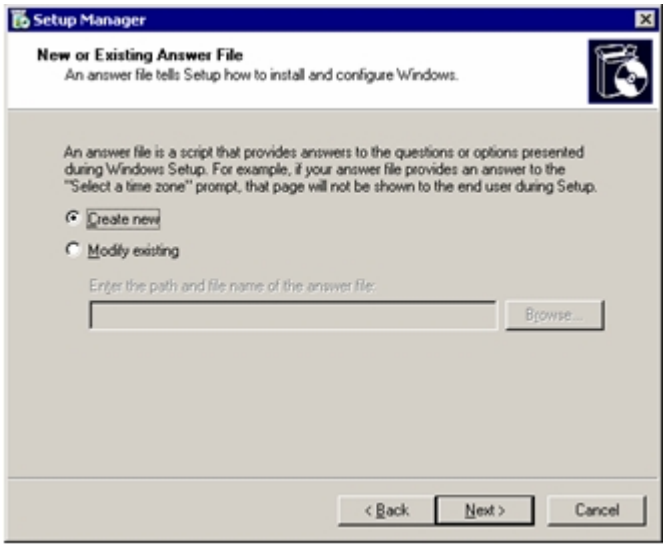

Figure 53. Setup Manager: Creating a new answer file

6. Click **Create new**; then click **Next**.
   The following page is displayed:

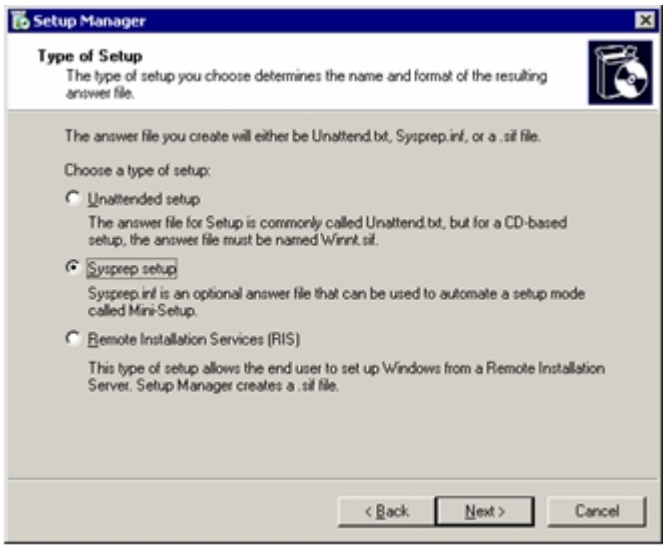

Figure 54. Setup Manager: Type of Setup

7. Click **Sysprep setup**; then click **Next**.
   The following page is displayed:

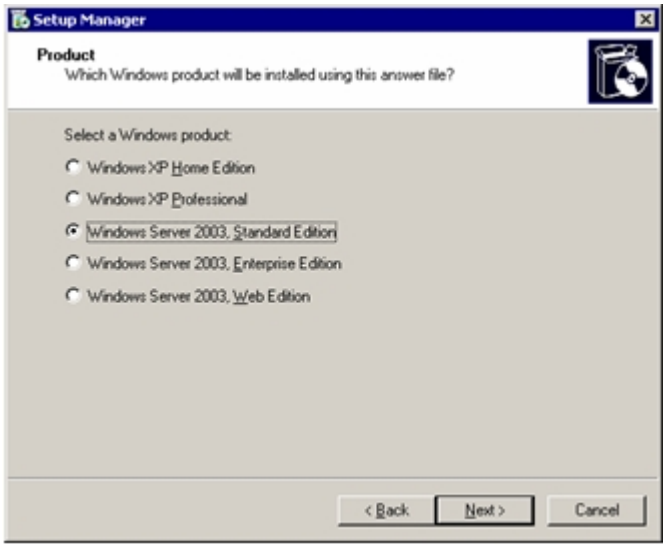

Figure 55. Setup Manager: Windows product

8. Click the Windows product version, such as Windows Server 2003 Standard Edition.
   The following page is displayed:

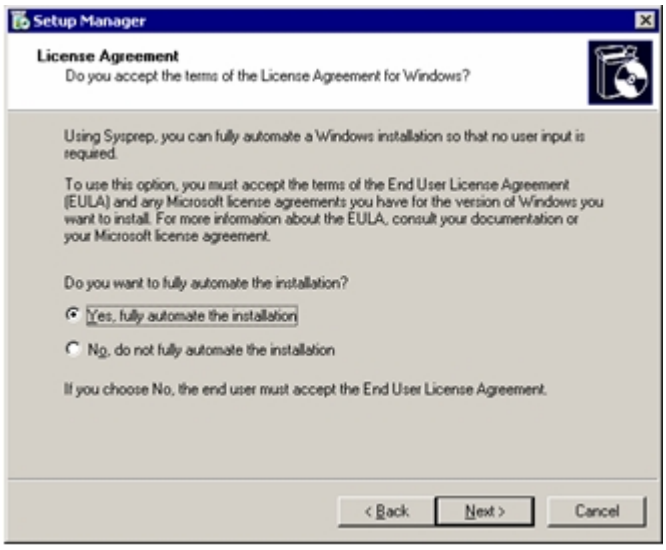

Figure 56. Setup Manager: License Agreement

9. Click **Yes, fully automate the installation**; then click **Next**.
   The following page is displayed:

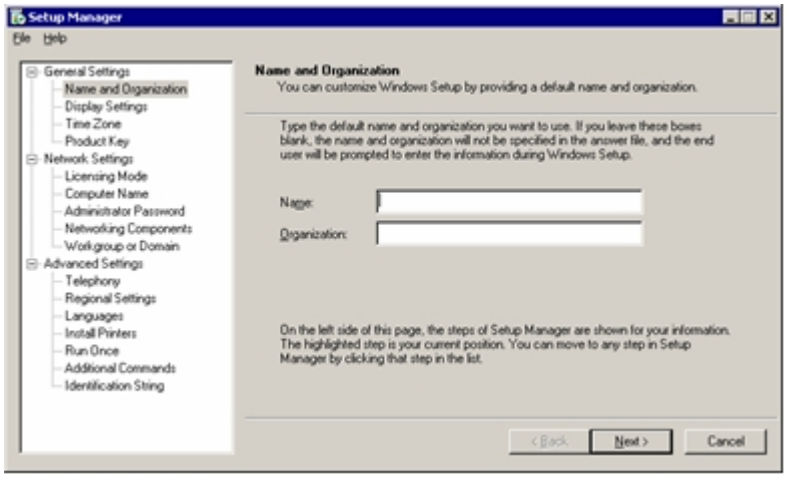

Figure 57. Setup Manager: Name and Organization

10. Enter information into the **Name** field and the **Organization** field; then click **Next**.
    The following page is displayed:

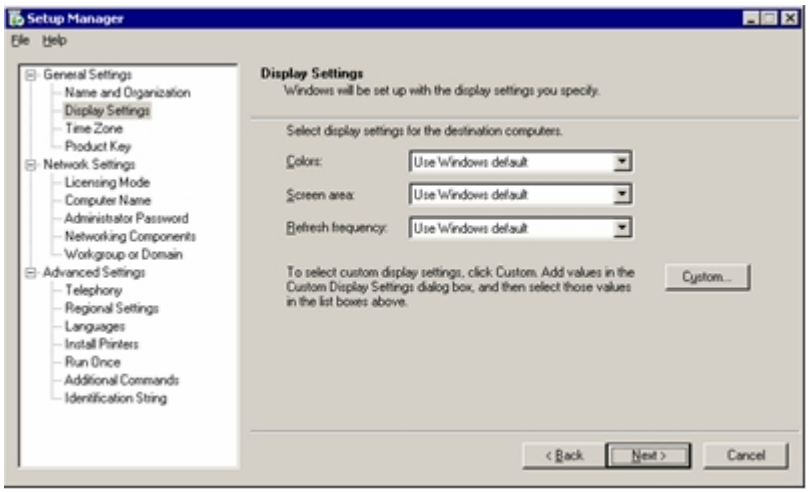

Figure 58. Setup Manager: Display Settings

11. Select display settings; then click **Next**.
12. Select a time zone; then click **Next**.
    The following page is displayed:

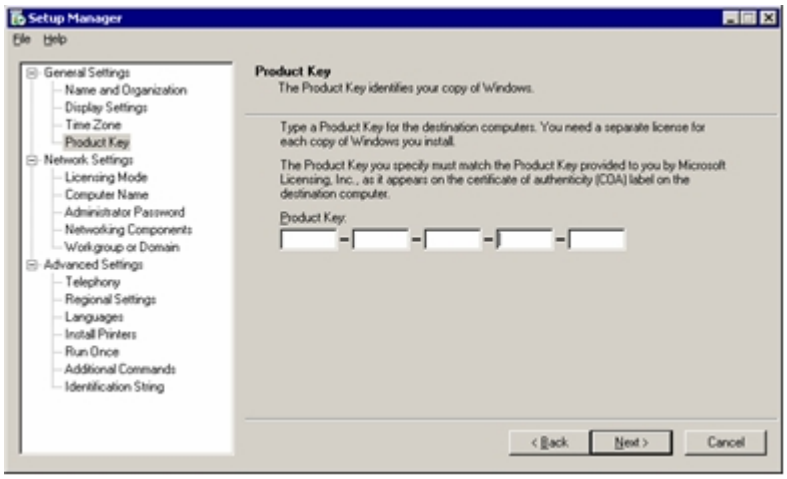

Figure 59. Setup Manager: Product Key

13. Enter the product key that matches the operating system that you installed; then click **Next**.
14. Click **Next** to accept the defaults for **Licensing Mode**.
15. Click **Next** to accept the defaults for **Computer Name**.
    The following page is displayed:

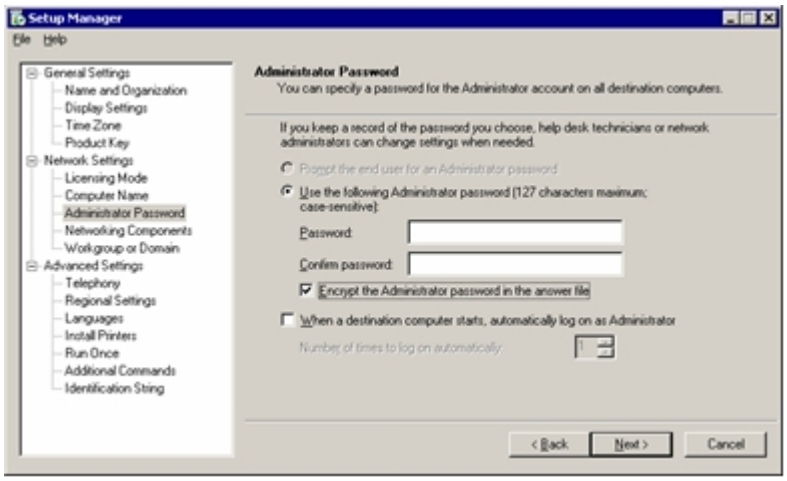

Figure 60. Setup Manager: Administrator Password

16. Keep the **Password** field and the **Confirm password** field blank. Select the checkbox to **Encrypt the Administrator password in the answer file**; then click **Next**.
17. Click **Next** to accept the defaults for **Networking Components**.
18. Click **Next** to accept the defaults for **Workgroup or Domain**.
19. Click **Next** to accept the defaults for **Telephony**.
20. Click **Next** to accept the defaults for **Regional Settings**.
21. Click **Next** to accept the defaults for **Languages**.
22. Click **Next** to accept the defaults for **Install Printers**.
23. Click **Next** to accept the defaults for **Run Once**.
24. Click **Next** to accept the defaults for **Additional Commands**.
25. Click **Next** to accept the defaults for **Identification String**.
26. Click **Next** to accept the defaults for **Run Once**.

    The following page is displayed:

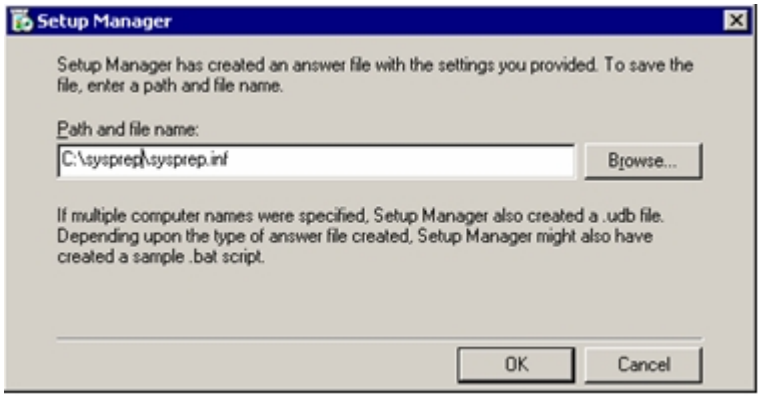

Figure 61. Setup Manager: Path and file name

27. Accept the default path; then click **OK** to save the `sysprep.inf` file.

    The Setup Manager program creates the `sysprep.inf` file in the folder.

28. Open a command window and change directories to the `C:\sysprep` directory; then run the **sysprep.exe** command.

    ```
    sysprep -reseal -nosidgen
    ```

    Make sure that both the `Sysprep.exe` file and the `Setupcl.exe` file exist in the `%SYSTEMDRIVE%\Sysprep` folder on the local hard disk. To use the answer file that you created, the `Sysprep.inf` file must also be in the folder.

29. If the computer is ACPI-compliant, the computer shuts down by itself. If not, shut down the computer when a dialog box is displayed that states that it is safe to shut down the computer.

    Now the system is ready for capturing.

30. Build the capture task sequence and advertise the task sequence from the Configuration Manager server, as described in Capturing operating system images.

31. Start the system. During the system boot, press **F1** to enable a system boot from the network.

    After finishing the capture task, the system restarts. The local `Sysprep` folder containing `Sysprep.exe` and `Sysprep.inf` in `%SYSTEMDRIVE%` is deleted.

Running Sysprep on Windows Server 2008

You can run the System Preparation Tool (Sysprep) on a reference computer running Windows Server 2008.

Procedure

1. Build the capture task sequence and advertise the task sequence from the Configuration Manager server, as described in Capturing operating system images.
2. Make sure the operating system and applications are installed and configured on the reference computer, in the way that they should exist in the final installation.
3. Log on to the computer as an administrator.
4. Open a command window and change directories to the `C:\windows\system32\sysprep` directory; then run the **sysprep.exe** command.

    ```
    sysprep
    ```

    The following page is displayed:

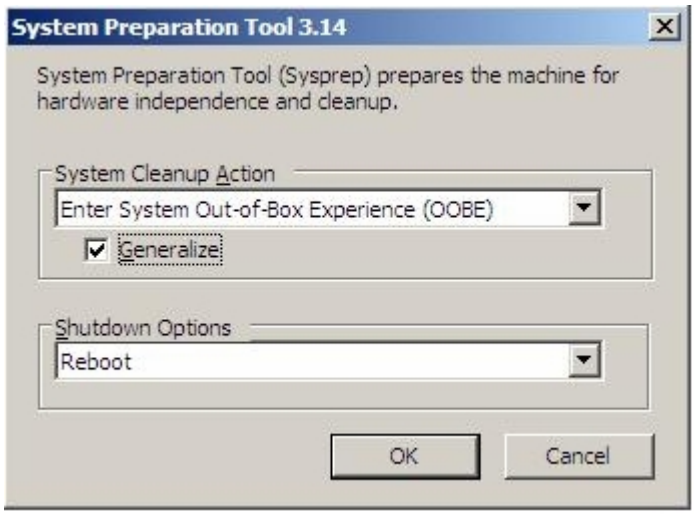

Figure 62. System Preparation Tool (Sysprep)

5. Click **OK** to run the System Preparation Tool and reboot the computer.
   Now the system is ready for capturing.
6. Start the system. During the system boot, press **F1** to enable a system boot from the network.
   After finishing the capture task, the system restarts.

Appendix D. Getting help and technical assistance

If you need help, service, or technical assistance or just want more information about IBM products, you will find a wide variety of sources available from IBM to assist you.

About this task

This information describes where to go for additional information about IBM and IBM products, what to do if you experience a problem with your system, and whom to call for service, if it is necessary.

Before you call

Before you call, make sure that you tried to solve the problem yourself.

About this task

Make sure that you have taken these steps to try to solve the problem:

- Check all cables to make sure that they are connected.
- Check the power switches to make sure that the system and any optional devices are turned on.
- Use the troubleshooting information in your system documentation, and use the diagnostic tools that come with your system. Information about diagnostic tools is in the *Problem Determination and Service Guide* on the *IBM Documentation CD* that comes with your system.
- Go to the Support for IBM Systems and servers to check for technical information, hints, tips, and new device drivers or to submit a request for information.

You can solve many problems without outside assistance by following the troubleshooting procedures that IBM provides in the online help or in the documentation that is provided with your IBM product. The documentation that comes with IBM systems also describes the diagnostic tests that you can perform. Most systems, operating systems, and programs come with documentation that contains troubleshooting procedures and explanations of error messages and error codes. If you suspect a software problem, see the documentation for the operating system or program.

Using the documentation

Information about your IBM system and preinstalled software, if any, or optional device is available in the documentation that comes with the product. That documentation can include printed documents, online documents, readme files, and help files.

About this task

See the troubleshooting information in your system documentation for instructions for using the diagnostic programs. The troubleshooting information or the diagnostic programs might tell you that you need additional or updated device drivers or other software. IBM maintains pages on the World Wide Web where you can get the latest technical information and download device drivers and updates.

To access these pages, go to Support for IBM Systems and servers and follow the instructions. Also, some documents are available through the IBM Publications Center.

Getting help and information from the World Wide Web

On the World Wide Web, the IBM Web site has up-to-date information about IBM systems, optional devices, services, and support, including IBM System x and xSeries information, IBM BladeCenter information, and IBM IntelliStation information.

About this task

You can find service information for IBM systems and optional devices at Support for IBM Systems and servers.

Software service and support

Through IBM Support Line, you can get telephone assistance, for a fee, with usage, configuration, and software problems with System x and xSeries® servers, BladeCenter products, IntelliStation workstations, and appliances.

About this task

For information about which products are supported by Support Line in your country or region, see the Supported Product List.

For more information about Support Line and other IBM services, see IT Services, or see Directory of worldwide contacts for support telephone numbers. In the U.S. and Canada, call 1-800-IBM-SERV (1-800-426-7378).

Hardware service and support

You can receive hardware service through your IBM reseller or IBM Services.

About this task

To locate a reseller authorized by IBM to provide warranty service, go to IBM PartnerWorld and click **Find a Business Partner** on the right side of the page. For IBM support telephone numbers, see Directory of worldwide contacts.

In the U.S. and Canada, call 1-800-IBM-SERV (1-800-426-7378).

In the U.S. and Canada, hardware service and support is available 24 hours a day, 7 days a week. In the U.K., these services are available Monday through Friday, from 9 a.m. to 6 p.m.

IBM Taiwan product service

You can contact IBM Taiwan product service.

About this task

Contact IBM Taiwan product service contact information at:

- IBM Taiwan Corporation
- 3F, No 7, Song Ren Rd.
- Taipei, Taiwan
- Telephone: 0800-016-888

Appendix E. Import IBM WinPE SEP package into SCCM

Prerequisites

- Microsoft System Center Configuration Manager 2007 installed and in normal status
- IBM Deployment Pack for Microsoft System Center Configuration Manager 2007, v1.4 installed and working normally
- If SCCM Server is running on Windows 2008, ensure that the hotfix 979492 is installed on the SCCM server. Refer to http://support.microsoft.com/kb/979492 for more information.

Download SEP files from IBM website

About this task

Before using SEP on your Configuration Manager server, you can download SEP packages according the machine type from the IBM Support Web site at http://www.ibm.com/systems/support/supportsite.wss/docdisplay?lndocid=TOOL-SEP&brandind=5000016.

Note: we only need the SEP package for WinPE, both x86 and x64.

Procedure

- The WinPE SEP package is like the following formats: (x.xx is the SEP build number)
  - ibm_utl_sep_x.xx_winpe_i386.zip
  - ibm_utl_sep_x.xx_winpe_x86-64.zip
- To import the SEP, you need the two .zip files and two .xml files as in the figure.

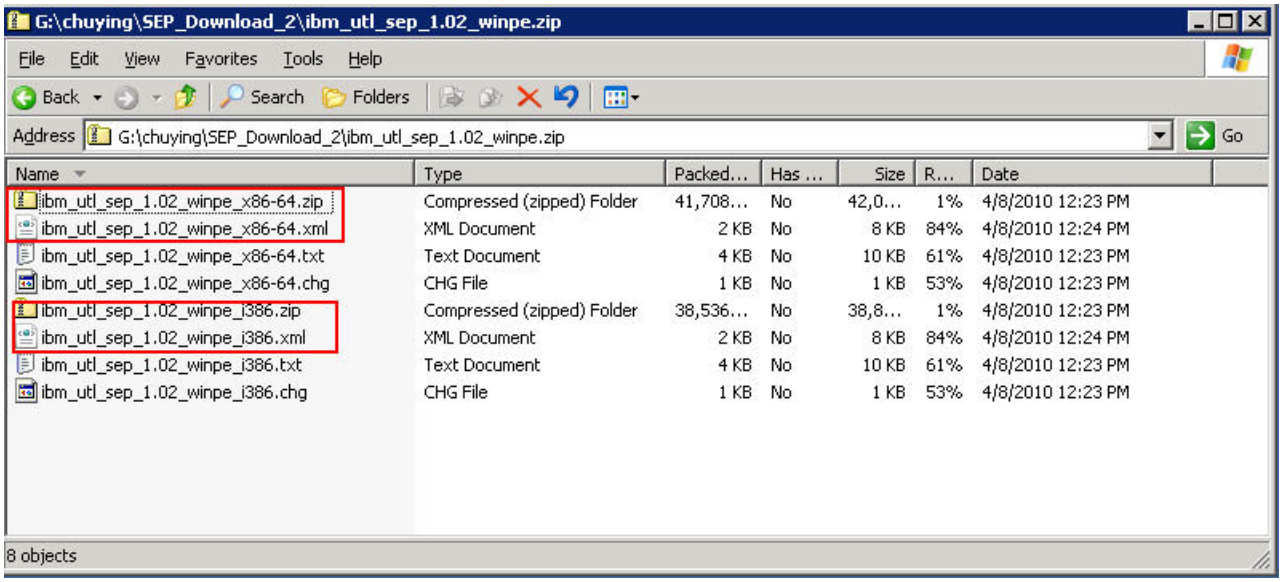

Figure 63. SEP download file selections

Extract SEP zip files on your server

About this task

Extract the SEP package to local folder. The folder structure will be like the following:

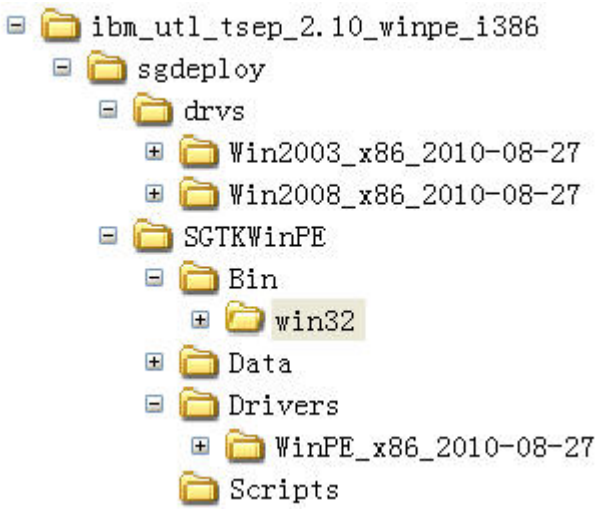

Figure 64. SEP package folder structure

Here the SEP root folder is \ibm_utl_tsep_2.10_winpe_i386\, called SEP_x86_root_folder. The ibm_utl_step_x.xx_winpe_x86-64.zip package is called SEP_x64_root_folder.

For the x86 WinPE SEP package, there are one w2k3 driver folder, one w2k8 driver folder, one tool (bin) folder and one WinPE driver folder. They are marked as follows:

- W2k3_x86_driver_folder (under SEP_X86_root_folder\sgdeploy\drvs);
- W2k8_x86_driver_folder(under SEP_X86_root_folder\sgdeploy\drvs);
- X86_tool_folder (ie: SEP_X86_root_folder\sgdeploy\SGTKWinPE\Bin)
- WinPE_x86_driver_folder (under SEP_X86_root_folder\sgdeploy\SGTKWinPE\Drivers)

For the x64 WinPE SEP package:

- W2k3_x64_driver_folder (under SEP_X64_root_folder\sgdeploy\drvs);
- W2k8_x64_driver_folder (under SEP_X64_root_folder\sgdeploy\drvs);
- X64_tool_folder (ie: SEP_X64_root_folder\sgdeploy\SGTKWinPE\Bin)
- WinPE_x64_driver_folder (under SEP_X64_root_folder\sgdeploy\SGTKWinPE\Drivers)

Import x86 tools from SEP package into Configuration Manager

About this task

The IBMOSDTool can be used to import drivers into SCCM, this tool can be found under the IBM Deployment Pack, v1.4 installation path (e.g. C:\Program Files\IBM\IBM Deployment Pack 1.4\Tool).

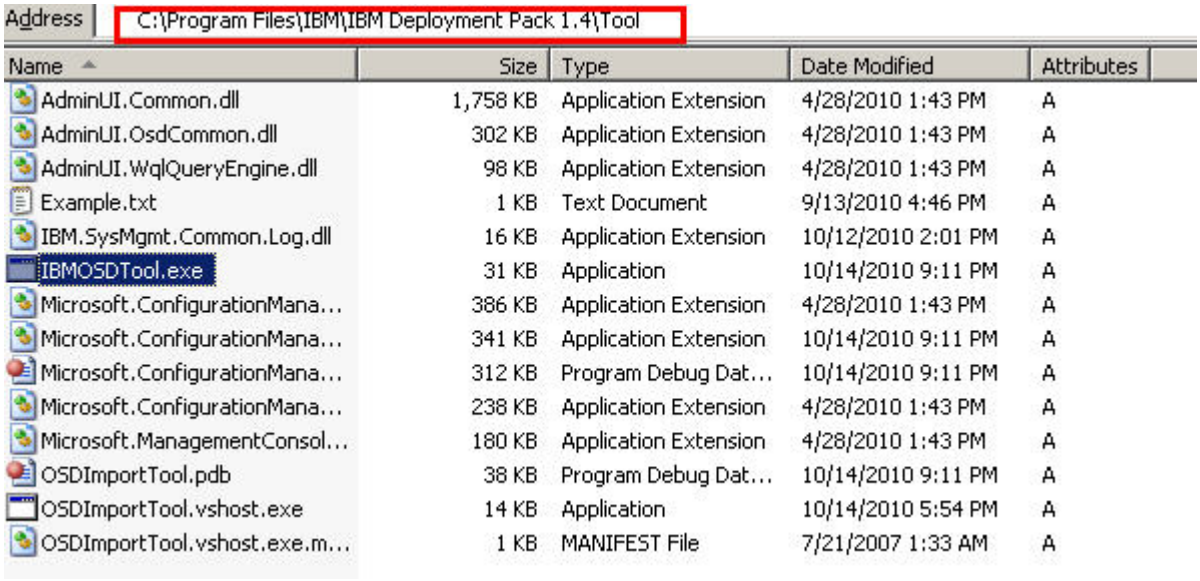

Figure 65. IBMOSDTool

Note: Run the tool from the command console.

Note: Close the SCCM Administrator Console before running the tool.

Procedure

Import the x86 tools into SCCM with the following command:`IBMOSDTool.exe tool -l SEP_x86_root_folder -a x86 -i sep_id`

Note: x64 tools are not required here because the x64 boot image is not supported in IBM Deployment Pack, v1.4.

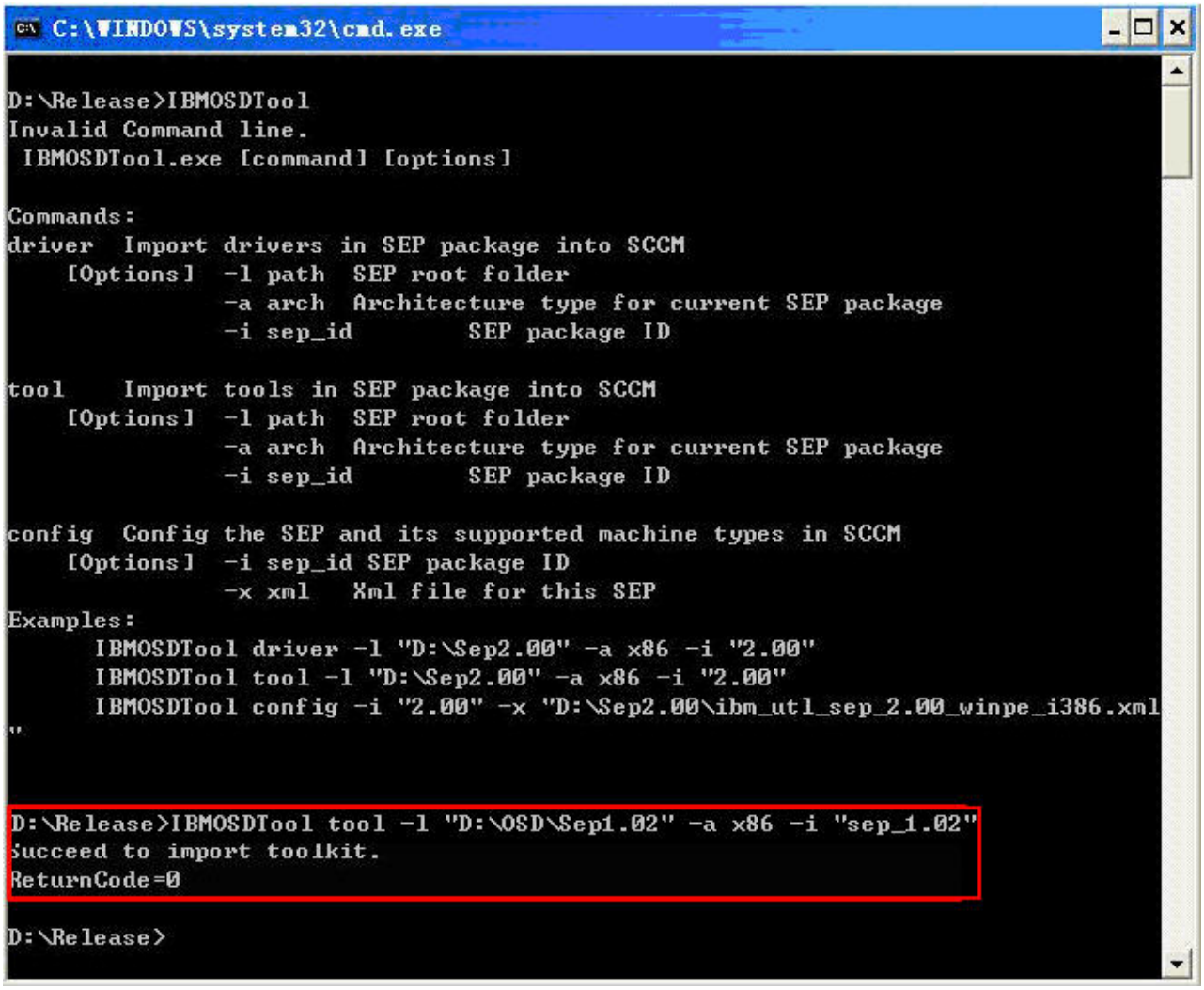

Figure 66. Command to import x86 tools into SCCM

What to do next

To check whether the x86 tools import was successful:

- Check to ensure the Return Code is 0 as in the above figure.
- After importing the x86 tools, you can create a new Bare Metal Deployment task sequence or edit an existing one. Click on one of the IBM-specific steps (such as Get/Set step). An option for the SEP package will appear at the Package drop-down list in the step.

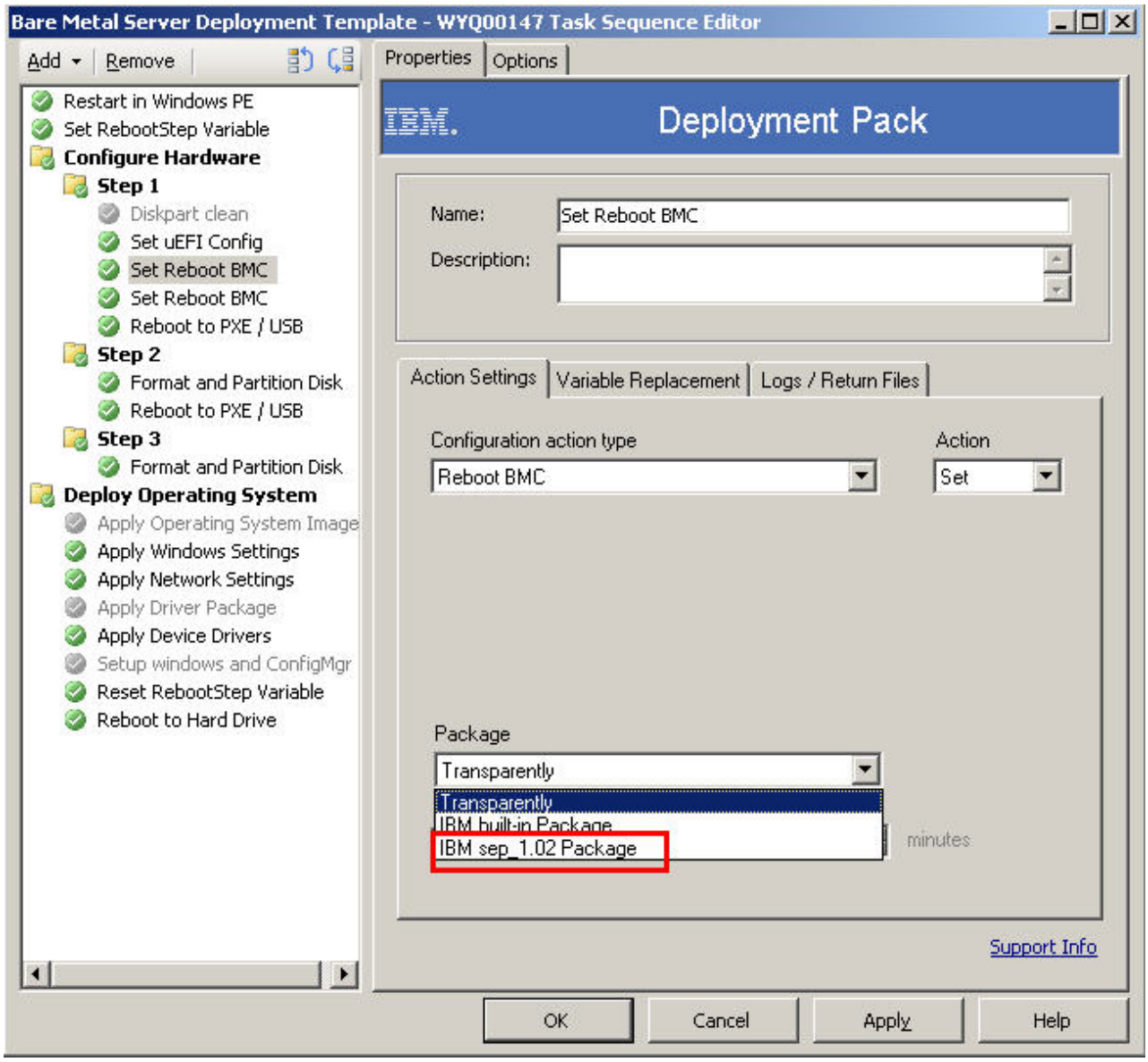

Figure 67. Confirming x86 tools import was successful

Import x86 drivers from SEP package into Configuration Manager

Procedure

Import the x86 drivers into SCCM with the following command:`IBMOSDTool.exe driver -l SEP_x86_root_folder -a x86 -i sep_id`

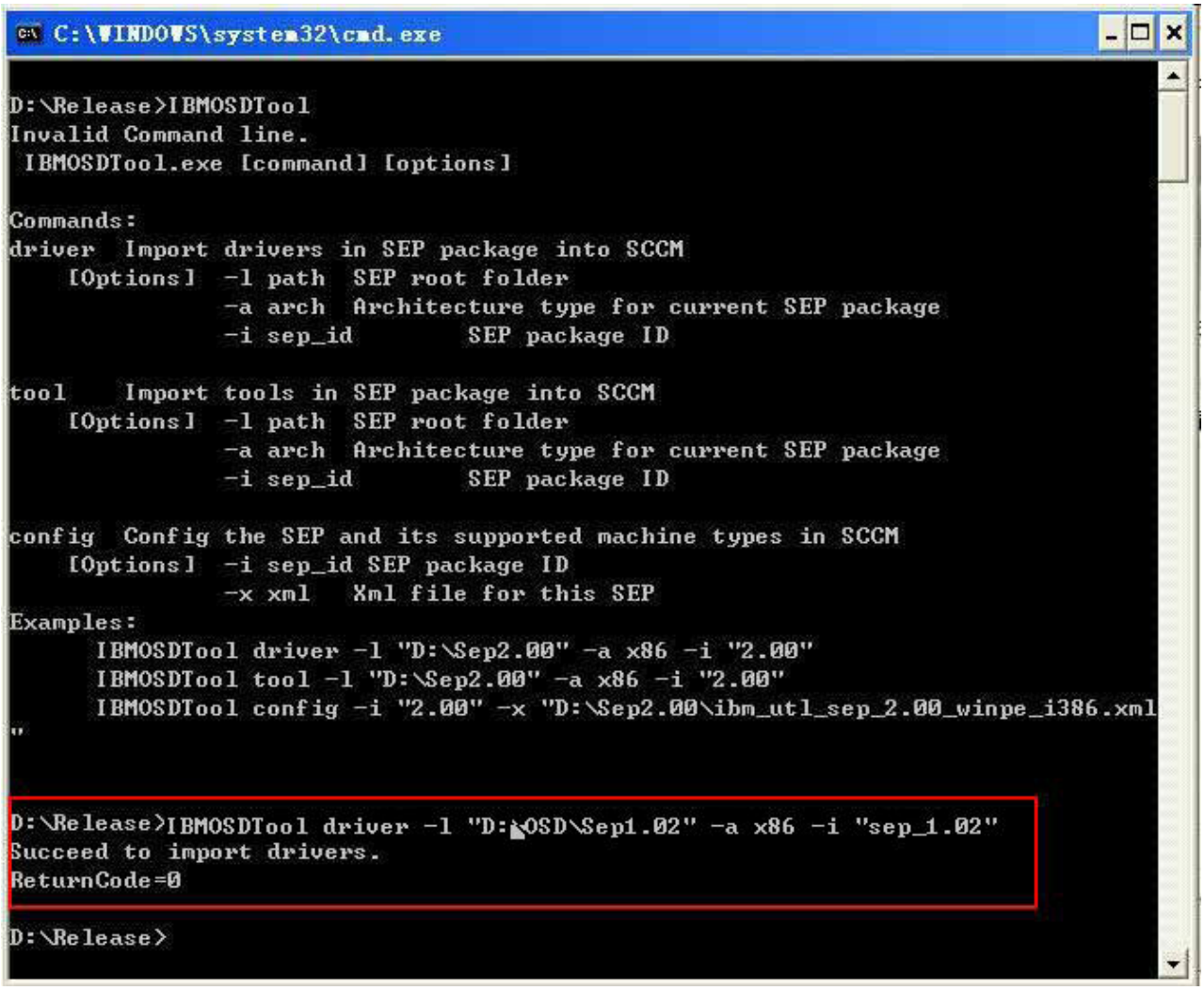

Figure 68. Command to import x86 drivers into SCCM

What to do next

To check whether the x86 drivers import was successful:

- Check to ensure the Return Code is 0 as in the above figure.
- After importing the x86 drivers, a folder named **sep_id** will be added into the SCCM under "Site Database\Computer Management\Operating System Deployment\Driver Packages\". There will be two folders under it named "IBM drivers for win2k3 x86" and "IBM drivers for win2k8 x86".

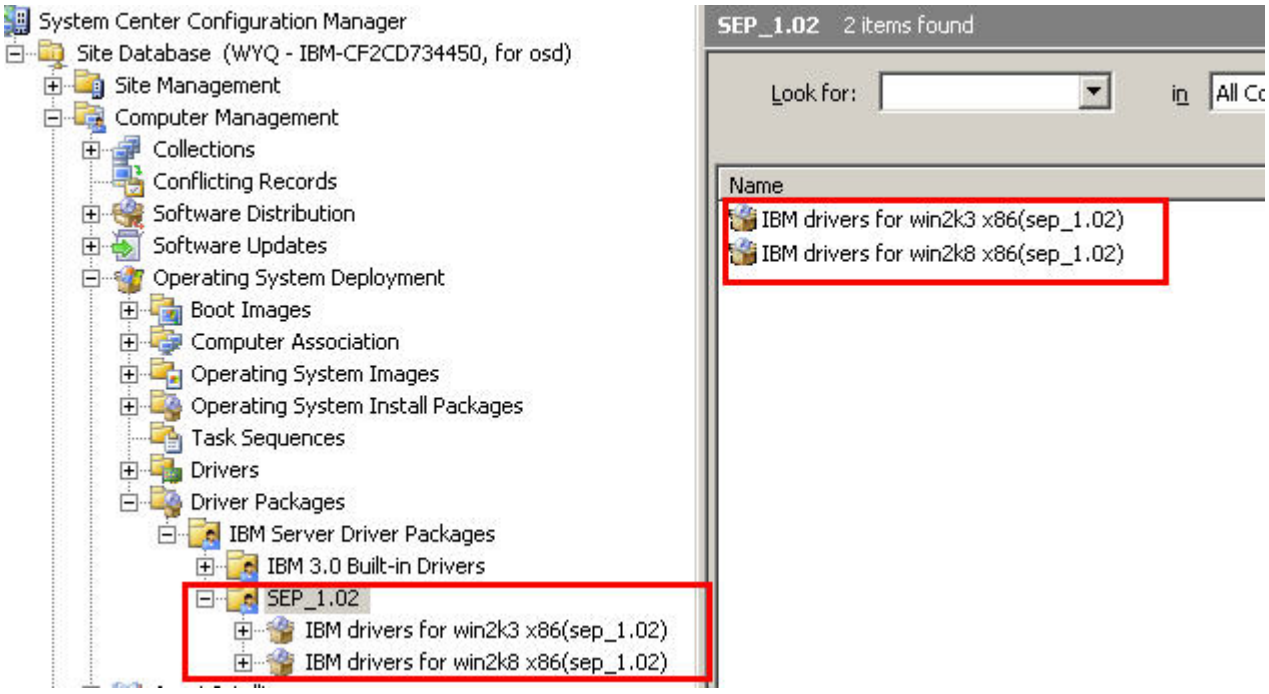

Figure 69. Confirming x86 drivers import was successful

Adding WinPE x86 drivers to boot image

Put your short description here; used for first paragraph and abstract.

About this task

After importing x86 drivers from SEP package into Configuration Manager, you need to add the WinPE x86 drivers to boot image.

Procedure

1. Open Configuration Manager console.
2. Click **Site Database -> Computer Management -> Operating System Deployment -> Drivers -> IBM Server Drivers**.
3. Select the one driver folder and choose the drivers which have 'IBM WINPE X86 Drivers' in the **Categories** column.

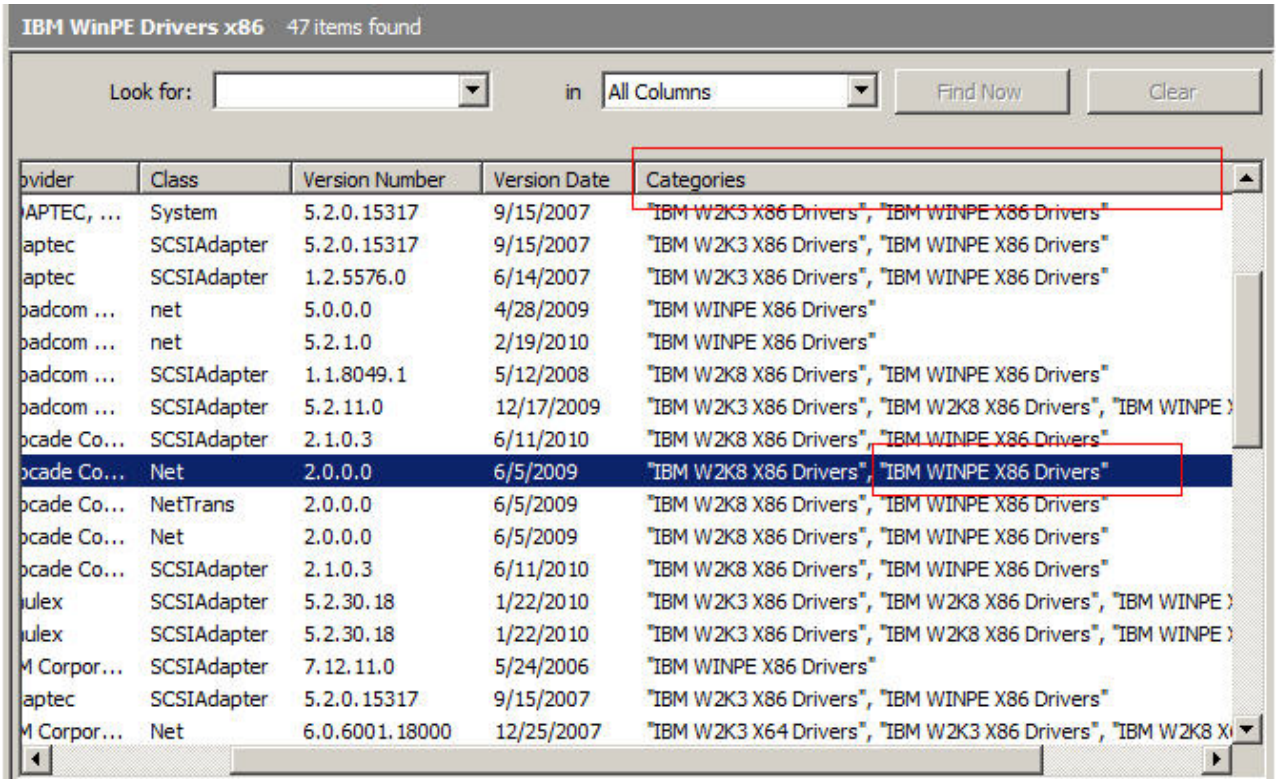

Figure 70. Adding drivers to boot image

4. Right-click the selected drivers and click **Add or Remove Drivers to Boot Image** to add the selected drivers into boot image.

Configure machine type list for x86 drivers and tools

About this task

After importing x86 drivers and tools, you need to configure the corresponding machine type list, which allows the Task Sequence to automatically select the appropriate drivers or tools according to different machine type.

Procedure

Set the machine type list of this SEP package with the following command:`IBMOSDTool.exe config –i sep_id –x x86_xml`

Note: X86_xml is the xml file included in the SEP package, named "ibm_utl_sep_x.xx_winpe_i386.xml"

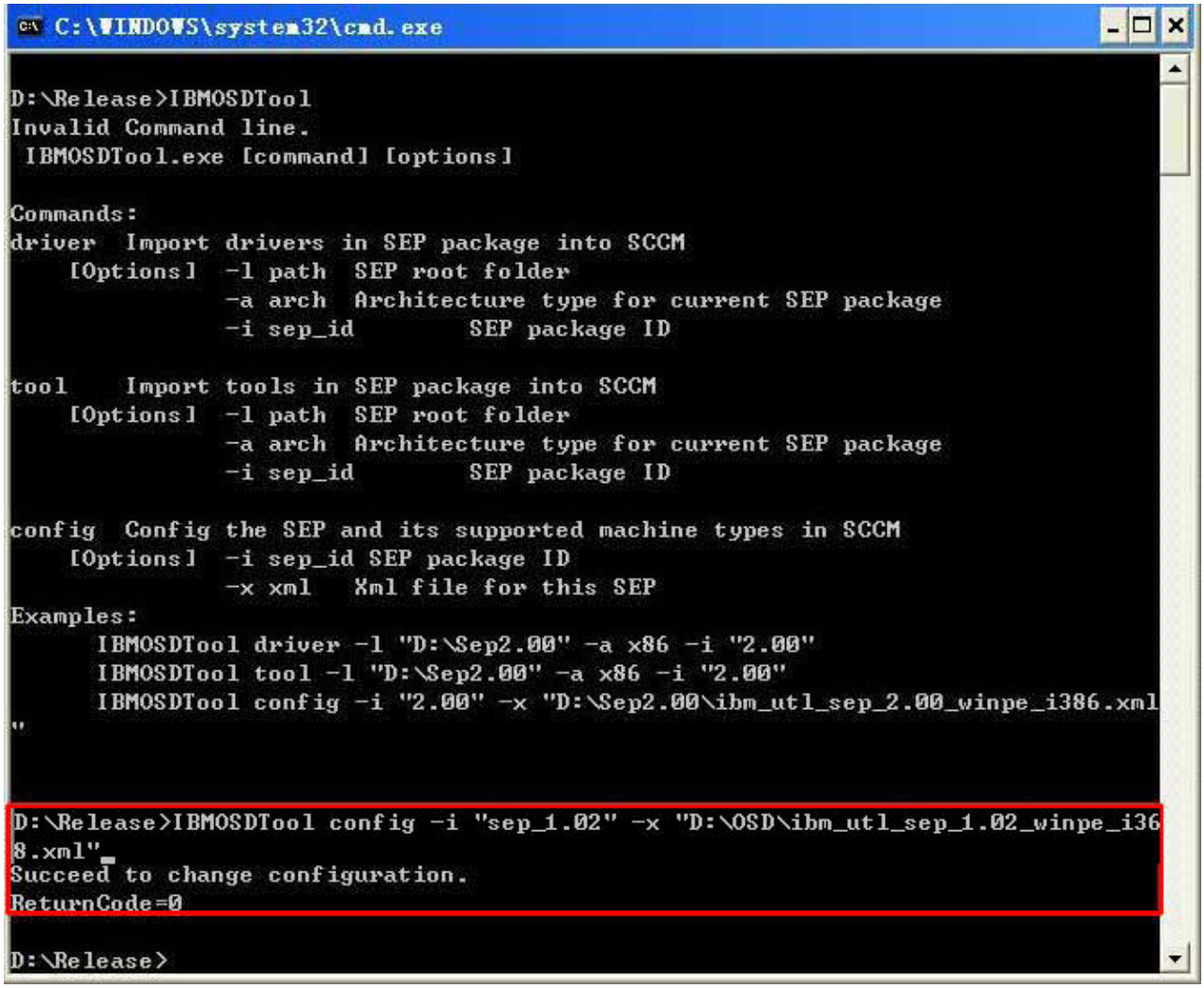

Figure 71. Command to set the machine type list of this SEP package

Import x64 drivers from SEP package into Configuration Manager

Procedure

Import the x64 drivers into SCCM with the following command:`IBMOSDTool.exe driver –l SEP_x64_root_folder–a x64 –i sep_id`

Note: IBM Deployment Pack, v1.4 does not support x64 WinPE boot image, so the WinPE x64 drivers are not required here.

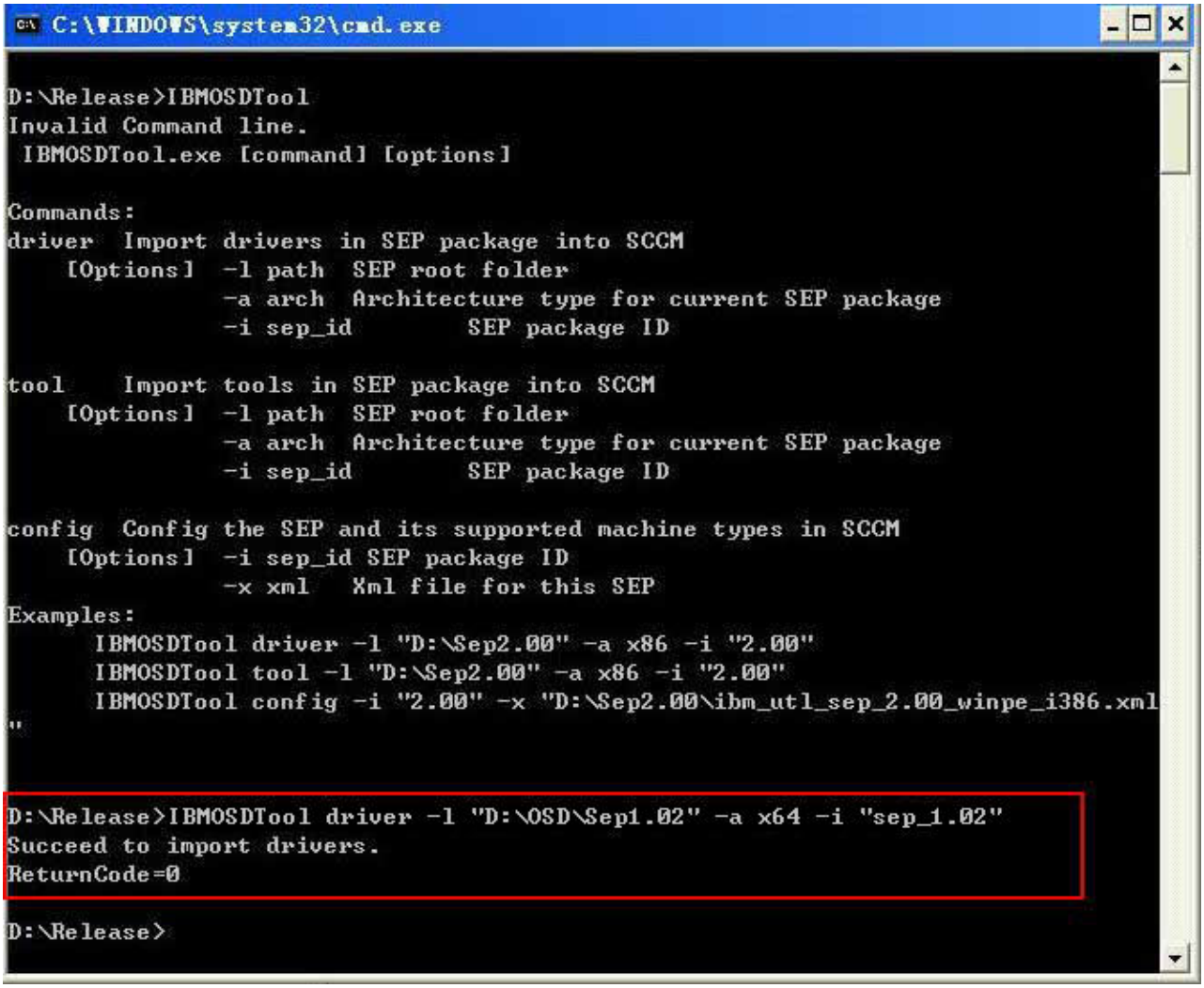

Figure 72. Command to import x64 drivers into SCCM

What to do next

To check whether the x64 drivers import was successful:

- Check to ensure the Return Code is 0 as in the above figure.
- After importing the x64 drivers, two folders named "IBM drivers for win2k3 x64(sep_1.02)" and "IBM drivers for win2k8 x64(sep_1.02)" will be added into the SCCM under "Site Database\Computer Management\Operating System Deployment\Driver Packages\SEP_1.02."

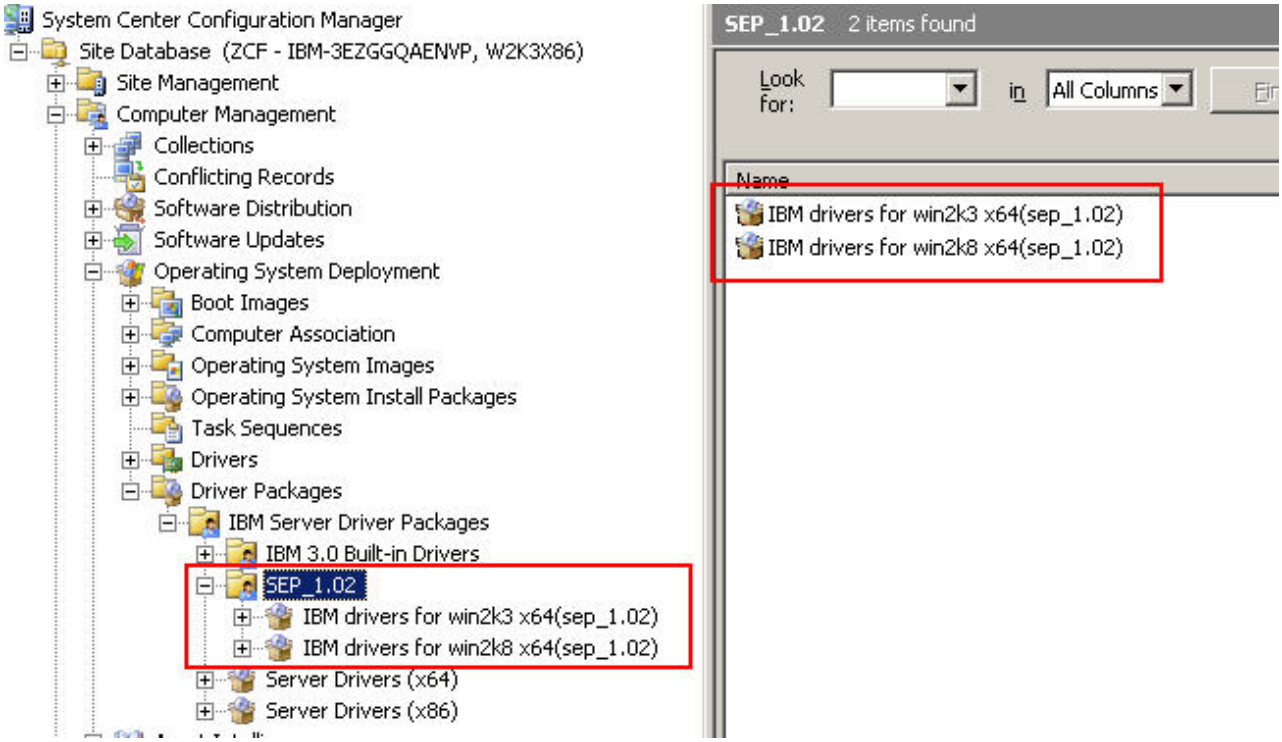

Figure 73. Confirming x64 drivers import was successful

Configure machine type list for x64 drivers and tools

Procedure

Set the machine type list of this SEP package with the following command:`IBMOSDTool.exe config –i sep_id –x x64_xml`

Note: X64_xml is the xml file included in the SEP package, named "ibm_utl_sep_x.xx_winpe_x86–64.xml"

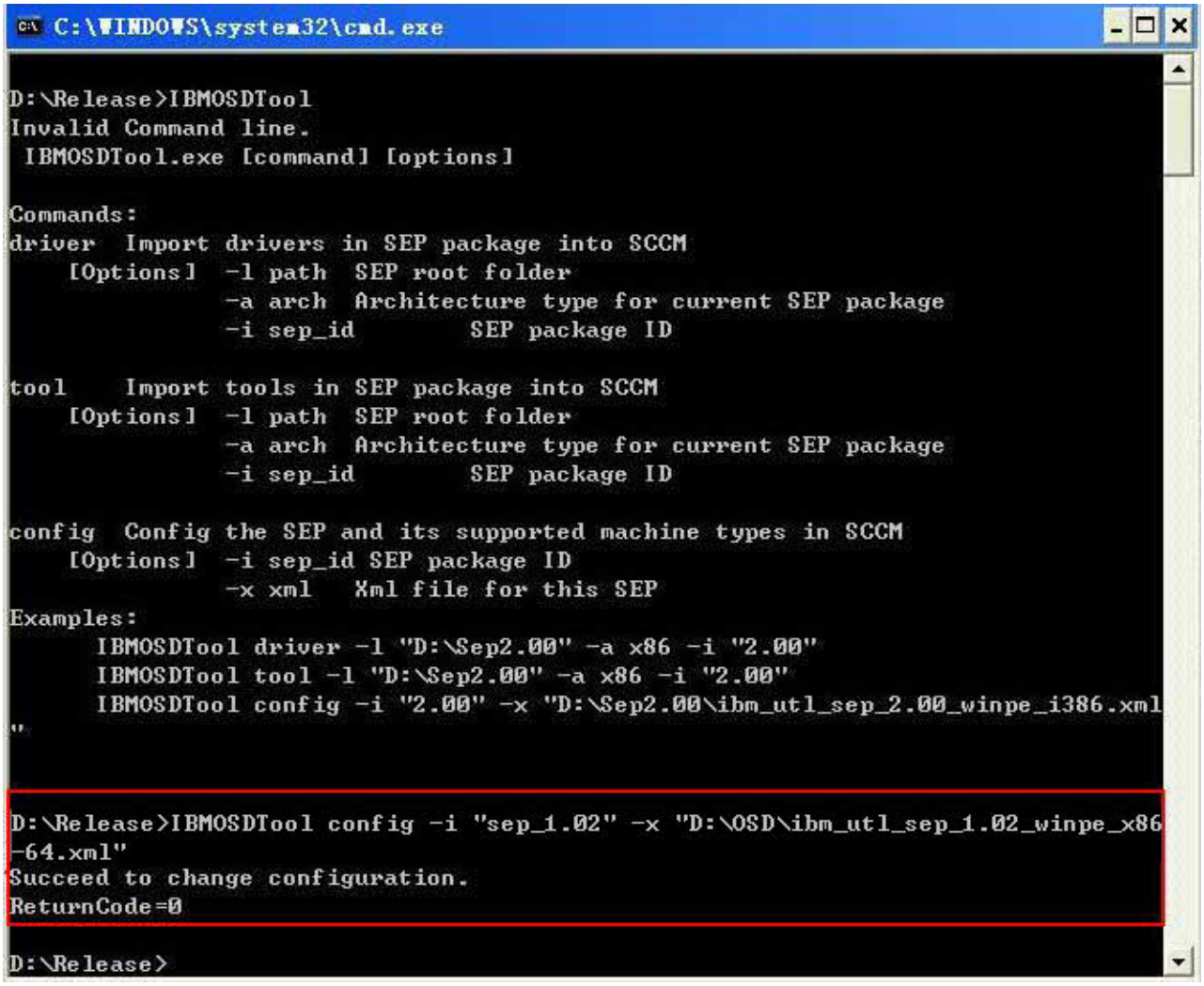

Figure 74. Command to set the machine type list of this SEP package

How to use the imported SEP package

Select toolkit packages in OS deployment (Transparent support)

For hardware configuration (such as RAID, ASU configuration), OSD provides a mechanism for selecting the correct built-in/SEP package according to the client machine type.

For OS drivers, you need to disable all other Operating Systems folders except the OS to be deployed before deploy the specific task sequence to client.

For example, if you want to deploy Windows 2003 32-bit operating system to the client, you should disable these folders in the task sequence editor: Win2k3x64, Win2k8x86 and Win2k8x64.

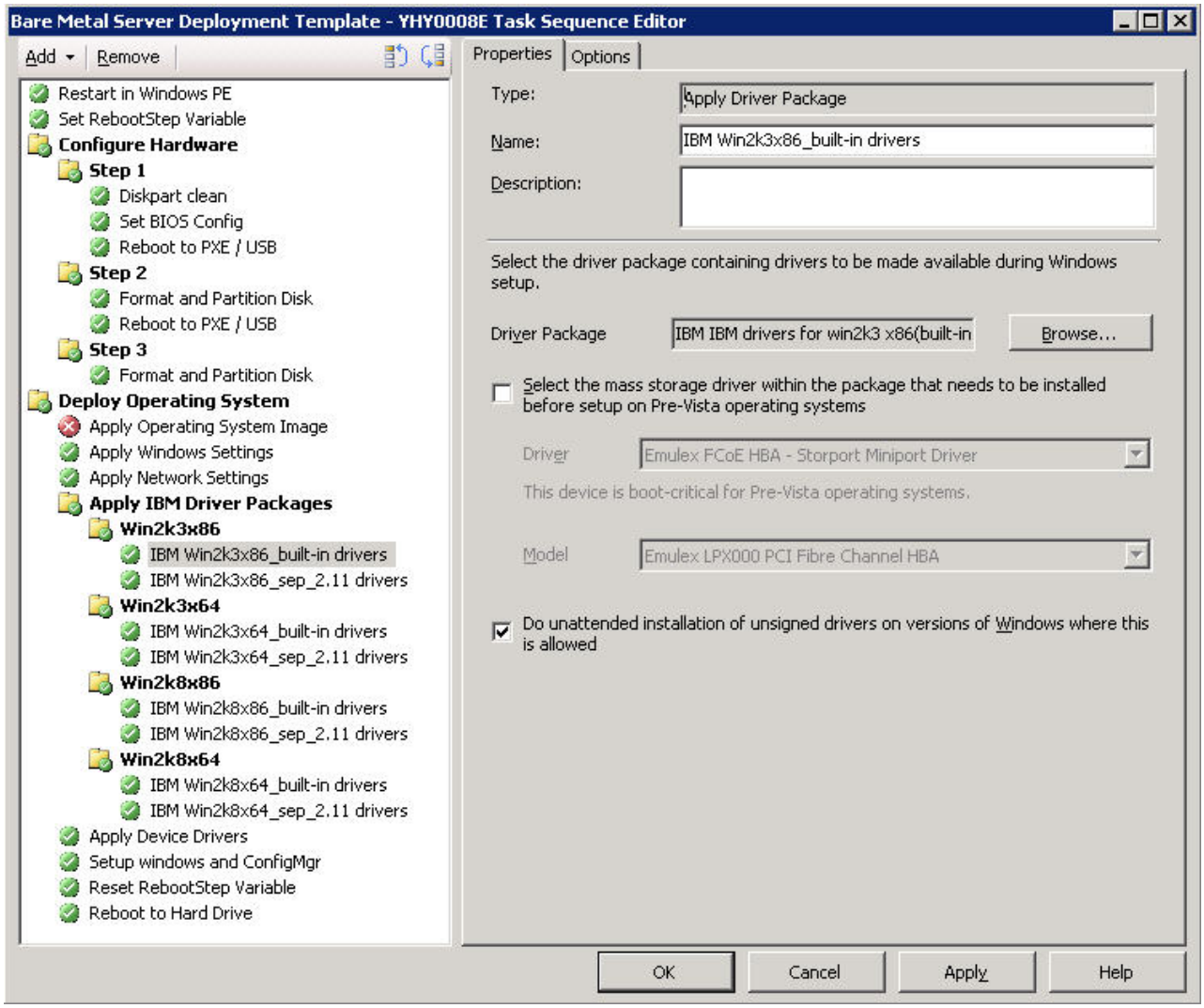

Figure 75. Applying the driver package

Note: You may need to manage distribution points and update distribution points of the packages (including IBM Deployment Pack, v1.4 packages, all SEP driver packages) after completing this procedure. See "Manage Distribution Point" on page 23 and "Update Distribution Point" on page 24.

Select SEP package manually

You can select the transparent method to use SEP package, or you can choose to manually select a different SEP package.

After all the previous steps for SEP have been done, you can create a new Bare Metal Deployment task sequence or edit an existing one. Click one of your Get/Set steps and you can choose to use your SEP package now.

Note: If you have completed your SEP configurations successfully, your task sequence editor will look like the figure below.

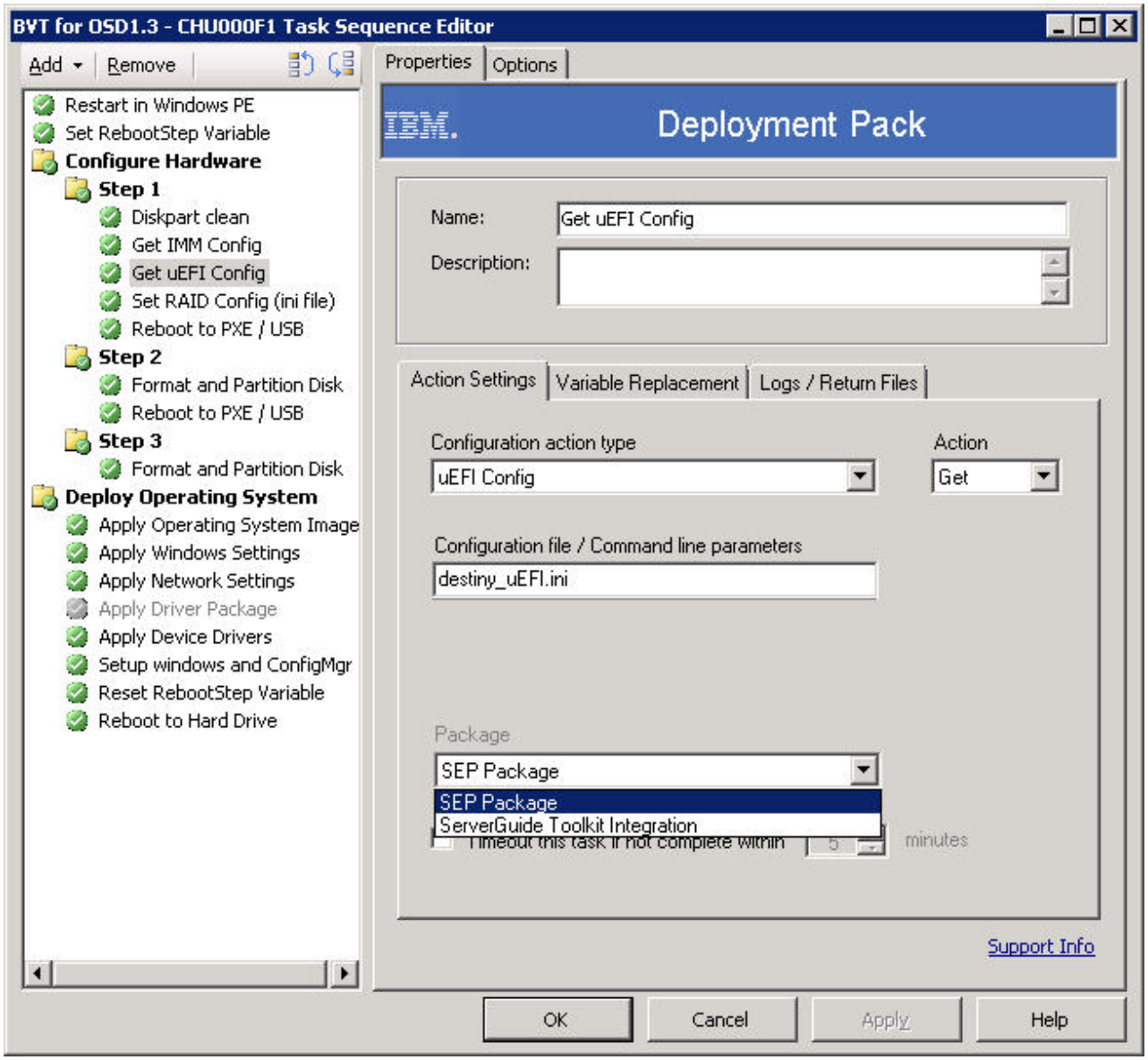

Figure 76. Task sequence editor after successful SEP configuration

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Installation and User's Guide
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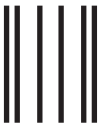

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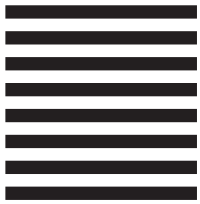

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