IBM System x

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

Version 3.1

IBM System x

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

Version 3.1

Note
Before using this information and the product it supports, read the information in "Notices" on page 133.

Edition notice

This edition applies to version 3.1 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 the IBM Deployment Pack for Microsoft System Center Configuration Manager 2007, v3.1 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 the IBM Deployment Pack for Microsoft System Center Configuration Manager 2007, v3.1 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 respective PDF files located on the Microsoft Systems Management Solutions for IBM Servers website. Please click the link provided to locate the individual product pages for each publication.

Saving PDF files

To save a PDF file, complete the following steps:

1. Right-click the link to the PDF in your browser.
2. Perform one of the following tasks.

Web browser	Command
For Internet Explorer	Click **Save Target As**.
For Netscape Navigator or Mozilla	Click **Save Link As**.

3. Navigate to the directory in which you want to save the PDF file.
4. Click **Save**.

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 you to tailor and build custom hardware deployment solutions. It provides hardware configuration and Windows operating system 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 operating system deployments.

The IBM Deployment Pack, v3.1, supports the following types of deployment:

- Policy-based Redundant Array of Independent Disks (RAID) configuration using PRAID
- Configuration of system settings using the Advanced Settings Utility (ASU)
  - Configuration of BIOS/uEFI settings
  - Configuration of BMC/IMM (including multiple nodes) settings
  - Configuration of RSA settings
- Automated deployment of the following operating systems:
  - Windows 2003 32bit/X64
  - Windows 2003 R2 32bit/X64
  - Windows 2008 32bit/X64
  - Windows 2008 R2 SP1 (X64)

The IBM Deployment Pack, v3.1 also provides the following components and functionality:

- Custom WinPE boot image with all required drivers, including WinPE x86 boot image and WinPE x64 boot image
- 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 the System Enablement Pack (SEP) into the SCCM server
- Transparent upgrade from IBM Deployment Pack v1.3
- Support license controller
- Support to automatically import the System Enablement Pack into the SCCM server

The IBM Deployment Pack v3.1 is a fee-based release. Some functions are disabled without a license. To enable these items and for support to automatically import the System Enablement Pack (SEP) into the SCCM server, you must purchase the license. You can purchase activation licenses by contacting your IBM representative or an IBM Business Partner.

Chapter 2. Installing and importing the IBM Deployment Pack

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

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

Prerequisites

Before installing the IBM Deployment Pack, make sure that your system meets these prerequisites.

- SCCM site server or administrative console is in a normal status

  Note: Before installing the IBM Deployment Pack, be sure that all SCCM components are up and running correctly on the SCCM server. If there are errors listed in the SCCM status, resolve those errors first. For more information on how to check SCCM status and resolve errors, refer to Microsoft TechNet: Configuration Manager Documentation Library.
- An installation account with the corresponding administrative authority, such as system administrator and SCCM administrator authority
- Windows Automated Installation Kit (WAIK) must already be installed
- If the SCCM server is running on Windows 2008, ensure that hotfix 979492 is installed on the SCCM server. For more information, refer to An .inf file cannot be validated when an application uses the "SetupVerifyInfFile" function in Windows Vista and in Windows Server 2008.

The IBM Deployment Pack can be installed on the SCCM site server or on the SCCM administrative console. Installation on the administrative 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 administrative console, the IBM Deployment Pack functionality cannot be used although IBM-related task sequences are shown on the administrative console.

Note: To use the IBM Deployment Pack through the administrative console, the same version of the IBM Deployment Pack has to be installed on both the corresponding SCCM site server and the SCCM administrative console.

Installing the IBM Deployment Pack into SCCM

This topic describes how to download the IBM Deployment Pack.

Before you begin

IBM Deployment Pack can be installed from IBM Deployment Pack installation file or IBM Upward Integration for Microsoft System Center bundle installation file. Download the IBM Deployment Pack from the IBM web site: IBM System x Integration Offerings for Microsoft Systems Management Solutions

1. Double-click on the setup executable file (.exe) to start the installation wizard.
2. Follow the installation wizard instructions until the Finish page is displayed.

Figure 1. InstallShield Wizard Completed

3. From the Completed page, make sure the **Launch the Post Action of IBM Deployment Pack** check box is selected and click **Finish** to start the post-installation wizard. The post-installation wizard imports the IBM Deployment Pack onto the SCCM server. For more information, see "Importing the IBM Deployment Pack into SCCM."

Importing the IBM Deployment Pack into SCCM

After running the installation wizard, you must import the IBM Deployment Pack into SCCM. This task is considered a post-installation procedure.

Before you begin

Close the SCCM administrative console before running the import wizard.

1. Start the wizard by clicking **Start** → **All Programs** → **IBM Upward Integration** → **IBM Deployment Pack** → **IBM Deployment Pack Import Wizard**.

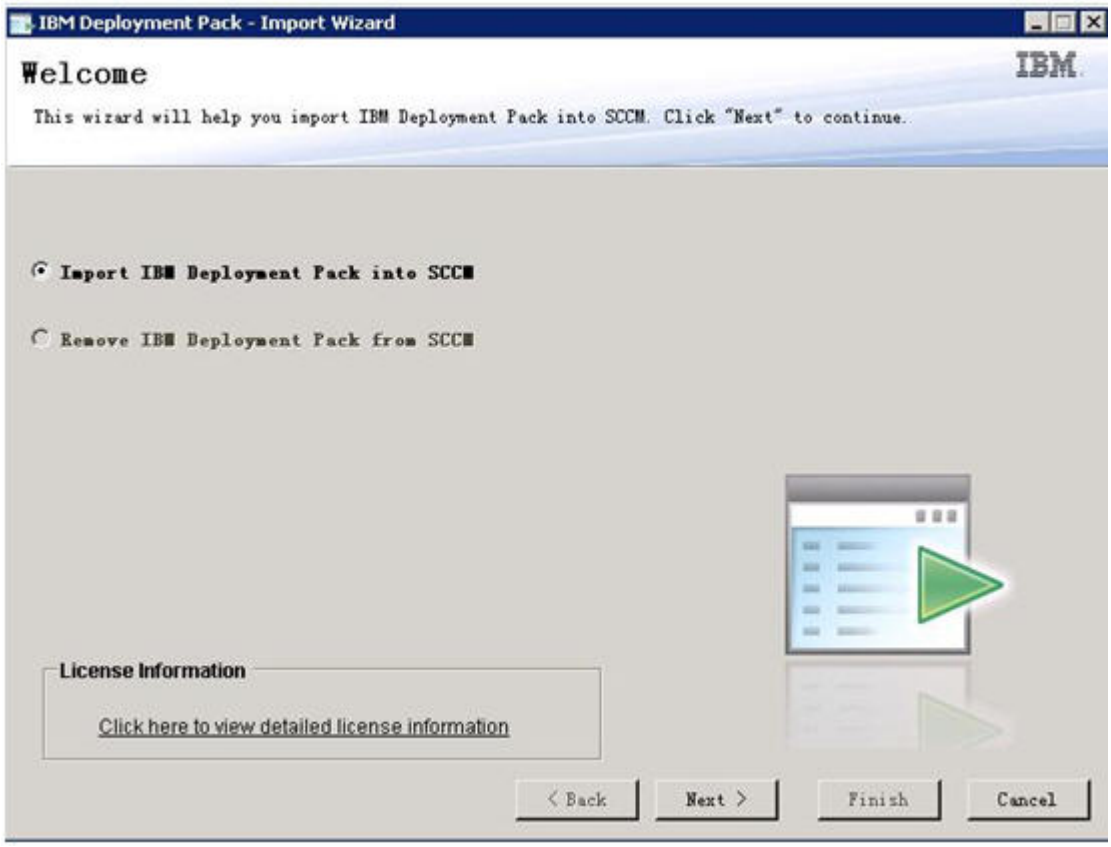


Figure 2. IBM Deployment Pack Import Wizard Welcome page

2. On the Welcome page, select **Import IBM Deployment Pack to SCCM** and click **Next**. The Target Systems page is displayed.

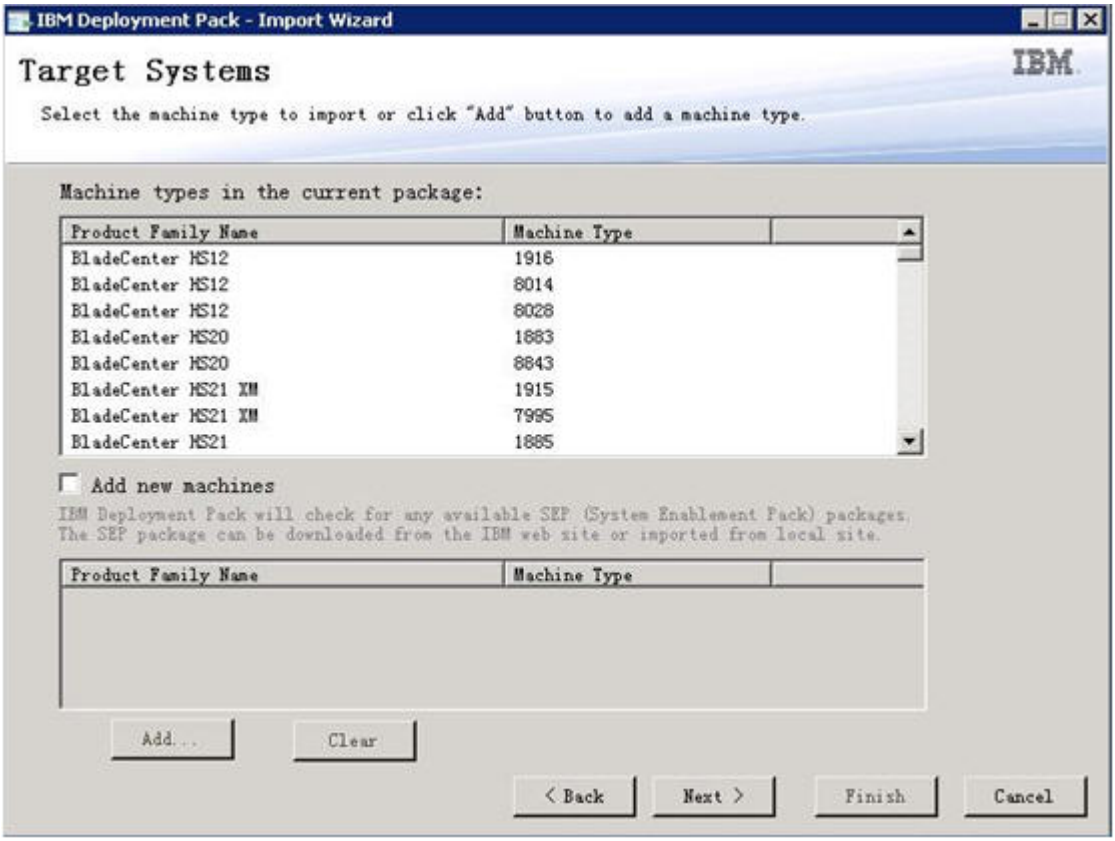


Figure 3. Target Systems page

3. Select the machine types to import or add new machine types:
   - Select the machine types in the current package that you want to import and click **Next**. The Boot Image page is displayed.

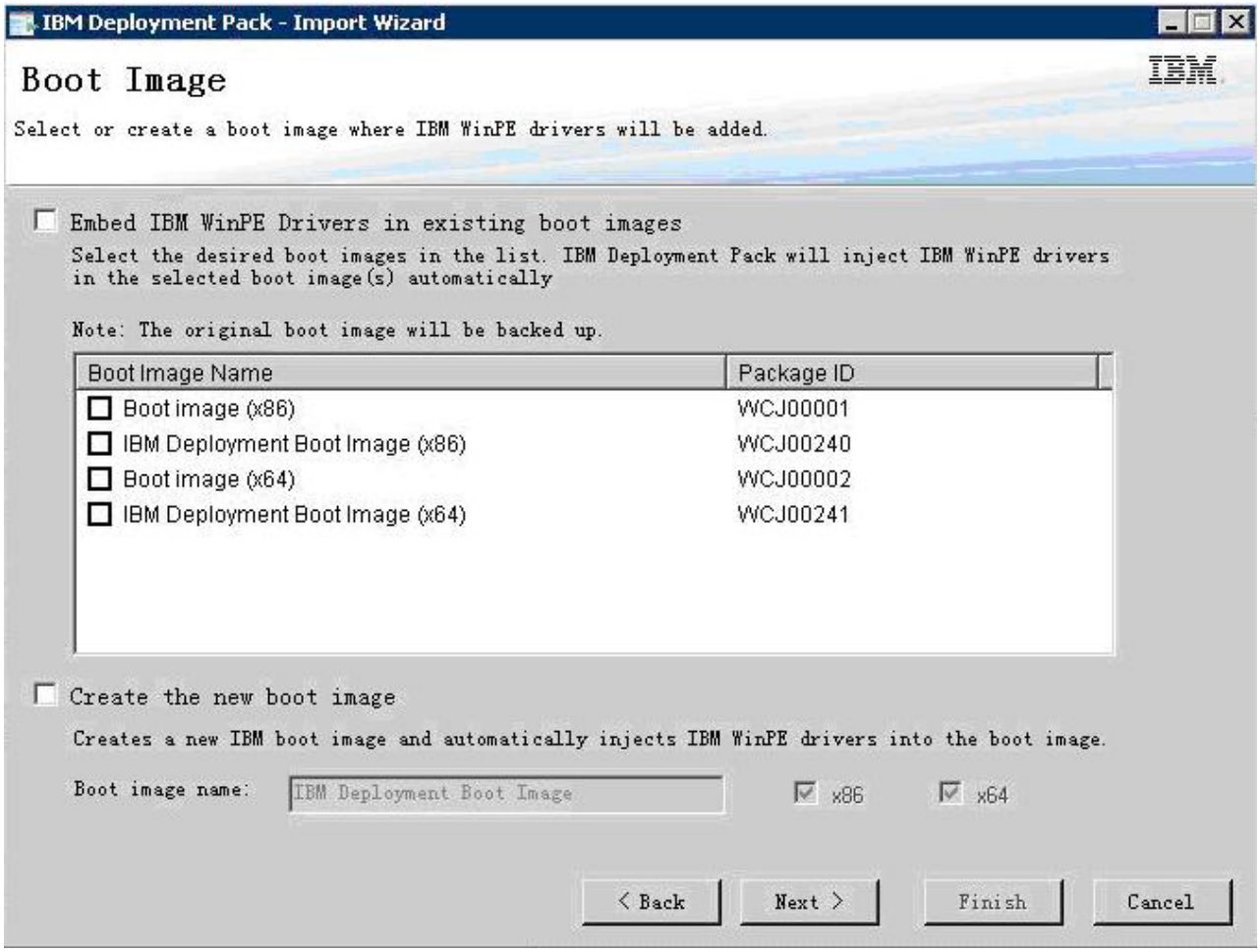


Figure 4. Boot Image page

- If the license is activated, you can add new machine types, and then click **Next**. The Additional SEP Packages page is displayed.

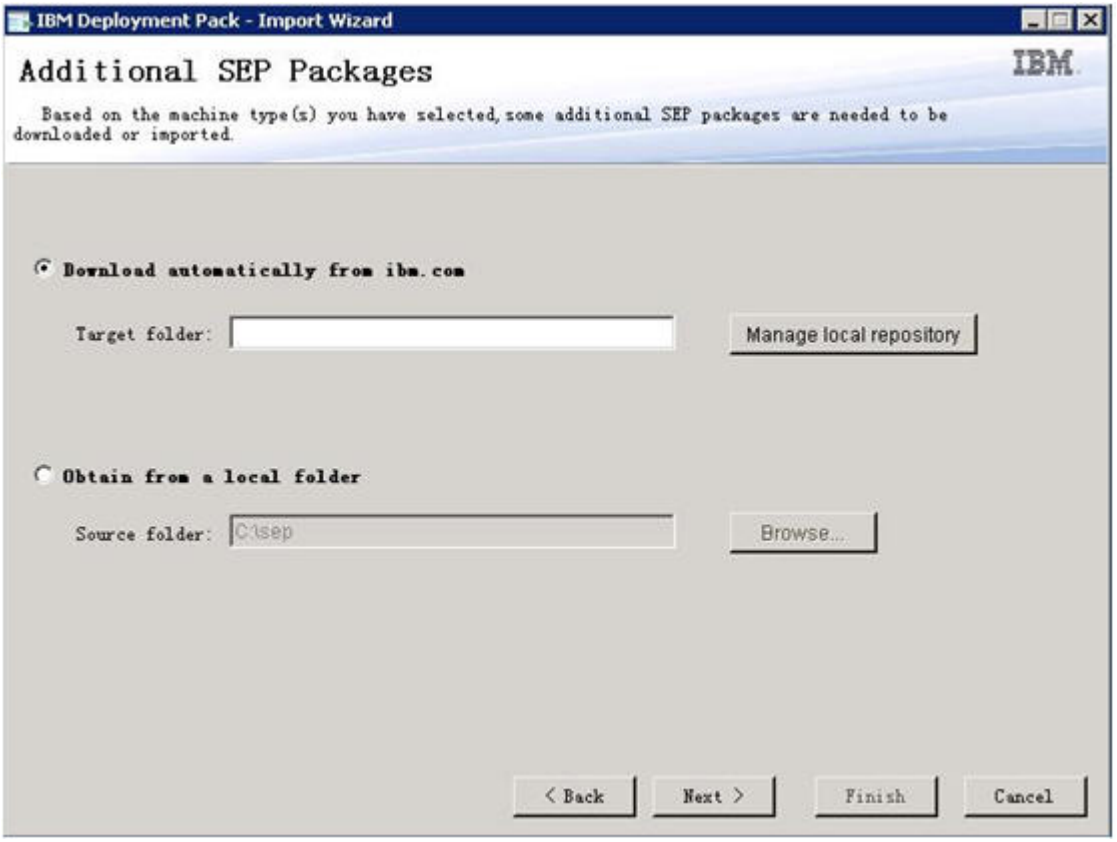


Figure 5. Additional SEP Packages page

- On the Additional SEP Packages page, select one of these two options:
  - Download SEP from the IBM web site, and click **Next**.
  - Import SEP from a local disk, and click **Next**.

The Boot Image page is displayed.

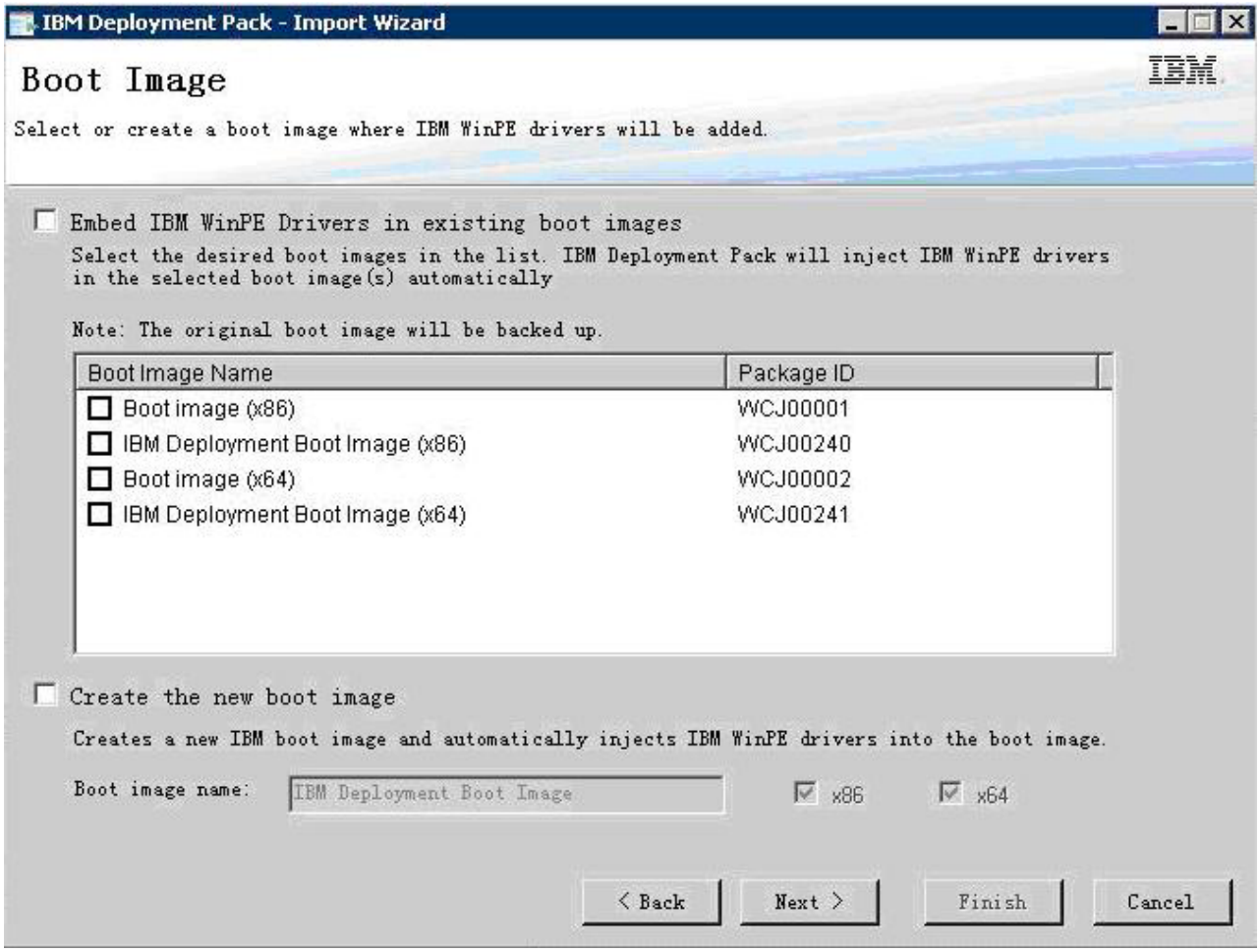


Figure 6. Boot Image page

4. Select an existing boot image or create a new IBM boot image and inject IBM WinPE drivers into the IBM boot image automatically, and then click **Next**. The Ready to Begin page is displayed.

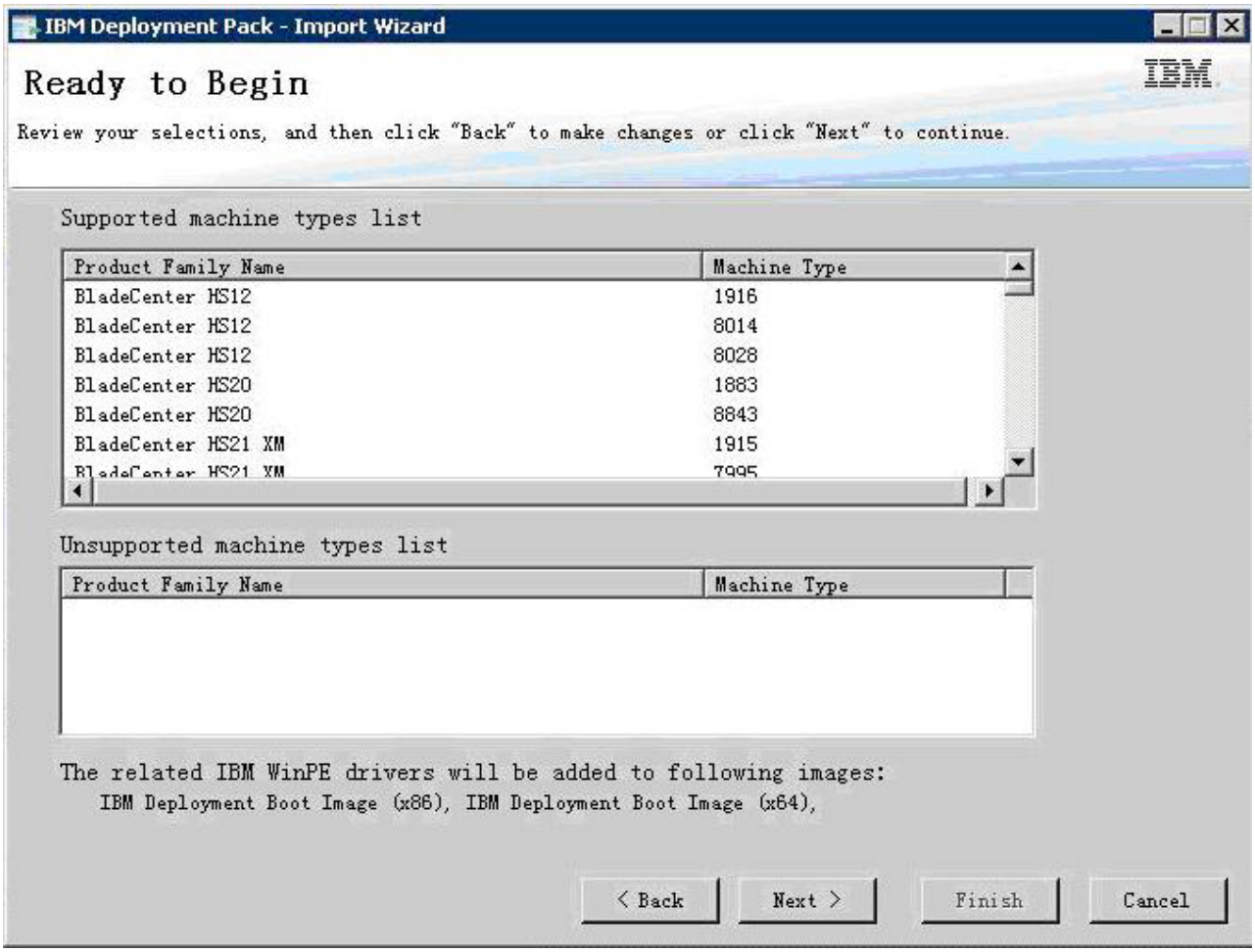


Figure 7. Ready to Begin page

5. On the Ready to Begin page, confirm your selections and click **Next** to proceed with the import, or **Back** to make corrections if needed. The Progress page is displayed with the status of the selected items.

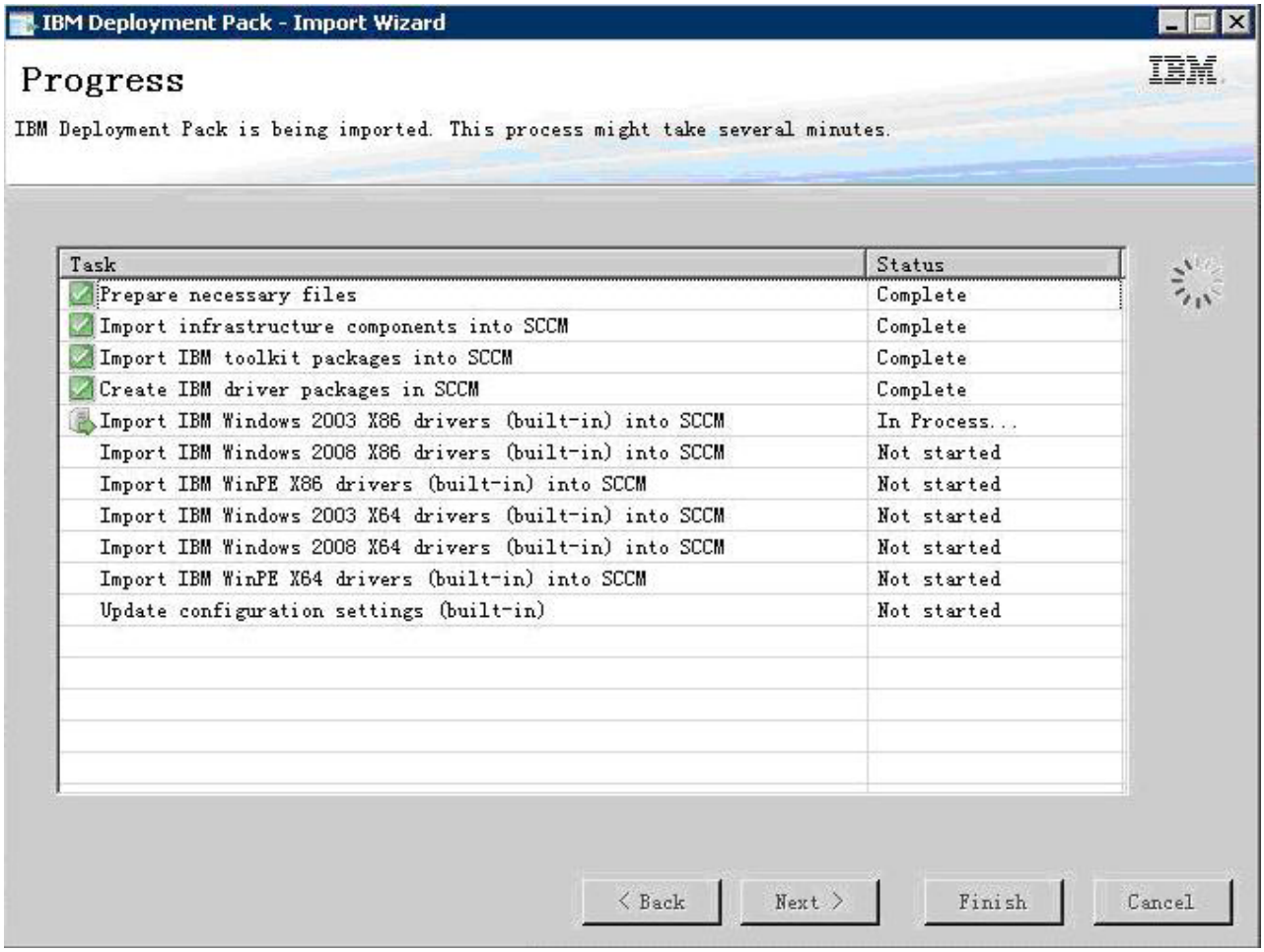


Figure 8. Progress page

Note: The tasks take a few minutes. Do not interrupt the import process. After all tasks have been performed, the Completed page is displayed.

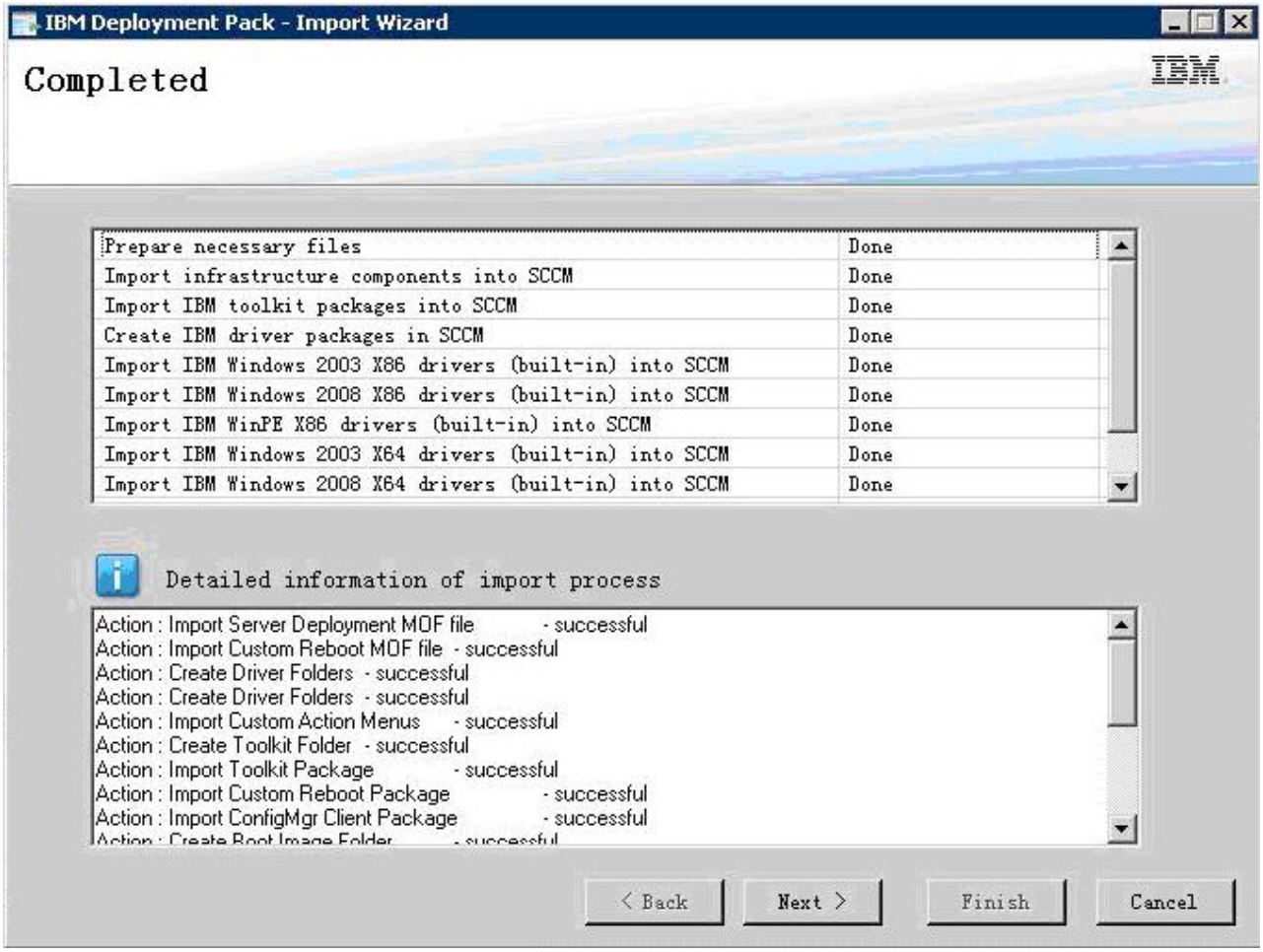


Figure 9. Completed page

Note: You also can use this wizard to remove the built-in and SEP packages from the SCCM server. For the SEP package, the IBM Deployment Pack 3.1 can process it automatically if the license is activated on this server. If the license is not activated, the IBM Deployment Pack 3.0 provides a tool named IBMOSDTool that you can use.

Make sure that the SCCM administrative console is closed before using the wizard.

6. Click **Next**. The Post Import Instruction page is displayed.

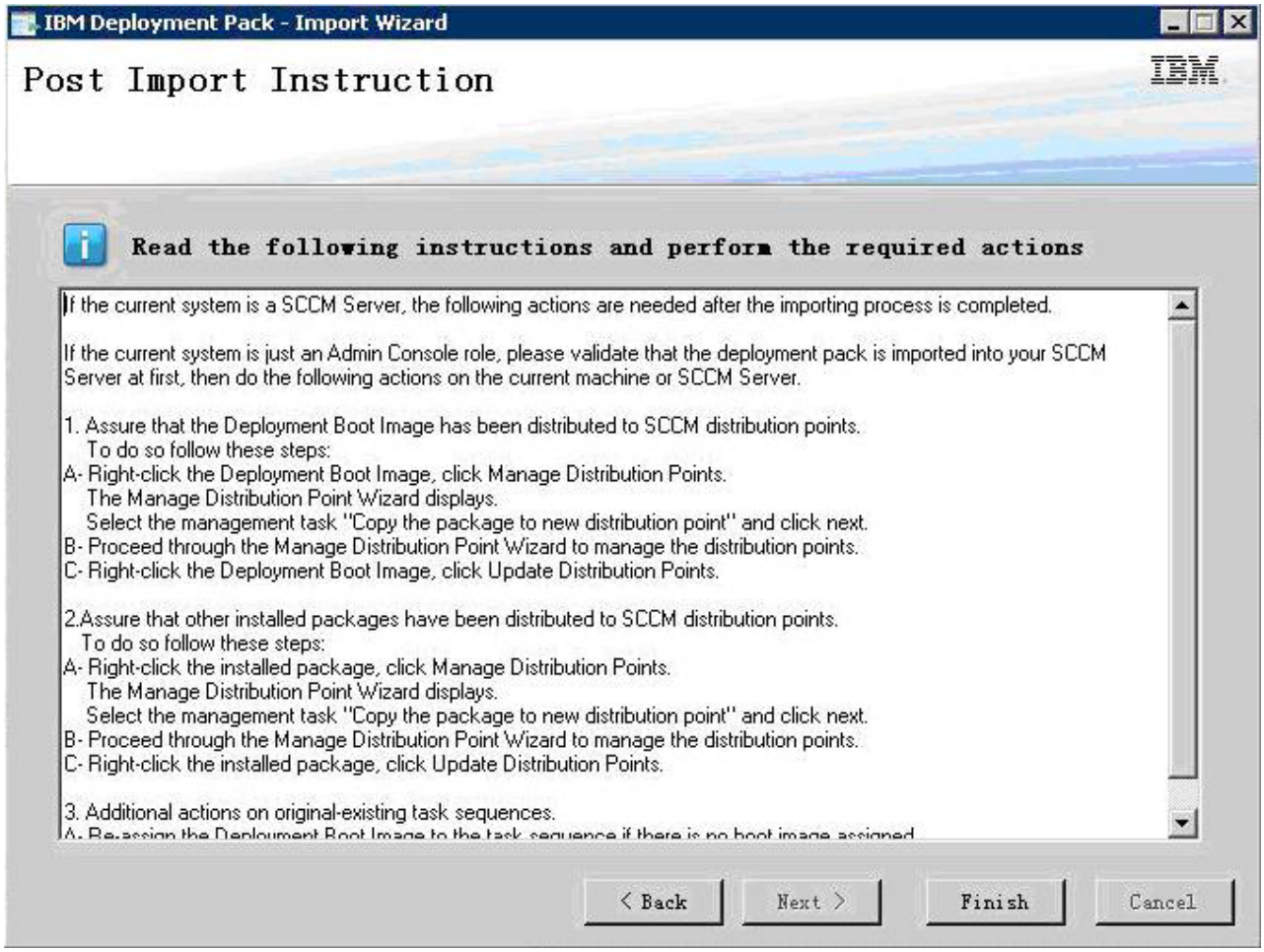


Figure 10. Post Import Instruction page

7. After importing completes, ensure that all components are installed on the SCCM server. The image below shows components that were added to the SCCM site server after importing.

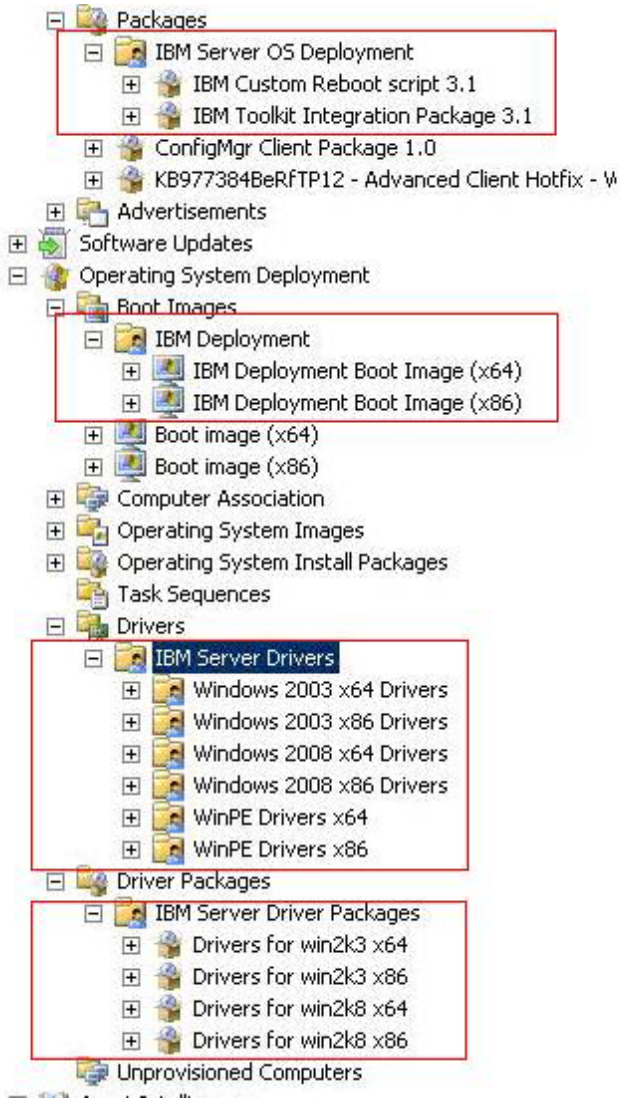


Figure 11. Items added to the SCCM console after installing the IBM Deployment Pack

8. Ensure that an IBM task sequence has been added to the task sequence Bare Metal Server Deployment drop-down menu. The image below shows the new options.

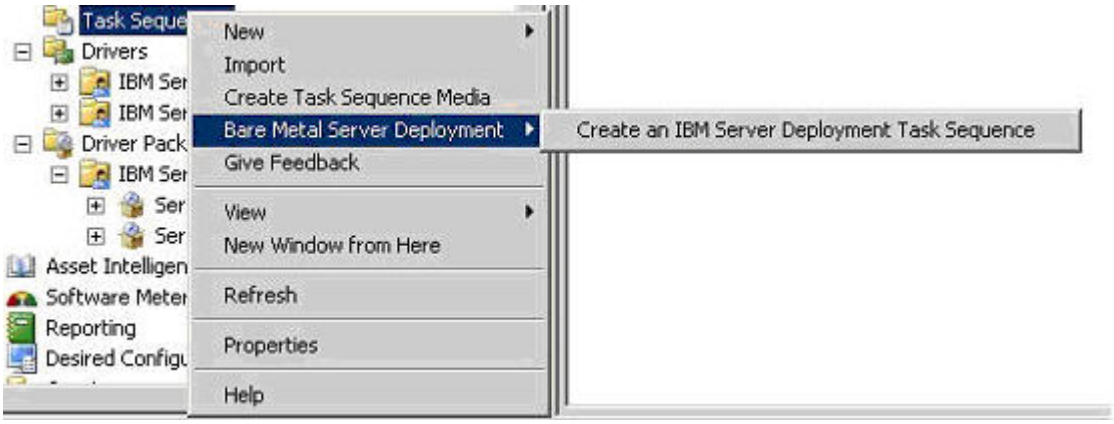


Figure 12. New Bare Metal Deployment option added

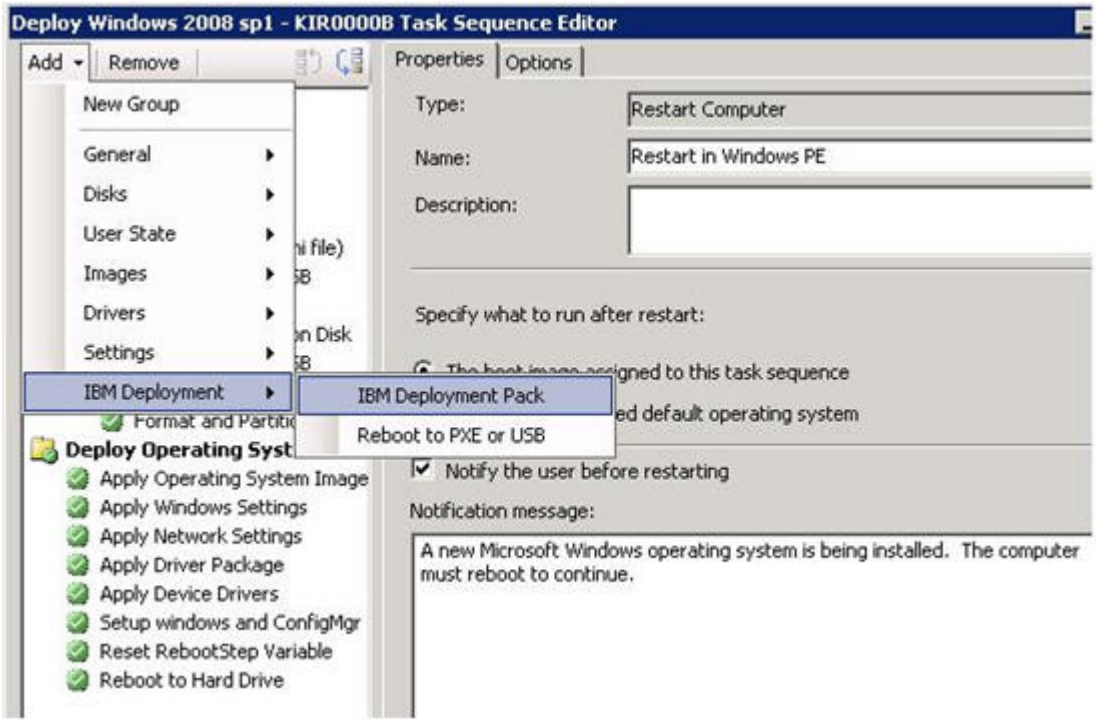


Figure 13. New action in Task Sequence Editor

Note: To import the IBM Deployment Pack into SCCM on a console-only server, choose **Import IBM Deployment Pack into SCCM** and accept the default configuration on the import wizard to complete the process.

What to do next

To remove the IBM Deployment Pack from SCCM, select **Remove IBM Deployment Pack from SCCM** on the welcome page. Follow the prompts in the wizard to completely remove the files.

Upgrading the IBM Deployment Pack from version 1.3

If you are currently running version 1.3 of the IBM Deployment Pack, use this topic to upgrade to version 3.1.

Before you begin

Download the IBM Deployment Pack from the IBM web site, IBM System x Integration Offerings for Microsoft Systems Management Solutions.

1. Double-click on the setup executable file (.exe) to start the installation wizard. A dialog box is displayed asking if you want to retain the settings from version 1.3.

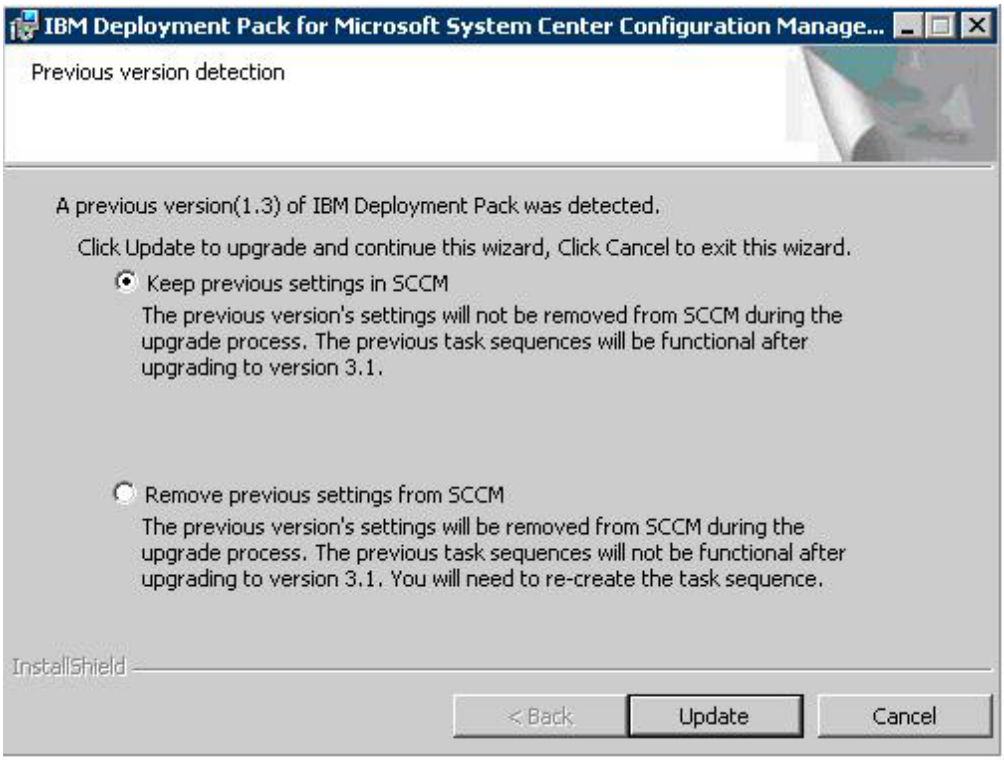


Figure 14. Option to retain settings from previous version

2. On the Previous version detected page:
   - To retain previous settings, click **Keep previous settings in SCCM** and then click **Update**.

     All 1.3 packages are retained.
   - To remove previous settings, click **Remove previous settings from SCCM** and then click **Update**.

     The settings for IBM Deployment Pack version 1.3, including the packages imported during installation and the SEP packages imported manually, are removed. However, the IBM-specific boot image (X86) is retained.

   IBM Deployment Pack version 1.3 is uninstalled and IBM Deployment Pack, v3.1, is installed on the SCCM server.

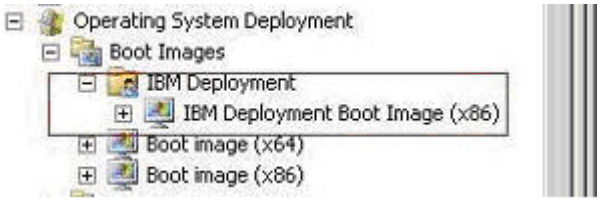


Figure 15. IBM Deployment Boot Image retained from previous version

3. From the Finish page, start the post-installation wizard. Using the post-installation wizard, you can import the IBM Deployment Pack, v3.1 built-in packages onto the SCCM server. For more information, see "Installing the IBM Deployment Pack into SCCM" on page 3.

   Note: In versions before IBM Deployment Pack 1.3, when you upgraded, the following message box displayed and you had to uninstall the previous version and install version 3.1 again.

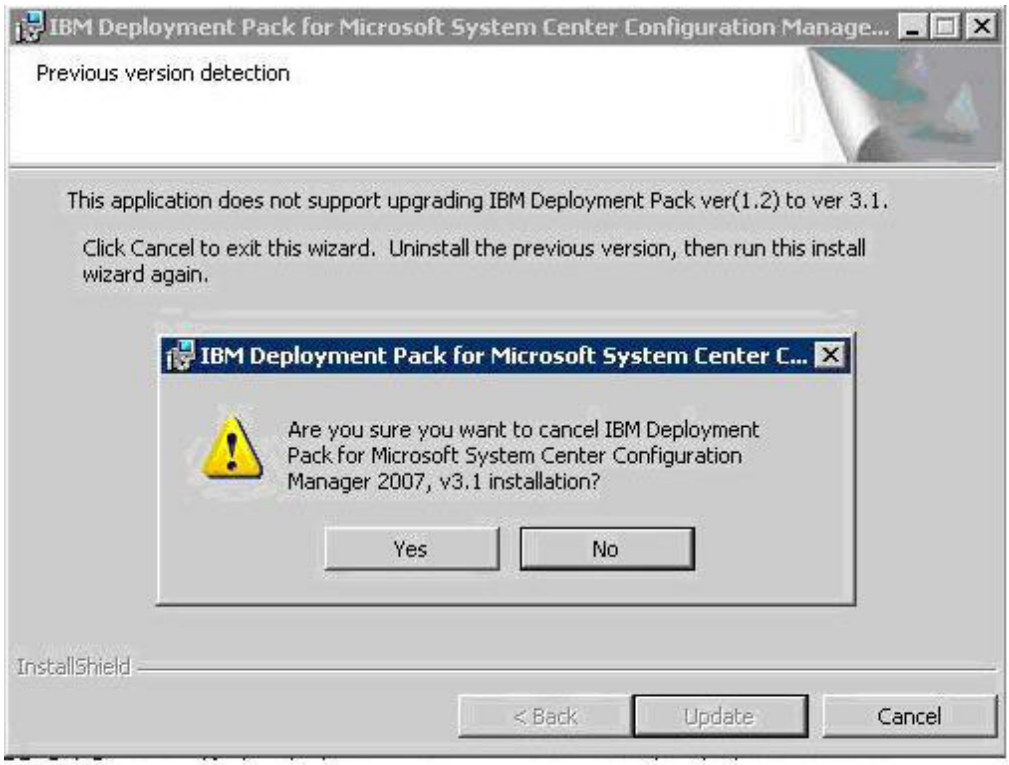


Figure 16. Old version detected message

Upgrading the IBM Deployment Pack from version 1.4 or 3.0

If you are currently running version 1.4 or 3.0 of the IBM Deployment Pack, use this topic to upgrade to version 3.1.

Before you begin

Download the IBM Deployment Pack from the IBM web site: IBM System x Integration Offerings for Microsoft Systems Management Solutions

1. Double-click on the setup executable file (.exe) to start the installation wizard. A dialog box is displayed asking if you want to upgrade from version 1.4 or 3.0.

Figure 17. Previous version detection

Figure 18. Prompt to upgrade from the previous components

Note: You cannot have both versions, 1.4 and 3.1, or 3.0 and 3.1, of the IBM Deployment Pack. They cannot co-exist on the SCCM server.

2. At the prompt to remove the previous version, click **Yes**. IBM Deployment Pack version 1.4 or 3.0 is uninstalled and IBM Deployment Pack, v3.1, is installed on the SCCM server.
3. From the Finish page, start the post-installation wizard. Using the post-installation wizard, you can import the IBM Deployment Pack, v3.1, built-in packages onto the SCCM server. For more information, see "Installing the IBM Deployment Pack into SCCM" on page 3.

Uninstalling the IBM Deployment Pack

Use this topic to help you uninstall the IBM Deployment Pack.

About this task

The IBM Deployment Pack can be uninstalled through **Control Panel** → **Add or Remove Programs**, the setup.exe file, or through the Start menu by clicking **Start** → **All Programs** → **IBM Upward Integration** → **IBM Deployment Pack** → **Uninstall**.

1. Click **Next** until the wizard panel is displayed that asks if you want to keep your current settings from the previous version. See the image in the previous section.
2. Indicate if you want to remove or keep the settings from the previous version.
   - If you select to remove the settings from the previous version, all imported SEP packages and built-in packages are uninstalled at the same time. However, the IBM-specific boot image (x86 and x64) is retained.

- If you select to keep the settings from the previous version, the settings remain 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.

Reusing the task sequence after reinstalling the IBM Deployment Pack

You can reinstall the deployment pack after uninstalling it by performing a few extra steps to reuse your existing task sequence.

About this task

Because of how the operating system deployment feature works with Configuration Manager, task sequences require some manual steps after you reinstall the deployment pack.

1. Right-click on the task sequence that you want 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 box is displayed.

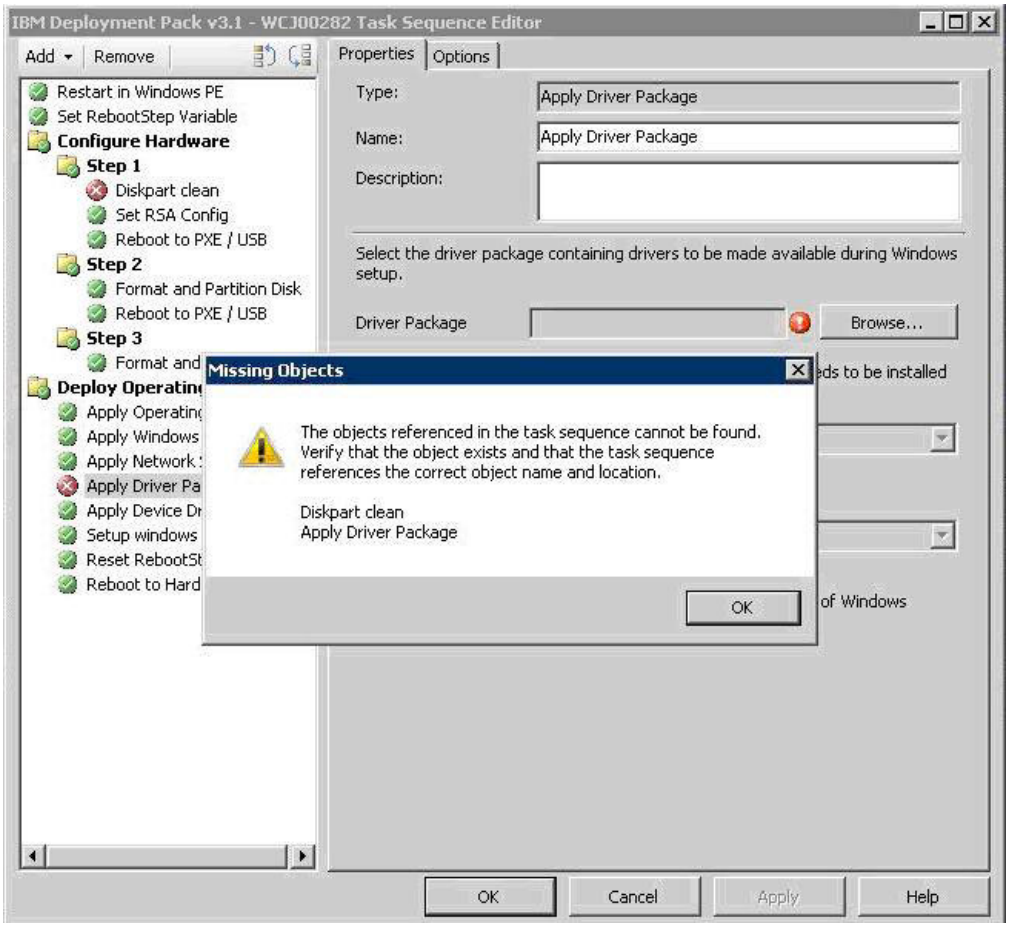


Figure 19. Missing Objects dialog box

Notice that the **Diskpart clean** item is flagged with a red X. The flagged item is the one that needs attention.

3. Click **OK** to dismiss the Missing Objects warning.
4. Click **Diskpart clean** to edit the item.
5. Click **Browse (for Package)**, and select the **IBM Custom Reboot Script** package.

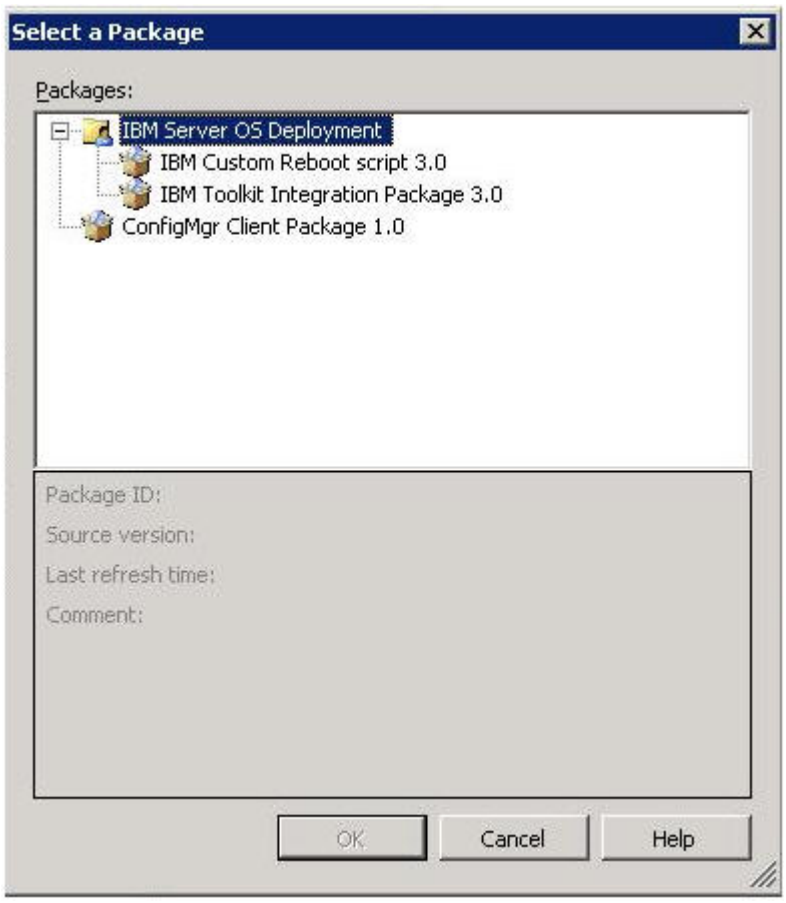


Figure 20. Selecting the IBM Custom Reboot script package

After you identify the source package for the **Diskpart clean** custom action, the **Diskpart clean** custom action is flagged with a green check.

6. Again, import the custom drivers that the task sequences might use.

   Uninstalling removes any drivers that were imported during the previous 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. Reimport the custom drivers into the driver repository.
   b. In the task sequence, check the **Add Driver Package** step to ensure that the correct driver is still selected.

      Note: Unlike the **diskpart clean** step, the Apply Driver Package step might not be flagged with a red X. However, even though the flag is green, the Apply Driver Package step fails at runtime.
   c. Because you uninstalled and are reinstalling the deployment pack, check the **Apply Driver Package** step for any task sequence that uses the IBM Deployment Pack.

d. Update the distribution points with the updated driver packages.

Integrating with the System Enablement Pack

This section contains topics that explain the integration process.

IBM Deployment Pack

The IBM Deployment Pack for Microsoft System Center Configuration Manager 2007, v3.1 uses IBM ToolsCenter tools to provide specific functionality.

ToolsCenter tools are changing the means of delivery code. The System Enablement Pack (SEP) uses system-specific codes that are separate from tools. Using SEP reduces the need to release a new version of the tools to support new hardware.

System Enablement Pack (SEP)

The System Enablement Pack (SEP) is comprised of 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 the IBM Deployment Pack for Microsoft System Center Configuration Manager 2007, v3.1, import the new SEP package into SCCM. IBM Deployment Pack 3.1 can process it automatically if the license is activated on this server. See “Installing the IBM Deployment Pack into SCCM” on page 3.

If the license is not activated, IBM Deployment Pack 3.1 also provides a tool named IBMOSDTool. Refer to Appendix E, “Importing the IBM WinPE SEP package into SCCM,” on page 107.

How SEP works in Configuration Manager

To use SEP in Configuration Manager, you must install IBM Deployment Pack first. This topic shows the workflow of SEP in Configuration Manager.

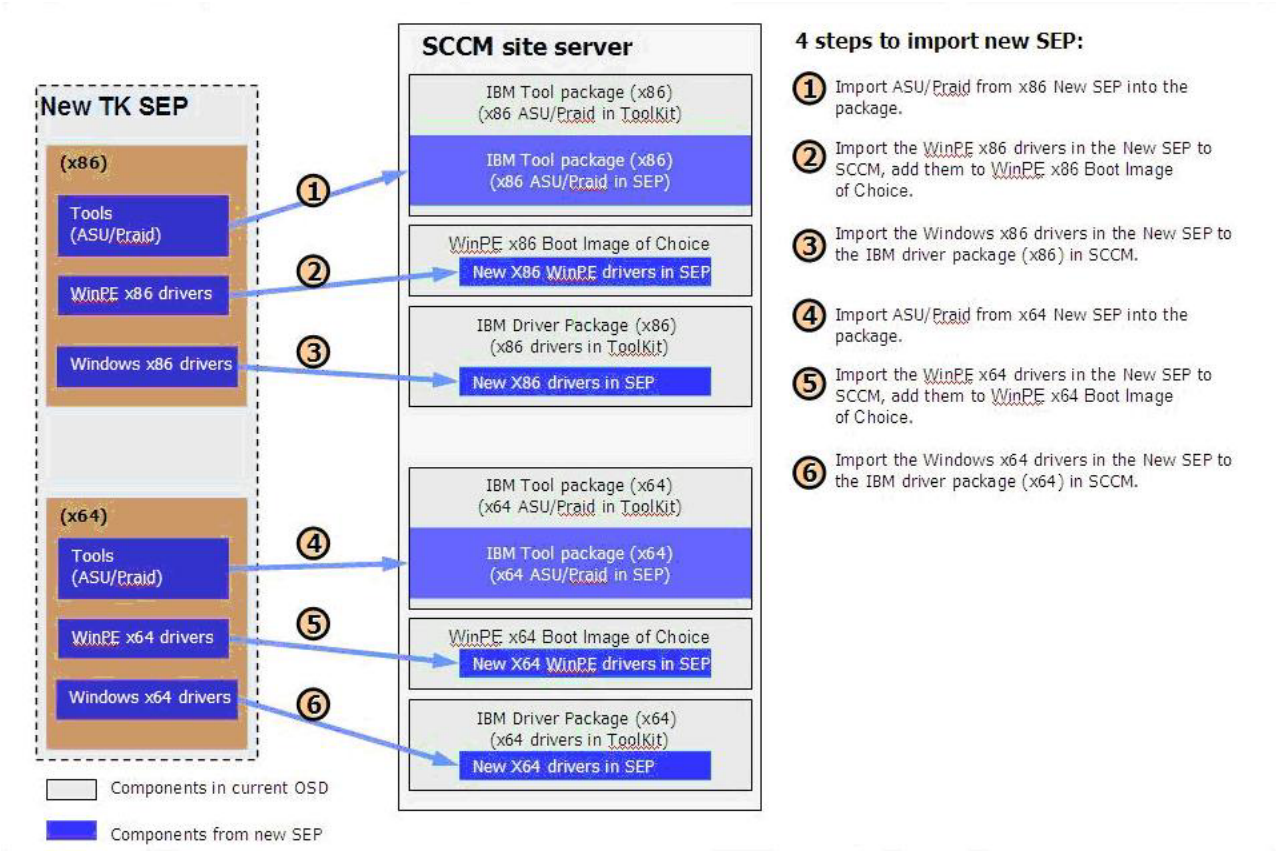


Figure 21. SEP workflow

Chapter 3. Preparing for deployment

Now that the IBM Deployment Pack is installed, this section covers the configuration steps to prepare for a full deployment.

First you must perform a few miscellaneous procedures.

SCCM OSD initial configuration

This topic refers you to detailed information about the OSD initial configuration.

The following information is provided for reference. For more information, use the link to go to the Microsoft TechNet: Configuration Manager Documentation Library.

Setting the network access account

To set the network access account, use the Configuration Manager console.

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

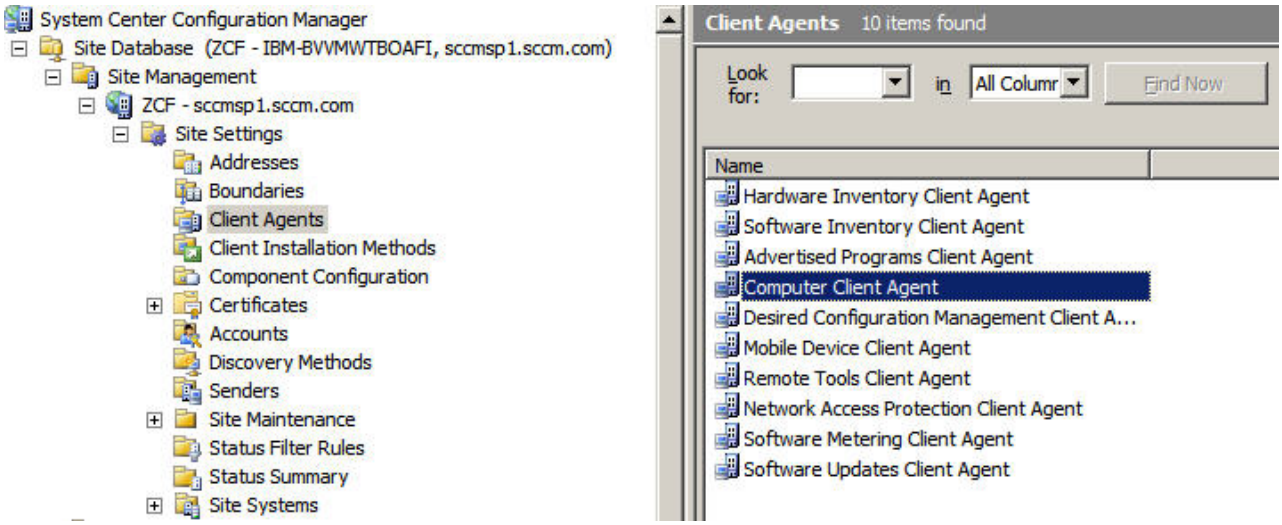


Figure 22. Select Client Agents

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

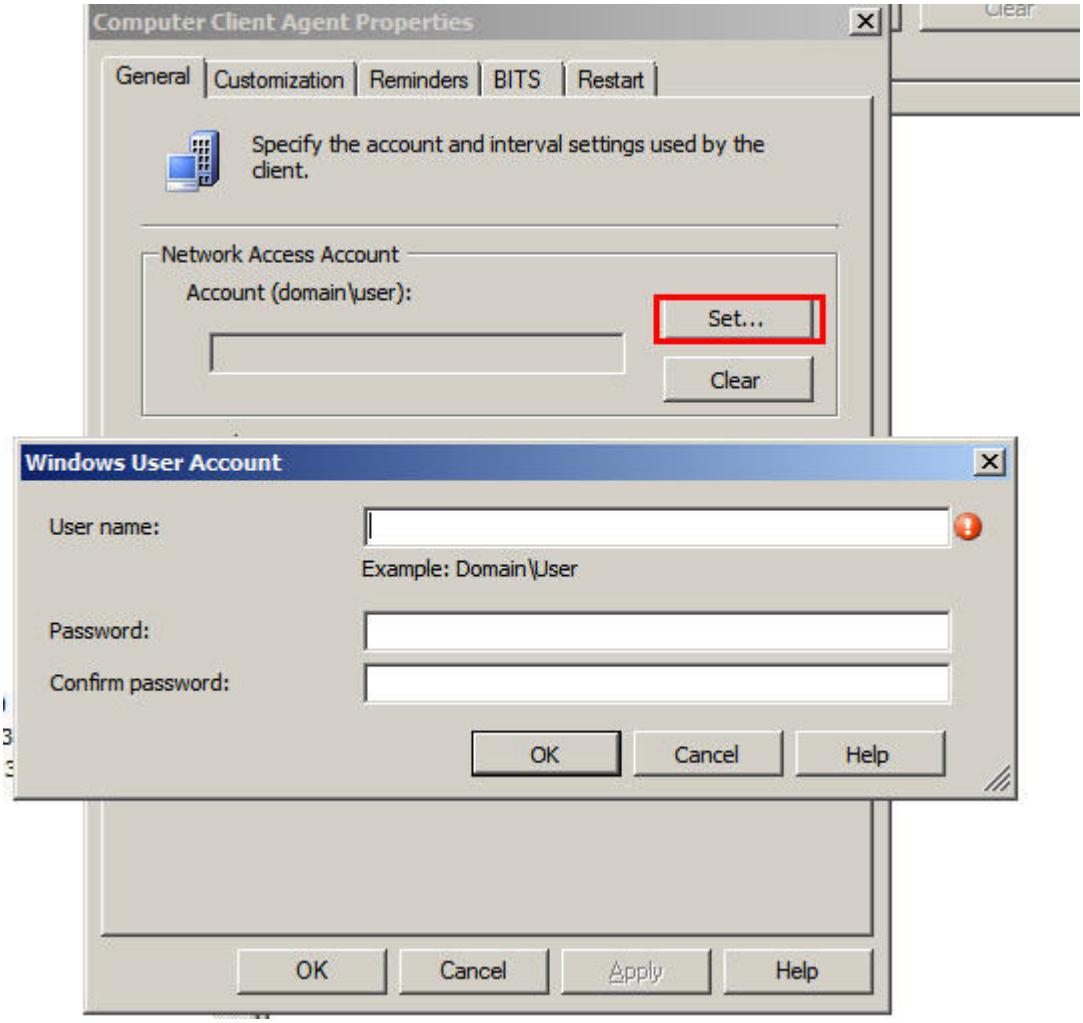


Figure 23. Windows User Account window

6. Click **OK**.

Setting up the Preboot Execution Environment service point

The Preboot Execution Environment (PXE) service point is a site system role that initiates operating system installations from computers that have a network interface card configured to allow PXE boot requests.

About this task

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

1. To open the Configuration Manager console, start Microsoft System Center Configuration Manager 2007.
2. Click **System Center Configuration Manager** → **Site Database** → **Site Management** → *site_name* → **Site Settings** → **Site Systems** → **SCCM** → **New Roles**.
3. Using the New Site Role Wizard, create a new PXE service point.

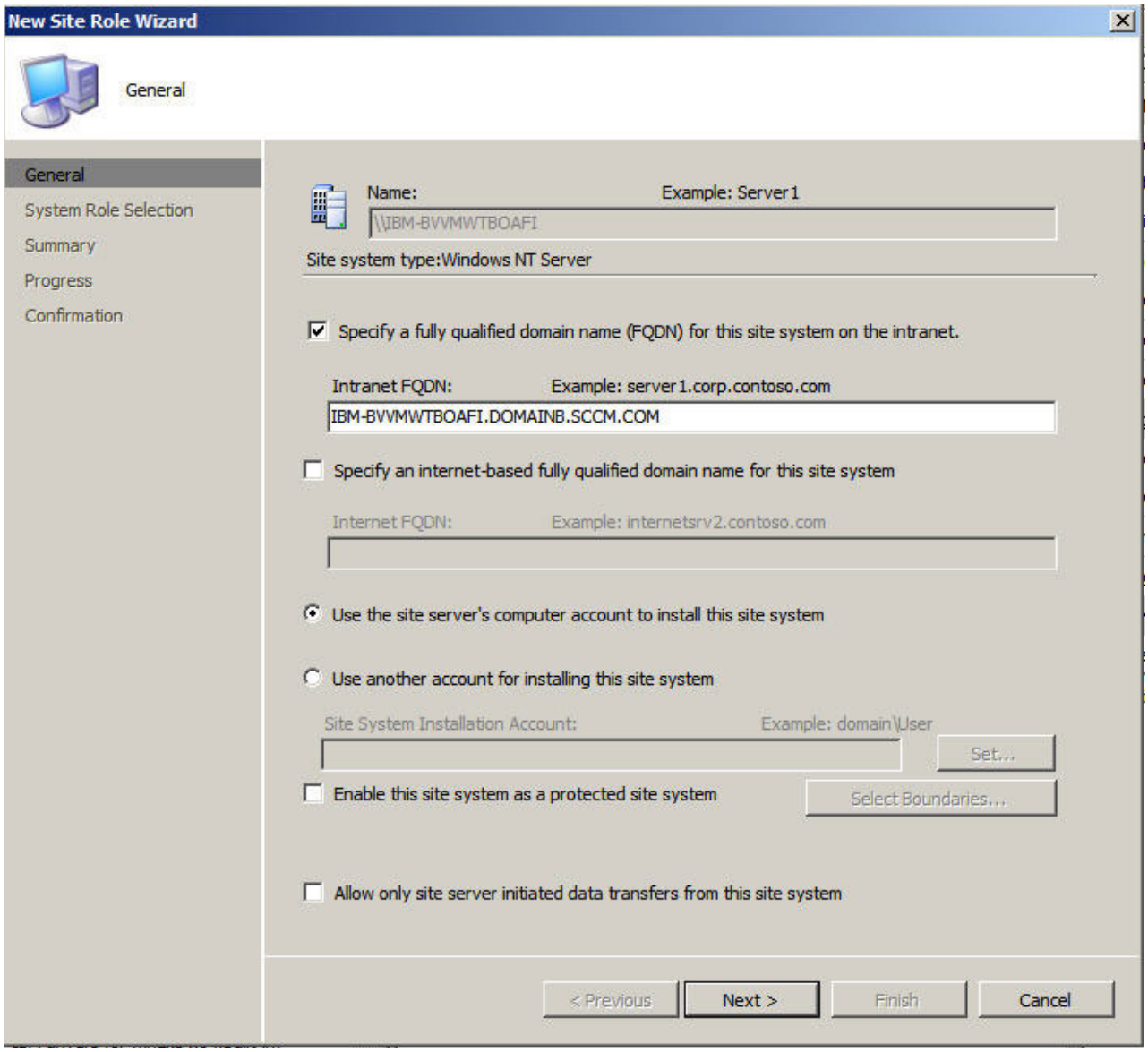


Figure 24. New Site Role wizard

4. Right-click on the service point, and select **Properties** from the drop-down 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.

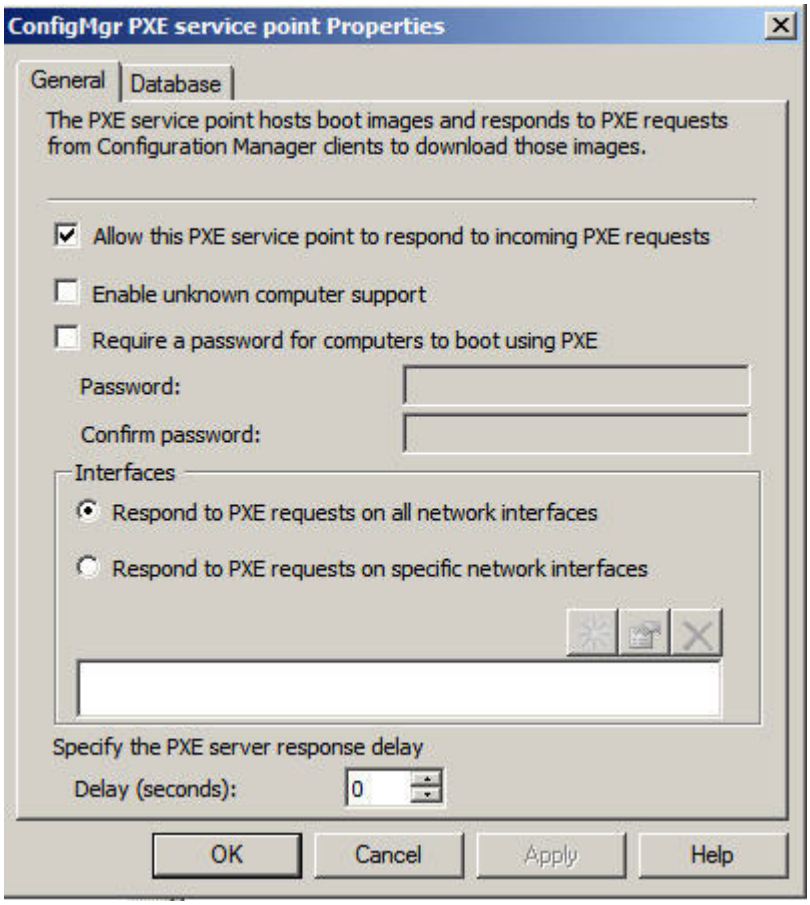


Figure 25. PXE service point Properties-General tab

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

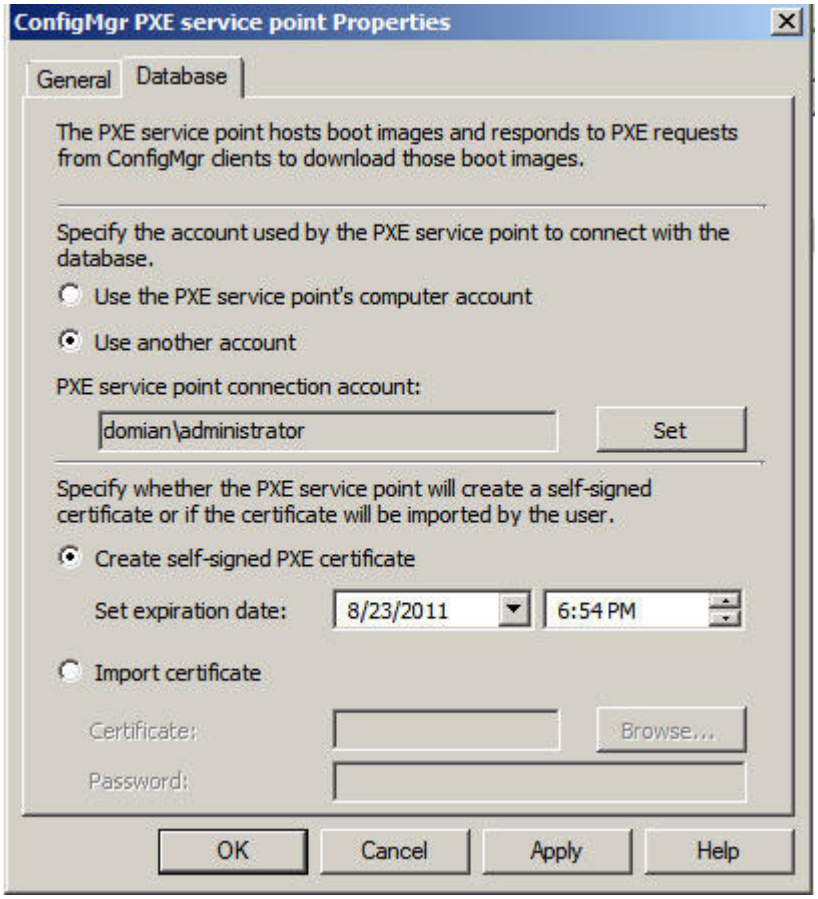


Figure 26. PXE service point Properties-Database tab

Post-installation configuration

After the IBM Deployment Pack has been installed, copy the new items installed by the package to the distribution points.

Copying the new items to the distribution points makes them available for the target servers to deploy. Copy the following packages to the distribution points:

- All packages under **Computer Management->Software Distribution->Packages** including IBM Server Deployment, the Configuration Manager client package, and any SEP packages that have been added.
- The IBM boot image located at **Computer Management->Operating System Deployment->Boot Images**. If the generic boot image has not been updated, update it now.
- Driver packages that are located at **Computer Management->Operating System Deployment->Driver Packages->IBM Server Drivers**.

Refer to the following two topics to copy and update distribution points: "Managing distribution points" on page 30 and "Updating distribution points" on page 30.

Managing distribution points

This topic describes how to copy distribution points using the Manage Distribution Points Wizard.

1. Right-click each of the items listed in “Post-installation configuration” on page 29 and select **Manage Distribution Points**.
2. Complete the Manage Distribution Points wizard for each item.

   Note: For the Boot Images package, on the page 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]*.

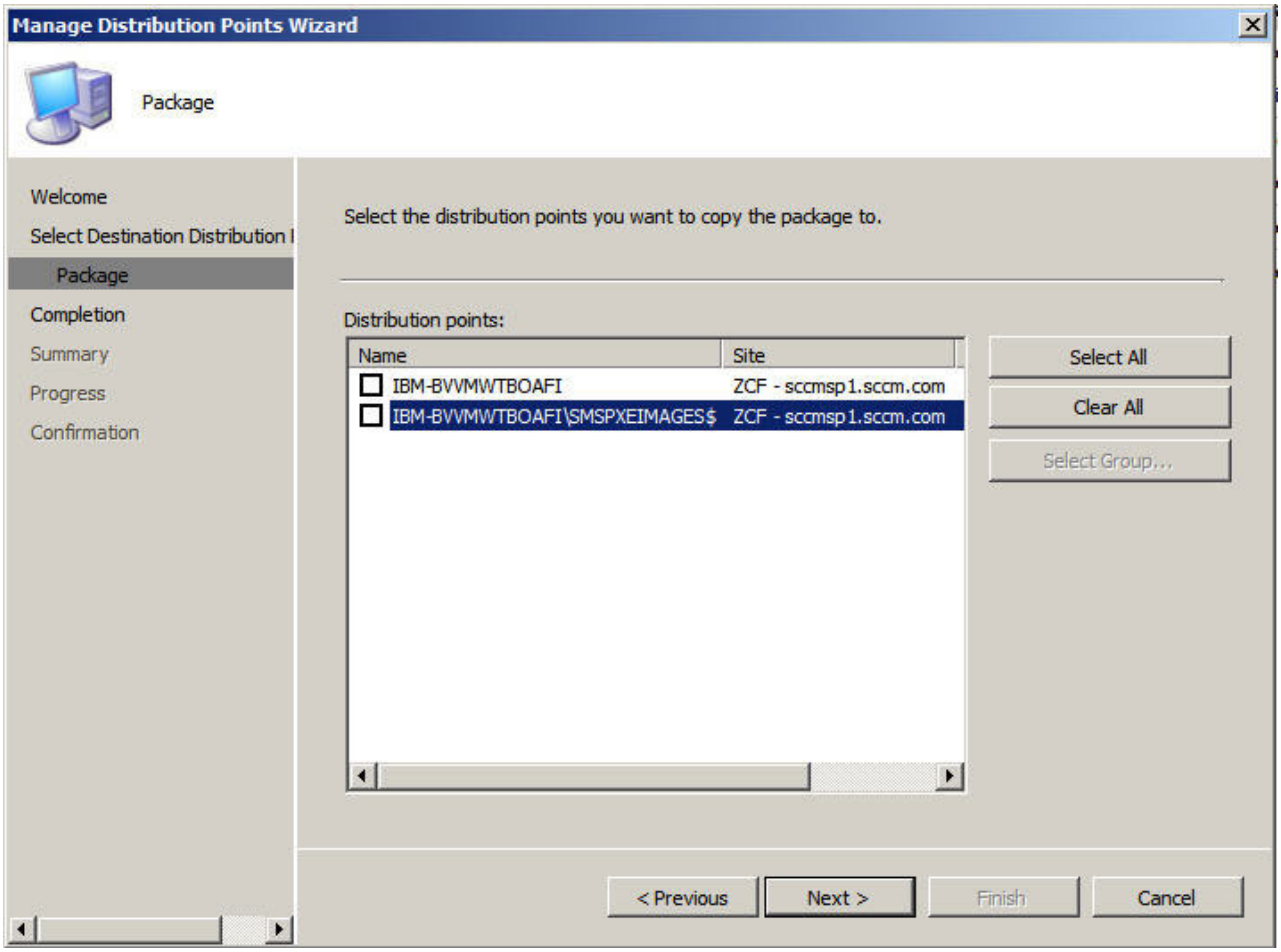


Figure 27. Manage Distribution Points Wizard

Updating distribution points

This topic describes how to update distribution points using the Update Distribution Points Wizard.

1. After performing the steps in “Managing distribution points,” right-click each item and select **Updating distribution points**.
2. Complete the Update Distribution Points Wizard for each package.

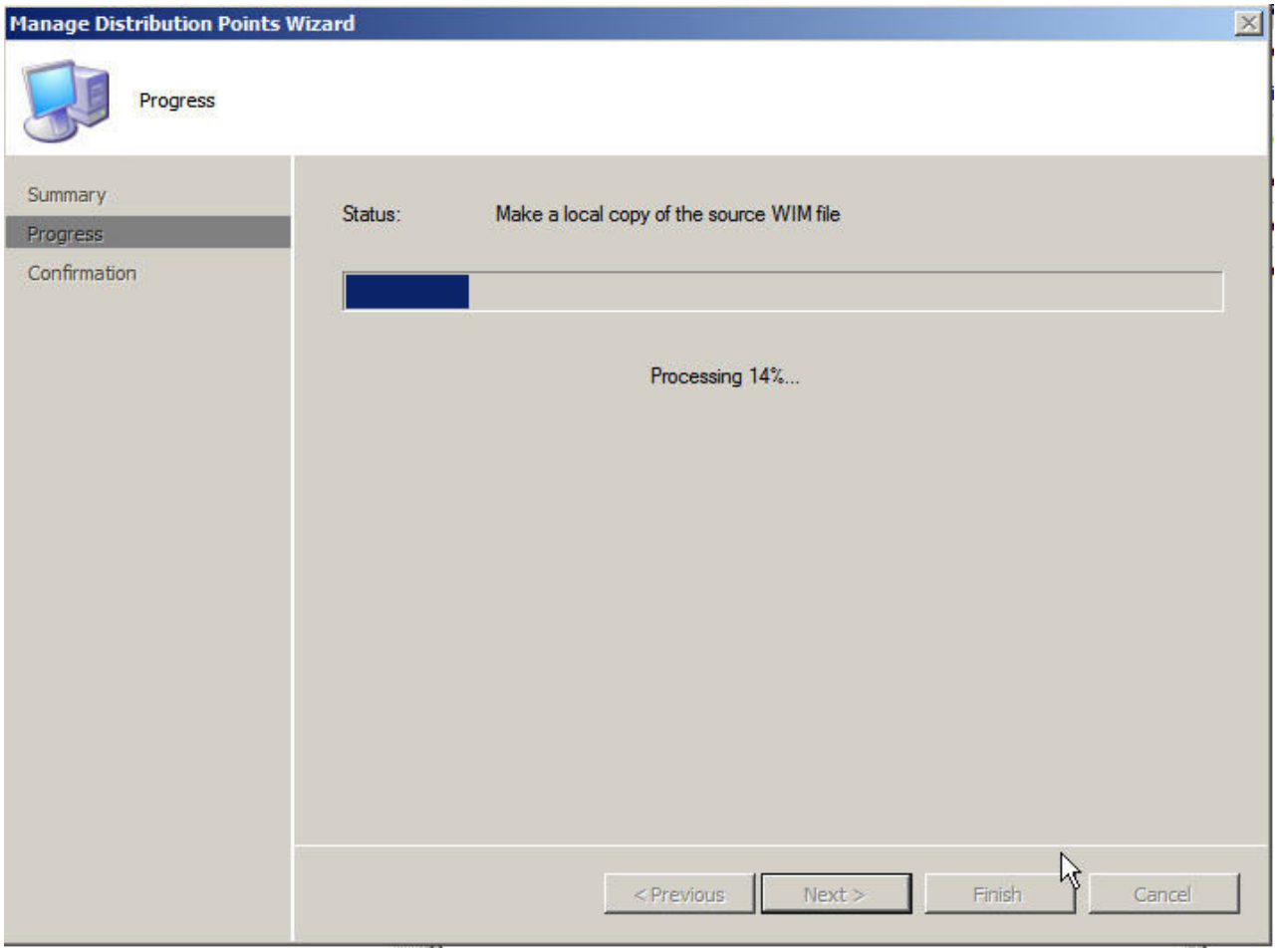


Figure 28. Update Distribution Points Wizard

Adding command-line support to the boot images for troubleshooting

Add command-line support to a boot image for easier troubleshooting on the target server. Command-line support also provides quick access to the task sequence logs.

About this task

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

To enable the debug command shell, change the property value setting on the boot image.

1. Click **System Center Configuration Manager->Site Database->Computer Management->Operating System Deployment->Boot Images->IBM Deployment Boot Image (x86) or IBM Deployment Boot Image (x64)**.
2. Right-click the boot image and select **Properties**.
3. Select the Windows PE tab.

4. Select the **Enable command support (testing only)** check box.

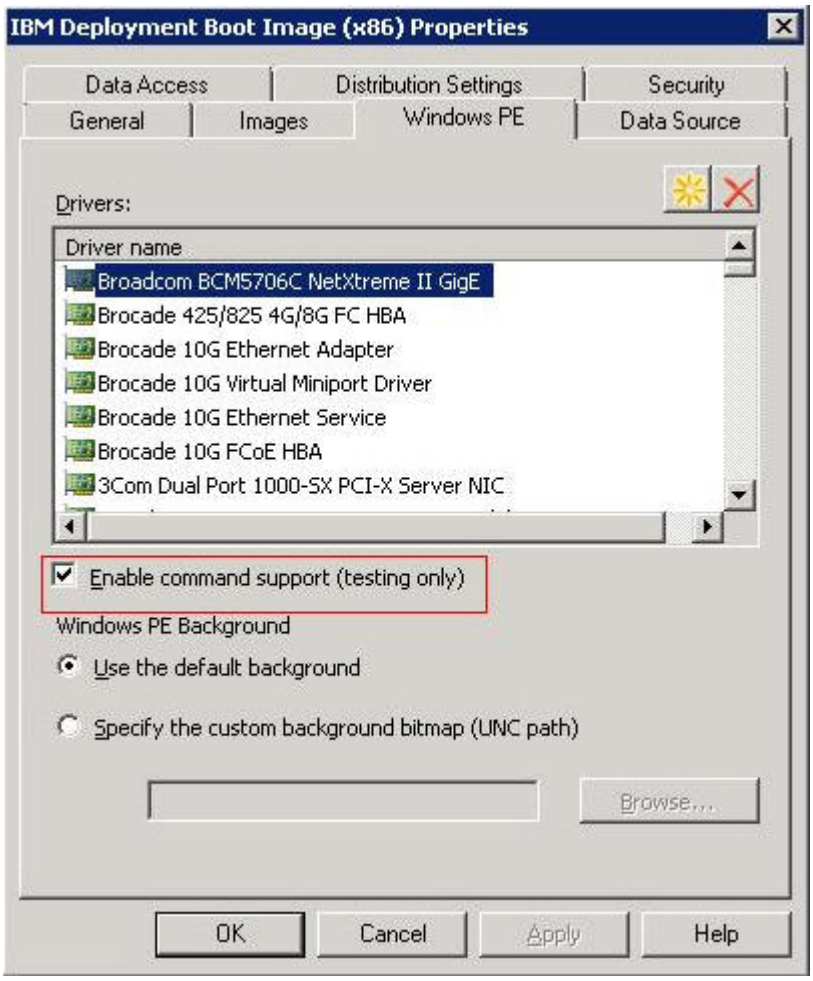


Figure 29. Enabling command-line support

5. Click **OK**.

What to do next

After completing this procedure, update the distribution points. See "Updating distribution points" on page 30.

Creating a task sequence for IBM servers

The IBM Server Deployment Task Sequence template can help you create a task sequence for the IBM servers.

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**.

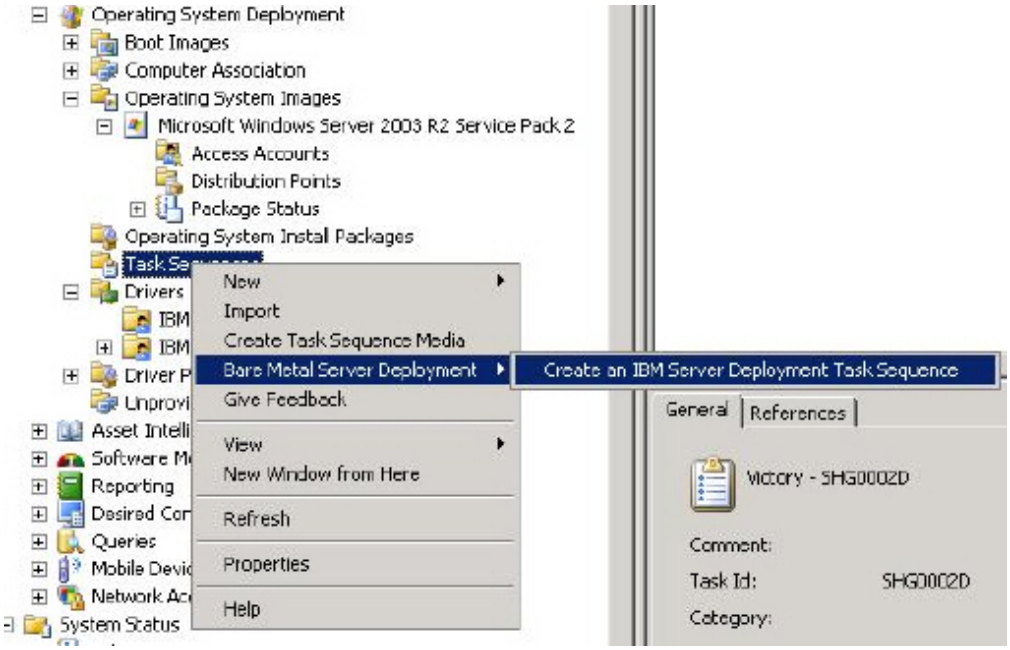


Figure 30. Menu of "Create an IBM Server Deployment Task Sequence"

3. In the Create Server Deployment Task Sequence wizard, you can select more than one device driver that you want to set during deploying, and input administrator and password of the SCCM server.

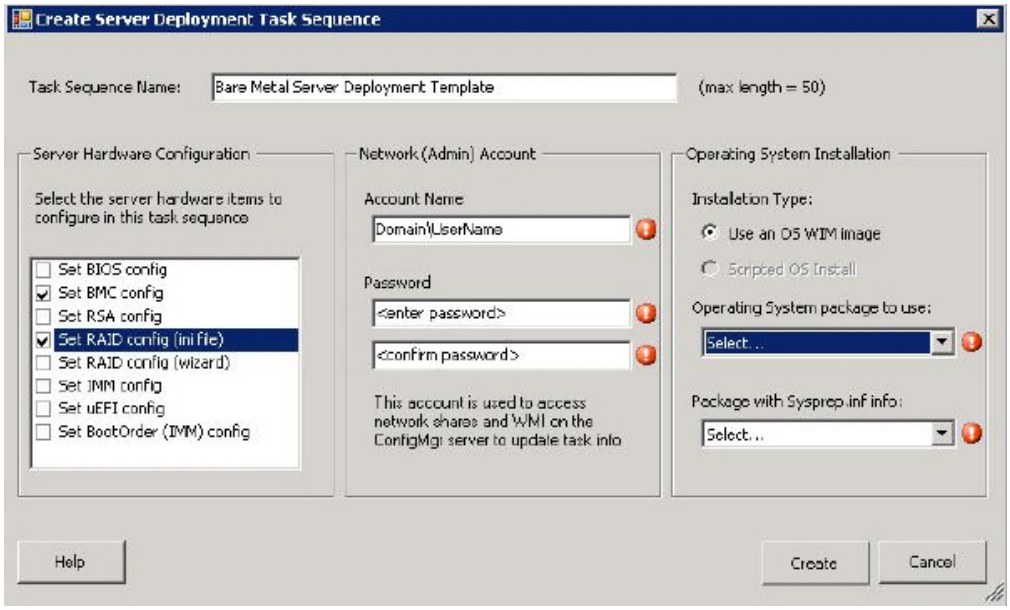


Figure 31. The Create Server Deployment Task Sequence wizard

4. Navigate to **Operating System Deployment** → **Task Sequence**, select the task sequence created and right-click **Edit**.

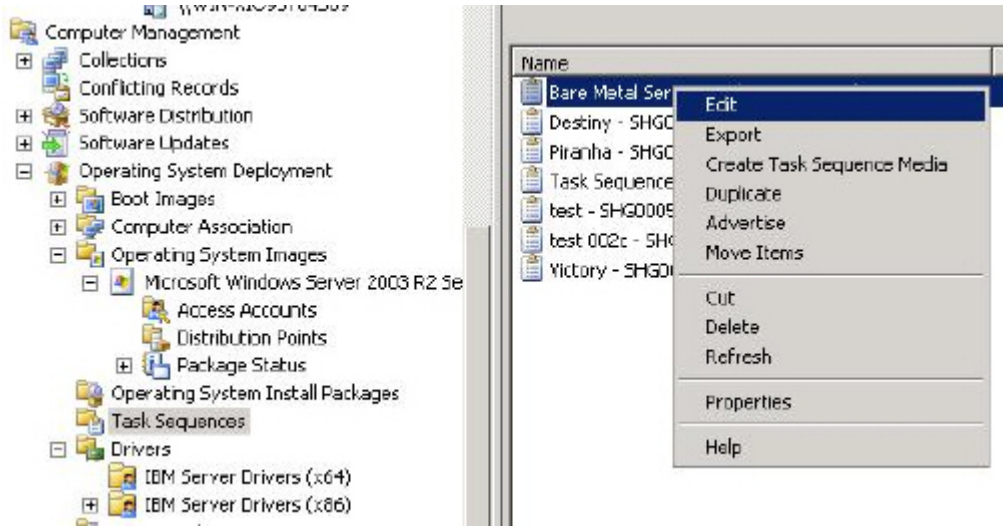


Figure 32. Opening the Task Sequence Editor

5. Click **OK** on the dialog box that pops up.

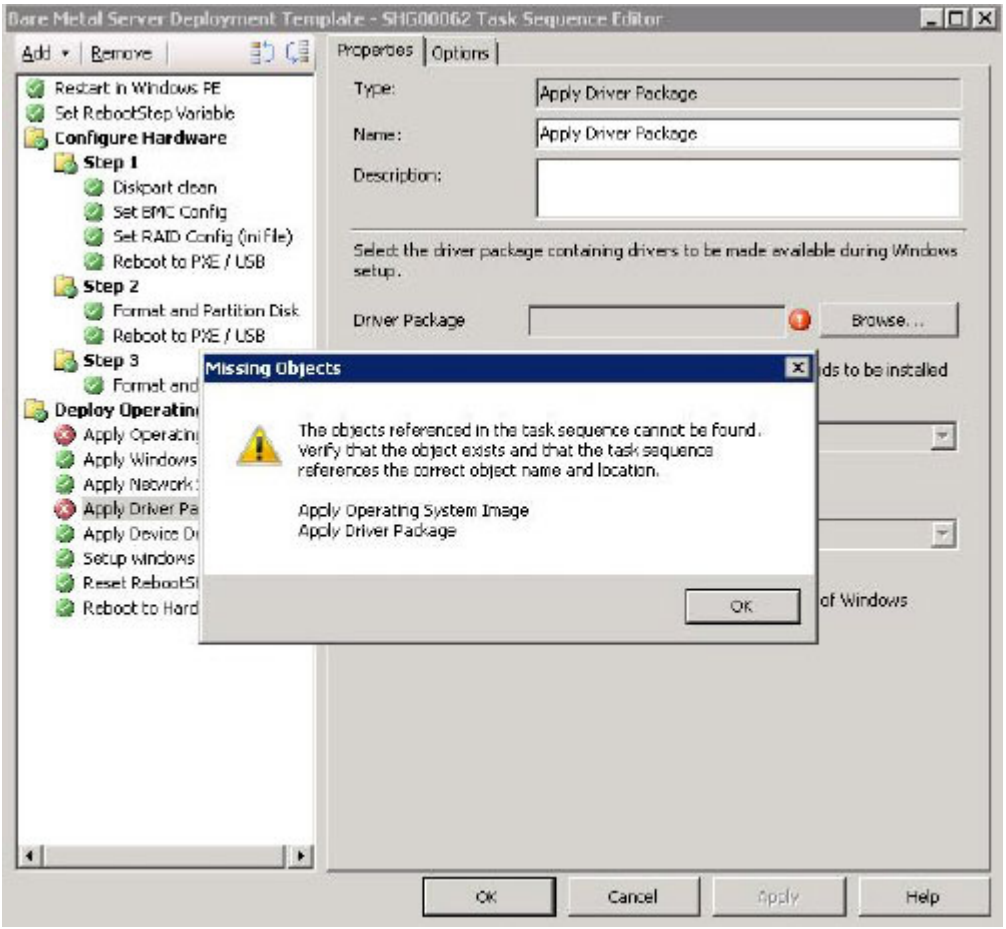


Figure 33. Missing Objects dialog box

6. Configure the **Apply Operating System Image** settings and **Apply Driver Package** settings and click **OK**.

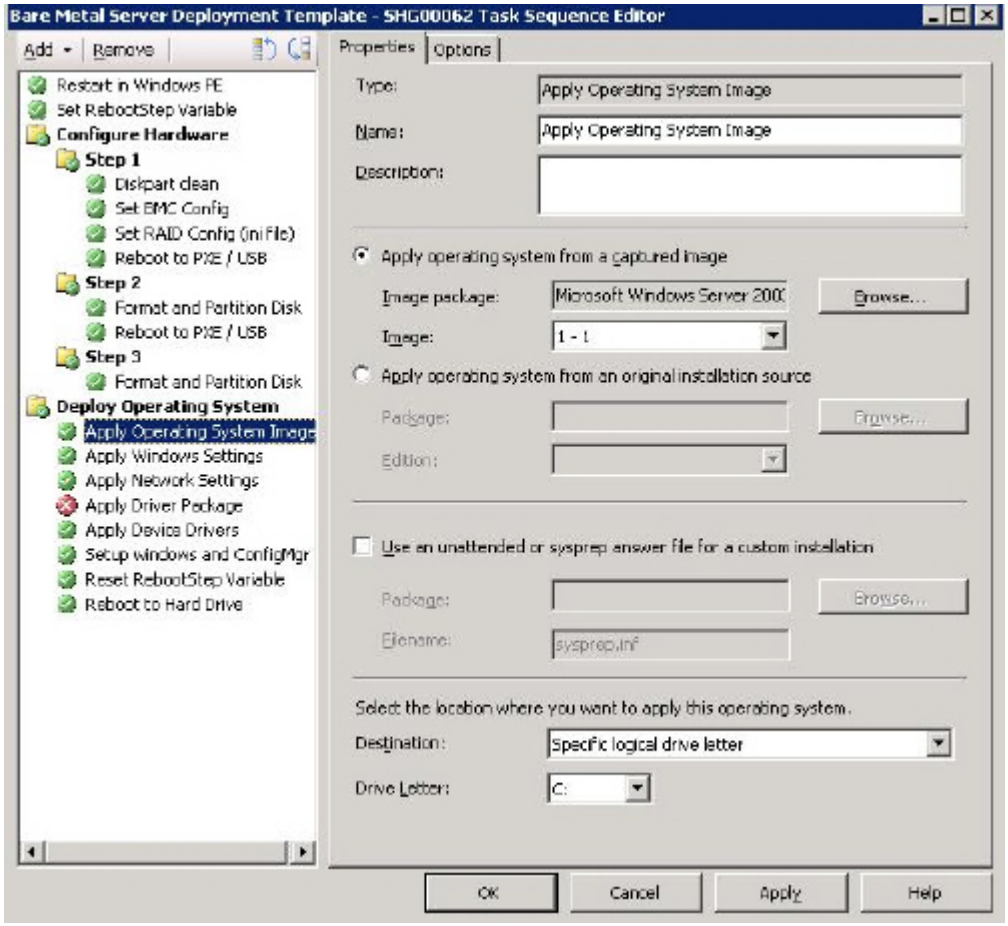


Figure 34. Apply Operating System Image settings

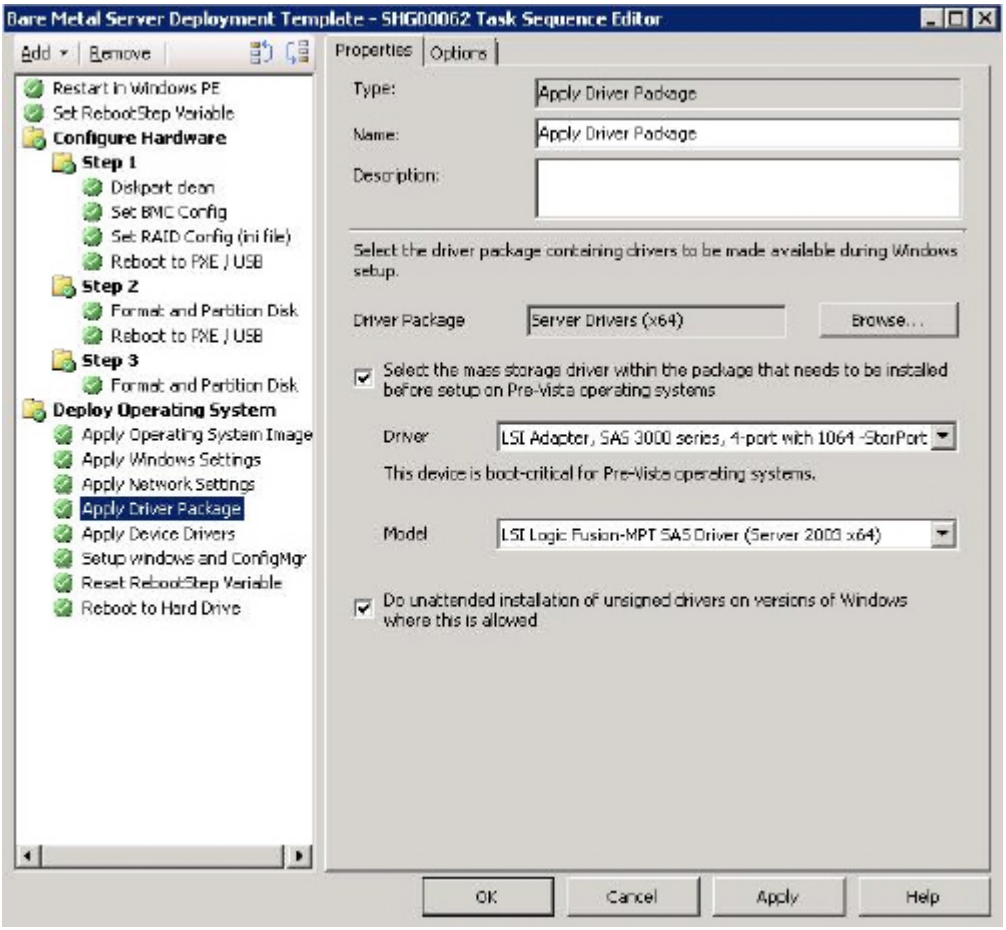


Figure 35. Apply Driver Package

For a description of the IBM Deployment Pack feature, see "IBM Deployment Pack feature reference" on page 43.

7. Advertise the task sequence to the target server. See step 9 on page 40 for detailed instructions.

Updating the distribution points for a boot image

After a new image is added or a change is made to the image, you must copy the new image to the Pre-boot Execution Environment (PXE) distribution point.

1. Launch **Microsoft Configuration Manager 2007** to open the Configuration Manager console.
2. From the console, open **Operating System Deployment → Boot Images**.
3. Right click one of the boot images and click **Update Distribution Points** from the context menu.

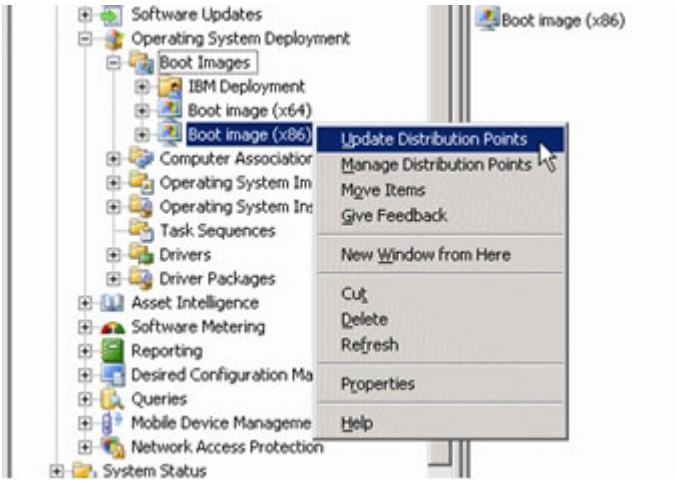


Figure 36. Update Distribution Points option

Advertising the task sequence to the new servers

After saving the task sequence, you can assign the task sequence to the collection of servers.

1. Launch **Microsoft Configuration Manager 2007** to open the Configuration Manager console.
2. Click **System Center Configuration Manager** → **Site Database** → **Computer Management** → **Operating System Deployment** → **Task Sequences**.
3. Right-click the task sequence and select **Advertise**.
4. Use the New Advertisement Wizard to assign the task sequence.
5. Always configure advertisements with the following settings when using PXE:

Option	Description
General page	Select **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:** "Always rerun program"
Distribution Points page	Select **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 causes the task sequence engine to ignore all actions that have packages set for this option.

Option	Description
Interaction page	Select **Show task sequence progress**.

Capturing operating system images

You can create a cloned operating system using the sample Task Sequence as a guide.

About this task

The recommended way to build an operating system image for deployment is to build a reference server with everything installed that is required for the image. You need to build a reference server with the tools, drivers, agents, service packs, updates, and so on. After the server is built, run `sysprep` and shut down the server.

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 95.
3. To capture or deploy a server with Configuration Manager, you must add the computer name, MAC address, and GUID information for the target reference server to the Configuration Manager database and to a collection.

   Add the computer name, the MAC address, and the GUID. To find a specific server, you only need to add the computer name and the MAC address.

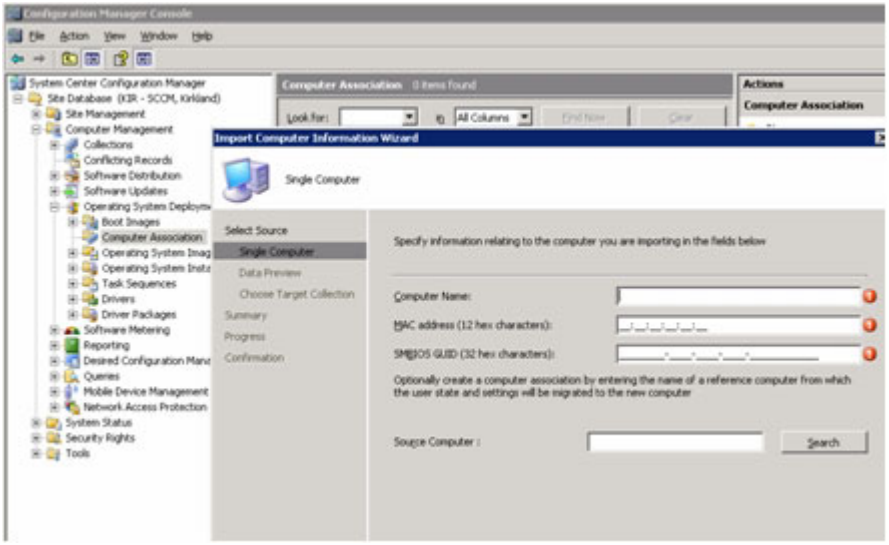


Figure 37. Import Computer Information Wizard

4. 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.

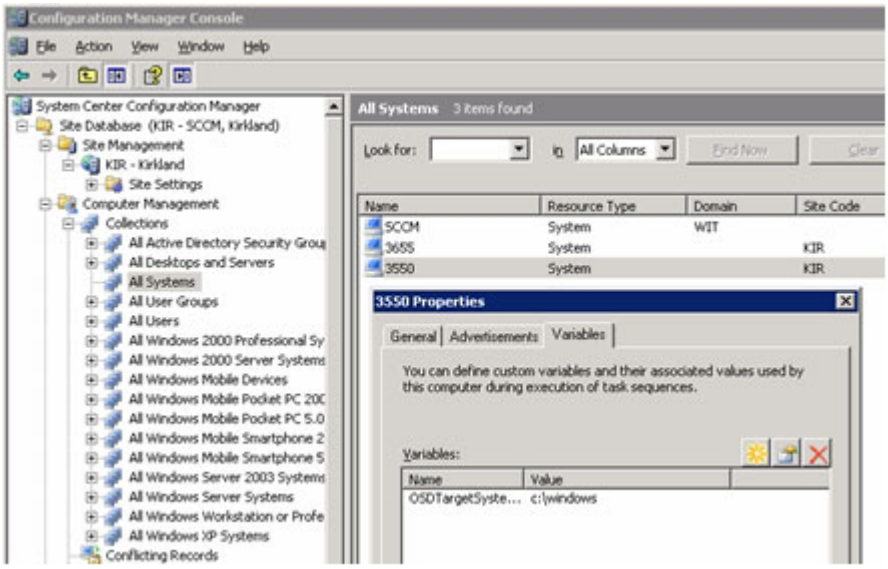


Figure 38. Setting the OS location on the target server

b. Set the *OSDTargetSystemRoot* variable to the system driver, for example, `OSDTargetSystemRoot=c:\windows`

5. 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.

6. Create a task sequence for capturing the image.

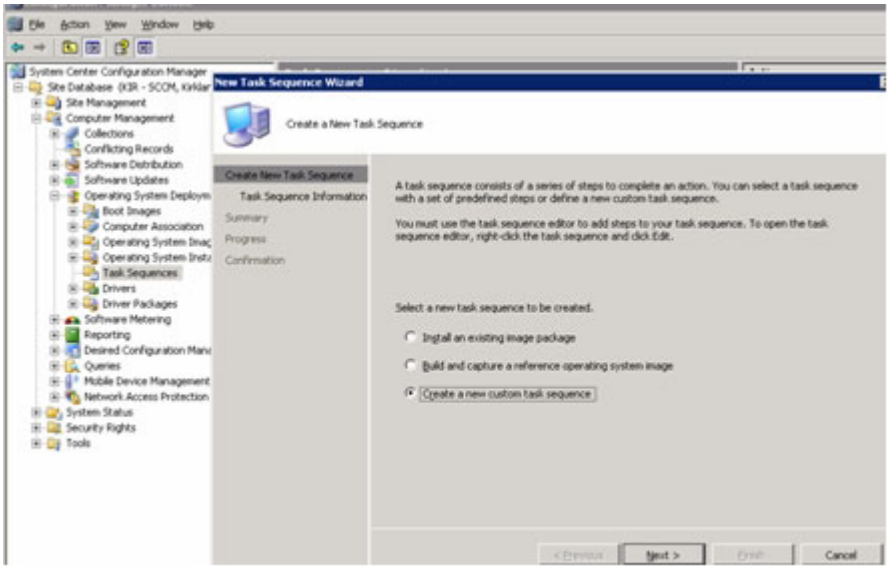


Figure 39. The New Task Sequence Wizard

7. Name the task sequence.

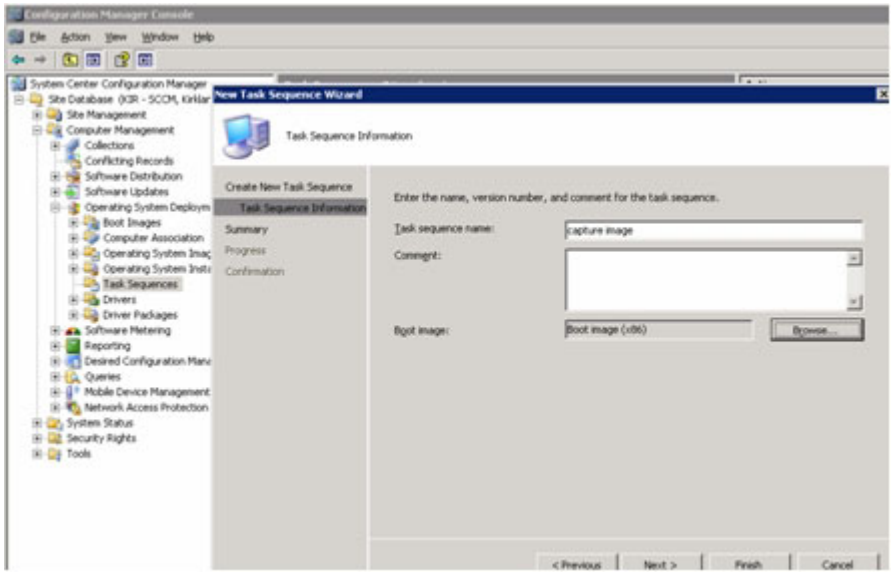


Figure 40. Naming the task sequence in the New Task Sequence Wizard

8. Edit the task sequence information, to include all steps for capturing the image.

   For example, fill in the path for storing the image using the share that you created in an earlier step.

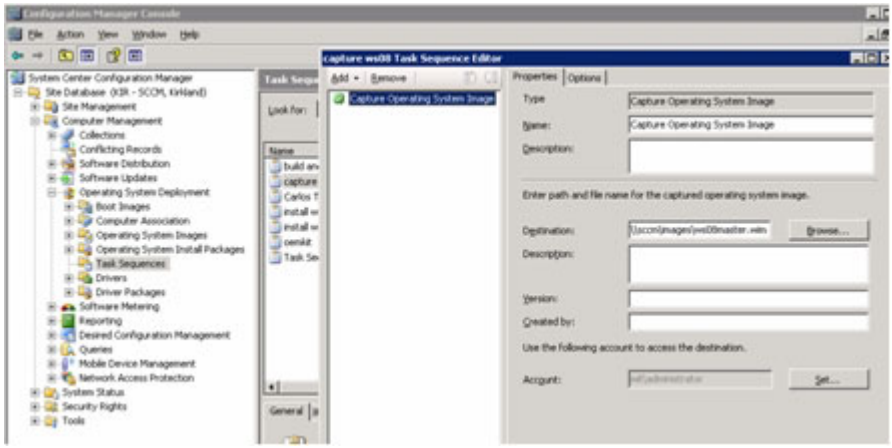


Figure 41. Editing the OS capture task sequence to identify the share

Once the task sequence has been completed an advertisement must be made. Advertisements are used in Configuration Manager to assign jobs to particular client machines – in this case, the machine that is being captured.

9. Right-click the task sequence and select **Advertise**.

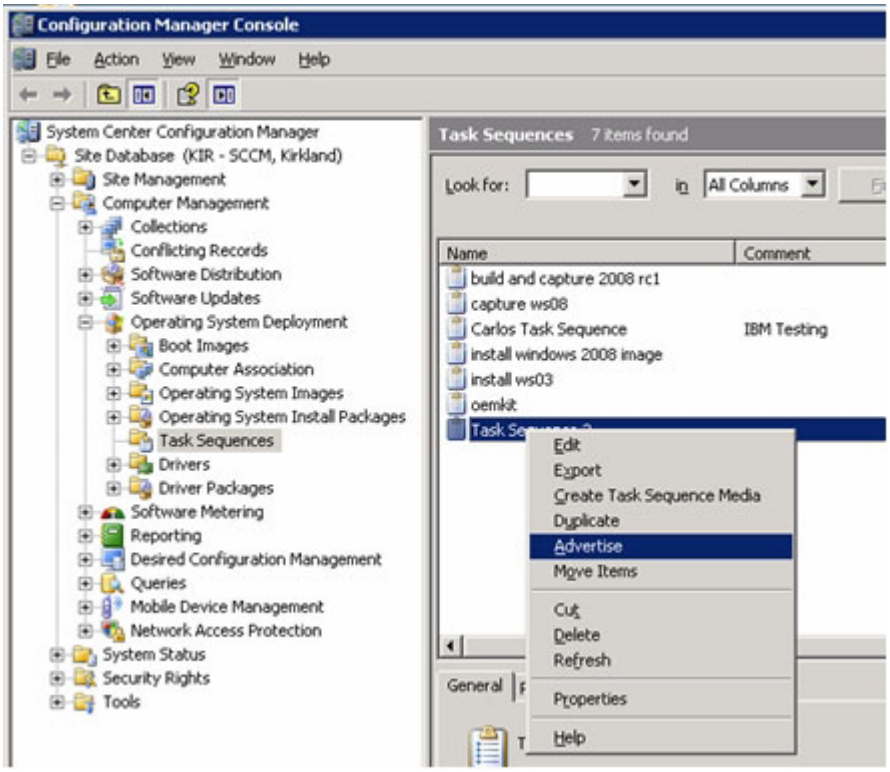


Figure 42. Advertising the OS capture task sequence

10. Use the New Advertisement Wizard to assign the task sequence.

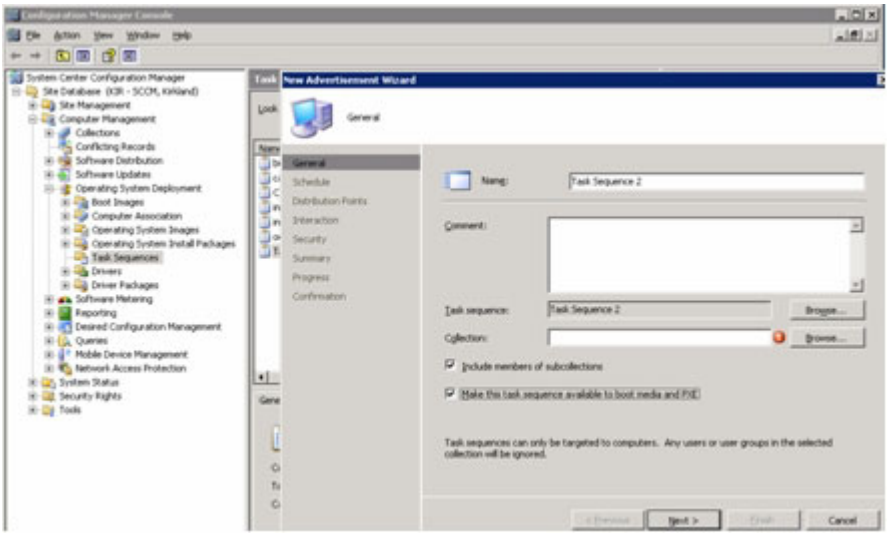


Figure 43. New Advertisement Wizard

Make sure the task sequence is made available to PXE. (As the example shown in Figure 43.) Also select the collection that contains the target system. This is the machine that was added to the database earlier. Without being added to the database, and to a collection, the machine will never pick up the advertisement.

11. Fill in the settings on the **Schedule** page.

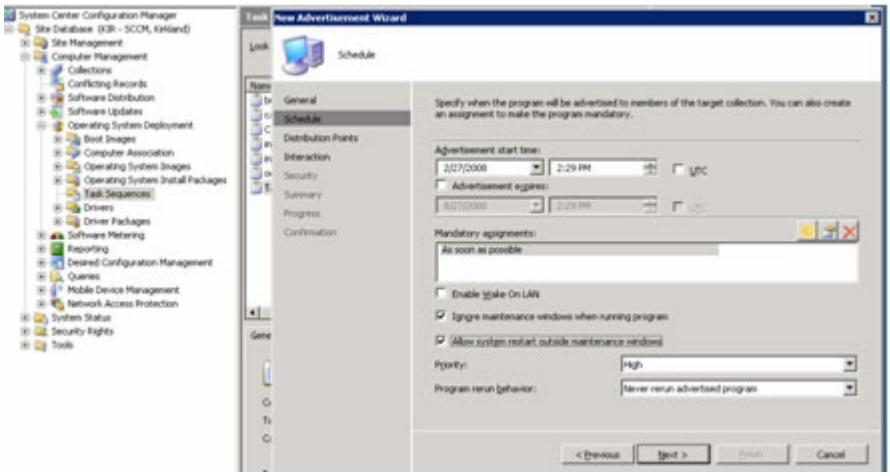


Figure 44. New Advertisement Wizard: Schedule page

12. Fill in the settings on the **Distribution Points** page.

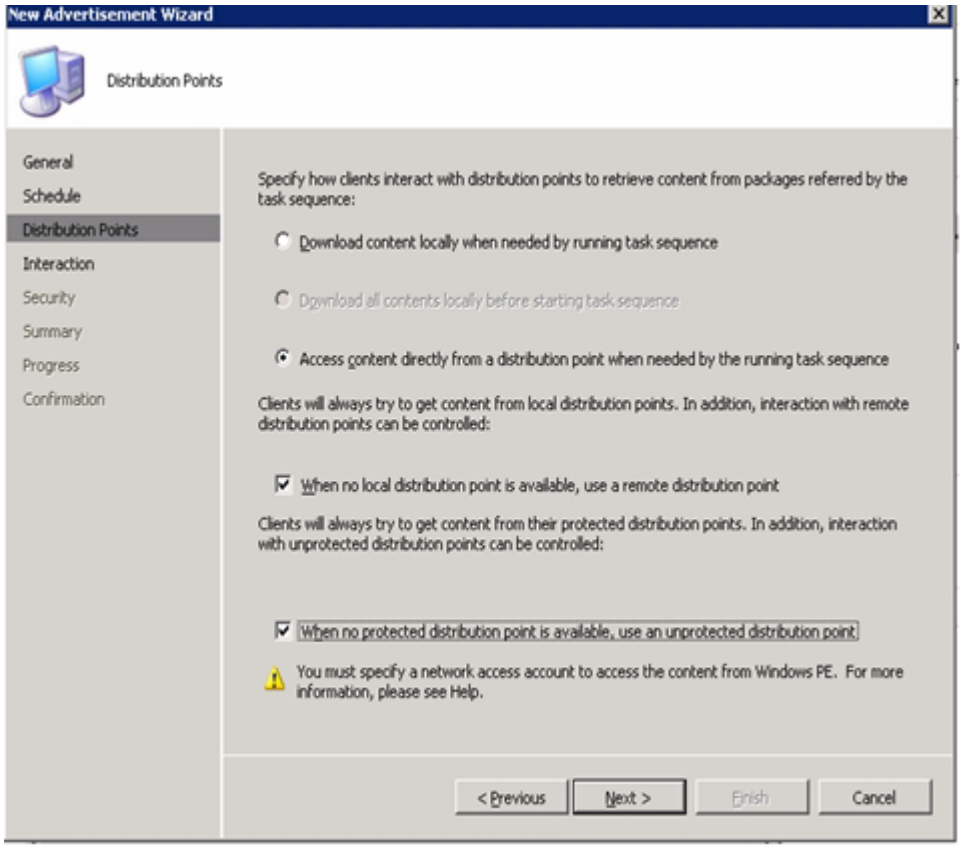


Figure 45. New Advertisement Wizard: Distribution Points page

13. 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.

14. 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.

    For more information, see TechNet: About the Operating System Deployment Reference Computer.

IBM Deployment Pack feature reference

This section describes the features and functionality that are available in the IBM Deployment Pack. Some functionality or capabilities might differ from other Configuration Manager deployment kits with which you might be familiar. Such differences are based on the capabilities of existing tools or additional integration that IBM has included in this Configuration Manager deployment kit.

Preparing the operating system image

This section describes how to capture operating system images and prepare reference servers.

Capturing operating system images

Use the Configuration Manager to capture operating system images.

The IBM Deployment Pack supports the clone method to install operating systems, so an operating system image must be prepared.

Preparing the reference server

This topic directs you to information on building the reference server.

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. On the reference server, run the sysprep /generalize command to prepare the image for installation onto other servers. For instructions, see Appendix C, “How to run Sysprep,” on page 95.

Adding a target server to Configuration Manager

This topic describes how to create a collection and add one or more servers to it.

About this task

To enable SCCM to recognize the target servers, use the MAC address of the system's primary network interface (the interface used for deployment). To group servers, SCCM uses collections. A number of default collections are already created based on operating system version and other attributes. Use the following procedure to create a new collection to use for deployments.

1. Right-click **Site Database → Computer Management → Operating System Deployment → Computer Association → Import Computer Information**. The Import Computer Information Wizard is displayed. You can add one or multiple servers to a collection at the same time.

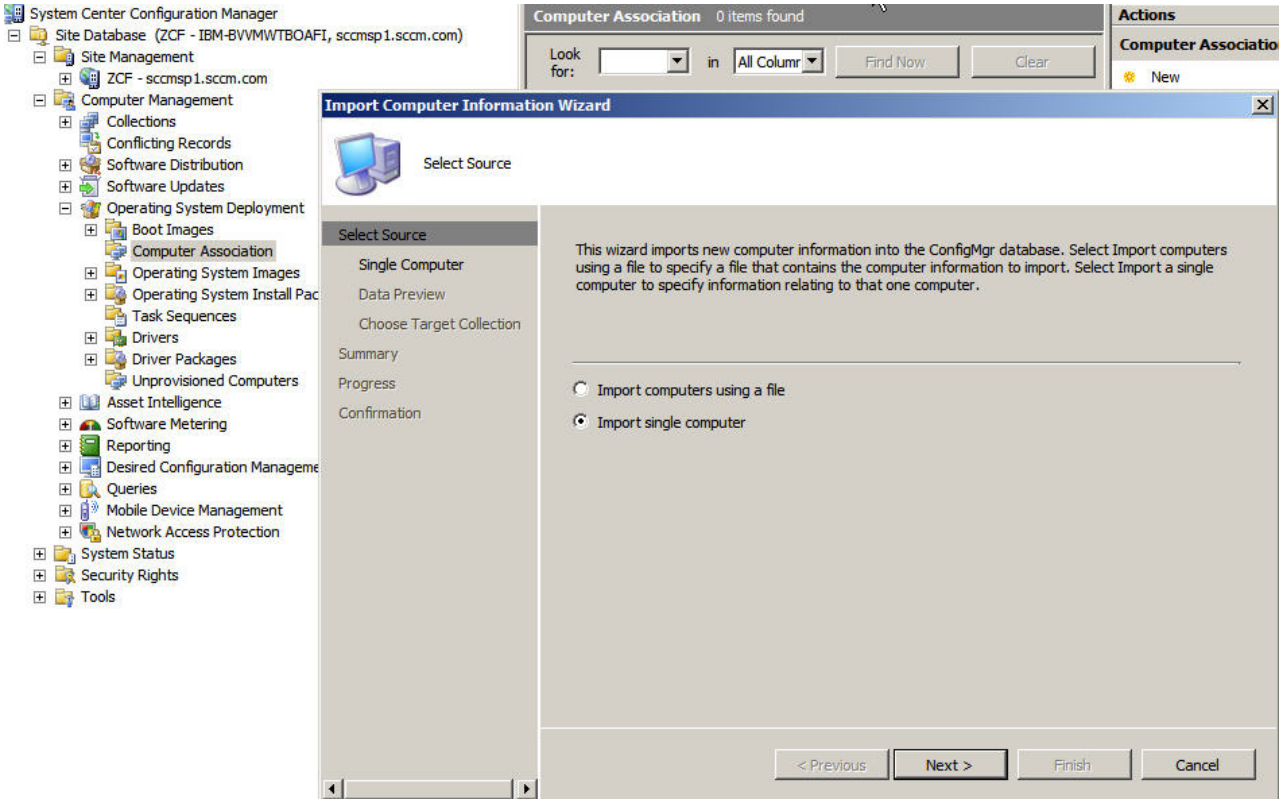


Figure 46. Import Computer Information Wizard

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.

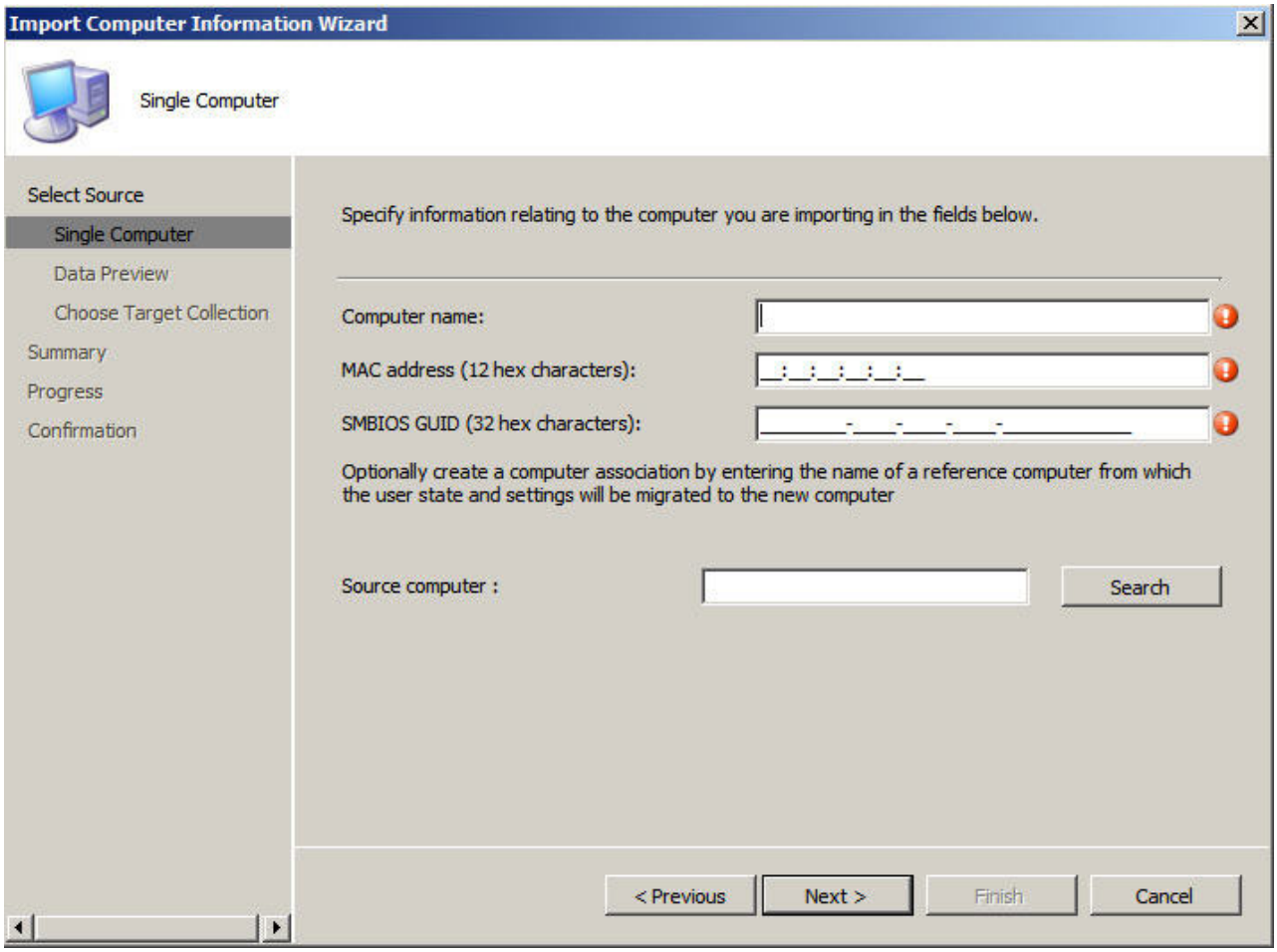


Figure 47. Adding a single computer

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.

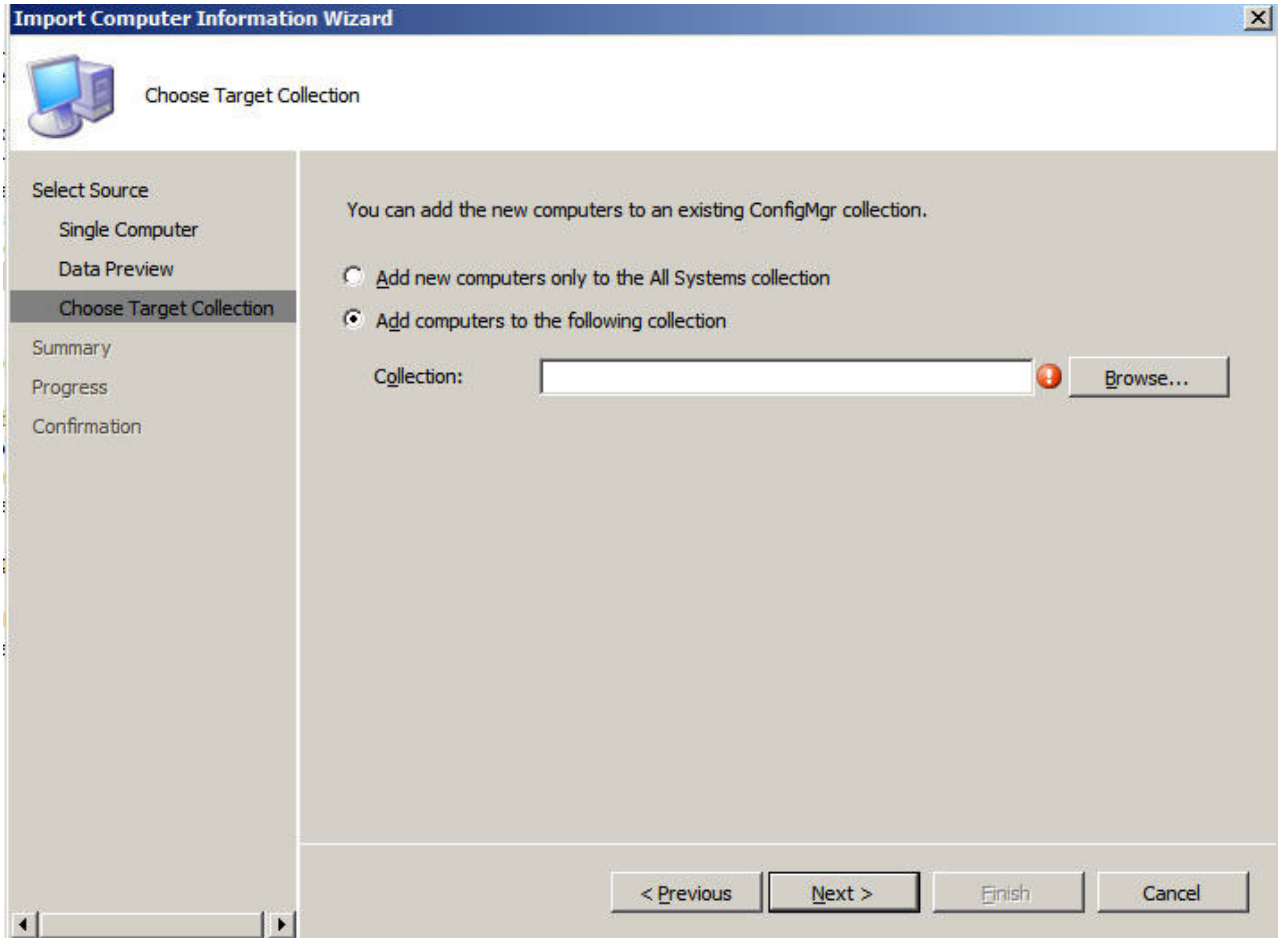


Figure 48. Adding the new computer to a collection

6. Click **Next**.
7. Continue through the remaining pages by clicking **Next**.
8. On the last page, click **Finish**.

Preparing Configuration Manager

This topic describes how to prepare the target server for the operating system.

1. On the target server (in this case, the server that is to be captured), 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 server object, then select the Variables tab.
   b. Set the OSDTargetSystemRoot variable to the system driver, for example: OSDTargetSystemRoot=c:\windows

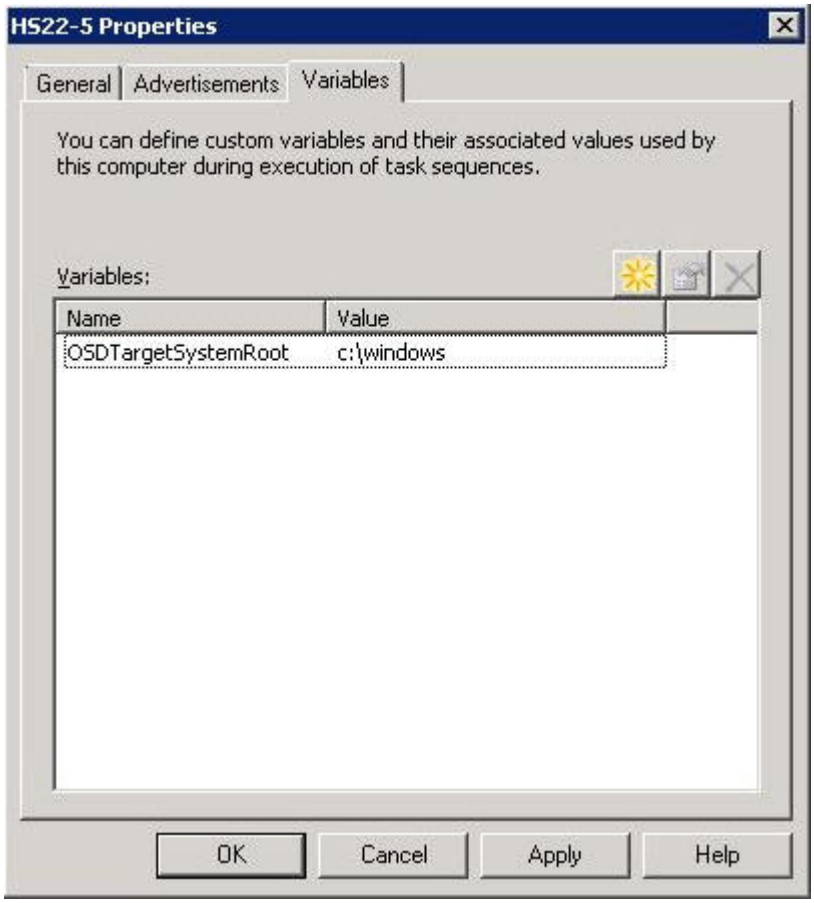


Figure 49. Setting the location variable

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 is displayed, select **New custom task sequence** and follow the prompts. This action creates an empty task sequence.
   d. Select the IBM custom boot image, and make sure that **PXE media** is selected.
4. To bring up the task sequence editor, right-click the newly created task sequence and select **Edit**.
5. From the Add menu, select **Images->Capture Operating System Image**. A screen similar to the following one appears.

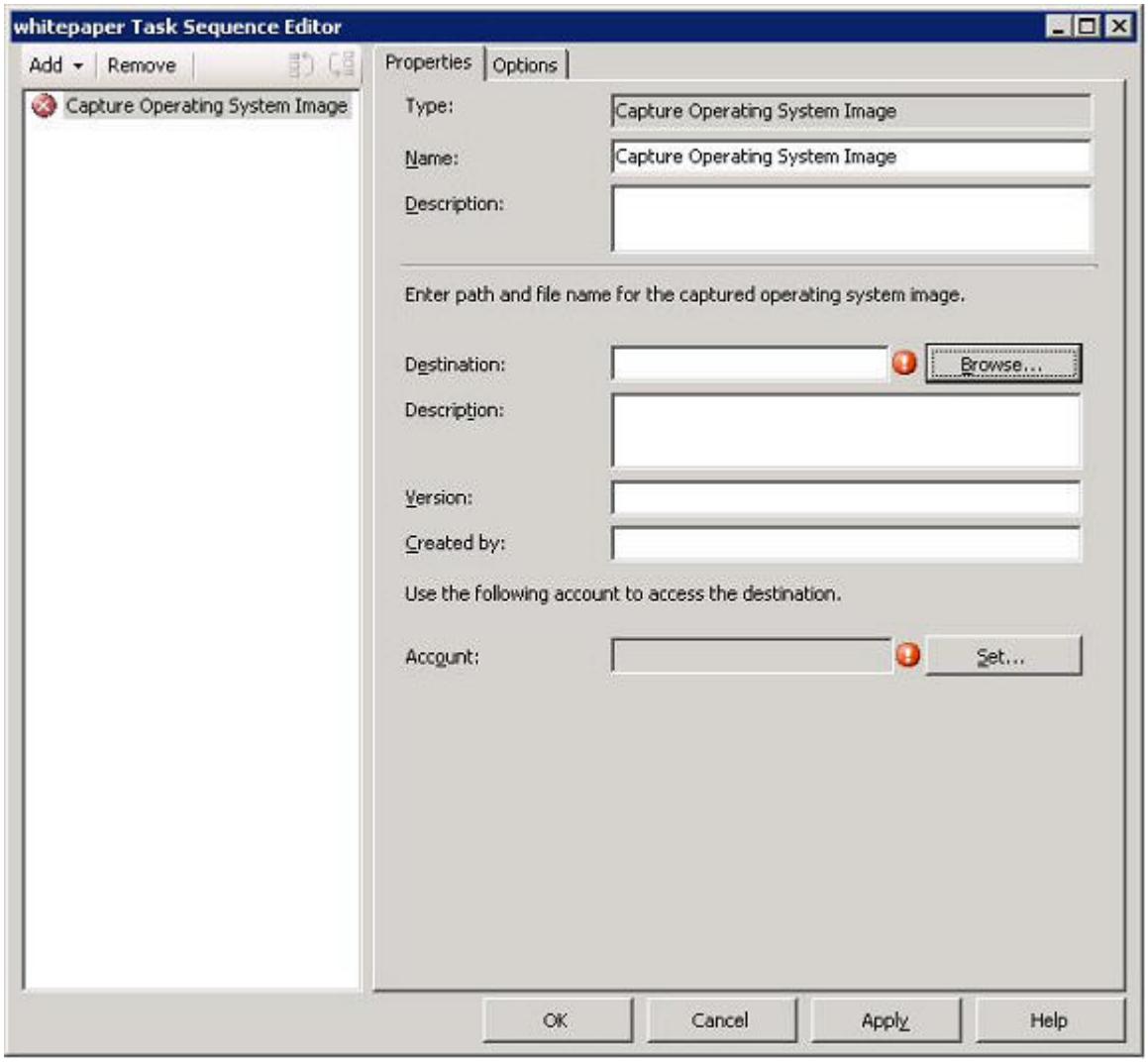


Figure 50. Capture Operating System Image

6. Enter 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 that the image can be accessed by the task sequence. You can now use this simple task sequence to capture the operating system from the reference server built earlier.

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

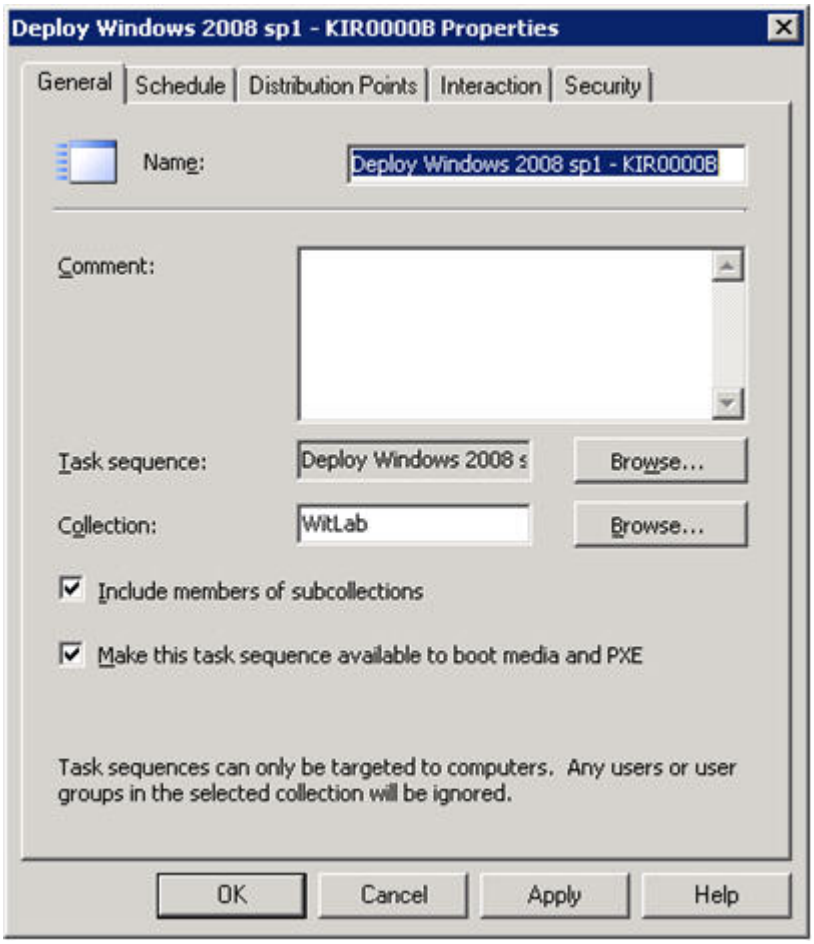


Figure 51. Advertisement settings, General tab

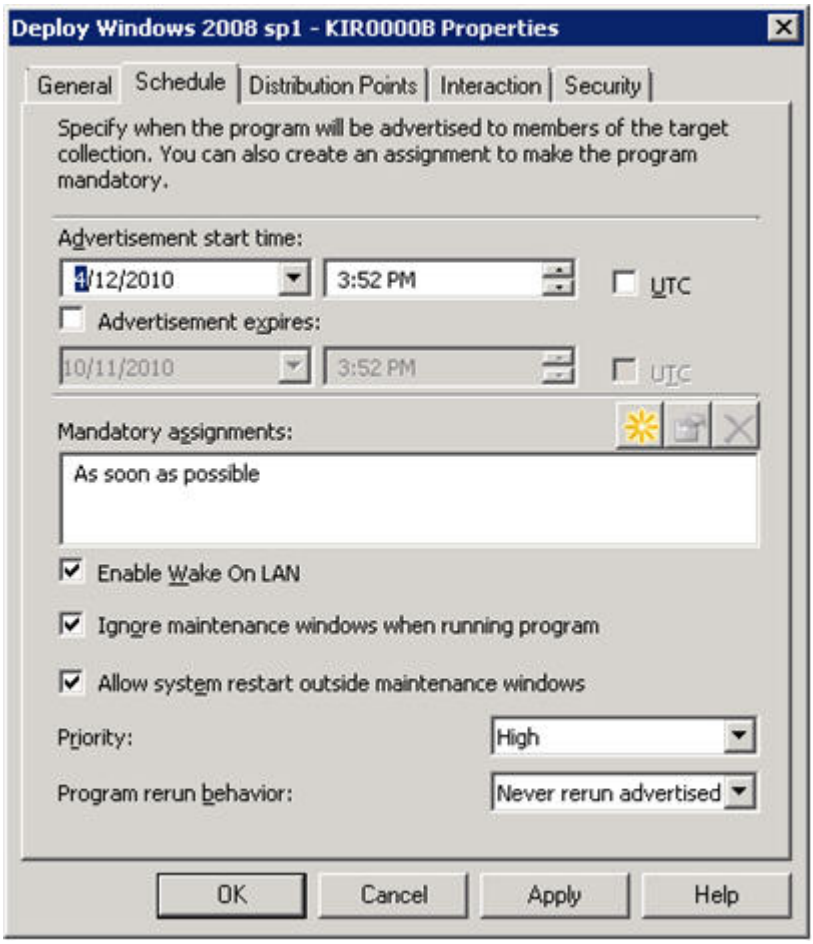


Figure 52. Advertisement settings, Schedule tab

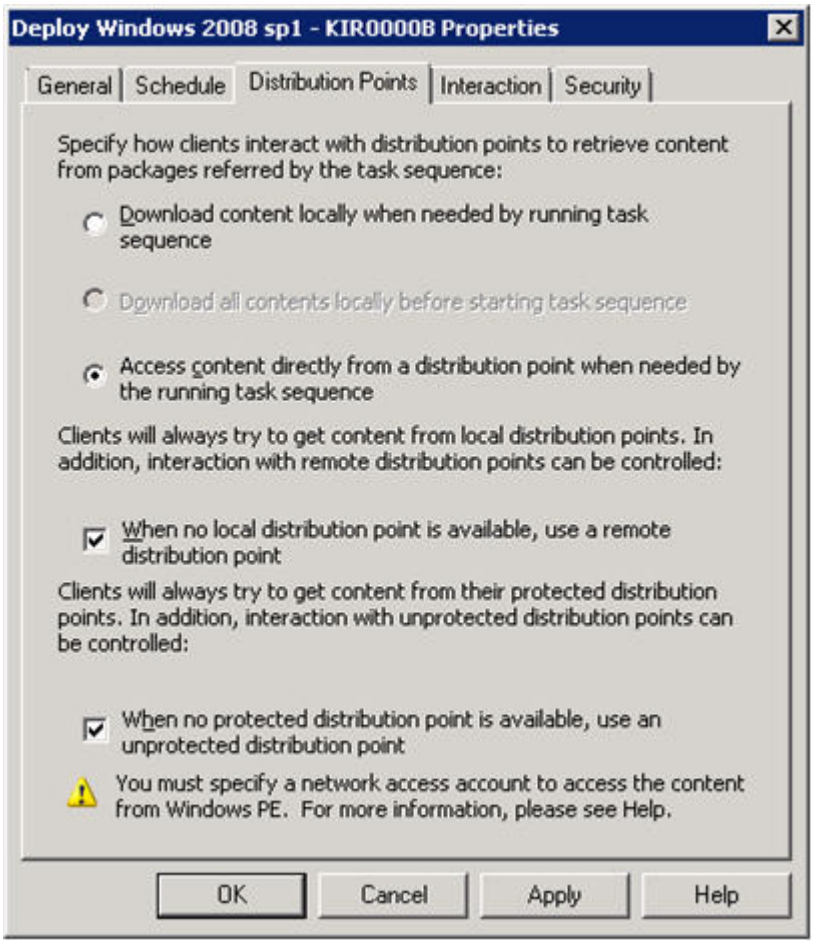


Figure 53. Advertisement settings, Distribution Points tab

Starting the reference server

This topic explains starting the reference server that is being captured.

Now that the advertisement is waiting, start the server that is being captured to the Preboot eXecution Environment (PXE). Verify that the site server and the target server connect, and that the site server transfers the boot image to the site server shared drive. The target server connects to the Configuration Manager site server and loads the boot image from the shared drive. Then, the target server starts the task sequence to capture the operating system image from the target server to the shared drive on the Configuration Manager site server.

Verifying the image on Configuration Manager

After the capture process is complete, you have to verify that the image exists on the Configuration Manager server.

After 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. Now, use Configuration Manager to deploy the image to other servers.

Note: You can use images captured manually (without using Configuration Manager to do the capture). However, using Configuration Manager to capture the

image can prevent 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 operating system image has been captured, add it into the SCCM distribution point for delivery. The next steps are to add the operating system image, and then manage and update the distribution points.

Adding operating system images

Use these steps to add the operating system images.

1. Click **Site Database** → **Computer Management** → **Operating System Deployment** → **Operating System Images** → **Adding Operating System Images**.

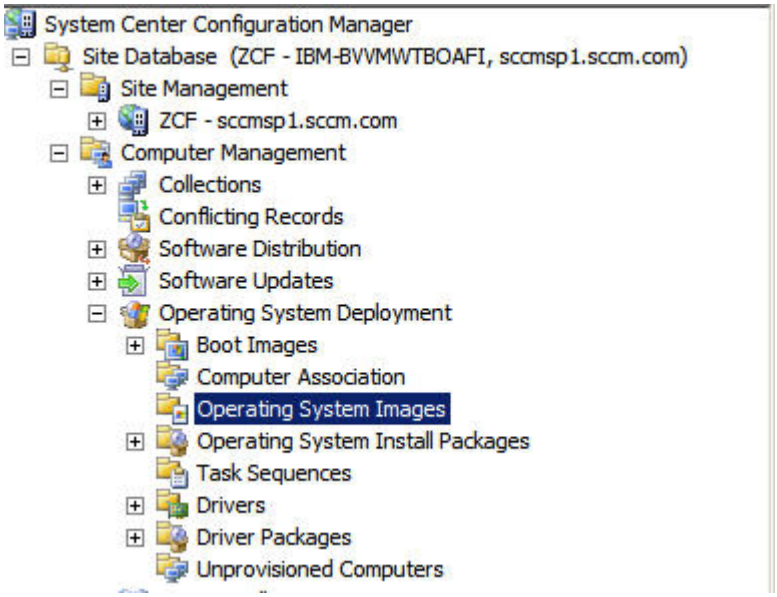


Figure 54. Adding operating system images

2. Click through the wizard prompts to finish.

Managing and updating operating system images

This topic describes how to manage and update operating system images.

About this task

This procedure is similar to the procedures "Managing distribution points" on page 30 and "Updating distribution points" on page 30

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 the IBM Deployment Pack provides various hardware configuration and operating system deployment functionality, the execution process is similar. This section explains the end-to-end deployment scenario. Use this scenario to deploy different scripts to fulfill different deployment pack functions.

Adding a target server to Configuration Manager

The first task in the scenario is to add the target server to Configuration Manager.

About this task

For detailed steps, refer to "Adding a target server to Configuration Manager" on page 43.

Preparing a task sequence

This topic explains how to create a task sequence using the template.

About this task

The IBM Deployment Pack includes a template to make it quick and easy to create a task sequence.

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.

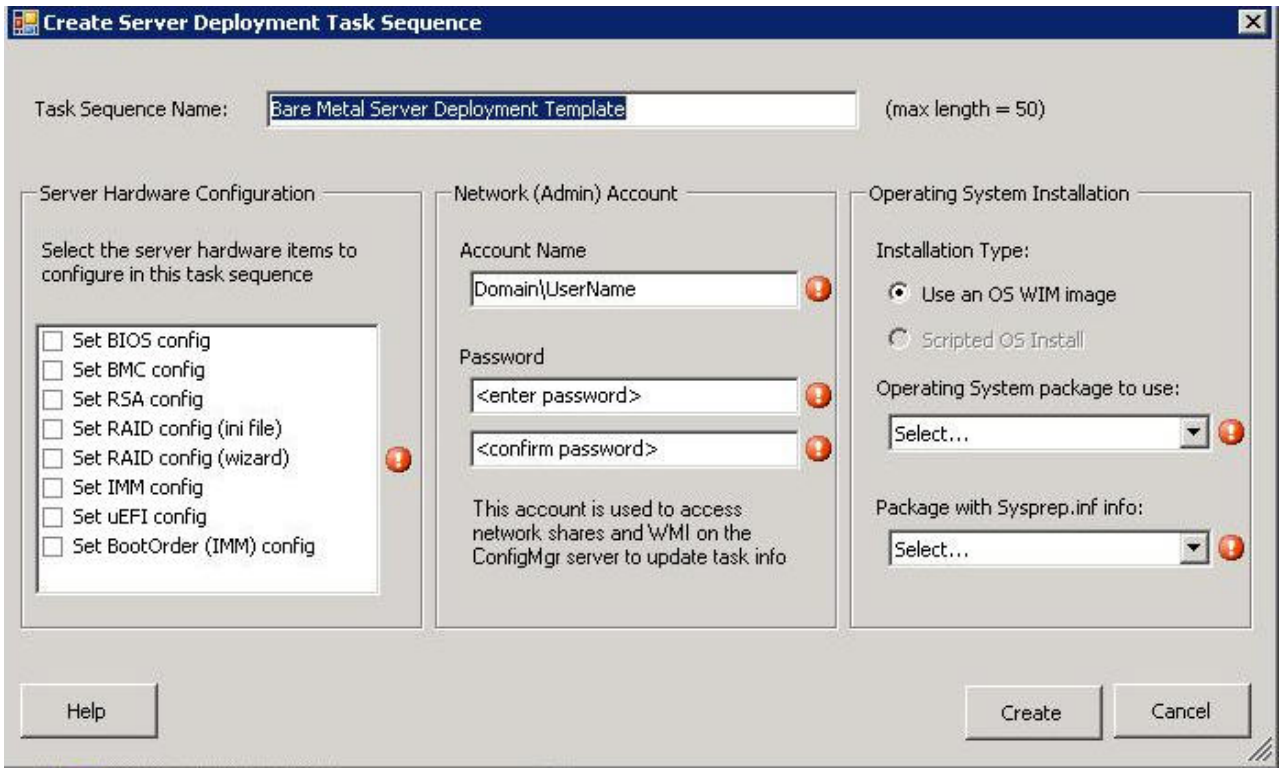


Figure 55. Creating a task sequence

a. From the list of IBM-specific hardware configuration actions that can be performed on System x servers, select the hardware items to configure for the task sequence.

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

c. On the right, select the operating system image to be used for this deployment.

3. When finished, select **Create** to create the task sequence.

4. In the left navigation panel, right-click the new task sequence and select **Edit**. A screen similar to the following is displayed.

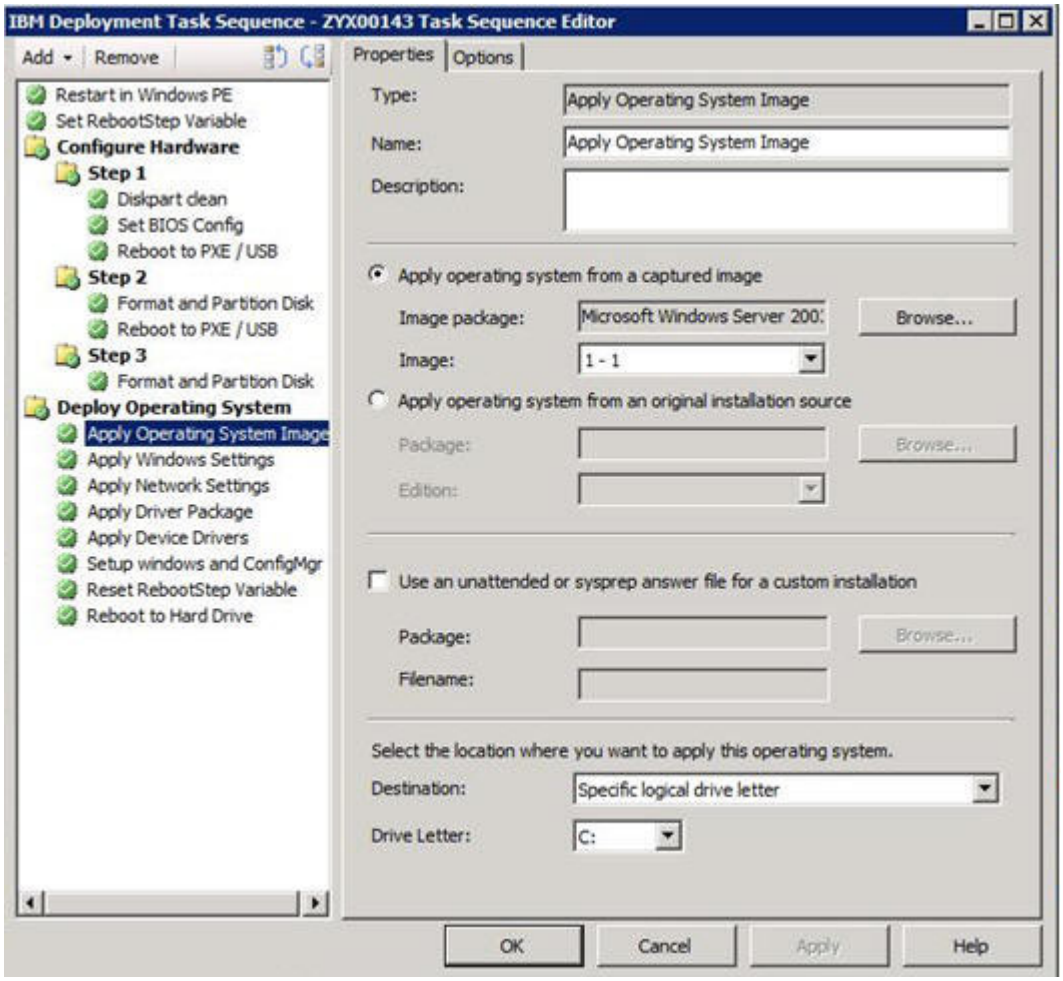


Figure 56. Applying driver package properties

5. If you are deploying Windows 2003 to the client server, ensure that the mass storage driver is selected from the Windows 2003 driver package in the Apply Driver Package step during "Creating a task sequence for IBM servers" on page 32. If you are deploying another operating system, OSD transparently selects the mass storage driver.

The actions from configuring hardware are provided by the deployment pack,

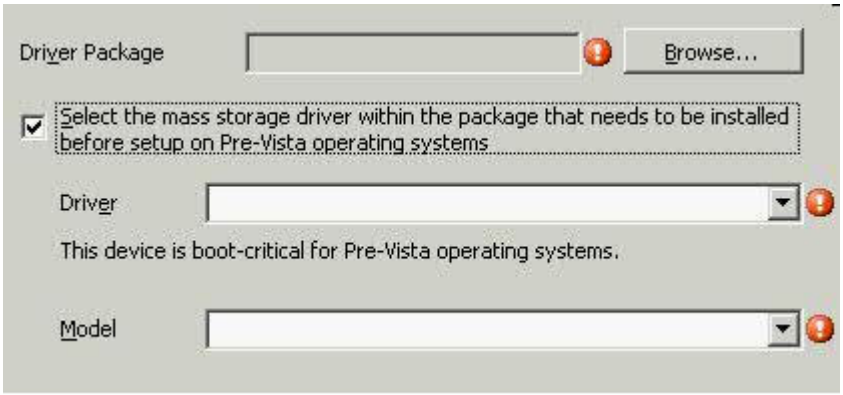


Figure 57. Selecting the mass storage driver

pre-operating system load. In these examples, Deploy Operating System is a Windows® installation with the IBM driver packages added.

6. Click **OK**.

Note: For IBM-specific hardware configuration, refer to Chapter 5, "IBM Deployment Pack features," on page 63. Prepare the operating system deployment image file using the instructions in "Preparing the operating system image" on page 43.

Advertising a task sequence

After creating and saving a task sequence, use these steps to create an advertisement and add it to a collection.

About this task

Advertisements are used in Configuration Manager to assign jobs to particular client servers – in this case, the server that is being captured. To complete the information for the advertisement, complete the following steps.

1. Right-click the task sequence and select **Advertise**.
2. Select the collection that contains the target server.
3. Select **Make this task sequence available to boot media and PXE**.

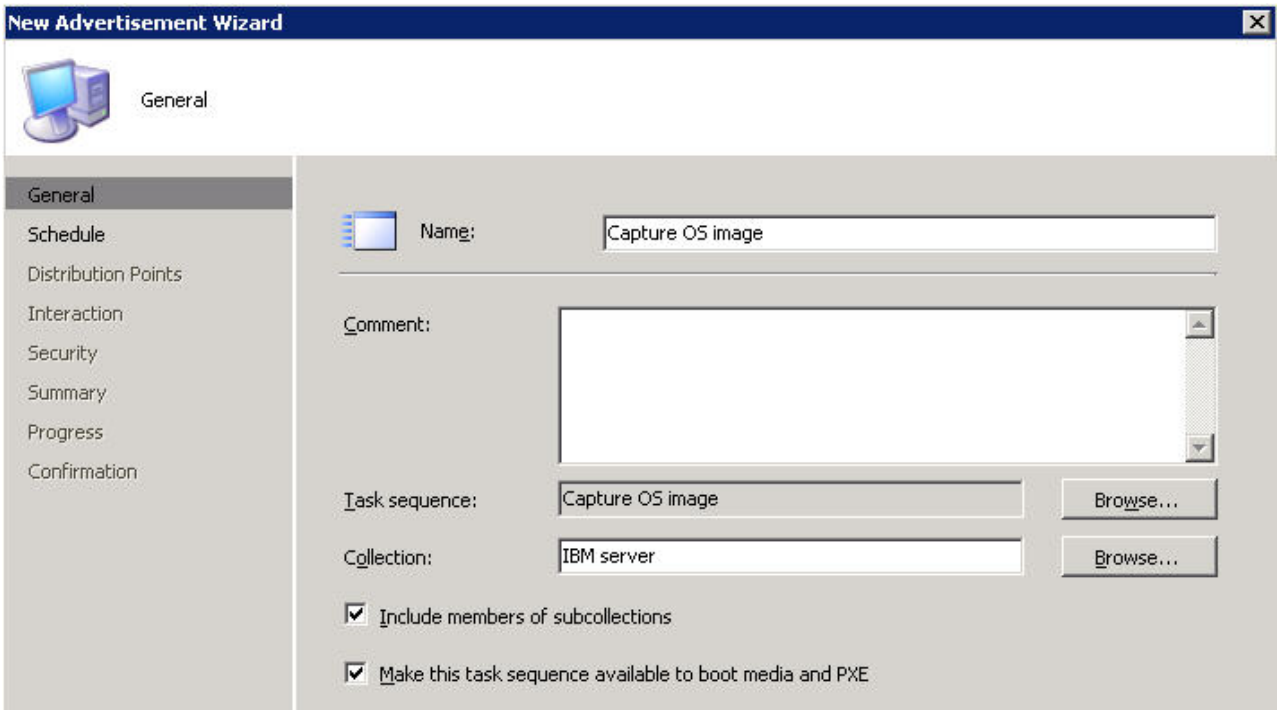


Figure 58. Selecting the collection containing the target server

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

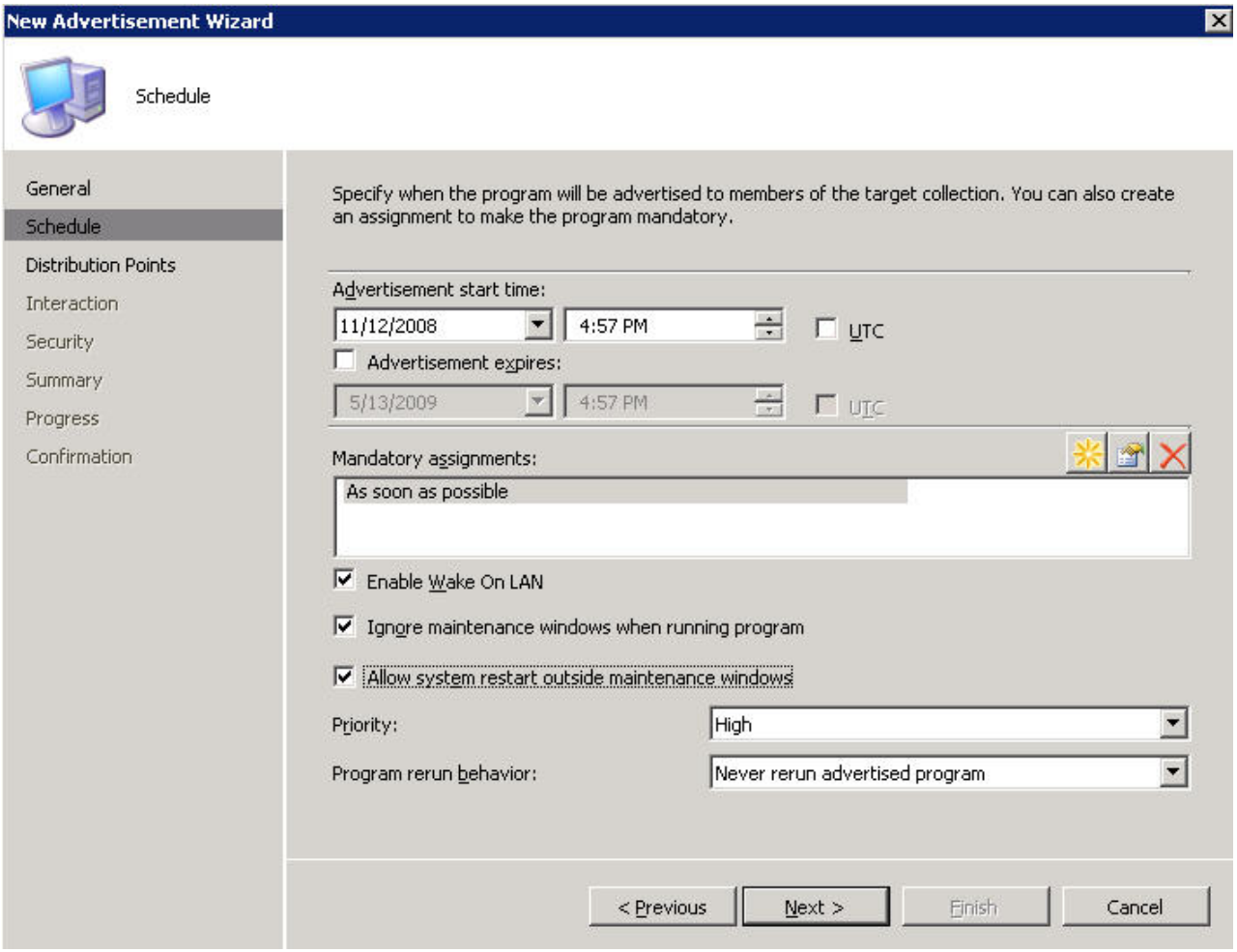


Figure 59. Scheduling the advertisement

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**.

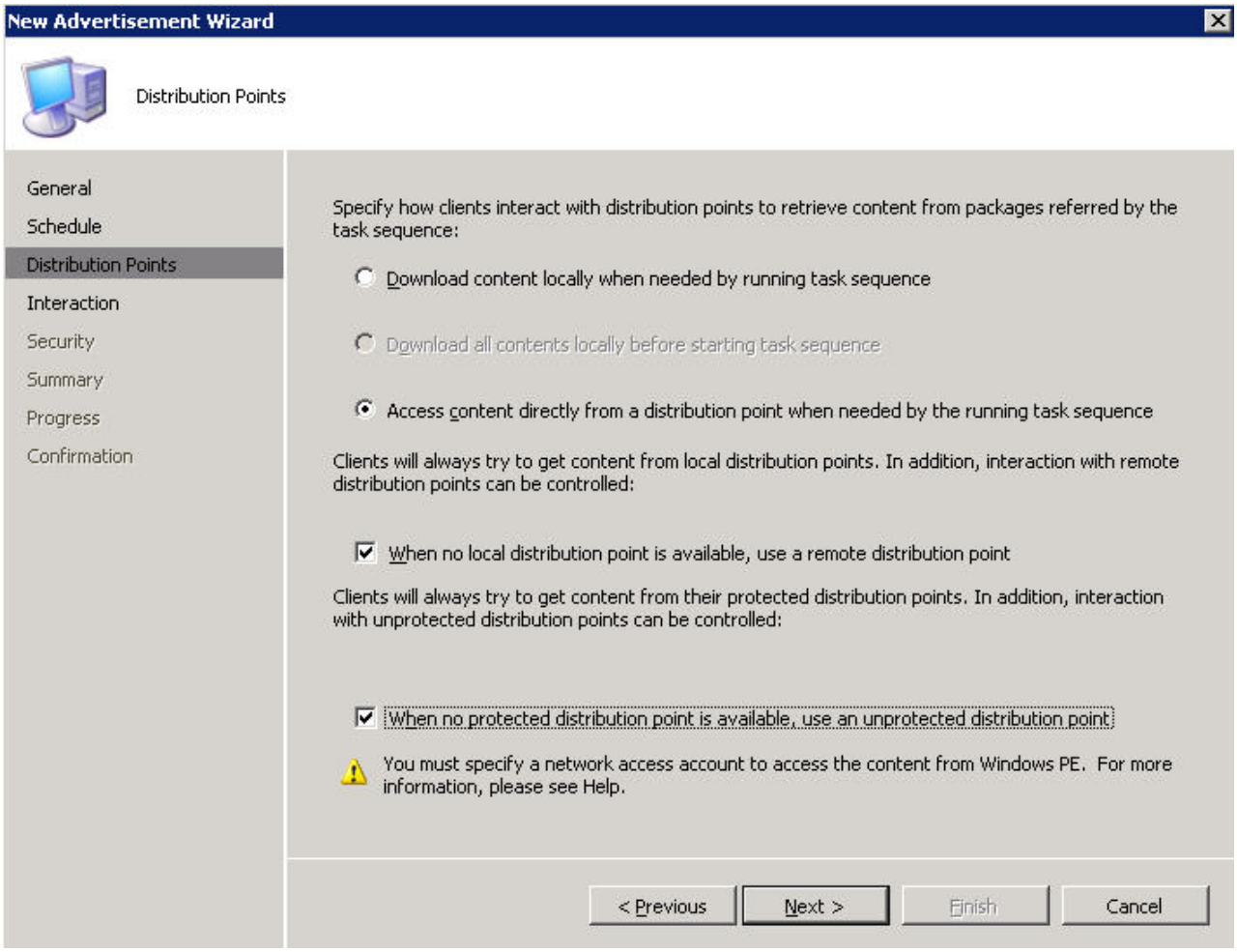


Figure 60. Specifying distribution points options

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

Checking the task sequence execution result

Use these steps to ensure that the task sequence can be started successfully.

1. After performing the procedure in "Advertising a task sequence" on page 56, restart the target server from PXE.

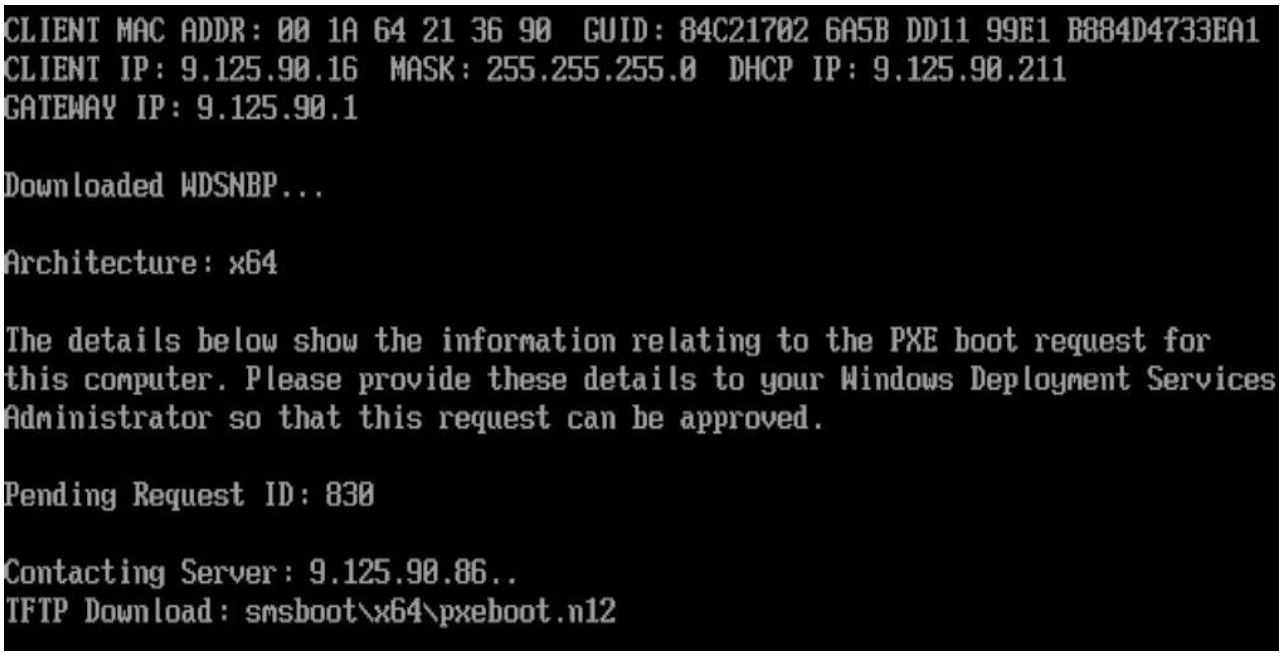


Figure 61. Restarting the target server from PXE

2. After the target server starts on PXE, the download process starts automatically from the SCCM server to the target machine.

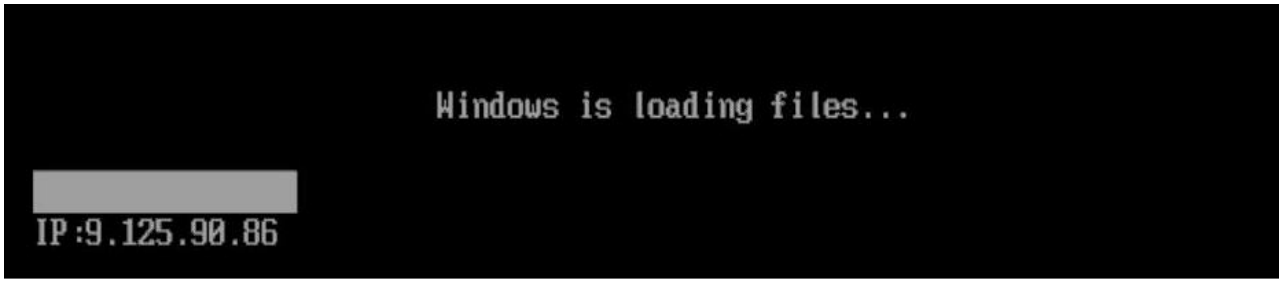


Figure 62. Starting the download process

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

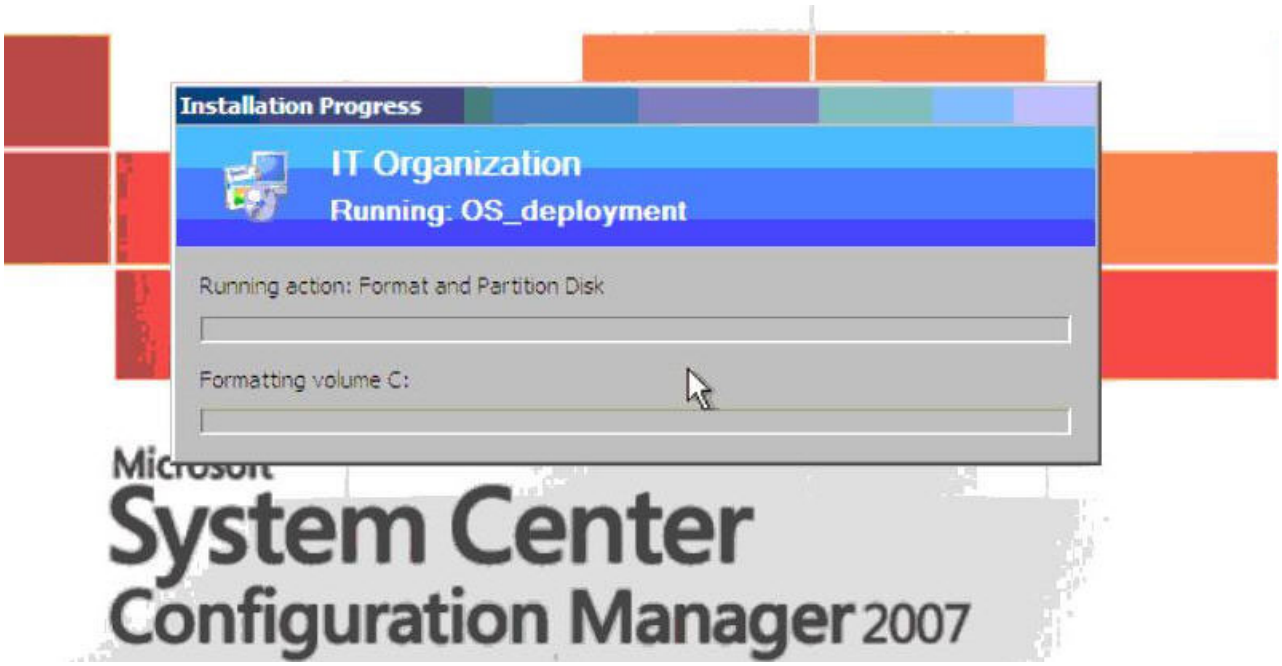


Figure 63. Running the Format and Partition Disk action

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

   Note: Different task sequences might have different actions. The windows are similar to those in the figures except for the different actions.

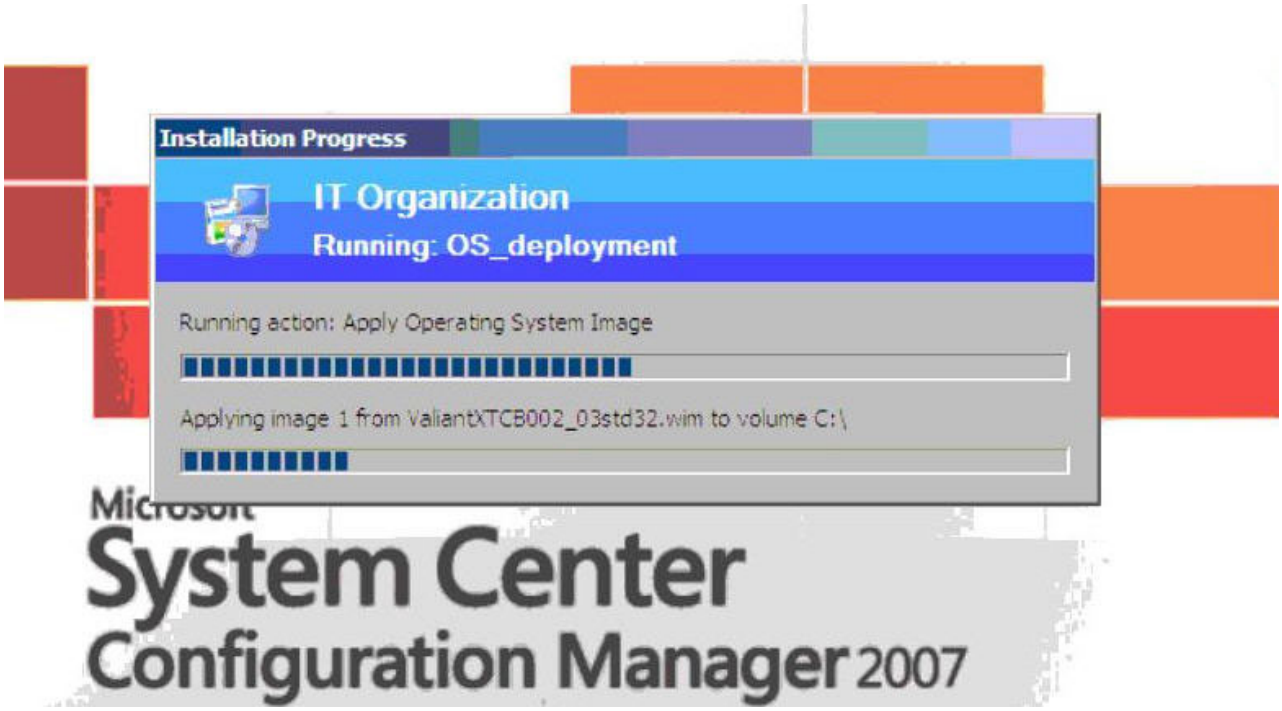


Figure 64. Running the Apply Operating System Image action

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

Chapter 5. IBM Deployment Pack features

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

Use the IBM Deployment Pack to configure RAID through PRAID. For details, refer to "Configuring RAID through PRAID."

Use the IBM Deployment Pack to configure hardware settings through the ASU tool. For details, refer to "Configuring hardware settings through ASU" on page 68.

Configuring RAID through PRAID

Use the PRAID utility to configure the RAID adapter.

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 you can customized. 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.

The IBM Deployment Pack leverages the PRAID utility provided by IBM WinPE Scripting Toolkit. For more information about the policy file and the RAID controllers support matrix, refer to the WinPE Scripting Toolkit User Guide.

Configuring RAID through policy file

Use this topic to configure the task sequence.

1. In the Task Sequence Editor, go to the new task sequence.
2. Right-click the task sequence and select **Edit**. A screen similar to the one in the following figure is displayed.

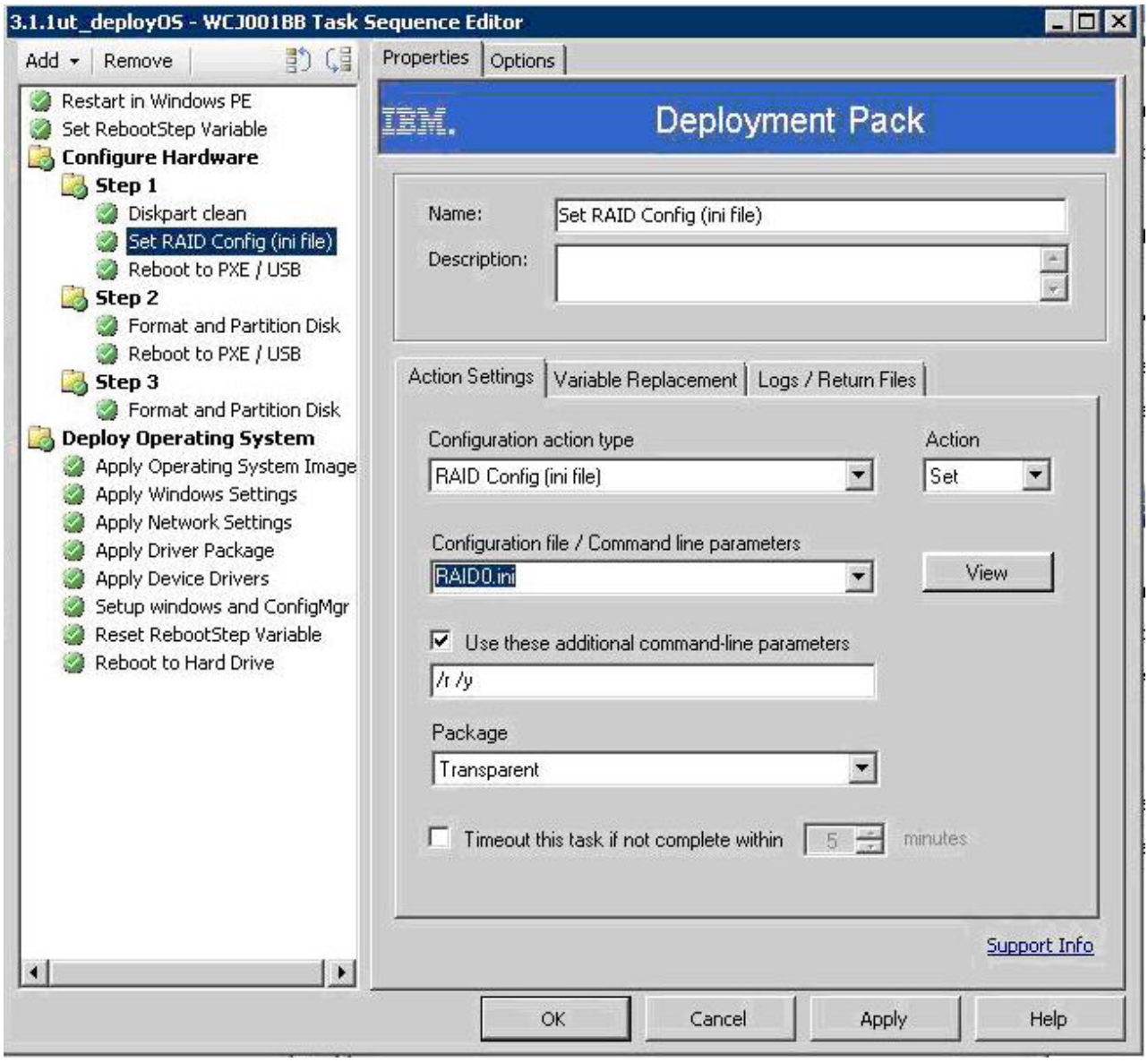


Figure 65. Editing the task sequence

3. Edit the task, **Set RAID Config (ini file)**. The following page is displayed:

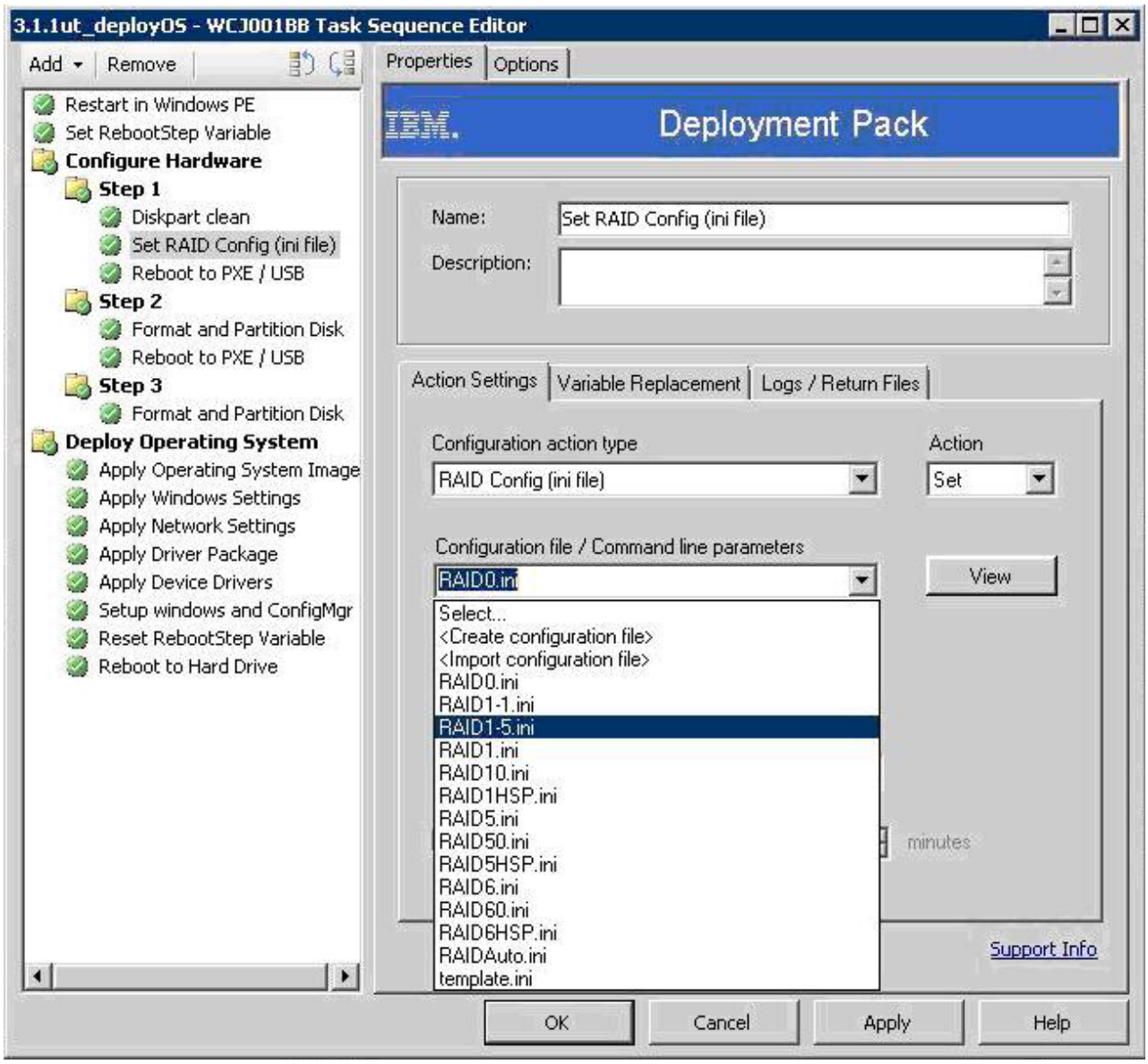


Figure 66. Editing the Set RAID Config (ini file) task

Example

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

- RAID0.ini configures RAID Controller as RAID level 0.
- RAID-auto.ini selects 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 themselves.

Note:

- Make sure that the RAID level is supported by the RAID controller on the target server. The IBM Deployment Pack only deploys PRAID and the corresponding policy file to the target server, and returns the execution result because the IBM Deployment Pack does not recognize the RAID controller until the task sequence is executed in the target server.
- The IBM Deployment Pack software invokes PRAID with the /r switch and the /y switch for all Set operations using the wizard. Using 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 using 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. For other parameters, refer to *WinPE Scripting Toolkit User Guide*.

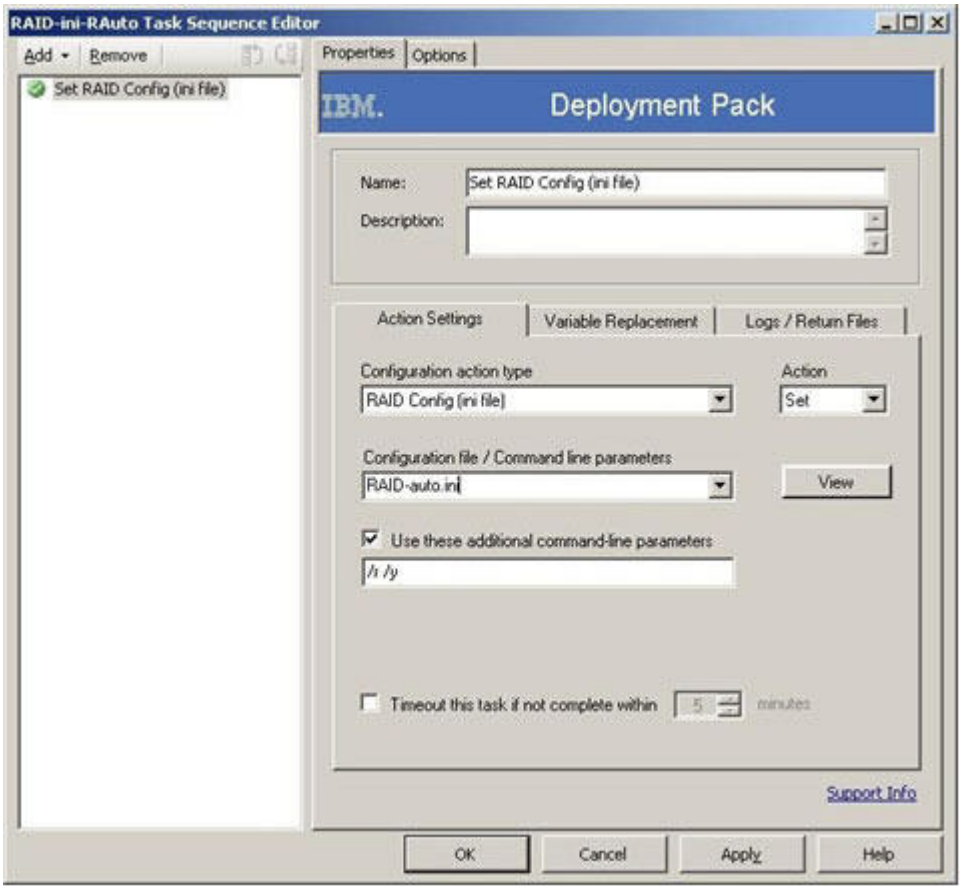


Figure 67. RAID configuration task sequence for INI files

Configuring RAID through the array wizard

Another way to configure RAID is through the Array Builder Wizard provided by Microsoft SCCM.

To configure RAID, the creates a policy file according to the input from the Array Builder Wizard and deploys the policy file and the PRAID utility to the target server.

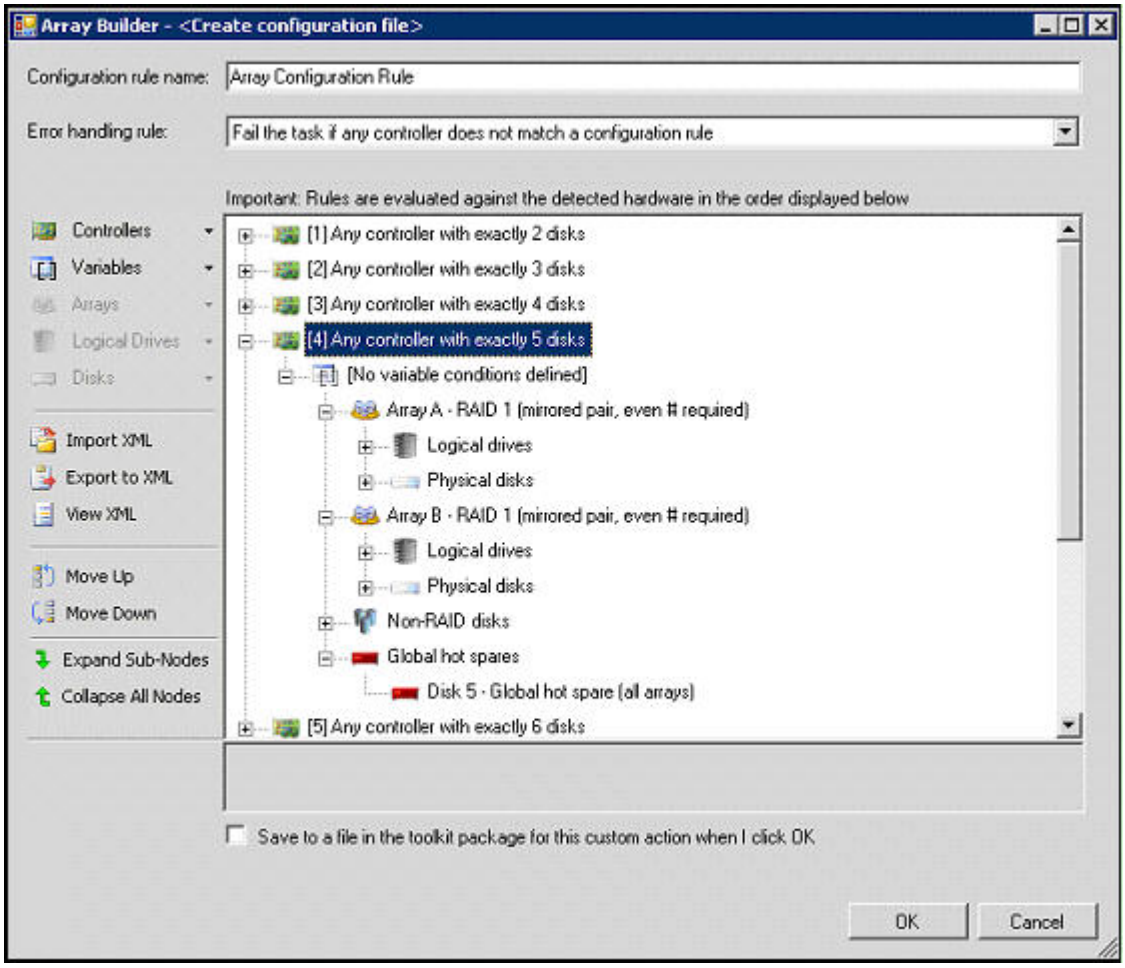


Figure 68. Array Builder Wizard

In IBM Deployment Pack, v3.1, two new features are supported in the RAID Array Builder Wizard:

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

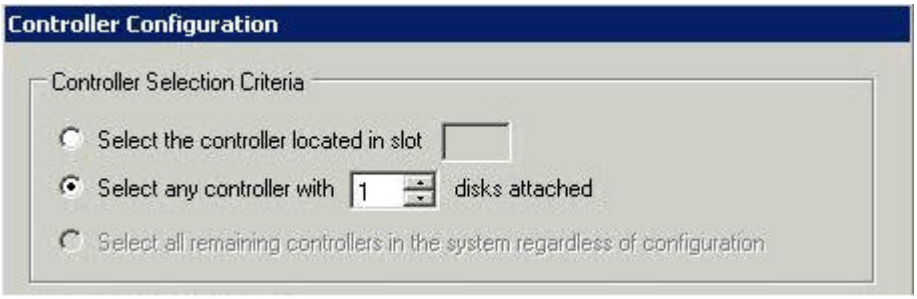


Figure 69. Dynamic RAID configuration

Configuring hardware settings through ASU

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

The 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 the Unified Extensible Firmware Interface (uEFI), without having to restart the system to access these settings on the BIOS or uEFI menus. (Usually, you have to press F1 in the beginning of the system startup to access these menus.)
- Set up the Baseboard Management Controller (BMC) and Integrated Management Module (IMM).

ASU is dependent on internal code for IMM functions and definition files for BIOS functions. Therefore, not all hardware can be treated equally. Depending on your specific server population, you might have to create hardware-specific task sequences. 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 might 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*.

Note: All set actions for IMM/UEFI/BIOS/BMC support the multiple-nodes function. There are only four nodes, with the default setting `Node-1 (main)`.

Configuring IMM through ASU

This topic describes how to configure the Integrated Management Module using the Advanced Settings Utility.

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

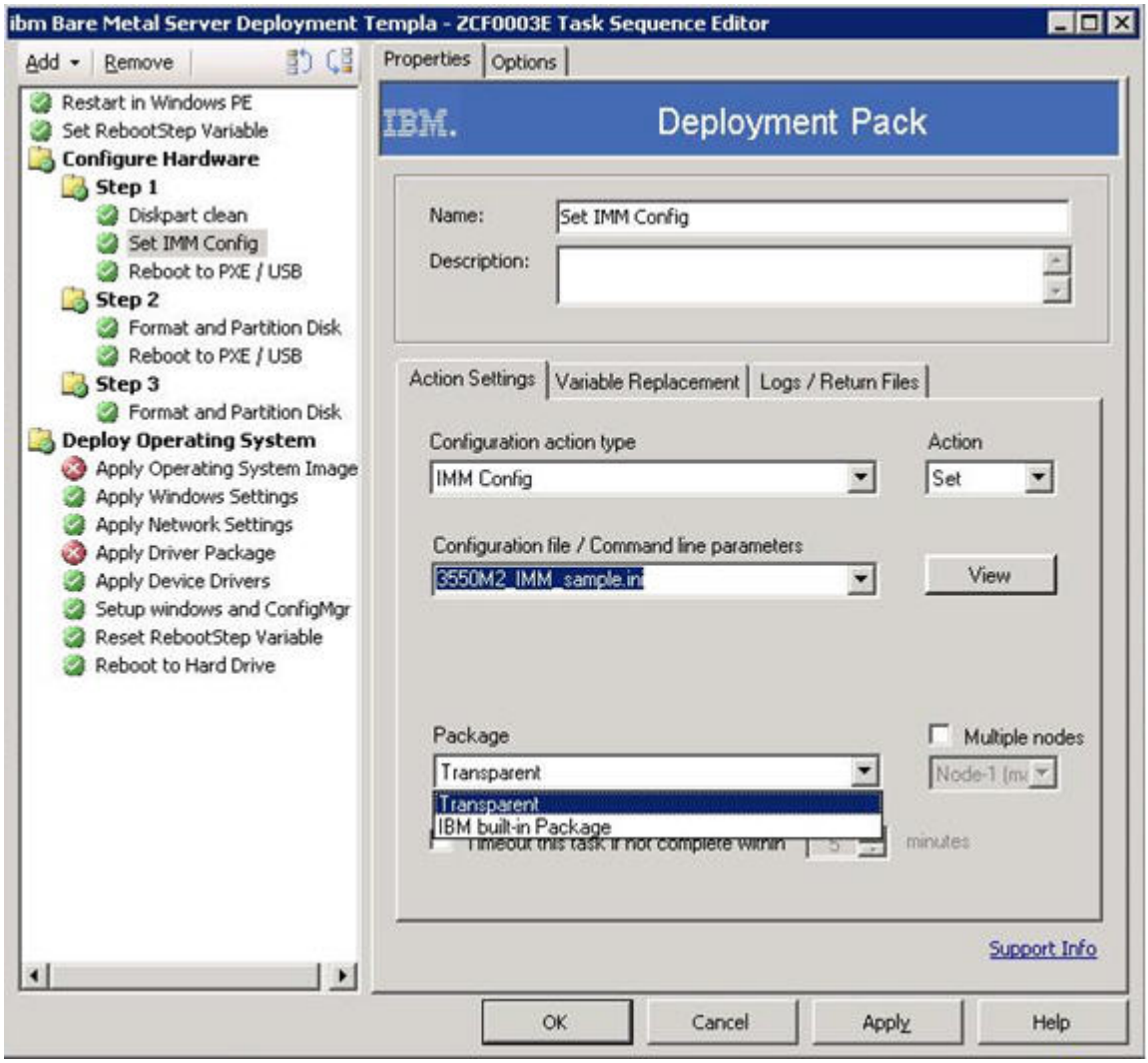


Figure 70. Selecting an IMM ini file

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

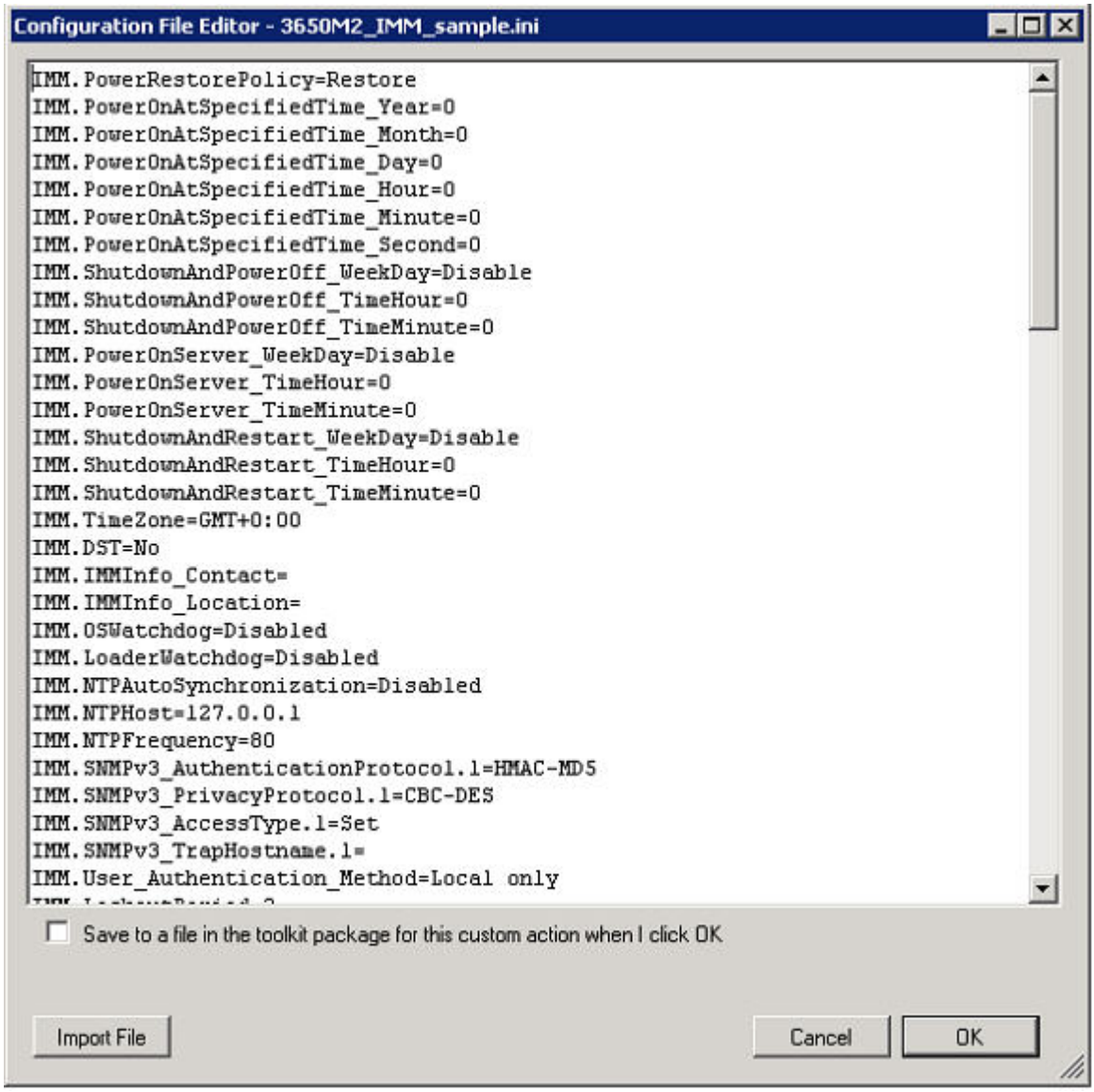


Figure 71. Sample settings in an IMM ini file

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, follow the instructions in the topic "Updating distribution points" on page 30 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 server being deployed.

Configuring uEFI through ASU

Similar to IMM, the uEFI action contains sample .ini files that you can modify.

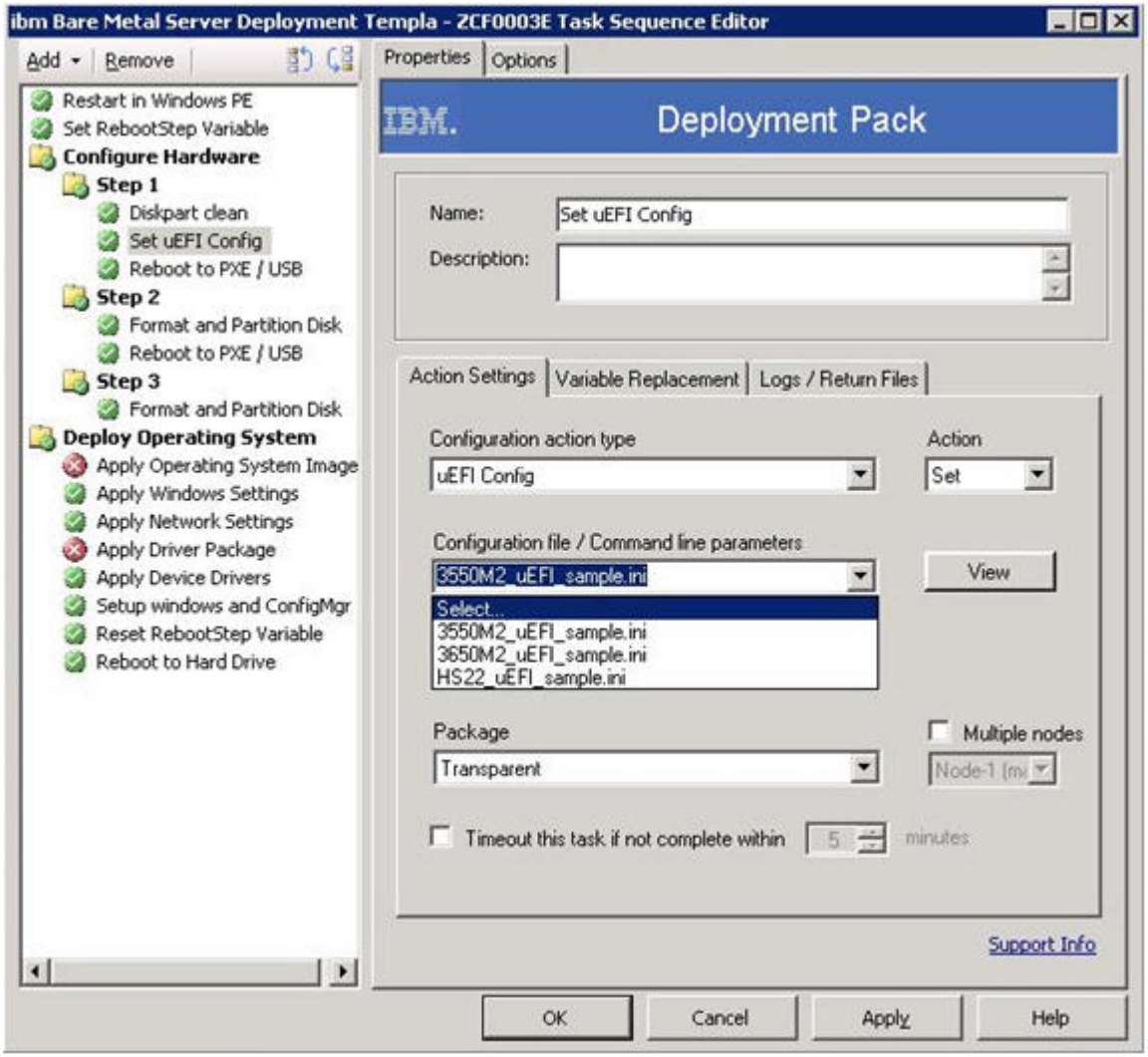


Figure 72. Selecting an uEFI ini file

The configuration of other hardware is similar to configuring the IMM and uEFI.

Supported IBM hardware-specific configuration list

This topic provides a summary and a detailed description of the hardware-specific configuration list.

Summary

The following actions are supported in the IBM Deployment Pack, v3.1:

- Set/get BIOS configuration
- Set/get RAID configuration
- Set/get BMC configuration
- Reboot BMC
- Reset/Reboot RSA
- Get/Set RSA configuration
- Set/get IMM configuration
- Reboot IMM

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

Detail description

Configuration action type	Action	Parameters	Command
RAID Config (wizard)	Set		MS array builder
RAID Config (ini file)	Get		Praid.exe /c /f:raid.ini /e1/e2 /e3
	Set	Policy files from toolkit package	Praid.exe /f:policy.ini /r /y /1/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
Reset RSA	Set		Asu.exe resetrsa
RSA Config	Get		Asu.exe show rsa > rsa.ini
	Set	Generic RSA ini template file	Asu.exe replicate rsa.ini
Reboot RSA	Set		Asu.exe rebootrsa
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
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

Operating system deployment

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

About this task

The IBM Deployment Pack, v3.1, supports the following operating systems deployment:

- Windows 2003 32bit/X64
- Windows 2003 R2 32bit/X64
- Windows 2008 32bit/X64
- Windows 2008 R2 SP1 (X64)

The IBM Deployment Pack supports deploying the captured operating system image to the target server. The process conducts end-to-end deployment scenarios with the operating system selected. Refer to the topic, Chapter 4, "End-to-end deployment scenario," on page 53.

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 the readme.htm file from the IBM Deployment Pack web page.

Server support

This topic lists the servers associated with the product names supported in this release.

For complete information on supported combinations of servers and operating systems, visit IBM ServerProven at the IBM Server Proven web site.

Product family name	Server type
IBM BladeCenter HS12	1916, 8014, 8028
IBM BladeCenter HS21	1885, 8853
IBM BladeCenter HS21 XM	1915, 7995
IBM BladeCenter HS22	1911, 1936, 7809, 7870
IBM BladeCenter HS22V	1949, 7871
IBM BladeCenter HX5	1909, 7872, 7873
IBM BladeCenter LS21/LS41	7971 7972
IBM BladeCenter LS22/LS42	7901 7902
IBM System x iDataPlex dx360 M2	7321 6380 7323
IBM System x iDataPlex dx360 M3	6391
IBM System x iDataPlex dx360 M4	7912,7913,7918,7919
IBM System x3100 M4	2582
IBM System x3200 M2	4367, 4368
IBM System x3200 M3	7327, 7328
IBM System x3250 M2	7657, 4190, 4191, 4194
IBM System x3250 M3	4251, 4252, 4261
IBM System x3250 M4	2583
IBM System x3400	7973, 7974, 7975, 7976
IBM System x3400 M2	7836, 7837
IBM System x3400 M3	7378, 7379
IBM System x3500	7977
IBM System x3500 M2	7839
IBM System x3500 M3	7380
IBM System x3550	1913, 7978
IBM System x3550 M2	4198, 7946
IBM System x3550 M3	4254, 7944

Product family name	Server type
IBM System x3620 M3	7376
IBM System x3630 M3	7377
IBM System x3650	1914, 7979
IBM System x3650 M2	4199, 7947
IBM System x3650 M3	4255, 5454, 7945
IBM System x3690 X5	7147, 7148, 7149, 7192
IBM System x3755 M3	7164
IBM System x3850 M2/x3950 M2	7141, 7144, 7233, 7234
IBM System x3850 X5/x3950 X5	7143, 7145, 7146, 7191
IBM Smart Analytics System	7949

RAID controller support

This list shows RAID controller support for this release.

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
ServeRAID BR10il
ServeRAID C100

Appendix A. Hints and tips

Hints and tips 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” on page 36.

Also, it could be that there is not a valid advertisement for this server. Creating an advertisement is described in “Advertising a task sequence” on page 56.

You must also add the target server MAC address and GUID to the Configuration Manager database, as described in “Advertising the task sequence to the new servers” on page 37.

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 server 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 you have problems 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, you might have to restart the DHCP server.

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

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.

Results

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. Therefore, 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.

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 to successfully complete a deployment.

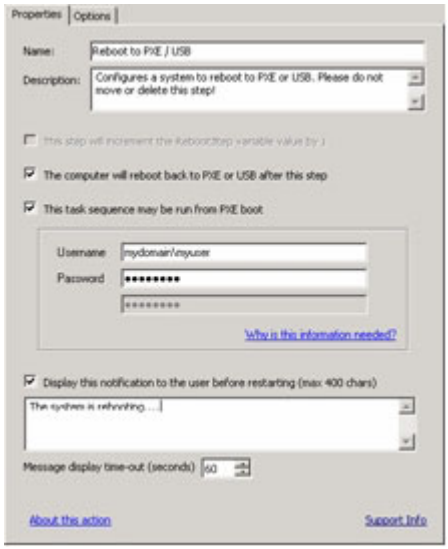


Figure 73. Properties page for a Reboot to PXE / USB action

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 server and these conditions do not exist, the task sequence fails 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 server 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. Therefore, 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 server, but when the first task sequence ends, the second starts immediately, without a reboot between them.

If you were using boot media such as CD or DVD media or a USB drive, the result is the same; the task fails when the reboot task runs because a valid boot partition does not exist. If you make the task sequence end instead of rebooting, 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 problems when starting the 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 restarts, it reruns the task sequence appropriately.

To control the flow of the task sequence across restarts, groups are created that have conditions set on the state variable. This state variable is a task sequence variable set through the Configuration Manager server or, for a disconnected deployment, using a file-based method.

The task sequence flow is similar to the following:

First start sequence

1. The computer starts 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 is set to `true`. (RebootStep = 1)
   a. Actions inside this group run.
   b. The **Reboot to PXE/USB** action resets the PXE advertisement.
5. The group `Step 2` condition is set to `false`, which skips some steps.
6. The group `Step 3` condition is set to `false`, which skips some steps.
7. The **Deploy Operating System** group condition is set to `false`.
8. The task sequence ends and the computer restarts.

Second start sequence

1. The computer starts 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 is set to `false`, which skips some steps.
5. The group `Step 2` condition is set 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 is set to `false`, which skips some steps.
7. The **Deploy Operating System** group condition is set to `false`.
8. The task sequence ends and the computer restarts.

`Third start sequence`

1. The computer starts 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 is set to `false`, which skips some steps.
5. The group `Step 2` condition is set to `false`, which skips some steps.
6. The group `Step 3` condition is set to `true`. (RebootStep = 3)
   a. Actions inside group 3 run without restarting at the end.
7. The **Deploy Operating System** group condition is set 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 restarts on 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 connects 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 because the custom action described in the topic “The Reboot to PXE/USB custom action” sets up the task sequence for you.

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 of the tasks needed (including reboots) for deploying a server from bare metal.
2. When inserting a new OEM custom action, use the dialog box about reboots to create a new task sequence with the appropriate actions using the current task sequence 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.

Preventing a server from looping during multiple reboot processing

A 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.

1. Start **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 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 clue to an unintended setup omission or a faulty setting.

About this task

To begin troubleshooting, follow these basic steps.

1. Read the documentation.

   The majority of issues related to the use of this product are covered in the documentation. Check this documentation 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 entered in the task sequence steps.

   Check the task sequence steps for:

   - Valid environment or task sequence variable references
   - Valid file references. 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 use debug logging.

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

   To help with troubleshooting issues, you can also perform extended logging with the custom action. Enable this logging on the **Logs / Return Files** tab in the sequence action.

4. Gather the appropriate information.

   When you call IBM support, you must have a set of information to provide 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 (identified in the %TEMP% environment variable). This file is usually located in a "1" directory and has a random name 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) Gather a copy of the custom action logs saved using the **Retrieve the task sequence log file from the client when this action runs** check box on the custom action **Logs / Return Files** tab. You should also check the box for **Enable extended/debug logging by this action**.

3) Gather 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 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 or action ever worked? When did it stop working?
- If it 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 IBM support, as described in Appendix D, "Getting help and technical assistance," on page 103.

Troubleshooting installation issues

You can troubleshoot some common installation issues.

A custom action does not appear on the Configuration Manager console

Configuration Manager uses information stored in Windows Management Instrumentation (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 Managed Object Format (.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. The cause might be that the file name or assembly name was not found.

Check WMI under root\SMS_*site_code*\SMS_TaskSequenceStep\ SMS_TaskSequenceAction for the appropriate WMI class for the product installed. For example the product might be IBM_DeploymentPack.

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

If you are 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 is not completely removed from SCCM

By design, boot images are not removed because they are tied to task sequence packages. Removing the boot image might invalidate other working task sequences that you are using.

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

How to delete remaining physical folders

1. Locate the SCCM installation folder.
2. Find the subfolder `AdminUI\XmlStorage\Extensions\bin\Deployment` and delete the folder named `IBM`.
3. Find the subfolder `OSD\lib\Drivers` and delete the folder named `IBM`.
4. Find the subfolder `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 administrative console part of the custom action. Set the **Debug Logging** key to 1, which is the `DWORD` value in the base registry key for the IBM Deployment Pack.

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 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 does not include 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.

In addition, trying to automatically import the driver into the Configuration Manager Driver Catalog and then inserting the driver into the boot image might fail 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 administrative 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 adds the drivers from the driver catalog, along with other Configuration Manager files to create a new WIM file named `boot.packageID.wim`; filenames such as: `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 issue 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 exists, 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 do not have the appropriate network drivers installed, which prevents the server from communicating with Configuration Manager.

Check your driver catalog to ensure that 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. 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 error is common 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 time outs. If autonegotiation 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 fails 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 after a server 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 **Download content locally when needed by running task sequence** does not work. When in WinPE, the task sequence engine ignores (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 103.

- 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 add a period 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. 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.

Create the installation or uninstallation log file

When the IBM Deployment Pack is installed or uninstalled, the log file with a random name is created in the %Temp% folder. To indicate the log file name, use the following methods.

- To create the installation log file, run the .exe file from the command line with this parameter: **/v"/l install.log"**.
- To create the uninstallation log file, run the .exe file from command line with this parameter: **/v"/l uninstall.log"**

Set log level in register

OSD supports five log levels: debug, info, warning, error, and fatal. The default log level is `info`. To change the level, set the **LogLevel** value as another one of the five types under this register path: `HKEY_LOCAL_MACHINE\SOFTWARE\IBM\Systems Management Integrations\Log`.

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 periods 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, **Download content locally when needed by running task sequence**, does not work. WinPE causes the task sequence server 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

Use these steps to 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 by clicking **Operating System Deployment → Boot Images**, right-clicking the image, and selecting **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.

1. Make sure the operating system and applications are installed and configured on the reference computer in the same 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:

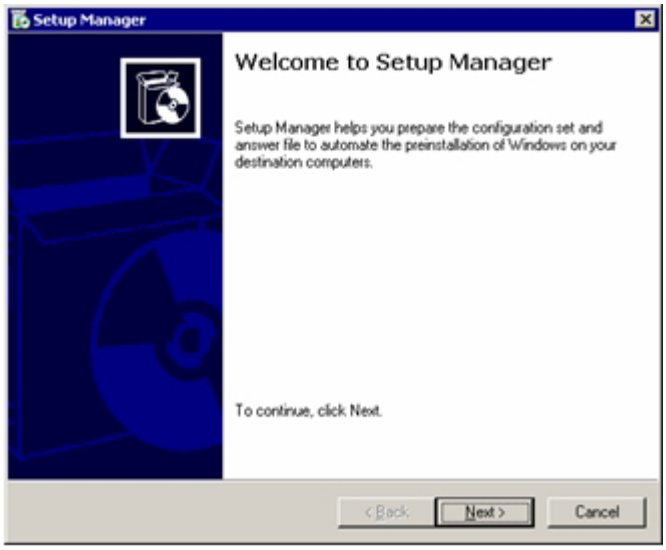


Figure 74. Welcome to Setup Manager

5. Click **Next**.

The following page is displayed:

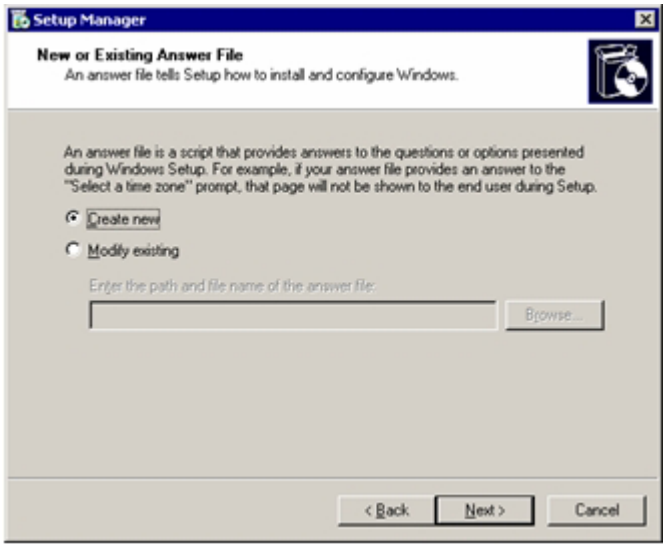


Figure 75. Setup Manager: Creating a new answer file

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

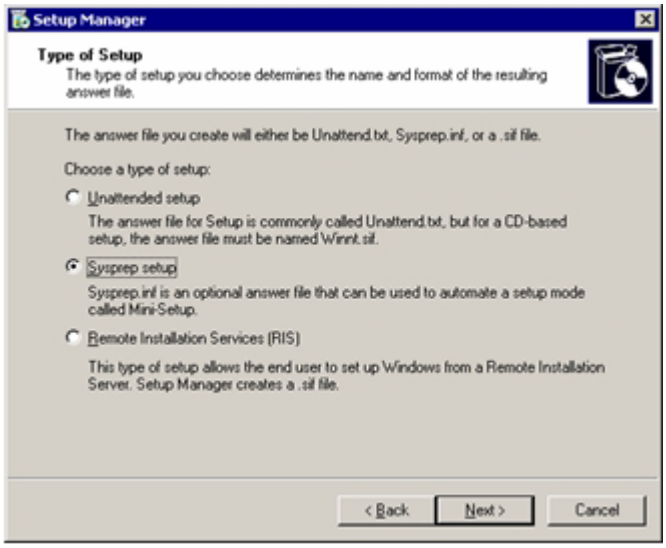


Figure 76. Setup Manager: Type of Setup

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

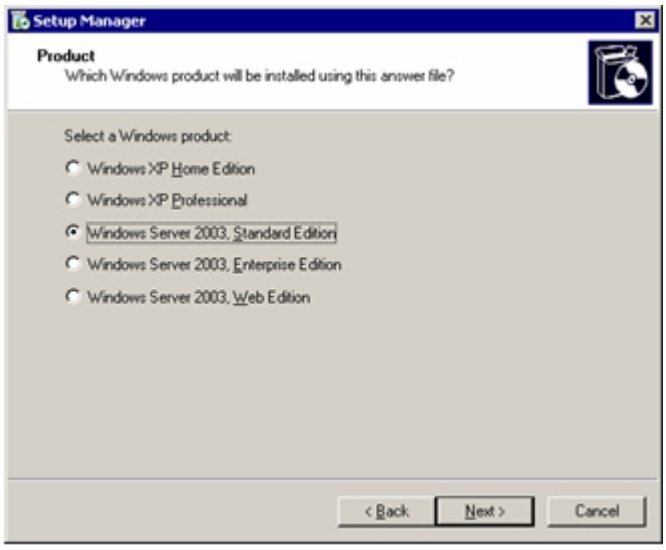


Figure 77. Setup Manager: Windows product

8. Click the Windows product version, such as Windows Server 2003 Standard Edition.

   The following page is displayed:

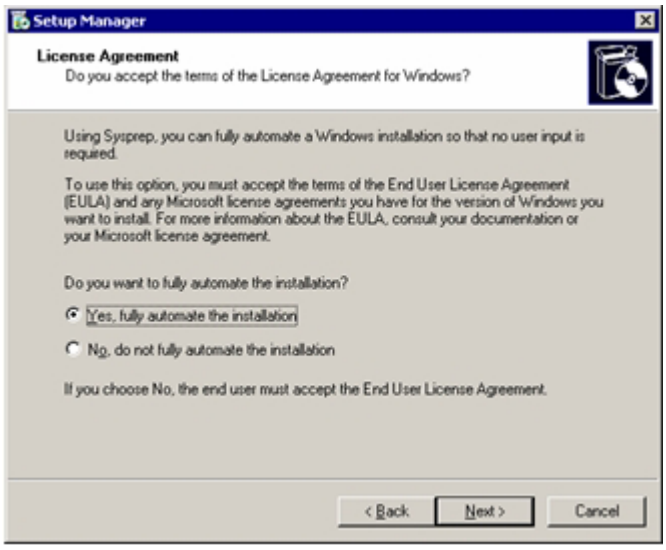


Figure 78. Setup Manager: License Agreement

9. Click **Yes, fully automate the installation**, and then click **Next**.

   The following page is displayed:

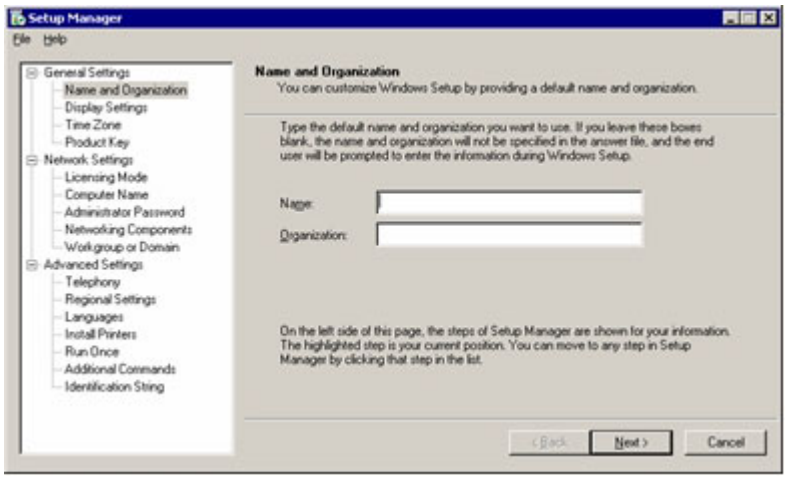


Figure 79. Setup Manager: Name and Organization

10. Enter information into the **Name** field and the **Organization** field; then click **Next**.

    The following page is displayed:

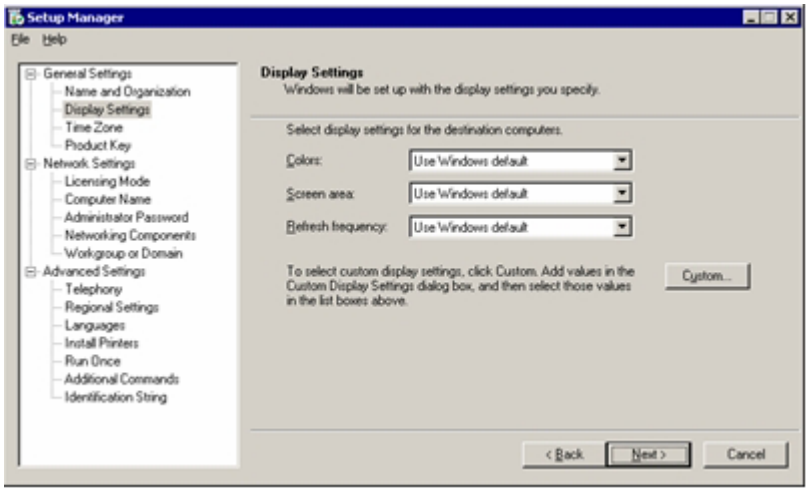


Figure 80. Setup Manager: Display Settings

11. Select display settings, and then click **Next**.
12. Select a time zone, and then click **Next**.

    The following page is displayed:

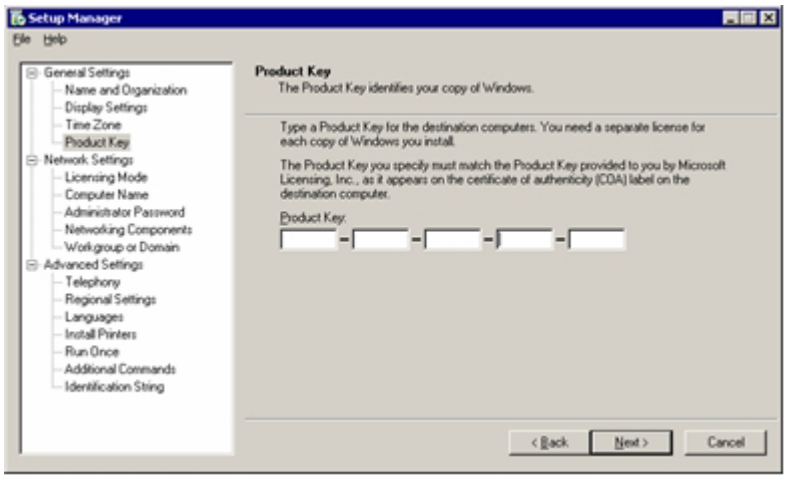


Figure 81. Setup Manager: Product Key

13. Enter the product key that matches the operating system that you installed, and 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:

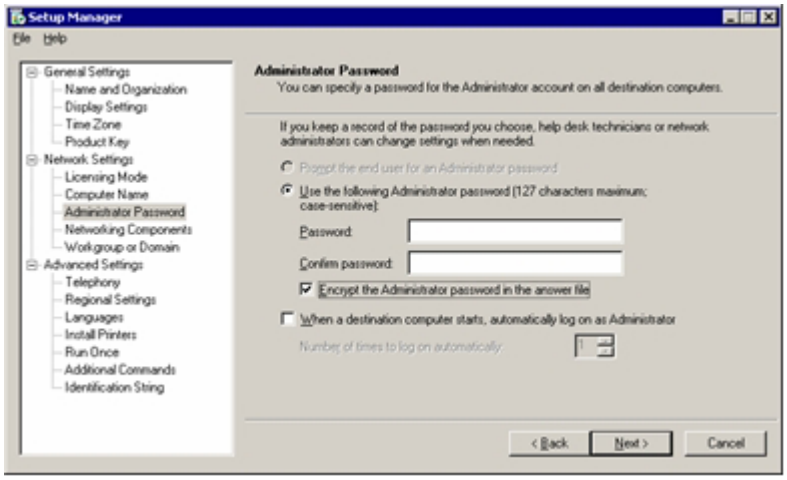


Figure 82. Setup Manager: Administrator Password

16. Keep the **Password** field and the **Confirm password** field blank. Select the **Encrypt the Administrator password in the answer file** check box, and 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:

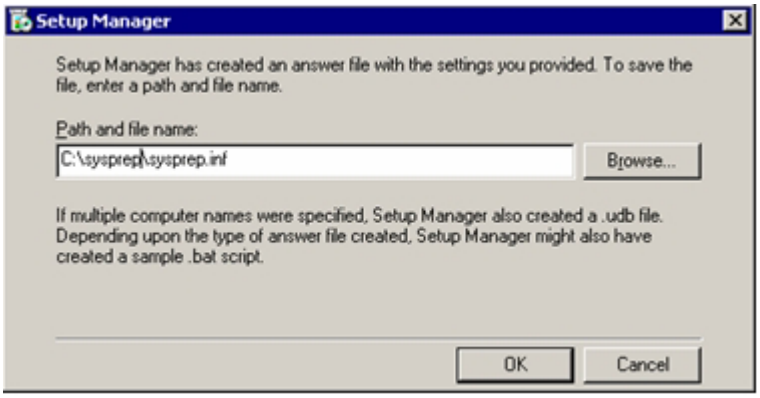


Figure 83. Setup Manager: Path and file name

27. Accept the default path, and 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" on page 38.
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.

1. Build the capture task sequence and advertise the task sequence from the Configuration Manager server, as described in "Capturing operating system images" on page 38.
2. Make sure the operating system and applications are installed and configured on the reference computer, in the same 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:

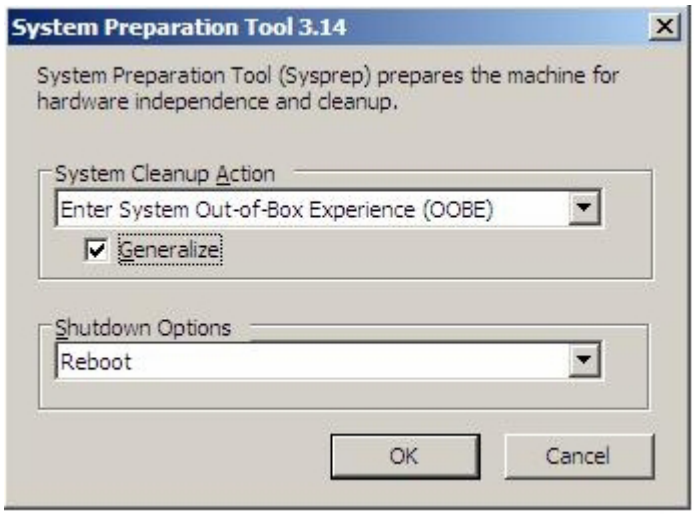


Figure 84. System Preparation Tool (Sysprep)

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 can 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 who 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 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. Importing the IBM WinPE SEP package into SCCM

This section describes how to download and use the SEP packages. It also provides information on importing tools from the SEP packages into Configuration Manager.

Prerequisites

Before you begin, make sure that the prerequisites in this topic are met:

Be sure that:

- Microsoft System Center Configuration Manager 2007 is installed and in normal status
- IBM Deployment Pack for Microsoft System Center Configuration Manager 2007, v3.1 is installed and working normally, and the built-in package has imported
- If SCCM Server is running on Windows 2008, ensure that hotfix 979492 is installed on the SCCM server. For more information, refer to the article An .inf file cannot be validated when an application uses the "SetupVerifyInfFile" function in Windows Vista and in Windows Server 2008.

Downloading SEP files from the IBM web site

Use this topic to help you download SEP files.

About this task

Before using SEP on your Configuration Manager server, download SEP packages by type from the IBM Support web site for the IBM System Enablement Pack.

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

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

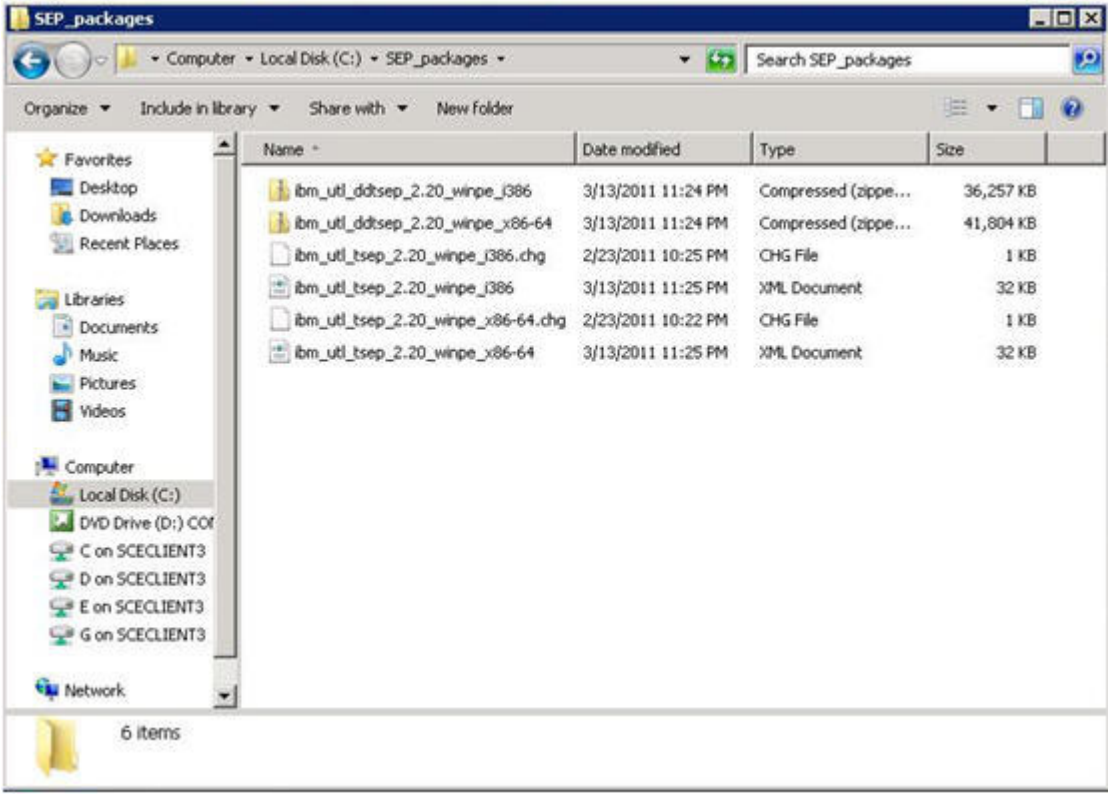


Figure 85. SEP download file selections

Extracting SEP zip files on your server

This topic describes extracting the SEP package to a local folder.

About this task

Extract the SEP package to a local folder. The folder structure is similar to the following:

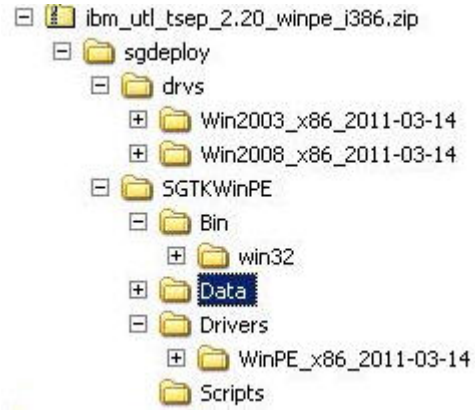


Figure 86. SEP package folder structure

Here the SEP root folder is \ibm_utl_tsep_2.20_winpe_i386\, called SEP_x86_root_folder. The ibm_utl_tsep_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. The folders 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 (such as: 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 (such as, SEP_X64_root_folder\sgdeploy\SGTKWinPE\Bin)
- WinPE_x64_driver_folder (under SEP_X64_root_folder\sgdeploy\SGTKWinPE\Drivers)

Importing the SEP package into Configuration Manager

Use the IBMOSDTool to import SEP into SCCM.

Before you begin

Before running the IBMOSDTool, close the SCCM administrative console.

About this task

You can find the IBMOSDTool tool under the IBM Deployment Pack, v3.1 installation path (for example, C:\Program Files\IBM\IBM Deployment Pack\Tool).

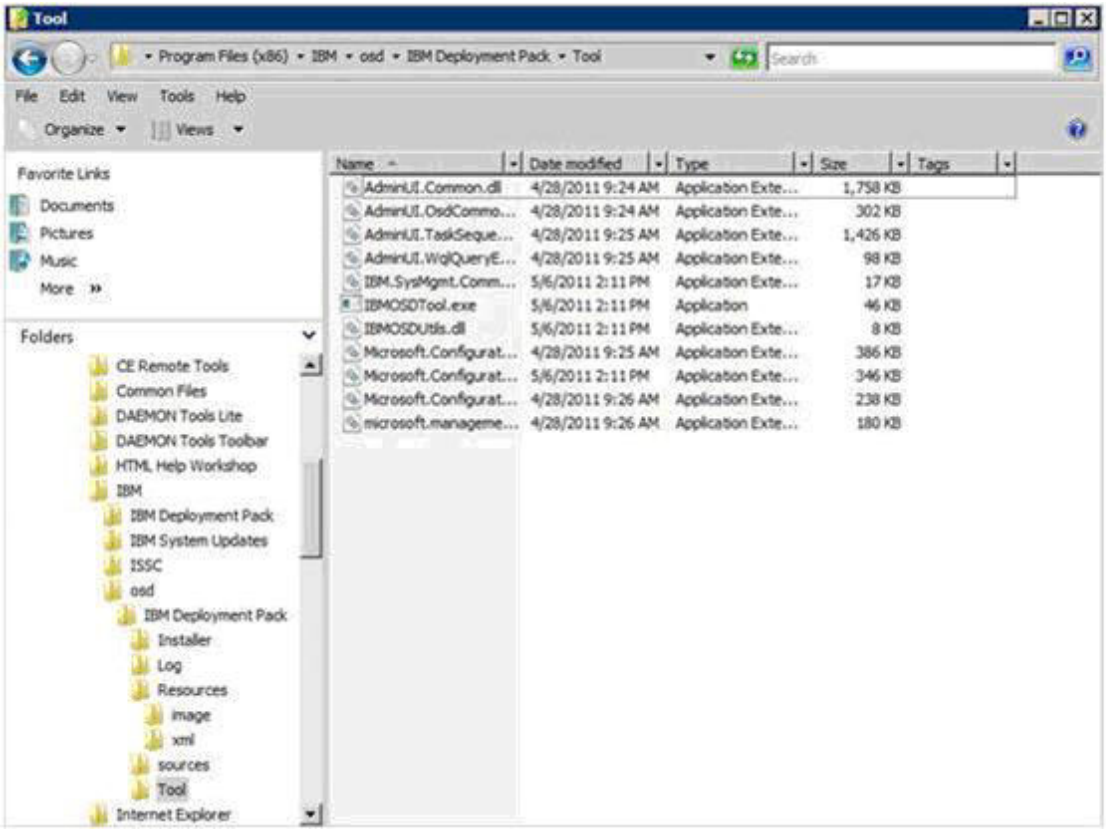


Figure 87. IBMOSDTool

Note: Run the tool from the command console.

Importing x86 tools from the SEP package into Configuration Manager

Use this topic to import x86 tools from the SEP package into Configuration Manager.

About this task

This procedure explains how to import x86 tools from the SEP package into Configuration Manager.

Import the x86 tools into SCCM using the following command: IBMOSDTool.exe tool –l SEP_x86_root_folder –a x86 –i sep_version

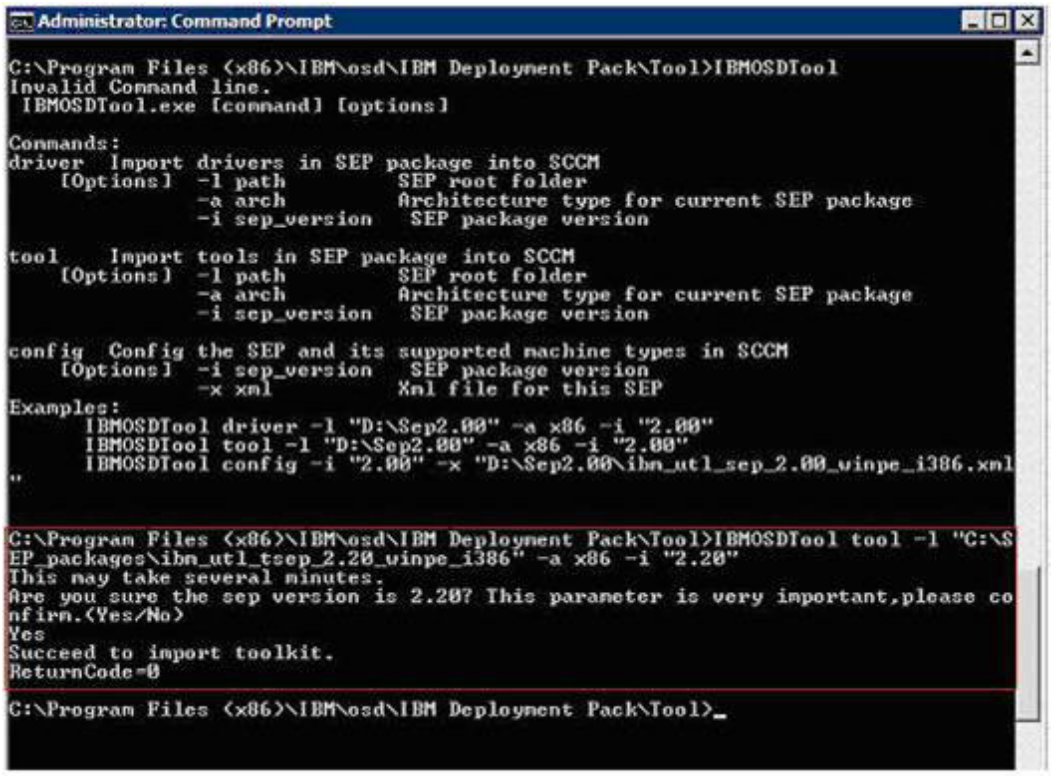


Figure 88. Command to import x86 tools into SCCM

What to do next

Ensure that the x86 tools imported successfully:

- Ensure that the Return Code is 0 as shown in the figure above.
- After importing the x86 tools, 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 appears on the Package drop-down menu.

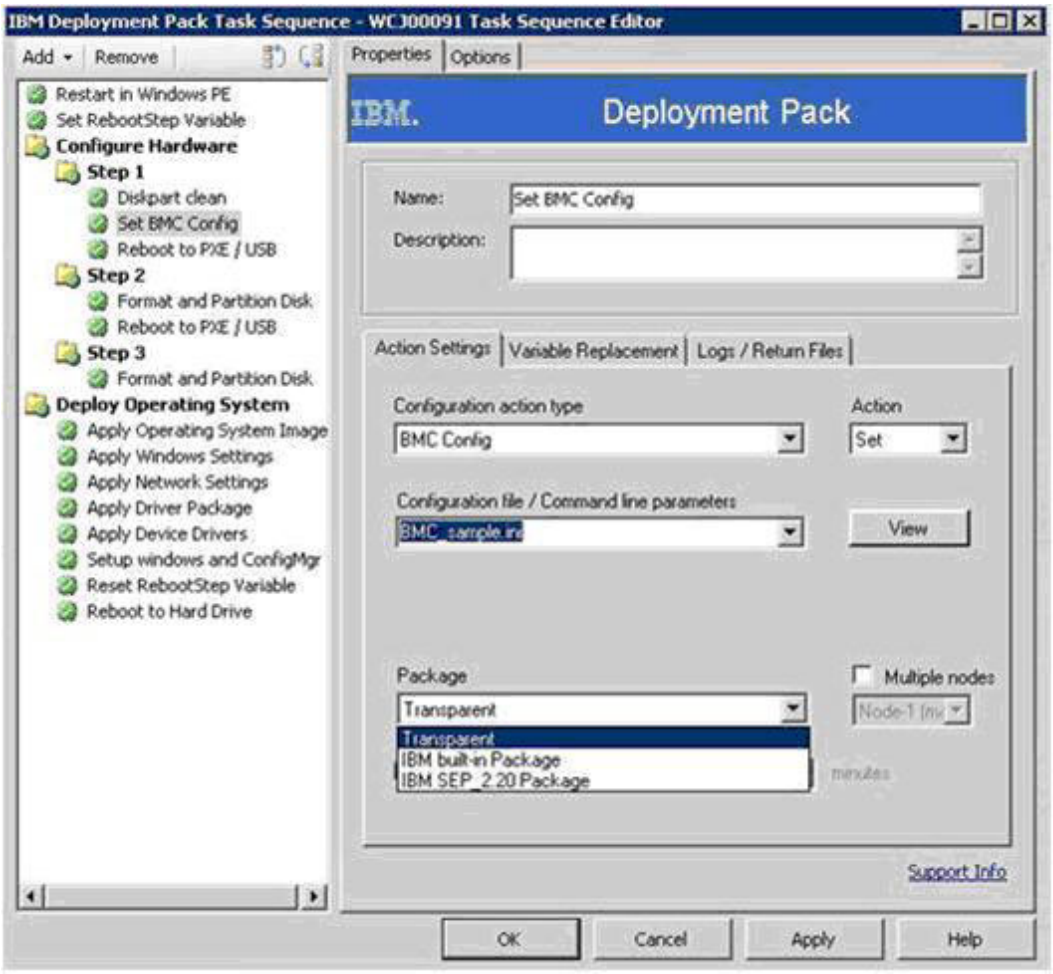


Figure 89. Confirming x86 tools import was successful

Importing x86 drivers from the SEP package into Configuration Manager

Use this topic to import x86 drivers from the SEP package into Configuration Manager.

Import the x86 drivers into SCCM using the following command:`IBMOSDTool.exe driver –l SEP_x86_root_folder –a x86 –i sep_version`

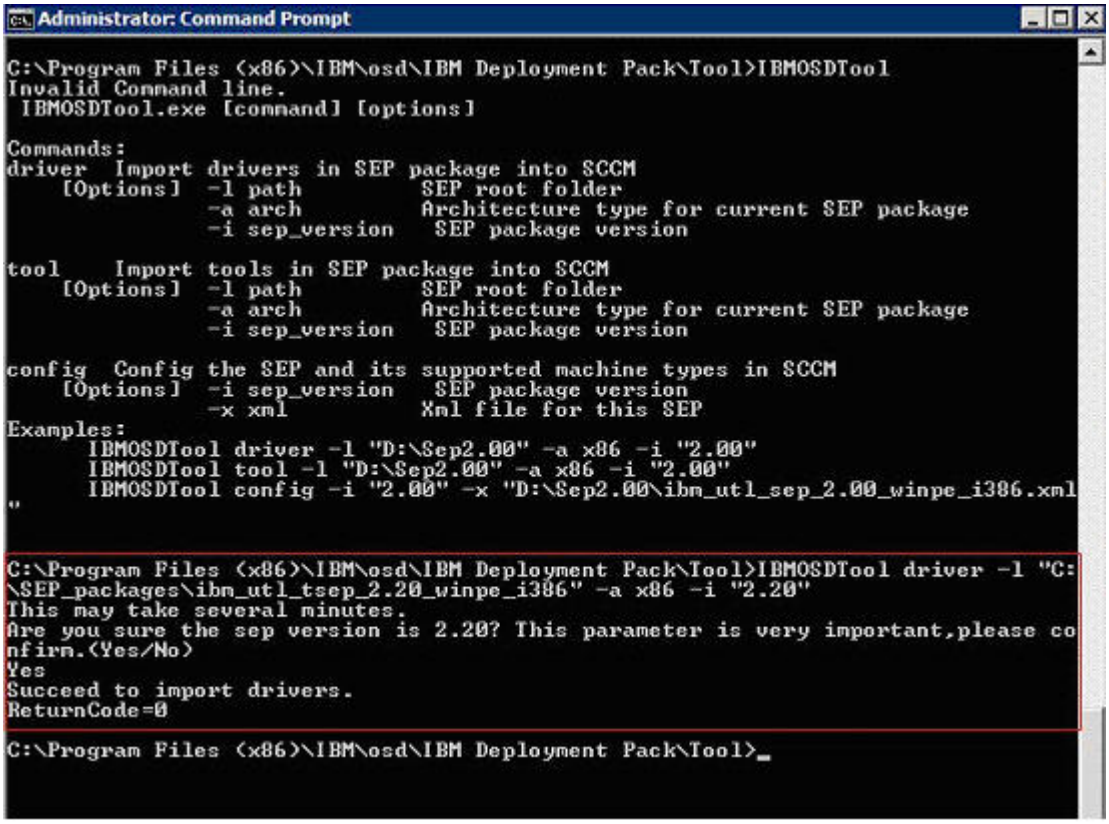


Figure 90. Command to import x86 drivers into SCCM

What to do next

To ensure that the x86 drivers imported successfully, ensure that the Return Code is zero as shown in the figure above.

After importing the x86 drivers, the new imported drivers are added to the existing driver packages named "Drivers for win2k3" and "Drivers for win2k8 x86."

Figure 91. Confirmation of successful driver import

Adding WinPE x86 drivers to the boot image

After importing x86 drivers from the SEP package into Configuration Manager, use this topic to add the WinPE x86 drivers to the boot image.

1. Open the 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 that have **IBM WINPE X86 Drivers** in the **Categories** column.

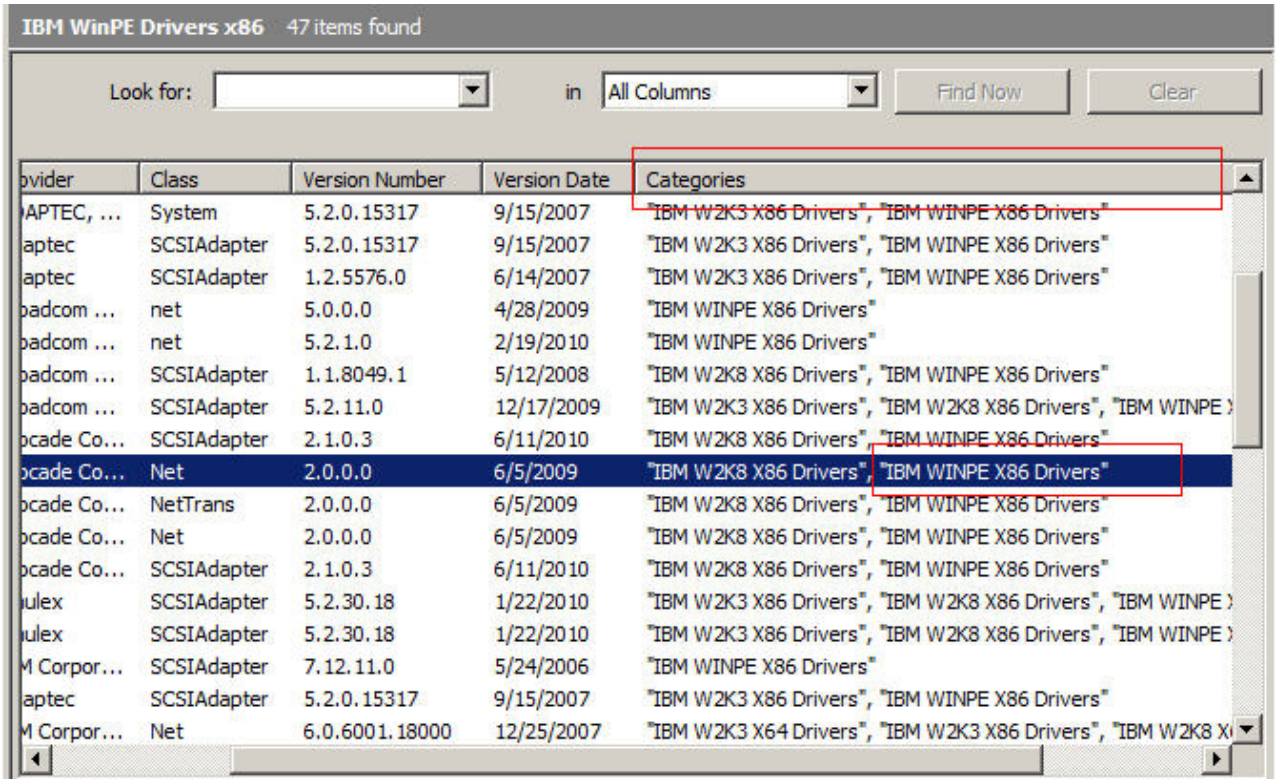


Figure 92. Adding drivers to the boot image

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

Configuring the machine type list for x86 drivers and tools

Use this topic to configure the machine type list after importing the x86 drivers and tools.

About this task

After importing x86 drivers and tools, configure the corresponding machine type list that allows the task sequence to automatically select the appropriate drivers or tools according to different machine types.

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

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

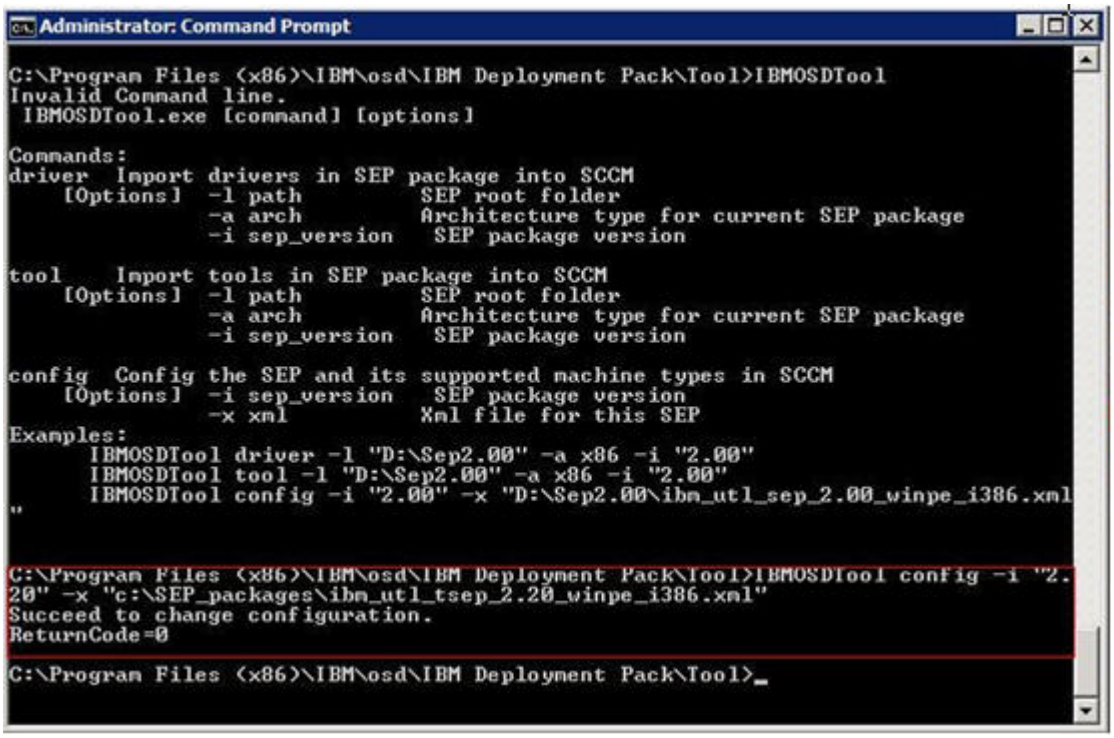


Figure 93. Command to set the machine type list of this SEP package

Importing x64 tools from the SEP package into Configuration Manager

This topic explains how to import x64 tools from the SEP package into Configuration Manager.

Import the x64 tools into SCCM using the following command: IBMOSDTool.exe tool –l SEP_x64_root_folder –a x64 –i sep_version

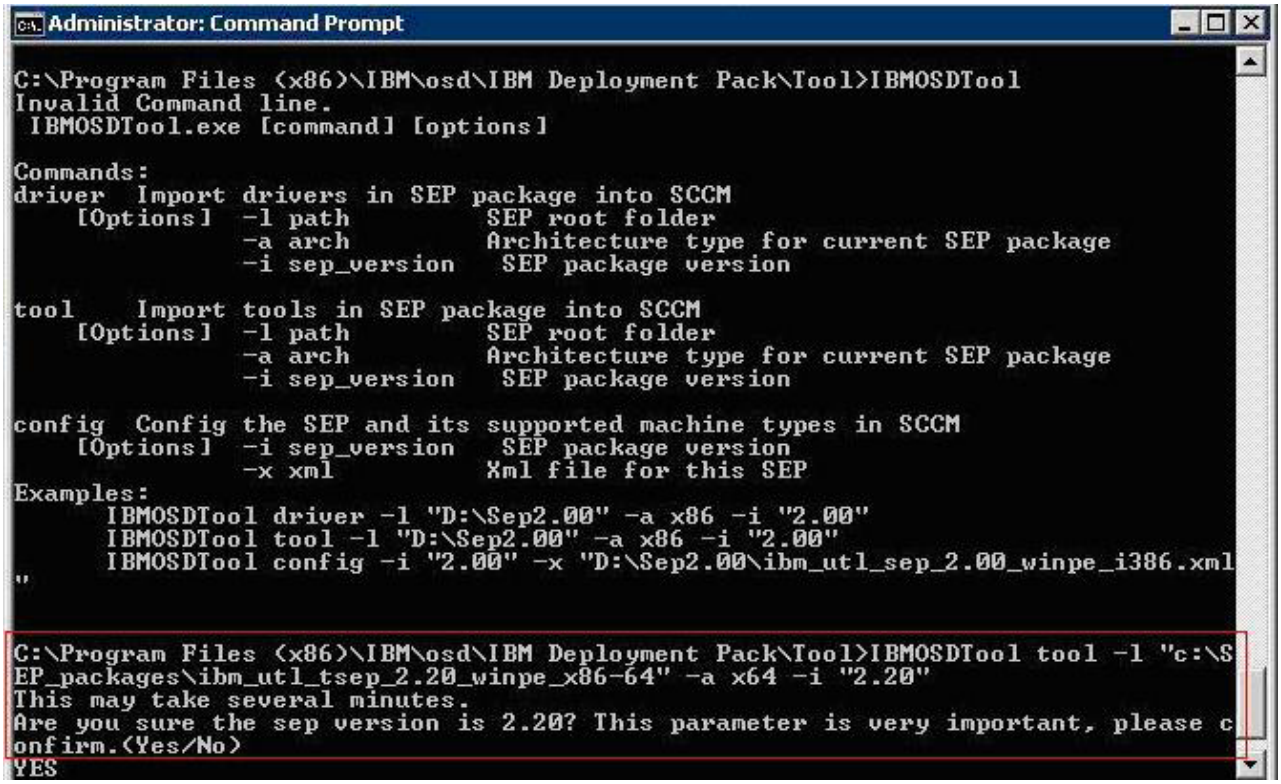


Figure 94. Command to import x64 tools into SCCM

What to do next

Ensure that the x64 tools imported successfully:

- Ensure that the Return Code is 0 as shown in the figure above.
- After importing the x64 tools, 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 appears on the Package drop-down menu. See Figure 89 on page 112.

Importing x64 drivers from the SEP package into Configuration Manager

This topic explains how to import x64 drivers from the SEP package into Configuration Manager.

Import the x64 drivers into SCCM using the following command: IBMOSDTool.exe driver –l SEP_x64_root_folder–a x64 –i sep_version

Note: IBM Deployment Pack, v3.1 does not support x64 WinPE boot image, so the WinPE x64 drivers are not required here.

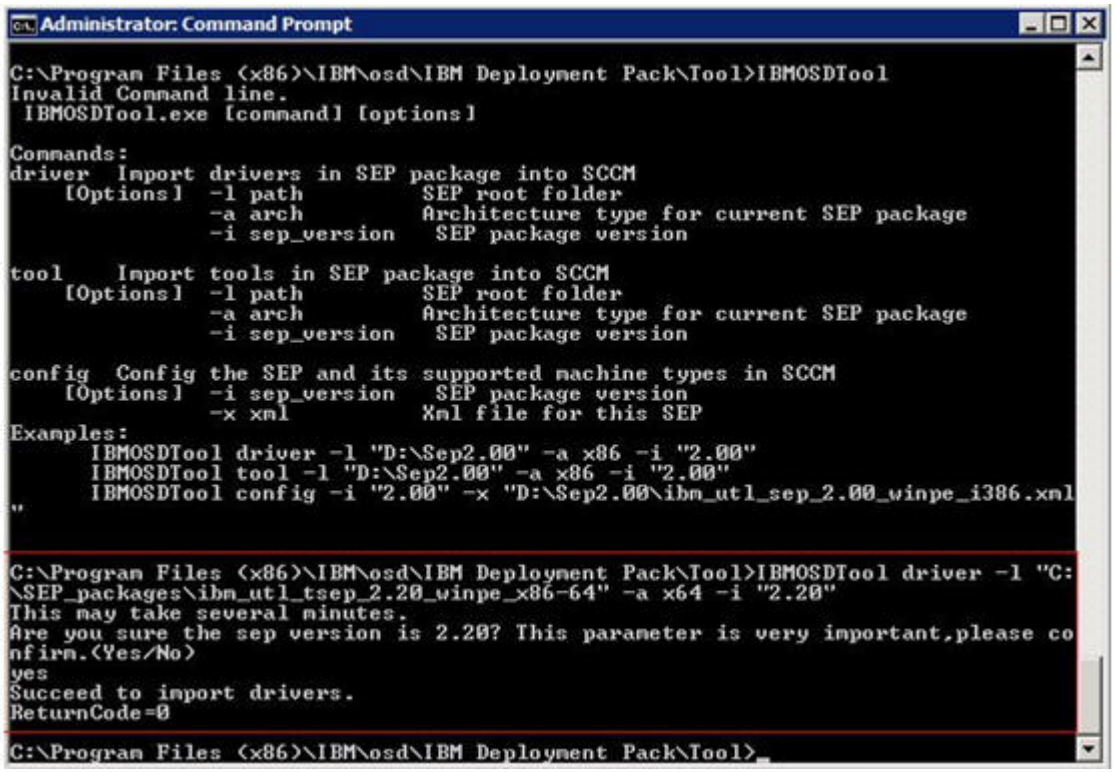


Figure 95. Command to import x64 drivers into SCCM

What to do next

To ensure that the x64 drivers imported successfully, check that the Return Code is zero as in the figure above.

After importing the x86 drivers, the new imported drivers are added to the existing driver packages named "Drivers for win2k3 x64" and "Drivers for win2k8 x64."

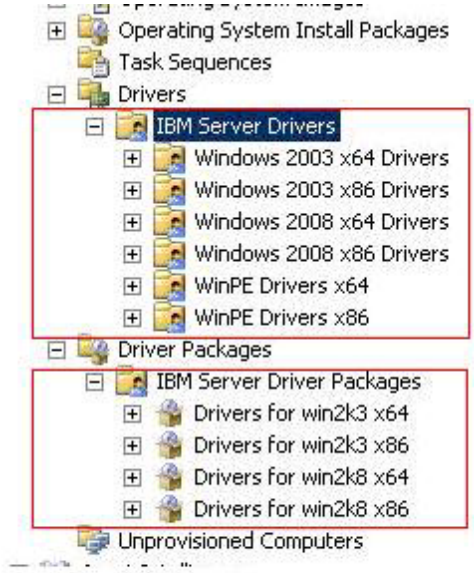


Figure 96. Confirming x64 drivers import was successful

Adding WinPE x64 drivers to the boot image

Use this topic to add the WinPE x64 drivers to the boot image.

Before you begin

You must import x64 drivers from the SEP package into the Configuration Manager.

1. Open the 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 that have IBM WINPE X64 Drivers in the Categories column.

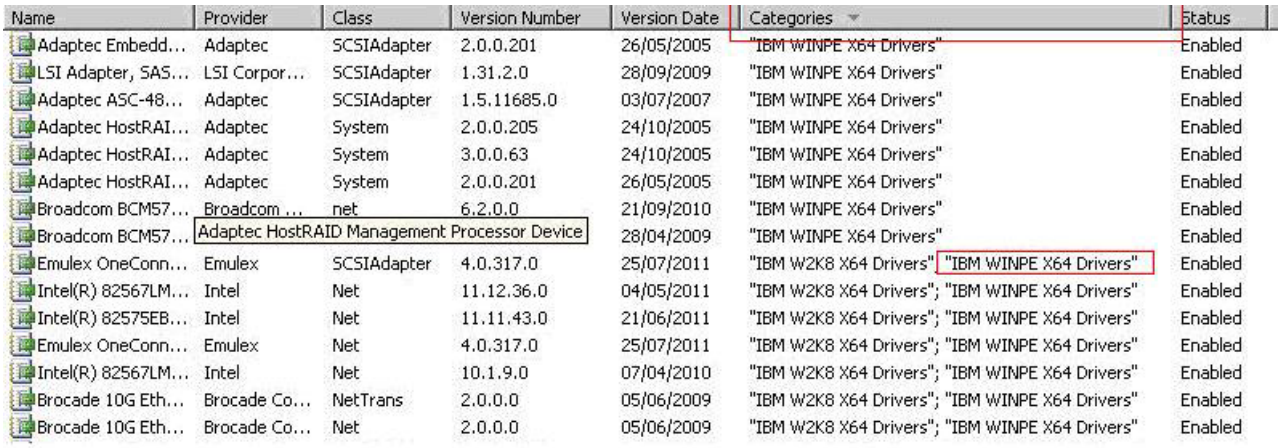


Figure 97. Adding drivers to the boot image

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

Configuring the machine type list for x64 drivers and tools

Use this topic to configure the machine type list after importing the x64 drivers and tools.

Set the machine type list of this SEP package using the following command:`IBMOSDTool.exe config –i sep_version –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`

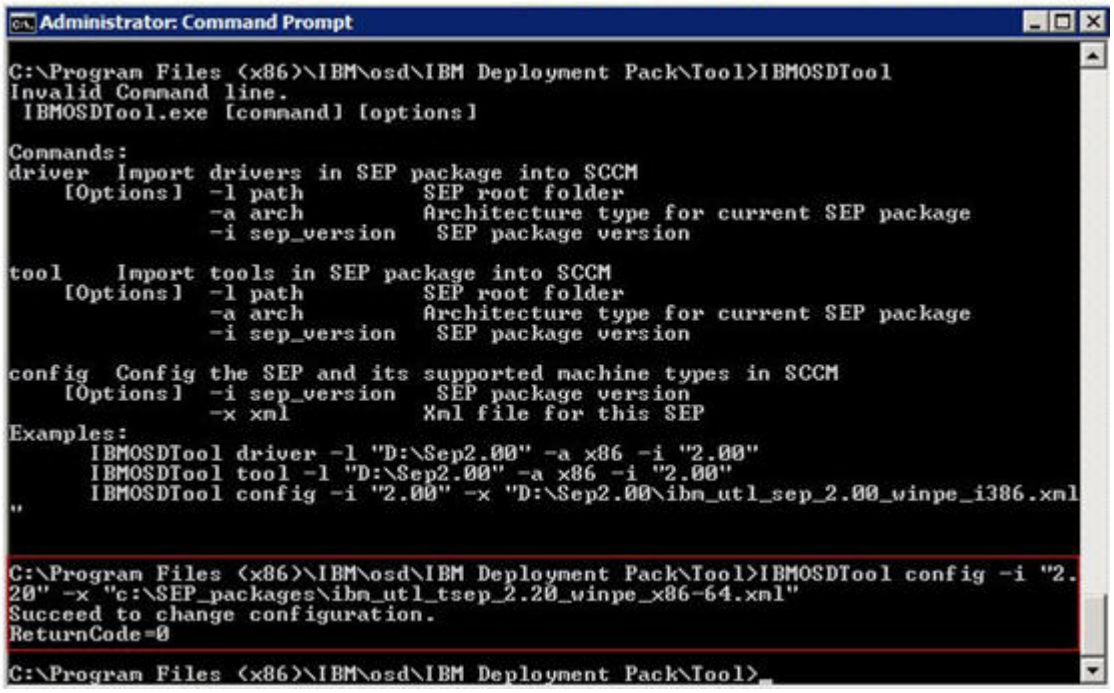


Figure 98. Command to set the machine type list of this SEP package

Using the imported SEP package

This section contains topics that describe how to use the SEP packages.

Selecting toolkit packages in an operating system 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.

Select the transparent mode to use the SEP package.

Note: After completing this procedure, you might need to manage distribution points and update distribution points of the packages (including IBM Deployment Pack, v3.1 packages, all driver packages). See “Managing distribution points” on page 30 and “Updating distribution points” on page 30.

Selecting the SEP package manually

This topic shows how to manually select the SEP package.

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

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

Note: If you have completed the SEP configurations successfully, your task sequence editor looks like the one in the figure below.

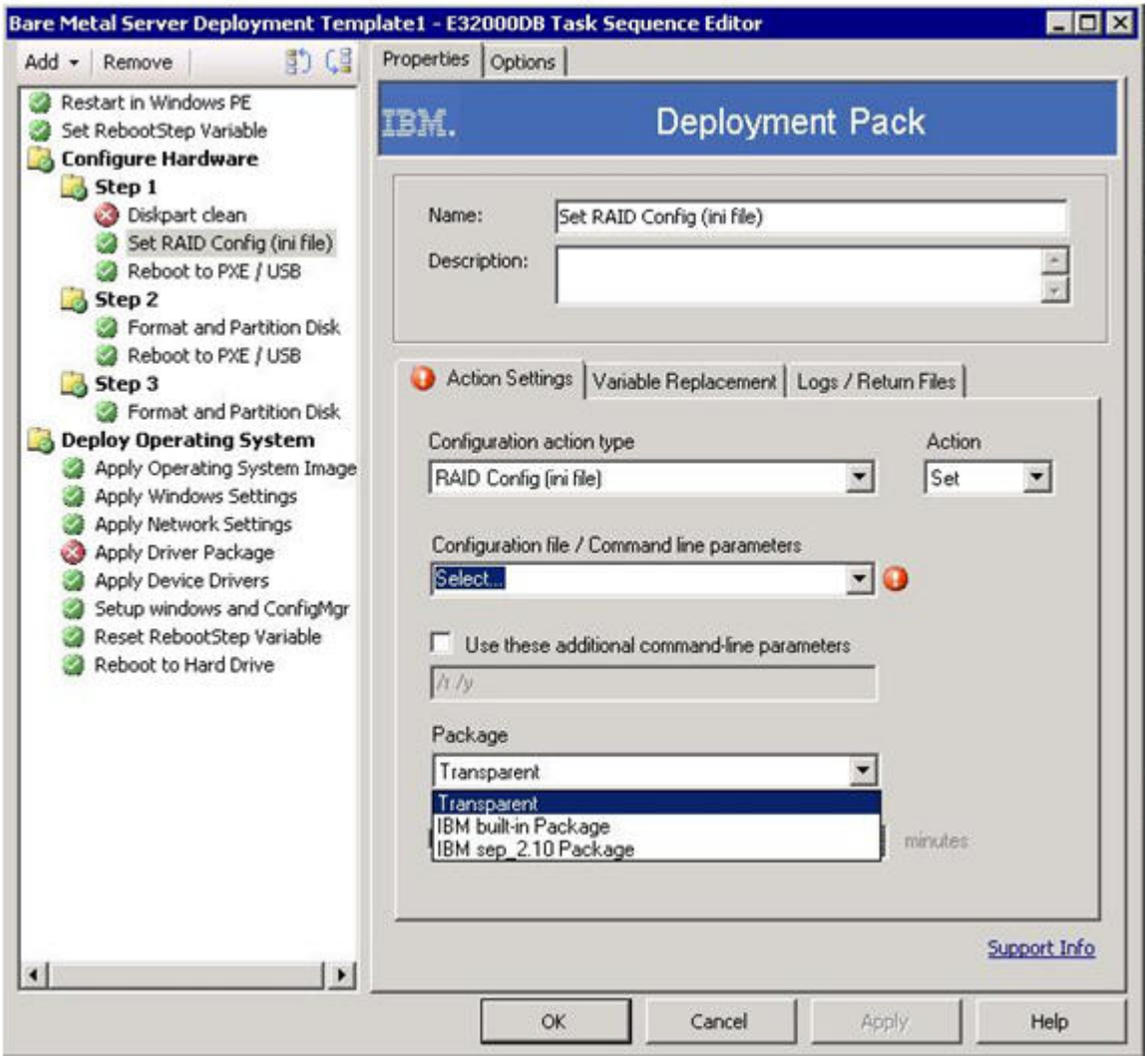


Figure 99. Task sequence editor after successful SEP configuration

Appendix F. Capturing and deploying Windows 2008 R2

These topics describe tasks required to capture and deploy the WS08 R2 image.

When you install Windows 2008 R2, the system sometimes creates one more reserved partition based on your installation settings. You must configure both partitions for your operating system installation. If you see only one partition, skip the steps in the following topics and follow the common steps to capture and deploy operating systems.

The following image shows two partitions, the reserved and C:

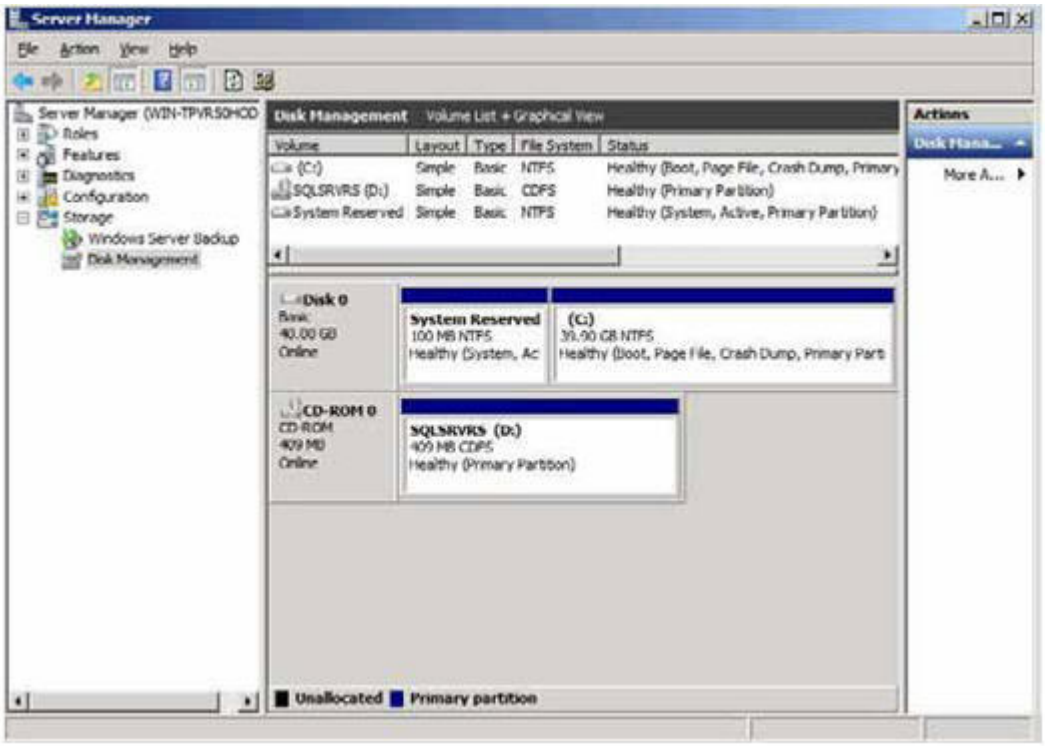


Figure 100. Two partitions

Changing the OSDTargetSystemRoot property

Before capturing the WS08 R2 image, you must change the value of the OSDTargetSystemRoot property.

1. Open the SCCM Configuration Manager console.
2. Expand Computer Management and click **Collections**.
3. Click on the custom collection, right-click the target computer that you are capturing, and click **Properties**.
4. Select **Variables** and add the OSDTargetSystemRoot property with the value `[SystemDisk]:\Windows`. In the example below, the D disk drive is the system disk drive.

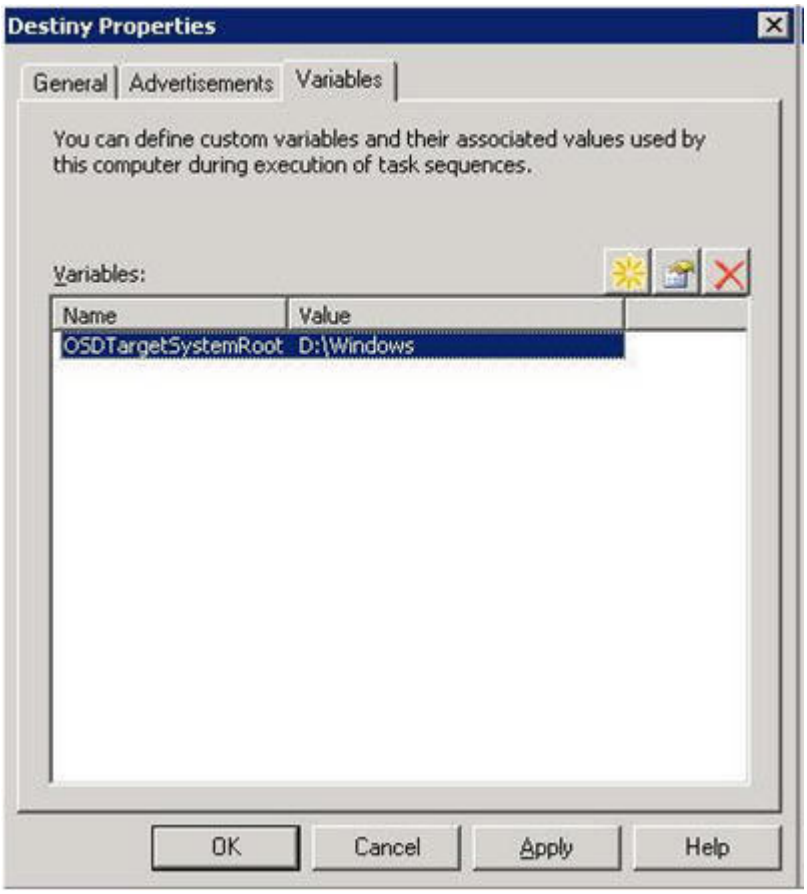


Figure 101. OSDTargetSystemRoot property

5. Follow the common steps to capture the WS08 R2 image.

Deploying the WS08 R2 image

After capturing the operating system image, import the Windows Imaging Format (WIM) file to the SCCM server.

About this task

After you import the WIM file, you see two volumes in the image list as shown in the following image.

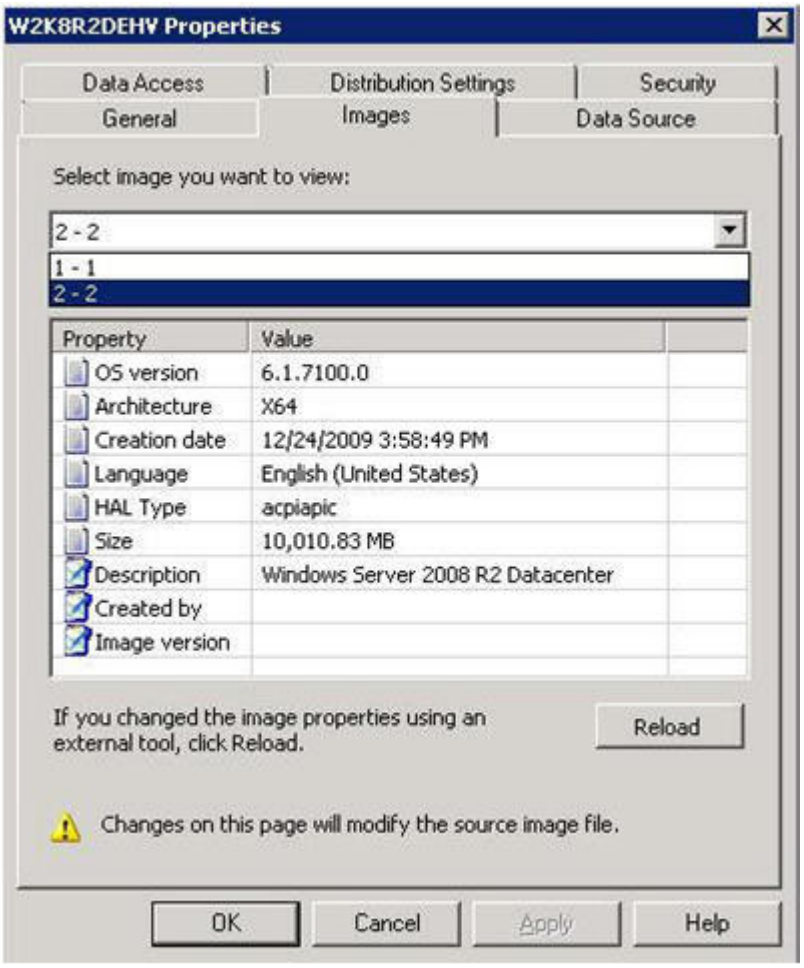


Figure 102. Image list

The first volume, 1-1, contains the 100 MB partition. The second one, 2-2, contains the operating system image. To create a task sequence for deployment, complete the following steps.

1. Using the IBM Task Sequence template, create the IBM Server Deployment Task Sequence.
2. Edit the task sequence.
3. On the navigation panel under Step 3, click **Format and Partition Disk** as shown in the following image.

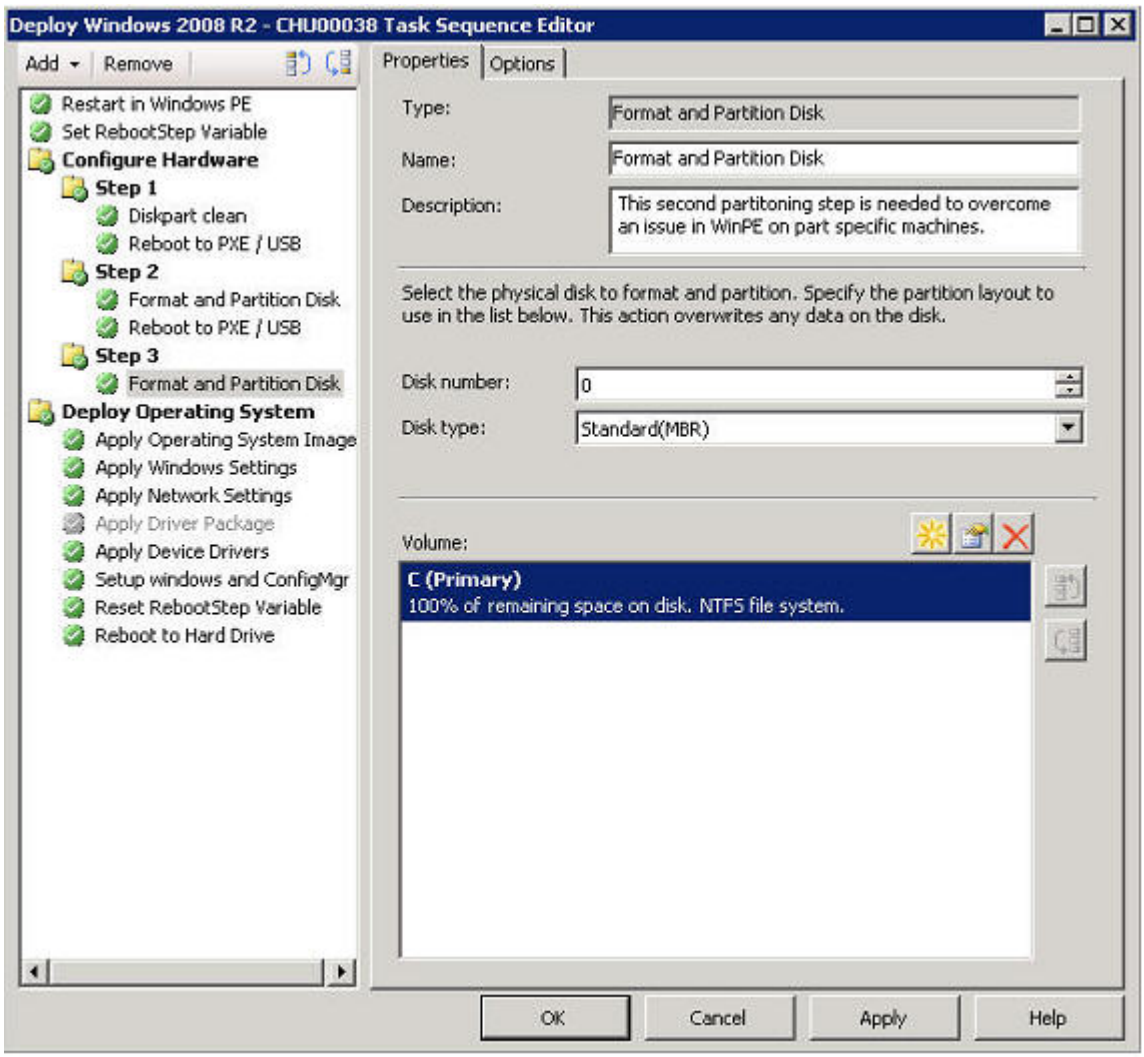


Figure 103. Format and partition disk

4. In the Volume part of the screen, double-click the first item. The Partition Properties menu is displayed.
5. Select **Mark this the boot partition**.
6. Select **Quick Format**.
7. In the **Variable** field, enter `BOOTPART`, and click **OK**.

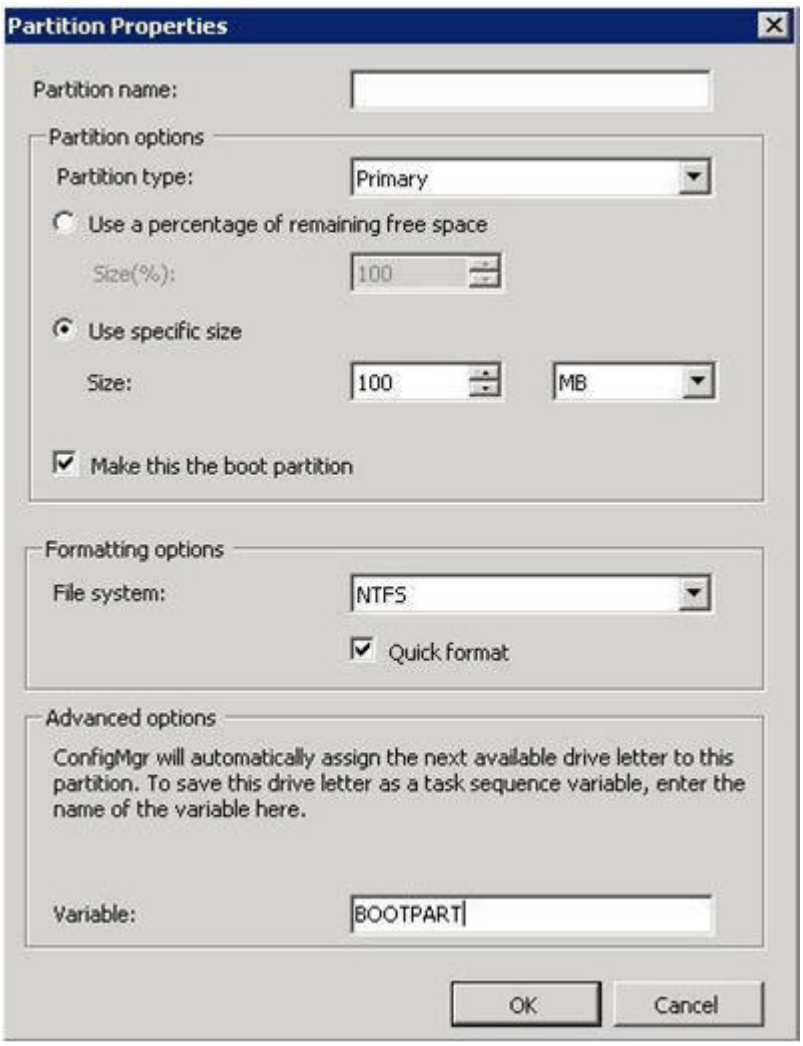


Figure 104. Partition properties

8. On the Partition Properties page, add a second volume:
   a. In the Partition Options section, select **Use a percentage of remaining free space**.
   b. Select the **Use specific size** check box, and enter `100` in the **Size** field.
   c. Under Formatting options, select the **Quick format** check box, and enter `OSPART` in the **Variable** field.

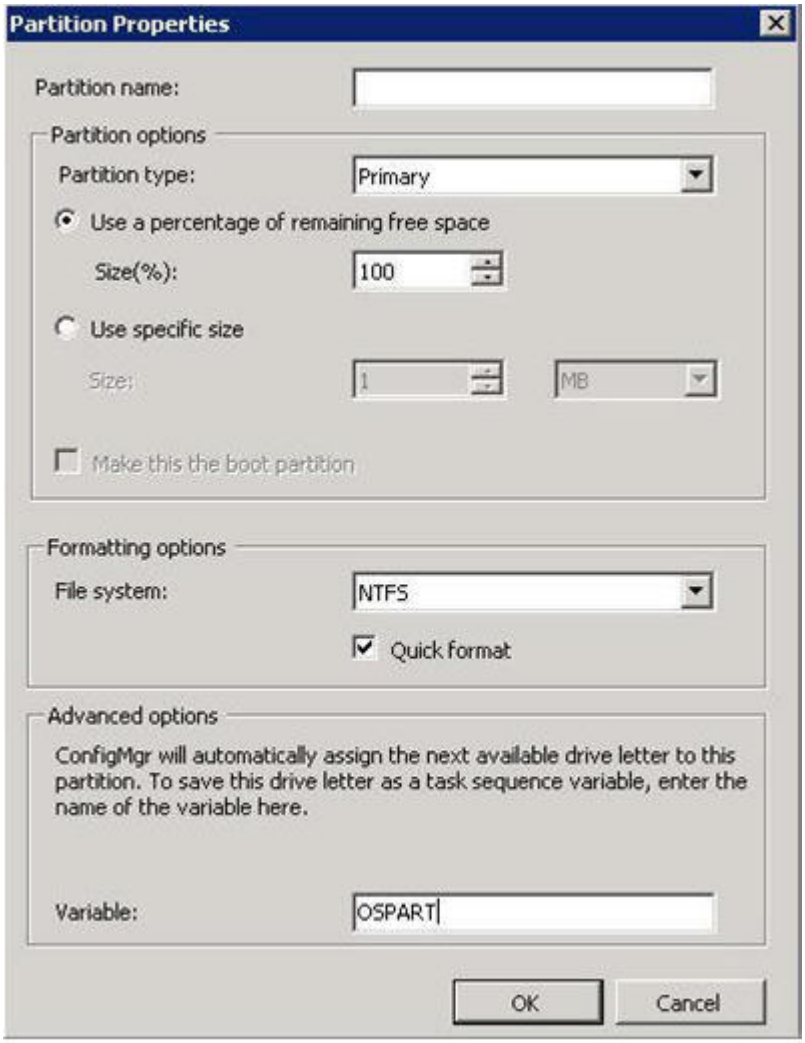


Figure 105. Partition properties for the second volume

d. To submit the changes, click **OK**. The following screen is displayed.

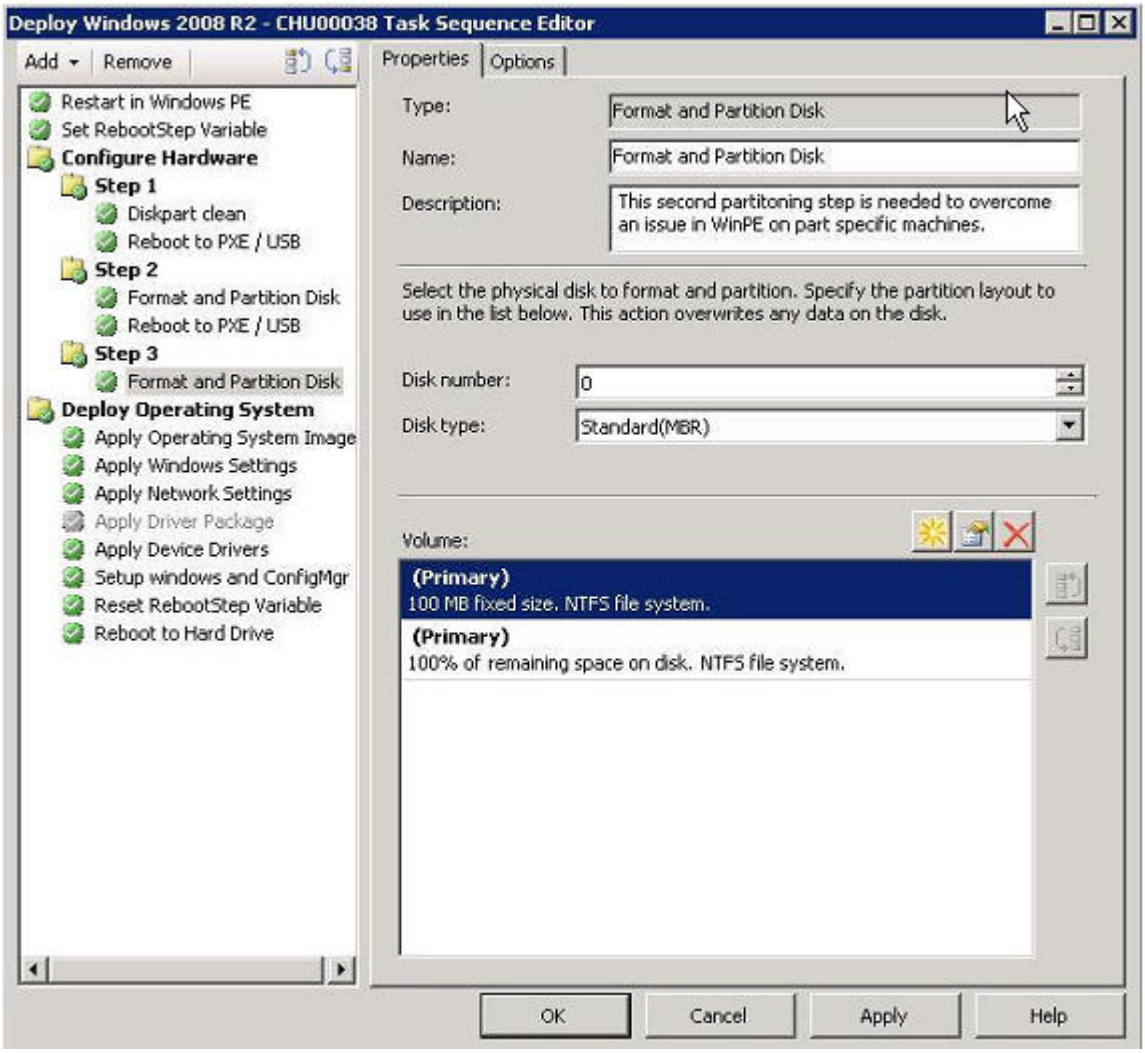


Figure 106. Task sequence

9. In the navigation panel, select **Apply Operating System Image** and click **OK**. The Deploy Windows 2008 R2 page is displayed.

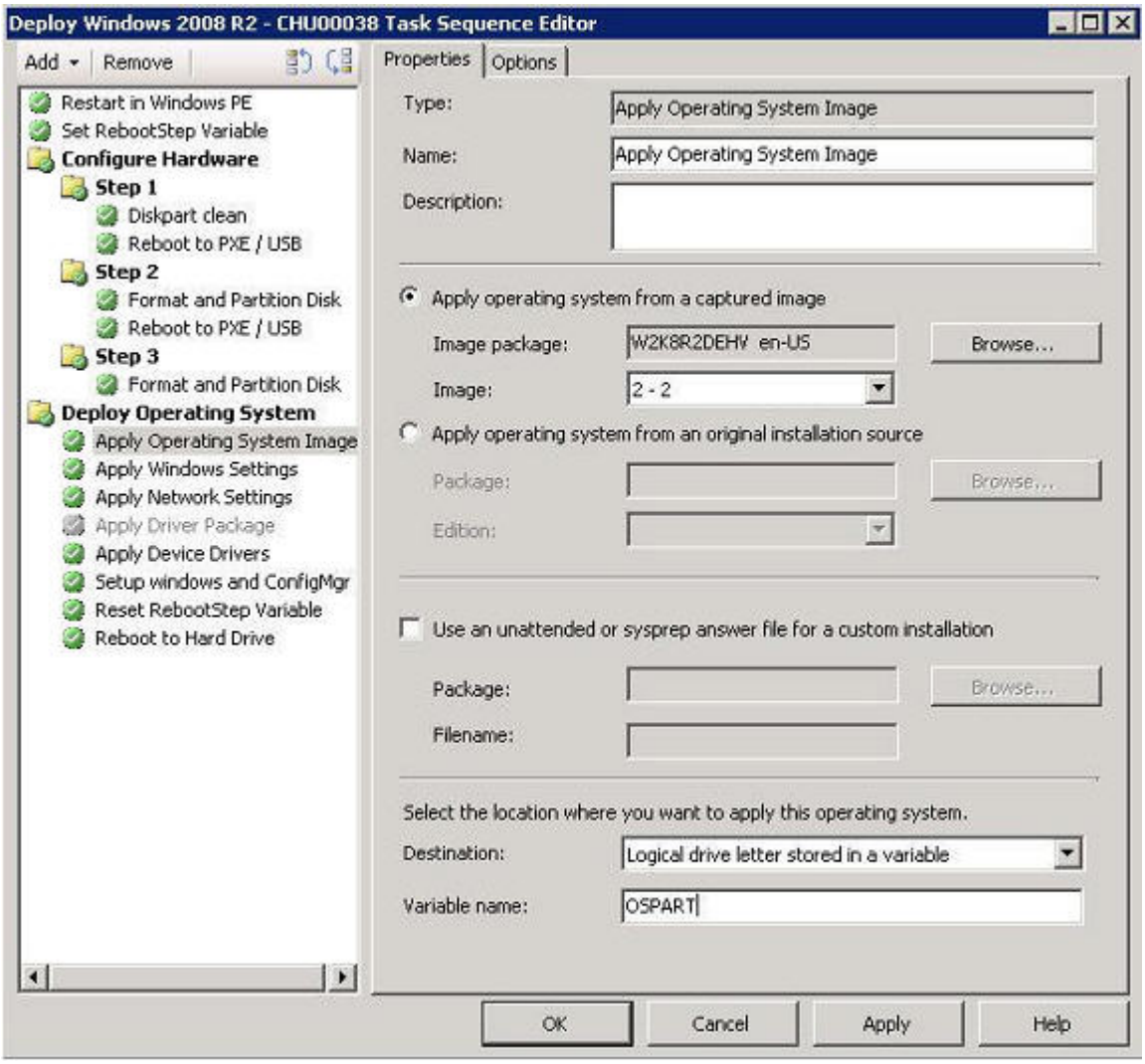


Figure 107. Deploy Windows 2008 R2 page

10. In the **Image** field, select **2-2** from the drop-down menu, and click **Apply**.
11. Follow the common steps to deploy the WS08 R2 image.
12. In the **Destination** field, select **Logical drive letter stored in a variable** from the drop-down menu.
13. In the **Variable** field, enter `OSPART`.
14. To submit the changes, click **OK**.

Appendix G. Accessibility features for the IBM Deployment Pack

Accessibility features help users who have a disability, such as restricted mobility or limited vision, to use information technology products successfully.

Accessibility features

The following list includes the major accessibility features in the IBM Deployment Pack:

- Can be operated using only the keyboard
- Communicates all information independent of color
- Inherit system settings for font, size, and color
- Supports interfaces commonly used by screen readers and screen magnifiers

Keyboard navigation

This product uses standard Microsoft® Windows navigation keys.

IBM and accessibility

See the IBM Human Ability and Accessibility Center web site at: `http://www.ibm.com/able` for more information about the commitment that IBM has to accessibility.

Notices

This information was developed for products and services offered in the U.S.A. IBM may not offer the products, services, or features discussed in this document in other countries.

Consult your local IBM representative for information on the products and services currently available in your area. Any reference to an IBM product, program, or service is not intended to state or imply that only that IBM product, program, or service may be used. Any functionally equivalent product, program, or service that does not infringe any IBM intellectual property right may be used instead. However, it is the user's responsibility to evaluate and verify the operation of any non-IBM product, program, or service.

IBM may have patents or pending patent applications covering subject matter described in this document. The furnishing of this document does not grant you any license to these patents. You can send license inquiries, in writing, to:

IBM Director of Licensing
IBM Corporation
North Castle Drive
Armonk, NY 10504-1785
U.S.A.

INTERNATIONAL BUSINESS MACHINES CORPORATION PROVIDES THIS PUBLICATION "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Some states do not allow disclaimer of express or implied warranties in certain transactions, therefore, this statement may not apply to you.

This information could include technical inaccuracies or typographical errors. Changes are periodically made to the information herein; these changes will be incorporated in new editions of the publication. IBM may make improvements and/or changes in the product(s) and/or the program(s) described in this publication at any time without notice.

Any references in this information to non-IBM Web sites are provided for convenience only and do not in any manner serve as an endorsement of those Web sites. The materials at those Web sites are not part of the materials for this IBM product, and use of those Web sites is at your own risk.

IBM may use or distribute any of the information you supply in any way it believes appropriate without incurring any obligation to you.

Trademarks

IBM, the IBM logo, and ibm.com® are trademarks or registered trademarks of International Business Machines Corporation in the United States, other countries, or both. If these and other IBM trademarked terms are marked on their first occurrence in this information with a trademark symbol (® or ™), these symbols indicate U.S. registered or common law trademarks owned by IBM at the time this information was published.

Such trademarks may also be registered or common law trademarks in other countries. A current list of IBM trademarks is available on the web at Copyright and trademark information at http://www.ibm.com/legal/copytrade.shtml.

Adobe and PostScript are either registered trademarks or trademarks of Adobe Systems Incorporated in the United States, other countries, or both.

Cell Broadband Engine is a trademark of Sony Computer Entertainment, Inc., in the United States, other countries, or both and is used under license therefrom.

Intel, Intel Xeon, Itanium, and Pentium are trademarks or registered trademarks of Intel Corporation or its subsidiaries in the United States and other countries.

Java and all Java-based trademarks are trademarks of Sun Microsystems, Inc., in the United States, other countries, or both.

Linux is a registered trademark of Linus Torvalds in the United States, other countries, or both.

Microsoft, Windows, and Windows NT are trademarks of Microsoft Corporation in the United States, other countries, or both.

UNIX is a registered trademark of The Open Group in the United States and other countries.

Other company, product, or service names may be trademarks or service marks of others.

Important notes

View important assumptions about terminology and claims.

Processor speed indicates the internal clock speed of the microprocessor; other factors also affect application performance.

CD or DVD drive speed is the variable read rate. Actual speeds vary and are often less than the possible maximum.

When referring to processor storage, real and virtual storage, or channel volume, KB stands for 1024 bytes, MB stands for 1•048•576 bytes, and GB stands for 1•073•741•824 bytes.

When referring to hard disk drive capacity or communications volume, MB stands for 1•000•000 bytes, and GB stands for 1•000•000•000 bytes. Total user-accessible capacity can vary depending on operating environments.

Maximum internal hard disk drive capacities assume the replacement of any standard hard disk drives and population of all hard disk drive bays with the largest currently supported drives that are available from IBM.

Maximum memory might require replacement of the standard memory with an optional memory module.

IBM makes no representation or warranties regarding non-IBM products and services that are ServerProven, including but not limited to the implied warranties of merchantability and fitness for a particular purpose. These products are offered and warranted solely by third parties.

IBM makes no representations or warranties with respect to non-IBM products. Support (if any) for the non-IBM products is provided by the third party, not IBM.

Some software might differ from its retail version (if available) and might not include user manuals or all program functionality.

Index

R

S

T

U

W

X

Readers' Comments — We'd Like to Hear from You

IBM System x
IBM Deployment Pack for
Microsoft System Center Configuration Manager 2007
Installation and User's Guide
Version 3.1

We appreciate your comments about this publication. Please comment on specific errors or omissions, accuracy, organization, subject matter, or completeness of this book. The comments you send should pertain to only the information in this manual or product and the way in which the information is presented.

For technical questions and information about products and prices, please contact your IBM branch office, your IBM business partner, or your authorized remarketer.

When you send comments to IBM, you grant IBM a nonexclusive right to use or distribute your comments in any way it believes appropriate without incurring any obligation to you. IBM or any other organizations will only use the personal information that you supply to contact you about the issues that you state on this form.

Comments:

Thank you for your support.

Send your comments to the address on the reverse side of this form.

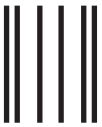
If you would like a response from IBM, please fill in the following information:

Name	Address
Company or Organization	
Phone No.	Email address

Readers' Comments — We'd Like to Hear from You

Cut or Fold
Along Line

Fold and Tape **Please do not staple** Fold and Tape



NO POSTAGE
NECESSARY
IF MAILED IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST-CLASS MAIL PERMIT NO. 40 ARMONK, NEW YORK

POSTAGE WILL BE PAID BY ADDRESSEE

International
Business Machines Corporation
PO Box 12195
Research Triangle Park
NC
U.S.A. 27709-9990

Fold and Tape **Please do not staple** Fold and Tape

Cut or Fold
Along Line

Printed in USA