Lenovo

Lenovo XClarity Integrator Deployment Pack for Microsoft System Center Configuration Manager
Installation and User's Guide

Version 7.6

Note

Before using this information and the product it supports, read the information in Appendix F "Notices" on page 89.

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About this publication

This book provides instructions for installing the Lenovo XClarity Integrator Deployment Pack for Microsoft System Center Configuration Manager and using the integrated features to deploy operating systems to Lenovo 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.

Table 1. Terms, acronyms and abbreviations

Term, acronym, or abbreviation	Definition
RAID	Redundant Array of Independent Disks
RSA	Remote Supervisory Adapter
OSD	Operating System Deployment
SCCM	Microsoft System Center Configuration Manager
LenovoSEP	Lenovo System Enablement Pack

Web resources

The following web pages provide resources for understanding, using, and troubleshooting Lenovo System x, BladeCenter servers, and systems management tools.

Lenovo XClarity Integrator

Learn more about how Lenovo System x Lenovo XClarity Integrator for Microsoft System Center provides IT administrators with the ability to integrate the management features of the System x and BladeCenter Servers with Microsoft System Center.

Lenovo Web site for Microsoft Systems Management Solutions for Lenovo servers

Locate the latest downloads for the Lenovo XClarity Integrator Add-in for Microsoft System Center Virtual Machine Manager:

- [Lenovo XClarity Integrator for Microsoft System Center Web site](#)

System Management with Lenovo XClarity Solutions

This Web site provides an overview of the Lenovo XClarity solutions that integrate System x and Flex System hardware to provide system management capability:

- [System Management with Lenovo XClarity Solution Web site](#)

Lenovo technical support portal

This Web site can assist you in locating support for hardware and software:

- Lenovo Support Portal Web site

Lenovo ServerProven pages

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

- Lenovo ServerProven: Compatibility for BladeCenter products
- Lenovo ServerProven: Compatibility for Flex System Chassis
- Lenovo ServerProven: Compatibility for System x hardware, applications, and middleware

Microsoft System Center Configuration Manager

Refer to the following Microsoft sites for information about System Center Configuration Manager and related documentation.

- Microsoft System Center Configuration Manager 2016 Web site
- Microsoft System Center Configuration Manager 2012 Web site

Chapter 1. Lenovo XClarity Integrator Deployment Pack for Microsoft Configuration Manager

The Lenovo XClarity Integrator Deployment Pack for Microsoft Configuration Manager enables you to tailor and build custom hardware deployment solutions for installing the Windows operating system on the following hardware: LenovoSystem x, BladeCenter, and Blade Servers hardware.

When integrated with the Microsoft System Center Configuration Manager (SCCM) Operating System Deployment component (including SCCM 2012 and SCCM 2016), the Lenovo XClarity Integrator Deployment Pack simplifies the steps for creating and customizing jobs to deploy hardware configurations and operating systems.

The Lenovo XClarity Integrator Deployment Pack, v7.6 supports the following types of deployment:

- Policy-based Redundant Array of Independent Disks (RAID) configuration using OneCLI, a built-in tool used to configure RAID
- Configuration of the following system settings by using the OneCLI
  - BIOS/uEFI
  - BMC/BMC (including multiple nodes)
- Automated deployment of the following operating systems:

  - Windows 2008 32bit/X64

  - Windows 2008 R2 SP1 (X64)

  - Windows 2012 (X64) - SCCM 2012 SP1 or above required

  - Windows 2012 R2

  - Windows 2016

  - Windows 2019

The Lenovo XClarity Integrator Deployment Pack, v7.6 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 for Windows 2008, Windows 2012, Windows 2016 and Windows 2019.
- Support for automatically importing the Lenovo System Enablement Pack into the SCCM server

Chapter 2. Planning and installing Lenovo XClarity Integrator Deployment Pack

Use this procedure to plan for, install, and import Lenovo XClarity Integrator Deployment Pack. It includes information about prerequisites, as well as instructions for installing, upgrading, removing, reinstalling, and importing the Lenovo XClarity Integrator Deployment Pack into SCCM.

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

System requirements

Before installing the Lenovo XClarity Integrator Deployment Pack, ensure that your system meets these prerequisites.

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

  Note: Before installing the Lenovo XClarity Integrator 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 about how to check SCCM status and resolve errors, see the Microsoft System Center Technical Documentation Library Web site.

- An installation account with the corresponding administrative authority, such as system administrator and SCCM administrator authority

- Windows Assessment and Deployment Kit(Windows ADK) must be installed.

- If the SCCM server is running on Windows 2008, ensure that hotfix 979492 is installed on the SCCM server. For more information, see the Microsoft support – An .inf file cannot be validated when an application uses the "SetupVerifyInfFile" function in Windows Vista and in Windows Server 2008 webpage.

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

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

Supported hardware and software

This chapter lists the servers, operating systems, adapters, and RAID controllers supported by the Lenovo XClarity Integrator Deployment Pack.

The most current support information is contained in the `readme.htm` file. You can download the latest version of the `readme.htm` file from the Lenovo ServerProven web pages:

- Lenovo ServerProven: Compatibility for BladeCenter products
- Lenovo ServerProven: Compatibility for Flex System Chassis

- Lenovo ServerProven: Compatibility for System x hardware, applications, and middleware

Supported systems

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

For complete information about supported combinations of servers and operating systems, visit the LenovoServerProven web pages:

- Lenovo ServerProven: Compatibility for BladeCenter products
- Lenovo ServerProven: Compatibility for Flex System Chassis
- Lenovo ServerProven: Compatibility for System x hardware, applications, and middleware

Table 2. Supported Lenovo systems

Product family name	Server type
Lenovo Flex System x240 Compute Node	2588
Lenovo Flex System x440 Compute Node	2590
Lenovo Flex System x240 M5 Compute Node	2591
Lenovo System x3250 M6	3633
Lenovo System x3250 M6	3943
Lenovo Lenovo Flex System x280/x480/x880 X6 Compute Node	4258
Lenovo System x3650 M5	5462
Lenovo System x3550 M5	5463
Lenovo System x3500 M5	5464
Lenovo NeXtScale nx360 M5	5465
Lenovo NeXtScale nx360 M5 DWC	5467
Lenovo NeXtScale nx360 M5 DWC	5468
Lenovo NeXtScale nx360 M5 DWC	5469
Lenovo System x3850 X6 / x3950 X6	6241
Lenovo Flex System x240 Compute Node	7162
Lenovo Flex System x440 Compute Node	7167
LenovoFlex System x280 x480 x880 X6 Compute Node	7196
Lenovo System x3650 M4	7915
Lenovo System x3750 M4	8718
Lenovo System x3750 M4	8752
Lenovo System x3750 M4	8753
Lenovo System x3550 M5	8869
Lenovo System x3650 M5	8871
Lenovo Flex System x240 M5 Compute Node	9532
Lenovo ThinkSystem SR630	7X01

Table 2. Supported Lenovo systems (continued)

Product family name	Server type
Lenovo ThinkSystem SR630	7X02
Lenovo ThinkSystem SR550	7X03
Lenovo ThinkSystem SR550	7X04
Lenovo ThinkSystem SR650	7X05
Lenovo ThinkSystem SR650	7X06
Lenovo ThinkSystem SR530	7X07
Lenovo ThinkSystem SR530	7X08
Lenovo ThinkSystem ST550	7X09
Lenovo ThinkSystem ST550	7X10
Lenovo ThinkSystem ST558	7Y15
Lenovo ThinkSystem ST558	7Y16
Lenovo ThinkSystem SR950	7X12
Lenovo ThinkSystem SN850	7X15
Lenovo ThinkSystem SN550	7X16
Lenovo ThinkSystem SN550	7X17
Lenovo ThinkSystem SR850	7X18
Lenovo ThinkSystem SR850	7X19
Lenovo ThinkSystem SD530	7X20
Lenovo ThinkSystem SD530	7X22
Lenovo ThinkSystem SR590	7X98
Lenovo ThinkSystem SR590	7X99
Lenovo ThinkSystem SR570	7Y02
Lenovo ThinkSystem SR570	7Y03
Lenovo ThinkSystem SR860	7X69
Lenovo ThinkSystem SR860	7X70
Lenovo ThinkSystem SR250 SR258	7Y51
Lenovo ThinkSystem SR250 SR258	7Y52
Lenovo ThinkSystem SR250 SR258	7Y53
Lenovo ThinkSystem SR250 SR258	7Y72
Lenovo ThinkSystem SR250 SR258	7Y73
Lenovo ThinkSystem SR150/SR158	7Y54
Lenovo ThinkSystem SR150/SR158	7Y55
LenovoThinkSystem ST250/ST258	7Y45

Table 2. Supported Lenovo systems (continued)

Product family name	Server type
Lenovo ThinkSystem ST250/ST258	7Y46
Lenovo ThinkSystem ST250/ST258	7Y47

RAID controller support

All RAID controllers are supported if XClarity Controller on your machine supports the storage command function. Check with the service provider to see whether storage command is supported.

Installing the Lenovo XClarity Integrator Deployment Pack into SCCM

This topic describes how to install the Lenovo XClarity Integrator Deployment Pack.

Before you begin

Download the Lenovo XClarity Integrator Deployment Pack from the [Lenovo XClarity Integrator for Microsoft System Center Web site](#)

About this task

Lenovo XClarity Integrator Deployment Pack can be installed from either the Lenovo XClarity Integrator Deployment Pack installation file or the Lenovo XClarity Integrator for Microsoft System Center bundle installation file.

Procedure

Step 1.   Double-click the setup executable file (*.exe*) to start the installation wizard.

Step 2.   Follow the installation wizard instructions until the Finish page is displayed.
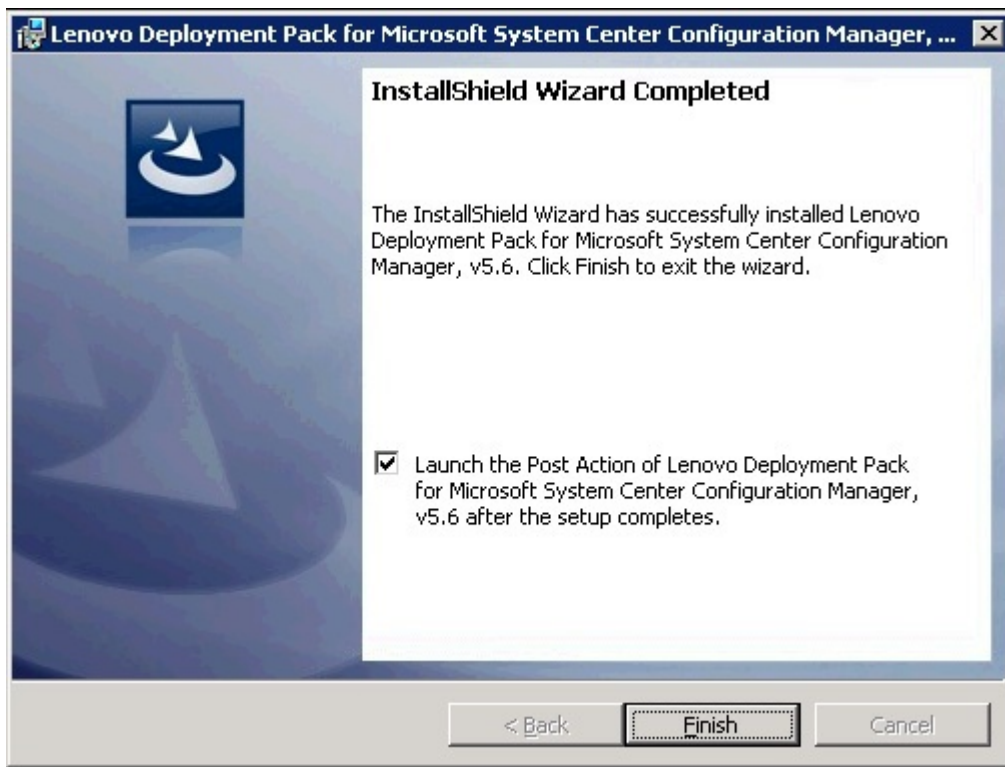
Figure 1. InstallShield Wizard Completed

Step 3.   From the InstallShield Wizard Completed page, make sure the **Launch the Post Action of Lenovo Deployment Pack** check box is selected, and click **Finish** to start the post-installation wizard. The post-installation wizard imports the Lenovo XClarity Integrator Deployment Pack onto the SCCM server.For more information, see "Importing the Lenovo XClarity Integrator Deployment Pack into SCCM" on page 7.

Importing the Lenovo XClarity Integrator Deployment Pack into SCCM

After running the installation wizard, you must import the Lenovo XClarity Integrator 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.

Procedure

Step 1.   Start the wizard by clicking **Start ➙ All Programs ➙ Lenovo Upward Integration ➙ Lenovo Deployment Pack ➙ Lenovo Deployment Pack - Import Wizard**.
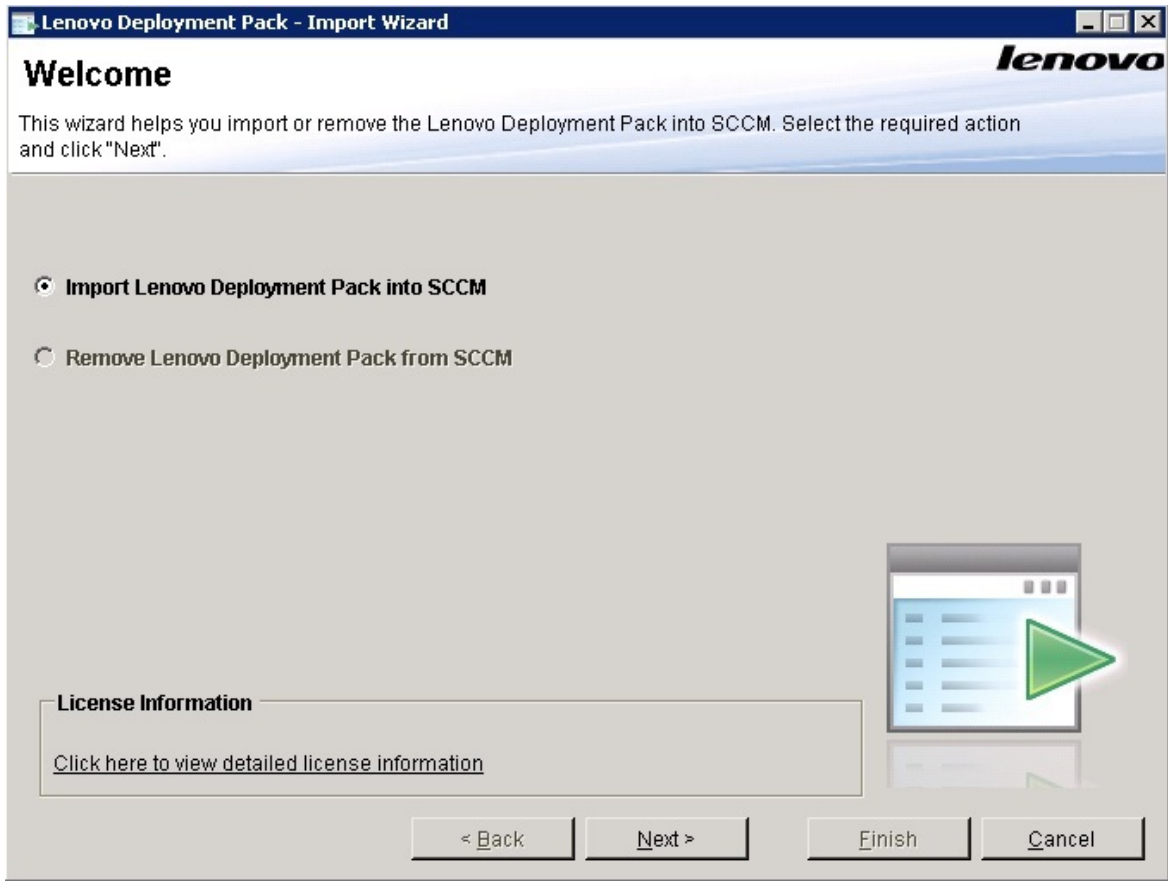
Figure 2. Lenovo XClarity Integrator Deployment Pack *Import Wizard Welcome page*

Step 2.   On the Welcome page, select **Import Lenovo Deployment Pack to SCCM**, and click **Next**.
The Target Systems page opens.
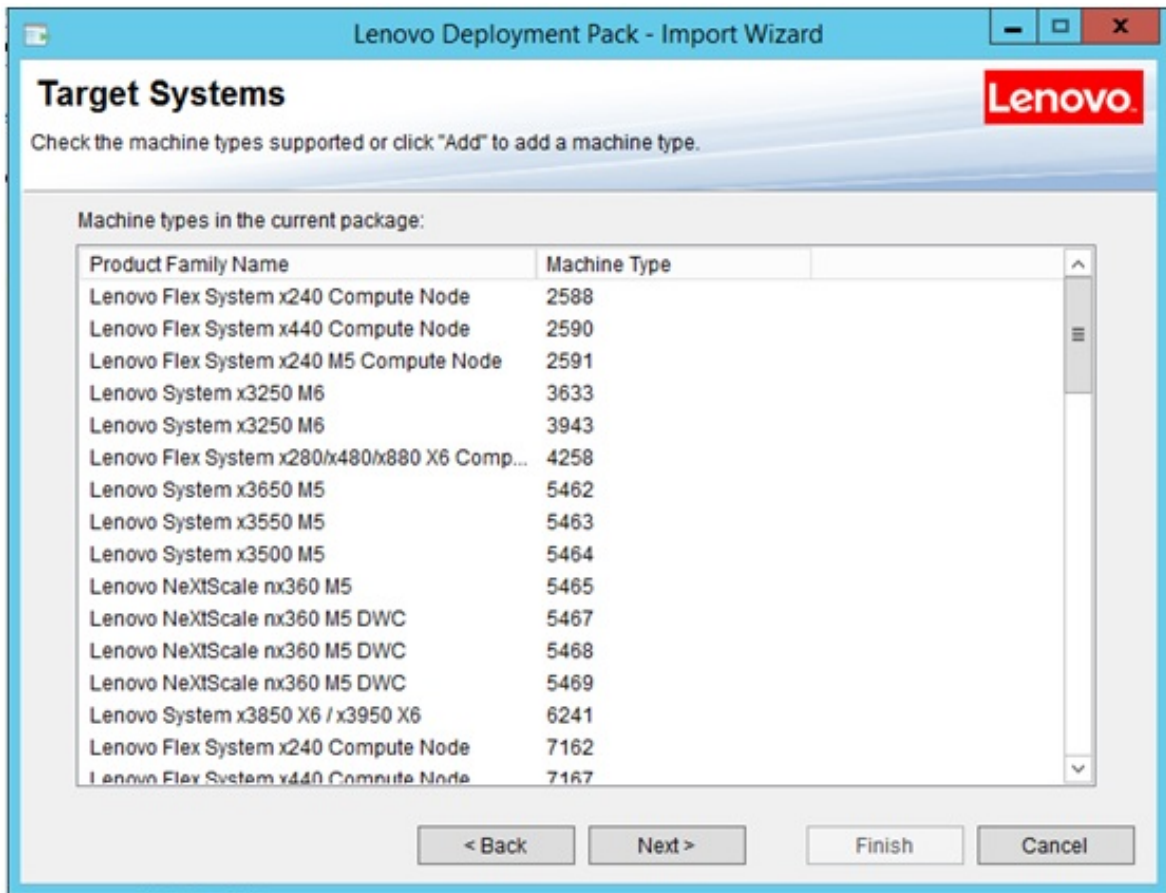
Figure 3. Target Systems page

Step 3. On the Target Systems page, click **Next**. The Boot Image page opens.
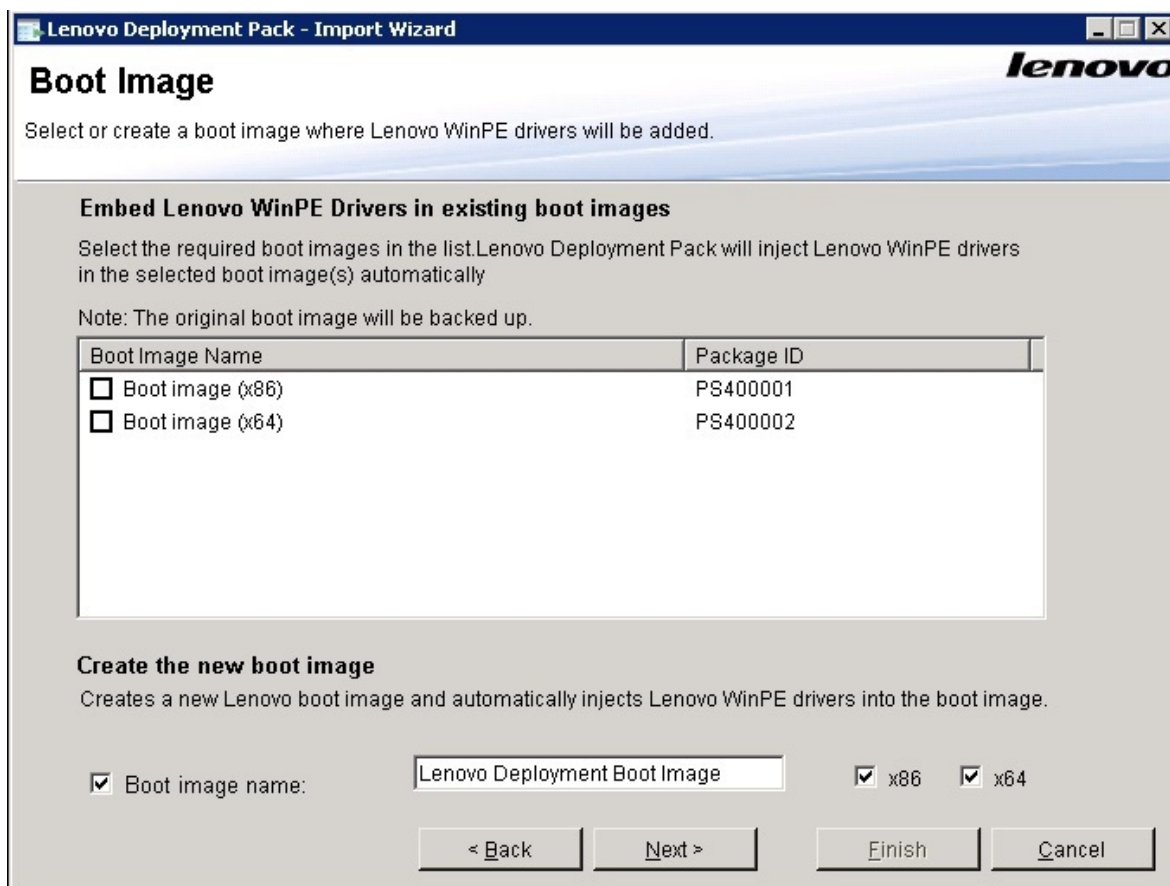
Figure 4. Boot Image page

Step 4.   Click **Next** to proceed with the import.The Progress page is displayed with the status of the selected items.
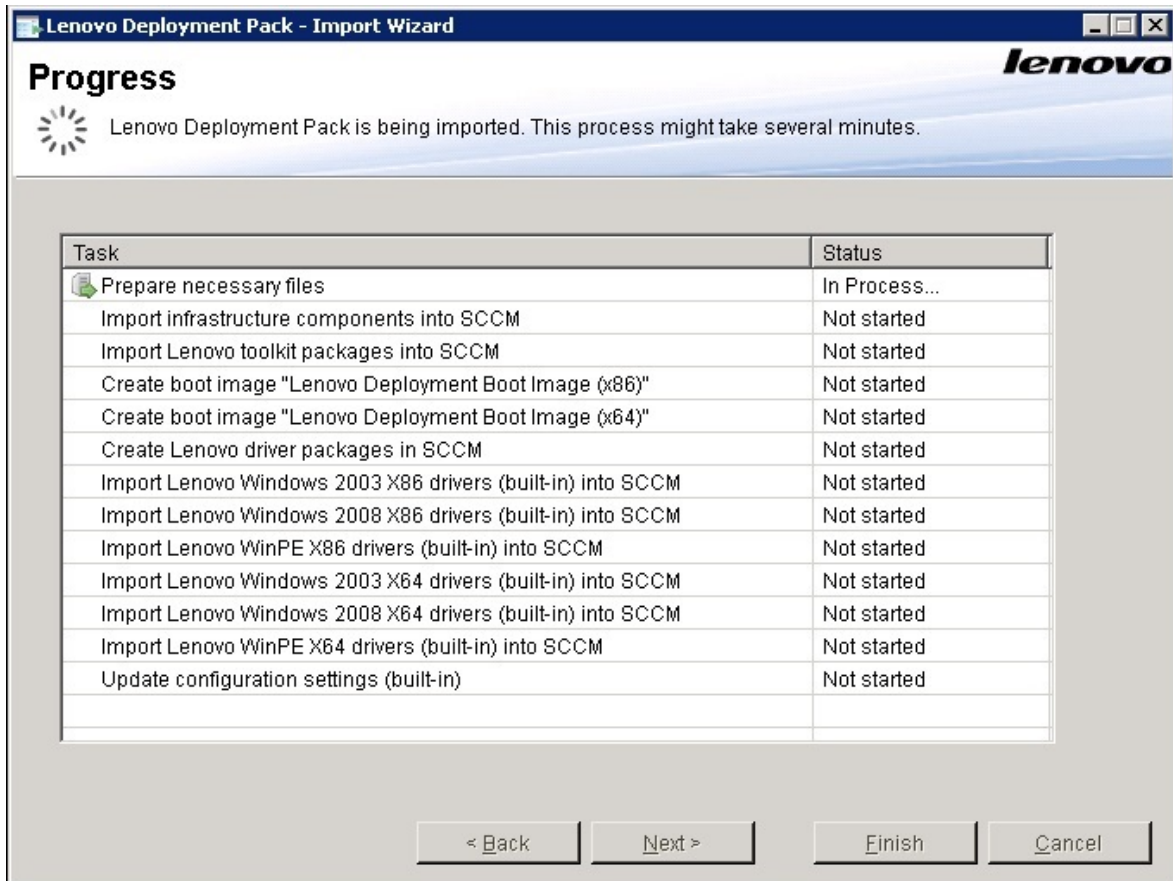
Figure 5. Progress page

Note: The tasks take a few minutes. Do not interrupt the import process.

After all tasks have been performed, the Completed page is displayed.
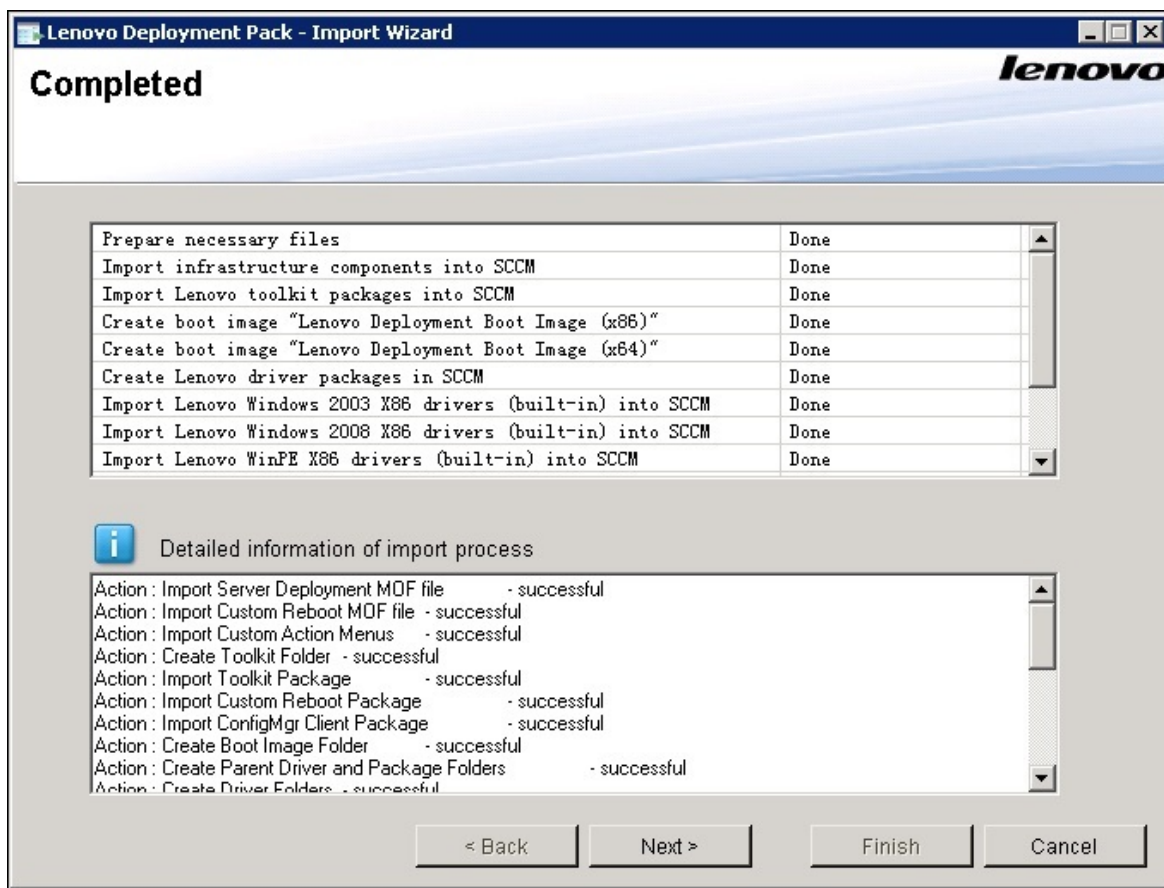
Figure 6. Completed page

Note: You also can use this wizard to remove the built-in and SEP packages from the SCCM server.

Before using the wizard, ensure that the SCCM administrative console is closed.

Step 5. Click **Next**. The Post Import Instruction page is displayed.
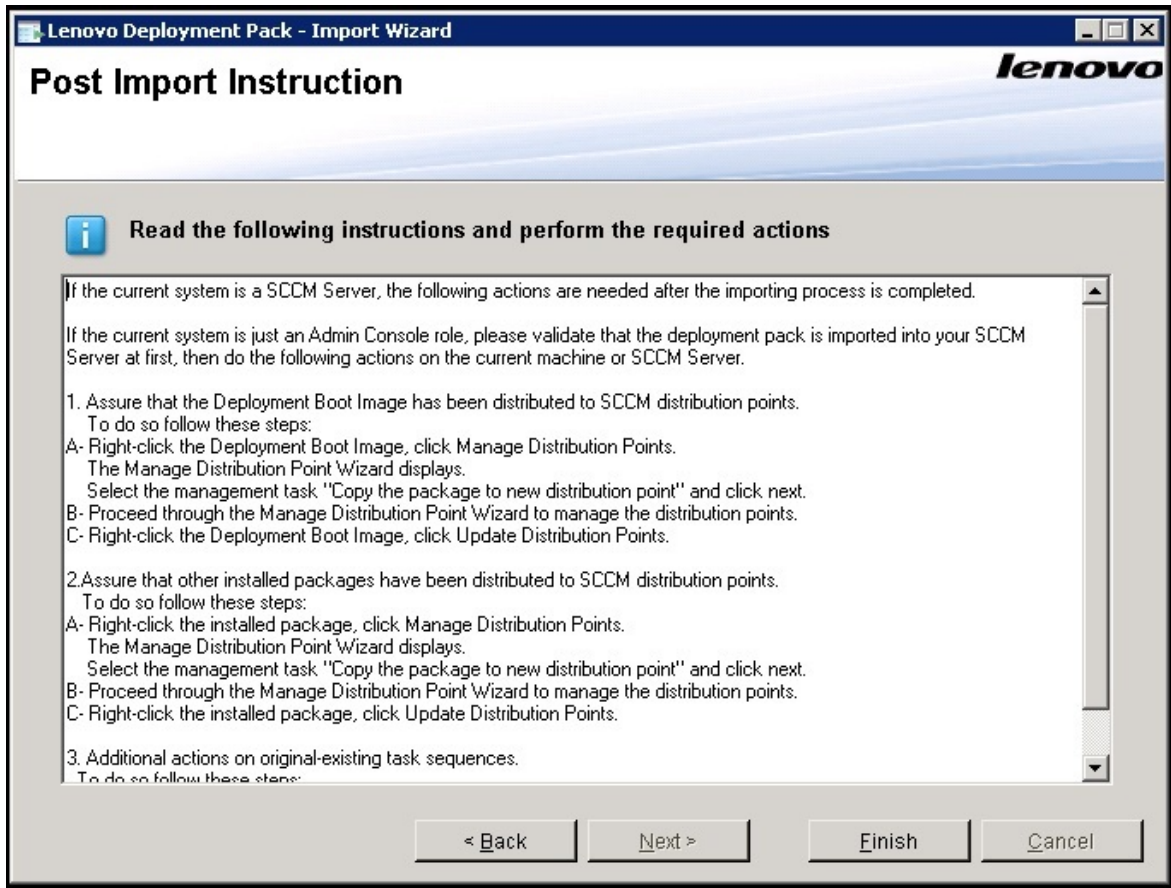
Figure 7. Post Import Instruction page

Step 6. After the import procedure is finished, 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.
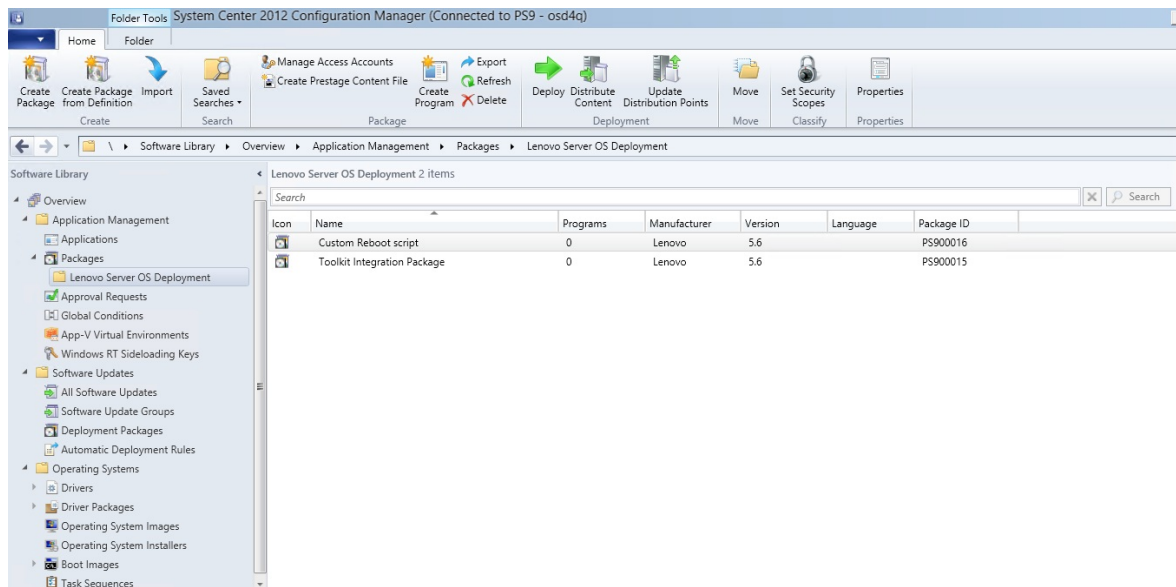
Figure 8. Items added to the SCCM *2012 console after installing the* Lenovo XClarity Integrator Deployment
Pack

Step 7.   Ensure that a Lenovo XClarity Integrator Deployment Pack task sequence has been added to the
task sequence **Bare Metal Server Deployment** menu. The image below shows the new options.
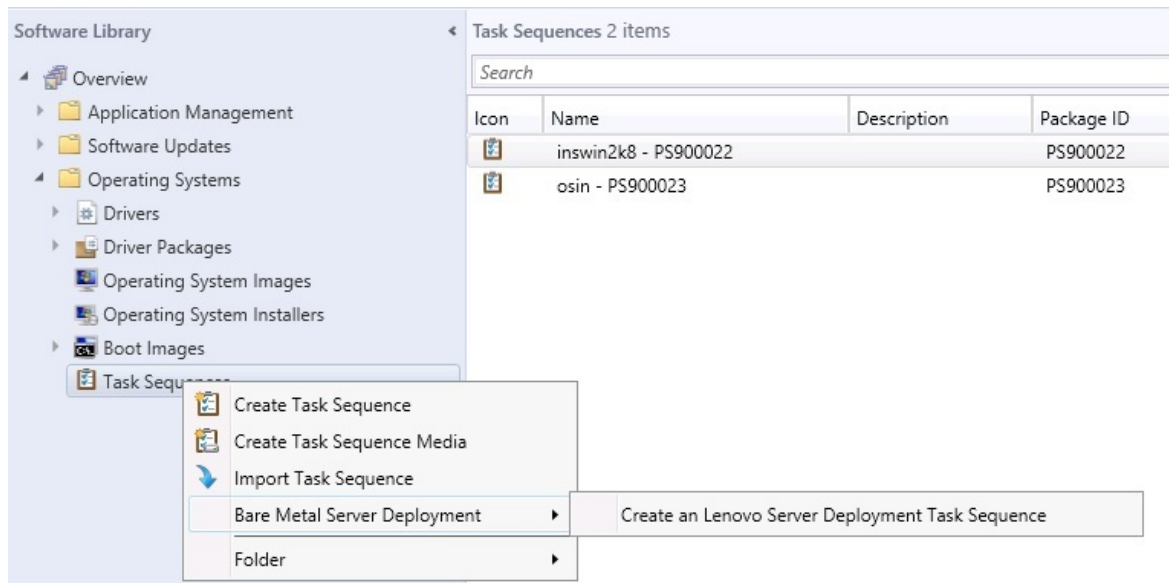
Figure 9. New Bare Metal Deployment option added in SCCM *2012*
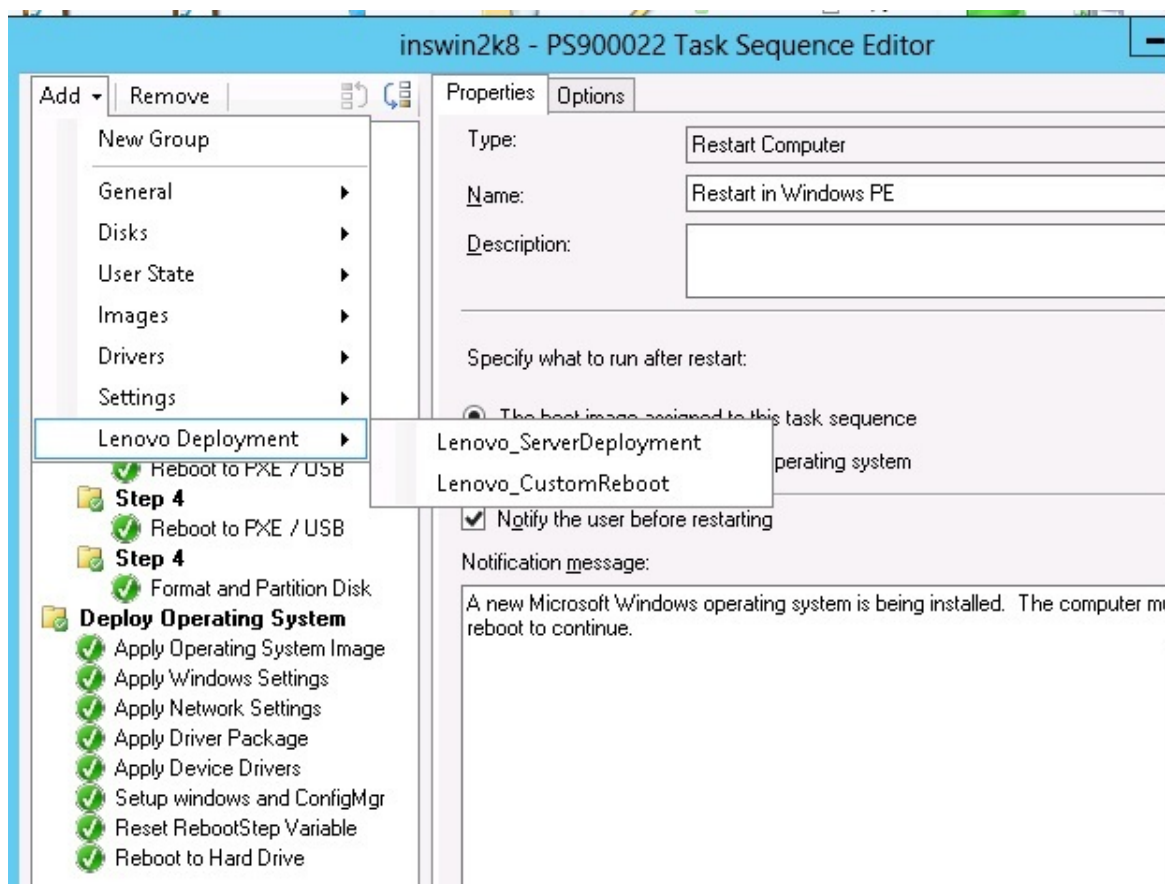
Figure 10. New action in Task Sequence Editor

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

What to do next

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

Uninstalling the Lenovo XClarity Integrator Deployment Pack

This topic describes how to uninstall the Lenovo XClarity Integrator Deployment Pack.

About this task

The Lenovo XClarity Integrator Deployment Pack can be uninstalled by clicking **Start ➙ All Programs ➙ Lenovo Upward Integration ➙ Lenovo Deployment Pack ➙ Uninstall**

Note: You can also uninstall the Lenovo XClarity Integrator Deployment Pack by either clicking **Control Panel ➙ Add or Remove Programs** or by running the `setup.exe`. file

Procedure

Step 1. After clicking the uninstallation shortcut in the system **Start** menu, a confirmation window opens. Click **YES** to continue.

Step 2. Indicate if you want to remove or keep the settings from the previous version.

- If you want to keep the settings from the previous version, select **Keep previous settings in SCCM**. The settings remain without any modification.
- If you want to remove the settings from the previous version. select **Remove previous settings from SCCM**. All imported SEP packages and built-in packages are uninstalled at the same time; however, the Lenovo-specific boot image (x86 and x64) is retained.

Note: By design, the uninstallation procedure does not remove the Lenovo-specific boot images that were created during installation that 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 Lenovo XClarity Integrator Deployment Pack

After uninstalling the Lenovo XClarity Integrator Deployment Pack, you can reinstall it, but you must perform 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.

Procedure

Step 1. Right-click the task sequence that you want to reuse, and click **Edit**.

Step 2. Identify the source package for the **Diskpart clean** custom action.

If the task sequence used the **Diskpart clean** custom action, the Missing Objects window opens.
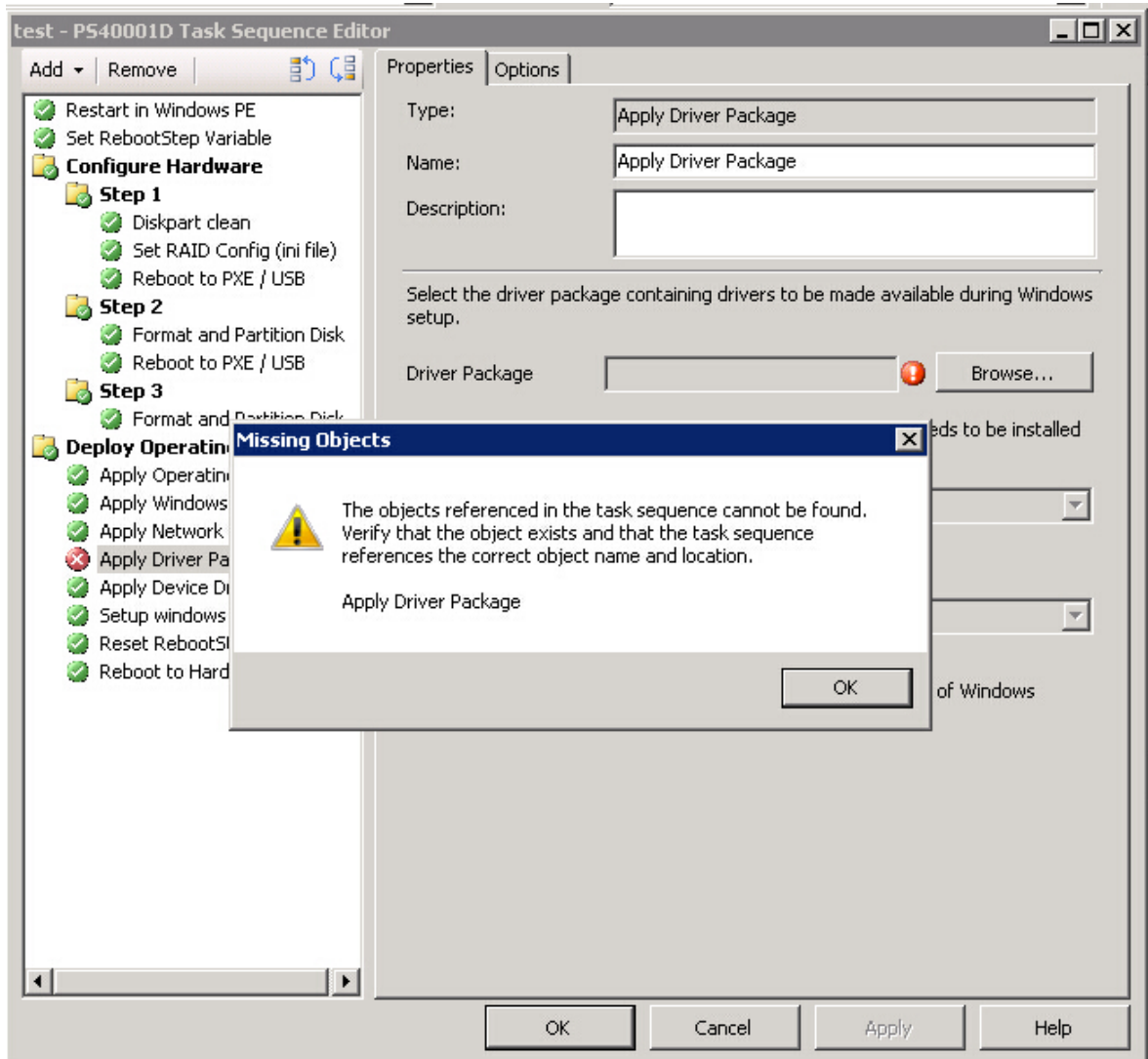
Figure 11. Missing Objects window

Note in the preceding image that the **Diskpart clean** item is flagged with a red X, which indicates that it needs attention.

Step 3. Click **OK** to dismiss the Missing Objects warning.

Step 4. Click **Diskpart clean** to edit the item.

Step 5. Click **Browse (for Package)**, and select the **Lenovo Custom Reboot script 7.5** package.
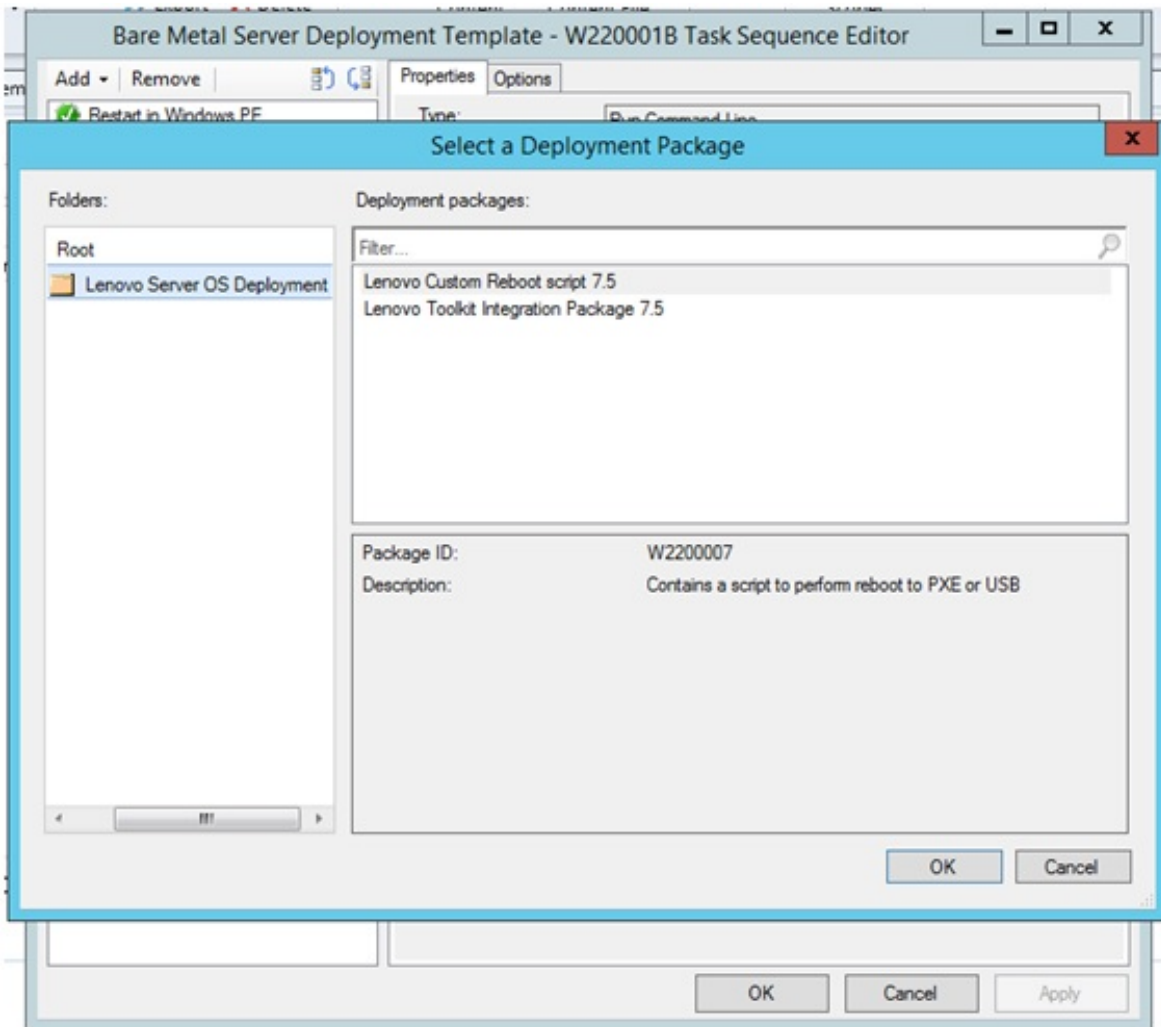
Figure 12. Selecting the Lenovo Custom Reboot script 7.5 package

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

Step 6. Import the custom drivers that the task sequences might use.

Note: An uninstallation removes any drivers that were imported during the previous installation of the Lenovo XClarity Integrator Deployment Pack. Because the drivers are removed from the driver repository, they are no longer shown in any existing driver packages.

a. Re-import 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, but it fails at run time.

c. Because you uninstalled and are reinstalling the Lenovo XClarity Integrator Deployment Pack, check the **Apply Driver Package** step for any task sequence that uses the Lenovo XClarity Integrator Deployment Pack.

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

Chapter 3. Preparing for deployment

Now that the Lenovo XClarity Integrator Deployment Pack is installed, you can perform the configuration steps required to prepare for a full deployment, including those for SCCM OSD initial configuration, post-installation configuration and updating distribution points.

Preparing for deployment in SCCM

Before deploying SCCM, you must perform some procedures as a prerequisite, which include configuring OSD, updating distribution points, and selecting the boot image.

The following sections will guide you through the process step by step.

SCCM OSD initial configuration

This topic refers you to detailed information about how to configure your operating system deployment (OSD) environment by describing the actions you should take in SCCM.

The following information about configuring OSD is provided as a general reference. For more detailed information about setting up OSD in SCCM, see the Microsoft System Center Configuration Manager Documentation Library webpage.

Setting the network access account

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

Procedure

Step 1.   Click start Microsoft System Center Configuration Manager.

Step 2.   From the Configuration Manager console, select the **Administration** tab, then select **Overview ➙ Site Configuration ➙ Sites ➙ Configure Site Components ➙ Software Distribution**.
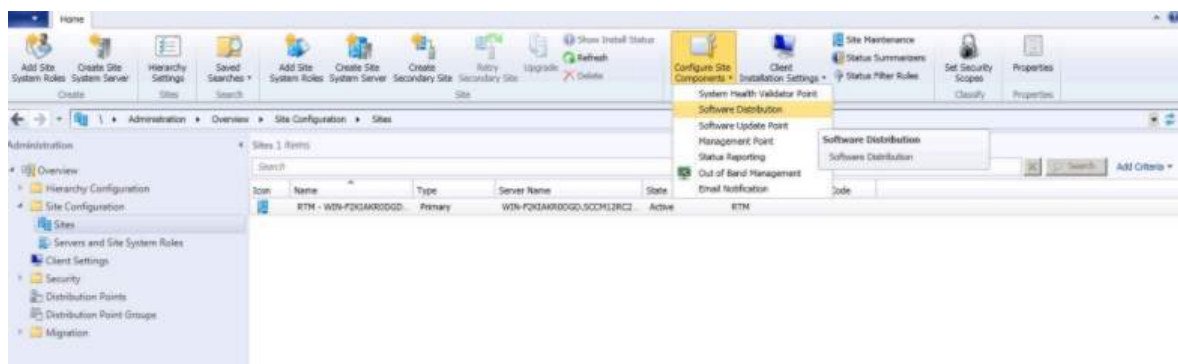
Figure 13. Select Software Distribution

Step 3.   Click **Software Distribution**.

Step 4.   On the **Network Access Account** tab, select **Specify the account that access network locations** and click **Set**. The Windows User Account window opens.

Step 5.   Complete the fields to set the network access account.

The account must have appropriate permissions to access the corresponding resources from site servers.
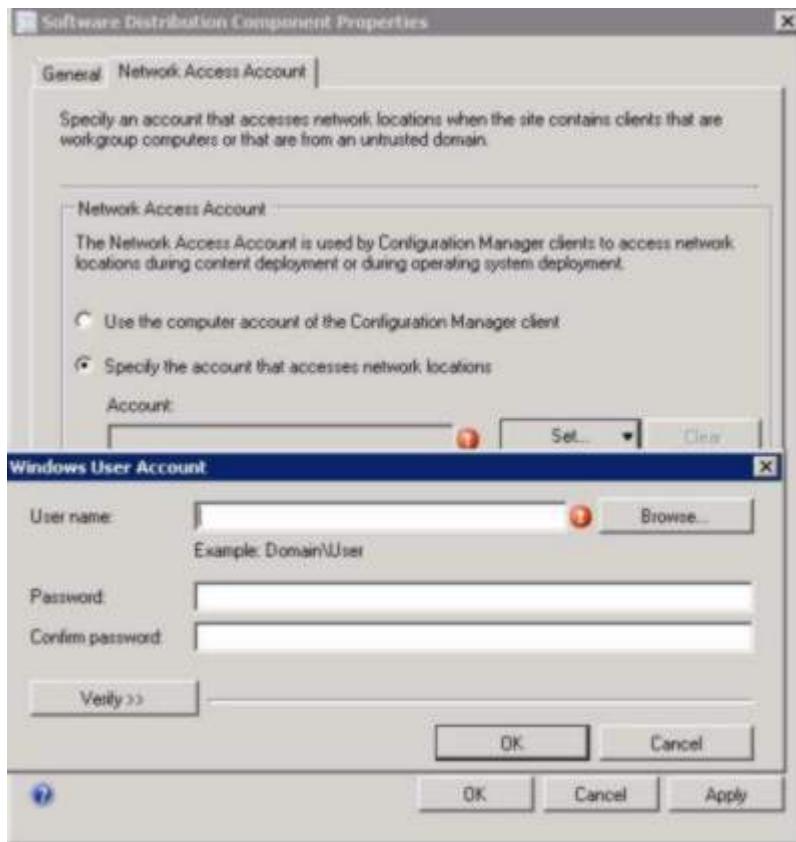
Figure 14. Windows User Account window

Step 6. Click **OK**.

Enabling 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

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

Procedure

Step 1. Start Microsoft System Center Configuration Manager.

Step 2. From the Configuration Manager console, click the **Administration** tab, then select **Overview ➙ Site Configuration ➙ Servers and Site System Roles**.

Step 3. Double-click the **Distribution point**, and select the **PXE** tab.
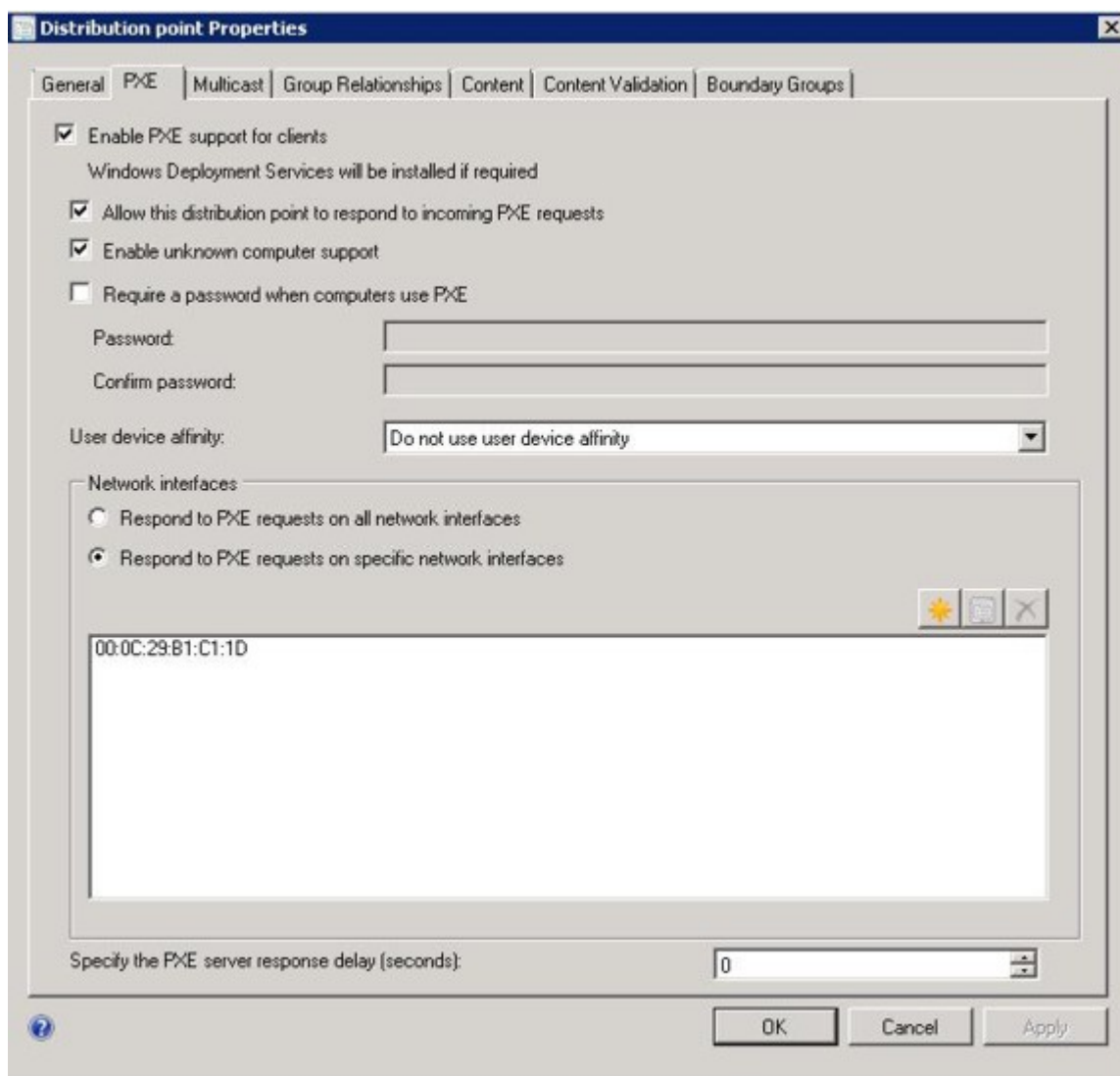
Figure 15. Enable PXE role

Step 4. Select the **Enable PXE support for clients** check box, and select **Allow this distribution point to respond to incoming PXE requests**.

Step 5. Click **OK**.

Post-installation configuration

After the Lenovo XClarity Integrator Deployment Pack has been installed, copy the newly imported driver packages, toolkit packages and boot image to the distribution points to make them available for the target servers to deploy.

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 **Overview ➙ Application Management ➙ Packages** including Lenovo Server Deployment, theConfiguration Manager client package, and any SEP packages that have been added.

- The Lenovo boot image located at **Overview ➙ Operating System ➙ Boot Images**. If the generic boot image has not been updated, update it now.

- Driver packages that are located at **Overview → Operating System → Driver Packages → Lenovo Server Driver Packages**.

Before copying the new items to distribution points, verify that the configurations are correct for each item:

- If you are updating the boot images, right click the boot image, click **Properties**, and then select **Deploy this boot image from the PXE service point**, as shown in the following figure.
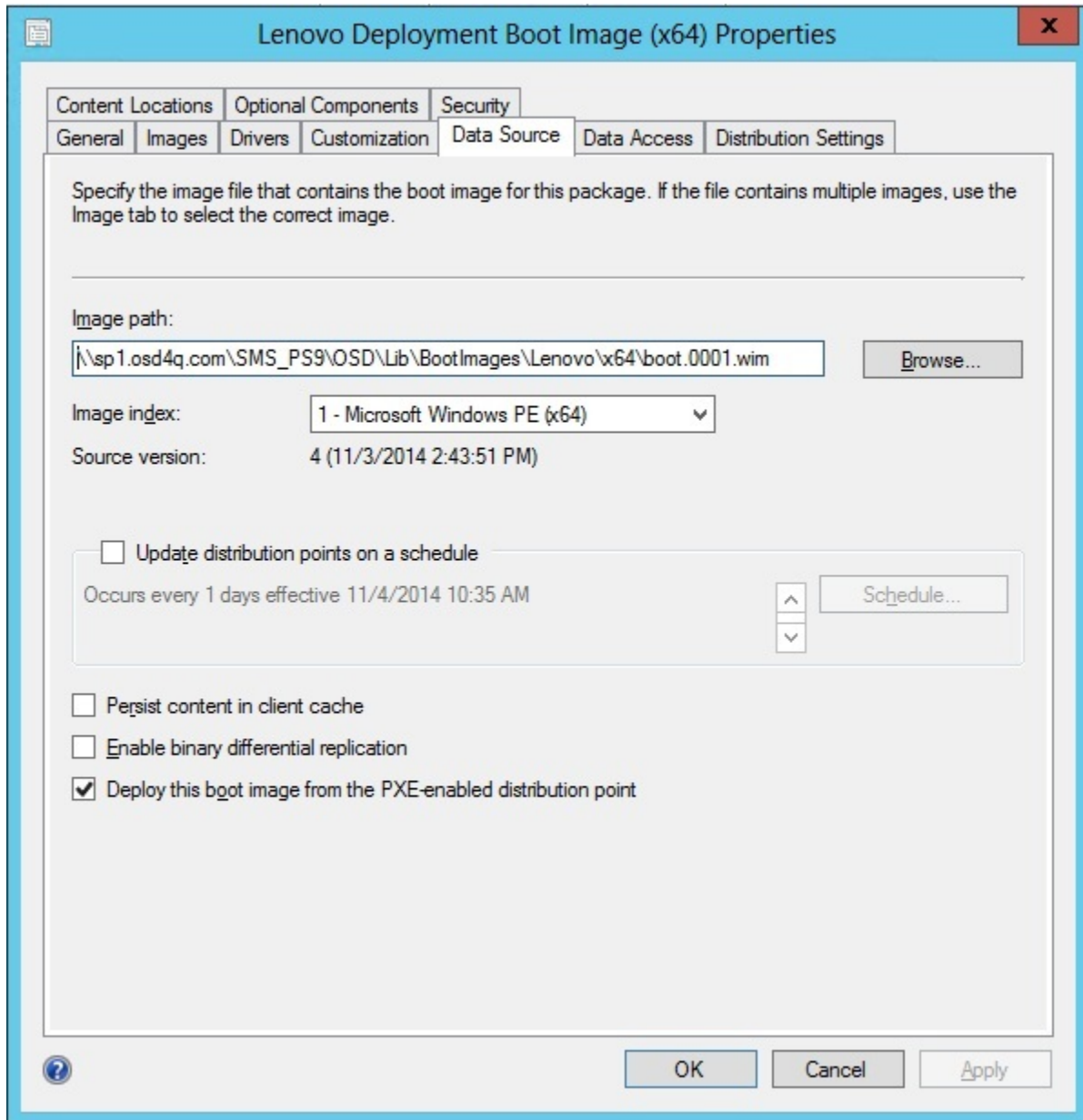
Figure 16. Configuring the data source

- On the **Data Access** tab, select **Copy the content in this package to a package share on distribution points** as shown in the following figure.
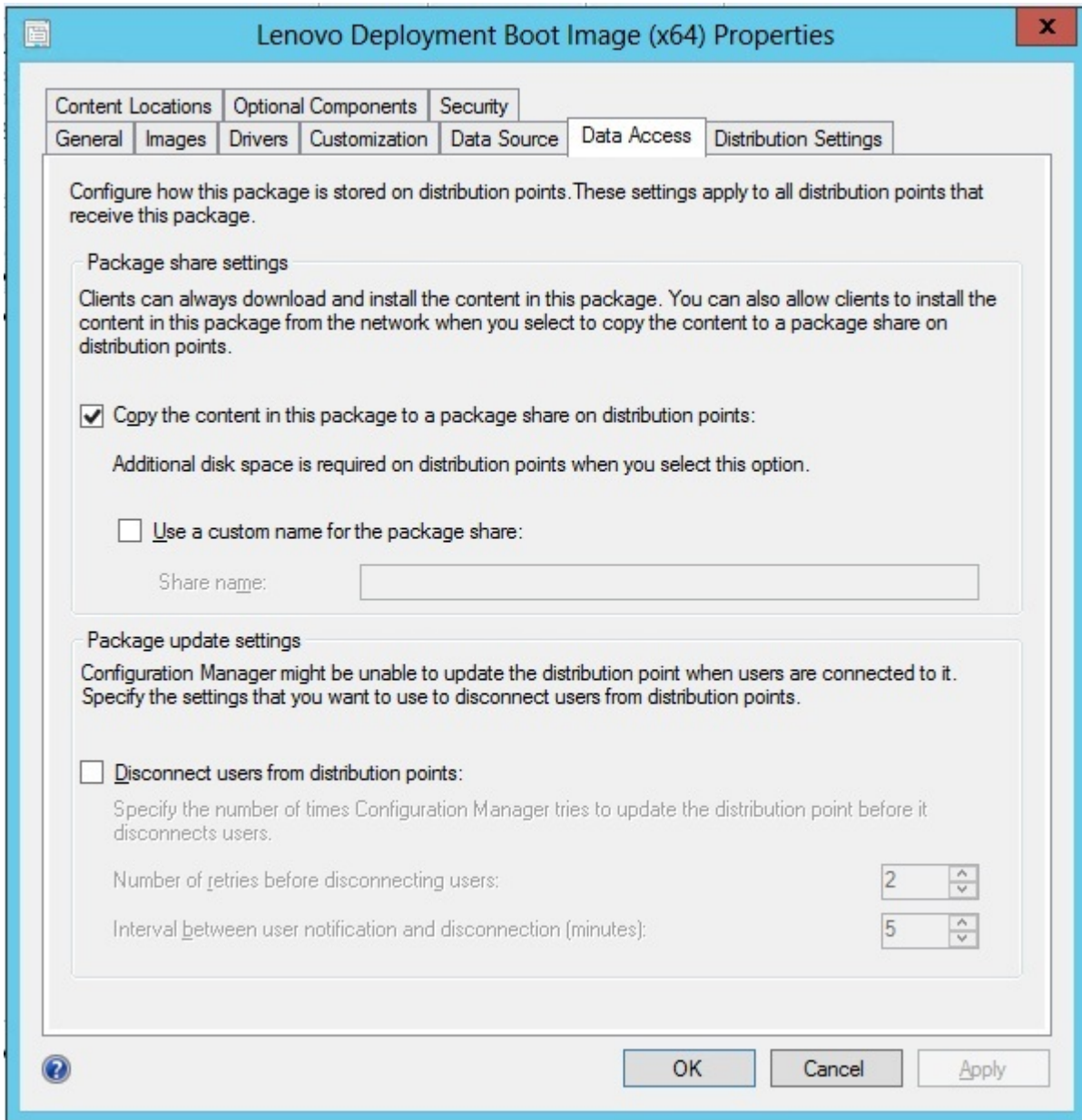
Figure 17. Package share settings

- If you are using SCCM 2012 SP1 or above, select a size of 64 MB or more for the **Windows PE Scratch Space [MB]** menu, as shown in the following figure.
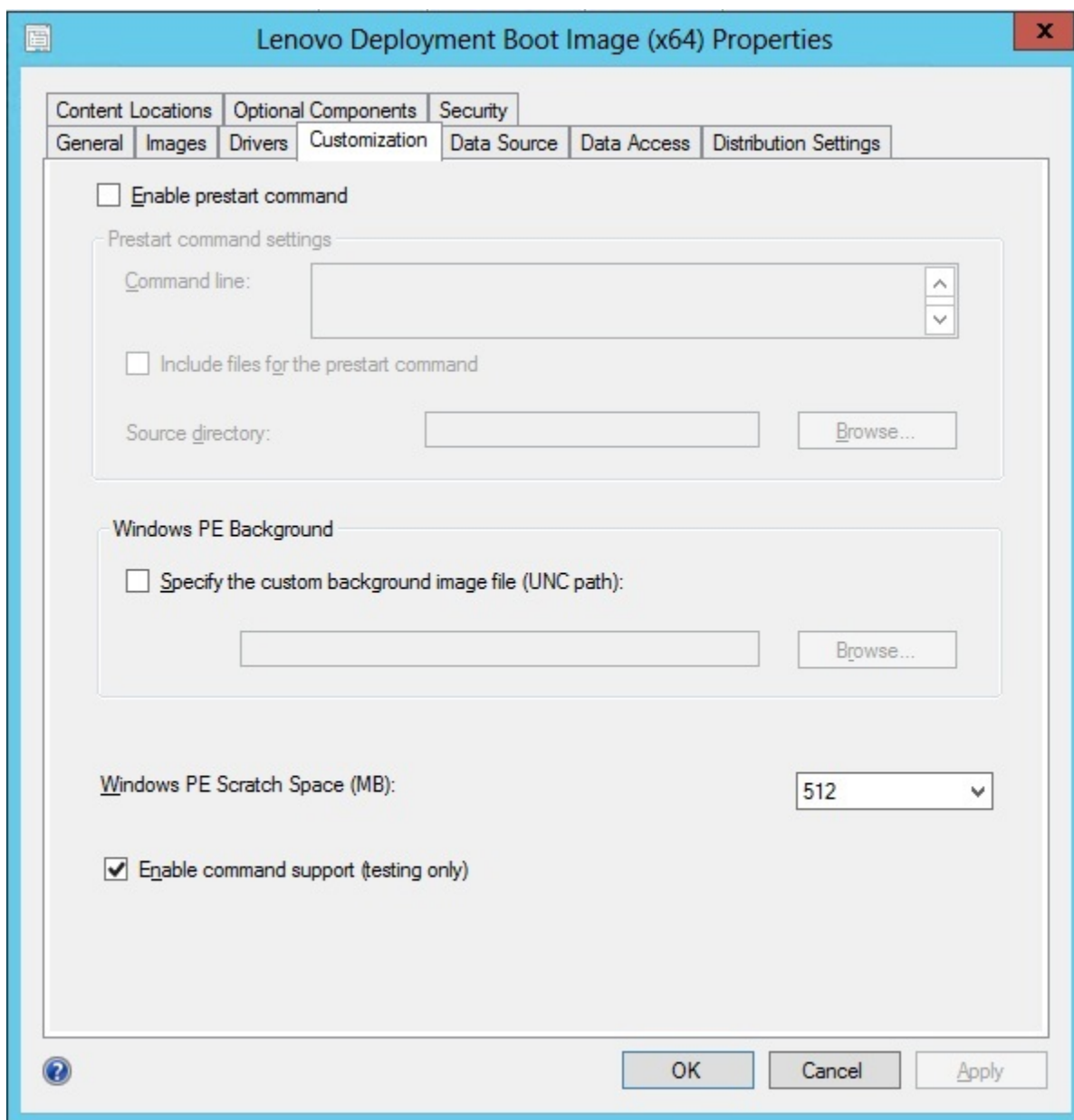
Figure 18. Set Windows PE Scratch Space

Refer to the following topics for instructions about copying and updating distribution points: "Updating distribution points" on page 25.

Managing distribution points

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

Step 1.   Right-click each of the items listed in "Post-installation configuration" on page 21 and select **Distribution Content**.

Step 2.   Select the distribution points for which you want to copy the content and complete the wizard.

   Note: For the Boot Images package, select the **Deploy this boot image from PXE service point** check box on the **Data source** tab beneath Property.
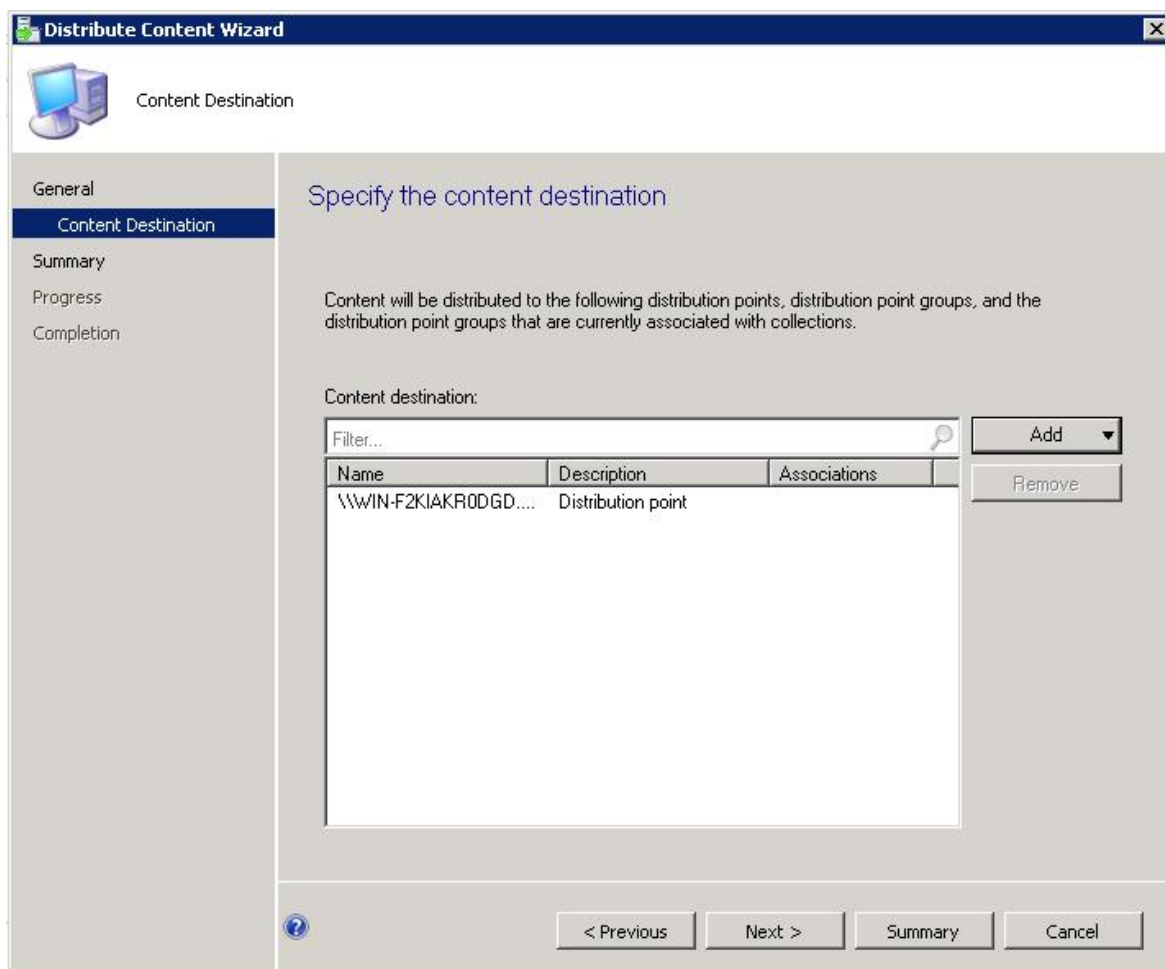
Figure 19. Distribution Content Wizard

Updating distribution points

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

Step 1. After performing the steps in "Managing distribution points" on page 24, right-click each item and select **Update distribution points**.

Step 2. Complete the Update Distribution Points Wizard for each package. A progress window showing the status of the update opens.
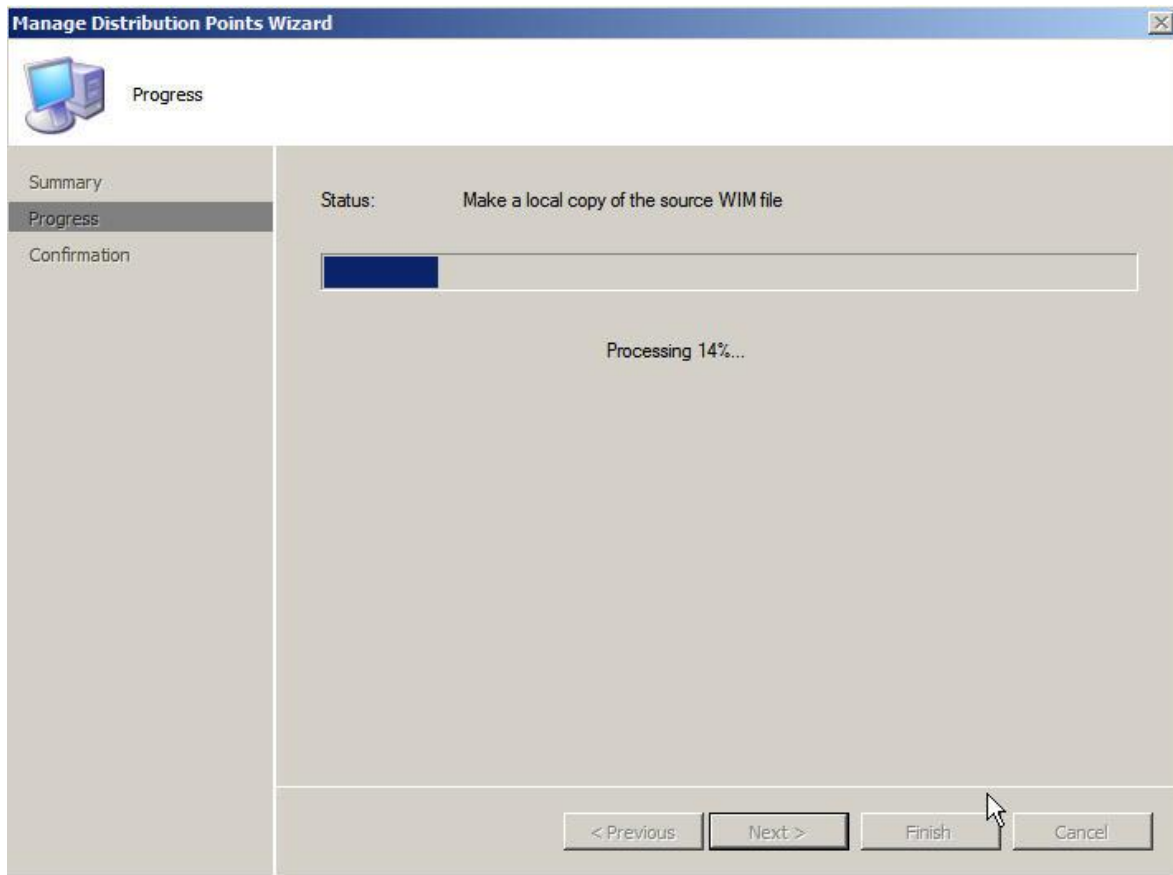
Figure 20. Update Distribution Points Wizard

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 and for 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 will not reboot the server. You can verify components of the boot image and network connectivity. You can also view task log files.

Procedure

To enable the debug command shell, select **Enable command support (testing only)** in the boot image.

Step 1. Click the **Software Library** tab, then click **Overview → Operating System → Boot Images → Lenovo Deployment → Lenovo Deployment Boot Image (x86) or Lenovo Deployment Boot Image (x64)**.

Step 2. Right-click the boot image and select **Properties**.

Step 3. Select the **Customization** tab.

Step 4. Select the **Enable command support (testing only)** check box.
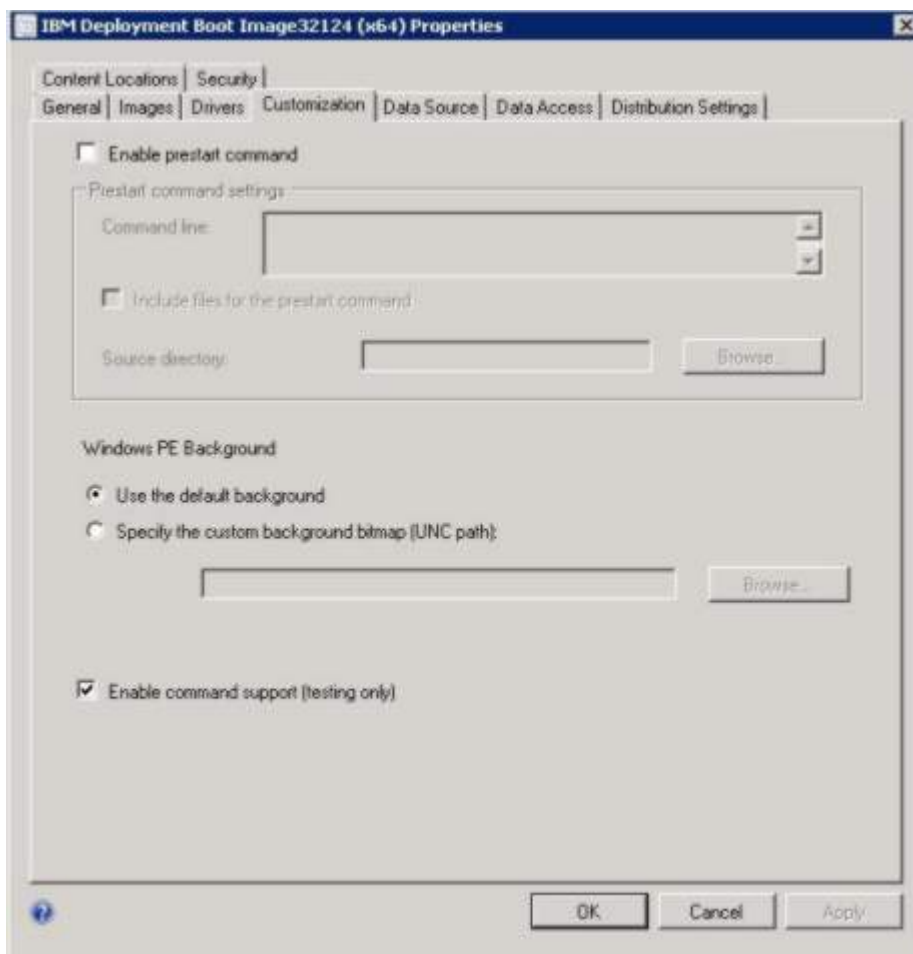
Figure 21. Enabling command-line support

Step 5.   Click **OK**.

What to do next

After completing this procedure, update the distribution points. See "Updating distribution points" on page 25.

Preparing the operating system image

This section describes how to capture operating system images and prepare reference servers. You can use the operating system image in the operating system deployment task sequence.

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.

Capturing operating system images
Use Configuration Manager to capture operating system images.

Lenovo XClarity Integrator Deployment Pack supports the clone method to install operating systems. To use this method, you must prepare an operating system image.

Preparing the reference server

This topic directs you to information about building the reference server, which is required when capturing operating system images.

Procedure

Step 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.

Step 2.   On the reference server, run the **sysprep /generalize** command to prepare the image for installation onto other servers. For instructions, see Appendix B "Running Sysprep" on page 75.

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 server, 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.

Procedure

Step 1.   Select the **Assets and Compliance** tab, then right-click **Overview → Devices → Import Computer Information**. The Import Computer Information Wizard dialog opens. You can add one or more servers to a collection at the same time. The following figure is an example of adding a single server.
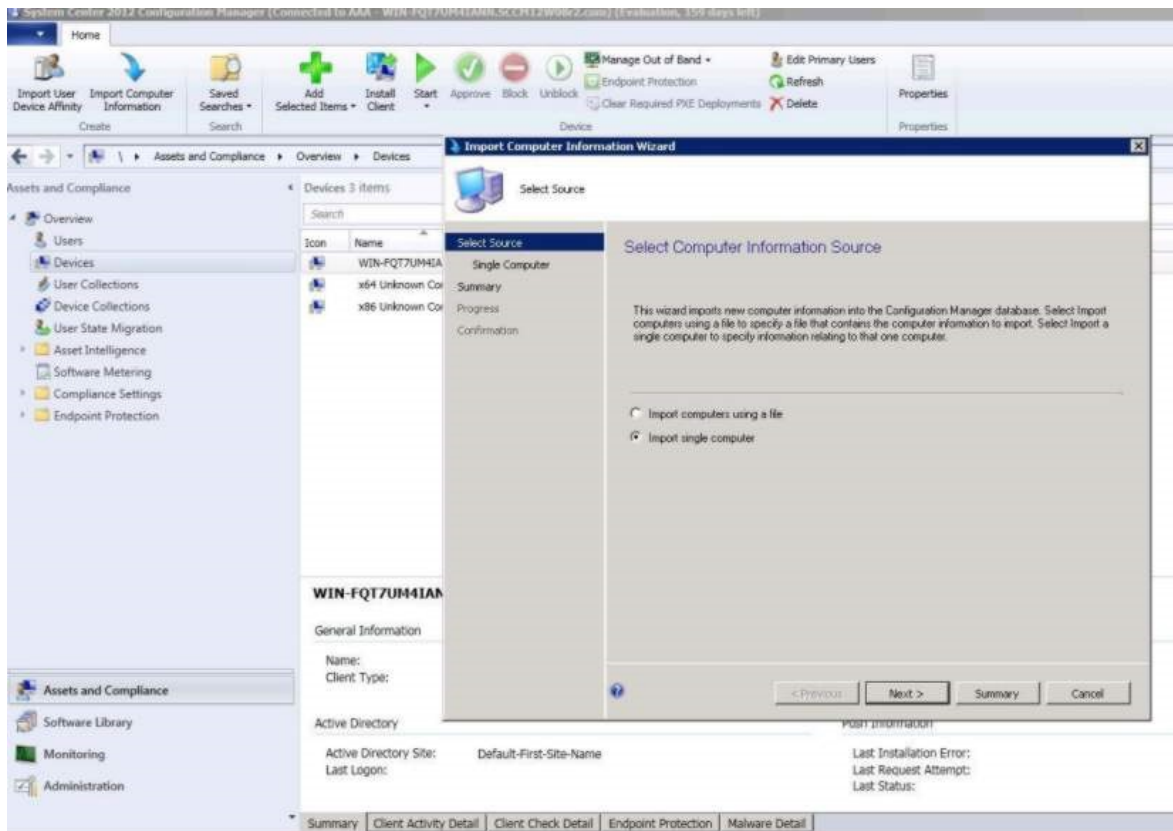
Figure 22. Import Computer Information Wizard

Step 2. Select **Import single computer**, then click **Next**.

Step 3. Enter the computer name and MAC address or GUID information of the target server, or click **Search** to navigate to the source computer.
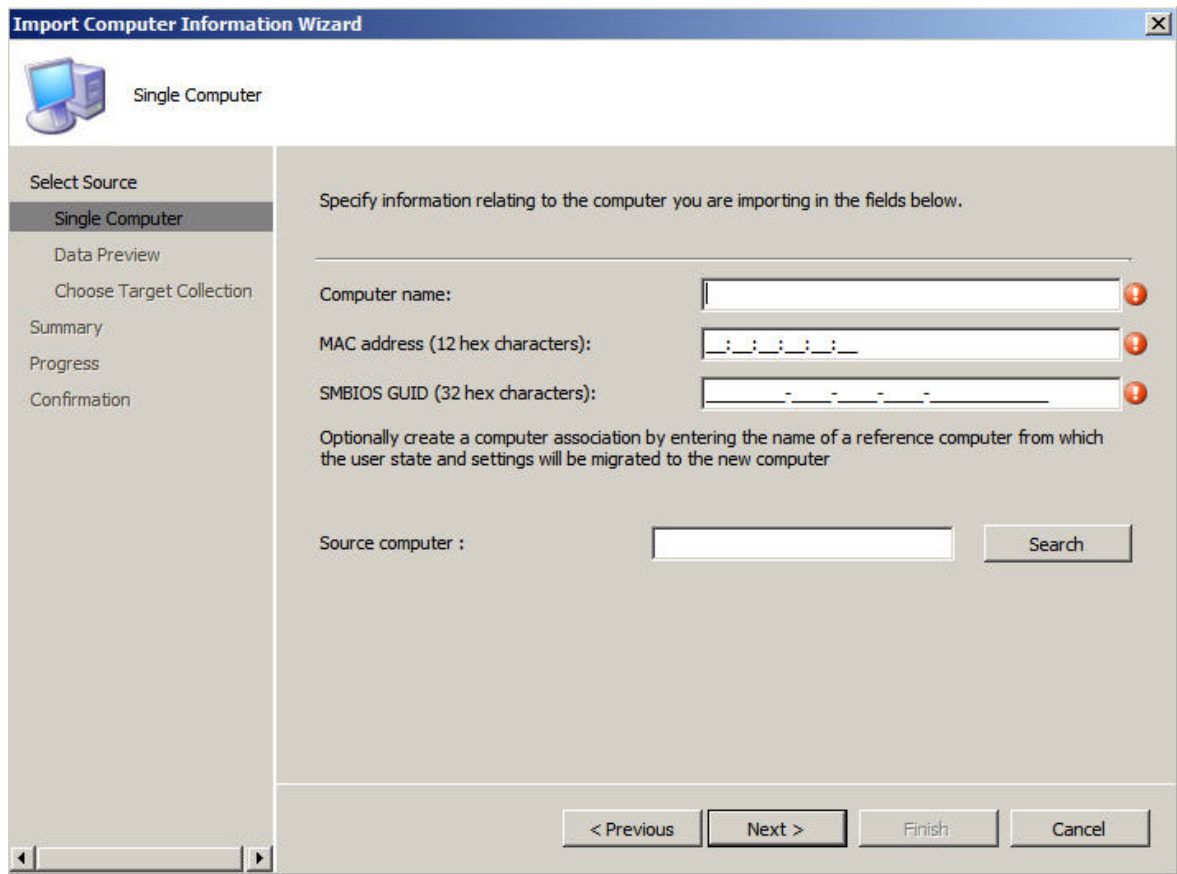
Figure 23. Adding a single computer

Step 4. Click **Next**.

Step 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.
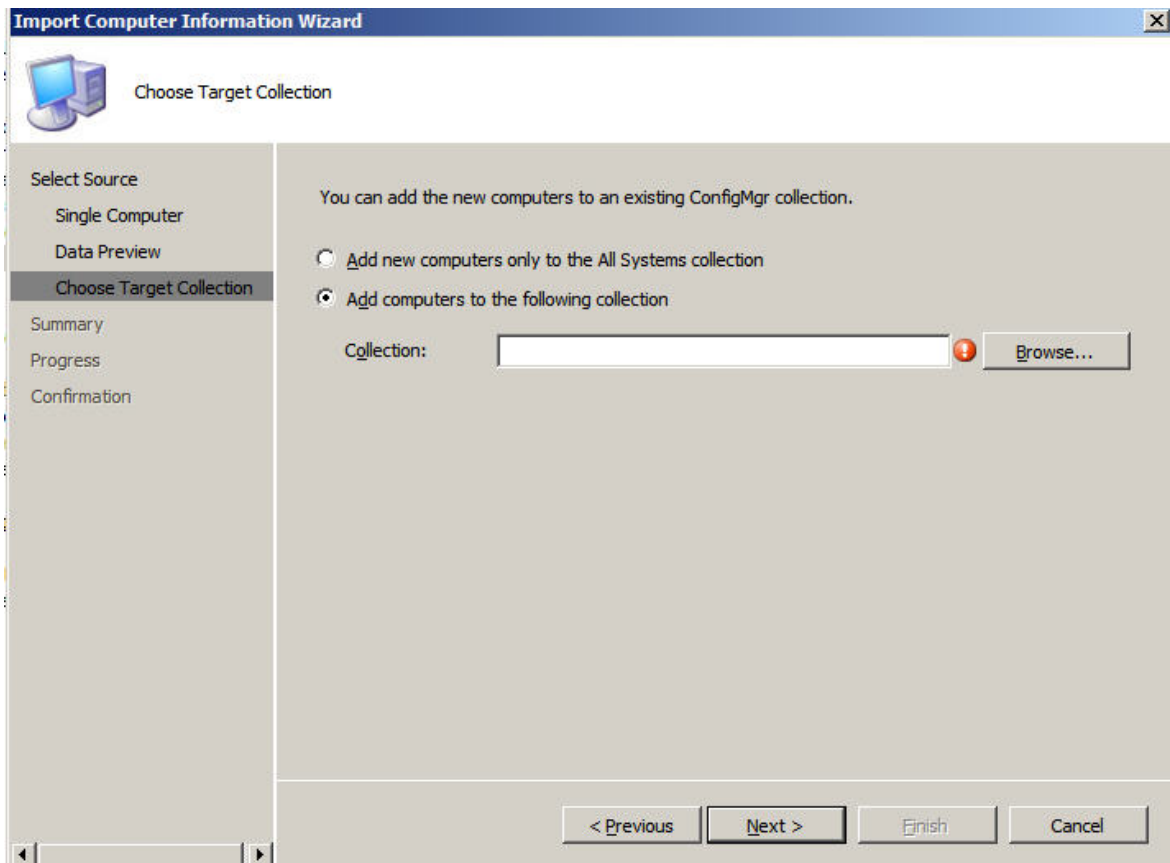
Figure 24. Adding the new computer to a collection

Step 6. Click **Next**.

Step 7. Continue through the remaining pages by clicking **Next**.

Step 8. On the last page, click **Finish**.

Preparing Configuration Manager

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

Procedure

Step 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.

b. Right-click the server object, then select the **Variables** tab.

c. Set the *OSDTargetSystemRoot* variable to the system driver, for example: *OSDTargetSystemRoot=c:\windows*
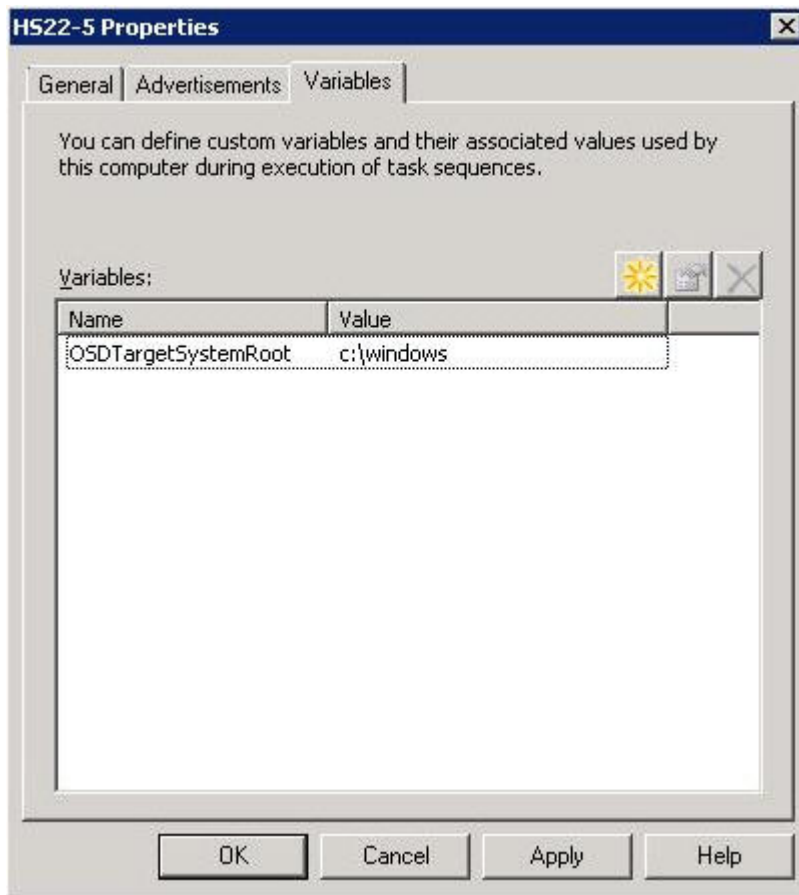
Figure 25. Setting the location variable

Step 2. Set up a shared folder on the Configuration Manager site server to store the captured images. For example, create a directory called `c:\images`. Create a share and assign everyone full control for the share permissions.

Step 3. Create a task sequence for capturing the image:

    a. Go to the **Software Library** tab, and then go to **Overview → Operating System** and right-click on **Task Sequences**.

    b. Select **New** and then select **Task Sequence**.

    c. When the wizard opens, select **New custom task sequence** and follow the prompts.

       Note: This action creates an empty task sequence.

    d. Select the Lenovo custom boot image, and make sure that **PXE media** is selected.

Step 4. Open the task sequence editor by right-clicking the newly-created task sequence, and select **Edit**.

Step 5. From the **Add** menu, select **Images → Capture Operating System Image**. A screen similar to the following one opens.
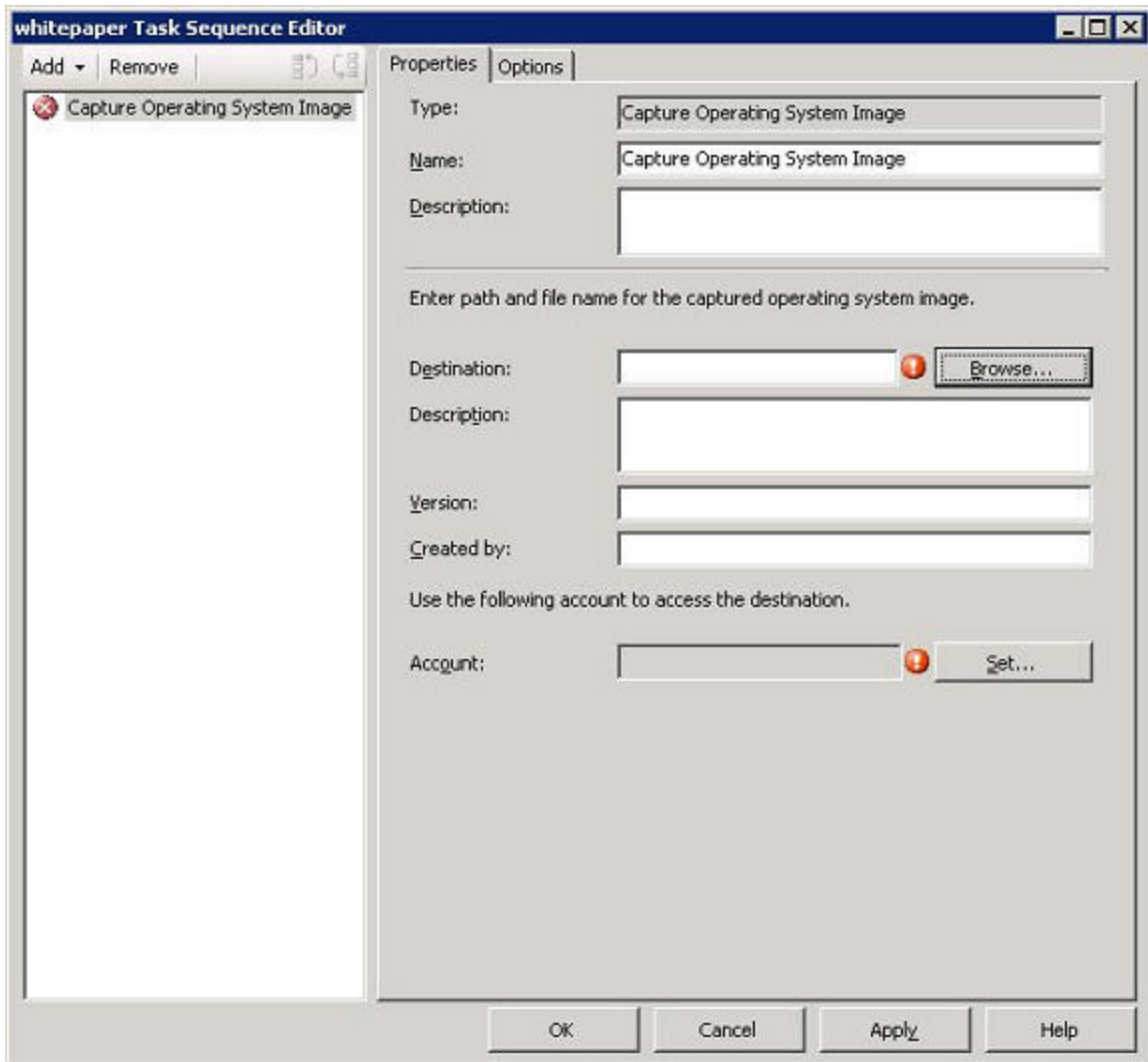
Figure 26. Capture Operating System Image

Step 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.

Step 7. To create an advertisement, right-click on the task sequence, select **Deploy**, and follow the wizard
prompts. See the following images for the recommend settings.
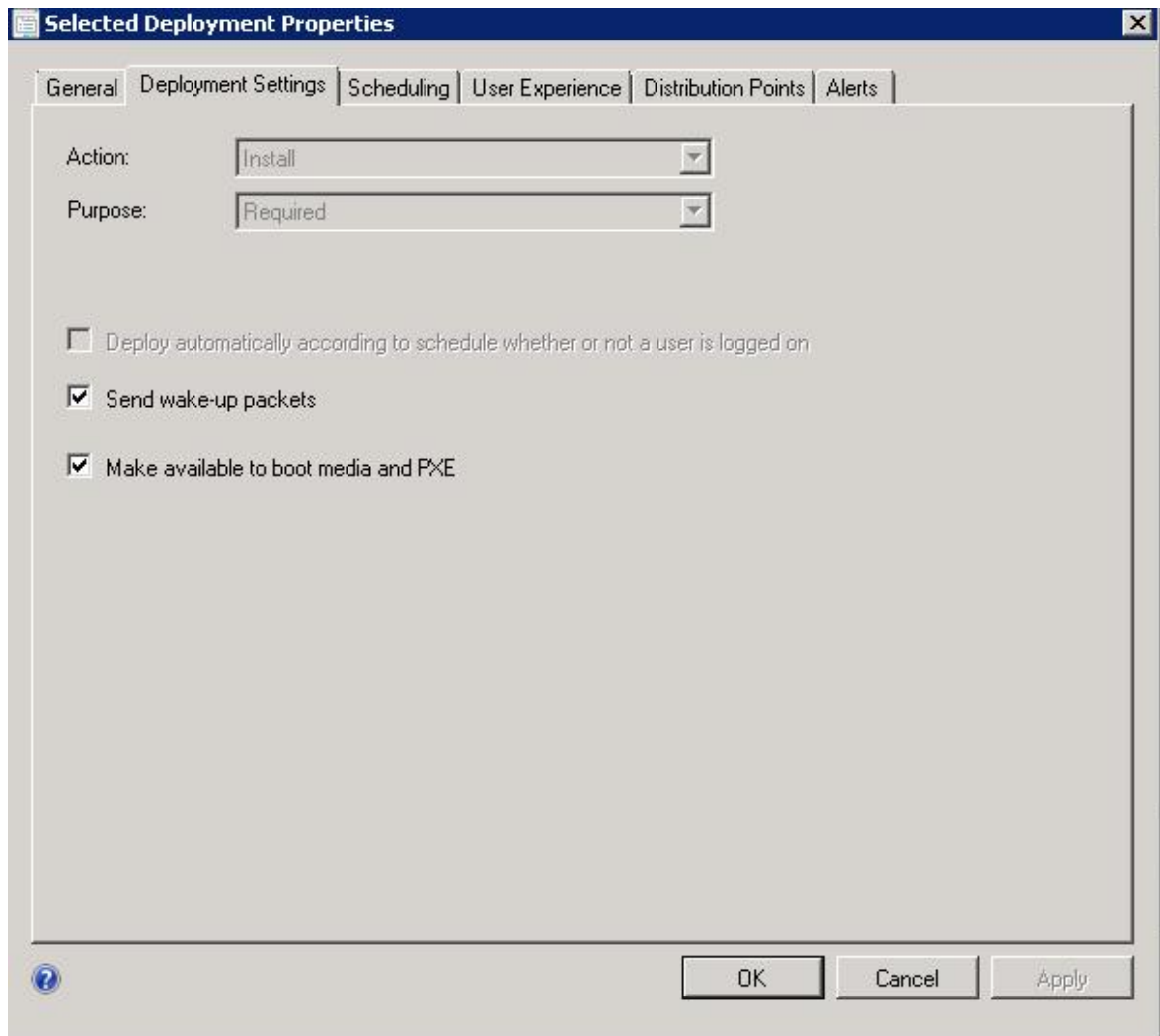
Figure 27. Deployment properties, Deployment Settings tab
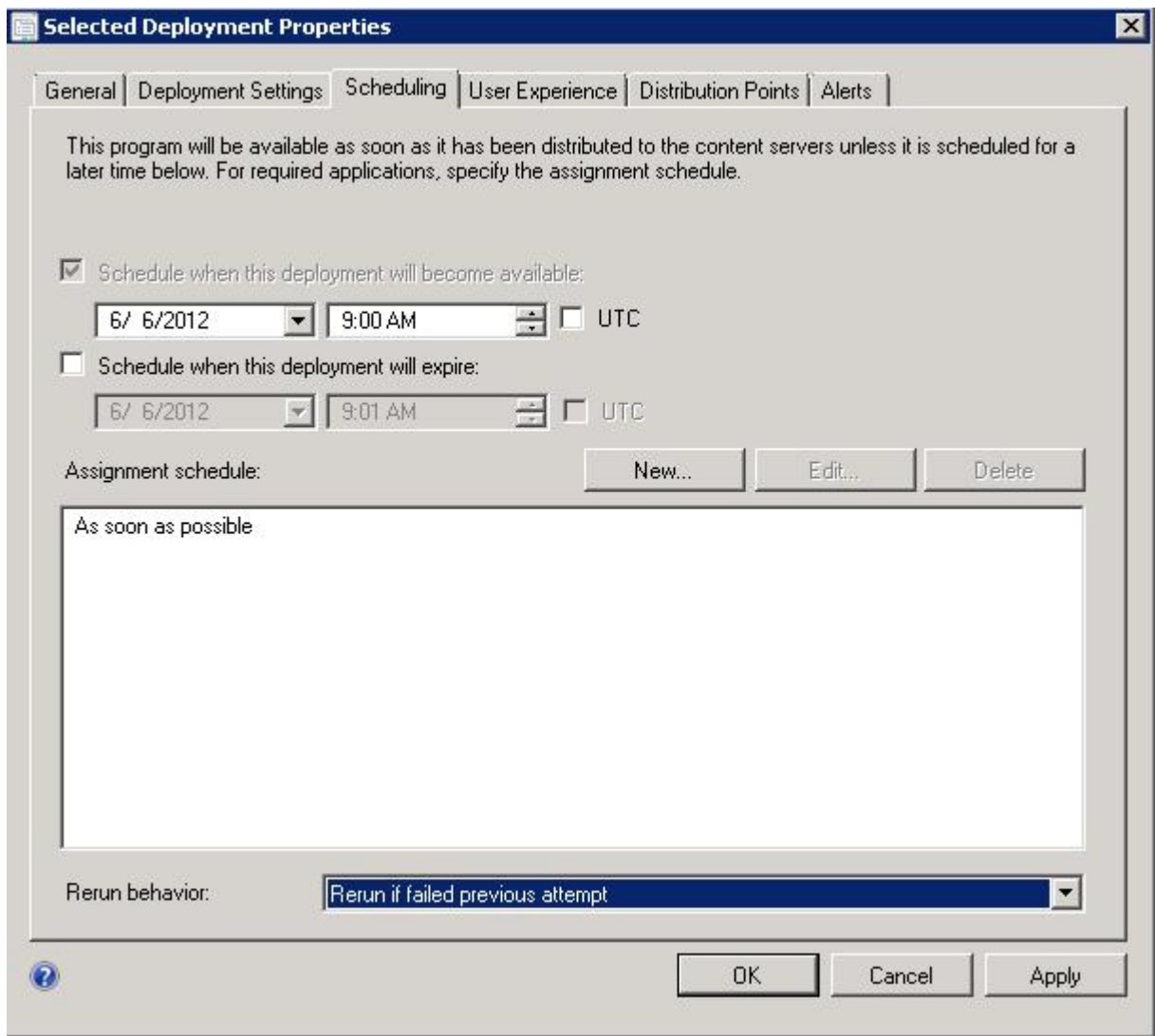
Figure 28. Deployment properties, Scheduling tab
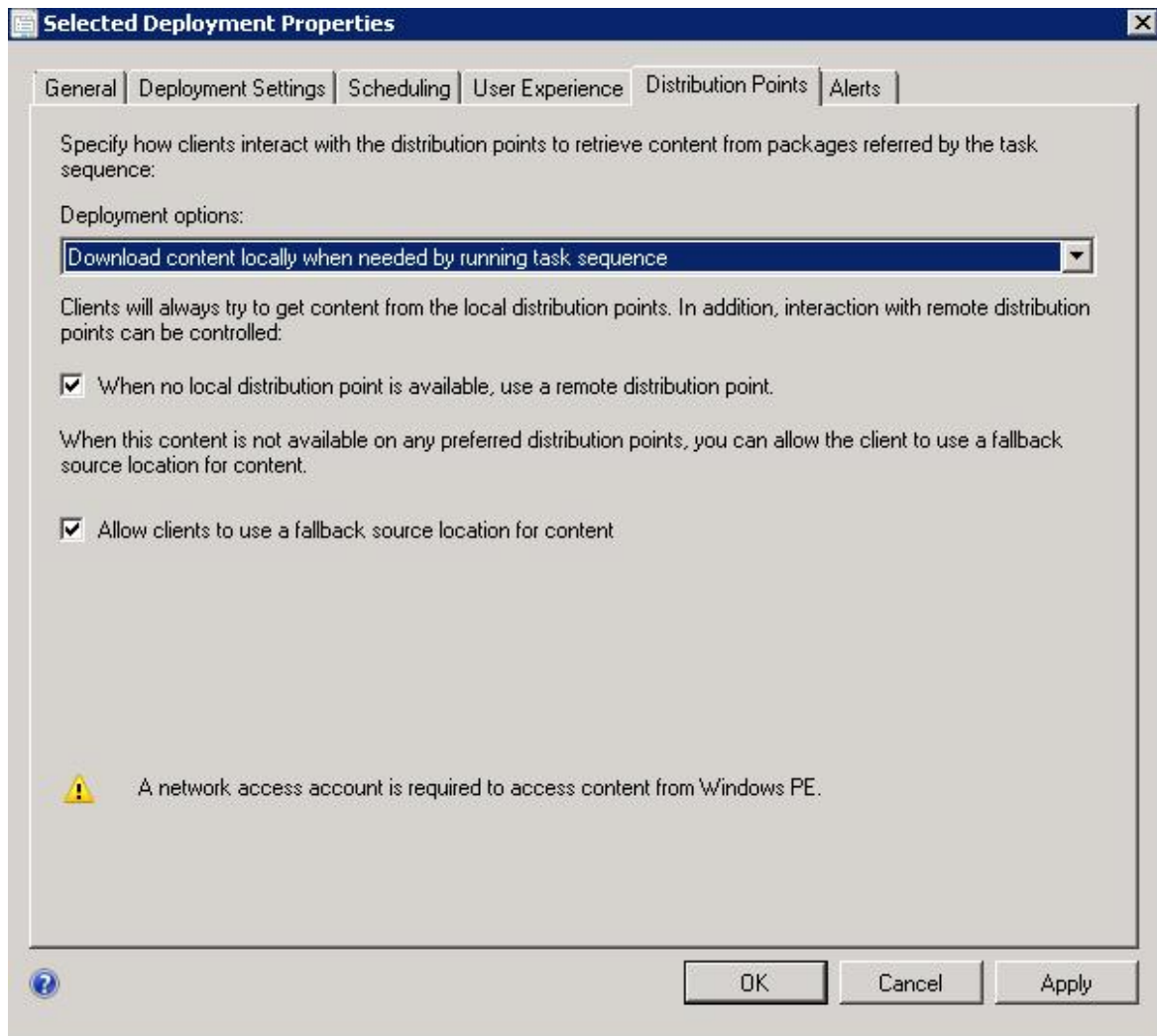
Figure 29. Deployment properties, Distribution Points tab

Step 8.   Click **OK**.

Starting the reference server

This topic explains how to start the reference server that is being captured.

Now that the advertisement is waiting, start the server that is being captured to thePreboot Execution Environment (PXE). Verify that the site server and the target server connect, and ensure 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 must 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.

Adding, managing, and updating operating system images

After the operating system image has been captured, add it into the SCCM distribution point for delivery.

To add the operating system image to the SCCM distribution point for delivery, you must first 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 to the distribution point for delivery.

Procedure

Step 1. On the **Software Library** tab, click **Overview** → **Operating System** → **Operating System Images** → **Adding Operating System Images**.
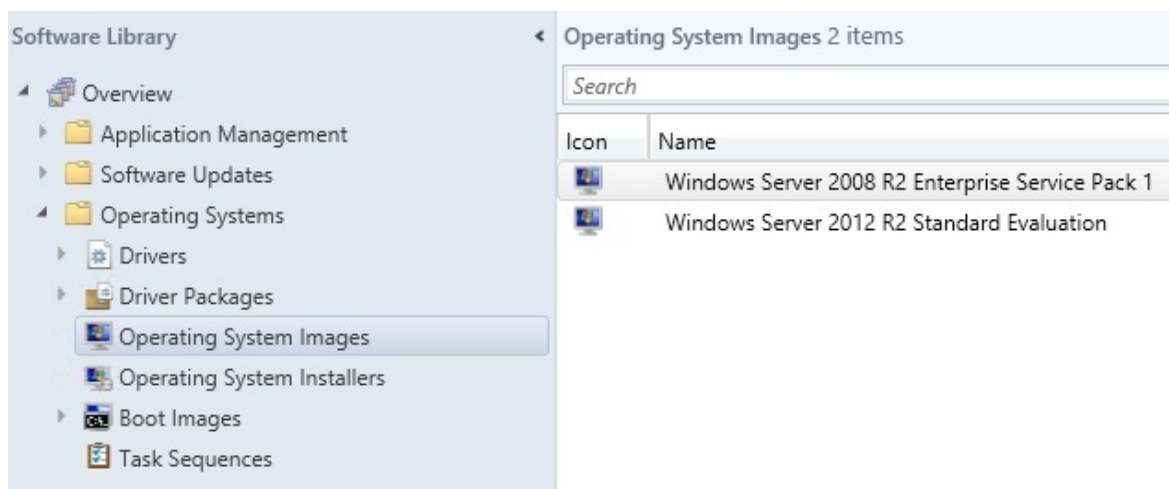
Figure 30. Adding operating system images

Step 2. Click through the wizard prompts to finish.

Managing and updating distribution points for operating system images

This topic describes how to manage and update operating system images. By performing these steps, the operating system image is copied and updated to the distribution point, where the client system can access and download it.

About this task

This procedure is similar to the procedures "Managing distribution points" on page 24 and "Updating distribution points" on page 25.

Procedure

Step 1. Right-click the newly added operating system image, and select **Distribution Content**.

Step 2. Complete the Manage Distribution Points wizard for the image.

Step 3. Right-click the newly added operating system image, and select **Update Distribution Points**.

Step 4. Complete the Update Distribution Points wizard for the image.

Chapter 4. End-to-end deployment scenario

Although the Lenovo XClarity Integrator Deployment Pack provides various hardware configuration and operating system deployment functionality, the execution process is similar. This section describes how to deploy the task sequence and explains the end-to-end deployment scenario. Use this scenario to deploy different scripts to fulfill different Deployment Pack functions.

End-to-end deployment scenario in SCCM

This section covers the end-to-end deployment scenario in SCCM.

Adding a target server to Configuration Manager

The first task in the scenario is to add the target server to Configuration Manager so that Configuration Manager will recognize the target server as a known server when deploying the task sequence.

About this task

For detailed steps, refer to "Adding a target server to Configuration Manager" on page 28.

Preparing a task sequence

This topic explains how to create a task sequence by using the template in the Lenovo XClarity Integrator Deployment Pack.

About this task

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

Procedure

Step 1.   Open the Configuration Manager console, and navigate to **Operating System ➙ Task Sequence**.

Step 2.   Right-click **Task Sequence ➙ Bare Metal Server Deployment ➙ Create a Lenovo Server Deployment Task Sequence**. The template shown in the following figure opens.
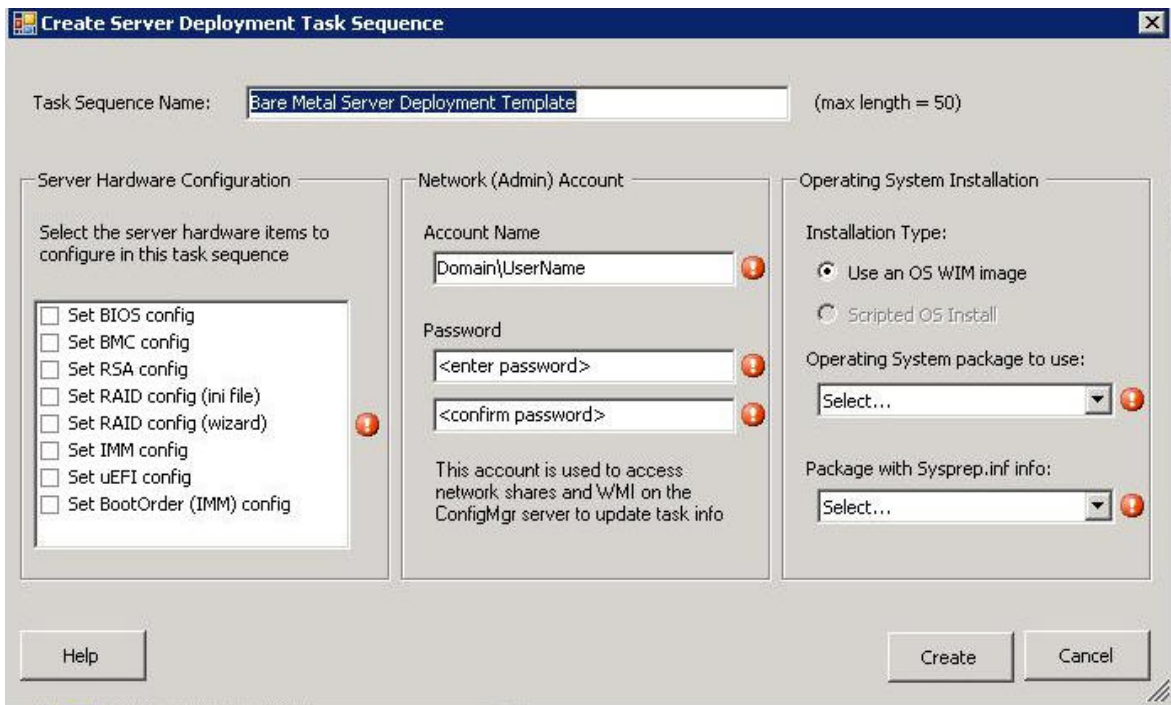
Figure 31. Creating a task sequence by using the template

    a.   From the list of Lenovo 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.

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

Step 4.   In the left navigation panel, right-click the new task sequence, and select **Edit**. The Task Sequence Editor window opens, as shown in the following figure.
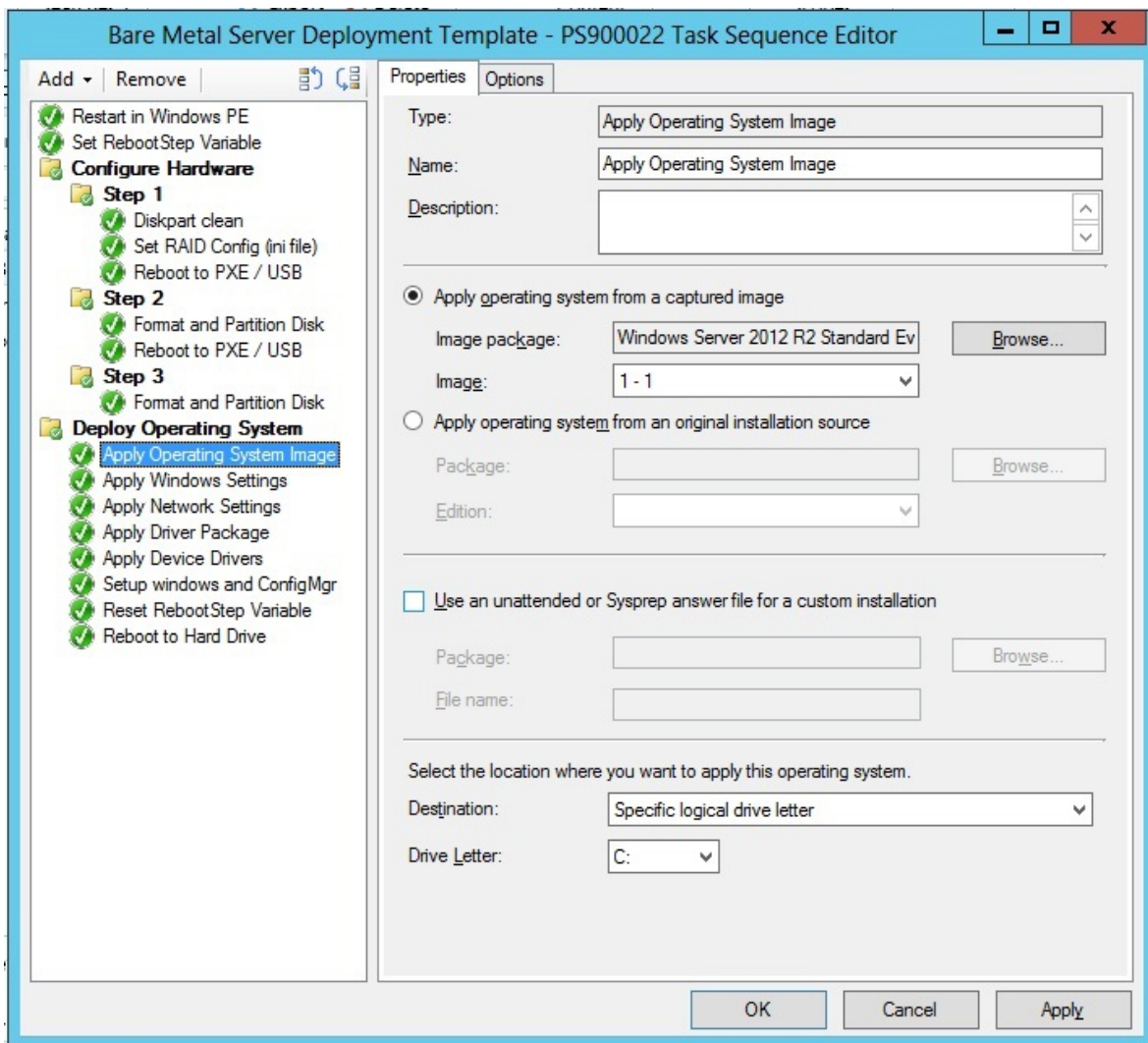
Figure 32. Applying driver package properties

Step 5. Depending upon the operating system you are deploying, you may need to manually select the mass storage driver:

- If you are deploying a different operating system,Lenovo XClarity Integrator Deployment Pack transparently selects the mass storage driver.
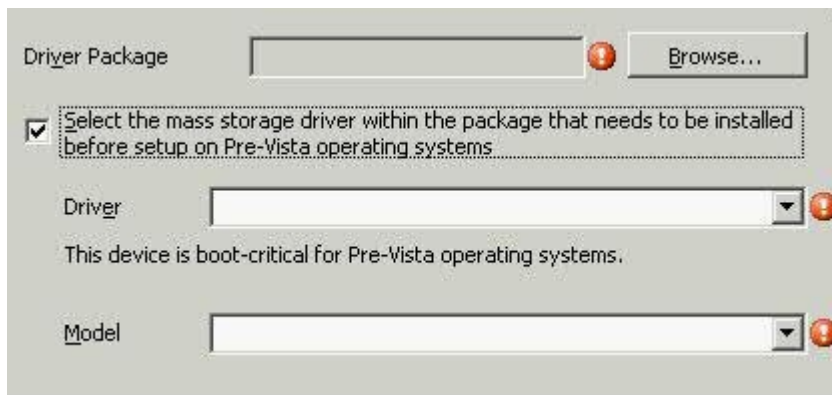
Figure 33. Selecting the mass storage driver

The action items in the hardware configuration panel are provided by theLenovo XClarity Integrator Deployment Pack pre-operating system load. In these examples, Deploy Operating System is a Windows® installation with theLenovo driver packages added.

Step 6. Click **OK**.

> **Note:** For Lenovo specific hardware configuration, refer to Chapter 5 "Lenovo XClarity Integrator Deployment Pack features" on page 47.

> **Note:** Prepare the operating system deployment image file by using the instructions in "Preparing the operating system image" on page 27.

Advertising a task sequence

After creating and saving a task sequence, create an advertisement and deploy 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 deployed, such as running a task sequence to deploy a Windows operating system on a client server.

Procedure

Step 1. Right-click the task sequence, and select **Deploy**.

Step 2. Select the collection that contains the target server.

Step 3. Select **Required** in the **Purpose** box, and select **Send wake-up packets** and **Make available to boot media and PXE**.
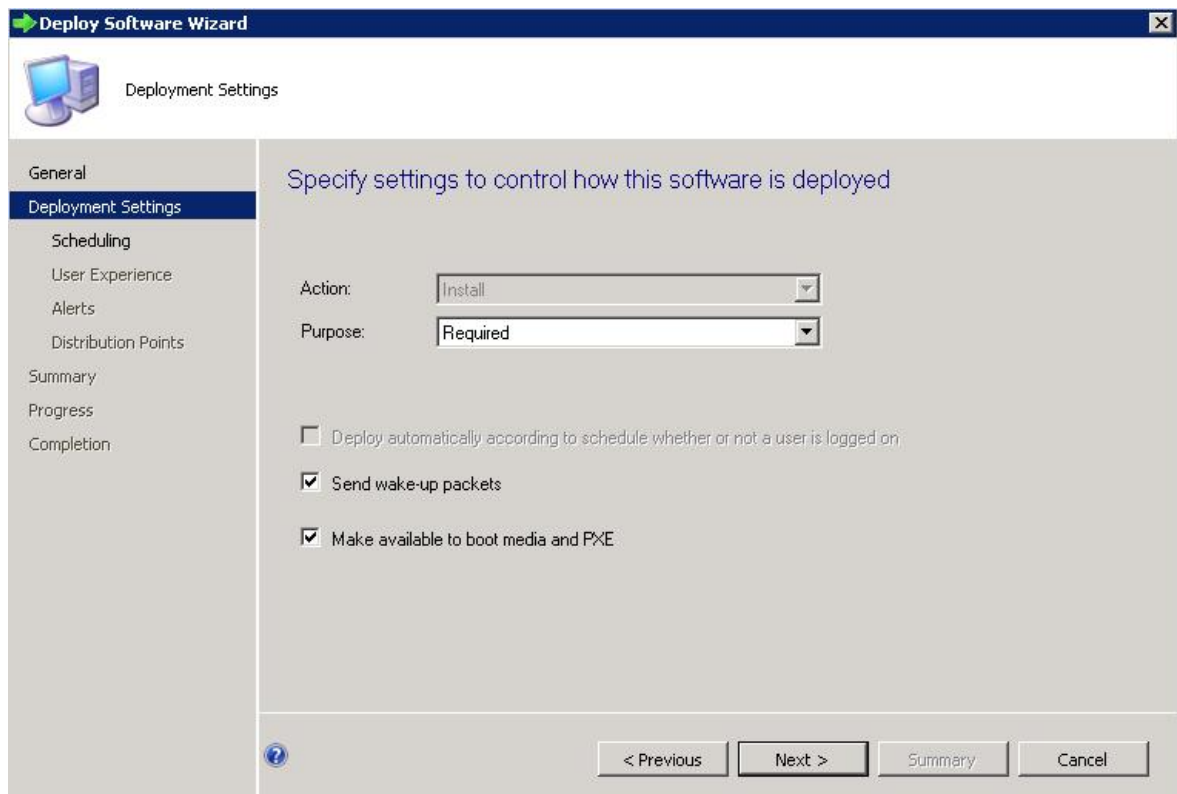
Figure 34. Select the deployment settings

Step 4.   Click **Next**.

Step 5.   On the Scheduling panel:

   a.   In the **Assignment schedule** field, select **As soon as possible**.

   b.   In the **Return behavior** field, select **never return deployed program**.

   c.   Click **Next**.
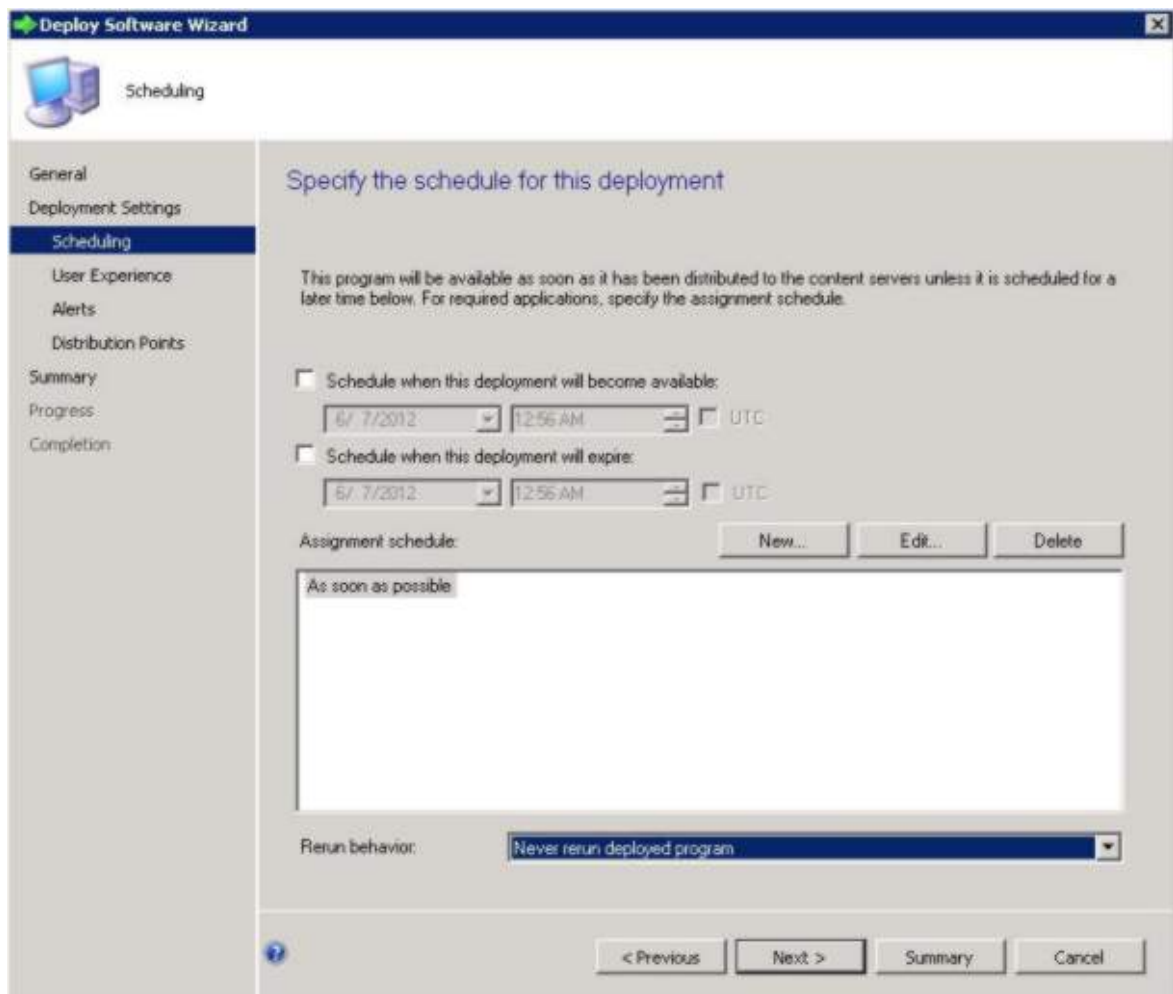
Figure 35. Schedule the deployment

Step 6.   Select **User Experience** from the left side of the window, and on that panel, select **Show Task Sequence progress**.
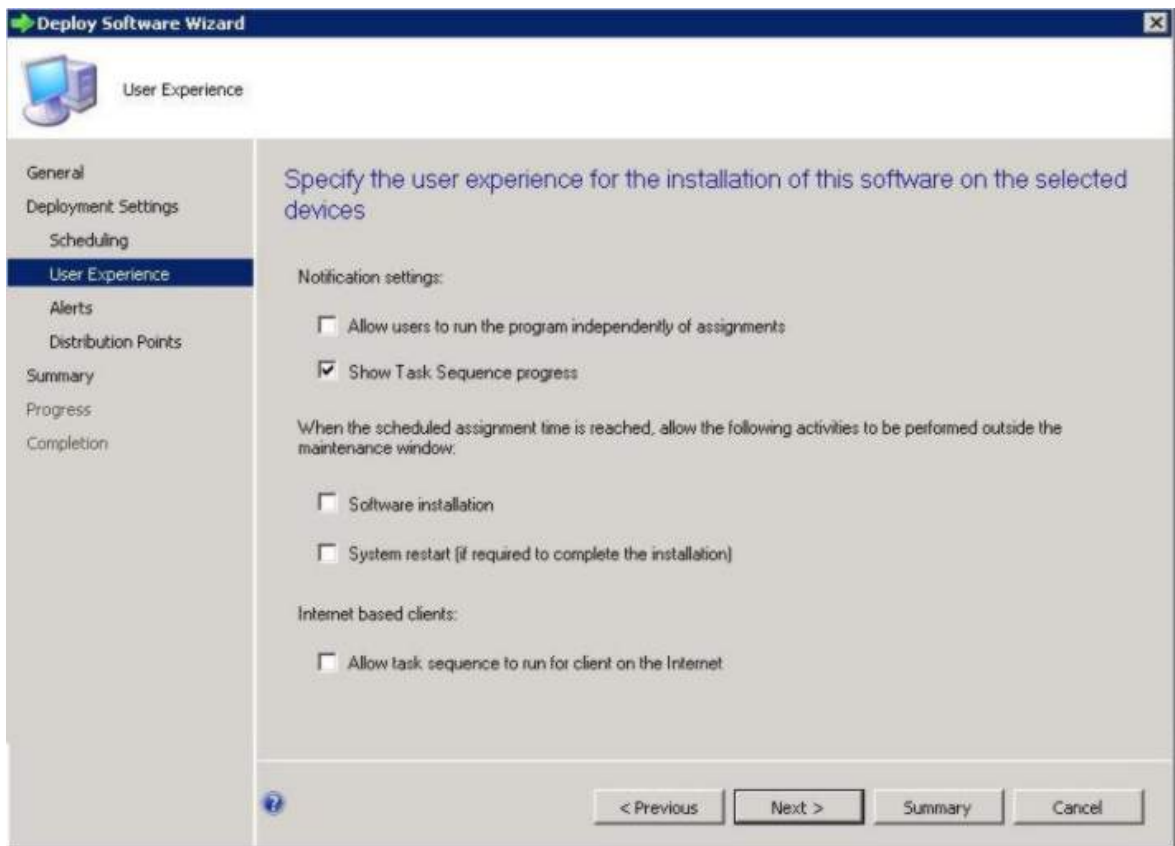
Figure 36. Select the user experience

Step 7. Skip the Alerts panel, and select **Distribution Points**.

Step 8. On the Distribution Points panel:

a. Select Access content directly from a distribution point when needed by the running task sequence from the **Deployment options:** list.

b. Select the**When no local distribution point is available, use a remote distribution point.** check box.

c. Select the**Allow clients to use a fallback source location for content** check box.
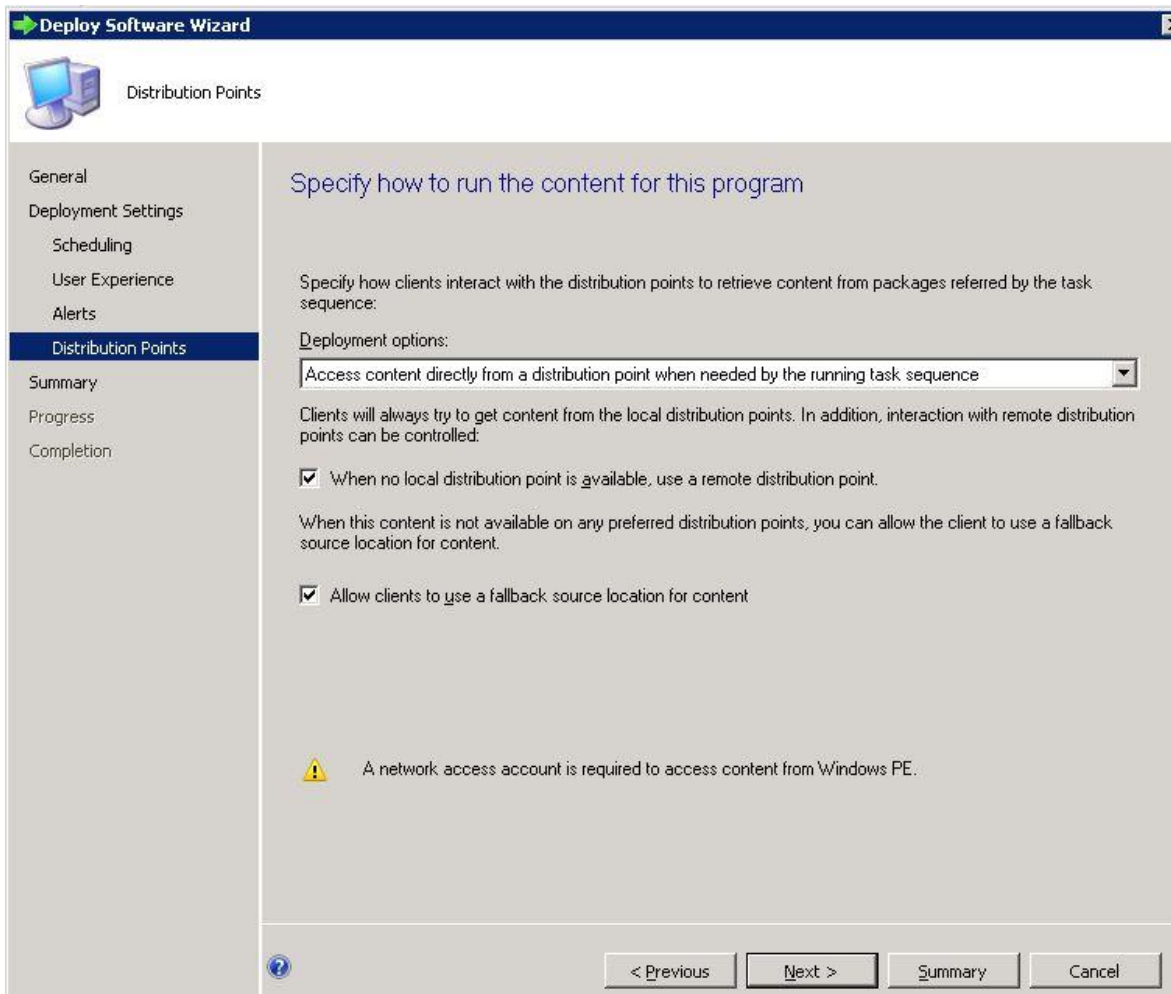
Figure 37. Specify distribution points options

Step 9. Click **Next**.

Step 10. Click **Finish**.

Checking the task sequence execution result

Ensure that the task sequence can be started successfully.

Procedure

Step 1. After performing the procedure in "Advertising a task sequence" on page 40, restart the target server fromPXE.

```
CLIENT MAC ADDR: 00 1A 64 21 36 90  GUID: 84C21702 6A5B DD11 99E1 B884D4733EA1
CLIENT IP: 9.125.90.16  MASK: 255.255.255.0  DHCP IP: 9.125.90.211
GATEWAY IP: 9.125.90.1

Downloaded WDSNBP...

Architecture: x64

The details below show the information relating to the PXE boot request for
this computer. Please provide these details to your Windows Deployment Services
Administrator so that this request can be approved.

Pending Request ID: 830

Contacting Server: 9.125.90.86..
TFTP Download: smsboot\x64\pxeboot.n12
```

Figure 38. Restarting the target server from PXE

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

```
                            Windows is loading files...


IP:9.125.90.86
```

Figure 39. Starting the download process

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

Figure 40. Running the Format and Partition Disk action

Step 4.   The second action is run. In this example, it is Apply Operating System Image.

Note: Different task sequences might have different actions. The windows used for the task sequences are similar to those shown here, only with different actions.
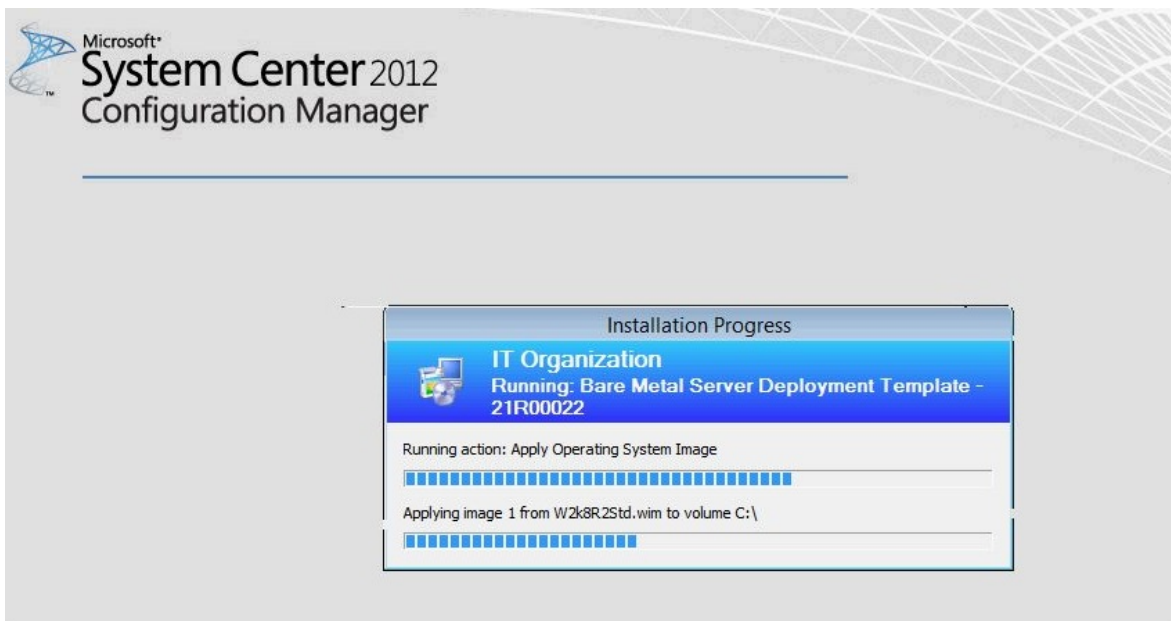
Figure 41. Running the Apply Operating System Image action

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

Chapter 5. Lenovo XClarity Integrator Deployment Pack features

Customize the primary tool used by the Lenovo XClarity Integrator Deployment Pack to perform tasks used for deployment: OneCLI.

To configure RAID, refer to "Configuring RAID through OneCLI" on page 47.

To configure hardware settings, refer to "Configuring hardware settings through OneCLI" on page 53.

Configuring RAID through OneCLI

Use the OneCLI utility to configure the RAID adapter.

There are two methods to configure RAID through the array wizard, a GUI-based editor, and through the policy file utility. Both use the OneCLI utility to configure the RAID adapter.

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

The Lenovo XClarity Integrator Deployment Pack leverages the OneCLI utility provided by LenovoWinPE Scripting Toolkit. For more information about the policy file and the RAID controllers support matrix, see the Lenovo XClarity Essentials OneCLI.

Configuring RAID through the policy file

Use this topic to configure the task sequence.

Procedure

Step 1.   In the Task Sequence Editor, go to the new task sequence you created.

Step 2.   Right-click the task sequence and select **Edit**.
A window similar to the one in the following figure is displayed.
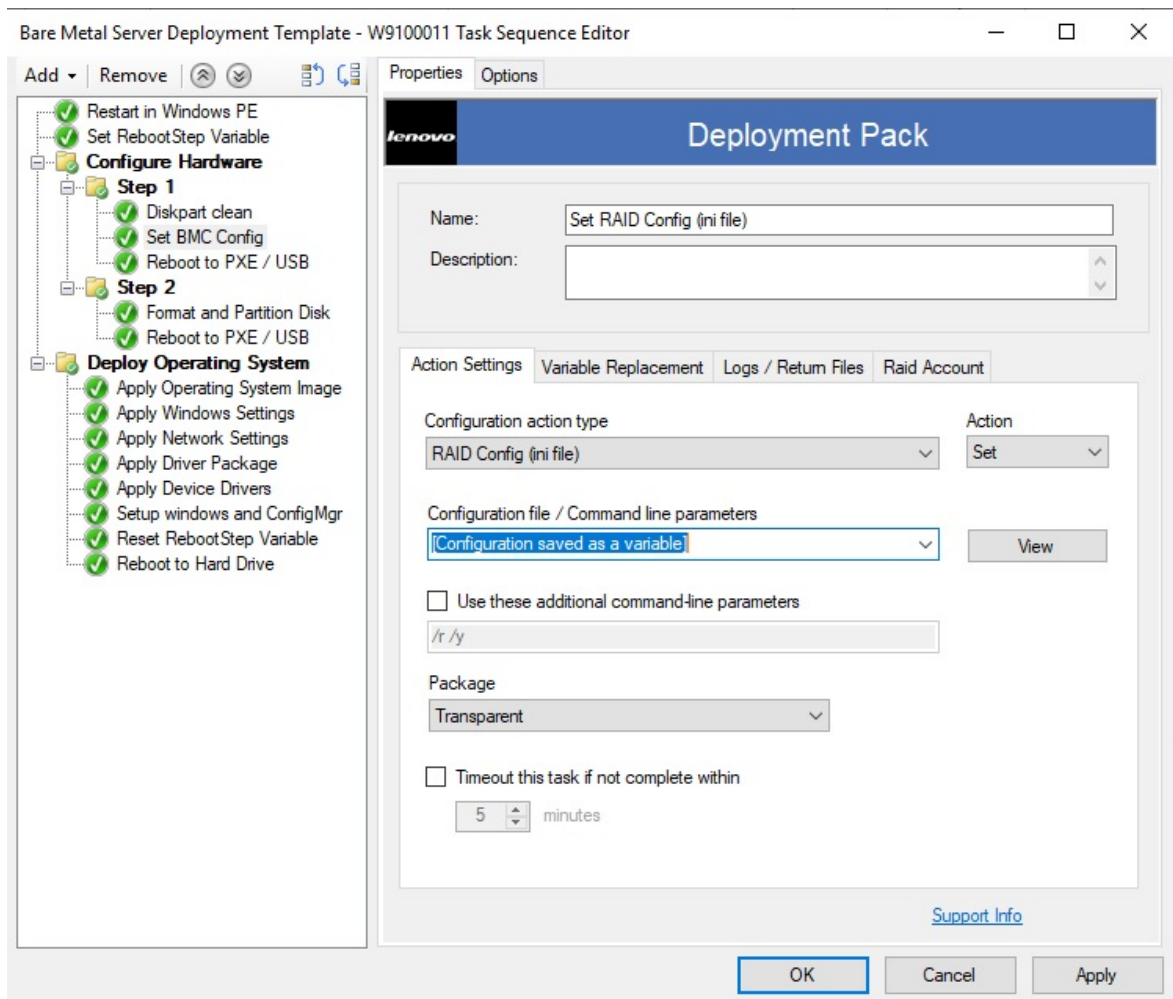
Figure 42. Editing the task sequence

Step 3.   Edit the task **Set RAID Config (ini file)**.
The following window opens.
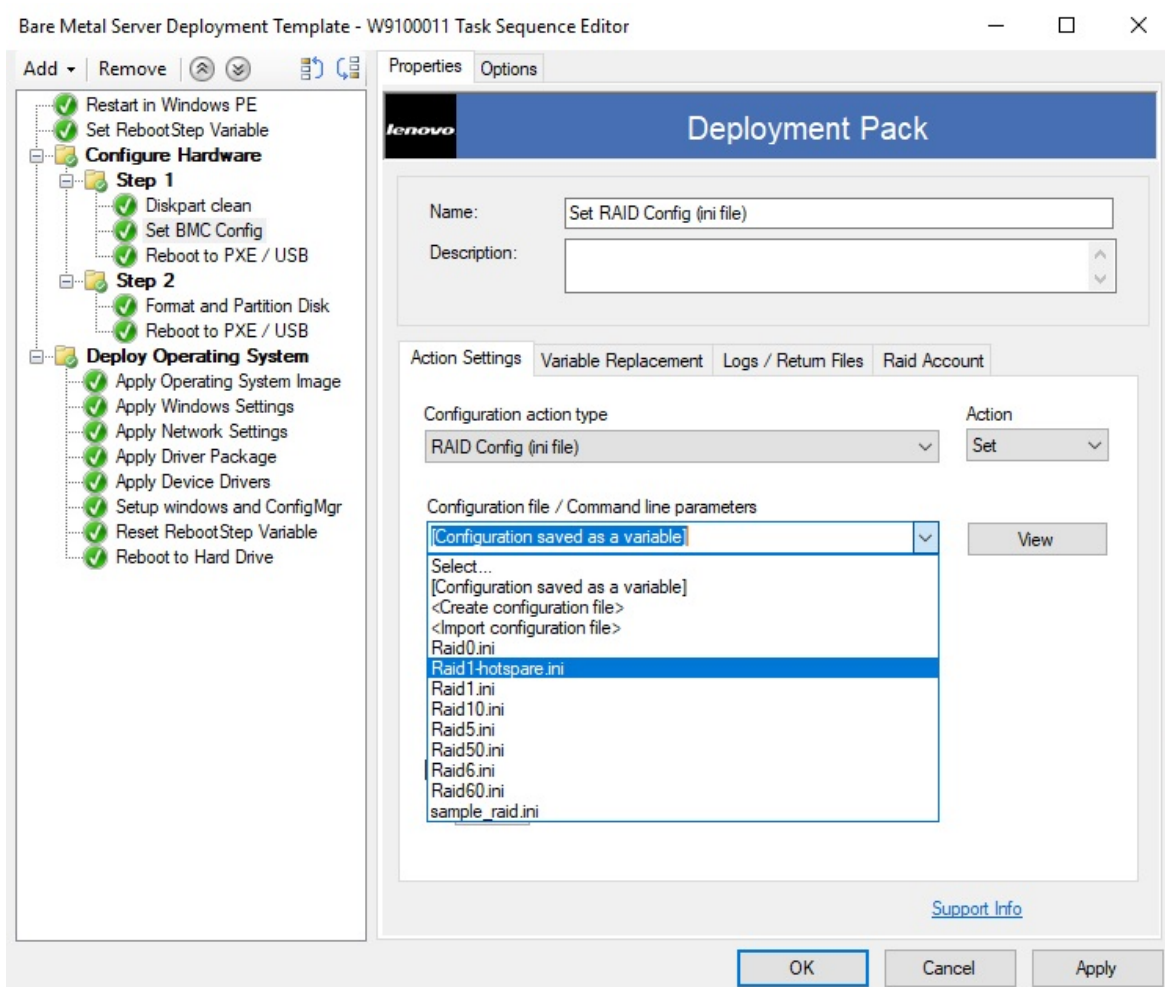
Figure 43. Editing the Set RAID Config (ini file) task

Step 4. Click **View** to customize the policy file.
The following window opens.
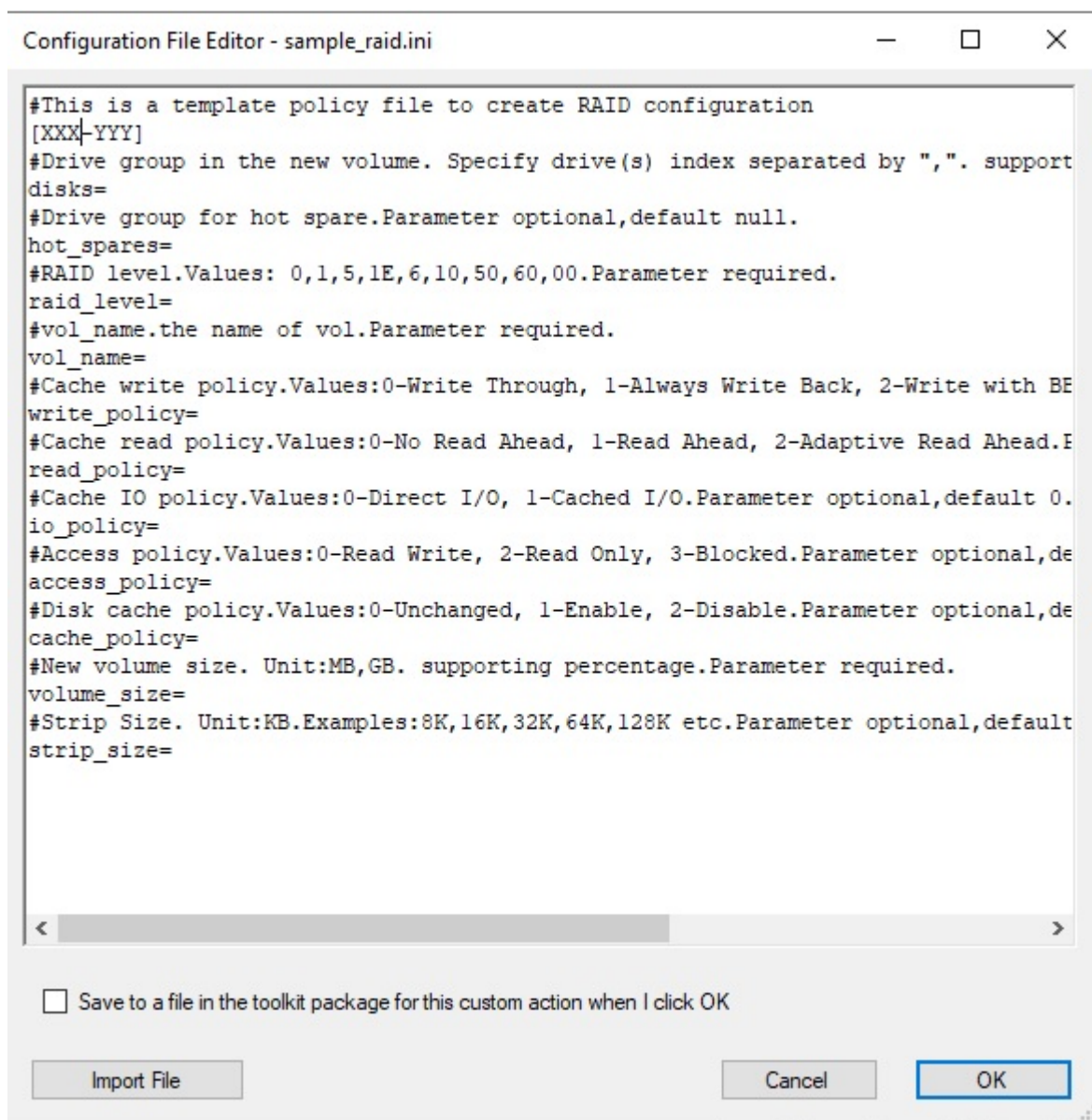
Figure 44. Editing the policy file

Notes:

- "XXX" refers to a RAID ID or a placeholder. A RAID ID is composed of "ctrl" and a slot number. For example, the ID of the RAID in slot one is "ctrl1", the one of slot two is "ctrl2" and so on. A placeholder can be RAIDID_X or RAID_AllRemaining. "X" refers to the number of the RAID adapter on your machine. For example, RAIDID_1 refers to the first RAID adapter and RAIDID_2 refers to the second one. You can use RAID_AllRemaining to represent all other RAIDs of the same settings.
- "YYY" refers to the volume ID. You can name it as vol0, vol1, vol2 and so on.
- Follow the descriptions on this page to enter specific information for other parameters.

Step 5. Edit **RAID** account.
The following window opens.
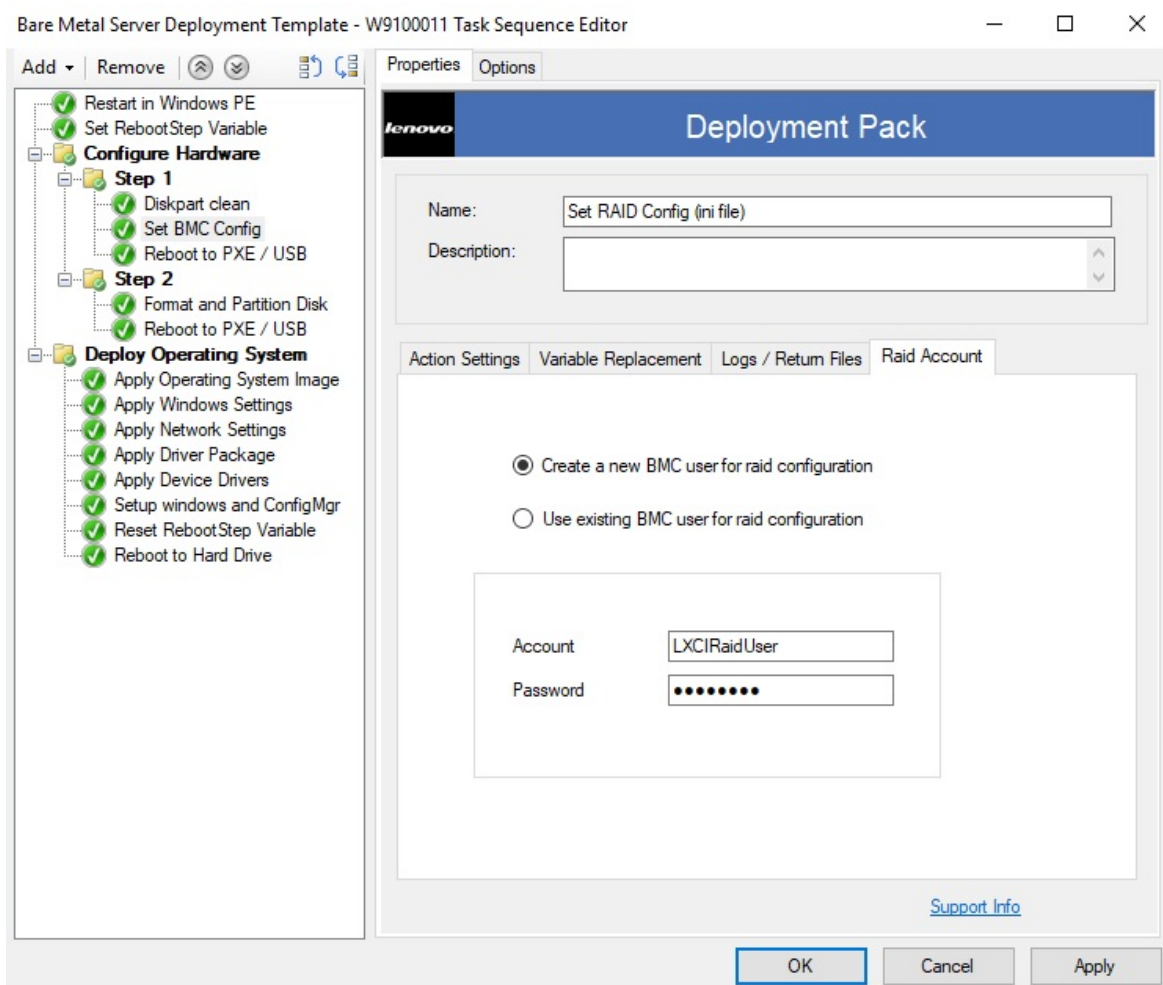
Figure 45. Editing the RAID account

When editing the RAID account, you can enter a supervisor user account existing on all BMCs that need the RAID configuration. If you choose to create a new BMC user account , a default user name "LXCIRaidUser" will be generated. We suggest that you change the user name and password of the new account.

Notes:

- Make sure that the RAID level is supported by the RAID controller on the target server.
- Multiple array configurations are supported in one policy file.

Configuring RAID through Array Builder Wizard

Another way to configure RAID is through Array Builder Wizard provided by MicrosoftSCCM.

To configure RAID, the Lenovo XClarity Integrator Deployment Pack creates a policy file according to input from Array Builder Wizard and deploys the policy file and the OneCLI utility to the target server.
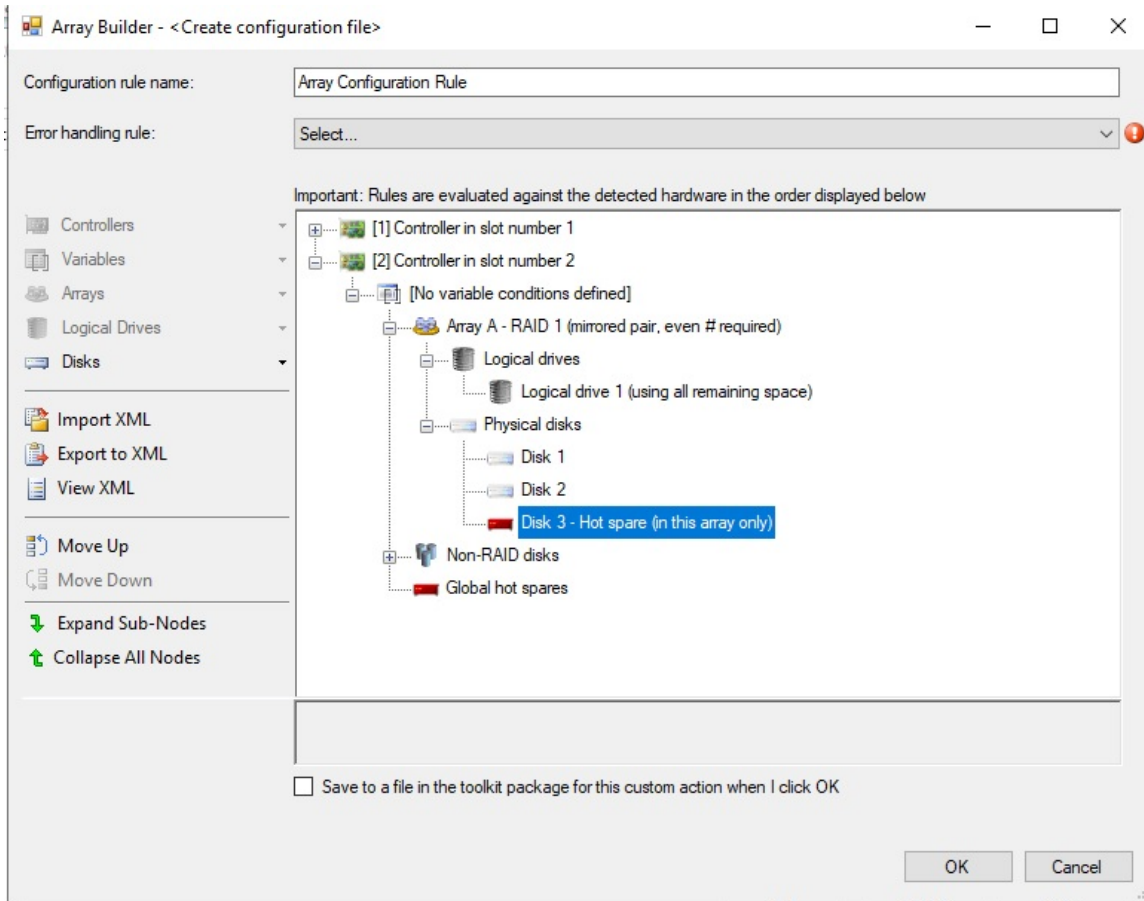
Figure 46. Array Builder Wizard

In Lenovo XClarity Integrator Deployment Pack, RAID Array Builder Wizard supports the following features:

- Hot Spare: You can use Array Builder Wizard to configure Hot Spare.
- Controller Configuration: Array Builder Wizard supports controllers located in slots or all remaining controllers in the system.
- RAID Level: Array Builder Wizard supports RAID level 0, 1, 5, and 6.

Figure 47. Dynamic RAID configuration

Configuring hardware settings through OneCLI

By using the OneCLI, you can modify hardware settings from the command line on multiple operating system platforms. The OneCLI tool supports scripting environments through its batch-processing mode.

The Lenovo XClarity Integrator Deployment Pack leverages the OneCLI 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 (BMC).

The OneCLI depends on internal code for BMC functions and definition files for BIOS functions; therefore, your results might vary with different hardware. Depending on your specific server population, you might have to create hardware-specific task sequences to get the support settings. Support for BMC settings is consistent across the product line, except for blade servers, where the management module in a given chassis overrides most of the blade BMC settings. The hardware release notes for the Lenovo XClarity Integrator Deployment Pack might contain more specific information.

Note: Command lines passed to the OneCLI tool might not return error codes or explanatory feedback, so be careful when creating your commands. For more information about OneCLI, including a list of the OneCLI commands and their descriptions, see the Lenovo XClarity Essentials OneCLI.

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

Configuring BMC through the OneCLI

This topic describes how to configure the BMCby using theOneCLI.

The following figure is an example of how to configure the BMC.
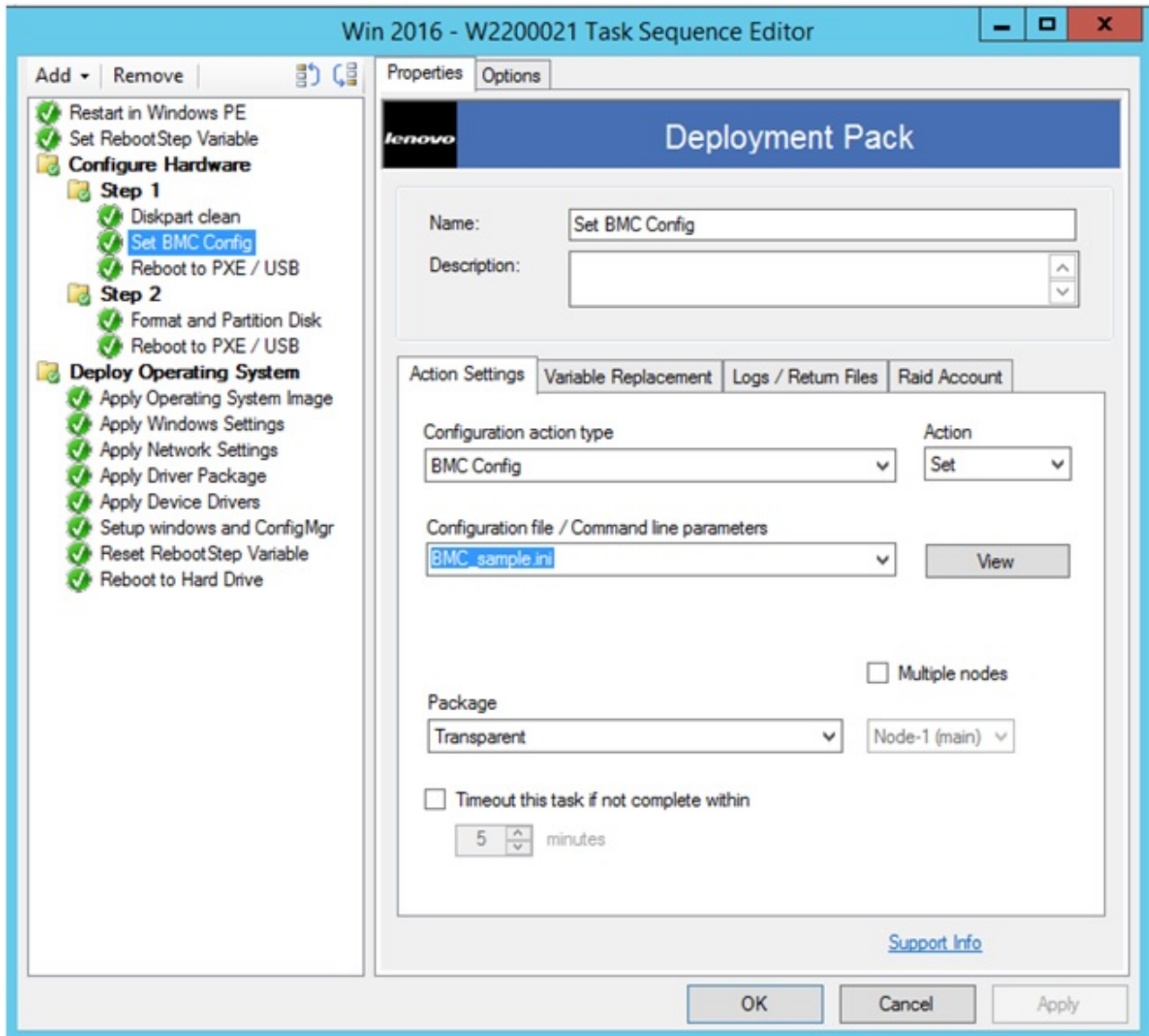
Figure 48. Selecting a BMC *ini file*

Sample .ini files are provided for BMC configuration. To view or modify the available settings for the .ini file, click **View**.
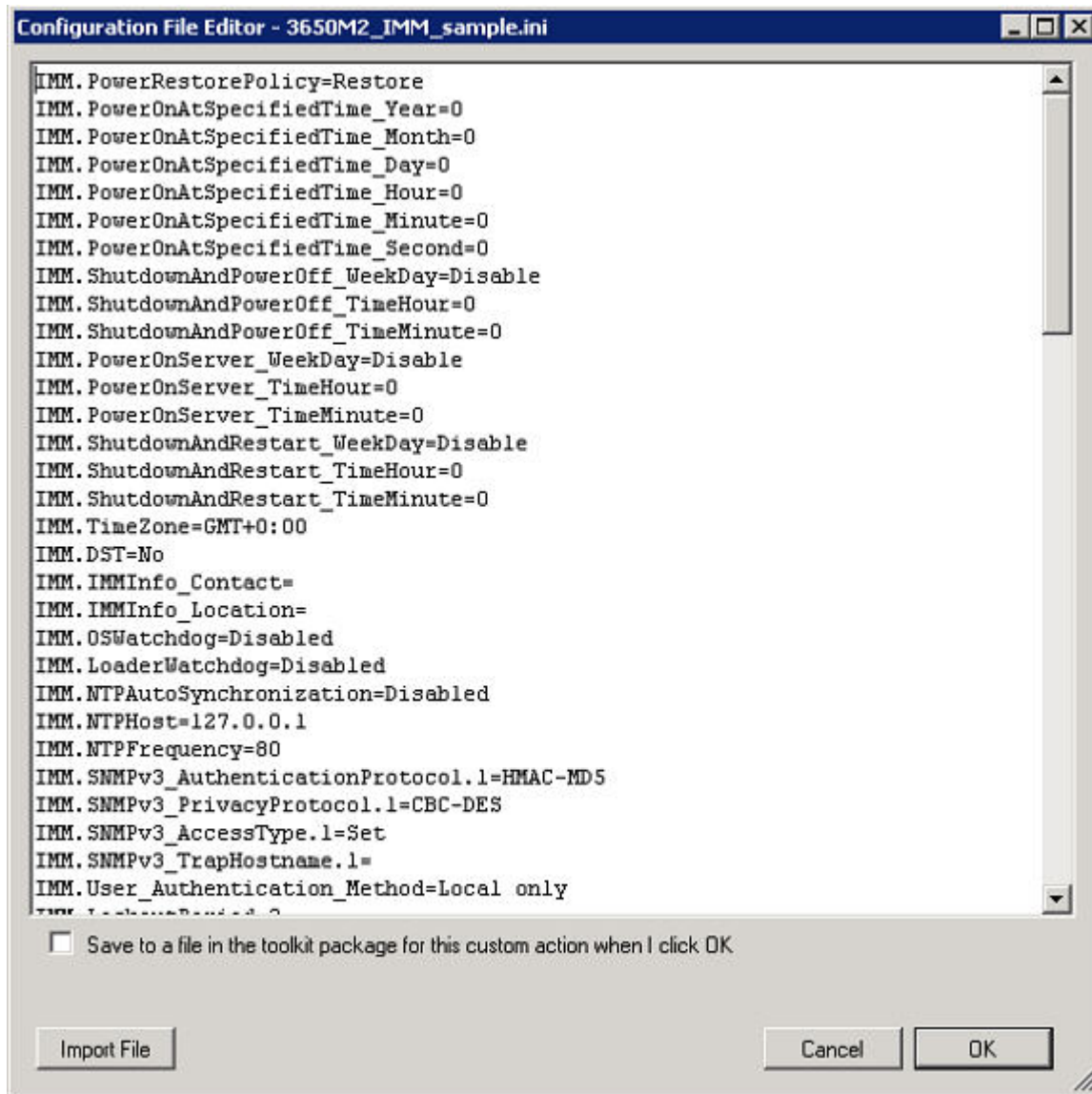
Figure 49. Sample settings in an BMC.ini *file*

You can either edit the file or create a new one. Follow the instructions in the topic "Updating distribution points" on page 25 for the package to make the file available.

Configuring uEFI through the OneCLI

Similar to BMC, the uEFI action contains sample .ini files that you can modify.
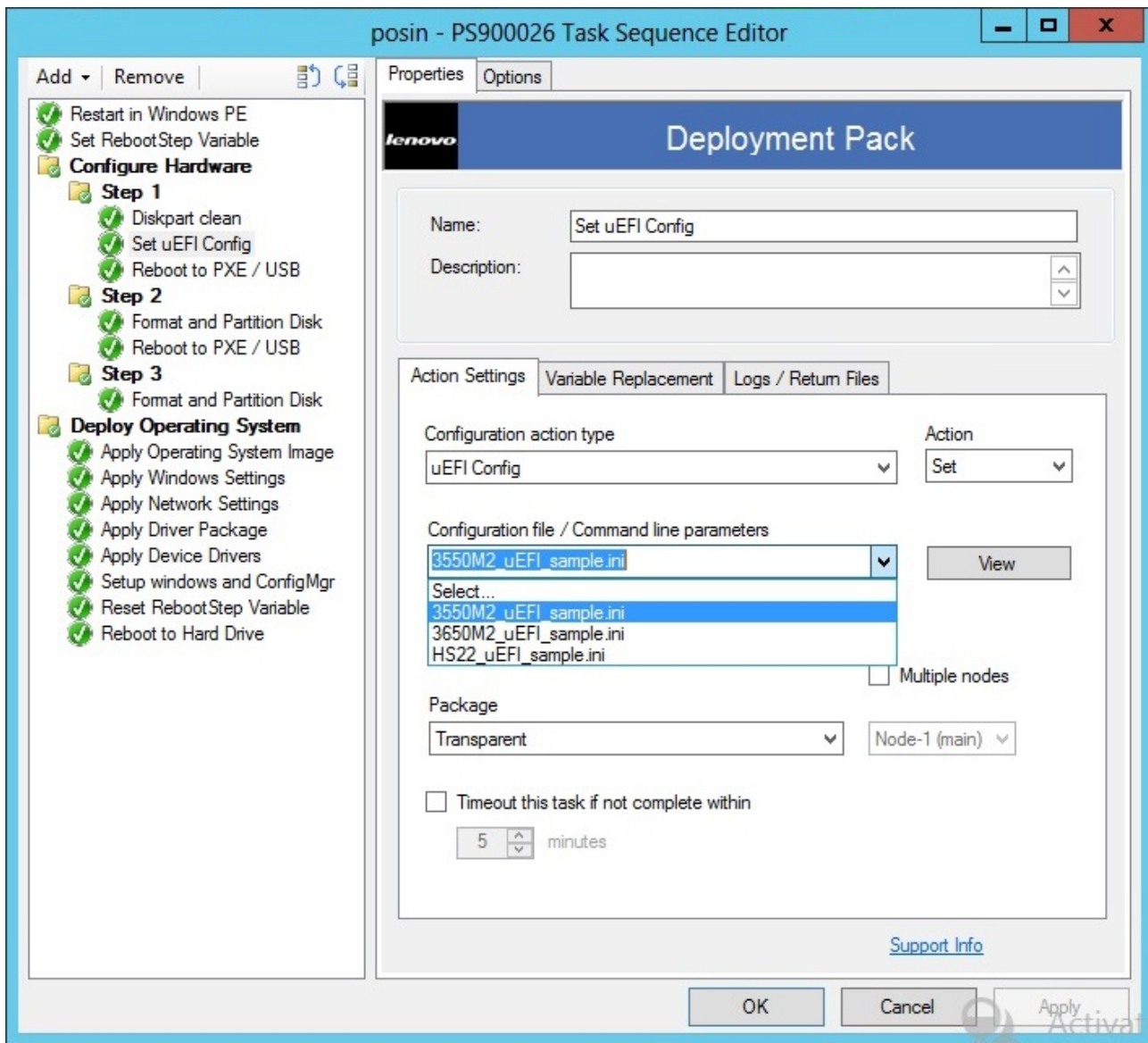
Figure 50. Selecting a uEFI .ini file

The configuration of other hardware is similar to the process for configuring the BMC and uEFI.

Supported Lenovo 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 Lenovo XClarity Integrator Deployment Pack. Each of these actions are described in more detail in the Detailed description table that follows.
- Set/get BIOS configuration
- Set/get RAID configuration
- Set/get BMC configuration
- Reboot BMC
- Set/get uEFI configuration
- Set/get BootOrder [BMC] configuration

Operating system deployment

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

About this task

Lenovo XClarity Integrator Deployment Pack supports the following operating systems:
- Windows 2008 32bit/X64
- Windows 2008 R2 SP1 (X64)
- Windows 2012 (X64) - SCCM 2012 SP1 or above is required
- Windows 2016 (x64)
- Windows 2019 (x64)

Lenovo XClarity Integrator 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 37.

Chapter 6. Hints and tips

The hints and tips provided in this section are designed to help you address common issues you might experience when installing and using the Operating System Deployment feature.

Create the installation or uninstallation log file

When the Lenovo XClarity Integrator Deployment Pack is either installed or uninstalled, the log file with a random name is created in the `%Temp%` folder. To specify 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 the log level in the 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\Lenovo\Systems Management Integrations\Log`.

Test WinPE-based sequence actions

When using PXE, always configure advertisements with the settings shown in the following table.

*Table 3. **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 4. **WinPE** boot image-required settings*

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

PXE issues

To troubleshoot a "File not found PXE error," re-create thePXE service point. You can also use the Reboot to PXE/USB custom action to circumvent a problem that might occur after rebooting a target system multiple times.

About this task

If the following error is displayed in the log file, it might be related to one of several common PXE issues:
`File not found PXE error #.`
Refer to the information that follows for possible solutions.

If the PXE service was operational at one time, the issue might be caused by changes to a boot image that were not distributed to the PXE service distribution points.

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 40.

You must also add the target server MAC address and GUID to the Configuration Manager database.

PXE-initiated deployments require a Preboot 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 Microsoft System Center – Planning for PXE Initiated Operating System Deployments webpage 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 WDS.
2. Either 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 re-create thePXE service point.

Procedure

Step 1. From the console, remove the PXE service role.

Step 2. Check the `Program Files\Microsoft Configuration Manager\Logs\PXEsetup.log` to verify that the role is removed successfully.

Step 3. Remove the WDS.

Step 4. Reboot the Configuration Manager site server, if WDS was installed on the site server.

Step 5. Reinstall WDS but do not configure it.

It is not necessary to import images. However, make sure that WDS is installed correctly.

Step 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**.

Step 7. Reinstall the PXE service role.

Step 8. Check the `PXEsetup.log` file to verify that the role was installed successfully.

Step 9. Update the PXE distribution points for the boot images now that the new role is installed.

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 Preboot 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 theWindows Preinstallation Environment (WinPE) boots, WinPE does not recognize the new system partition, which means a reboot is necessary to successfully complete a deployment.

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

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 copyWinPE to the disk and reboot toWinPE again. If you assign a reboot task to a server and these conditions do not exist, the task sequence fails at that action. Without a valid boot partition, the machine cannot be rebooted in the middle of a task sequence.

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 will 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 used boot media such as CD, DVD, 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 Lenovo XClarity Integrator Deployment Pack

Lenovo 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 thePXE 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, by using a file-based method.

The following example shows what a task sequence flow might look like:

First start sequence

1. The computer starts WinPE through 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 Lenovo XClarity Integrator 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" on page 63 sets up the task sequence for you.

The Reboot to PXE/USB custom action

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

After Lenovo XClarity Integrator Deployment Pack is installed on the Configuration Manager server, this custom action is automatically installed. You can also insert the custom action into a task sequence by performing the following steps:

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

During multiple reboot processing, the target server might loop and be unable to run the task sequence correctly. The problem is due to an improper setting for the state variable that controls the 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 Lenovo XClarity Integrator Deployment Pack provide for multiple reboots back to USB or PXE, and they 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, and your task sequence might not restart from the beginning or even the current phase of deployment.

To ensure that the computer restarts the sequence from the beginning, remove the computer variable for any computer that has failed the task sequence.

Reset the computer variable by performing the following procedure.

Procedure

Step 1.   Start **Microsoft Configuration Manager** to open the Configuration Manager console.

Step 2.   From the console, click **Computer Management → Collections**.

Step 3.   Right-click the computer resource in the appropriate collection.

Step 4.   Click **Properties** ➙ **Variables**.

Step 5.   Select the **RebootStep** variable.

Step 6.   Click **Delete**.

Step 7.   Click **Apply**.

Step 8.   Click **OK**.

Appendix A. Troubleshooting

Frequently, the reason for a problem you are experiencing is due to a faulty setting or unintended omission during setup. The symptoms of a problem that you have often provide clues to the reason for the problem. In general, troubleshooting begins with making sure that you performed certain tasks.

About this task

To begin troubleshooting, follow these basic steps.

Procedure

Step 1.   Read the documentation.

The majority of issues related to the use of this product are covered in the documentation. Check the documentation before calling support.

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

- Microsoft System Center – Troubleshooting Operating System Deployment webpage
- Microsoft System Center – Troubleshooting Operating System Image Deployment Using USB Devices webpage

Step 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.

Step 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.

Step 4.   When all else fails, contact Lenovo support, as described in Appendix C "Getting help and technical assistance" on page 77. Before contacting support, however, gather appropriate information related to your problem. When you call Lenovo support, you must have a set of information to provide them so that they can efficiently work your issue. Before calling, gather the appropriate information. Here are suggestions for 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\Lenovo\Lenovo Deployment Pack\setup`

    Note: The location of the log file varies by machine.

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 select the check 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 circumstances related to the following questions:

    • 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 is being applied to different computer types? Is it using different configuration files, different task sequence variables, or has something else been modified?

Troubleshooting installation issues

Some common installation issues are presented along with information about how to troubleshoot them.

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 an error occurred during importation or for some reason the WMI information is incorrect, the MMC might generate 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 `Lenovo_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 WMI Administrative Tools.

The Lenovo XClarity Integrator 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 created by Lenovo XClarity Integrator Deployment Pack

1. Locate the SCCM installation folder.
2. Find the subfolder `AdminUI\XmlStorage\Extensions\bin\Deployment`, and delete the folder named `Lenovo`.
3. Find the subfolder `OSD\lib\Drivers`, and delete the folder named `Lenovo`.
4. Find the subfolder `OSD\lib\Packages\Deployment`, and delete the folder named `Lenovo`.

Troubleshooting administrator console issues

Some common administrator console issues are presented here along with information about how to resolve them.

Enabling user interface debug logging

If you customized the configuration XML but the XML is not correct, 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 Lenovo XClarity Integrator Deployment Pack.

MMC crash, exception, or Property Not Found errors occur 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 an error occurred during importation, or for some reason the WMI information is incorrect, the MMC might generate 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: `Lenovo_DeploymentPack`.

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

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 WMI Administrative Tools.

Troubleshooting device driver issues

In many instances, you must import drivers into yourWinPE 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 do not include instructions about how to import the driver intoWinPE.

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 file 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.

Renamed files

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, the driver cannot be injected into theWinPE image because the correct file names are not present.

Modified boot image

During the installation of the Lenovo XClarity Integrator Deployment Pack, the installation program performs several modifications to aWinPE boot image to insert drivers and other changes that allow the Lenovo XClarity Integrator 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 Lenovo XClarity Integrator 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`, for example,`boot.SMS00001.wim`.

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

Failing imported drivers

Often, several drivers are loaded together in a common directory and contain a `TXTSETUP.OEM` file. However, when you try to update the WinPE boot image after these drivers are injected, it might fail. 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.

It is better to load drivers individually by using their 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

Some common WinPE and task sequence issues are presented along with information about how to troubleshoot them.

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 in 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 whenConfiguration Manager was installed is copied and modified with Lenovo specific drivers and other files. Your task sequences that use the Lenovo XClarity Integrator 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 orPXE 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, 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. To eliminate the delay, either switch to a manual mode or turn off this feature.

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

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

- Cisco: Using PortFast and Other Commands to Fix Workstation Startup Connectivity Delays webpage

- [Cisco: Configuring and Troubleshooting Ethernet 10/100/1000Mb Half/Full Duplex Auto-Negotiation webpage](#)

Default boot order does not allowPXE 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 comes 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 ifPXE 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.

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, remove the package from the distribution point (through **Manage Distribution Points**) and add 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 inWinPE, the task sequence engine ignores (and fail) all actions that have packages set for this option.

Set all packages needed for use in WinPEto **Access content directly from a distribution point when needed by the running task sequence**.

Task sequence does not run again even after clearing thePXE 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 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 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. InWinPE viaPXE, the location is at `X:\Windows\Temp\Smstslog\smsts.log`.

- Malformed XML in the Lenovo XClarity Integrator Deployment Pack configuration file. Correct the XML file according to the original format.

- The command being run 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. The error handling did not catch the same error.

  Report such issues to the Lenovo support site, as described in Appendix C "Getting help and technical assistance" on page 77.

- The task sequence cannot access the share or mapped drive that is the target drive for copying the files or logs. Ensure that the network is connected and that the user ID and Password that are required to access the share are correct.

Logs are 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 causes for the task sequence not 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 steps do not automatically change after a change is made to the configuration XML file

If you change the configuration XML file, 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. For example, 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

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
```

Several problems can cause this error.

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.

How to tell if your boot images are upgraded to Vista SP1
> Boot image properties contain an identifier for OS Version.
>
> Perform the following procedure to see the version ofWinPE in your boot images:
>
> 1. Click **Computer Management** ➙ **Operating System Deployment** ➙ **Boot Images** ➙ **Lenovo 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 re-create your boot images using the Windows AIK and following the steps listed in Microsoft System Center – 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 System Center – Automated Installation Kit (AIK) for Windows Vista SP1 and Windows Server 2008 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

Some general installation issues are presented along with information for addressing them.

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

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

Restarting a failed PXE-based task sequence

To troubleshoot a failed PXE-based task sequence, follow these steps.

1. Right-click on the computer you are testing, and 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 B. Running 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 2008, Windows Server 2012 or Windows Server 2016

You can run the System Preparation Tool (Sysprep) on a reference computer running Windows Server 2008, Windows Server 2012 or Windows Server 2016.

Procedure

Step 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 27.

Step 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.

Step 3. Log on to the computer as an administrator.

Step 4. Open a command window and change directories to the `C:\windows\system32\sysprep` directory. Then run the **sysprep.exe** command:
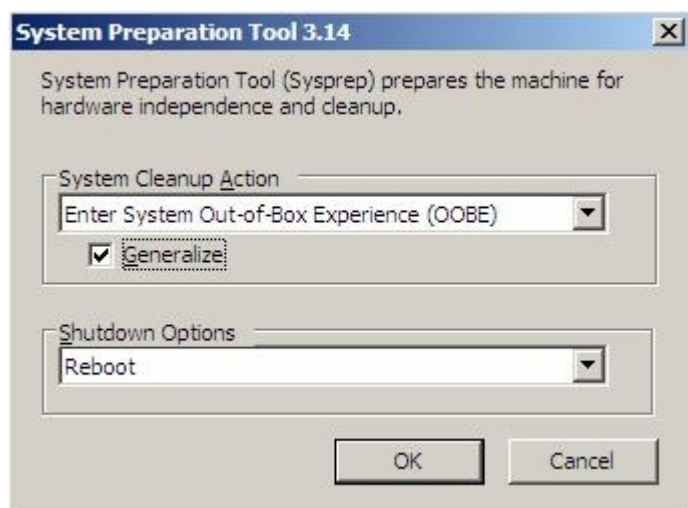```
sysprep
```

The following page opens:



*Figure 52. System Preparation Tool (Sysprep)*

Step 5.  Click **OK** to run the System Preparation Tool and reboot the computer.

Now the system is ready for capturing.

Step 6.  While the system is rebooting, press F1 to enable a system boot from the network.

After finishing the capture task, the system restarts.

# Appendix C. Getting help and technical assistance

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

**About this task**

This information describes where to go for additional information aboutLenovo and Lenovo 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 Lenovo *Documentation CD* that comes with your system.
- Go to Lenovo XClarity Integrator Deployment Pack for Microsoft System Center Configuration Manager Web site 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 Lenovo provides in the online help or in the documentation that is provided with your Lenovo product. The documentation that comes with Lenovo 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 Lenovo 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. Lenovo 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 Lenovo XClarity Integrator Deployment Pack for Microsoft System Center Configuration Manager Web site and follow the instructions.

# Getting help and information from the Web

The Lenovo web site has up-to-date information about Lenovo systems, optional devices, services, and support, including http://shop.lenovo.com/us/en/systems/, http://www.ibm.com/systems/bladecenter/, and http://www.ibm.com/intellistation/.

**About this task**

You can find service information for Lenovo systems and optional devices at Lenovo XClarity Integrator Deployment Pack for Microsoft System Center Configuration Manager Web site.

# Appendix D. Capturing and deploying Windows 2008 R2

These topics describe tasks required to capture and deploy the Windows 2008 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.

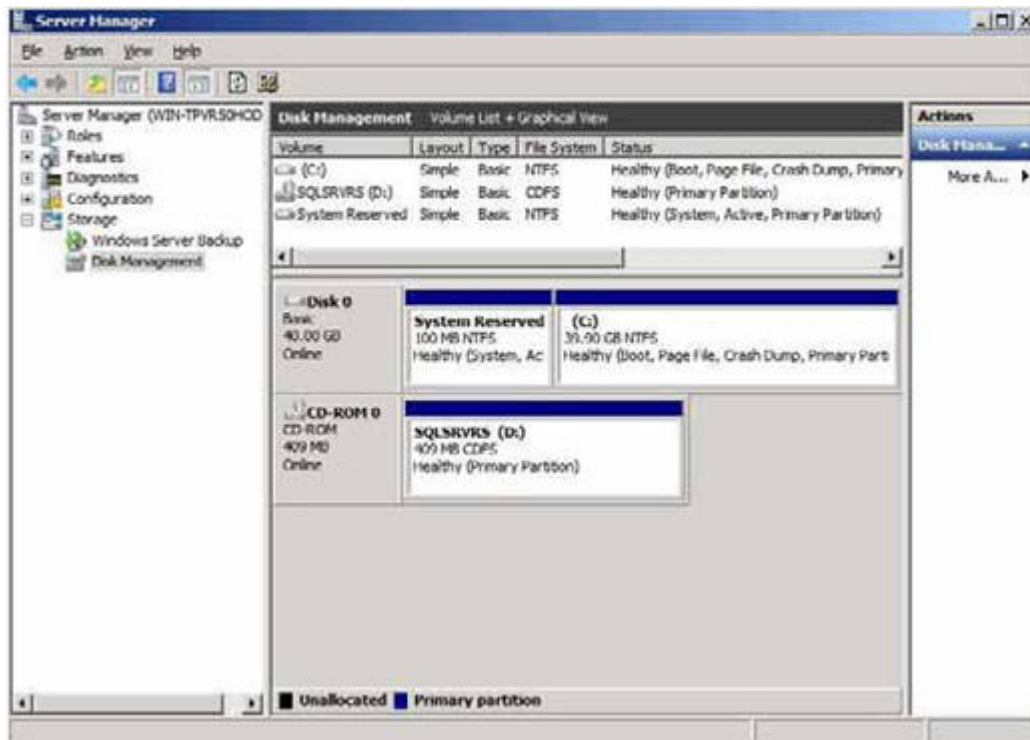The following image shows two partitions, the reserved and C:



*Figure 53. Two partitions*

## Changing the OSDTargetSystemRoot property

Before capturing the Windows 2008 R2 image, you must change the value of the OSDTargetSystemRoot property.

**About this task**

Changing the value of the OSDTargetSystemRoot property is necessary for capturing the Windows 2008 R2 image, which is used whenSCCM tries to identify the system root of the target server.

**Procedure**

Step 1.    Open the SCCMConfiguration Manager console.

Step 2.    Expand **Computer Management**, and click **Collections**.

Step 3. Click on the custom collection, right-click the target computer that you are capturing, and click **Properties**.

Step 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.
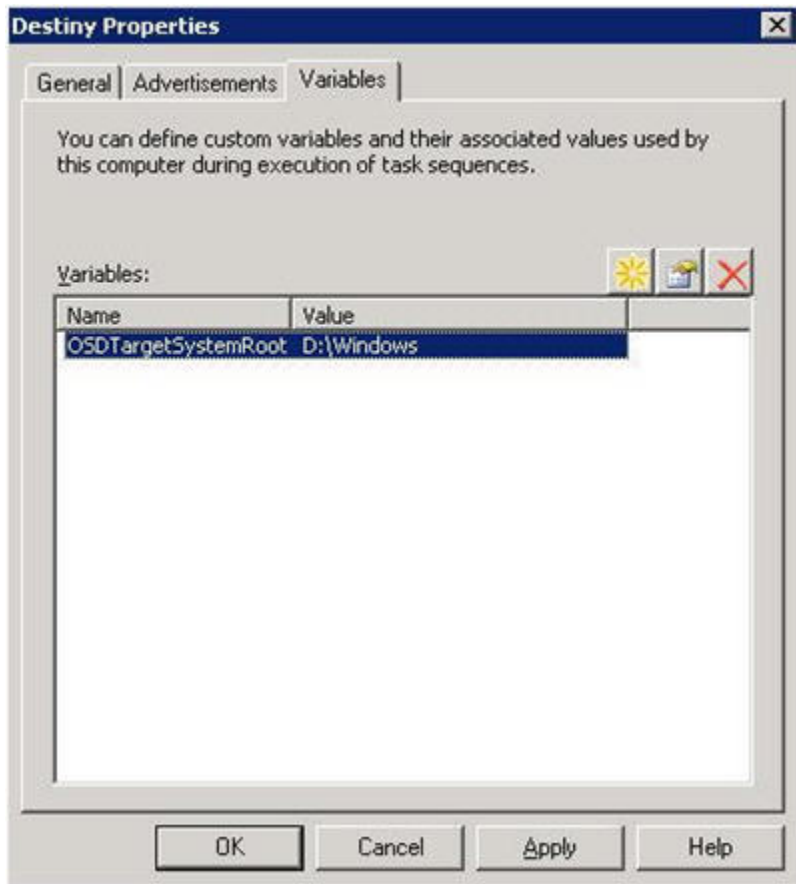


*Figure 54. OSDTargetSystemRoot property*

Step 5. Follow the common steps to capture the Windows 2008 R2 image.

# Deploying the Windows 2008 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, two volumes are displayed in the **Images** list, as shown in the following figure.
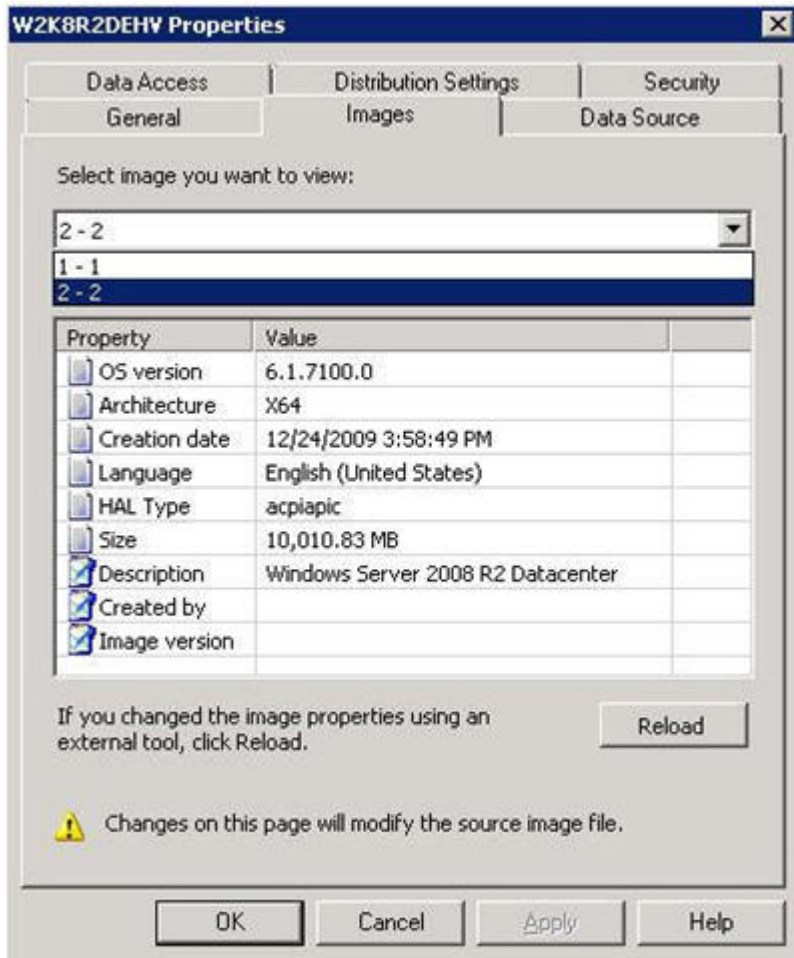
*Figure 55. Image list*

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.

**Procedure**

Step 1.    Use the Lenovo Task Sequence template to create the Lenovo Server Deployment Task Sequence.

Step 2.    To edit the task sequence, right-click the task sequence and choose Edit.

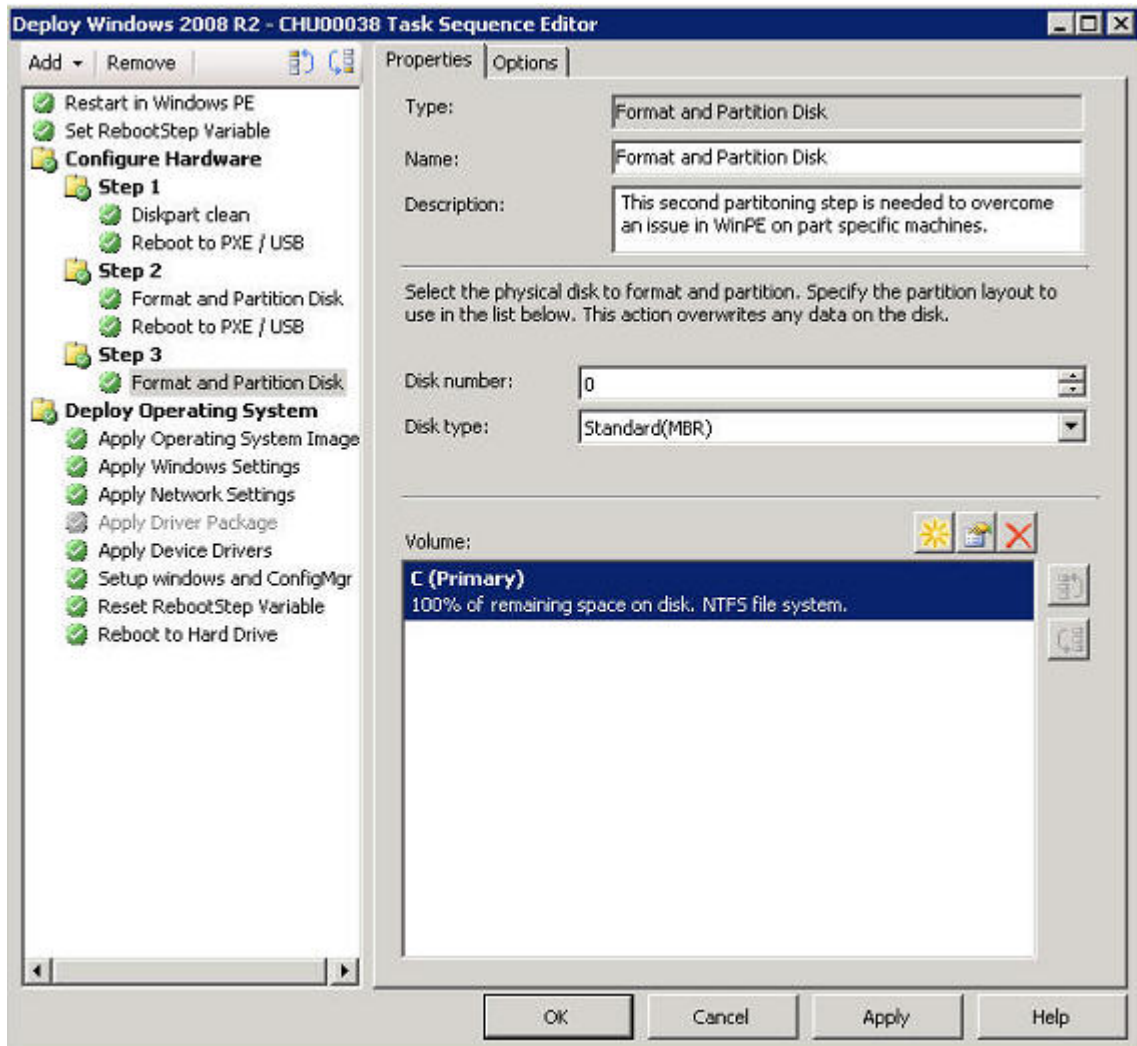Step 3.    On the navigation panel under Step 3, click **Format and Partition Disk** as shown in the following figure.

*Figure 56. Format and partition disk*

Step 4.   In the Volume portion of the window, double-click the first item.
          The **Partition Properties** menu opens.

Step 5.   Select **Mark this the boot partition**.

Step 6.   Select **Quick Format**.

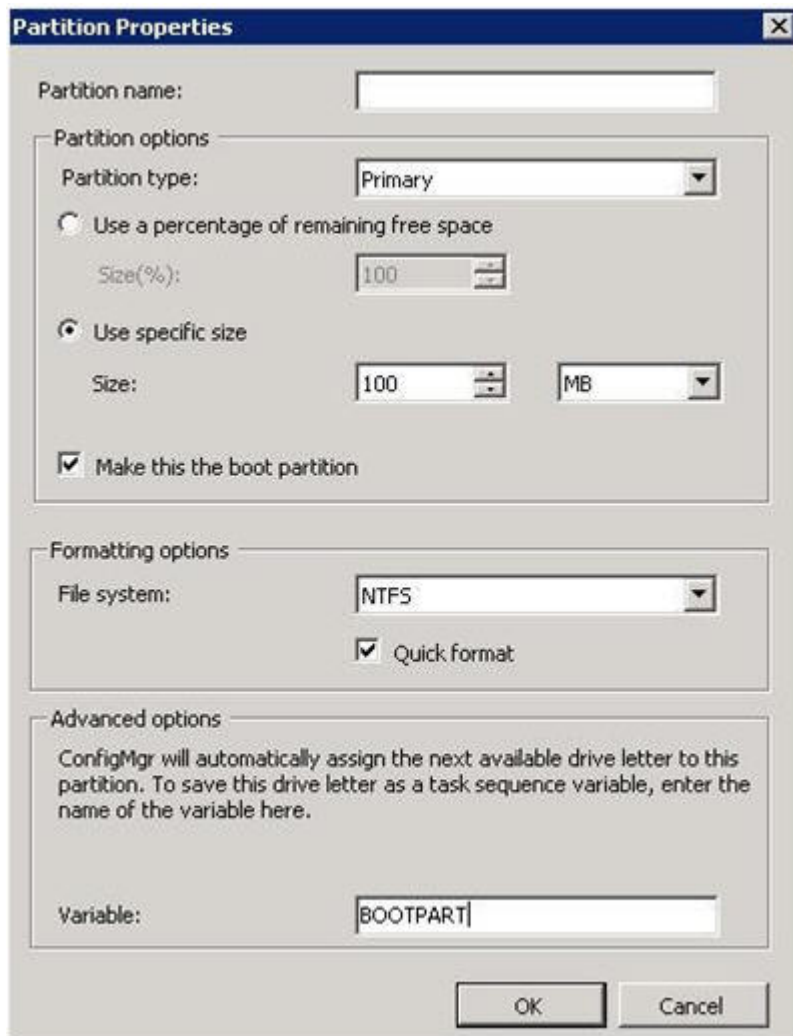Step 7.   In the **Variable** field, enter `BOOTPART`, and click **OK**.

*Figure 57. Partition properties*

Step 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.    In the Formatting options section, select the **Quick format** check box, and enter `OSPART` in the **Variable** field.
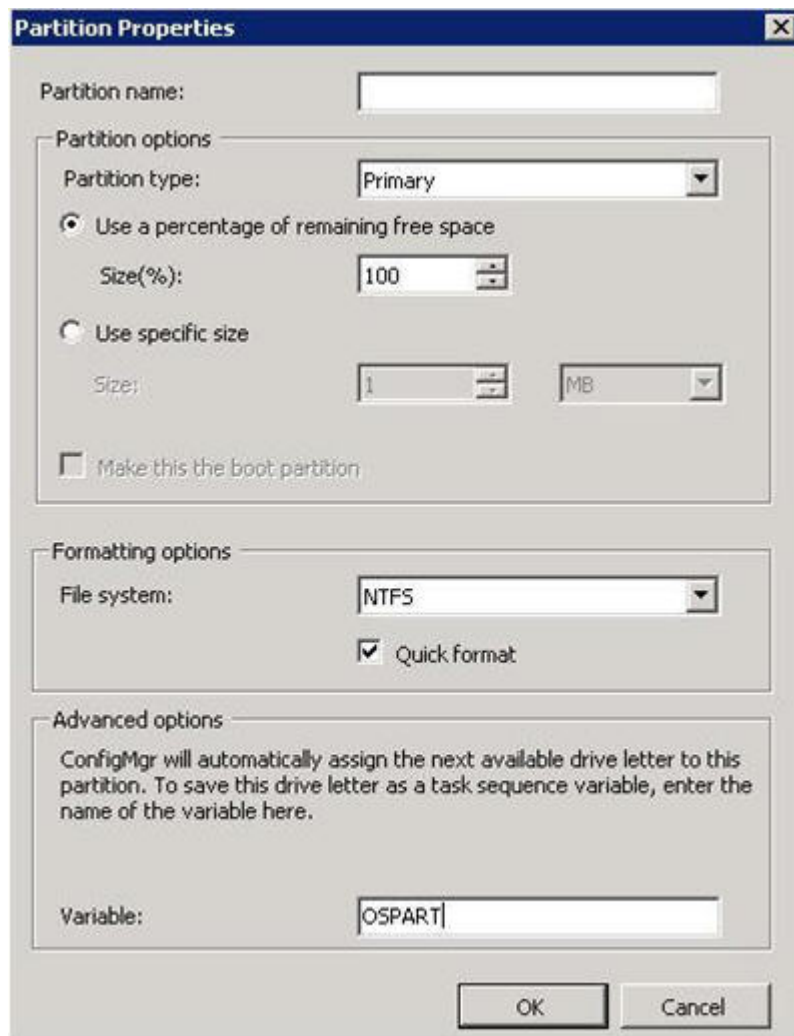
*Figure 58. Partition properties for the second volume*

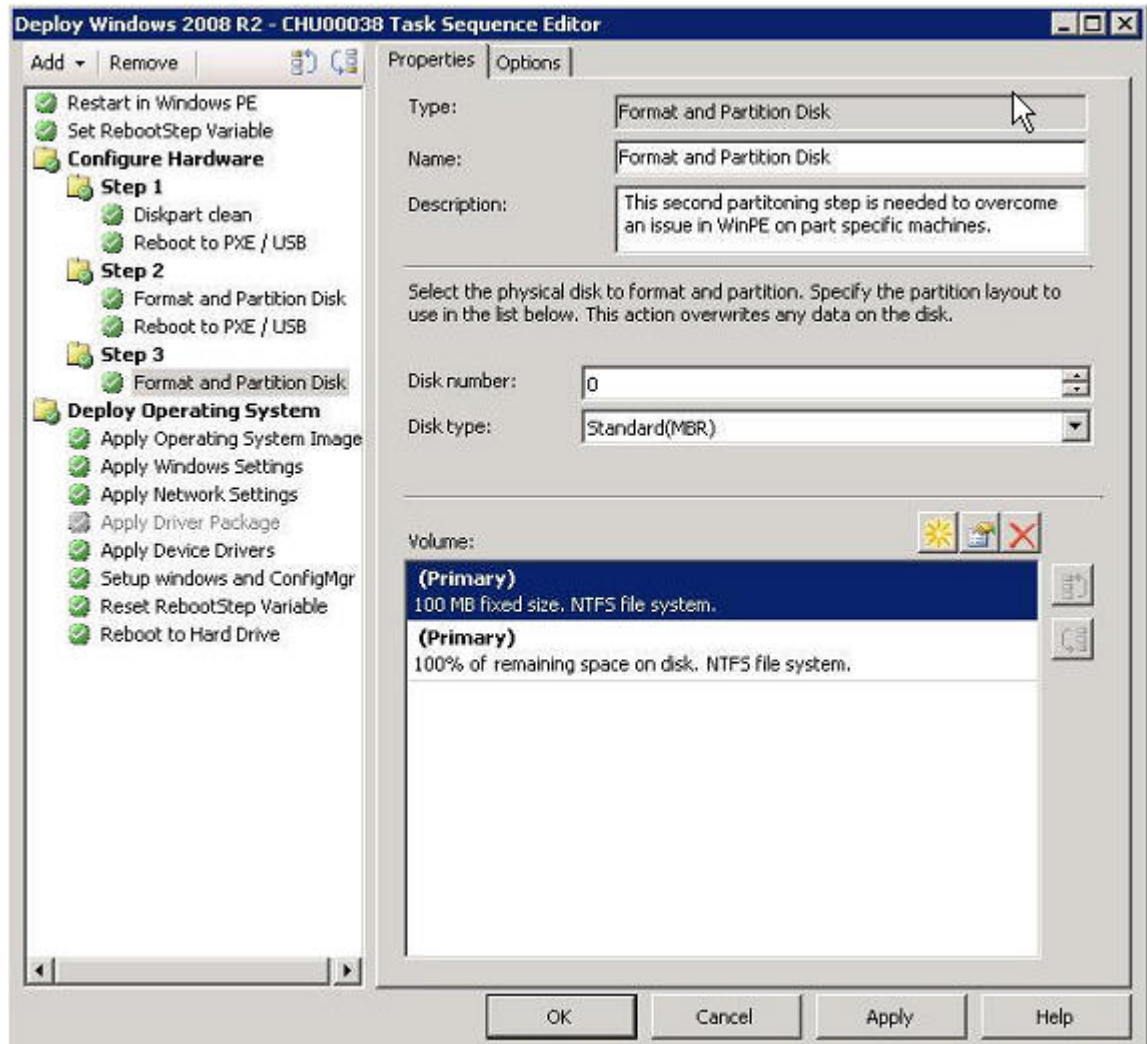d.  To submit the changes, click **OK**.
    The following window opens.

*Figure 59. Task sequence*

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

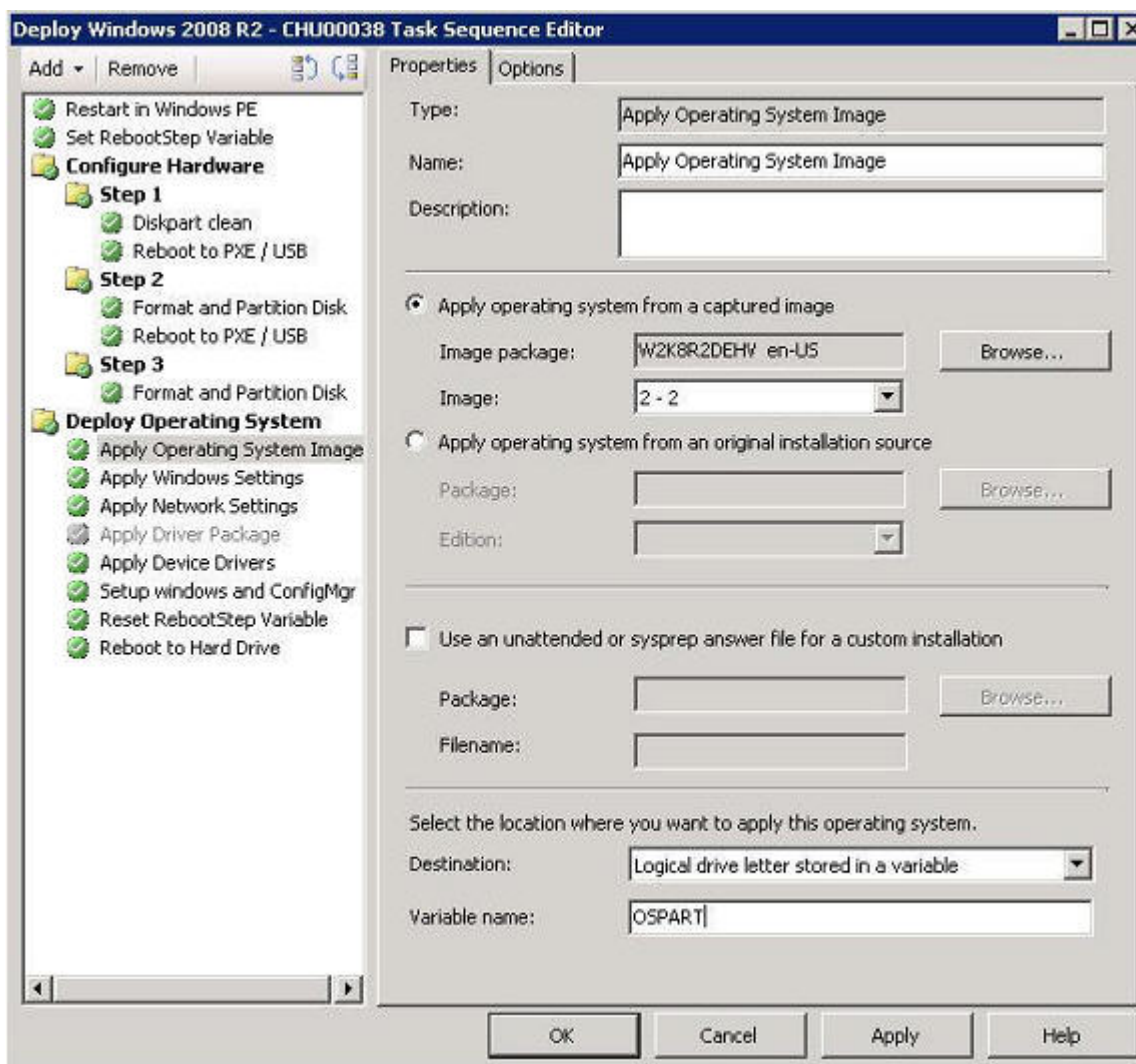*Figure 60. Deploy Windows 2008 R2 page*

Step 10.  In the **Image** field, select **2-2** from the list, and click **Apply**.

Step 11.  Follow the common steps to deploy the WS08 R2 image.

Step 12.  In the **Destination** field, select **Logical drive letter stored in a variable** from the list.

Step 13.  In the **Variable** field, enter OSPART.

Step 14.  To submit the changes, click **OK**.

# Appendix E. Accessibility features

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 Lenovo XClarity Integrator 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.

**Lenovo and accessibility**

See the Lenovo Accessibility Web site for more information about the commitment that Lenovo has to accessibility.

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

When referring to processor storage, real and virtual storage, or channel volume, KB stands for 1 024 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.

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