



IBM System x

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

Version 1.0





IBM System x

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

Version 1.0

Note

Before using this information and the product it supports, read the information in “Notices” on page 117.

This edition applies to version 1.0 of IBM Deployment Pack for Microsoft Configuration Manager 2007 and to all subsequent releases and modifications until otherwise indicated in new editions.

© **Copyright International Business Machines Corporation 2008.**

US Government Users Restricted Rights – Use, duplication or disclosure restricted by GSA ADP Schedule Contract with IBM Corp.

Contents

About this publication	v
Conventions and terminology	v

Information resources	vii
PDF files	vii
World Wide Web resources	vii

Chapter 1. Product overview **1**

An overview of deploying operating systems	2
Components of the IBM Deployment Pack	3
A scenario for using the IBM Deployment Pack.	3
Installing the necessary components	4
Installing a required Configuration Manager site and database	4
Installing a Configuration Manager console	6
Establishing secure administrator authority to perform Configuration Manager tasks	7
Verifying the success of the installation	7
Installing the IBM Deployment Pack on the site server.	7
Installing the IBM Deployment Pack on a secondary console	8
Performing post-setup configuration tasks	9
Distributing Configuration Manager and deployment pack components	9
Configuring for package creation and deployment	10
Creating operating system deployment packages and task sequences	10
Deploying an operating system image package	11
Putting it all together: an end-to-end scenario	11
Receiving new servers from IBM	12
Importing the servers into the Configuration Manager database	12
Creating a custom task sequence for deploying the new servers	13
Adding Windows device drivers to the boot image	15
Editing the task sequence steps.	16
Enabling the command shell on your boot image	17
Advertising the task sequence to the new servers	17
Racking and booting the new servers.	18
Preventing a server from looping during multiple reboot processing	18

Chapter 2. Installing the IBM Deployment Pack **21**

Distributing Deployment Pack components.	23
Distributing boot images	23
Distributing the toolkit package	25
Distributing the device driver packages	26
Uninstalling	27
Uninstalling quickly	27

Uninstalling interactively	28
Reinstalling the IBM Deployment Pack	28

Chapter 3. Performing specific management tasks **31**

Capturing an operating system image for deployment	32
Configuring the state migration point	37
Importing Windows device drivers into the driver catalog	37
Debugging task sequences	38
Advertising task sequences	38
Adding device drivers to a boot image	40
Adding command-line support to the boot images	41
Creating a custom boot image	42
Adding a custom boot image to Configuration Manager	43
Updating the distribution points for a boot image	44
Updating the distribution points for an operating system installation package	44

Chapter 4. Deploying operating system image packages. **45**

Installing a required distribution point	45
Setting up the Pre-boot Execution Environment (PXE) service point	46
Working with deployment task sequences	48
Creating a task sequence to deploy an existing image package	48

Chapter 5. IBM Deployment Pack feature reference **53**

IBM Server Configuration custom action.	53
Using the text editor	59
Using the Array Builder interface	61
Array Builder elements and associated rules	62
Other Array Builder functionality	69
Adding IBM configuration steps to an existing task sequence	70

Appendix A. Hints and tips **75**

PXE issues.	75
The problem when rebooting to PXE or USB	76
How the Deployment Pack solves the problem	77
Manual workaround method	78
The Reboot To PXE / USB custom action	79
Preventing a server from looping during multiple reboot processing	79

Appendix B. Frequently asked questions **81**

Appendix C. Troubleshooting **83**

Troubleshooting installation issues	84
Troubleshooting administrator console issues	85
Troubleshooting device driver issues	86
Troubleshooting WinPE and task sequence issues	88
Troubleshooting general issues	94
Appendix D. Additional resources	97
Appendix E. Supported target server hardware	99
Appendix F. The IBM PRAID program	101
Appendix G. The IBM Advanced Settings Utility	103
Appendix H. How to run Sysprep	105
Running Sysprep on Windows XP and Windows Server 2003	105
Running Sysprep on Windows Vista and Windows Server 2008	111

Appendix I. Getting help and technical assistance	113
Before you call	113
Using the documentation	114
Getting help and information from the World Wide Web	114
Software service and support	114
Hardware service and support	115
IBM Taiwan product service	115
Notices	117
Trademarks	118
Important notes	118
Glossary	121
Index	125

About this publication

This book provides instructions for installing IBM Deployment Pack for Microsoft System Center Configuration Manager 2007, v1.0 and using the integrated features to deploy operating systems to IBM® servers in your environment.

Conventions and terminology

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

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

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

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

Information resources

You can find additional information about IBM Deployment Pack for Microsoft System Center Configuration Manager 2007, v1.0 in the product documentation and on the World Wide Web.

PDF files

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

Downloading Adobe® Acrobat Reader

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

Viewing and printing PDF files

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

Release Notes

- *IBM Deployment Pack for Microsoft System Center Configuration Manager 2007 Release Notes, v1.0*

Installation and User's Guide

- *IBM Deployment Pack for Microsoft System Center Configuration Manager 2007 Installation and User's Guide, v1.0*

World Wide Web resources

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

IBM Systems Technical support site

Support for IBM Systems and servers

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

IBM Web site for Microsoft® Systems Management Solutions for IBM Servers

Microsoft Systems Management Solutions for IBM Servers

Download IBM systems-management and systems-deployment software.

IBM Systems Management page

IBM Systems Management

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

IBM ServerProven® page

IBM ServerProven

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

Microsoft System Center Configuration Manager 2007 page

Microsoft TechNet: System Center Configuration Manager

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

Microsoft TechNet: Configuration Manager Documentation Library

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

TechNet Blog: Inside ConfigMgr 07 Operating System Deployment

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

TechNet Forum: Configuration Manager – Operating System Deployment

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

Chapter 1. Product overview

Microsoft System Center Configuration Manager 2007 provides a feature for operating system deployment and for many other configuration and management tasks. Operating system deployment installs a new operating system image to new or existing computers as well as to computers with no connection your Configuration Manager 2007 site. Operating system deployment can use task sequences and its driver catalog to install a dynamic operating system image on different types of computers and configurations.

You can use the Task Sequence Editor to create flexible automated task sequences that can deploy computers, distribute software, modify configurations, and perform other deployment tasks on target servers. Within the Editor, built-in actions help you quickly automate standard deployment tasks. You can also create and integrate new custom actions within the editor so that the new actions become as easy to use as the built-in actions.

The IBM Deployment Pack for Microsoft System Center Configuration Manager 2007 is a deployment kit that extends Configuration Manager 2007 by providing IBM utilities, drivers, and custom tasks for creating automated deployment scripts for IBM target servers. The IBM extensions are available as built-in actions within the Configuration Manager menus.

The IBM Deployment Pack includes various IBM and third-party tools that are needed to configure items such as RAID adapters, management cards, BIOS settings, and other vendor specific settings that are required when deploying servers. While it is true these types of activities can be manually added to the operating system deployment (OSD) process, the Deployment Pack is a much simpler solution that puts everything in the right place for the user, so the tools are ready to use in a custom task sequence. It also includes a custom boot image that is already prepared to work with Configuration Manager OSD. This tool is highly recommended and will save a huge amount of setup and preparation time for the deployment of x86 servers.

This documentation provides information about the IBM Deployment Pack for Microsoft System Center Configuration Manager 2007.

This information:

- Provides an overview of the IBM Deployment Pack, and how it integrates with Configuration Manager, including an overview of the core scenarios for creating and using the IBM task sequence custom actions
- Describes prerequisite requirements for installing and using the product
- Introduces you to deployment actions and the Task Sequence Editor within the IBM Deployment Pack.

See the Microsoft TechNet for further documentation about Configuration Manager.

The IBM Deployment Pack for Microsoft System Center Configuration Manager 2007 gives you a complete solution for deploying Microsoft operating systems on IBM servers.

An overview of deploying operating systems

Configuration Manager contains an integrated task sequence engine, wizard-based deployment templates, and a number of pre-defined actions to help you deploy new computers.

Configuration Manager provides the following capabilities:

- Software distribution
- Hardware and software inventory
- Patch / updates management and distribution (integration with Windows® Server Update Services (WSUS))
- Operating system deployment in a Pre-boot Execution Environment (PXE) integration with Windows Deployment Services (WDS)
- Network access protection
- Desired configuration management
- Mobile device management
- Software metering
- Remote control
- Reporting

All of these features are exposed in an Administrative user interface (UI) that is built around the Microsoft Management Console (MMC) architecture. Client functions are exposed in the Client UI found in the Control Panel of managed machines. Almost every feature that you can select in the Admin UI is also available programmatically by scripting.

Using Configuration Manager to deploy operating systems on IBM servers follows this general scenario:

- Registering new (target) servers in the Configuration Manager database
- Capturing and distributing operating system images and IBM and Microsoft device drivers and tools
- Creating and distributing scripted installation tasks for operating systems
- Advertising the existence of custom deployment tasks to target servers
- Configuring and formatting storage on a target server
- Installing the operating system on a target server
- Migrating user state information using the State Migration Tool
- Miscellaneous deployment tasks after deploying an operating system

Components of the IBM Deployment Pack

The IBM Deployment Pack for Microsoft Configuration Manager 2007 includes an IBM server configuration toolkit that provides the functionality necessary to configure IBM hardware components prior to deploying the operating system.

The IBM Deployment Pack is composed of:

- An installation utility
- IBM-specific drivers, agents, and firmware
- Scriptable hardware configuration tools (available for the Windows Preinstallation Environment (WinPE) operating system)
- Sample configuration files used with the utilities, including sample Sysprep and Unattended.txt files
- Scripts and batch files that run the utilities
- Documentation for using the utilities

The IBM Deployment Pack contains Configuration Manager console extensions and custom task sequence actions. These user interface elements provide the custom actions that are available in the Task Sequence Editor and custom forms for creating sample task sequence templates.

IBM provides custom actions that are specific to IBM server hardware, drivers, updates to WinPE boot images, sample driver packages, and IBM server configuration toolkits.

Each IBM custom action includes one or more tabs that contain controls for configuring the options of the custom action.

A scenario for using the IBM Deployment Pack

This scenario describes an end-to-end task path that includes the major tasks of installing, creating operating system deployment packages, and deploying the packages.

Microsoft System Center Configuration Manager 2007 is a product that Microsoft sells and documents on the Microsoft TechNet.

One main goal of this IBM Deployment Pack documentation is to keep you pointed in the right direction, to help you use Configuration Manager 2007 wisely and safely, and to help you use the IBM extensions for deploying Microsoft operating system images on IBM servers as efficiently as possible.

Major tasks for using the IBM Deployment Pack for Microsoft System Center Configuration Manager 2007 include:

- Installing Configuration Manager 2007 and the IBM Deployment Pack
- Creating operating system image packages and task sequences
- Deploying image packages to target computers

Descriptions of these major tasks introduce Configuration Manager 2007 concepts and components in a context that shows you possible choices that you might make as you perform your real-life scenarios.

This information for the IBM Deployment Pack does not attempt to duplicate the Microsoft documentation on TechNet, but provides pointers to Configuration Manager 2007 planning information, conceptual topics, and task descriptions that are on TechNet.

The introductory topics for the scenario provide a context for understanding what tasks are typically necessary to achieve a goal, and why you would perform the tasks, either through descriptions of important considerations or pointers to Microsoft documentation that you should read.

The end-to-end task in “Putting it all together: an end-to-end scenario” on page 11 describes many of the tasks that you might perform to receive several bare-metal servers from IBM and deploy an operating system on them.

Use these scenarios to decide what you must install, how to create deployable operating system packages, and how to distribute the packages to make them available to deploy on new and existing machines.

Installing the necessary components

Install the components, verify the installation, configure the system, and activate the components to begin using the IBM Deployment Pack.

About this task

Typical installation tasks that you might perform include:

- Installing a Configuration Manager site server and related software
- Installing a Configuration Manager Web Admin console
- Establishing secure administrator authority
- Installing the IBM Deployment Pack on the site server
- Installing the IBM Deployment Pack on an Admin console machine, if remote from the Site Server
- Verifying installation success
- Performing post-setup configuration
- Distributing the IBM Deployment Pack components

Installing a required Configuration Manager site and database

Installing Configuration Manager requires careful planning.

About this task

The sequence of tasks involved in installing Microsoft System Center Configuration Manager follows this outline.

1. Obtain the installation media, but do not use it to install Configuration Manager yet.

- a. Download a trial from the Microsoft Trial Software page, or learn how to buy Configuration Manager at the Microsoft How to Buy page.
- b. Download the SP1 update from the Microsoft download page.

2. If the Configuration Manager server does not have access to the Internet, download the installation code from another server and make the code accessible during the installation.

- a. Go to any machine with Internet access.
- b. Run the `setup /download path` command from the Configuration Manager installation media.

Setup downloads the necessary files to the chosen path.

- c. Copy the downloaded files to a location that is accessible to the server where you intend to install Configuration Manager.

3. Required: Plan to deploy the software.

A System Center Configuration Manager 2007 site has the primary site server, the SQL Database server, clients, resources, and site system roles that can reside on various clients or other machines.

Examine the many scenarios for installing the site infrastructure. For example, you might install a single site or multiple sites, or install sites in more than one national language locale. Such considerations are the responsibility of infrastructure planning and deployment, which is beyond the scope of this information about the IBM Deployment Pack.

In addition, you must consider how to enhance site performance, such as co-locating the site server and the database server on the same machine.

See Technet: Planning and Deploying the Server Infrastructure for Configuration Manager 2007 for more information.

4. Determine the prerequisite software that you need.

You must install prerequisite software for the components that you intend to install. Such prerequisites might include Active Directory, Internet Information Services (IIS), Background Intelligent Transfer Service (BITS) server extensions, and Web Distributed Authoring and Versioning (WebDAV) extensions, just to name a few.

Each site role and each feature has specific software requirements, as described in the planning information on TechNet.

For example, the Operating System Deployment feature requires you to install the Windows User State Migration Tool (USMT), if you plan to capture and restore the user state as part of the operating system deployment. You can download the USMT from the Microsoft Download Center.

The Operating System Deployment feature for Configuration Manager 2007 SP1 requires (and installs) Windows Automated Installation Kit (WAIK) for Vista SP1 and Windows Server 2008.

There are no other specific prerequisites for installing the IBM Deployment Pack other than having Configuration Manager installed. If the computer is not a primary site server or a secondary console, the IBM Deployment Pack cannot install.

5. Determine the method that you intend to use for deploying operating system software and install any prerequisites. If you think that you might use all of the methods, install all of the prerequisite software and perform the necessary setup tasks.
 - PXE-initiated deployments require a Pre-boot Execution Environment (PXE) service point role (and some NTFS-formatted disk space), a DHCP server, Windows Deployment Services (WDS), and a firewall port configuration. Using DHCP and WDS on the same machine requires you to configure WDS to listen on a port other than port 67.
See Technet: Planning for PXE Initiated Operating System Deployments for more information.
 - Bootable media deployments require a media set of all installation files.
 - Side-by-side deployments require the state migration point site role and the User State Migration Tool.
 - Configuration Manager 2007-initiated deployments require the target system to have a client role.
6. Determine whether you will use native mode or mixed mode as the communication mode. To use the more secure native mode, you must plan for its prerequisites, which include a public key infrastructure (PKI) and possible access to Domain Name Server (DNS), as described in Technet: Prerequisites for Native Mode.
7. Install all prerequisite software on the servers where you have decided to deploy Configuration Manager 2007 site roles, except for prerequisites that you plan to install on a target system as you deploy its operating system. For example, you would not install the User State Migration Tool on a client machine until you are ready to deploy a new operating system to that machine.
8. Deploy Configuration Manager from the installation media according to your planning.
 - Deploy a single site, as described in Technet: Configuration Manager Tasks for Deploying a Single Site.
 - Deploy multiple sites, as described in Technet: Configuration Manager Multiple Site Planning and Deployment.

Installing a Configuration Manager console

The Configuration Manager console is installed on the primary site server during setup, but you can also install a child Configuration Manager console on any remote computer that can connect to the primary server. For example, you might install a secondary console on your own workstation. Secondary consoles also require planning for prerequisites and other considerations.

Establishing secure administrator authority to perform Configuration Manager tasks

Configuration Manager 2007 controls access to the console in several ways. Only administrators have rights to files and registry keys that help the Configuration Manager 2007 console run.

About this task

Windows Management Instrumentation (WMI) also limits access to the SMS Provider role, which is restricted to members of the local SMS Admins group. The local SMS Admins group begins with the user who installs Configuration Manager 2007. Others can access the Common Information Model (CIM) repository and gain SMS Provider rights as they join the SMS Admins group.

Accessing objects in the primary site database also requires permissions. The Local System account and the installer account have access to all objects in the site database. One of those accounts can grant permissions to additional users in the Configuration Manager 2007 console.

See Technet: Understanding Configuration Manager Security for more information.

Verifying the success of the installation

Although you might often use the console to refer to the following sources of information long after installing a Configuration Manager 2007 site, status messages and codes, log files, and state messages can all point out a problem that might arise during installation.

About this task

Review the installation steps on the Installation Status page to verify the actions taken and their status as Configuration Manager is installing.

See Technet: How to Verify Successful Site Installation for more information.

Installing the IBM Deployment Pack on the site server

The IBM Deployment Pack installs components into the site infrastructure and into the console. Interface components are joined to the Admin console. Packages, programs, collections, drivers, and reports are located within the site infrastructure, but are not necessarily on the site server itself.

About this task

Installing the IBM Deployment Pack on the site server installs the appropriate components into the appropriate locations within the site.

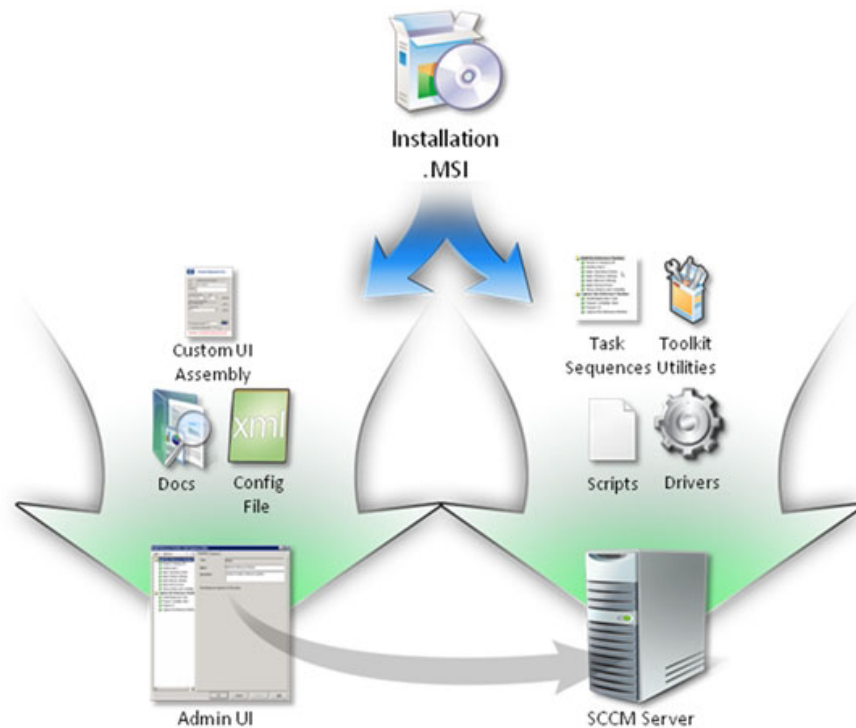


Figure 1. IBM Deployment Pack components and installation locations

The installation process installs some components into a share point and then imports them as packages into the Configuration Manager database. The installation process also updates the Windows Management Instrumentation (WMI) so that the Admin console can identify the new custom actions. The installation also imports drivers and updates boot images.

Installing the IBM Deployment Pack on a secondary console

You must install the IBM Deployment Pack for Microsoft System Center Configuration Manager 2007, v1.0 on any secondary site consoles where you intend to use the IBM Deployment Pack.

About this task

The IBM Deployment Pack console extensions show the specific built-in actions for deploying operating systems to IBM servers.

Performing post-setup configuration tasks

Several configuration tasks require careful planning. Although some configuration tasks apply more to other features, you must configure Configuration Manager for the Operating System Deployment feature.

About this task

See Technet: How to Configure Configuration Manager 2007 for information about each configuration task.

The IBM Deployment Pack for Microsoft System Center Configuration Manager 2007 performs some configuration of the generic Configuration Manager as it installs the IBM extensions for deploying operating systems on IBM servers.

You perform other configuration tasks as you use the Configuration Manager console to build and deploy installation packages. Configuration tasks that you might perform using the console include:

- Adding images and installation packages
- Managing the user state
- Managing the driver catalog and driver packages
- Managing task sequences
- Managing task sequence variables
- Managing operating system boot images
- Managing native mode certificates

See Technet: Configuring Operating System Deployment for information about performing these tasks with the generic Configuration Manager 2007 product.

This IBM Deployment Pack information describes procedural differences for IBM enhancements that support the IBM extensions to Configuration Manager.

Distributing Configuration Manager and deployment pack components

You must distribute the image packages and other packages to distribution points before you can actively use any of the task sequences that you create to deploy operating system images and packages on IBM servers.

Configuring for package creation and deployment

The tasks that describe creating and deploying operating system images also describe the configuration tasks that you must perform.

About this task

Configuration tasks that you must do as you create and deploy operating system images are described in “Creating operating system deployment packages and task sequences” and “Deploying an operating system image package” on page 11.

Creating operating system deployment packages and task sequences

You might perform any of several package creation tasks as you create operating system deployment packages and the task sequences that you use to deploy the packages.

About this task

Possible task components for typical scenarios for creating operating system packages and task sequences include:

- Capturing operating system images
- Adding operating system images
- Adding operating system installation packages
- Configuring the state migration point
- Importing Windows device drivers into the driver catalog
- Importing IBM and third-party device drivers into the driver catalog
- Creating a driver package
- Adding device drivers to an existing driver package
- Disabling or enabling a driver in the catalog
- Deleting a driver from the catalog
- Creating task sequences:
 - Creating a task sequence to perform an image capture
 - Creating task sequences to capture and restore the user state
 - Creating a task sequence to install a driver package
 - Creating a task sequence to deploy an existing image package
 - Creating a task sequence to build and capture an image
 - Creating a custom task sequence
 - Editing an existing task sequence
 - Advertising task sequences
 - Copying a task sequence from one site to another
 - Adding a software package to an existing deployment task sequence
- Creating and using task sequence variables
- Updating a boot image
- Adding device drivers to a boot image
- Adding command line support to a boot image
- Creating a custom boot image
- Adding a custom boot image to Configuration Manager
- Updating the distribution points for a boot image

- Updating the distribution points for the operating system installation package

For a description of each of these possible tasks, see *Technet: Configuring Operating System Deployment*.

Deploying an operating system image package

You might perform any of several deployment tasks as you deploy operating system deployment packages and use task sequences that you develop.

About this task

Possible task components for typical scenarios for deploying operating system packages and task sequences include:

- Building a reference computer
- Adding a new computer to the database
- Deploying an operating system image to a computer
- Creating a computer association for a side-by-side migration
- Performing a side-by-side deployment
- Creating task sequence bootable media for use within the site
- Creating stand-alone media
- Capturing an image from a reference computer using capture media
- Deploying an image to a new computer using boot media
- Deploying an image to an offline computer
- Adding boot images to the PXE service point
- Configuring the PXE service point
- Deploying an image using PXE

For a description of each of these possible tasks, see *Technet: Tasks for Operating System Deployment*.

Putting it all together: an end-to-end scenario

A typical deployment scenario covers all the steps from receiving a bare-metal server, deploying an operating system image on the server, and verifying that the server is running as planned.

About this task

This sample scenario includes the following tasks:

- Receiving new servers from IBM
- Importing information about the new servers into the Configuration Manager database
- Assigning the servers to a collection
- Creating a custom task sequence for deploying the new servers
- Editing the task sequence steps
- Advertising the task sequence to the servers
- Racking and booting the new servers
- Monitoring the multiple installations to prevent looping
- Verifying the installation

Receiving new servers from IBM

When you receive new servers from IBM, save any printed materials and any CDs or DVDs that are in the box.

1. Unpack and check the shipment to verify its accuracy.
2. Locate the unique information about each server to use in its entry in the Configuration Manager database.
3. Download the IBM Deployment Pack if you have not done so already.
4. Install the IBM Deployment Pack onto the Configuration Manager site server, if it is not already installed.

See Chapter 2, “Installing the IBM Deployment Pack,” on page 21 for more information.

Importing the servers into the Configuration Manager database

Use the information provided by IBM to put information about the servers in the Configuration Manager database.

1. Launch **Microsoft Configuration Manager 2007** to open the Configuration Manager console.
2. Click **Operating System Deployment** → **Computer Association** → **Import Computer Information** in the console.

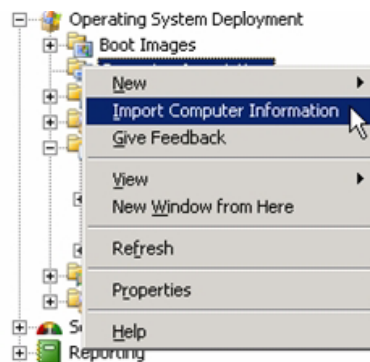


Figure 2. Menu option for importing computer information

3. Use the MAC address of the primary NIC and assign a name to each server to import them into the database.
4. Assign the new computers to a collection that uses direct membership.
Make sure that there are no other computers in the collection.

Creating a custom task sequence for deploying the new servers

Create a new task sequence for deploying servers from the sample task sequences that are part of the IBM Deployment Pack, if you do not already have a task sequence that works.

About this task

If you already have a working task sequence, edit the task sequence as described in “Editing the task sequence steps” on page 16.

1. Click **Operating System Deployment** → **Task Sequences** → **Bare Metal Server Deployment** → **Create an IBM Server Deployment Task Sequence** in the Configuration Manager console.

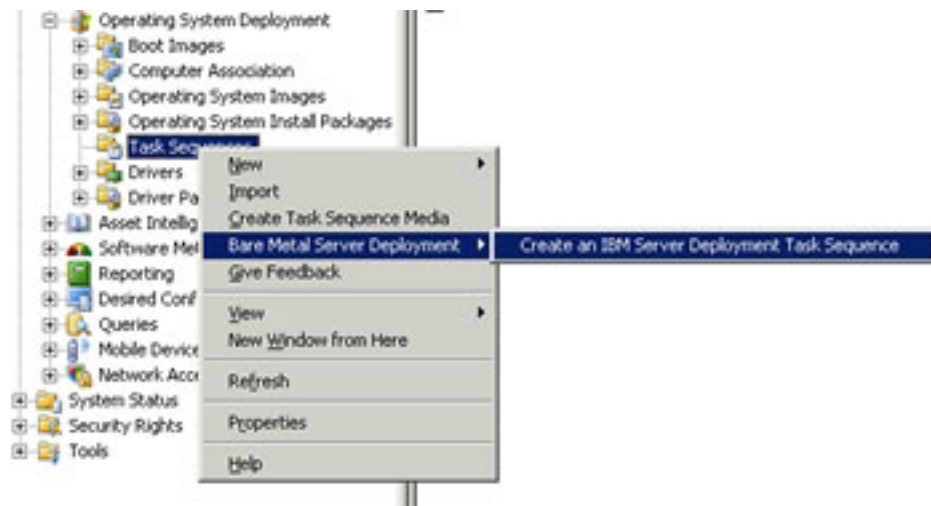


Figure 3. Creating an appropriate task sequence for deploying an image

2. Use the **Create Server Deployment Task Sequence** wizard to select the following hardware configuration task checkboxes.
 - a. Select the **Set BIOS config** checkbox.
 - b. Select the **Set BMC config** checkbox.
 - c. Select the **Set RAID config (wizard)** checkbox.
3. Enter a domain user name and password.
4. Select the WIM-based operating system image to use for deploying these new servers.

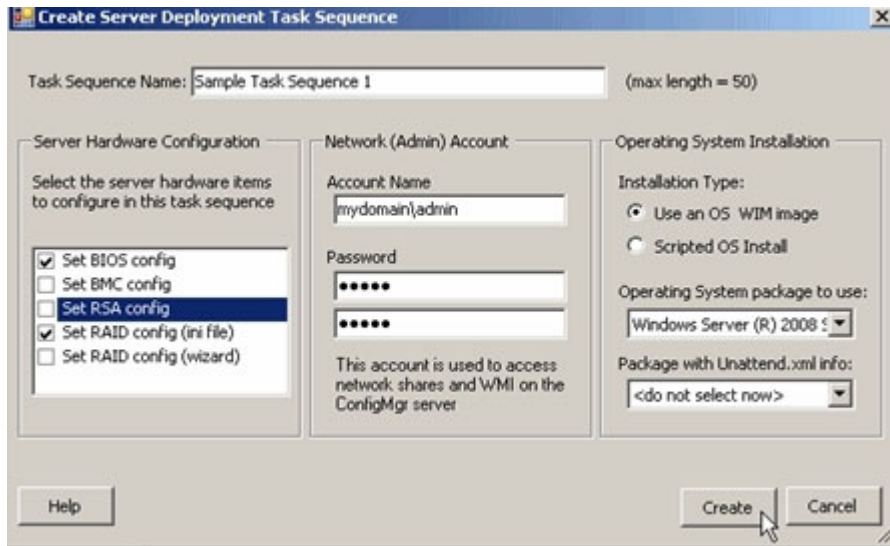


Figure 4. Settings in the Create Server Deployment Task Sequence wizard

5. Required: Select the IBM version of the Configuration Manager boot image. The installation program copies and modifies the original Windows Imaging (WIM) files for x86 and x64 systems, which are Windows Preinstallation Environment (WinPE) boot images, to add IBM-specific drivers and other files. If you do not use these modified images, the IBM deployment tools might not work properly.

When upgrading from a previous version of this product, existing task sequences that use these custom actions are not automatically updated. To function correctly, you must open each task sequence action that uses a custom action and make some minor edit, such as adding a "." to the description and then removing it. After editing, apply your changes to refresh the properties of the custom action and save any new data or formatting required to function with the new version. You may also see a red 'X' on some task sequence steps – click on each one, and provide any missing information.

6. Click **Create** to create a task sequence that contains the hardware configuration steps specified and some sample steps for deploying the operating system. When you click **Create**, a new task sequence is created that contains all the tasks necessary to deploy a server from bare metal, including hardware configuration (BIOS, array controller, remote access controller), partitioning, and operating system installation.

This sample task sequence also includes the necessary reboots in the appropriate sequence. The task sequence is broken into several groups that represent the logical organization of the task sequence steps and also represent the sets of actions to be performed in a reboot sequence.

Important: The grouping and order of the sample task sequence is important. Do not delete any groups or remove any of the steps for booting to PXE or setting task sequence variables. Also, do not modify the conditions set on the groups. Doing so might cause the task sequence to function incorrectly.

Important: After the task sequence is created, go through each step to confirm all of the settings. The task sequence that is created is a sample that contains several example values, such as network login accounts and drive paths, that cause the task sequence to fail. Modify the values for your specific

environment.

7. Open any items with a red 'X', and enter any needed information.
8. Add more task steps as needed in the locations around the reboot steps. Remember to not remove the groups or the reboot steps.

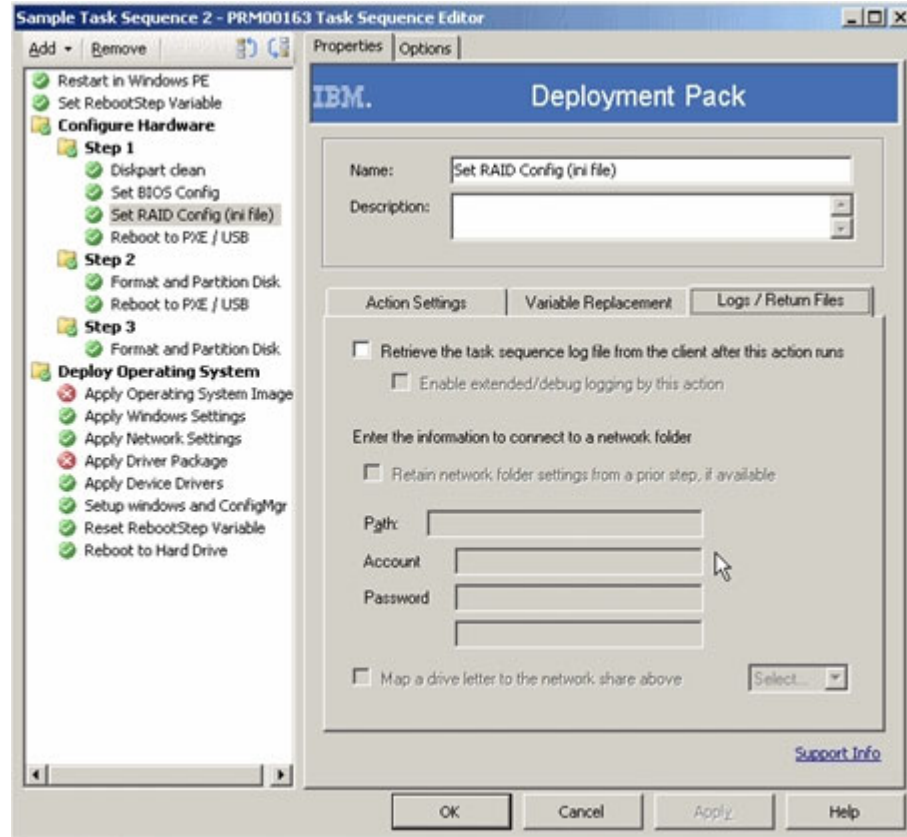


Figure 5. Settings in the Task Sequence Editor

Adding Windows device drivers to the boot image

Although the IBM Deployment Pack adds drivers to the driver catalog during installation and adds drivers to the Windows PE boot images, you might require additional network or storage drivers.

About this task

Add any additional drivers in the boot image that you require for Windows PE to boot correctly.

1. Launch **Microsoft Configuration Manager 2007** to open the Configuration Manager console.
2. Click **System Center Configuration Manager** → **Site Database** → **Computer Management** → **Operating System Deployment** → **Drivers**.
3. Select one or more drivers to add.
4. Right-click the selection and click **Add or Remove Drivers to Boot Images**.
5. In the dialog box, specify one or more boot images that should receive the additional drivers. To select all available boot images, click **Select All**.
6. Update the distribution points.
 - To update distribution points immediately, select **Update distribution points when finished**.
 - To update distribution points at a later time, right-click the Distribution Point node under the boot image to be updated, and then click **Update Distribution Points**.

Boot images with the added drivers are not actively available to computers until they are updated on distribution points.

Editing the task sequence steps

Edit the task sequence to update settings in the steps that you want to use, to add steps, or to delete any steps that you do not need.

1. Launch **Microsoft Configuration Manager 2007** to open the Configuration Manager console.
2. Click **System Center Configuration Manager** → **Site Database** → **Computer Management** → **Operating System Deployment** → **Task Sequences**.
3. Select and right-click the task sequence; then click **Edit**.
4. Make the changes that you require.
 - To add a step, click **Add** and the task sequence step that you want to add.
 - To add a new task sequence group, click **Add** → **New Group**.
 - To remove a task sequence step or group, select the task sequence step or group to remove and click **Remove**; then click **Yes**.
 - To edit a step, click **Options** to update the options.
5. Click **OK** to save the task sequence and close the editor.

While you can make modifications as you wish, keep in mind that the following steps should not be modified or moved from their relative positions:

- a. Reboot To PXE / USB
- b. The RebootStep Variable
- c. Configure Server Hardware group
- d. Deploy Operating System group
- e. Cleanup group

Client script

The custom action sends a script to the machine that is running the task sequence. The primary functions of this script are to:

- Clear the PXE advertisement for the machine
- Set the RebootStep machine variable

Clearing the PXE advertisement allows the machine to boot into PXE once it does reboot. If this is not done, the machine might reboot, but Configuration Manager will not offer PXE boot to the machine.

Setting the PxeRebootStep machine variable allows the task sequence to branch off and perform only specific actions based on conditions set in the task sequence on groups or steps.

There is nothing required for you to do with the client script, and you should not edit the client script.

Enabling the command shell on your boot image

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

About this task

When a task sequence is running in Windows PE on a target machine, you can open a command shell on the machine by pressing **F8**. As long as the command shell is open, the task sequence cannot reboot the machine.

You can verify components of the boot image and network connectivity. You can also view task log files.

Change a property value setting for the boot image to enable the debug command shell.

1. Launch **Microsoft Configuration Manager 2007** to open the Configuration Manager console.
2. Click **System Center Configuration Manager** → **Site Database** → **Computer Management** → **Operating System Deployment** → **Boot Images**.
3. Right-click the boot image and click **Properties**.
4. Click **Windows PE**.
5. Select the checkbox for **Enable command support (testing only)**.

Advertising the task sequence to the new servers

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

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

Option	Description
General page	Select Make this task sequence available to boot media and PXE . Otherwise, the network client cannot receive the intended task from the Configuration Manager server.
General page	Browse to select the collection of the target server.

Option	Description
Schedule page	Mandatory assignments: "As soon as possible"
Schedule page	Program rerun behavior: "Always rerun program"
Distribution Points page	<p>Select Access content directly from a distribution point when needed by the running task sequence.</p> <p>In WinPE, the default option of "Download content locally when needed by running task sequence" does not work. WinPE causes the task sequence engine to ignore all actions that have packages set for this option.</p>
Interaction page	Select Show task sequence progress.

Racking and booting the new servers

After creating the deployment task sequence, you must rack the new servers, connect them to a network, and power them on to continue the deployment.

1. Rack the servers according to your conventions.
2. Connect the servers to the network so that they can connect to the Configuration Manager site server.
3. Connect the servers to power.
4. Boot the servers.

As the servers connect to the network and use PXE to boot, the PXE server contacts Configuration Manager to get load instructions.

The new machines boot to WinPE to start the task sequence to deploy the operating system image.

When the task sequence completes, the servers are now deployed and are ready to use. If the task sequence seems to be hung on a particular server, use the next scenario to restart the installation.

Preventing a server from looping during multiple reboot processing

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

About this task

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

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

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

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

1. Launch **Microsoft Configuration Manager 2007** to open the Configuration Manager console.
2. Click **Operating System Deployment** → **Computer Association** in the console.
3. Right-click the computer resource in the appropriate collection.
4. Click **Properties** → **Variables**.
5. Select the **RebootStep** variable.
6. Click **Delete**.
7. Click **Apply**.
8. Click **OK**.

Chapter 2. Installing the IBM Deployment Pack

You can install the IBM Deployment Pack on a Windows server that is running Microsoft System Center Configuration Manager 2007. You can also install the IBM Deployment Pack on a machine that is running a secondary console.

1. If you must install Configuration Manager 2007, prepare to install the Configuration Manager 2007 prerequisites on Windows Server 2003 with SP2 applied, as described in Technet: Prerequisites for Installing Configuration Manager.

Select the **Primary site** option in the Configuration Manager 2007 Prerequisite Checker that runs as part of the setup program.

2. If necessary, install Configuration Manager 2007 on the Windows Server 2003 SP2 server, as described in “Installing a required Configuration Manager site and database” on page 4.

3. Install Windows Automated Installation Kit (WAIK) for Windows Vista SP1 and Windows Server 2008, if you have not already installed it, WAIK is available at Microsoft Download Center: AIK.

If Configuration Manager 2007 SP1 is installed, you probably already installed the correct version of WAIK as a prerequisite.

See “Task sequence fails at “Apply Operating System” with “Failed to make volume X:\ bootable”” on page 92 for information about the problem that can occur if you do not install the WAIK update for Windows Vista SP1 and Windows Server 2008.

All other prerequisites for the IBM Deployment Pack are installed when installing the Configuration Manager components.

The Deployment Pack installation makes copies of the WinPE instances that were loaded by WAIK, and then adds Configuration Manager and IBM Toolkit features to the images. Because most of this data comes from your own server, the installer has trouble predicting the total amount of space that is required.

The installer therefore cannot warn you about the free space on your disk being too small. Typical installations require slightly less than 800 Mb of disk space, so the best practice is to be sure there is at least 1 Gb of free space available before beginning the installation.

4. If necessary, download the Deployment Pack from the Microsoft Systems Management Solutions for IBM Servers page.
5. Start the installation of the IBM Deployment Pack by double-clicking on the Windows Installer package file (.MSI).

After initializing, the start page appears.



Figure 6. Installation wizard for the IBM Deployment Pack

6. Click **Next** to go to the License Agreement page.
7. Accept the license agreement to continue; then click **Next**.
8. Choose the installation type you wish to perform; then click **Next**.

If you are installing onto a computer that has only the Administrator Console installed, you will only be able to select the Administrator Console feature.

If you are installing to a Configuration Manager site server, all features are available and pre-selected. You cannot deselect certain features such as the Administrator Console and WinPE updates.
9. If you chose the **Custom** installation, you can modify some components of the installation. You can also change the target path of some components. Click **Next** to continue.

Do not change the path to a location that is not on the site server. Only local paths are supported at this time.
10. Click **Install** to begin the installation process.

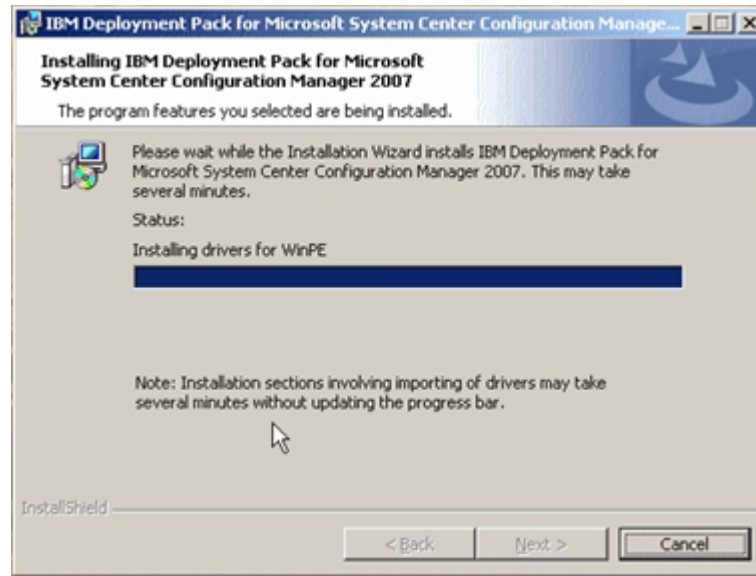


Figure 7. Installation wizard as it installs files for the IBM Deployment Pack

As the installation continues, you might see a blank status bar with a status that might not change for several minutes. This is normal. If any errors occur during installation, you are notified appropriately.

11. When the installation is complete, a final page is displayed. You then have the option to launch several actions by selecting appropriate check boxes.
12. Click **Finish** to exit the installation.

Distributing Deployment Pack components

Once the IBM Deployment Pack is installed, you must copy objects, such as boot images, software packages, and driver packages to distribution points before they can be used.

Distributing boot images

Copy boot images to distribution points so they can be used.

1. Launch **Microsoft Configuration Manager 2007** to open the Configuration Manager console.
2. From the console, click **Computer ManagementOperating System DeploymentBoot ImagesIBM Deployment**.
3. Right-click one of the boot images and click **Manage Distribution Points**.

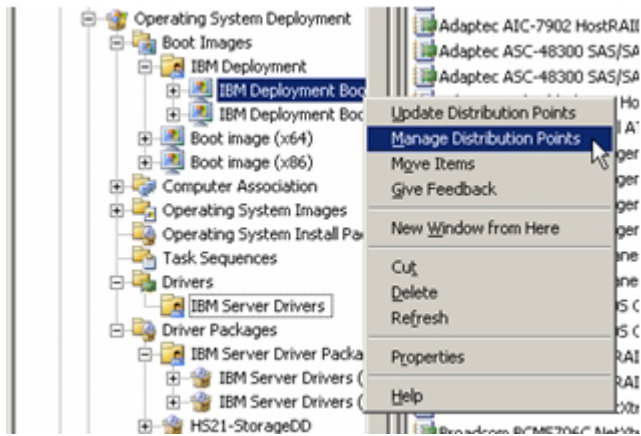


Figure 8. The Manage Distribution Points option

The Manage Distribution Points Wizard opens.

4. Click **Next**; then click **Next** again to copy the package to a new distribution point.
5. Select the appropriate distribution points to indicate where to copy the boot image.

The selected distribution points must be Pre-boot Execution Environment (PXE) distribution points that are signified using the SMSPXEIMAGES\$ share name.

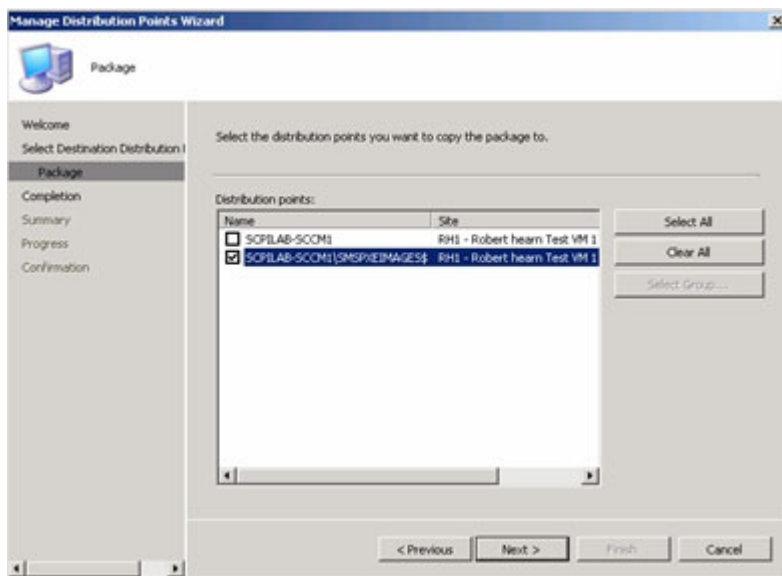


Figure 9. The Manage Distribution Points Wizard

6. Click **Next**; then click **Next** again; then click **Close** when the task completes.
7. Repeat this procedure for the other boot image.

Distributing the toolkit package

Copy the Deployment Toolkit Package to distribution points to make it usable.

1. From the console, click **Computer Management** **Software** **Distribution Packages** **IBM Server Deployment** .
2. Right-click the **IBM Server Deployment Toolkit Package** and select **Manage Distribution Points**.

The Manage Distribution Points Wizard opens.

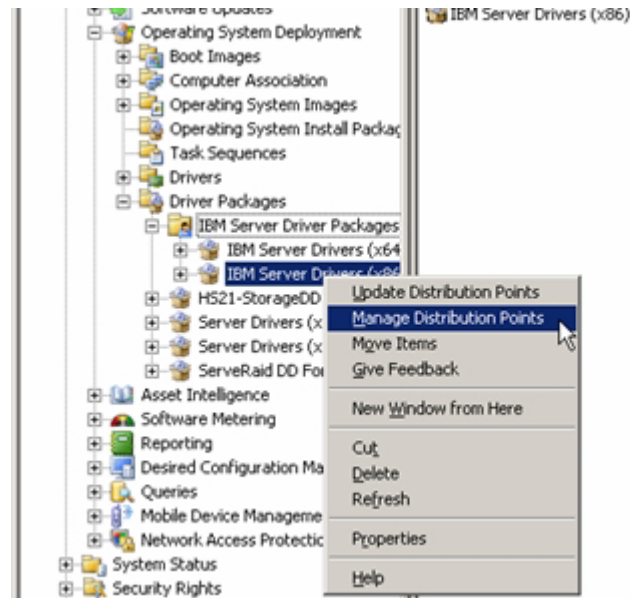


Figure 10. Manage Distribution Points option

3. Click **Next**; then click **Next** again to copy the package to a new distribution point.
4. Select the appropriate distribution points to indicate where to copy the package.

This package does not need to be copied to the PXE distribution point.

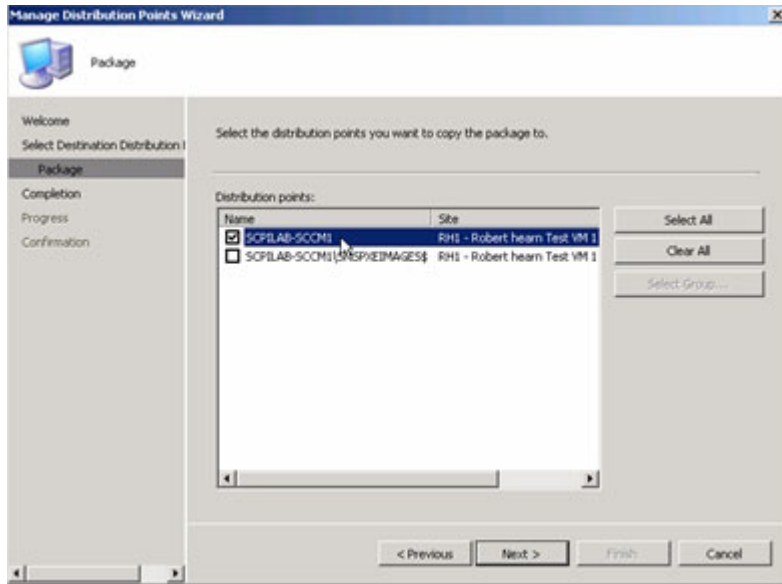


Figure 11. Manage Distribution Points Wizard

5. Click **Next**; then click **Next** again; then click **Close** when the task completes.

Distributing the device driver packages

Copy device driver packages to distribution points so they can be used.

1. From the console, click **Computer Management** → **Operating System Deployment** → **Driver Packages** → **IBM Server Driver Packages node** → .
2. Right-click a driver package and select **Manage Distribution Points**.
The Manage Distribution Points Wizard opens.

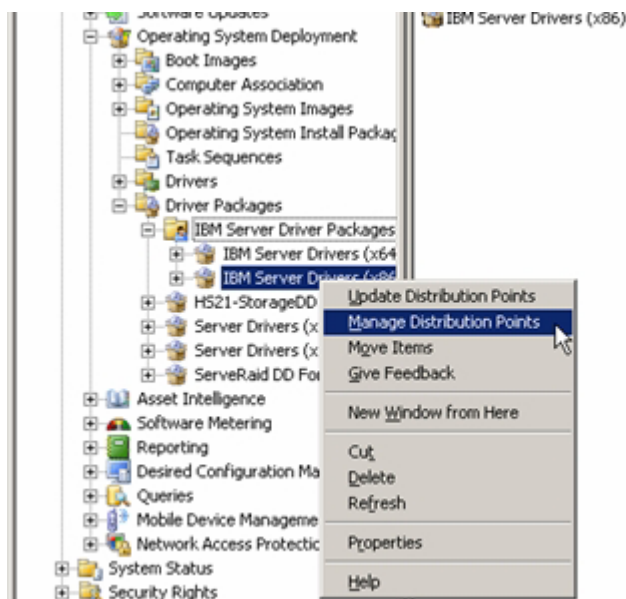


Figure 12. Manage Distribution Points option

3. Click **Next**; then click **Next** again to copy the packages to a new distribution point.
4. Click **Next**; then click **Next** again; then click **Close**.
5. Repeat this procedure for each driver package that you intend to use.

Uninstalling

You can use the **Add or Remove Programs** window to uninstall the IBM Deployment Pack quickly, or you can use the interactive uninstall program.

About this task

Important: By design, uninstalling does not remove the IBM-specific boot images that were created during installation. The images are tied to task sequence packages. So removing the boot image might invalidate otherwise working task sequences that you are using. If you are no longer using the boot images, you can simply delete them from the console.

When removing the installation, the uninstall process replaces the custom action with a *stub* interface. This stub is simply a blank, non-operational task step that replaces steps held by the previous custom action. This is done so that you can keep your existing task sequences and open them for editing without causing a system exception error. Otherwise, trying to load a non-existent custom action causes a system exception error. You can delete these stub steps if you like, but they are a reminder of the previous location of the custom actions.

A stub replacement in your task sequence does not cause an exception when loading, but might not function correctly if any remaining steps relied on actions performed by replaced step. Test your system after uninstalling the IBM Deployment Pack.

Uninstalling quickly

Use the **Add/Remove Programs** window to uninstall the IBM Deployment Pack quickly.

1. From the Windows desktop, click **Start** → **Control Panel** → **Add or Remove Programs** (Programs and Features in Vista or Windows Server 2008).
The Add/Remove Programs window opens.
2. From the list of programs, select **IBM Deployment Pack for Microsoft System Center Configuration Manager 2007**; then, click **Remove**.
The Confirm File Deletion window opens.
3. Click **OK**.
After confirming the uninstall, the process continues without further interaction.

Uninstalling interactively

You can uninstall interactively using the InstallShield program.

1. Double-click the MSI file to start an uninstall.
2. After initializing, the maintenance page appears; then click **Next**.
3. Select **Remove**; then click **Next**.

The Modify and Repair options are not supported at this time.

4. Click **Remove** to begin uninstalling.
5. If you receive a warning about uninstalling when certain files are in use, click **OK** to continue.

When the IBM Deployment Pack is uninstalled, a summary page is displayed. You have the option of viewing the log file by selecting the checkbox.

6. Click **Finish** to end the wizard.

Reinstalling the IBM Deployment Pack

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

About this task

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

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

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

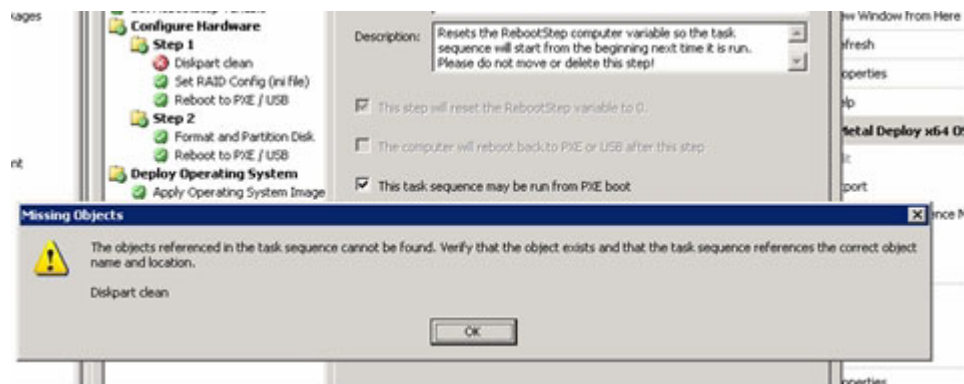


Figure 13. Missing Objects dialog

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

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

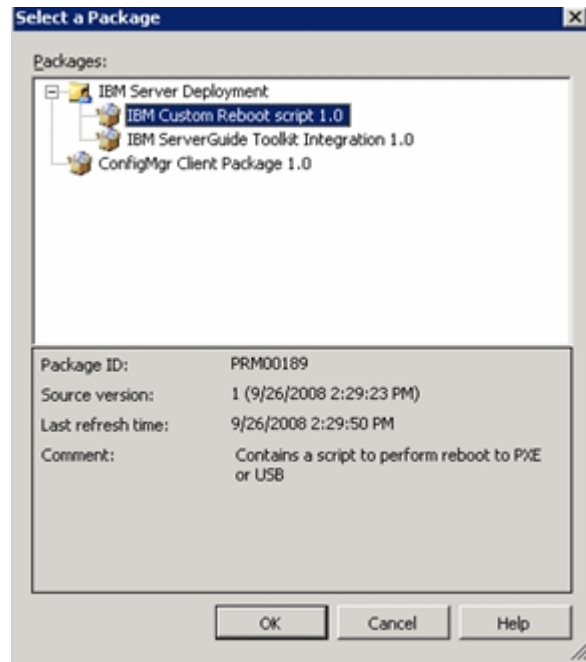


Figure 14. Selecting the IBM Custom Reboot script 1.0 package

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

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

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

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

Unlike the **diskpart clean** step, the Apply Driver Package step might not be flagged with a red X icon. However, even though the icon flag is green, the Apply Driver Package step fails at run-time.

- c. Check the **Apply Driver Package** step in any task sequence that uses the IBM Deployment Pack, if you uninstall and reinstall the Deployment Pack.
- d. Update the Distribution Points with the updated Driver Packages.

Chapter 3. Performing specific management tasks

For successful operating system deployments using the Operating System Deployment feature and the IBM Deployment Pack, you must perform some configuration tasks after installing the Deployment Pack.

About this task

You perform some configuration tasks as you use the Configuration Manager console to build and deploy installation packages. Configuration tasks that you might perform using the console include:

- Adding operating system images and installation packages
- Adding operating system images
- Capturing operating system images
- Adding operating system installation packages
- Configuring the state migration point
- Importing Windows device drivers into the driver catalog
- Importing IBM and third-party device drivers into the driver catalog
- Creating a driver package
- Adding device drivers to an existing driver package
- Disabling or enabling a driver in the catalog
- Deleting a driver from the catalog
- Creating task sequences:
 - Creating a task sequence to perform an image capture
 - Creating task sequences to capture and restore the user state
 - Creating a task sequence to install a driver package
 - Creating a task sequence to deploy an existing image package
 - Creating a task sequence to build and capture an image
 - Creating a custom task sequence
- Advertising task sequences
- Copying a task sequence from one site to another
- Adding a software package to an existing deployment task sequence
- Creating and using task sequence variables
- Updating a boot image
- Adding device drivers to a boot image
- Adding command line support to a boot image
- Creating a custom boot image
- Adding a custom boot image to Configuration Manager
- Updating the distribution points for a boot image
- Updating the distribution points for the operating system installation package

For a description of each of these possible tasks, see [Technet: Configuring Operating System Deployment](#).

Capturing an operating system image for deployment

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

About this task

The recommended way to build an operating system image for deployment is to build a reference server with everything installed that is required for the image. Once the server is built, you run `sysprep` and then shut down the server.

1. Build the reference server with everything installed that is required for the image.
Include everything that a new system might require, such as tools, drivers, agents, service packs, and updates.
2. Run the `sysprep /generalize` command on the reference server to prepare the image for installation onto other machines, as described in Appendix H, “How to run Sysprep,” on page 105.
3. To capture or deploy a server with Configuration Manager, you must add the computer name, MAC address, and GUID information for the target reference server to the Configuration Manager database and to a collection.
Add the computer name, the MAC address, and the GUID:

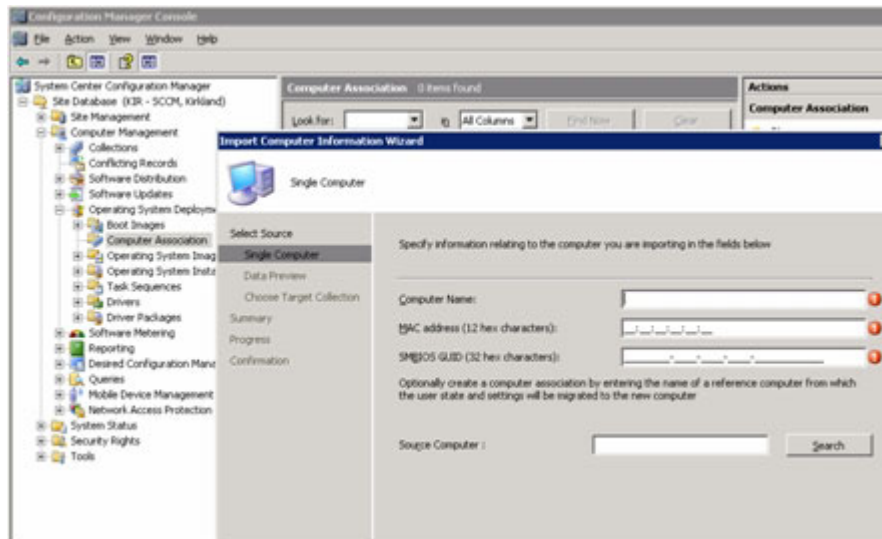


Figure 15. Import Computer Information Wizard

4. On the target server (the server that is to be captured, in this case), set the variable that contains the location of the operating system to be captured.
 - a. Go to the collection with the target reference server. Right-click the server object; then select the **Variables** tab.

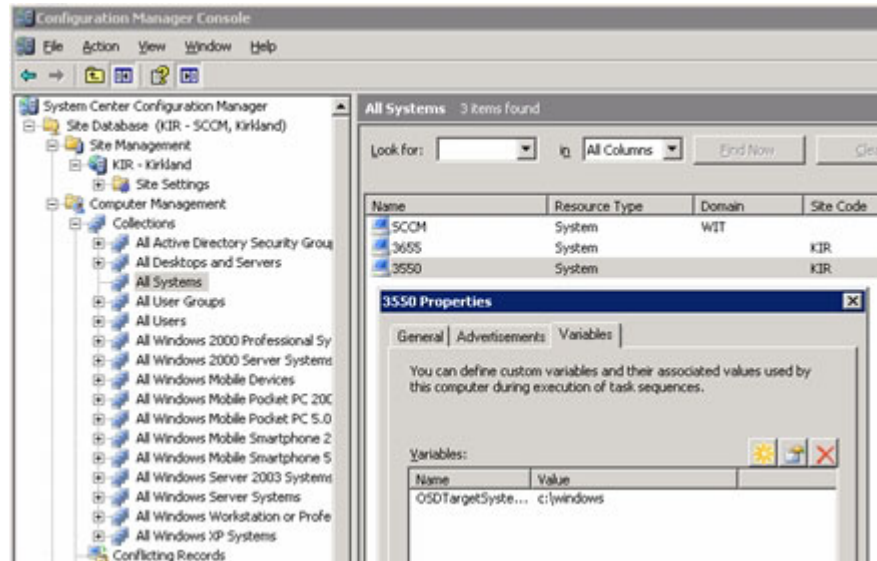


Figure 16. Setting the OS location on the target server

- b. Set the *OSDTargetSystemRoot* variable appropriately, such as:
`OSDTargetSystemRoot=c:\windows`
5. Set up a share on the Configuration Manager site server to store the captured images.
 For example, create a directory on the Configuration Manager server called `c:\images`.
 Create a share and assign everyone **Full Control** for the share permissions.
6. Create a task sequence for capturing the image.

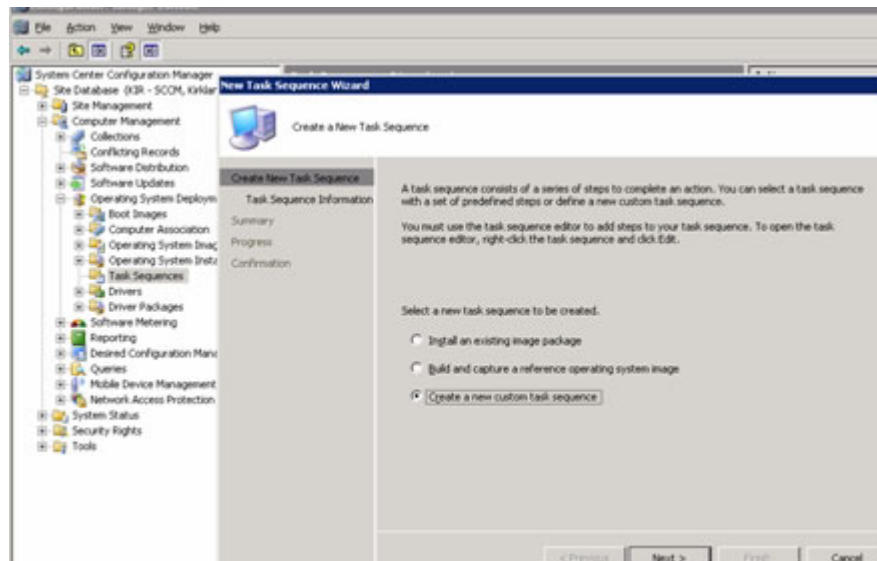


Figure 17. The New Task Sequence Wizard

7. Name the task sequence.

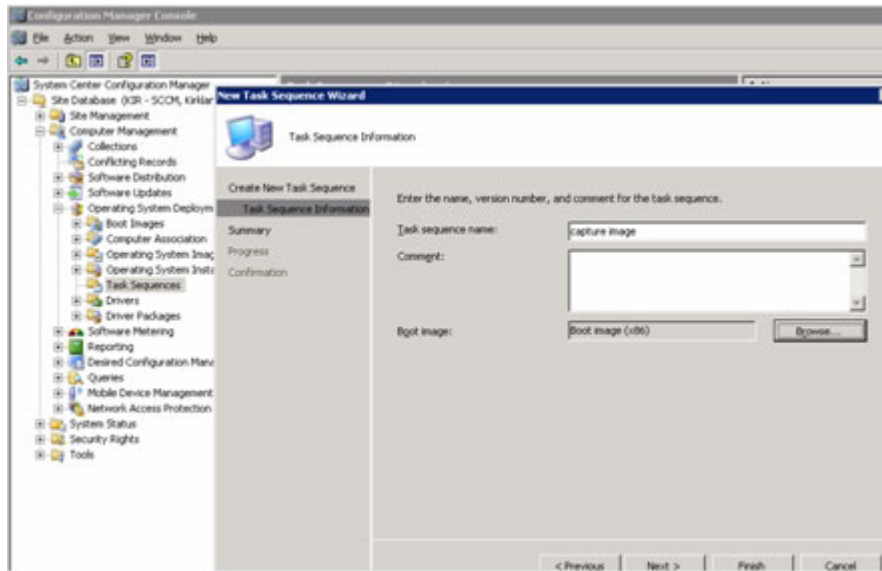


Figure 18. Naming the task sequence in the New Task Sequence Wizard

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

For example, fill in the path for storing the image using the share that you created in an earlier step on the **Properties** page of the task sequence.

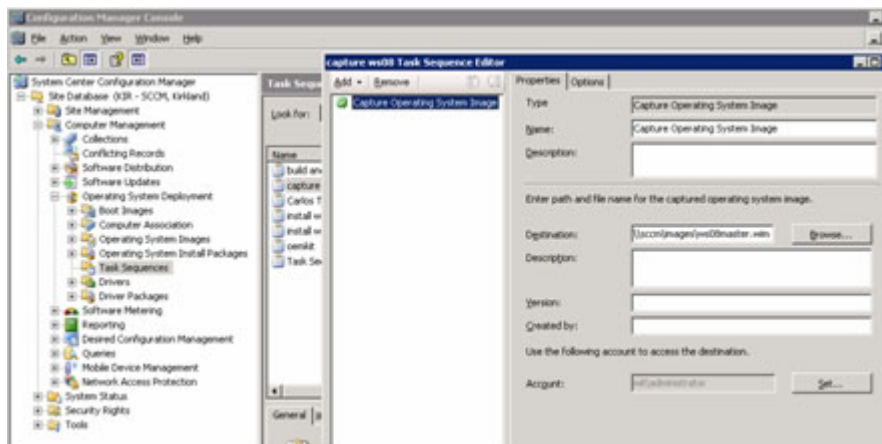


Figure 19. Editing the OS capture task sequence to identify the share

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

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

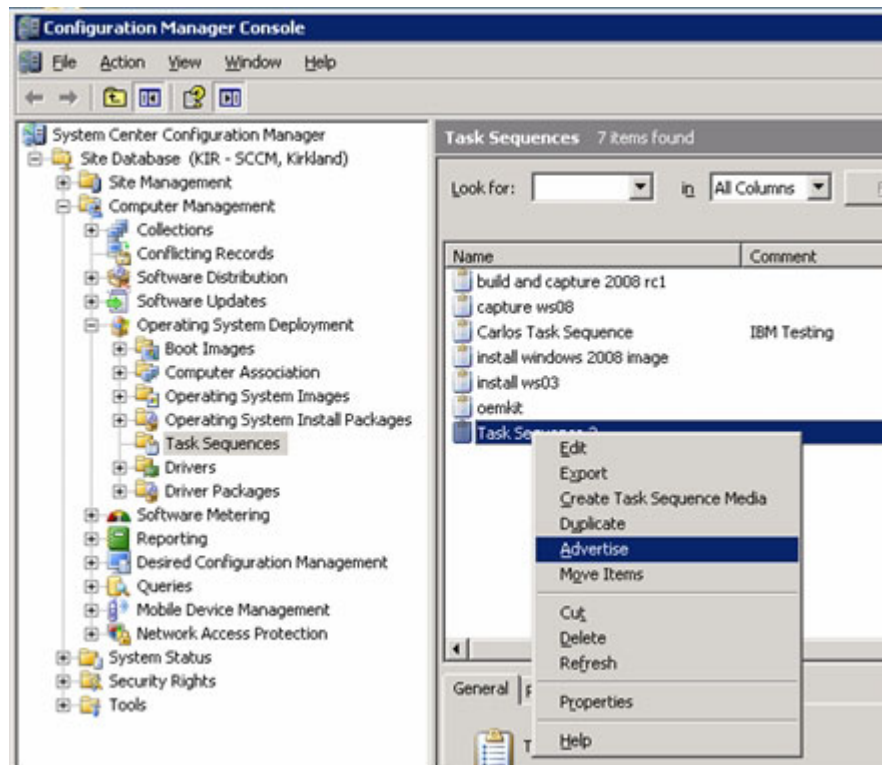


Figure 20. Advertising the OS capture task sequence

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

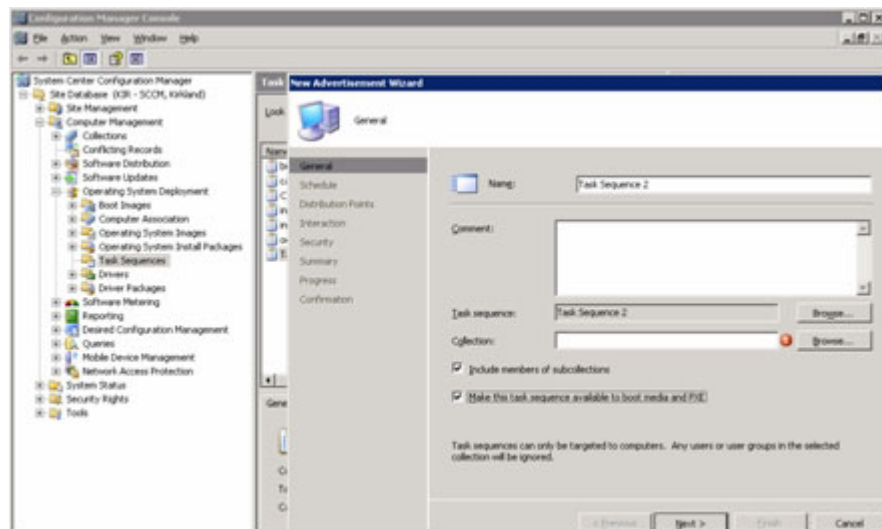


Figure 21. Using the New Advertisement Wizard

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

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

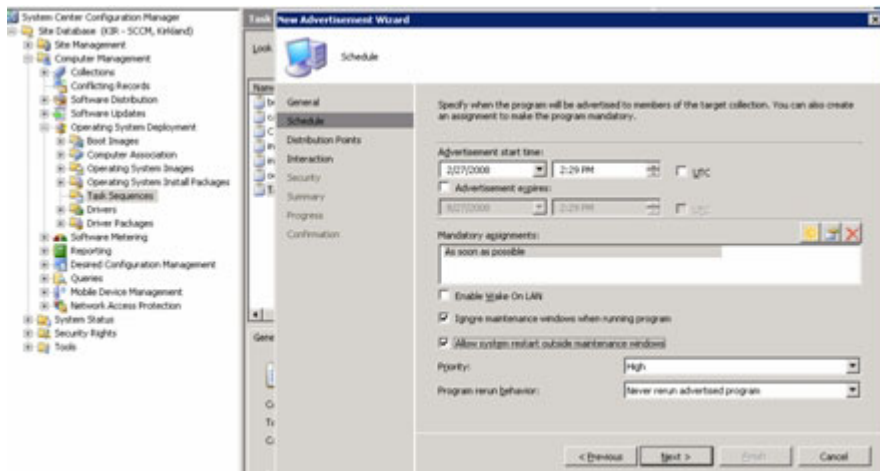


Figure 22. New Advertisement Wizard: Schedule page

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

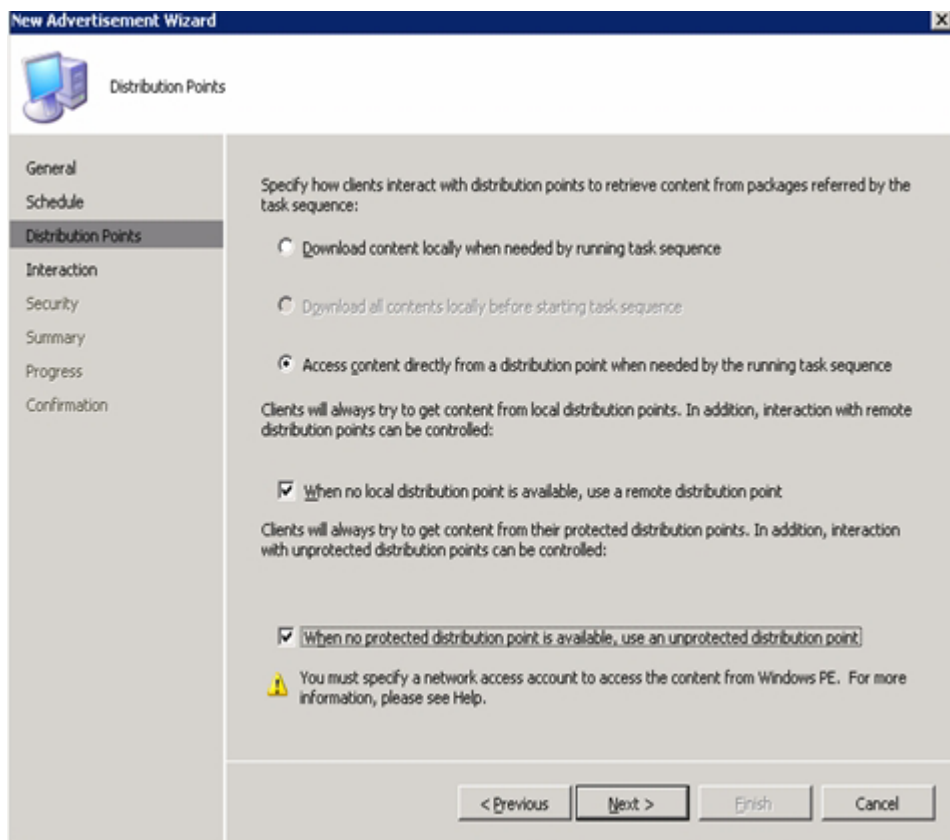


Figure 23. New Advertisement Wizard: Distribution Points page

13. Boot the reference server that is being captured.

Now that the advertisement is waiting, boot the server that is being captured to PXE. Verify that the site server and the target server make a connection and that the site server transfers the boot image to the site server share.

The target server connects to the Configuration Manager site server and loads the boot image from the share. Then, the target server starts the task sequence to capture the operating system image on the target server back to the share on the Configuration Manager site server.

14. Once the capture process has completed go back to the Configuration Manager server and verify that the *image_name.wim* file is stored in the shared images directory.

At this point, you can use Configuration Manager to deploy the image to other servers.

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

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

Configuring the state migration point

The state migration point (SMP) stores user data during the deployment of a new operating system to an existing computer. The state migration point is required for operating system deployments that migrate the user state.

Importing Windows device drivers into the driver catalog

Import device drivers into the driver catalog to make the drivers available to packages.

1. Copy the driver files that you require to a network share.
2. Assign full control of the share to everyone.
3. Open the Configuration Manager console.
4. Click **Operating System Deployment** → **Drivers**.
5. Right-click **Drivers** and click **Import New Drivers Wizard**.

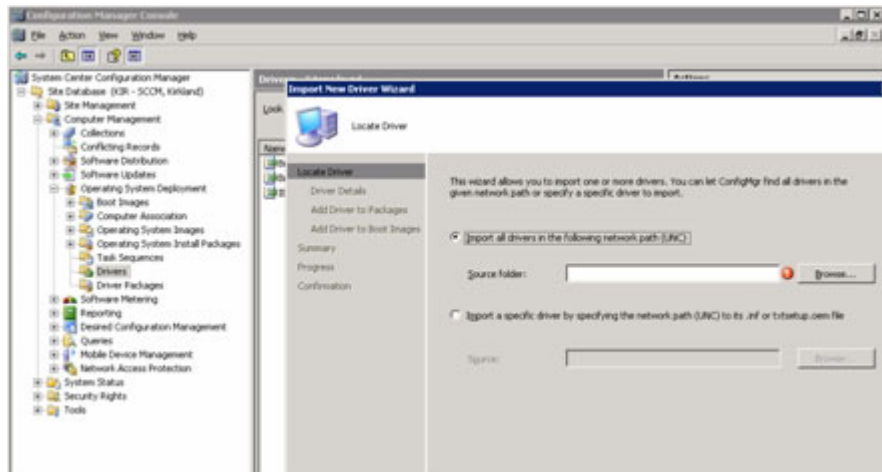


Figure 24. Import New Drivers Wizard

6. Import the drivers from the share location into Configuration Manager.

Debugging task sequences

Task sequences are easy to create generally, but the results might not always meet expectations.

About this task

The best way to troubleshoot task sequence errors is to view the `smsts.log` or the task sequence log on the client. Although many lines of information are in these logs, it is usually possible to isolate the issue by searching this log.

If you added the command line option to the boot image, you can open the command window on the client by pressing **F8**. So long as the command window is open, you can view the logs or copy them to a USB key or network share for further analysis.

Also, when working on a problem, the Support organization will request these logs.

Advertising task sequences

Advertisements distribute tasks to clients. There are several important options you must choose when creating an advertisement.

About this task

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

1. Right-click the task sequence and select **Advertise**.
2. Use the **New Advertisement Wizard** to assign the task sequence.
3. Always configure advertisements with the following settings when using the Pre-boot Execution Environment (PXE):

Option	Description
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: "Always rerun program"
Distribution Points page	Access content directly from a distribution point when needed by the running task sequence In WinPE, the default option of "Download content locally when needed by running task sequence" does not work. WinPE cause the task sequence engine to ignore all actions that have packages set for this option.
Interaction page	Show task sequence progress

4. If you must remove an advertisement from a specific client or collection, select the collection or server, right-click the collection or server; then select the **Clear Last PXE Advertisement** checkbox.
5. If a server is not successfully receiving an advertisement, check to make sure that you added the MAC address and the GUID for the target machine to the Configuration Manager database and to a collection, and that you selected the collection on the **General** page.

Adding device drivers to a boot image

Add a device driver to a boot image to support devices that the boot image has never supported before, or to provide a later level of support for a device.

1. Launch **Microsoft Configuration Manager 2007** to open the Configuration Manager console.
2. From the console, open the **Computer Management** → **Operating System Deployment** → **Boot Images** → **IBM Deployment Pack Boot Images**.
3. Right-click on one of the boot images and click **Properties** → **Windows PE**.
4. Add a driver to the boot image.

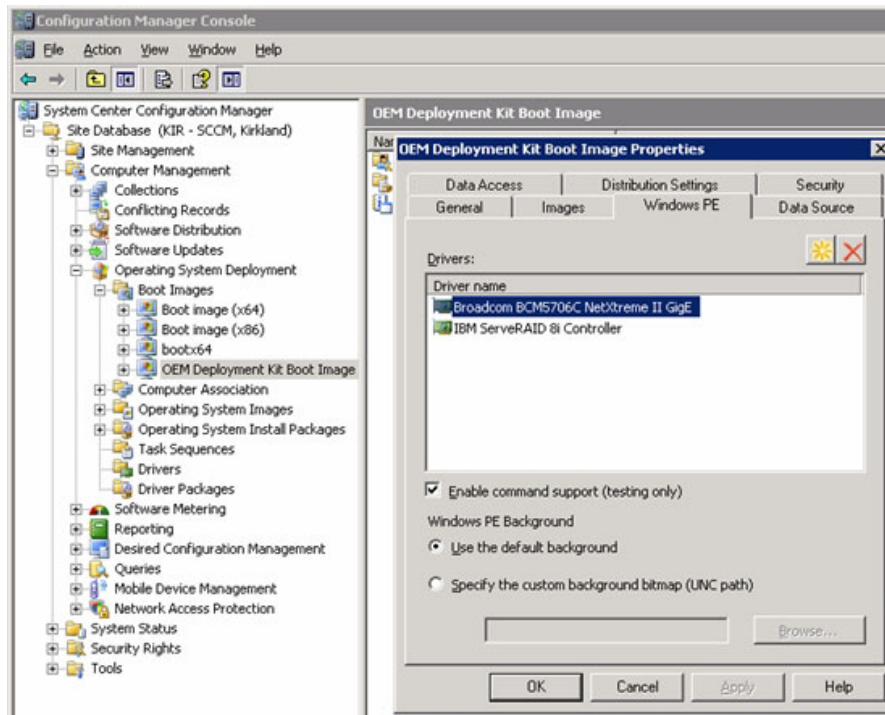


Figure 25. OEM Deployment Kit Boot Image Properties

Adding command-line support to the boot images

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

About this task

When a task sequence is running in Windows PE on a target machine, you can open a command shell on the machine by pressing **F8**. As long as the command shell is open, the task sequence cannot reboot the machine.

You can verify components of the boot image and network connectivity. You can also view task log files.

Change a property value setting for the boot image to enable the debug command shell.

1. Launch **Microsoft Configuration Manager 2007** to open the Configuration Manager console.
2. Click **System Center Configuration Manager** → **Site Database** → **Computer Management** → **Operating System Deployment** → **Boot Images**.
3. Right-click the boot image and click **Properties**.
4. Click **Windows PE**.
5. Select the checkbox for **Enable command support (testing only)**.

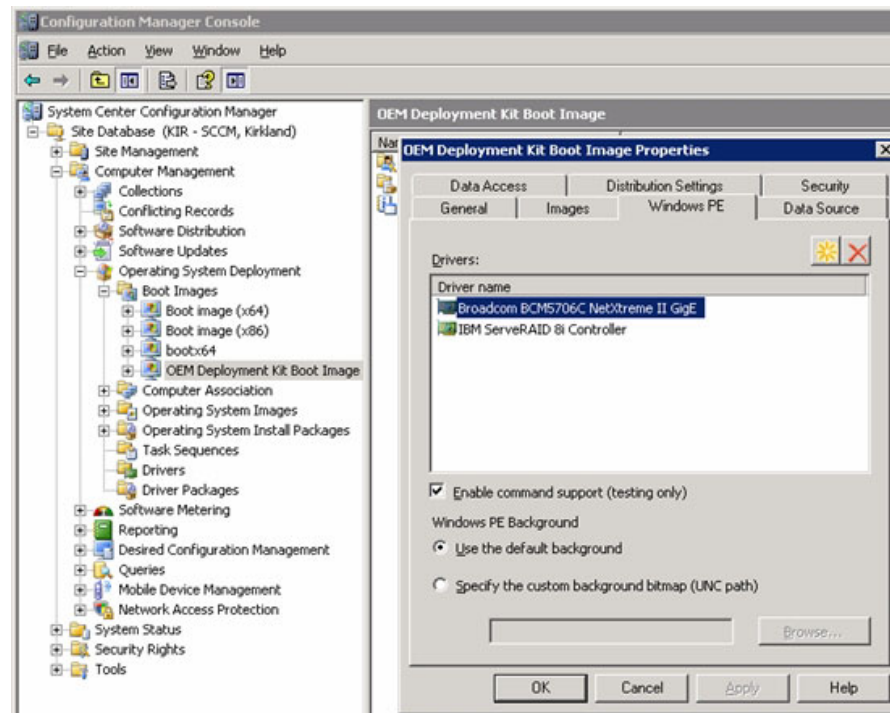


Figure 26. OEM Deployment Kit Boot Image Properties

Creating a custom boot image

Configuration Manager uses Windows Preinstallation Environment (WinPE) 2.1 for the pre-installation boot image. As Configuration Manager is installed, two default boot images are created - one for x86 architecture and the other for x64 architecture.

About this task

These WinPE boot images contain the necessary files for Configuration Manager, but might not contain the necessary drivers for the hardware being installed. If the necessary drivers are not included, you can add them to the boot image from the driver catalog. You can also create a custom WinPE image that contains the necessary drivers.

The Configuration Manager installation procedure also installs Windows Automated Installation Kit (Windows AIK). This tool is necessary for building custom boot images.

A number of non-default packages are also required. To use your own boot image in Configuration Manager, add the following packages:

```
WINPE-SCRIPTING-PACKAGE
WINPE-WMI-PACKAGE
WINPE-XML-PACKAGE
```

You also might have to apply other fixes that are required for the version of WinPE on which your image is based. You must also finalize the image.

For more information, see [How to Add a Boot Image to Configuration Manager](#) on the Microsoft TechNet.

Important: A deceptive option is available on the **Boot Images** → *image_name* → **Properties** → **Images** tab.

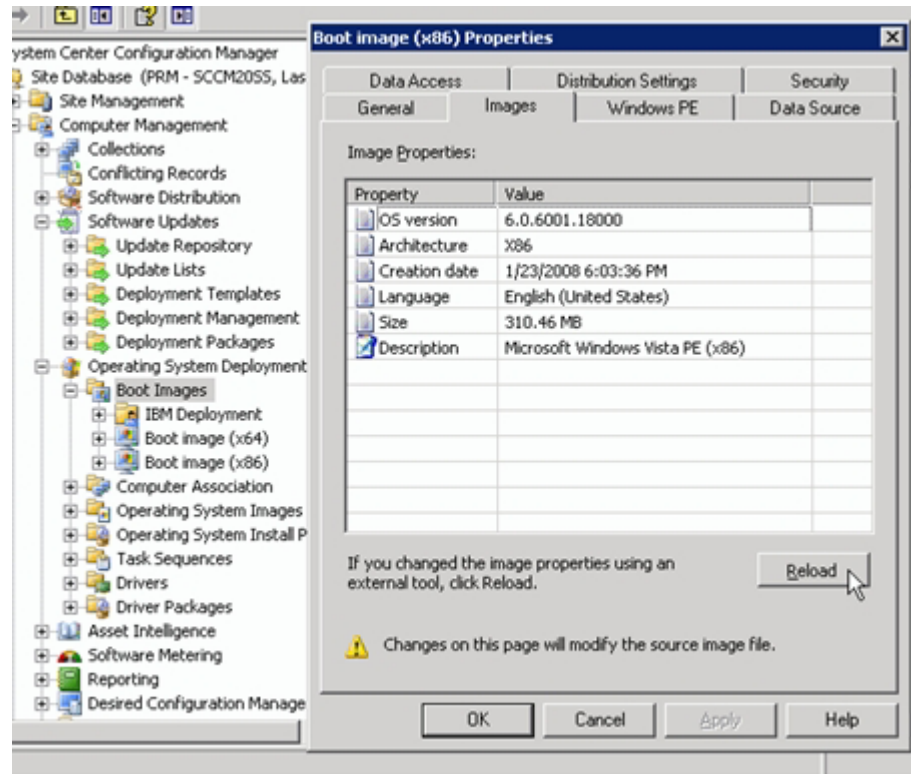


Figure 27. Reload button on Images tab

The **Reload** button appears to recreate the IBM boot image. In fact, **Reload** reloads the default WinPE image from the CD instead. There is no reason to ever press this button.

Adding a custom boot image to Configuration Manager

Add a custom boot image to Configuration Manager to make the boot image available for use during deployment.

1. Click **Operating System Deployment** → **Boot Images**.
2. Right click **Boot Images** and select the **Add Boot Image Package Wizard** on the context menu.
3. Identify the location of the boot image on the **Data Source** page.

Updating the distribution points for a boot image

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

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

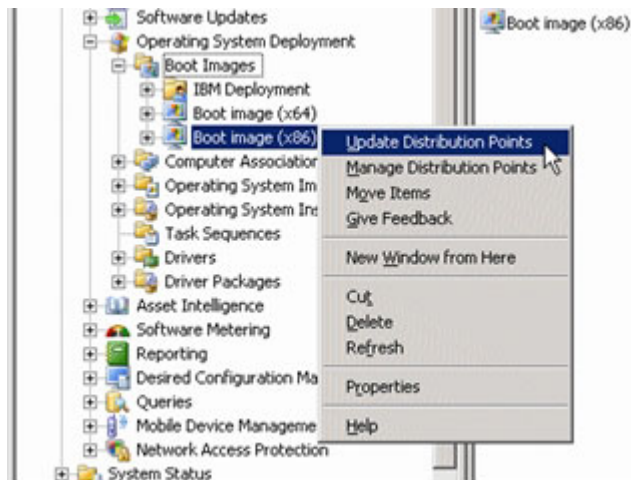


Figure 28. Update Distribution Points option

Updating the distribution points for an operating system installation package

Update the distribution points for an operating system package to make the package available for deployment.

1. Launch **Microsoft Configuration Manager 2007** to open the Configuration Manager console.
2. From the console, open the **Computer Management** **Operating System Deployment** **Operating System Install Packages**.
3. Right click one of the operating system install packages and click **Distribution Points** from the context menu to add, remove, or change a distribution point for a package.

The distributed packages are now ready for deployment.

Chapter 4. Deploying operating system image packages

Deploying operating system images is the main purpose of the Operating System Deployment feature and the IBM Deployment Pack.

Installing a required distribution point

A distribution point is a site system that stores packages for clients to install. Distribution points are required for software distribution and updates, as well as for using advertised task sequences to deploy operating system software.

About this task

The distribution point is the only site system role that does not require the installation of a special Configuration Manager 2007 service.

You can use the console to create one or several distribution points in each site. Several distribution points can provide better access to available software, updates, and operating systems. For example, a client might be able to use a distribution point on the same subnet more easily than a point on another subnet.

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

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

1. Launch **Microsoft Configuration Manager 2007** to open the Configuration Manager console.
2. Click **System Center Configuration Manager** → **Site Database** → **Site Management** → *site_name* → **Site Settings** → **Site Systems** → **SCCM** → **New Roles**.
3. Create a new PXE service point with the New Roles Wizard.
4. Right-click the service point; then select **Properties**.
5. Make the following settings.

Option	Description
General	Select Allow this PXE service point to respond to incoming PXE requests to enable the service point to handle the boot requests that arrive.
Database	Specify settings for controlling the user account and certification. For example, you might use a self-signed certificate with a domain account rather than a service account.

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

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

About this task

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

1. Launch **Microsoft Configuration Manager 2007** to open the Configuration Manager console.
2. Click **System Center Configuration Manager → Site Database → Site Management → *site_name* → Site Settings → Site Systems → SCCM → New Roles**.

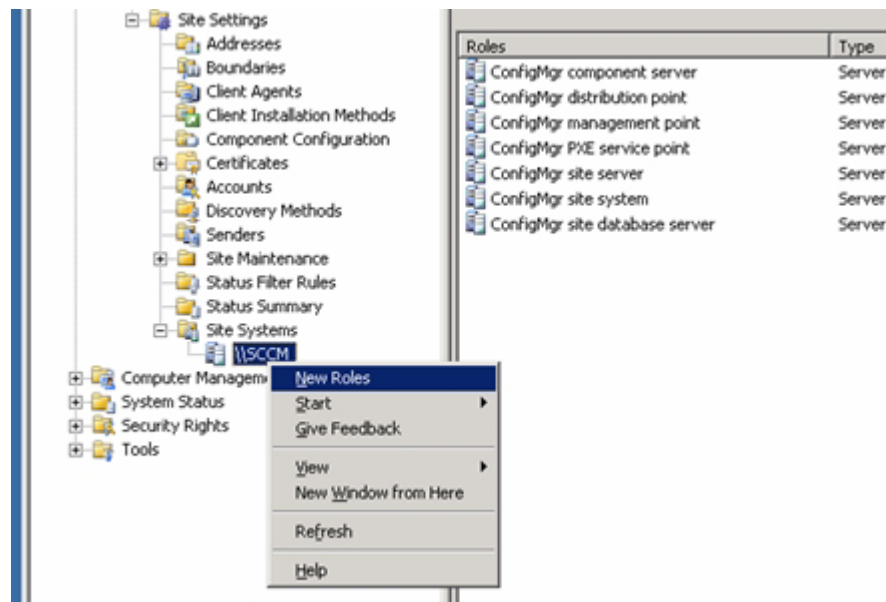


Figure 29. New Roles option

3. Create a new PXE service point with the New Roles Wizard.
4. Select the service point; then right-click the service point to select **Properties** from the context menu.
5. On the **General** page, select **Allow this PXE service point to respond to incoming PXE requests** to enable the service point to handle the boot requests that arrive.

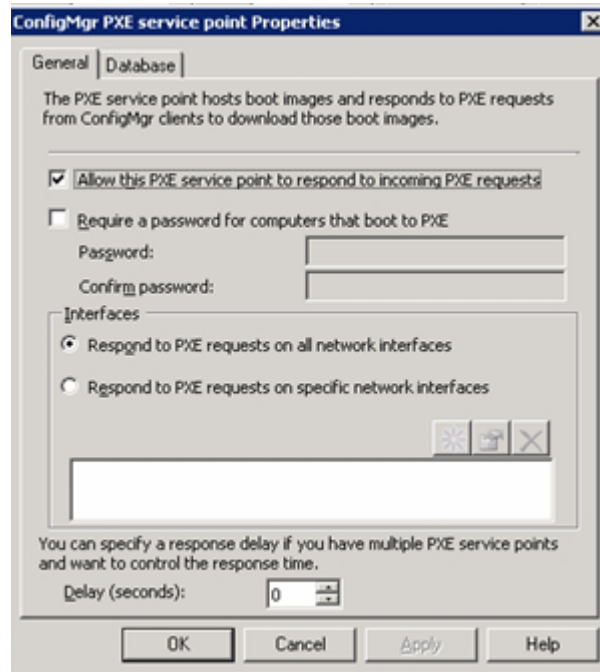


Figure 30. PXE service point Properties-General page

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

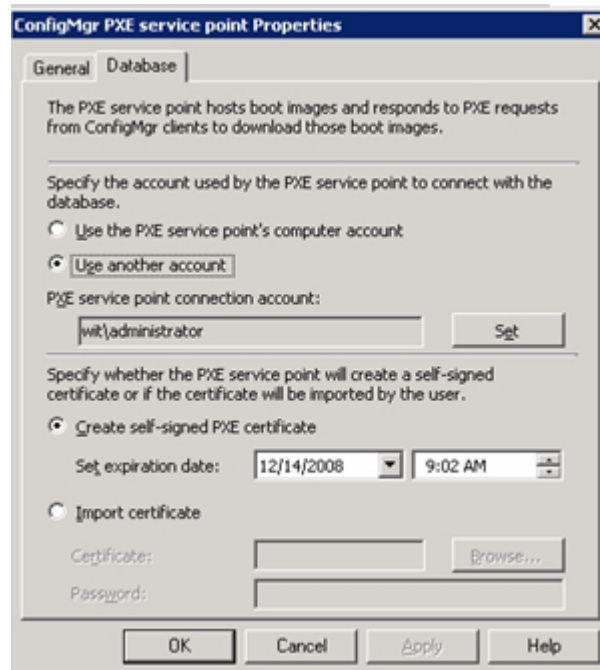


Figure 31. PXE service point Properties-Database page

Working with deployment task sequences

In the same way that you can create a task sequence for capturing an operating system image, you can create a task sequence for deploying a driver package or an operating system image.

Creating a task sequence to deploy an existing image package

Creating a task sequence to deploy an existing image package involves using the Task Sequence Editor.

About this task

The Task Sequence Editor has many optional and required settings for building a customized operating system installation, but the required steps are few:

1. Format and partition a disk.
2. Apply the operating system.

Of course, you can have many other steps to perform such useful tasks as adding drivers, configuring Windows settings, and configuring network settings during the deployment.

IBM tools add yet more configuration possibilities that center around hardware configuration.

1. Create a simple task sequence that can deploy a captured operating system.
 - a. Capture an operating system image.
 - b. Add the target machines to the Configuration Manager database, if necessary.
 - c. Create a task sequence for deploying the captured operating system.
 - d. Edit the task sequence to add a step that partitions and formats the drive.

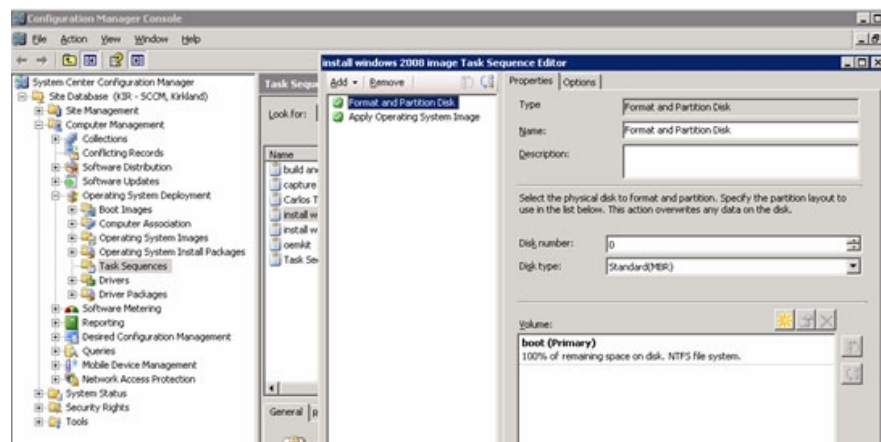


Figure 32. Task Sequence Editor: Format and Partition Disk

- e. Define a step that applies the captured operating system image.

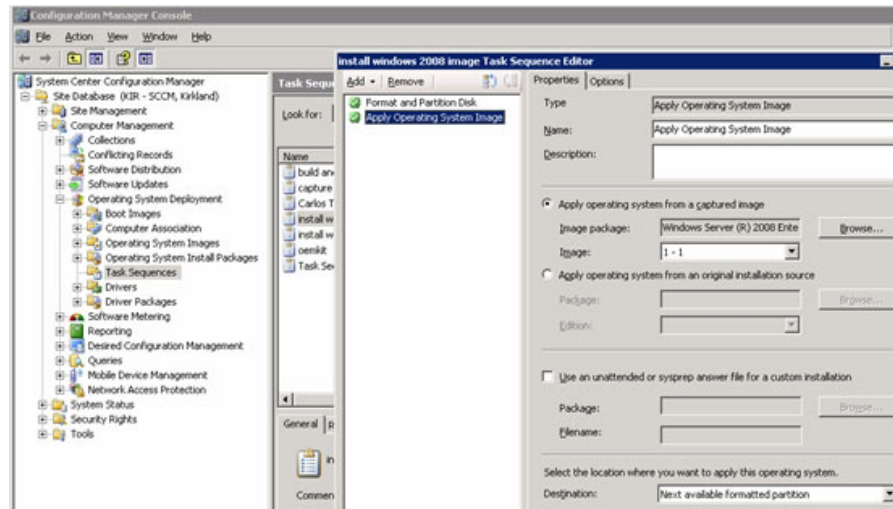


Figure 33. Task Sequence Editor: Apply Operating System Image

- f. Advertise the task sequence to make it available to bare metal servers.
2. Define how to apply Windows settings.

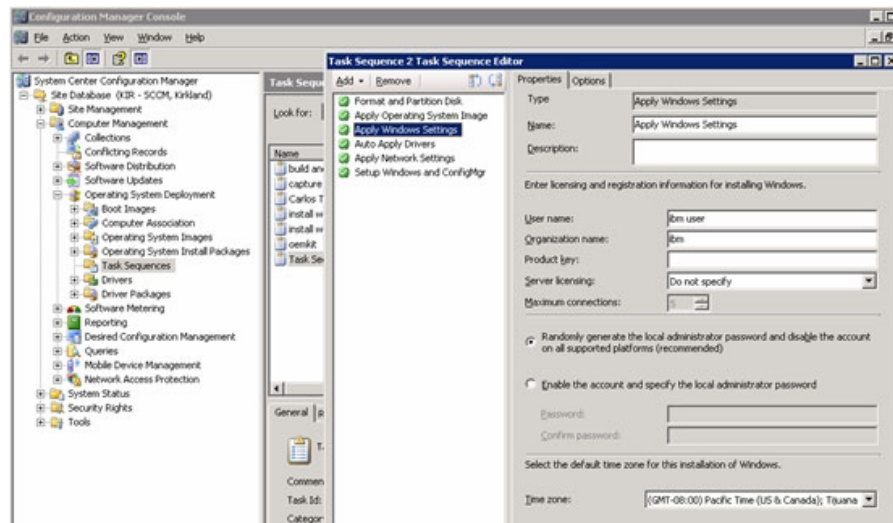


Figure 34. Task Sequence Editor: Apply Windows Settings

3. Define how to apply device drivers.

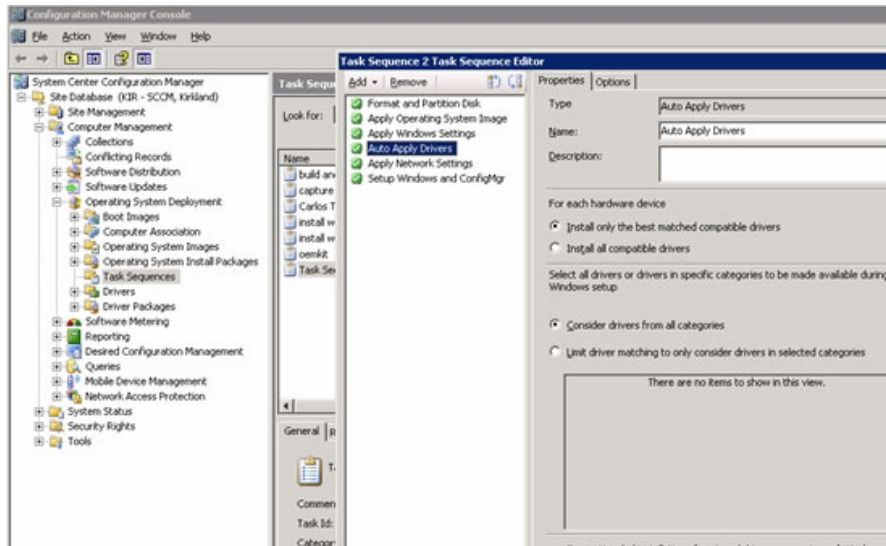


Figure 35. Task Sequence Editor: Auto Apply Drivers

4. Define network settings.

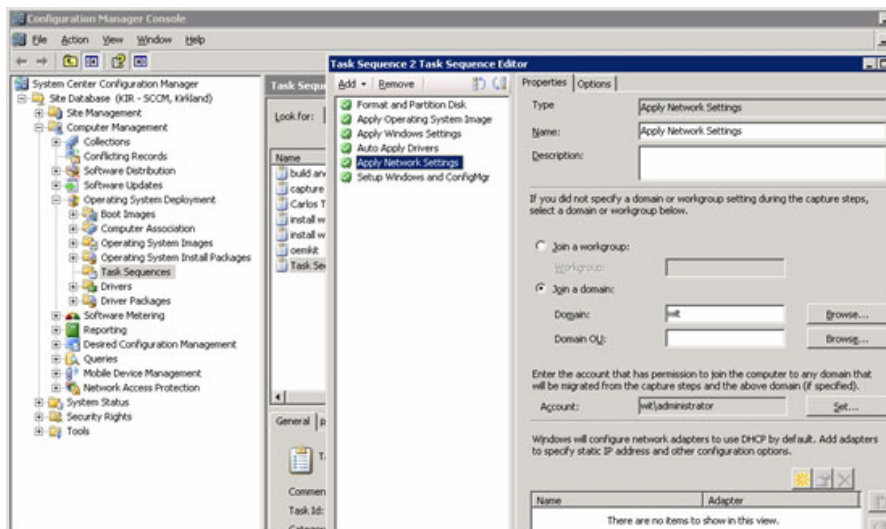


Figure 36. Task Sequence Editor: Apply Network Settings

5. Set up Windows and the Configuration Manager client.

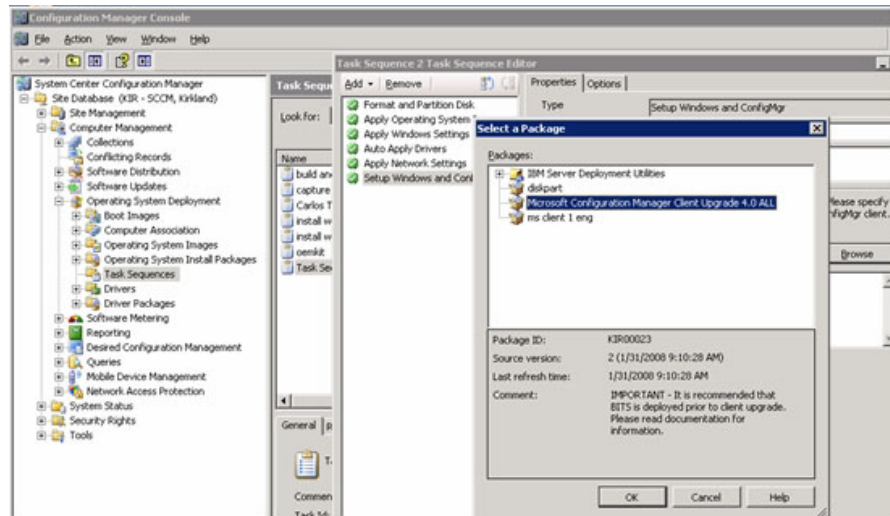


Figure 37. Browsing to select a package

Automating the entire deployment makes it more easily repeatable and avoids human error when deploying many servers or workstations. After defining the original configuration and setting up the Operating System Deployment feature, it is possible to realize great time savings during subsequent deployments.

Chapter 5. IBM Deployment Pack feature reference

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

IBM Server Configuration custom action

When the IBM Deployment Pack is installed, it creates new classes in WMI that describe the custom action assembly and its location. When Configuration Manager loads, it reads this information and adds new menu items for the assemblies you have installed. These new menu items appear in the location specified in WMI. New menu items can be in an existing group used by Configuration Manager or on the main part of the menu in the IBM Deployment Pack group.

The IBM Deployment menu group has individual menu selections for supported deployment options.

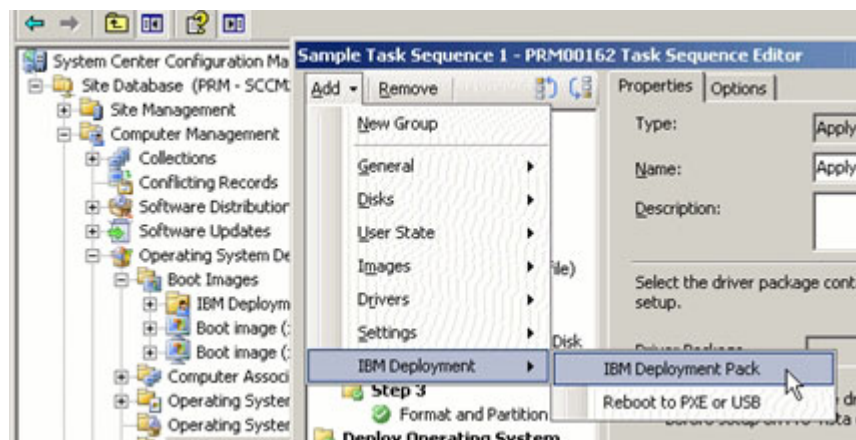


Figure 38. IBM Deployment menu group

Once you click a menu item, a new task sequence action is added. This custom action contains a standard set of user controls (such as textboxes, drop-down lists, tabs) driven by a configuration XML file that enables customization of the available features or actions for the IBM server.

Main page

The custom action page contains the name and description of the action and a tabbed interface for the control.

The following graphic shows two sets of tabs:

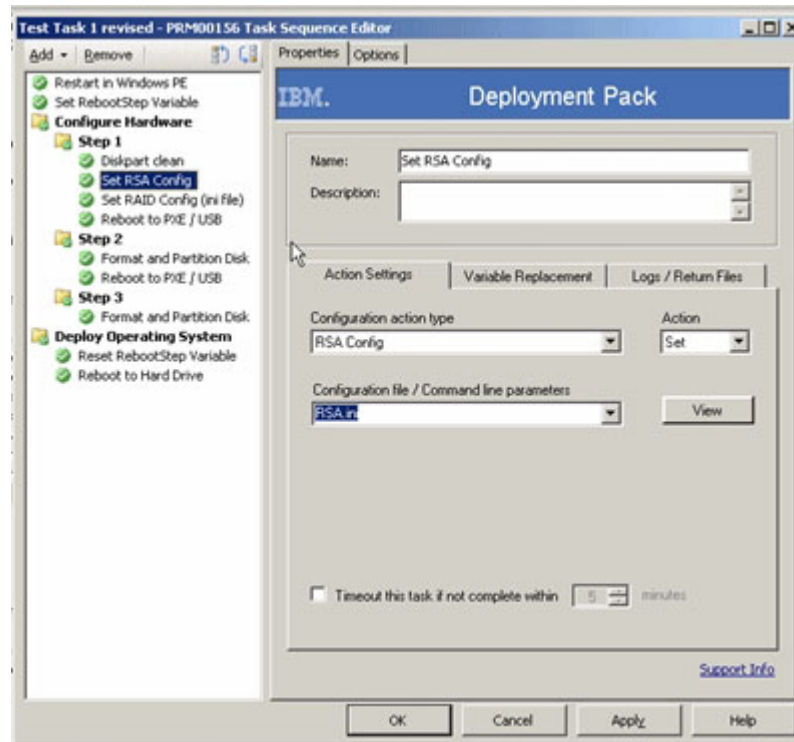


Figure 39. Main page of custom action

The tabs on the top of the form switch between the main part of the form and the Options (or Conditions) page. The Conditions page holds the controls for disabling the action and for establishing conditional tests for determining if the action should run in a task sequence.

The tabs in the middle of the page are specific to this custom action. Use these tabs to edit the different options available for the custom action.

Name

Displays the name of the action, which is also what is displayed in the left-pane of the Task Sequence Editor. This textbox is set to a default name programmatically at runtime by the custom action, can be set programmatically to the action type when the selection changes, or is editable by you in your interface.

Description

Displays a multi-line description of the task step. This text is entered to add descriptive details and is optional.

Custom action Help button

This button displays the help associated with the Task Sequence Editor. Currently, however, Configuration Manager 2007 does not allow Deployment Pack-specific help.

Action Settings tab

The Action Settings page contains the controls shown in the following graphic:

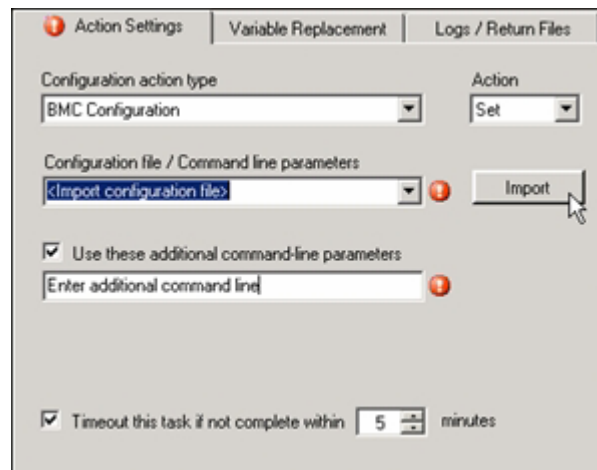


Figure 40. Action Settings page

Configuration action type

This drop-down list displays the available configuration actions for the IBM Deployment Pack. The list represents the types of major activities used by administrators to configure IBM servers, such as configuring the array controller, BIOS, remote service adapter card, or other functions.

When you first create a new task step, this control and the Action control are the only two visible, with the Action control disabled. Once you select a configuration action type from the list, the Action control is enabled.

Action

This drop-down list displays the available options for the selected configuration action type, which is either **Get**, **Set**, or **Both**. With each configuration type, you can apply a configuration to the targeted machine (Set) or you can capture a configuration from a reference machine (Get) using a single task step. Some configuration types allow only one option, and in that case, only one is available to select.

Once you select an available action, additional controls become visible and enabled.

Configuration file / Command line parameters

Based on the type of action that you are performing, the command needed by the utility is either the name of a file or a command line parameter. Use this control to enter the appropriate information for the task. The information that is displayed and the options that are available follow these general rules:

- If a configuration is being applied (Set) and:
 - If the utility requires a configuration file, the drop-down list contains a list of sample files that are included with the installation, in addition to any other files that you place in the same directory.
 - When you select one of the files, click **View** to display the text editor and the contents of the file.
 - If the utility requires a configuration file that is text or XML formatted, the list contains two options at the top:

- If you select the **Create configuration file** option, click **Create** to display the text editor or Array Builder dialog. Use the dialog to create a configuration file from scratch.
- If you select **Import configuration file**, click **Import** to display a file selector and select a file to import into the text editor or Array Builder. For more information about using the text editor, see “Using the text editor” on page 59.
For more information about using the Array Builder, see “Using the Array Builder interface” on page 61.
- If the utility requires a command line, the control is displayed as a text box for entering the appropriate command line.
- If a configuration is being applied (Get), the control is displayed as a text box where you can enter either a file name for saving the captured information or an appropriate set of command line parameters for the command.

Selecting a Get action enables the Mapped Drive and Log File Path controls so that you can select the drive letter of a network share that has been mapped to a drive on the client machine and to an optional path within that mapped drive for the log file.

Use these additional command line parameters

Select this checkbox to enable the Additional Command Line control. Some configuration types might not allow or need additional command line parameters. In this case, the checkbox is not displayed.

Additional Command Line

Sample command lines can be displayed based on the contents of the XML configuration file. If no value has been selected, a default value is displayed. No other controls are disabled. If a value is required, then an error icon is displayed until you enter a command or select an item from the dropdown.

Timeout checkbox

This checkbox controls the use of the timeout value control. If checked, the timeout value control is enabled.

Timeout value

This control contains an integer value (limited to between 5 and 100) which specifies the number of minutes that the task sequence engine waits for the task step to complete. If no status is returned before that time, the step fails. This is a standard control on all task sequence steps.

Variable Replacement tab

The Variable Replacement page contains all the settings related to the use and replacement of variables within the task. Variables can take several forms:

- System variables
- Task sequence variables
- Machine variables
- Collection variables

Name	Value	Type	X
variable1	value1	System	x
variable2	%SystemDrive%	Task Sequence	x
variable3	this_%variable%na...	Machine	x

Figure 41. Variable Replacement tab

Action to take when a variable is uninitialized or the value is null or blank

Use a null/blank value

In cases where you wish a variable that is not initialized or has a blank value to remain blank, you would select this option. This causes the processing of the task on the client side to continue if any variable is undefined or blank.

Fail the task

In some instances, if variables are intended to be replaced but are not found within the environment, the action would be left in an unusable or misconfigured state. If an environment variable is not set or is set to null, an invalid value is returned.

When this checkbox is checked, any failure to retrieve a valid variable value will result in the action being marked as failed. This allows you to more easily see what is wrong with the action rather than trying to debug a failed command line or a misconfigured system.

Search all text input files for variables to replace

This setting enables the client-side script to search for variables that are specified in the command line or within specified files, to replace them with values found in the task sequence environment or in the Windows system environment. If you do not specify any variables in the command line or in

files, clearing this checkbox provides for greater performance of the action because the client-side script does not search for the variables in every file.

Replace %PASSWORD% variables with this password

In some instances, configuring a hardware component requires the use of a password. Rather than embedding the password in plain text within the XML or visible on the command line, you can utilize this option to store the password hidden from you and used within the action on the client as a task sequence variable. Checking this box enables the two password text boxes for confirming the password.

Manually define additional variables

In some instances, you might need to set additional variables on the system prior to a task running. This might be because the utility or script being run needs to have specific variables defined to direct it to a specific path, other utilities, or to define options for program execution. This data grid can define an unlimited number of additional variables for this task, which are set prior to the start of the command that runs the associated utility.

Each variable must have a name, but the value can remain empty to create a null variable. Each variable can be designated as a system, task sequence, or machine variable. To remove a variable, click **X** on the appropriate row.

A variable value can specify another variable.

Log / Return Files tab

The settings on the Log / Return Files page relate to files that are returned to the site system after the task runs, including either log files, captured configuration files, or both.

Retrieve the task sequence log file

When a task sequence runs, Configuration Manager tracks and logs command execution through the SMSTS.LOG file stored in the local path on the client, such as, for example, on the X: drive in WinPE. This log file contains valuable debugging information, yet when using WinPE, the log is lost at each reboot. This checkbox enables the SMSTS.LOG file to be sent back to a designated location, specified previously in a "Connect to Network Drive" action.

After the command executes, the client gathers the SMSTS.LOG file and pushes it back to the mapped network location specified in the Drive Letter drop-down list and the Path textbox. If the path does not exist, it is created before the log file is placed there. If a file name is specified in the path, the SMSTS.LOG file is saved as that file. If the file already exists, the file name is modified with an incremental value and then saved.

Enable extended / debug logging

By default, a limited amount of information regarding the task execution by the script is displayed in the SMSTS.LOG file. By enabling debug-level logging, a much greater amount of information is included in the log file, which might assist with troubleshooting a failure in the task sequence. This setting affects only the logging by the custom action script and not the logging by the task sequence client itself.

For information about logging debug information about the Admin UI components of the custom action, see the "Enabling user interface debug logging" step in "Troubleshooting administrator console issues" on page 85.

Network folder connection information

Use the following fields to connect to a network share.

Retain network folder settings checkbox

If you have an extensive task sequence with many custom actions, rather than require you to enter the same network path and login information in each task step, select this checkbox to copy the settings from a previous step that sets these network settings.

Network settings are not retained across a reboot. Selecting this checkbox copies settings from a prior task if there are no reboots between the steps. A reboot before this task causes an error message to display that lets you enter the network settings.

Path

Stores the log file in a location other than the root directory of the mapped drive. If the directory does not exist, it is created if possible. If a file name is specified at the end of the path, the log file is saved as that file name. If the file name already exists, an incremental value is added to the name so that the file does not overwrite an existing file.

Account

The domain and account name to be used to access the Path.

Password

The password associated with the account name. This information is stored and transmitted in encrypted form.

Map a drive checkbox

This checkbox enables the drop-down list for mapping a drive. Although recommended, a mapped drive is not necessary for storing files on a network share. You could use a Universal Naming Convention (UNC) path, for example. A mapped drive is required for accessing CMD or BAT batch files.

Mapped drive

This drop down contains a list of drive letters that you can use as the drive to store the log file or the captured settings file from the Get action. This drive needs to already have been mapped using a "Connect to Network Folder" action prior to this task step.

Using the text editor

Use the text editor to display and change the content of many settings files.

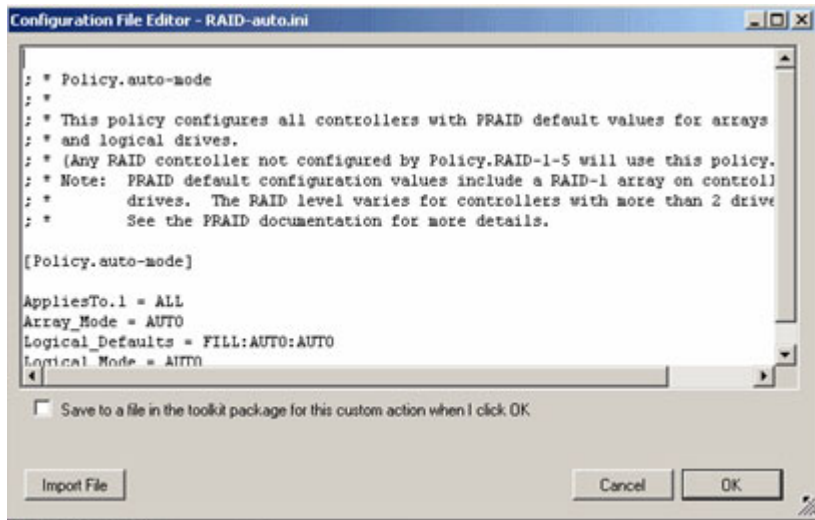


Figure 42. Configuration File Editor

Import File button

This button helps you search for and import an existing text-based file. The contents are displayed in the form.

Save to a file in the toolkit package checkbox

Select this checkbox to export the configuration to a file when you click **OK**. The starting directory is the package directory where the other toolkit configuration files exist.

The package must be updated to distribution points before any changes are available to task sequences. The following dialog box is displayed when the box is checked.

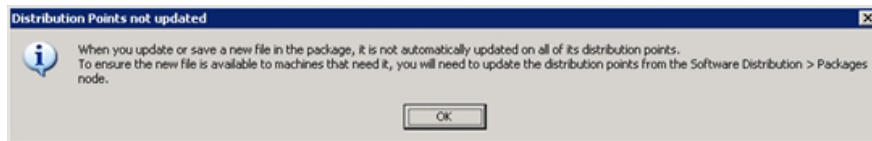


Figure 43. Distribution points not updated

Save to a variable

If you do not choose to save the configuration to the package, the configuration is saved as a string within the task sequence and sent as a variable to the client during deployment. When this occurs, it is noted in the task UI with the configuration parameter text “[Configuration saved as a variable]”.

The configuration can be saved as a file in the package instead by opening the editor and selecting the **Save to a file in the toolkit package** checkbox. Click **OK** to select the file.

Using the Array Builder interface

Array Builder is a tool that defines rules for configuring array controllers in target servers based on several variable factors. By taking a rules-based approach, you can define standard array configurations for your company and configure your servers according to these standards, without having to know the exact physical configuration of the array controller and disks before you start your deployment.

How the Array Builder works

When you run the task sequence on a target server, the array configuration utility detects the existing controllers in the system as well as the disks attached to each controller. The custom action then tries to match the physical configurations it detected to the logical configurations you defined in the configuration rules.

These array configuration rules are defined using a graphical, logical layout that helps you visualize how your array controllers are configured. Rules are processed in the order displayed in the tree, so you know exactly which rules have priority.

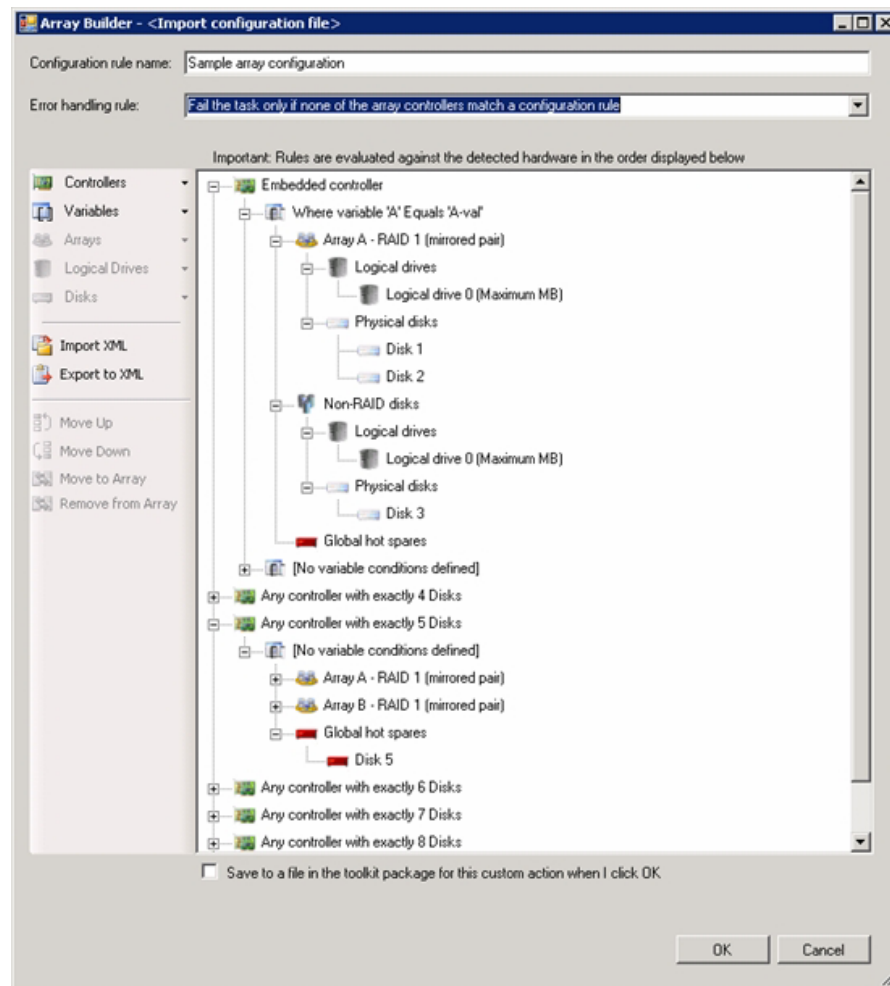


Figure 44. Array Builder interface

You can define rules to match configurations based on the detected slot number of the controller or the embedded controller, if any, how many disks are attached to the controller, or you can apply a blanket configuration to any controller that is

found. You can also apply configuration rules based on task sequence variables detected on the system. You can define different configurations to servers even if the detected hardware is identical.

Using Array Builder, you can define arrays / disk sets with all available RAID settings, logical drives / virtual disks of varying sizes or use all available space, and assign hot spares to individual arrays or assign global hot spares to the controller.

Error handling rule

There are times when you want to apply a very specific set of configuration rules to target servers and to fail when any one of the rules does not match a controller in the system. At other times you might want to apply a large blanket set of rules to all servers and fail only when no rule matches a controller. The Array Builder error handling rule setting controls that action.

Three available error handling rules exist:

- **Fail the task if any controller does not match a configuration rule** – will report a failure on the task if any of the detected controllers are not able to be configured by a rule.
- **Fail the task only if the first controller does not match a configuration rule** – will report a failure if the first controller detected (usually the embedded controller) cannot be configured by a rule.
- **Fail the task only if none of the array controllers match a configuration rule** – reports a failure only if all of the controllers in the system fail to match a rule, leaving none configured.

Array Builder elements and associated rules

Different elements in the dialog have associated rules that define what actions can be performed on the various elements. These rules define what actions can or cannot be performed on the various elements, which in turn drive the activation or deactivation of the various controls and menu buttons on the dialog and also display warnings.

For example, if moving an array upward in the list will cause an invalid configuration, the **Move Up** control is disabled, or a warning dialog is displayed.

Controllers



Controller elements contain variable condition elements. Controllers can be one of several configuration types:

- The embedded controller
- A controller in slot “X”
- Any controller with exactly “X” disks
- Any controller with “X” disks or more
- All remaining controllers

When launching Array Builder from a “Create configuration file” selection in the deployment action, a default controller is created.

When a controller is created, a default variable condition, array, and disks are created to ensure a valid configuration. You can choose to leave the controller unconfigured – with disks set to non-RAID, or you can add arrays or do other actions.

When a controller node is selected, the following controls are available:

New Controller

- You can add as many controllers as you like, with the following restrictions:
 - You cannot have more than one “All remaining controllers” node. The selection for that type is disabled if one already exists.
 - You cannot have two identical controller configurations (two controllers that specify the same quantity of disks). If there were duplicates, the program would not know which configuration to pick and would never pick the second configuration. If you attempt to enter a duplicate configuration, a warning dialog appears.

A controller that has the same number of disks as an existing controller is not allowed, even if the comparison (“exactly” or “at least”) is different.
 - You cannot create a controller that matches zero (0) disks.
- When adding a controller, you can optionally define a specific variable condition to create for the controller. When the controller is added, this variable condition is created in addition to the default “No variable conditions defined” condition.

Edit Controller

Changes the configuration of the controller to another type or modifies the number of associated disks. The same restrictions apply as in creating a new controller.

Delete Controller

Deleting a controller deletes all variable conditions, arrays and all disks contained within that controller.

Deleting the last controller causes a new default controller to be created in the display. You cannot have a configuration of zero (0) controllers.

New Variable Condition

Because the default variable condition (“No variable conditions defined”) was created when the controller was created, this selection creates a new variable with a specific definition and adds it to the controller configuration. The new variable condition is displayed above the default condition and cannot be moved below the default condition.

Move Up / Move Down

If there is only one controller, neither selection is enabled.

If there are two controllers, and the last one is the “All Remaining Controllers,” neither selection is enabled. If “All Remaining Controllers” exists, it is the default and must be last in the order.

If the “All Remaining Controllers” is listed, the controller above it does not have the “Move Down” selection enabled.

If the first controller in the list is selected, “Move Up” is not enabled.

If the last controller in the list is selected, “Move Down” is not enabled.

If any other controller is selected, both selections are enabled.

Variable Conditions



To provide the ability to use the same hardware configuration in multiple logical configurations, variable evaluation is provided so that a different configuration for arrays and logical drives can be applied to different situations.

Variable condition elements contain arrays and global hot spares, and are available in two types:

- No variables defined. This is the default configuration, inserted with every controller, and cannot be removed or moved from last in the order.
- Variables defined. This is where any variable is compared to a value using one of the pre-defined operators.

When a variable node is selected, the following controls are available:

New Variable Condition

Displays the Variable Condition Configuration dialog where you can select the criteria for the condition. When a new variable condition is created, a default logical drive and set of disks is created. If the controller specifies the number of disks, that many disks are created. Otherwise, the “All remaining disks” node is used.

You can add as many variable conditions as you like, with the following restrictions:

- You cannot have more than one default variable condition node. The selection for that type is disabled if one already exists.
- You cannot have two identical variable conditions. If there are duplicates, the program does not know which configuration to pick and would never pick the second configuration. If you attempt to enter a duplicate configuration, a warning dialog appears.

Edit Variable Condition

Not enabled when the default variable condition is selected.

Displays the Variable Condition Configuration dialog where you can edit the criteria for the condition. The same restrictions apply as in creating a new variable condition.

Delete Variable Condition

Not enabled when the default variable condition is selected.

Deleting a variable condition deletes all arrays and all disks contained within that variable condition.

New Array

See “Arrays (also known as disk groups) ” on page 65 for details.

Move Up / Move Down

If there is only one variable, neither selection is enabled.

If there are two variables, and the last one is the default variable, neither selection is enabled. If the default variable exists, it is the default and must be last in the order.

If the default variable is listed, the variable above it does not have the “Move Down” selection enabled.

If the first variable in the list is selected, “Move Up” is not enabled

If the last variable in the list is selected, “Move Down” is not enabled.

If any other variable is selected, both selections are enabled.

Arrays (also known as disk groups)



Array nodes include both RAID arrays and non-RAID disk groups (indicated by “Non-RAID disks” and the different array icon). By default, a non-RAID disk group is created when a controller is created. If the controller configuration specifies a number of disks required, that many disks are added to the non-RAID group.

Arrays can be added, modified, or deleted depending on the controller configuration and number of disks available.

Array elements contain logical drives and physical disks.

When an array node is selected, the following controls are enabled:

New Array

- Adds another array to the controller under the same variable condition. Adding an array also adds a default number of disks to meet the requirements of the array.
For example, adding a RAID 5 array adds three disks automatically. You are not allowed to remove disks below the RAID requirement.
- Some arrays (RAID 1 and RAID 10) require an even number of disks. In these instances, you are not allowed to create a situation where an odd number of disks exists.
For example, if you add a disk to a two-disk RAID 1 set, the program adds another disk to ensure an even number. If you delete a disk, the program deletes a total of two disks. Status messages inform you of these actions as appropriate.
Hot spares do not count in the total array disk numbers, so it is possible to have an odd number of disks appear under the array node.
- If the controller defines an exact number of disks and you attempt to add an array, the program attempts to move disks from the Non-RAID disks set to the new array.
If there are not enough disks in the non-RAID set, you cannot add the array.

Change Array

Arrays can be changed from one RAID type to another. For example, you can decide to configure the controller with a RAID 5 array instead of a RAID 1 array by simply changing the array type.

Changing the array results in an evaluation of disk requirements. If the array does not contain enough disks to meet the RAID requirement, the appropriate number of disks are added and you are notified of the action. If the new RAID level requires fewer disks, no disks are removed.

If the controller defines an exact number of disks and you attempt to change an array and the new array requires more disks than the existing array, the program attempts to move disks from the Non-RAID disks set to the new array. If there are not enough disks in the non-RAID set, you cannot change the array.

If you change an array to a type that requires an even number of disks, another disk is added or removed if necessary to meet that requirement.

Changing from one array type to the same array type is disabled on the menu.

Delete Array

You cannot delete the “Non-RAID disks” node.

Deleting an array results in deletion of all disks in that array, except where the controller defines an exact number of disks. That is, the program moves the array disks to the Non-RAID disks set.

New Logical Drive

Creates a new logical drive in addition to the default logical drive. See “Logical Drives (also known as virtual disks)” for more information.

New Disk

Adds one or more new disks to the array. You can add a single disk, multiple disks at once, a hot spare disk, a hot spare assigned to the last drive on the controller, or “all remaining disks.”

See “Physical Disks (also known as array disks)” on page 67 for complete rules information.

If the controller defines an exact number of disks, the **New Disk** button is disabled.

If the array or the controller already contains an “all remaining disks” element, this choice is disabled on the New Disk menu.

Move Up / Move Down

If an array can be moved up or down on the controller, those menu selections are enabled.

Moving array controllers results in the following:

- Array names (i.e. “A”, “B”, etc.) are modified so that the arrays are listed in alphabetical order.
- Disks are renumbered so that disks are listed in order on the controller. This also helps you specify which disks are used in which array by re-ordering the arrays on the controller.

The “Non-RAID Disks” node is always listed last.

Logical Drives (also known as virtual disks)



Logical drives that are contained with arrays (or the Non-RAID disks node) are configured to a specific size (in GB) or to consume all available (or remaining) space in the array. By default, a single logical drive is created for all new arrays, and set to consume all available space.

When specific-size logical drives are defined, the “using all remaining space” logical drive consumes any leftover space after the other logical drives have allocated their space on the array.

When a logical drive node is selected, the following controls are enabled:

New Logical Drive

When you create a new logical drive, it is placed before the default “using all remaining space” logical drive (if it exists).

Edit Logical Drive

You can modify the settings of the currently-selected logical drive, including changing the allocated size, or changing it from maximum size to a specified size or vice versa.

If a logical drive using all remaining space already exists, you cannot change another logical drive to that type.

Delete Logical Drive

Removes the selected logical drive.

You cannot remove the last remaining logical drive.

Move Up /Move Down

If a logical drive can be moved up or down on the controller, those menu selections are enabled.

Moving logical drives will cause logical drive numbers to be modified so that the logical drives are listed in numerical order.

The “using all remaining space” node is always listed last.

Physical Disks (also known as array disks)



Disks are contained with arrays (or the Non-RAID disks node) and take several forms:

Standard disks

The basic, non-defined disk type that makes up the storage on arrays.

Hot spares

Disks that provide online redundancy in case a RAID disk fails, and are assigned to a specific array.

All remaining disks

You can define an array without specifying exactly how many disks are in it. A good example is when RAID 1 is set as the first two disks, and the rest (an unknown number between 1 and 6) can be utilized in the best manner possible. In this case, you would define the RAID 1 array, and then create a dynamic array containing the “All Remaining Disks” element.

If the controller configuration specifies a number of disks required, that many disks are added to the non-RAID group. If the controller specifies an exact quantity, disks cannot be added or removed from the controller – they can only be moved from array to array (or the non-RAID group).

If the controller specifies a minimum number of disks, you can add or remove disks. Removing disks beyond the lower limit of the controller configuration is not allowed.

Controls

When a disk node is selected, the following controls are enabled:

New Disk

Users can add as many new disks as they like to any configuration except where an exact number of disks is specified. In that case, the “New Disk” menu item is disabled.

If an “all remaining disks” element exists in the array or on the controller, that menu selection is disabled.

Change Disk

If changing a disk from one type to another invalidates an array or a controller configuration, you get a warning dialog and the change is not allowed.

Allowed changes include:

Changing from a standard disk to a hot spare (which reduces the number of disks in the array) – unless an “all remaining disks” is in the array

Changing from an “all remaining disks” to a standard disk or a hot spare (unless enough other standard disks exist in the array)

If an “all remaining disks” element exists in the array or on the controller, that menu selection is disabled.

Changing from one disk type to the same type is disabled on the menu.

Delete Disk

If deleting a disk invalidates an array or a controller configuration, you will get a warning dialog and the deletion is not allowed.

If you are deleting an “all remaining disks” node, and there are not enough disks left in the array, you must add disks before you can delete the “all remaining disks” node.

Move Up / Move Down

Only applicable if moving the hot spare disks among the standard disks.

Global Hot Spares



Global hot spares assign a failover disk across multiple arrays. This enables more efficiency in using disk resources, but also provides less protection in case of a multiple-disk failure.

Some manufacturers either do not support global hot spares or limit the number of global hot spares that you can assign. In these cases, this functionality is reduced or unavailable as appropriate.

When a global hot spare node is selected, the following controls are enabled:

New Disk → Global Hot Spare (all other disk types disabled)

Adds another global hot spare if additional disks are allowed.

Change Disk

Changing a disk from a global hot spare to another type displays a dialog to select the array where you wish to move the disk.

Delete Disk

If deleting a disk invalidates a controller configuration, a warning dialog is displayed and the deletion is not allowed.

Move Up / Move Down

Not applicable

Other Array Builder functionality

Other functionality included in the Array Builder includes the ability to import, export, and view XML, and the ability to save the configuration as a file or a variable.

Import XML

This menu item searches for and imports an existing Array Builder XML file. The XML file must be properly formatted.

Any violations of the rules are automatically modified by the program, which notifies you of the change.

Export to XML

This menu item saves the current configuration to an XML file. However, this configuration file is not used unless you save it into the package. The configuration is saved as a variable if you do not save it into the package.

This selection is enabled if you create a new configuration or if you make a change to an imported configuration.

View XML

Views the current array configuration rules in XML form, which is how they are sent to the server.

Save to Package

Select this checkbox to export the configuration to a file. This is just like the Export feature, except that the starting directory is the package directory where the other Deployment Pack configuration files exist. This creates new configurations that can be propagated.

Save to a Variable

If you do not choose to save the configuration to the package, the configuration is saved as an XML string within the task sequence and sent as a variable to the client during deployment. When this occurs, it is noted in the task UI with the configuration parameter text as “[Configuration saved as a variable].”

The configuration can be saved as a file in the package instead by simply opening the Array Builder again and selecting the checkbox. Click **OK** to select the file.

Adding IBM configuration steps to an existing task sequence

Because of the mechanization of Configuration Manager's OSD feature, and some peculiarities of WinPE's view of disk partitions, configuring RAID arrays poses some problems for the OSD process. The wizard used to "Create an IBM Server Deployment Task Sequence" is a way of creating the somewhat complex set of steps required to manage the reboots required.

About this task

An existing task sequence (created before loading the Deployment Pack) does not have all of these steps in place. The first time you add an IBM RAID configuration step to an existing task sequence, the program detects the need for these extra steps, and offers to let you use the same wizard to insert them.

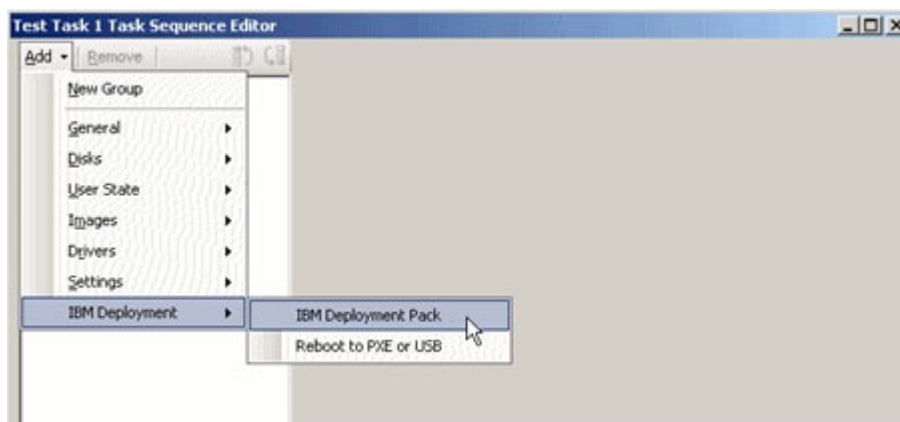


Figure 45. Adding a RAID configuration to an existing task sequence

When you first attempt to add an IBM Deployment Pack step, you are prompted to determine whether you plan to add a RAID configuration step. This decision determines whether the wizard is needed, or whether you plan to edit the steps without the aid of the wizard.

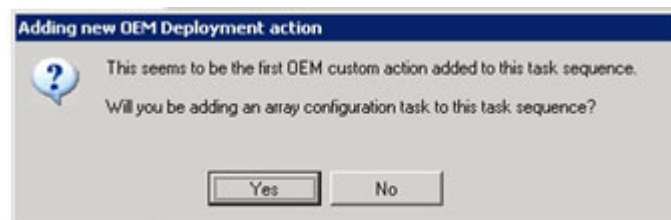


Figure 46. Prompt to determine if a RAID configuration step is being added

If you are adding a RAID configuration, the program prompts to determine whether you want to use the wizard to help get all the steps in the right order. Doing so is highly encouraged.

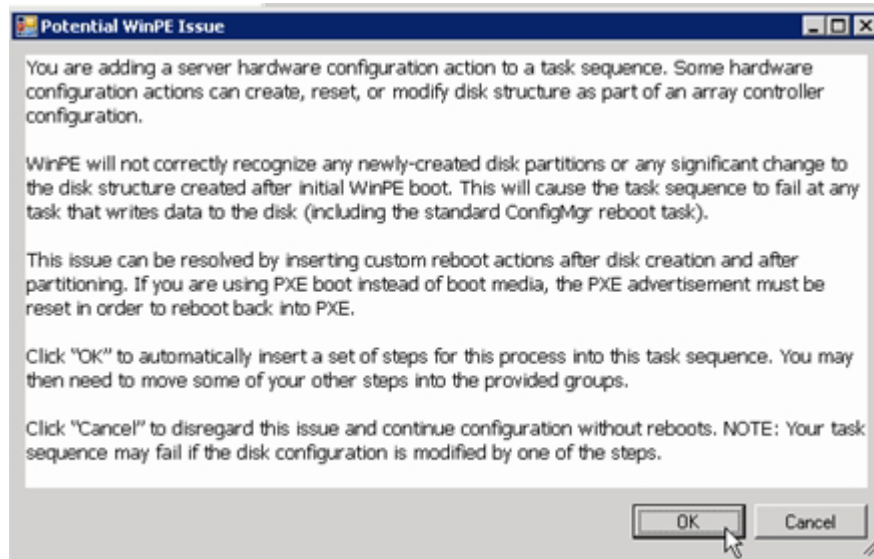


Figure 47. Prompt to determine if reboots should be added automatically

If you click **Cancel**, you can still add RAID configuration steps, but you the wizard does not help you get all of the required reboots inserted properly. This is discouraged. Pressing **OK** launches the same wizard that is used in the Create an IBM Server Deployment Task Sequence custom action.

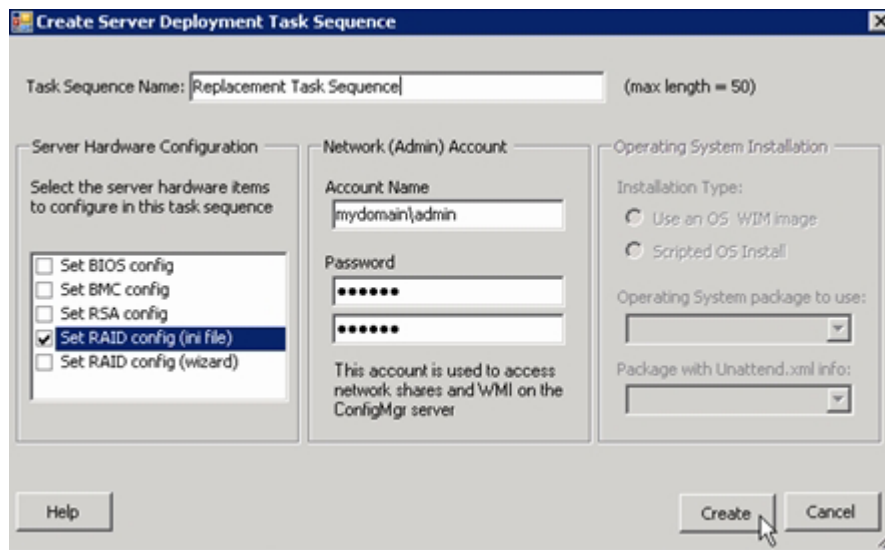


Figure 48. Create Server Deployment Task Sequence wizard

After filling in the wizard dialog, pressing **Create** creates a new task sequence to avoid making unwanted changes to your original task sequence. Use this new task sequence for your new deployment task; you can delete the original sequence if you no longer need it.

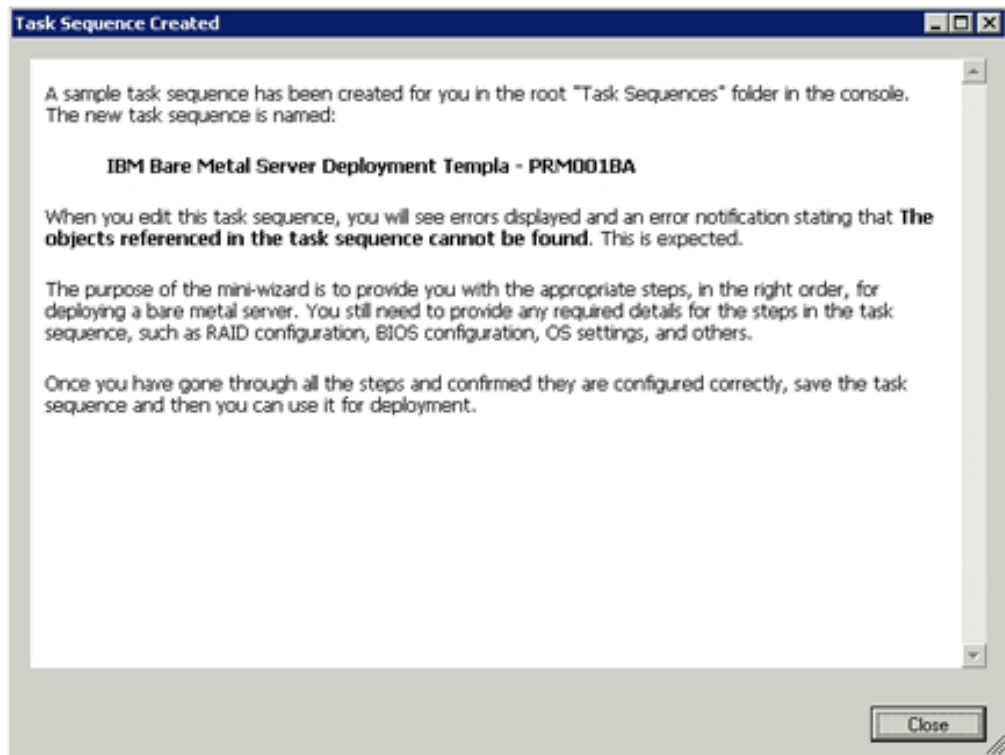


Figure 49. Task Sequence Created message

After creating the copy of your original task sequence, the original task sequence has "edited," status, but has not been saved.

To proceed, you must close your original task sequence without saving the changes. Then open the new task sequence to continue. The program does not let you save changes to the original task sequence.

After closing the **Task Sequence Created** information dialog, you see the following message:

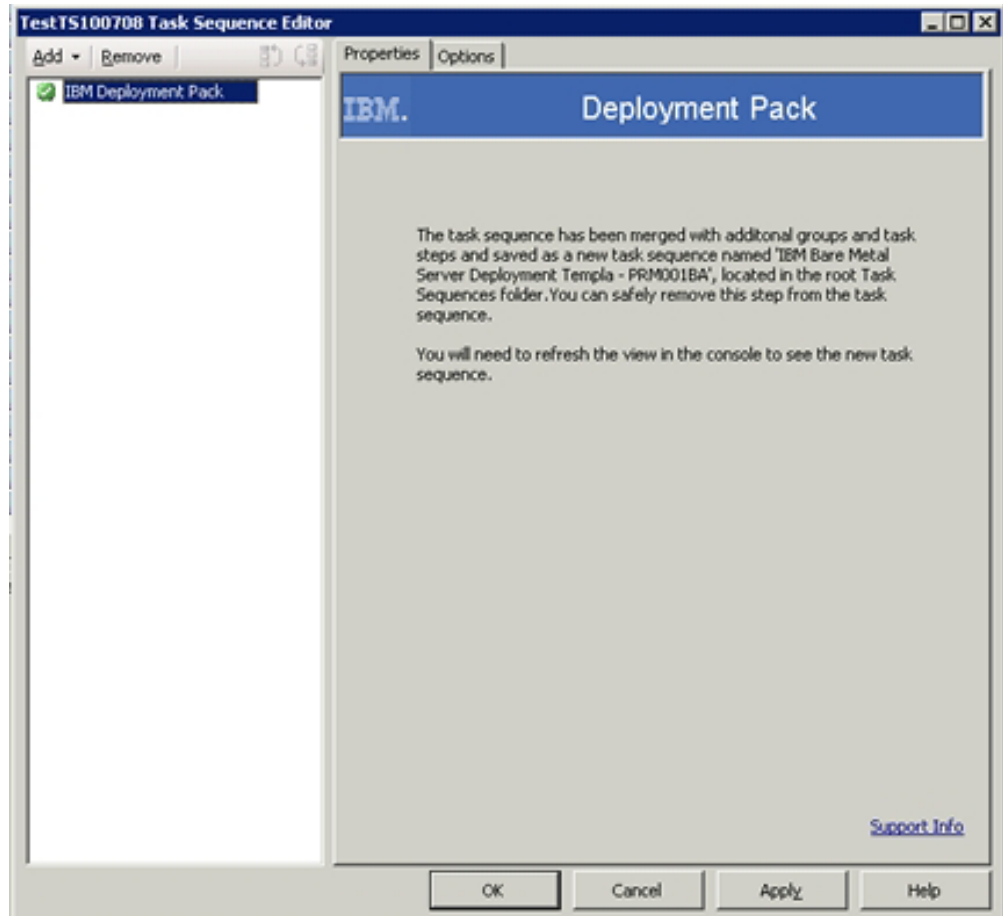


Figure 50. Confirmation of new task sequence creation

At this point, click **Cancel**, then click **Yes** on the following confirmation prompt:

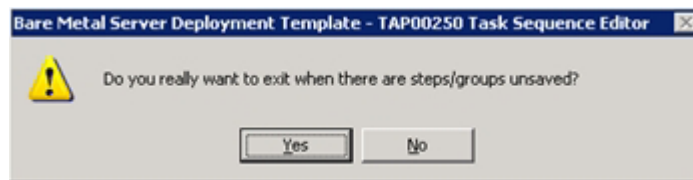


Figure 51. Confirmation of exiting the original task sequence

Locate the new task sequence in the list of task sequences, right-click the task sequence, then click **Edit**. When you open the new task sequence, it is normal for some information to be missing from the newly-created steps. You see this dialog:

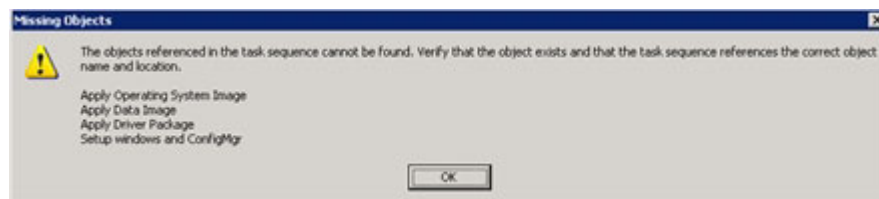


Figure 52. Missing objects when editing the new task sequence

Click each item in the list that has a red 'X' next to it, then provide the required information. Finally, save the new task sequence, then advertise it for deployment.

Appendix A. Hints and tips

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

PXE issues

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

About this task

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

File not found PXE error #.

Assuming that the PXE service was operational at one time usually means that changes to a boot image were not distributed to the PXE service distribution points. Distributing boot image changes is described in “Updating the distribution points for a boot image” on page 44.

Also, it could be there is not a valid advertisement for this machine. Creating an advertisement is described in “Advertising task sequences” on page 38.

You must also add the target server MAC address and GUID to the Configuration Manager database, as described in “Importing the servers into the Configuration Manager database” on page 12.

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

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

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

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

1. From the console, remove the PXE service role.
2. Check the Program Files\Microsoft Configuration Manager\Logs\ PXEsetup.log to verify that the role is removed successfully.
3. Remove the Windows Deployment Service.
4. Reboot the Configuration Manager site server, if WDS was installed on the site server.
5. Reinstall WDS but do not configure it.
It is not necessary to import images. However, make sure that WDS is installed correctly.
6. Assuming DHCP and WDS are installed on the Configuration Manager server, make sure that DHCP Option 60 is enabled and choose **Don't listen on port 67**.
7. Reinstall the PXE service role.
8. Check the PXEsetup.log to verify that the role was installed successfully.
9. Update the PXE distribution points for the boot images now that the new role is installed.
10. The target client should now be able to PXE boot to the Configuration Manager server.

The problem when rebooting to PXE or USB

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

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

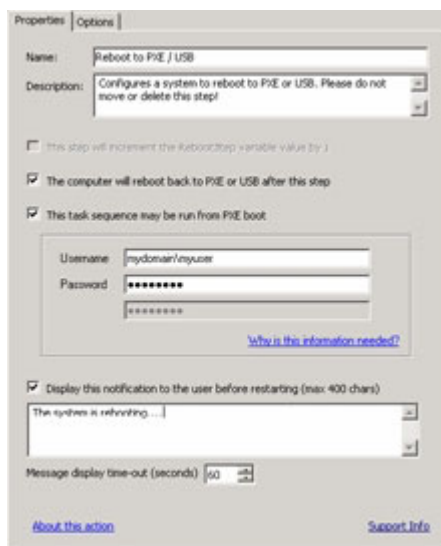


Figure 53. Properties page for a Reboot to PXE / USB action

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

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

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

How the Deployment Pack solves the problem

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

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

The task sequence flow is similar to the following:

First boot sequence

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

Second boot sequence

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

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

Third boot sequence

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

Manual workaround method

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

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

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

The Reboot To PXE / USB custom action

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

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

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

Preventing a server from looping during multiple reboot processing

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

About this task

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

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

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

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

1. Launch **Microsoft Configuration Manager 2007** to open the Configuration Manager console.
2. Click **Operating System Deployment** → **Computer Association** in the console.
3. Right-click the computer resource in the appropriate collection.
4. Click **Properties** → **Variables**.

5. Select the **RebootStep** variable.
6. Click **Delete**.
7. Click **Apply**.
8. Click **OK**.

Appendix B. Frequently asked questions

Frequently asked questions can help you identify answers to questions that you might have.

Can I deploy firmware updates using the Deployment Pack?

Firmware should be applied as a standard “install software” action. Configuration Manager will only download one package per action, and since the client-side script and the toolkit utilities are a package, no additional packages can be downloaded.

Can I deploy IBM Software using the Deployment Pack?

Things like the UpdateXpress System Packs are just like firmware. They should be installed as a standard “install software” action, after the OS is installed.

Can I just integrate the toolkit package with my boot image?

The product does not currently support that option, and requires the use of a package for the toolkit utilities. This process is also the best practice from a change management perspective, since any changes to the toolkit or related components can be updated easily in the package, versioned appropriately, and redistributed to distribution points. If these components are included in a boot image, they are harder to track, update, and ensure consistency, and any change requires a change to the boot image.

Can I install this kit on SMS 2003?

No, this product is not supported for use with SMS 2003, since SMS 2003’s operating system deployment capability is an add-on pack that uses a different architecture than the Operating System Deployment feature in Configuration Manager 2007. There are no plans to make this product backward-compatible.

Can you tell me exactly what I can configure using “BIOS Config” in the Deployment Pack?

The Deployment Kit is dependent on the functionality of the IBM toolkit (specifically, the ASU program). You should consult the *IBM ASU User’s Guide* for specific information on the operation of the tool. While the Deployment Pack tries to abstract as many hardware interfaces as possible, BIOS settings for each machine type are unique.

General comments

With respect to the hardware configuration functionality of the IBM tools, the Deployment Pack provides no more or less functionality except ease of use.

With respect to any particular hardware platform, deployable operating system, or component support, support is a function of the underlying IBM tools.

The IBM Deployment Pack is a hardware-neutral interface for launching and controlling IBM utilities within Configuration Manager.

- As long as IBM provides a scriptable tool that supports WinPE, it can be included in the Deployment Pack.
- All of the functionality of the kit (in relation to the tools) is strictly dependent on the functionality of the IBM tools.
- There is no additional functionality “around” the tools, such as the UI, client-side scripting, environment variables, pre- and post-configuration tasks, etc. Those portions of the IBM Scripting Toolkit are not used in the Deployment Pack, since Configuration Manager provides other methods.

Appendix C. Troubleshooting

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

1. Read the documentation.

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

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

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

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

2. Check your action settings.

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

Be sure to check the task sequence steps for:

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

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

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

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

4. Gather the appropriate information.

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

- a. Export the task sequence you were using, by right-clicking the task sequence and selecting **Export**.
- b. If the issue is visible in the interface, collect screen captures of the relevant portions.
- c. If the issue is related to installation of the product or follows closely after installation:
 - 1) Gather a copy of the MSI installation log, located in the temporary files directory, which is identified in the %TEMP% environment variable. This file is usually located in a "1" directory and has a random name that is formatted as `MSIrandom_characters.LOG`.

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

```
{AdminUI Install Directory}
  \XmlStorage\Extensions\bin\Deployment
  \IBM\IBM Deployment Pack\setup
```
- d. If the issue occurred while running a task sequence:
 - 1) Gather a copy of the `SMSTS.LOG` file from WinPE.

The log might be in the `X:\Windows\Temp\Smstslog` directory for a PXE boot. The log might also be in the `\Smstslog` directory on the local drive. The format of the log name might be `SMSTSLOGtime_based_name>.LOG`.
 - 2) A copy of the custom action logs saved using the “Retrieve the task sequence log file from the client when this action runs” checkbox on the custom action **Logs / Return Files** tab. You should also check the box for **Enable extended/debug logging by this action**.
 - 3) A copy of the files used as input to the configuration task, such as configuration INI or XML files.
- e. A complete, detailed explanation of the issue, including:
 - 1) The exact point of failure, such as for example, the action running when the process failed, a description or screen captures of error messages, error codes, and other relevant facts.
 - 2) A detailed description of the computers being configured, such as model, hardware configuration, RAID controllers, and other characteristics.
 - 3) A description of other circumstances, such as:
 - Has this task sequence / action ever worked? When did it stop working?
 - If it had worked before, what is different now? Is the task sequence being applied to different computer types, is it using different configuration files, different task sequence variables, or has something else been modified?
5. When all else fails, contact support, as described in Appendix I, “Getting help and technical assistance,” on page 113.

Troubleshooting installation issues

You can troubleshoot some common installation issues.

A custom action does not appear in the Configuration Manager console

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

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

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

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

The IBM Deployment Pack does not completely uninstall

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

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

Troubleshooting administrator console issues

You can troubleshoot some common administrator console issues.

Enabling user interface debug logging

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

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

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

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

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

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

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

Troubleshooting device driver issues

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

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

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

File renaming

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

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

Installation program modification of a boot image

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

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

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

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

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

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

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

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

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

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

Troubleshooting WinPE and task sequence issues

You can troubleshoot some common WinPE and task sequence issues.

WinPE never starts the task sequence

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

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

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

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

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

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

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

Servers will not boot using PXE

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

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

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

Another feature that can be affected by this issue is the EtherChannel or Port Aggregation Protocol (PAgP). EtherChannel allows multiple links between devices to act as one fast link that shares the load between the links. Running the

EtherChannel Protocol in automatic mode can cause a connectivity delay of up to 15 seconds. Switch to a manual mode or turn off this feature to eliminate this delay.

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

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

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

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

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

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

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

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

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

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

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

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

This error code typically refers to a certificate validation issue.

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

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

or

no cert available for policy decoding

Possible causes are:

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

If your site server does not specify a FQDN (and only specifies the NETBIOS name), and your DNS server refers to the FQDN, a faulty lookup might cause this error.

- The certificate being used for PXE and boot media.

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

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

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

This error code typically refers to a certificate validation issue.

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

```
failed to download policy
```

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

Task sequence fails because the package is not downloading

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

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

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

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

Task sequences fail or act incorrectly after an upgrade

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

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

Files and logs are not being returned from the client

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

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

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

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

Then open the `SMSTS.LOG` file. The location varies. In WinPE via PXE, the location is at `X:\Windows\Temp\Smsstlog\smssts.log`.

- Malformed XML in the IBM Deployment Packconfiguration file.
- The command being executed actually has an error but exits with code 0.
This can occur when a severe error is encountered in the script while the script is set to ignore errors and use programmatic error handling. Then the error handling did not catch the same error.
Report such issues to the IBM support site, as described in Appendix I, “Getting help and technical assistance,” on page 113.
- The task sequence cannot access the share or mapped drive that is the target drive for copying the files or logs.

Logs are being returned but not output files

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

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

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

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

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

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

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

Several problems can cause this error.

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

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

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

```
Unspecified error (Error: 80004005; Source: Windows)
```

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

```
Process completed with exit code 2147500037
```

This issue can be related to two different scenarios:

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

If you do not make a drive bootable and the computer has only the single drive, the task sequence engine automatically makes one of the partitions the boot partition. But if there are multiple drives, the task sequence engine cannot determine which drive should be bootable, and you see this error.

- If you upgraded from the Configuration Manager RTM to SP1, you might have a problem if both hard drives are completely raw. If you have never partitioned the drives, a known bug in Windows PE prevents Windows PE from determining the drive where it was booted, and you see this error.

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

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

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

Install Configuration Manager 2007 SP1

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

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

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

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

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

Boot image properties contain an identifier for "OS Version."

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

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

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

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

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

How to tell if WAIK was upgraded to Vista SP1

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

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

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

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

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

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

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

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

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

Troubleshooting general issues

You can troubleshoot some general installation issues.

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

The logs do not show everything.

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

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

Testing WinPE-based sequence actions

Always configure advertisements with the following settings when using PXE:

Table 1. PXE-required settings for advertisements

General page	Make this task sequence available to boot media and PXE. Otherwise, the network client cannot receive the intended task from the Configuration Manager server.
General page	Browse to select the collection of the target server.
Schedule page	Mandatory assignments: “As soon as possible”
Schedule page	Program rerun behavior: “Always rerun program”

Table 1. PXE-required settings for advertisements (continued)

Distribution Points page	<p>Access content directly from a distribution point when needed by the running task sequence.</p> <p>In WinPE, the default option of "Download content locally when needed by running task sequence" does not work. WinPE cause the task sequence engine to ignore all actions that have packages set for this option.</p>
Interaction page	Show task sequence progress

Always configure WinPE boot images with the following setting:

Table 2. WinPE boot image-required settings

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

Restarting a failed PXE-based task sequence

You can troubleshoot a failed PXE-based task sequence.

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

Appendix D. Additional resources

The following Web pages provide resources for understanding, using, and troubleshooting Configuration Manager 2007 and the Operating System Deployment feature.

Microsoft System Center Configuration Manager 2007 pages

Microsoft TechNet: Configuration Manager Documentation Library

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

TechNet Blog: Inside ConfigMgr 07 Operating System Deployment

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

TechNet Forum: Configuration Manager – Operating System Deployment

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

Appendix E. Supported target server hardware

Learn which IBM systems and adapters are supported by version 1.0 of the IBM Deployment Pack.

Table 3. Supported target server hardware

System	Adapter
x3105 4347	IBM SAS HBA 25R8060
x3200 4362	ServeRAID™ 8s (SAS)
x3200 4363	ServeRAID 8s (SAS)
x3250 4364	LSI SAS (1064/1064E)
x3350 4192	ServeRAID-MR10i (1078)
x3400 7973	ServeRAID 8k (SAS)
x3500 7977	ServeRAID 8k (SAS)
x3550 7978	ServeRAID 8k & 8k-l (SAS)
x3650 7979	ServeRAID 8k & 8k-l (SAS)
x3755 8877	ServeRAID 8k-1 (SAS)
x3800 8866	ServeRAID 8i
x3850 8864	ServeRAID 8i (SAS)
x3850 M2 7141	ServeRAID-MR10k (1078) LSI MegaRAID SAS 8480
x3950 8872	ServeRAID 8i
x3950 8878	ServeRAID 8i
HS21 8853	LSI SAS (1064/1064E)
HS21xm 7995	LSI SAS (1064/1064E)
LS20 8850	LSI SCSI (1020/1030)
LS21 7971	LSI SAS (1064/1064E)
LS22 7901	LSI SAS (1064/1064E)
LS41 7972	ServeRAID 8k-1 (SAS) LSI SAS (1064/1064E)

Appendix F. The IBM PRAID program

The IBM Policy-based RAID (PRAID) program is a scriptable executable program that offers a single user interface for both configuring and replicating all RAID controllers supported by the ServerGuide™ Scripting Toolkit.

PRAID has three modes of operation:

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

The IBM Deployment Pack software invokes PRAID with the “/r” switch and the “/y” switch for all “Set” operations using the wizard. The use of these switches tells PRAID to remove the array configuration from all controllers attached to the machine being deployed, before applying the new configuration.

These switches avoid failures due to preconfigured arrays, and operate similarly on older versions of PRAID. You can add these switches manually to RAID configurations done with the command line, or when using INI files.

The following graphic shows a page that illustrates how to add the switches when using an INI file. You can also add other switches as well.

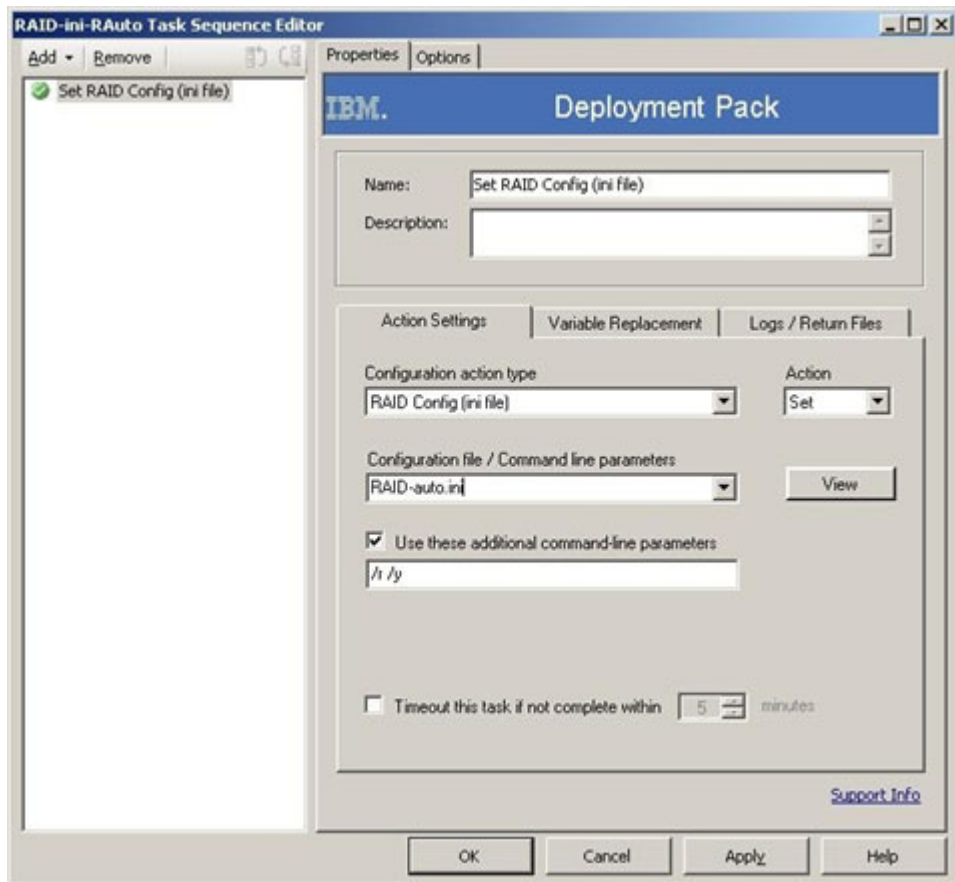


Figure 54. RAID configuration task sequence for INI files

For more information, see the *IBM PRAID Program Reference* PDF.

Appendix G. The IBM Advanced Settings Utility

You can use the IBM Advanced Settings Utility (ASU) to modify firmware settings from the command line on multiple operating-system platforms.

You can perform the following tasks by using the utility:

- Modify the basic input/output system (BIOS) CMOS settings without the need to restart the system to access F1 settings
- Issue selected baseboard management controller (BMC) setup commands
- Issue selected Remote Supervisor Adapter (RSA) and Remote Supervisor Adapter II (RSA II) setup commands

The ASU program supports scripting environments through its batch-processing mode.

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

Important: Command lines passed to the ASU program might not return error codes or explanatory feedback. Therefore, be careful when creating your commands.

For more information about ASU, including a list of the ASU commands and their descriptions, see the *IBM Advanced Settings Utility User's Guide* PDF.

Appendix H. How to run Sysprep

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

Running Sysprep on Windows XP and Windows Server 2003

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

About this task

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

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

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

The following page is displayed:



Figure 55. Setup Manager program dialog

5. Click **Next**.

The following page is displayed:

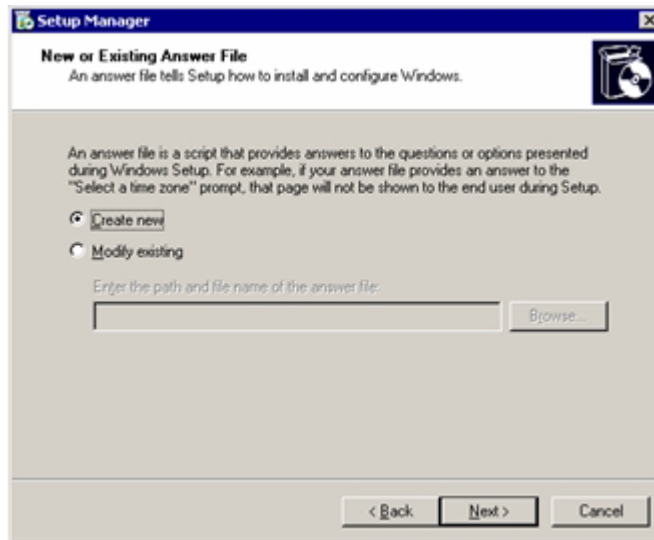


Figure 56. Setup Manager: Creating a new answer file

6. Click **Create new**; then click **Next**.

The following page is displayed:

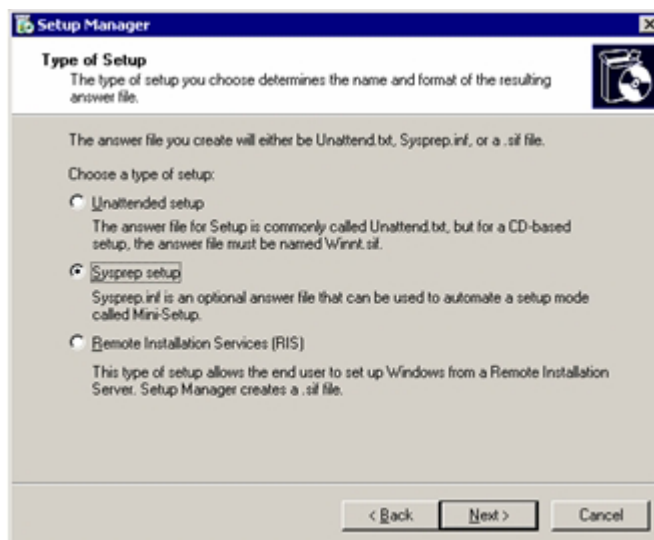


Figure 57. Setup Manager: Type of Setup

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

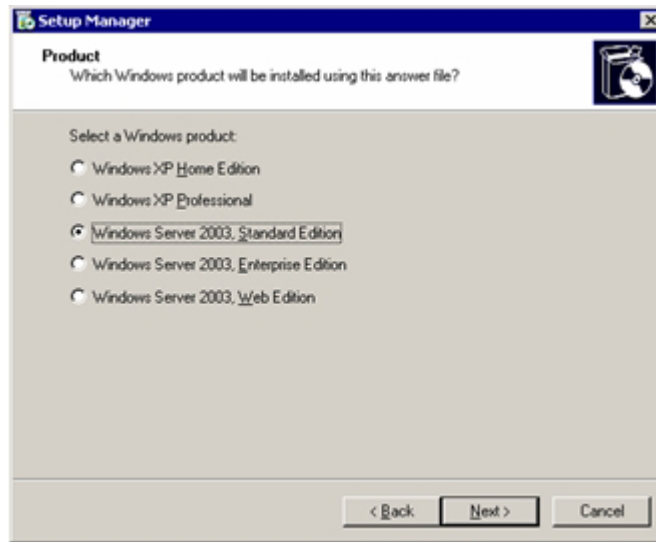


Figure 58. Setup Manager: Windows product

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

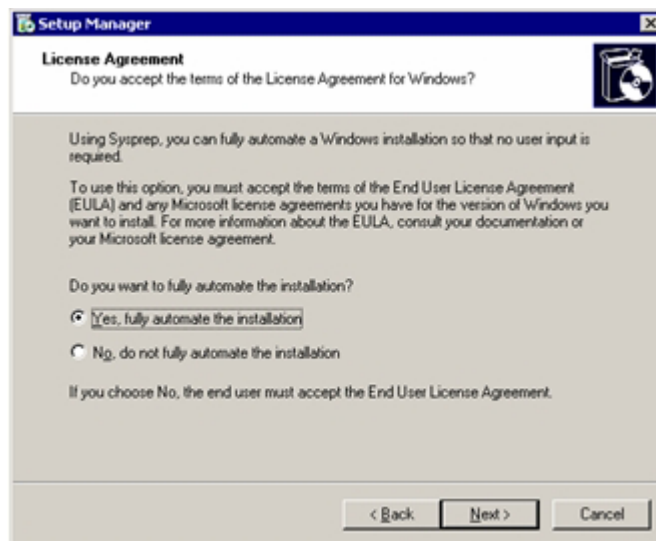


Figure 59. Setup Manager: License Agreement

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

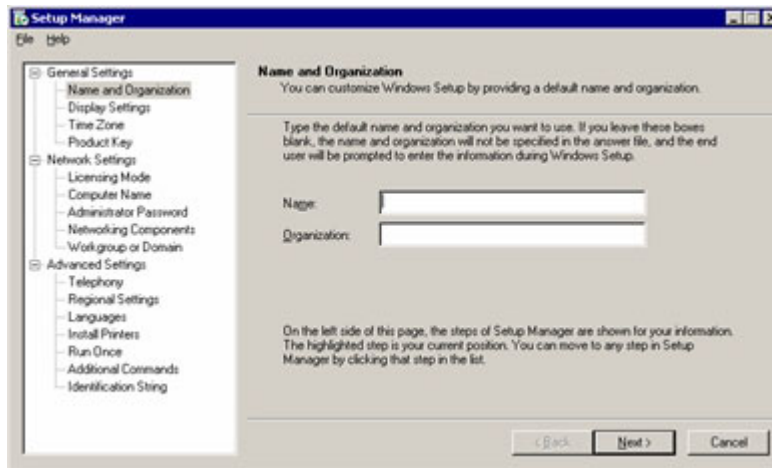


Figure 60. Setup Manager: Name and Organization

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

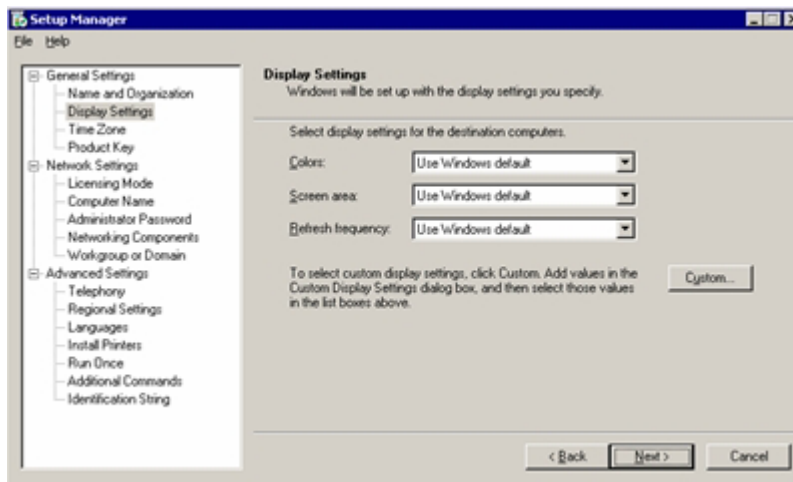


Figure 61. Setup Manager: Display Settings

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

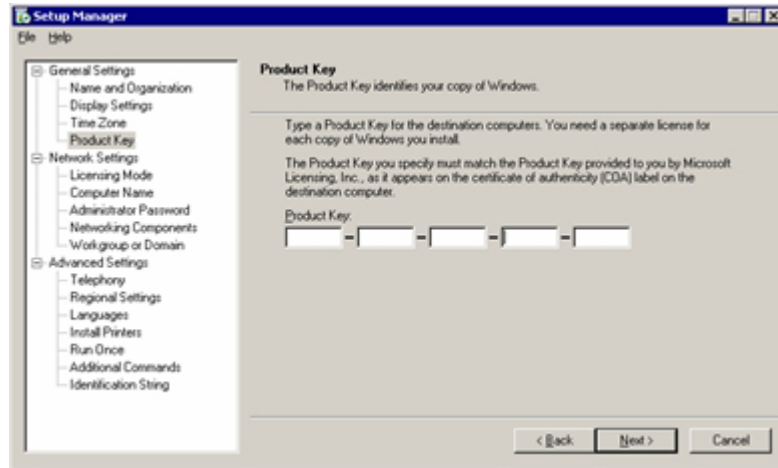


Figure 62. Setup Manager: Product Key

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

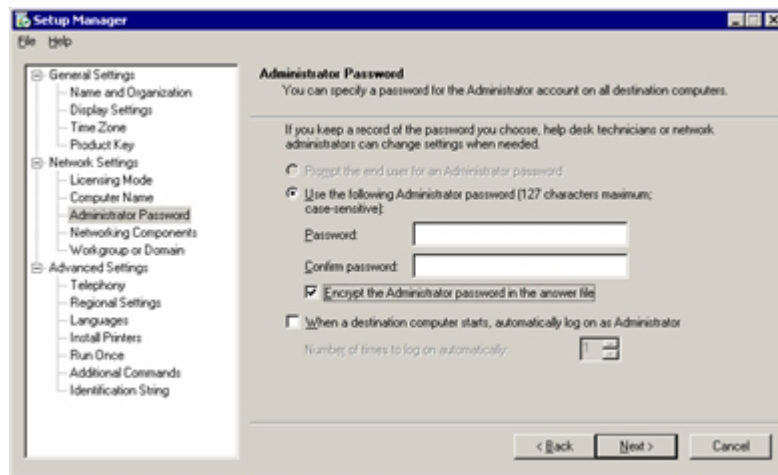


Figure 63. Setup Manager: Administrator Password

16. Enter the administrator password in the **Password** field and again in the **Confirm password** field. Select the checkbox to **Encrypt the Administrator password in the answer file**; then click **Next**.

17. Click **Next** to accept the defaults for **Networking Components**.
18. Click **Next** to accept the defaults for **Workgroup or Domain**.
19. Click **Next** to accept the defaults for **Telephony**.
20. Click **Next** to accept the defaults for **Regional Settings**.
21. Click **Next** to accept the defaults for **Languages**.
22. Click **Next** to accept the defaults for **Install Printers**.
23. Click **Next** to accept the defaults for **Run Once**.
24. Click **Next** to accept the defaults for **Additional Commands**.
25. Click **Next** to accept the defaults for **Identification String**.
26. Click **Next** to accept the defaults for **Run Once**.

The following page is displayed:

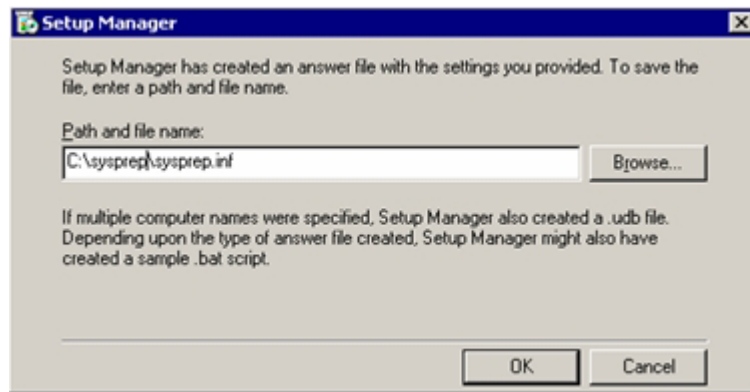


Figure 64. Setup Manager: Path and file name

27. Accept the default path; then click **OK** to save the `sysprep.inf` file.
The Setup Manager program creates the `sysprep.inf` file in the folder.
28. Open a command window and change directories to the `C:\sysprep` directory; then run the `sysprep.exe` command.
`sysprep -reseal -nosidgen`
Make sure that both the `Sysprep.exe` file and the `Setupcl.exe` file exist in the `%SYSTEMDRIVE%\Sysprep` folder on the local hard disk. To use the answer file that you created, the `Sysprep.inf` file must also be in the folder.
29. If the computer is ACPI-compliant, the computer shuts down by itself. If not, shut down the computer when a dialog box is displayed that states that it is safe to shut down the computer.
Now the system is ready for capturing.
30. Build the capture task sequence and advertise the task sequence from the Configuration Manager server, as described in “Capturing an operating system image for deployment” on page 32.

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

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

Running Sysprep on Windows Vista and Windows Server 2008

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

1. Build the capture task sequence and advertise the task sequence from the Configuration Manager server, as described in “Capturing an operating system image for deployment” on page 32.
2. Make sure the operating system and applications are installed and configured on the reference computer, in the way that they should exist in the final installation.
3. Log on to the computer as an administrator.
4. Open a command window and change directories to the C:\windows\system32\sysprep directory; then run the **sysprep.exe** command.

sysprep

The following page is displayed:

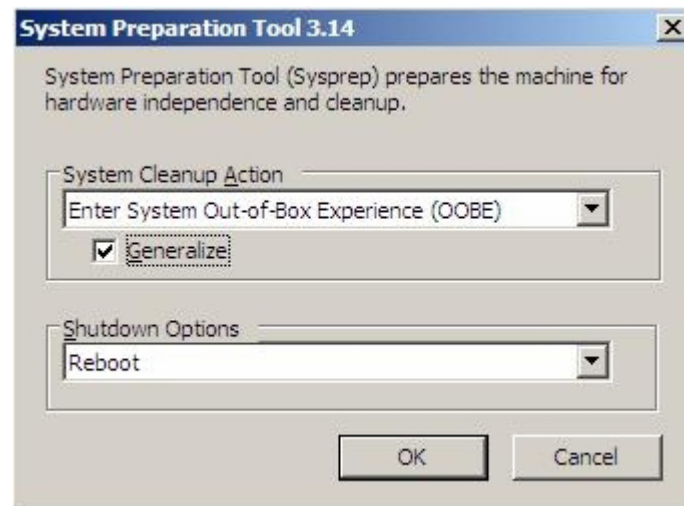


Figure 65. System Preparation Tool (Sysprep)

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

Appendix I. Getting help and technical assistance

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

About this task

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

Before you call

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

About this task

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

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

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

Using the documentation

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

About this task

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

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

Getting help and information from the World Wide Web

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

About this task

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

Software service and support

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

About this task

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

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

Hardware service and support

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

About this task

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

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

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

IBM Taiwan product service

You can contact IBM Taiwan product service.

About this task

Contact IBM Taiwan product service contact information at:

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

Notices

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

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

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

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

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

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

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

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

Trademarks

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

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

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

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

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

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

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

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

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

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

Important notes

View important assumptions about terminology and claims.

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

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

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

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

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

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

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

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

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

Glossary

Find definitions for common terms and objects that are part of the Microsoft System Center Configuration Manager 2007.

To learn more about Configuration Manager 2007, see TechNet: Fundamentals of Configuration Manager 2007. See also the TechNet: Microsoft System Center Configuration Manager glossary for definitions of common terms.

Boot images

An operating system deployment boot image is a Windows Pre-Installation Environment (WinPE) 2.1 image that is used to deploy the operating system. The Boot Images node displays a list of the operating system deployment boot images that exist and actions that you can run. Select a boot image to see specific actions that you can run for that boot image.

Built-in actions

The Task Sequence Editor comes with built-in, or preconfigured, actions for performing such standard tasks as:

- Operating system image deployment
- Operating system configuration
- Automatic driver injection into an operating system installation
- Configuration of network parameters
- Configuration of Windows settings

Computer associations

A computer association organizes the migration of user state and settings from a reference computer to a destination computer. The reference computer is an existing computer that is managed by Configuration Manager 2007, which contains the state and settings to be migrated.

The Computer Association node displays a list of existing computer associations and the actions that you can run. Select a computer association to view specific actions that you can run for that computer association.

Condition

A parameter within a task sequence step or task sequence group that determines whether the Configuration Manager Client should process the action. Conditions can be based on a number of variables, including collection or machine variables, task sequence variables, Windows Management Instrumentation (WMI) queries, and more.

For more information about conditions, see TechNet: Task Sequence Options Tab

Custom actions

IBM provides custom tools for configuring IBM hardware. These utilities are often run behind the scenes in a stand-alone GUI or are integrated into another tool set.

You also have the ability to create a custom action, with custom user interfaces, to use your own tools and actions. You can use drop-down lists, checkboxes and buttons to format the appropriate commands for your tools or actions.

Custom actions can also combine a number of related actions into a single menu item. For example, you could create a custom action to perform pre-configuration and post-configuration tasks.

Device drivers

A device driver consists of an INF file that describes how to install the driver, the driver file, and one or more additional files required for device support. A driver package is a Configuration Manager 2007 package that contains the content for one or more device drivers. Driver package content is added to a driver package shared disk. The driver package can then be copied to a distribution point so that computers can install them.

When you perform operating system deployments, the Auto Apply Drivers and Apply Driver Package task sequence actions can be used to apply the specified device driver or device driver package onto each computer that will receive the corresponding image.

Driver catalogs

The driver catalog helps manage the cost and complexity of operating system deployment by providing a centralized location to manage Windows device drivers.

When you create generic operating system images, you can import the related device drivers into the driver catalog.

Group A group is a logical arrangement of multiple steps within a task sequence. A task sequence group consists of a name and an optional check for the conditions assigned to a task. Grouping task sequence steps is not required. However, using groups improves the readability of the task sequence and provides better error handling and conditional execution.

Operating system images

The Operating System Images node displays a list of the operating system deployment image packages that exist and the actions that you can run. Select an operating system image package from the Operating System Images results pane to view specific actions that you can run for that operating system image package. A Windows Imaging (WIM) file, which is the file format for a captured image, is a compressed collection of files and folders.

Operating system installation packages

The **Operating System Install Packages** node displays a list of existing operating system installation packages in the **Details** pane.

You can add a new operating system install package, or copy an existing one with the appropriate wizard.

Step A step is the basic component of a task sequence or task sequence group. Each step can contain an action and an optional check for the conditions assigned to a task.

Task sequence action

The general term for a single step within a task sequence. There are two types of task sequence actions: built-in actions and custom actions.

Task Sequence Editor

Use the Task Sequence Editor to modify new or existing task sequences. You can add, remove, or modify the task steps and groups within a task sequence.

You can update or change the run-time actions associated with an existing task sequence. You can change the order of the task sequence steps. You

can specify how the task sequence handles errors for failed task sequence steps. You can also add conditional processing to the task sequence for certain options.

Task sequences

A task sequence is a series of one or more task steps that can be advertised to Configuration Manager 2007 clients to run user-specified actions. Task sequences are used with Operating System Deployment to build source computers, capture an operating system image, migrate user and computer settings, and deploy an image to a collection of target computers. Task sequences can also be used to run other Configuration Manager 2007 actions, such as deploying Configuration Manager 2007 software packages or running custom command lines.

For more information about task sequences, see [TechNet: About Task Sequences](#).

Task sequence variables

When a task sequence is running, the Task Sequence environment contains many variables, including temporary variables available only to the running action, variables available throughout the task sequence, and variables that are more permanent such as machine or collection variables. These variables play a part in many aspects of the task sequence, but especially in the use of conditions.

For more information about variables, see [TechNet: About Task Sequence Variables](#).

Index

A

- about this publication v
- Action Settings page 55, 56
- activating components 23
 - boot images 23
 - device driver packages 26
 - toolkit package 25
- adding command-line support to the boot image 41
- adding custom boot image 43
- adding device drivers to boot image 40
- adding IBM configuration steps to existing task sequence 70
- adding Windows device drivers to the boot image 15
- additional resources 97
- administrator authority 7
- administrator console issues, troubleshooting 85
- Adobe Acrobat Reader vii
- Advanced Settings Utility 103
- advertising task sequences 38
- advertising the task sequence to the new servers 17
- Array Builder interface 61
 - elements and associated rules 62
 - other functionality 69
- ASU 103

B

- boot image 15, 17
 - adding command-line support 41
 - adding custom 43
 - adding device drivers 40
 - creating custom 42
 - updating distribution points 44
- boot images 23
- booting new servers 18

C

- capturing an operating system image 32
- catalog, driver 37
- command shell 17
- command-line support, adding to boot image 41
- components 23
 - boot images 23
 - device driver packages 26
 - toolkit package 25
- components of the IBM Deployment Pack 3
- Configuration File Editor 59
- Configuration Manager 2007 pages viii
- Configuration Manager database 12
- configuring 9
 - RAID arrays 61, 62, 69
- configuring the state migration point 37
- console 8

- conventions and terminology v
- creating a custom task sequence for deploying the new servers 13
- creating custom boot image 42
- creating operating system deployment packages and task sequences 10
- creating task sequence to deploy existing image package 48
- custom action for PXE reboot problem 79
- custom action, IBM Server Configuration 53
- custom boot image 42
- custom boot image, adding 43
- custom task sequence 13

D

- database 12
- debugging task sequences 38
- deploy existing image package 48
- deploying an operating system image package 11
- deploying operating system image packages 45
- deploying operating systems overview 2
- deployment 10
- Deployment Pack feature reference
 - IBM Server Configuration custom action 53
- Deployment Pack solution to PXE reboot problem 77
- deployment task sequences 48
- device driver issues, troubleshooting 86
- device driver packages 26
- device drivers, adding to boot image 40
- device drivers, importing 37
- distributing 9
- distribution point, installing 45
- distribution points for boot image, updating 44
- driver catalog 37

E

- elements and associated rules, Array Builder 62
- end-to-end scenario 11
- existing task sequence, adding IBM configuration steps 70
- Export to XML 69

F

- FAQ 81
- feature reference 53
- frequently asked questions 81
 - Can I deploy firmware updates using the Deployment Pack? 81

- frequently asked questions (*continued*)
 - Can I deploy IBM Software using the Deployment Pack? 81
 - Can I install this kit on SMS 2003? 81
 - Can I just integrate the toolkit package with my boot image? 81
 - Can you tell me exactly what I can configure using "BIOS Config" in the Deployment Pack? 81
 - General comments 82

G

- general issues, troubleshooting 94
- getting help 113
- glossary 121

H

- hardware, supported target server 99
- hints and tips 75
 - PXE issues 75
 - Deployment Pack solution 77
 - manual workaround method 78
 - problem rebooting to PXE or USB 76
 - Reboot To PXE / USB custom action 79

I

- IBM Advanced Settings Utility 103
- IBM Deployment Pack
 - installing 21
- IBM Deployment Pack components 3
- IBM Deployment Pack feature reference 53
- IBM Deployment Pack for Microsoft System Center Configuration Manager
 - reinstalling 28
 - uninstalling 27
 - uninstalling interactively 28
 - uninstalling quickly 27
- IBM PRAID program 101
- IBM Server Configuration custom action 53
 - Action Settings page 55
 - Action 55
 - Additional Command Line 56
 - Configuration action type 55
 - Configuration file / Command line parameters 55
 - Timeout checkbox 56
 - Timeout value 56
 - Log / Return Files page
 - Account 59
 - Enable extended / debug logging 58
 - Map a drive checkbox 59

IBM Server Configuration custom action
(*continued*)

Log / Return Files page (*continued*)

Mapped drive 59

Network folder connection

information 58

Password 59

Path 59

Retain network folder settings

checkbox 59

Retrieve the task sequence log

file 58

main page - header 54

Variable Replacement page 57

Action to take when a variable is

uninitialized or the value is null

or blank 57

Fail the task 57

Manually define additional

variables 58

Replace %PASSWORD% variables

with this password 58

Search all text input files for

variables to replace 57

Use a null/blank value 57

IBM ServerProven page viii

IBM Systems Management page viii

IBM Web site for Microsoft Systems

Management Solutions for IBM

Servers viii

Import XML 69

important notes 118

importing the servers into the

Configuration Manager database 12

importing Windows device drivers into

the driver catalog 37

information resources vii

Installation and User's Guide vii

installation issues, troubleshooting 84

installation package 44

installing

distributing Deployment Pack

components 23

boot images 23

device driver packages 26

toolkit package 25

IBM Deployment Pack 21

installing distribution point 45

interactive uninstall 28

L

Log / Return Files page 58, 59

looping during multiple reboot

processing 18, 79

M

management tasks 31

manual workaround method to PXE

reboot problem 78

Microsoft System Center Configuration

Manager 2007 pages viii

multiple reboot processing 18, 79

N

new servers 17, 18

notices 117

O

operating system image package 11

operating system image packages,

deploying 45

operating system image, capturing 32

operating system installation package,

updating distribution points 44

overview 1

overview of deploying operating

systems 2

P

package creation and deployment 10

package deployment 10

pdf files vii

performing specific management

tasks 31

PRAID program 101

prerequisites 99

problem rebooting to PXE or USB 76

Deployment Pack solution 77

manual workaround method 78

Reboot To PXE / USB custom

action 79

product overview 1

PXE issues 75

problem rebooting to PXE or USB 76

Deployment Pack solution 77

manual workaround method 78

Reboot To PXE / USB custom

action 79

PXE service point, setting up 46

Q

quick uninstall 27

R

racking new servers 18

RAID 61, 62, 69

RAID arrays

Export to XML 69

Import XML 69

Save to Package 69

Save to Variable 69

View XML 69

reboot processing 18, 79

rebooting to PXE or USB, problem 76

custom action 79

Deployment Pack solution 77

manual workaround method 78

receiving new servers from IBM 12

reference, IBM Deployment Pack

feature 53

reinstalling 28

Release Notes vii

S

Save to Package, RAID configuration

file 69

Save to Variable, RAID configuration

file 69

scenario 3

adding Windows device drivers to the

boot image 15

advertising the task sequence to the

new servers 17

configuring 9

configuring for package creation and

deployment 10

creating a custom task sequence for

deploying the new servers 13

distributing 9

editing the task sequence steps 16

enabling the command shell on your

boot image 17

end-to-end scenario 11

importing the servers into the

Configuration Manager

database 12

installing 4

installing Configuration Manager

2007 4

installing Configuration Manager

console 6

installing the IBM Deployment Pack

on secondary console 8

installing the IBM Deployment Pack

on server 7

preventing a server from looping

during multiple reboot

processing 18, 79

racking and booting new servers 18

receiving new servers from IBM 12

secure administrator authority 7

verifying the success of the

installation 7

secondary console 8

security 7

server hardware, supported target 99

service point, setting up PXE 46

setting up PXE service point 46

state migration point, configuring 37

supported target server hardware 99

Sysprep 105, 111

System Center Configuration Manager

2007 pages viii

System Preparation Tool (Sysprep) 105

Windows Vista and Windows Server

2008 111

Windows XP and Windows Server

2003 105

Systems Technical support site viii

T

target server hardware, supported 99

task sequence 13

adding IBM configuration steps 70

task sequence steps 16

task sequence, advertising 17

task sequences, advertising 38

task sequences, debugging 38

- task sequences, deployment 48
- text editor 59
- toolkit package 25
- trademarks 118
- troubleshooting 83
 - administrator console issues 85
 - device driver issues 86
 - general issues 94
 - installation issues 84
 - WinPE and task sequence issues 88

U

- uninstalling
 - IBM Deployment Pack for Microsoft System Center Configuration Manager 27
 - interactively 28
 - quick 27
- updating distribution points for boot image 44
- updating distribution points for operating system installation package 44
- using the text editor 59

V

- Variable Replacement page 57, 58
- View XML 69

W

- Web resources vii
- Windows device drivers 15
- Windows Vista and Windows Server 2008
 - System Preparation Tool (Sysprep) 111
- Windows XP and Windows Server 2003
 - System Preparation Tool (Sysprep) 105
- WinPE and task sequence issues, troubleshooting 88
- working with deployment task sequences 48

X

- XML, export array configuration file 69
- XML, import array configuration file 69
- XML, view array configuration file 69

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

IBM System x
IBM Deployment Pack for
Microsoft System Center Configuration Manager 2007
Installation and User's Guide
Version 1.0

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

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

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

Comments:

Thank you for your support.

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

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

Name

Address

Company or Organization

Phone No.

E-mail address



Fold and Tape

Please do not staple

Fold and Tape



NO POSTAGE
NECESSARY
IF MAILED IN THE
UNITED STATES

BUSINESS REPLY MAIL

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

POSTAGE WILL BE PAID BY ADDRESSEE

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



Fold and Tape

Please do not staple

Fold and Tape



Printed in USA