IBM

Remote Deployment Manager 4.1 Installation Guide

Note:

Before using this information and the product it supports, read the general information in Appendix A, "Notices," on page 33.

Contents

About this guide

This guide explains how to install IBM® Remote Deployment Manager (RDM) 4.1. This product gives administrators centralized control over many servers, workstations, desktop computers, point-of-sale systems, and mobile computers that are connected to the local area network (LAN) or wide area network (WAN). Using the RDM tasks in IBM Director Console, you can deploy an operating system (including applications), update BIOS code or other system firmware, back up or restore the primary partition, and perform other maintenance tasks on your computers without having to visit each computer. This can significantly lower your cost of ownership.

Although one of the features of RDM is to distribute software to systems across a LAN, the terms and conditions of the IBM International Program License Agreement for RDM do not grant any license to install, copy, or use any application software or operating system software not provided with RDM. This includes, but is not limited to Windows® 2000 Professional, Windows 2000 Server and Advanced Server, Windows XP Professional, Windows Server 2003, DOS, and Linux®. Always ensure that you have obtained suitable licenses for any software you intend to use with RDM.

This guide describes the operating environment, prerequisites, procedures, and network configuration (switches, hubs, and routers) for a successful installation of RDM.

Who should read this guide

This guide is intended to help network administrators install RDM. To use this guide effectively, you should already have an extensive knowledge of your network environment and the applicable operating system: Windows 2000 Server, Windows 2000 Advanced Server, Windows XP Professional, Windows Server 2003 Standard Edition, Windows Server 2003 Enterprise Edition, Windows Server 2003 Web Edition, or Linux.

Related documentation

In addition to this guide, there are other sources that you can refer to for RDM information.

Guides

- *Remote Deployment Manager 4.1 Getting Started* – Step-by-step examples of using several tasks

- *Remote Deployment Manager 4.1 Operations Guide* – A detailed reference for RDM tasks, features, interface, and customizations

- *Remote Deployment Manager 4.1 Compatibility and Configuration Guide* – Lists RDM-supported hardware and software

The system configurations documented for RDM 4.1 are those supported by IBM compatibility tests for a variety of hardware, software, and firmware combinations. The test results are accessible in the compatibility guide on the RDM home page. This guide is updated as additional test cases are completed.

Online help

In general, every window has online help available (except for some message windows or other windows where no help is applicable), either using a **Help** menu or a **Help** button.

Links

- The compatibility and configuration guides list compatibility of RDM functions with specific hardware (such as systems or adapters). For details, go to the RDM home page at:

  http://www.ibm.com/servers/eserver/xseries/systems_management/sys_migration/rdm.html

- Subscribe to the RDM Users Forum to discuss problems and solutions with fellow users and IBM support personnel. For details, go to http://www7.pc.ibm.com/~UMS/.

- Support is available for supported systems (IBM and non-IBM) through e-mail or fee-based telephone support. Telephone support is not available in all countries. For more information about the fee-based telephone support, go to http://www.ibm.com/support or http://service.software.ibm.com/supportline.html. For more information about e-mail support, go to the RDM home page.

IMPORTANT: Before using RDM 4.1, check the compatibility test results and browse the rest of the RDM Web site for additional information and tips concerning the installation and use of RDM.

Chapter 1. Operating environment

This section provides network topologies and configuration considerations to help you plan your installation.

Network topologies

This section shows examples of the various hardware configurations for using RDM in a Preboot Execution Environment (PXE) environment.

This chapter provides an overview of typical configurations.

Single LAN environment example

In the simplest case, all RDM components reside on a single LAN. After RDM Server is installed, all necessary installable RDM components (Server, Console, and Deployment Server) are present on a single computer. Installing RDM Console on another computer on the same LAN is optional but often enables access to RDM Server from a more convenient computer. This is a typical setup for a configuration center or a small business with a single LAN segment.

The following illustration shows the typical RDM single LAN environment.
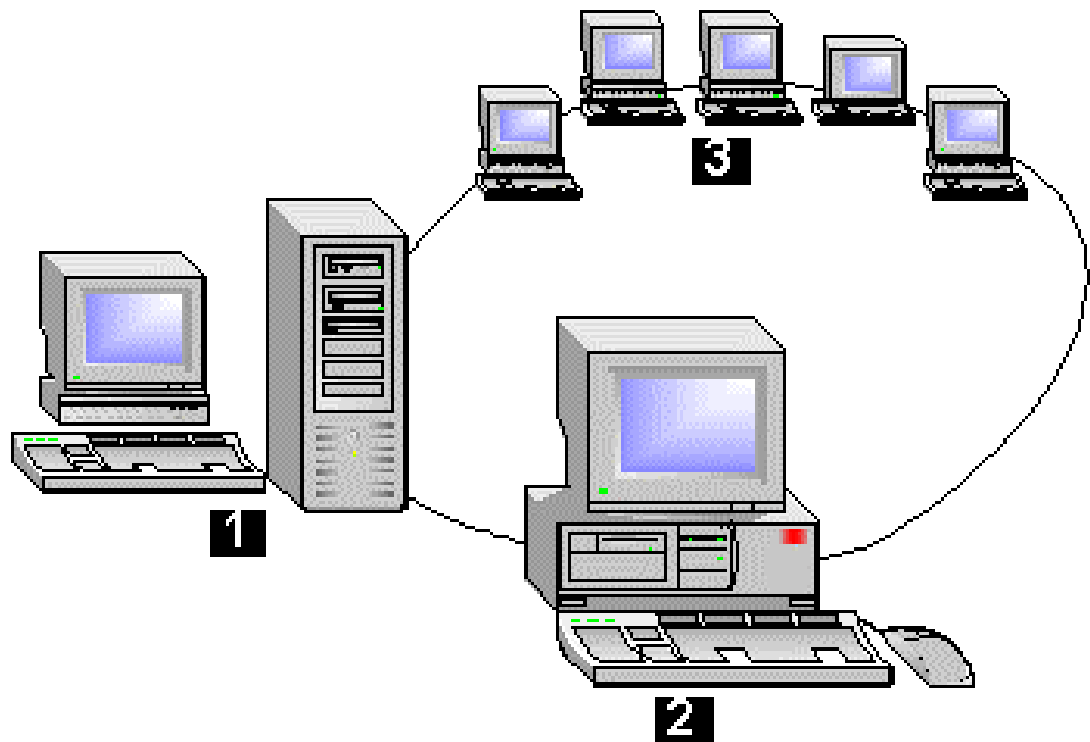
1. RDM Server, Console, Deployment Server – Server, with attached keyboard and monitor, where RDM is installed and run.

2. RDM Console – Computer on the LAN on which the RDM Console is installed.

3. Systems – PXE-enabled systems connected to the LAN.

Routed network environment example 1

Another configuration can also be used for the small-LAN business that has only a few locally routed segments all connected at LAN speed.
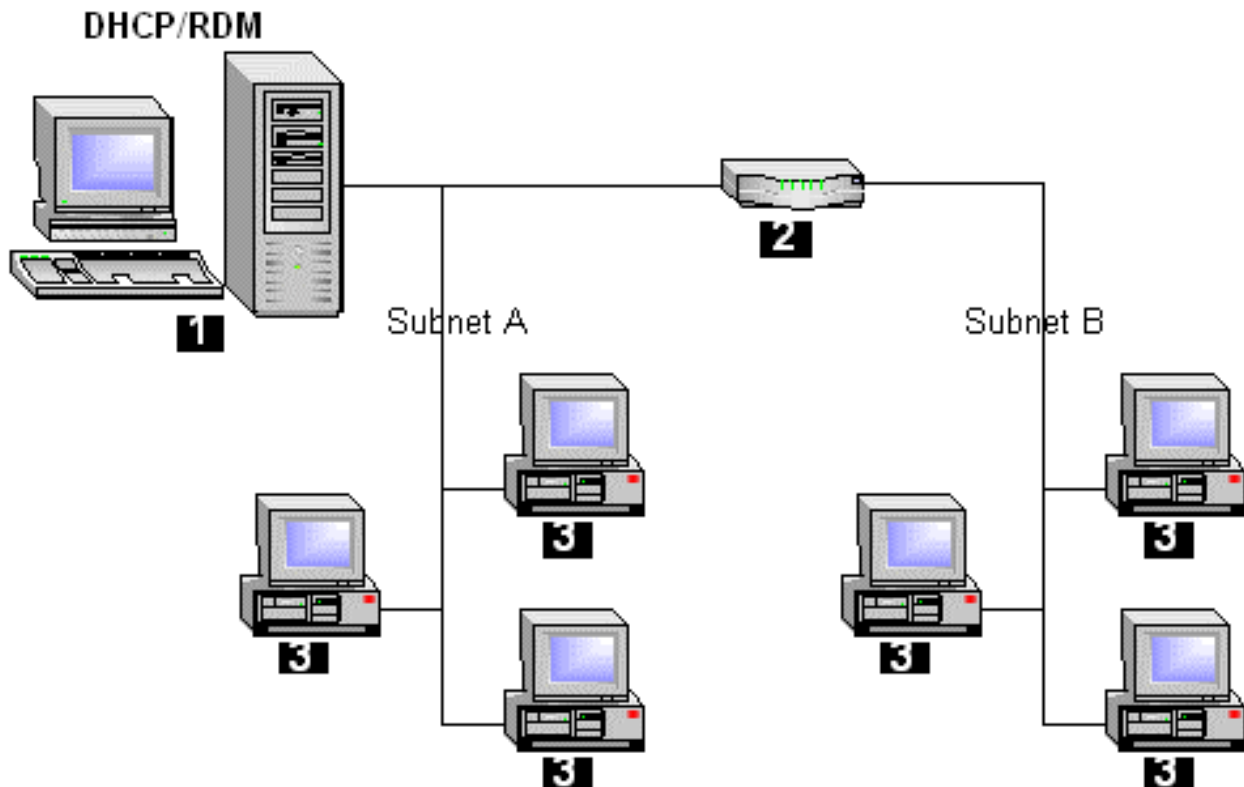
The DHCP service, and RDM Server, Console, and Deployment Server are on the same system. The systems start and connect either locally (through the local network segment) or through one or more Internet Protocol (IP) routers. The IP router must support the BOOTP Relay Agent function.

For this environment, or any environment where systems and the RDM Deployment Server are separated by one or more routers, each router between the system and the deployment server must support the following configurations:

- ICMP IP-multicasting messages from the systems

- BOOTP Relay Agent function

The DHCP server must support the following configurations:

- Option 60 (the RDM PXE service and the DHCP service are on the same system)
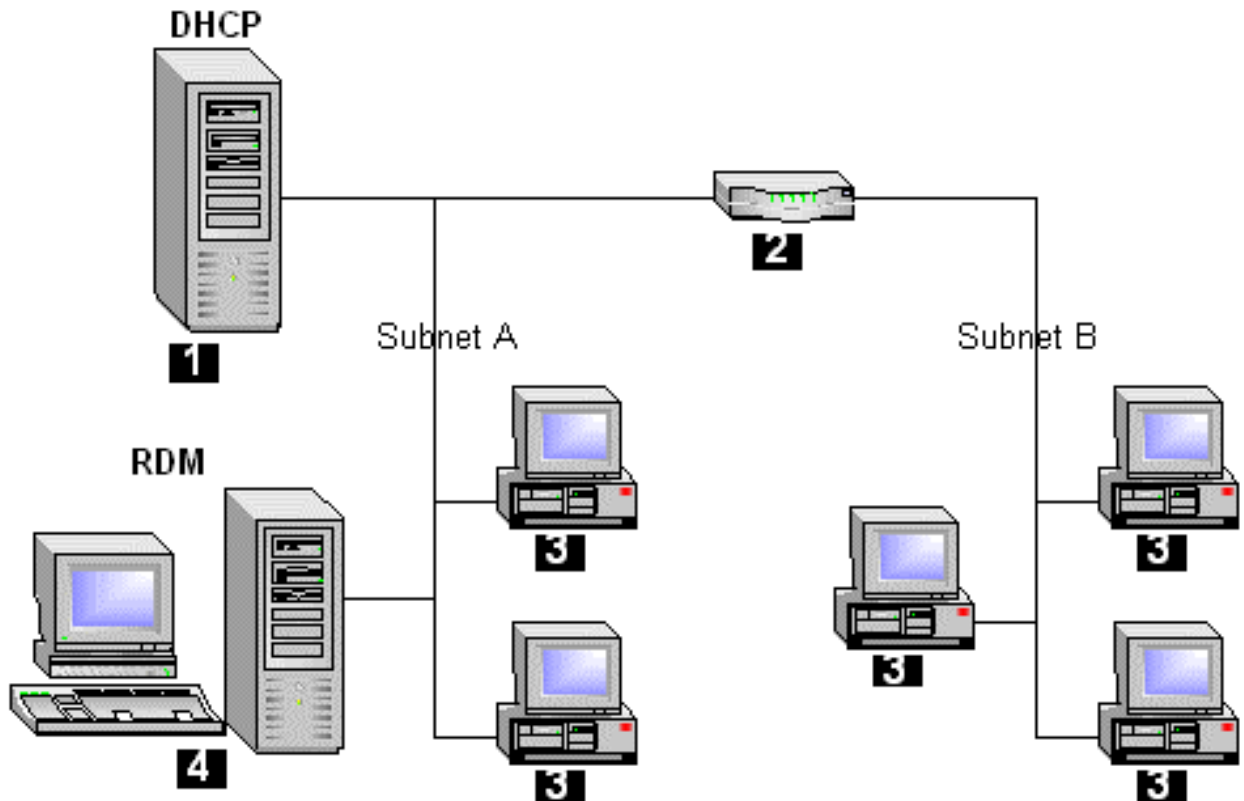
- Option 3 for each router

1. DHCP service, and RDM Server, Console, and Deployment Server on the same system

2. IP router (one or more)

3. PXE systems

Routed network environment example 2

The DHCP service is installed on one system. RDM Server, Console, and Deployment Server are installed on another system. The systems start and connect either locally (through the local network segment) or through one or more IP routers.
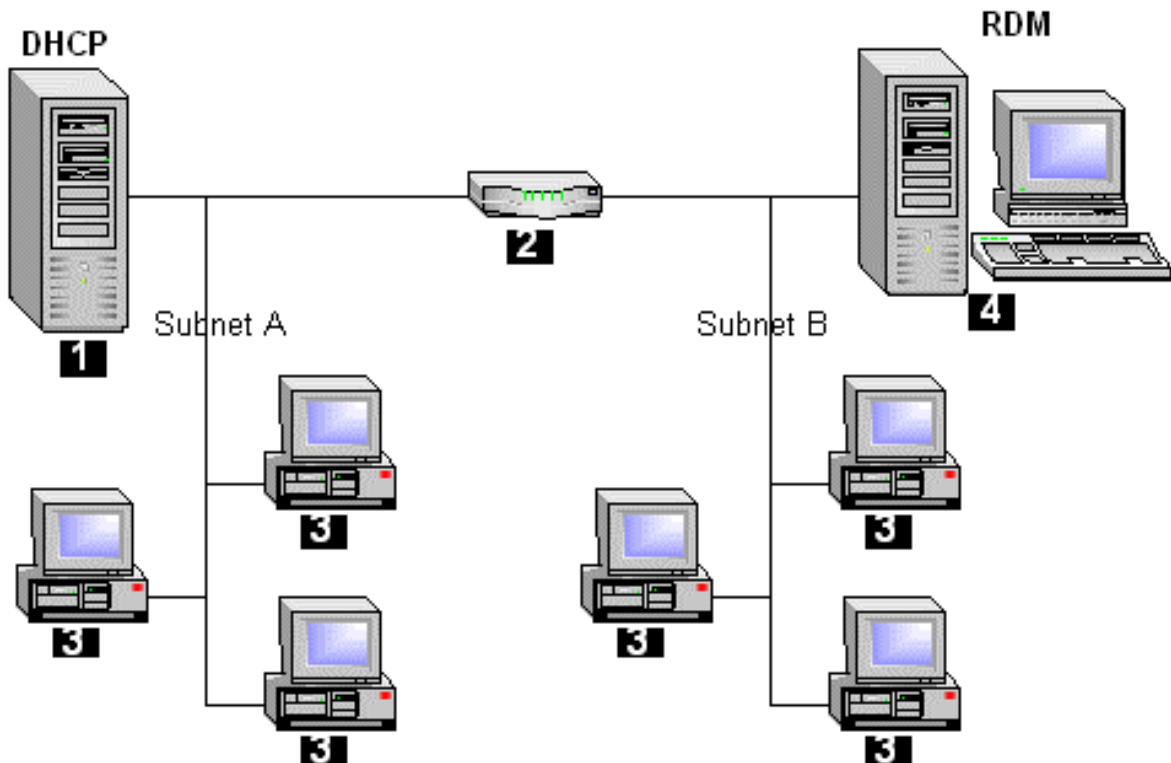
The routers must be configured as in Routed Network Environment Example 1. The DHCP server must be configured as in Routed Network Environment Example 1, except that option 60 must not be configured.

1. DHCP server

2. IP router (one or more)

3. Systems

4. RDM Server, Console, and Deployment Server

Routed network environment example 3

The DHCP service and RDM Server are on different computers separated by zero or more IP routers. The systems receive configuration data (either locally or through one or more IP routers), start, and connect (either locally or through one or more IP routers).

1. DHCP server

2. IP router (zero or more)

3. Systems

4. RDM Server, Console, and Deployment Server

The routers and DHCP server must be configured as in Routed Network Environment Example 2, with Proxy Address Resolution Protocol (ARP) also configured.

Proxy ARP enables two computers on different subnets to communicate even though they do not know about the existence of a router between them.

In this environment, the DHCP server is on one subnet, RDM Server is on the other subnet, and systems are distributed on both subnets. The router must have the Proxy ARP protocol enabled. The router must also have a BOOTP forward defined for the RDM PXE Service to reach systems on subnet A, and a BOOTP defined for the DHCP server to reach systems on subnet B.

Typically, Proxy ARP protocol is enabled on all routers regardless of the configuration, though it is only required for RDM in this configuration.

Routed network environment example 4

The DHCP service is separated from RDM Server by one or more IP routers. The systems receive configuration data (either locally or through one or more IP routers), start, and connect (either locally or through one or more IP routers). RDM Console connects to RDM Server through one or more IP routers.

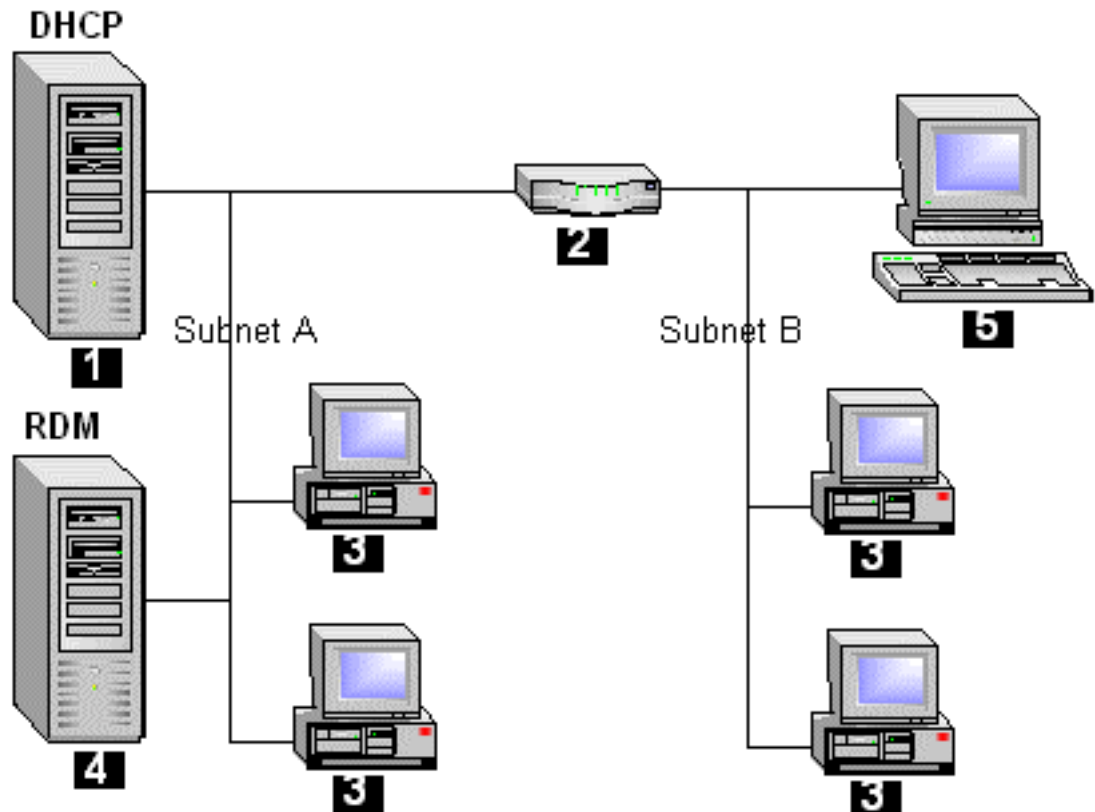The routers and DHCP server must be configured as in Routed Network Environment Example 3.
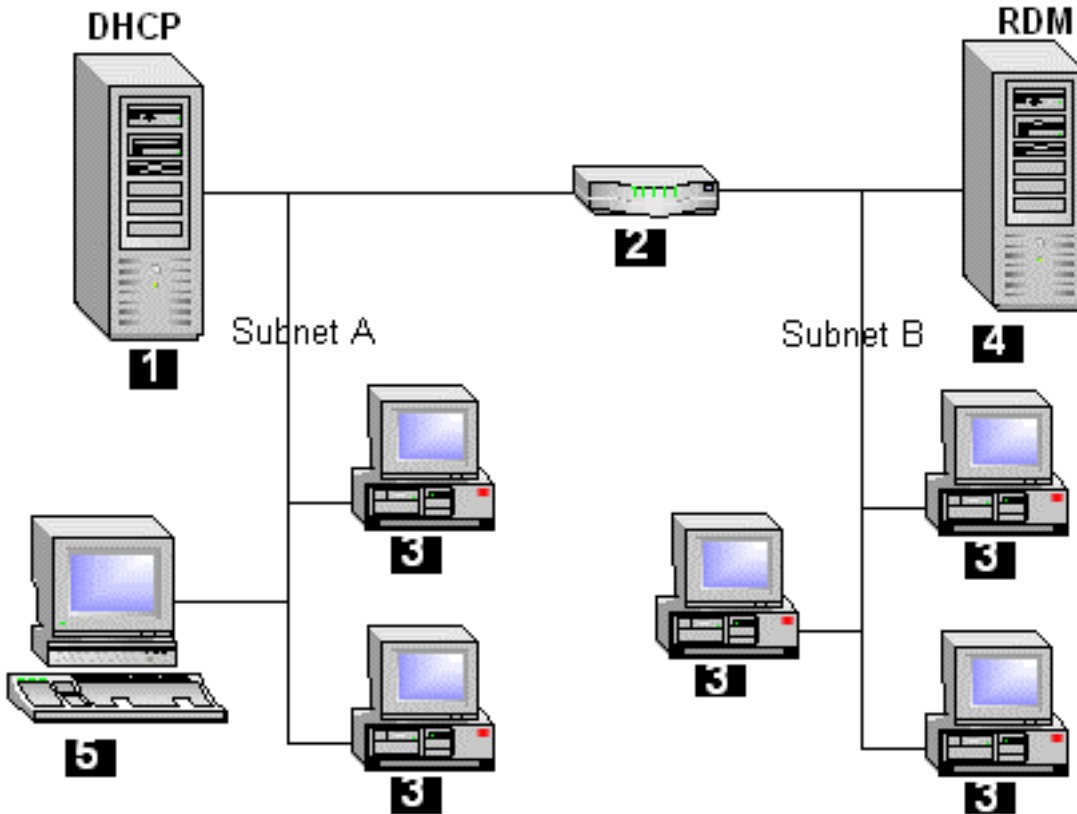
1. DHCP service
2. IP router (one or more)
3. Systems
4. RDM Server, Console, and Deployment Server
5. RDM Console

Routed network environment example 5

The DHCP server and RDM Server are on the same LAN segment. The systems receive configuration data (either locally or through one or more IP routers), start, and connect (either locally or through one or more IP routers). RDM Console connects to RDM Server through one or more IP routers.
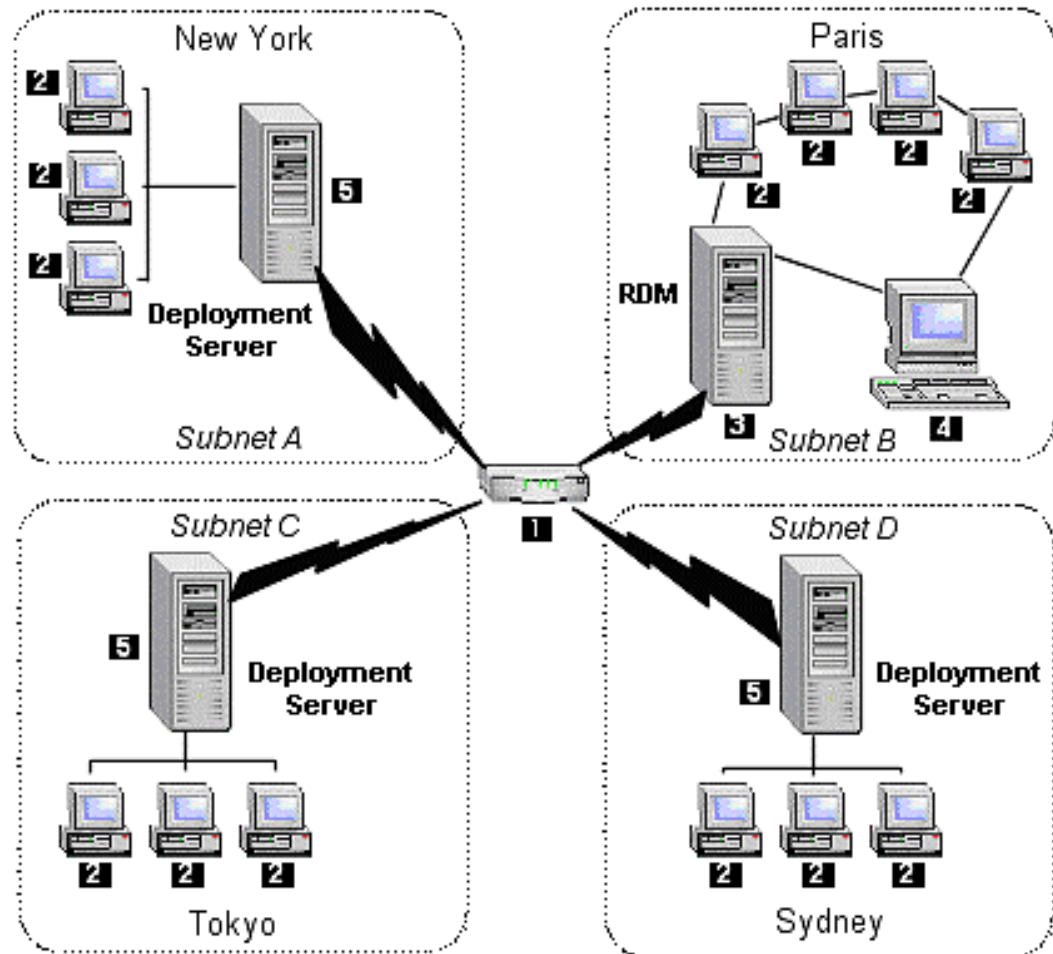
The routers and DHCP server must be configured as in Routed Network Environment Example 3.

1. DHCP server
2. IP router (one or more)
3. Systems
4. RDM Server, Console, and Deployment Server
5. RDM Console

WAN environment example

In a WAN configuration, performance is usually a significant concern. The key factor in reducing the impact of RDM network traffic is to make sure that as much as possible of this traffic is transmitted at LAN speed. You accomplish this by putting an RDM Deployment Server on each physical LAN, as in this sample configuration.

1. IP routers

2. Systems

3. RDM Server, Console, and Deployment Server

4. RDM Console

5. Remote RDM Deployment Server

The routers must, in general, be configured as in Routed Network Environment Example 3. However, for security reasons, it is possible to restrict the network traffic between the remote sites (subnets A, C, and D) and RDM Server. The main requirement is that the routers and firewalls allow DHCP and HTTP between the remote RDM Deployment Server and RDM Server.

Network considerations

The existence of routers and switches within a network can complicate the configuration needed for RDM to function properly. When working with existing routers and switches, or when installing new routers and switches, consider the following issues:

- Generally, if all systems and services are located on the same subnet, behind a router, there are typically few router or switch issues.

- When systems and services span a router or several routers, the routers must support DHCP broadcasts through the router to other subnets (for example, by enabling BOOTP forwarding and subnet-directed broadcasts), or a DHCP relay agent must be present on the same subnet (that is, behind the same router) as the RDM systems.

Network switches can also cause unique issues with RDM systems and servers, sometimes causing RDM systems to act as if the network were too busy to handle system requests. Determine if any switches in the network are using spanning tree protocol, and disable this protocol on the ports to which RDM systems are connected. Do not disable spanning tree protocol on the ports to which routers are connected. Many switches are set up by default to use spanning tree protocol on all ports, and adding a new switch to an existing RDM-installed network might introduce problems if the switch configuration is not changed

Network configuration requirements

For a successful installation of RDM, observe the following requirements:

- **Prerequisites.** Ensure that your systems meet the requirements for RDM to operate successfully.

- **Examine the network configuration**. This section gives examples of various network configurations and the install issues involved. Compare the network configuration in your organization with the examples to get an understanding of the issues pertaining to your environment.

- **Install RDM 4.1**. Run a complete install of the RDM software.

- **Configure the DHCP server.** Make sure that your DHCP server is properly configured.

- **Configure routers.** Properly configure your routers.

- **Configure switches and hubs.** Make sure that your switches and hubs are properly configured.

Chapter 2. Prerequisites

Before installing RDM 4.1, verify that your systems meet the following requirements for the RDM components.

RDM Server

RDM Server has the following prerequisites:

- Install IBM Director Server, version 4.1

- Install one of the following operating systems:

    - Windows 2000 Server plus Service Pack 3 or higher

    - Windows 2000 Advanced Server plus Service Pack 3 or higher

    - Windows Server 2003 Standard Edition

    - Windows Server 2003 Enterprise Edition

    - Windows Server 2003 Web Edition

- Install IBM Director (on your RDM Server) with the following options:

    - Select a database manager (Jet, Sequel Server, IBM DB2, Oracle)

    - Enable all network adapters

    - Install ServeRAID™ with IBM Director in order for RDM RAID functions to work.

- Install supported versions of Microsoft® Windows only on a RDM Server that has TCP/IP connectivity

- Optional choices:

    - DHCP Service (needed if you do not have a DHCP service already installed on your network)

    - Network Monitor (needed to capture network traces when debugging)

- Install the following hardware:

    - A computer on which one of the supported operating systems is installed.

    - At least 1 Ethernet or Token Ring network adapter, with TCP/IP connectivity.

    - 300 MB (megabytes) of disk space for the RDM programs.

    - 200 MB of temporary disk space on the system partition.

    - At least 2 GB (gigabytes) of disk space for the RDM Master Repository. The actual disk space needed depends on the number and size of the image files used by your tasks. Some small installations might require less than 2 GB, and many larger installations could require significantly *more* space.

    - 1 GB of RAM.

For Windows 2000 Server or Windows 2000 Advanced Server, RDM can be installed on:

- **Domain controller.** The domain controller maintains the central domain authorization database and validates connections to the domain it controls.

- **Stand-alone server.** A stand-alone server can be a member of a domain or a workgroup but it cannot be the domain controller. The stand-alone server is not

involved with user account logon verification and depends on the domain controller to validate connections to the domain to which it belongs.

RDM Console

RDM Console has the following prerequisites:

- Install on one of the following operating systems:
  - Windows 2000 Professional plus Service Pack 3 or higher
  - Windows 2000 Server plus Service Pack 3 or higher
  - Windows 2000 Advanced Server plus Service Pack 3 or higher
  - Windows 32-bit XP Professional plus Service Pack 3 or higher
  - Windows Server 2003 Standard Edition
  - Windows Server 2003 Enterprise Edition
  - Windows Server 2003 Web Edition
- Install IBM Director Console, version 4.1.
- Install hardware that will support IBM Director Console, with the following *additional* requirements:
  - 30 MB of free disk space on the hard drive
  - 256 MB of RAM

RDM Deployment Server

RDM Deployment Server has the following prerequisites:

- Install on one of the following operating systems:
  - Windows 2000 Professional plus Service Pack 3 or higher
  - Windows 2000 Server plus Service Pack 3 or higher
  - Windows 2000 Advanced Server plus Service Pack 3 or higher
  - Windows XP Professional plus Service Pack 3 or higher
  - Windows Server 2003 Standard Edition
  - Windows Server 2003 Enterprise Edition
- Install supported versions of Microsoft Windows only on a RDM Deployment Server that has TCP/IP connectivity
- Install a network monitor (optional choice needed to capture network traces when debugging)
- Install the following hardware:
  - A computer that supports one of the operating systems listed earlier.
  - An Ethernet or Token Ring network adapter, with TCP/IP connectivity.
  - 0.5 MB of disk space for RDM programs, plus at least 2 GB of disk space for the RDM image files. The actual disk space needed depends on the number and size of the image files used by your tasks and the distribution of systems assigned to any particular deployment server.

System hardware

RDM is able to deploy a Windows or Linux operating system and applications on any recently manufactured computer that supports the target operating system and the proper protocols. However, because of differences between computers, including differences between IBM computers, there might be exceptions. The term *system* includes servers (xSeries™, Netfinity®, and blade servers), workstations (IntelliStation®), desktop computers (NetVista™), mobile computers (ThinkPad®), and point-of-sale systems.

The following are the generic hardware requirements for RDM system computers:

- A supported processor architecture−32-bit Intel® Pentium® (or equivalent) computers.

- A system capable (according to the manufacturer) of installing and running the target operating system.

- An Ethernet or Token Ring network adapter that supports one of the following environments:

  - PXE 1.0 – Preboot Execution Environment (PXE) specified in the NetPC hardware Design Guidelines (Version 1.0b − August 1997, co-authored by Compaq Computer Corporation, Dell Computer Corporation, Hewlett Packard Company, Intel Corporation, and Microsoft Corporation) including the Universal Network Driver Interface (UNDI).

Note: Linux Native Install tasks cannot be deployed to systems using a PXE 1 network adapter.

  - PXE 2.0 – Preboot Execution Environment (PXE) version 2.0 specified by Intel Corporation (28 December 1998).

  - PXE 2.1 – Preboot Execution Environment (PXE) version 2.1 specified by Intel Corporation (20 September 1999).

- A system that complies with the *Wired for Management Baseline* 2.0 specification.

Chapter 3. Installation

The installation process encompasses the installation of three RDM components: Server, Console, and Deployment Server. Although there are several kinds of configurations possible, there are two basic install configurations:

- RDM Server (that is, Server, Console, and Deployment Server features) installed on a single server, with no other RDM features installed anywhere. This is the minimum possible configuration.
- RDM Server installed on a single server and one or more RDM Deployment Servers installed on other computers.

In either of these configurations, it is also possible to optionally install one or more RDM consoles (with no other RDM features) on different computers.

The installation takes place when you run the RDM setup program (after installing the prerequisite IBM Director components) from the program CD. The installation program guides you through a series of wizard screens to select the type of installation that takes place on the local system.

Note: Your system must be connected to the network while you install RDM.

Note to RDM 3.*x* users

The installation package for RDM 4.1 is used to perform a new installation of RDM. There is no upgrade from RDM 3.*x*.

You can install RDM 4.1 even if LCCM 3.0, RDM 3.1, RDM 3.1.01, or RDM 3.2 is installed. However, you cannot install RDM 4.1 into the same directory as the previous version, and the PXE and MTFTP services are disabled by the installation. If you later uninstall RDM 4.1, you will need to manually enable those old services to make the previous version to work again.

Installing RDM (attended)

This section describes an interactive installation of the RDM 4.1 Server with the InstallShield wizard. Review disk space requirements carefully before installing RDM. You might consider installing RDM somewhere other than on your drive C partition.

Installation Path Limitation

The default RDM installation path is C:\Program Files\IBM\RDM\. We recommend that you use the default path, changing only the drive letter, if appropriate.

If you decide to install into a different path, there are some path-length restrictions that you must consider. The length of the RDM install path, after conversion to a DOS-style path, must be no longer than 28 characters.

Important: The install program will not warn you that the path you chose is too long.

For example, you could attempt to install to:

   D:\Program Files\IBM Corporation\Remote Deployment Manager\

The path length for this path is determined from:

D:\PROGRA~1\IBMCOR~1\REMOTE~1\

Since the length of this path is 30 characters, RDM will not run properly (although it will appear to install properly). However, if you choose D:\Program Files\IBM\Remote Deployment Manager\, the installation will be successful because the length computed from D:\PROGRA~1\IBM\REMOTE~1\ is 25 characters.

Installation Procedure

Complete the following steps to install RDM 4.1:

1. Log on to your server as a network administrator or equivalent.

2. Run the RDM installation program (setup.exe*).* The following windows open. Click **Next** to continue.
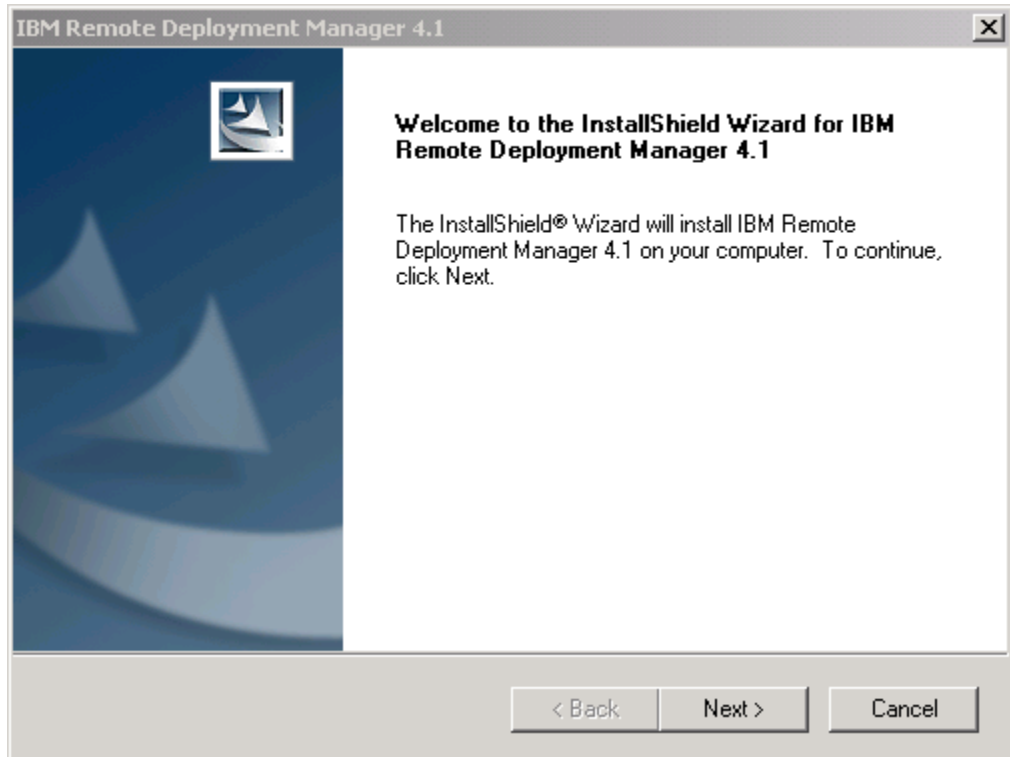
3. Click **Yes** to continue with the installation program if you accept the terms and conditions of the license agreement. Click **No** to cancel the installation.
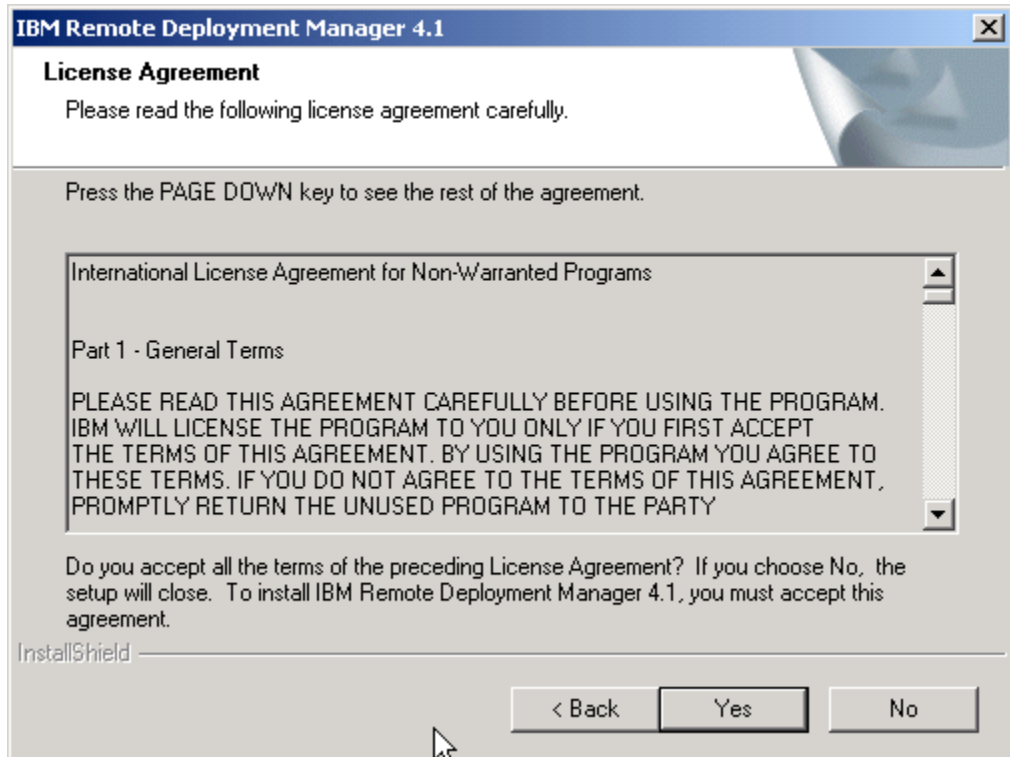
4. Type the user name and company name (if they did not get filled in automatically), and then click **Next** to continue.

5. Browse to the location where files are to be installed. Click **Next** to continue.

6. Select a setup type. Select **Complete** to install all components of RDM or **Custom** to select Server, Console, or D-Server. Click **Next** to continue.
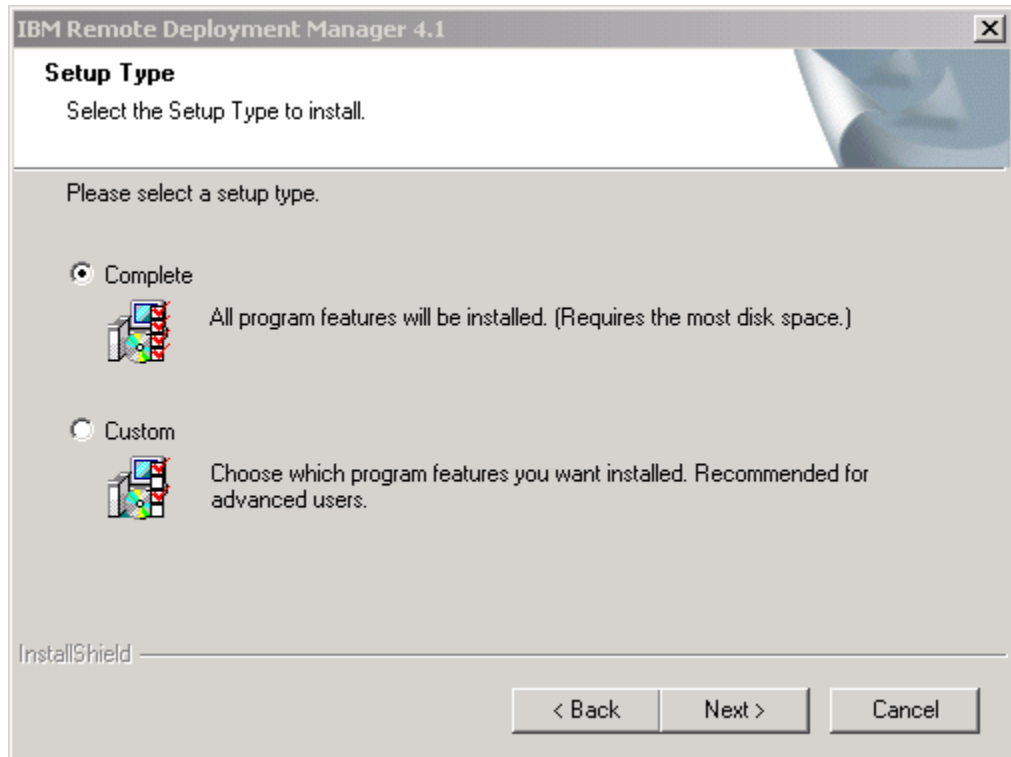

If you click **Custom**, the following window opens. Select the components to install and click **Next**. As you select the components, the **Space Required** field will change accordingly. If you select the **Server** check box, both Console and D-Server components will be installed.
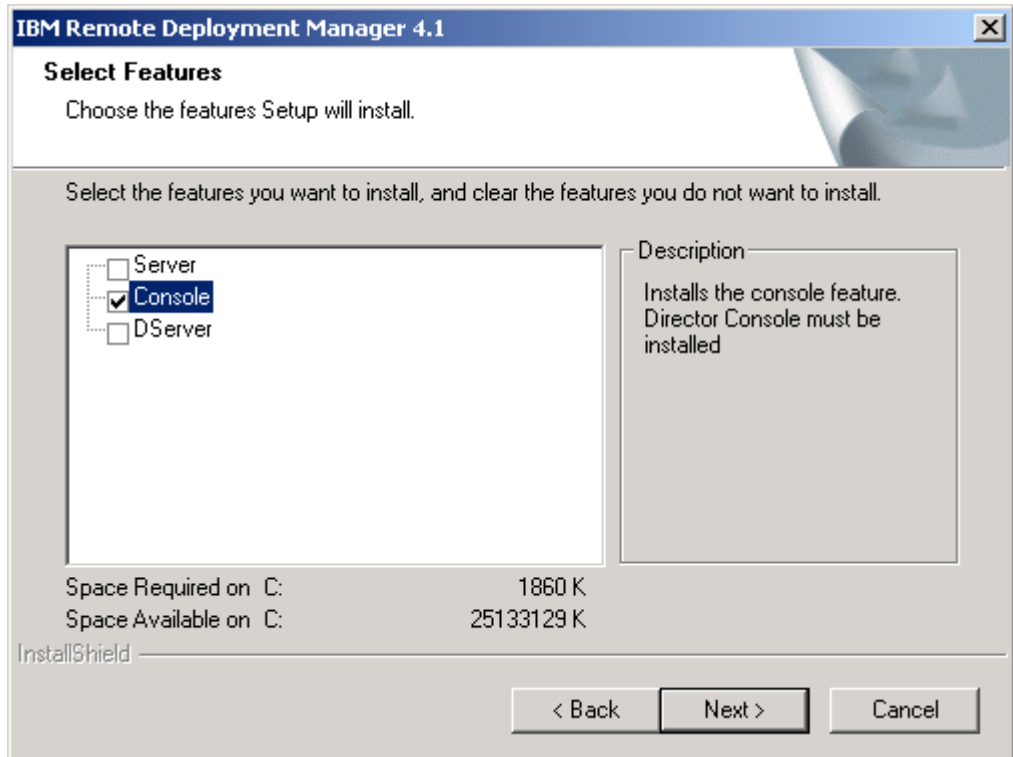
The Start Copying Files window lists the selections that you made on the previous installation windows to review. If the selections in the Start Copying Files window are correct, click **Next** to continue (otherwise, click **Back** to change your selections).
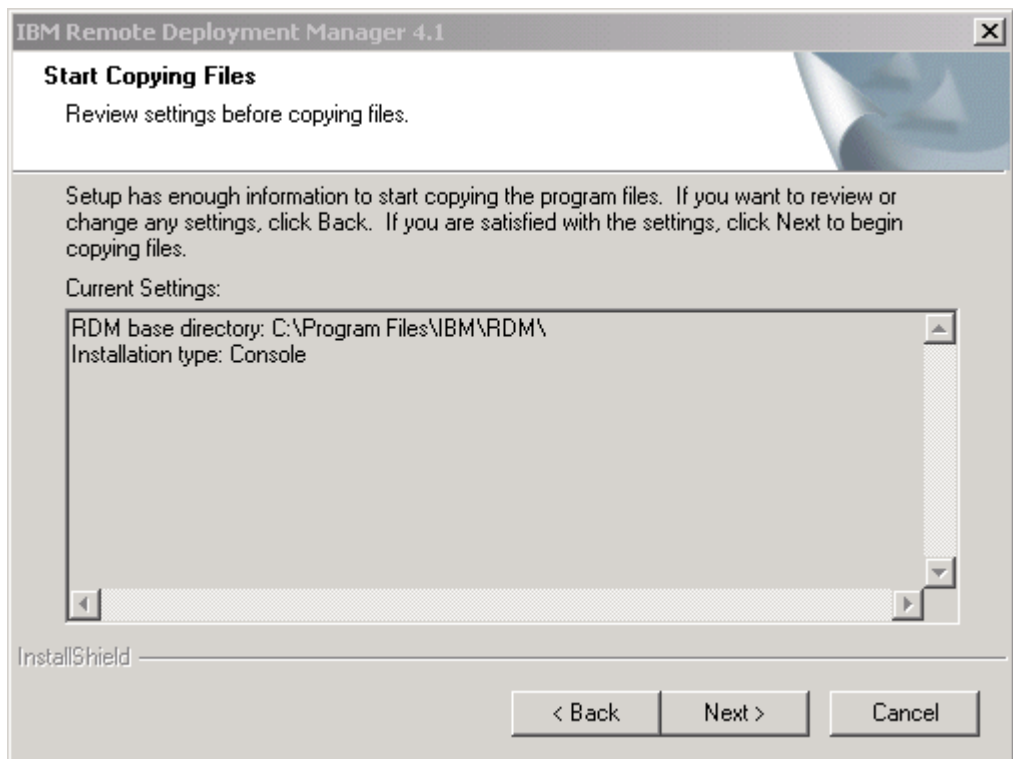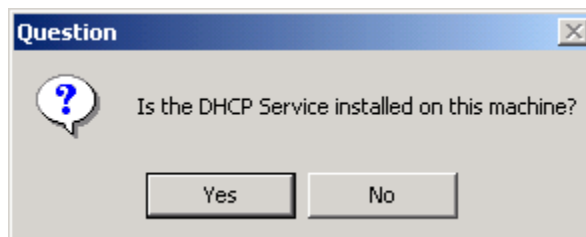
7. Shut down IBM Director Service to install RDM. Click **Yes** to continue.
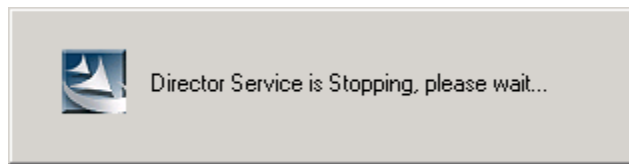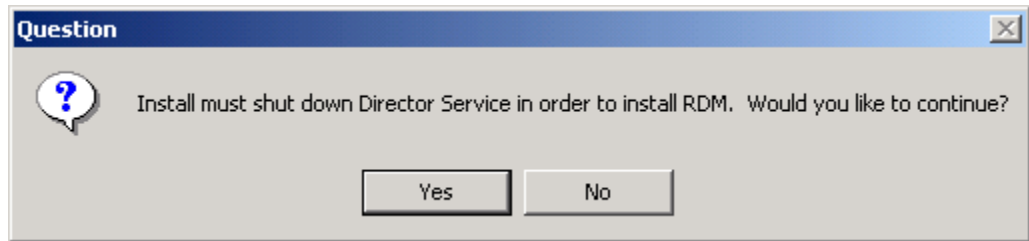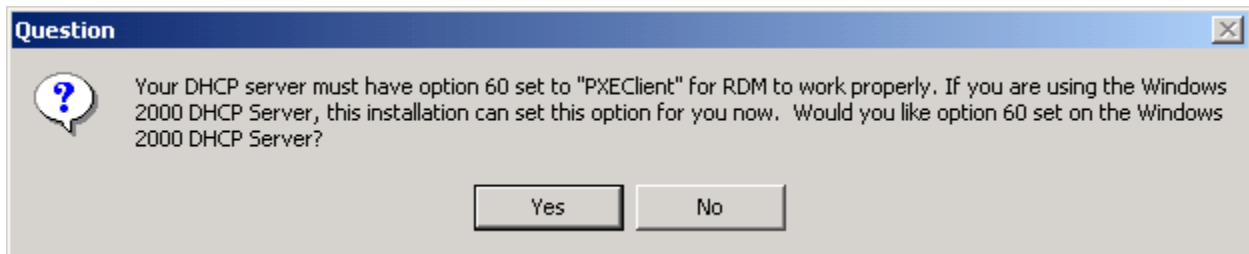

The IBM Director Service is stopped and the RDM files are installed.
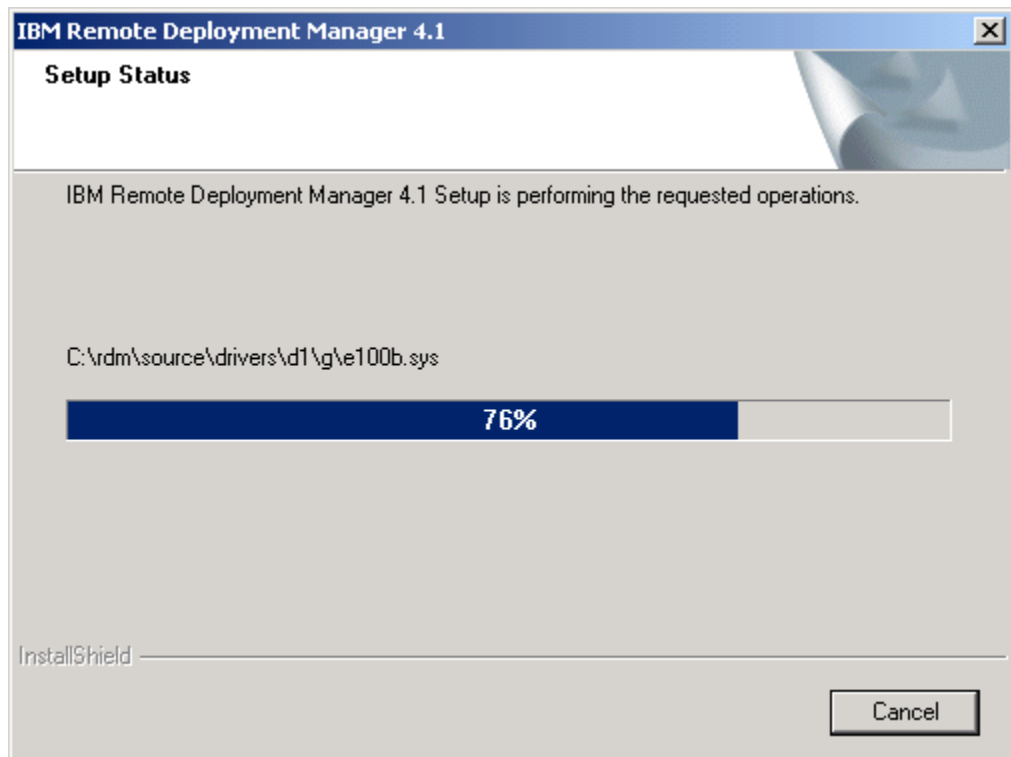
8. When you are asked whether DHCP is installed on the system, click **Yes**.

The following message window opens.

Question

? Your DHCP server must have option 60 set to "PXEClient" for RDM to work properly. If you are using the Windows 2000 DHCP Server, this installation can set this option for you now. Would you like option 60 set on the Windows 2000 DHCP Server?

[Yes]   [No]

Click **Yes**. The PXEDHCP.BAT program adds option 60 to your Windows 2000 DHCP Server configuration. It will not work on any other DHCP Server (in that case, you must configure it manually).

You must also configure option 3 (router) for each subnet. Typically, you will already have this option configured.

9. Edit settings if necessary (usually, changing these settings is not required), then click **OK**.
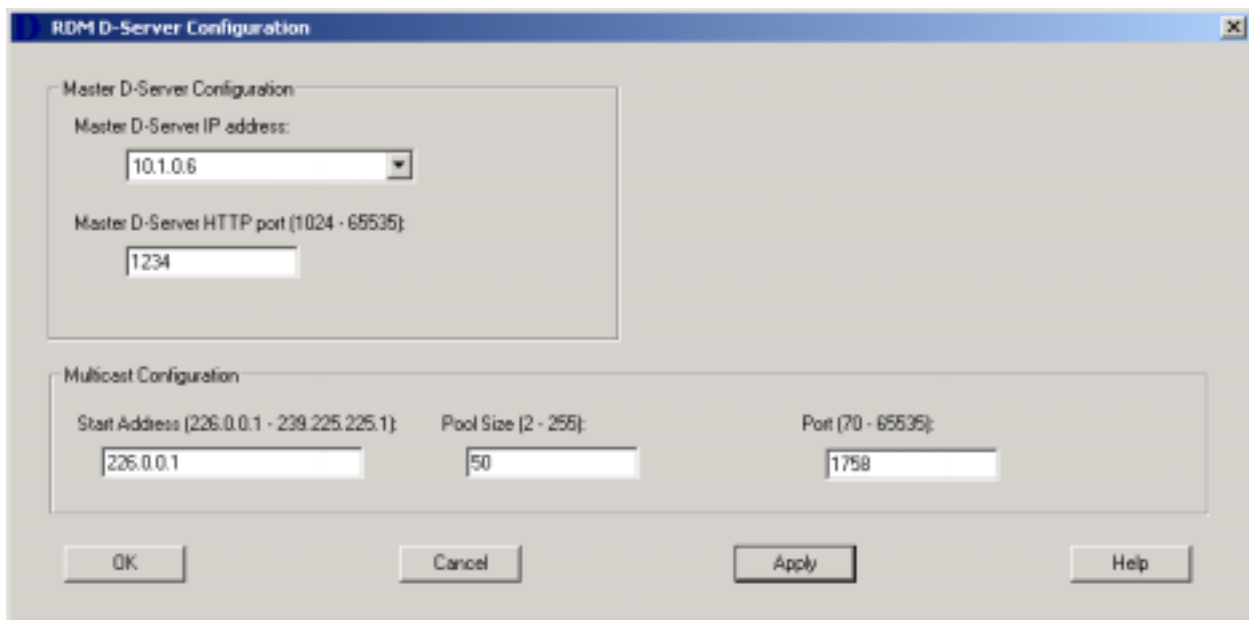
Master D-Server IP address – This is the IP address by which the Master D-Server is known to RDM. If the Server contains multiple network adapters (with multiple IP addresses), you must select one of them in this field.

Master D-Server HTTP port – This is the port number for communication between the Master D-Server and remote D-Servers; it is the port on which the Master D-Server receives HTTP messages. The default is 1234. The minimum of 1024 is an IBM Director requirement. The port must not already be in use by any application.

Start Address – This is the first class-D (multicast) IP address in a range of addresses that is assigned to this D-Server. The default value, 226.0.0.1, is the smallest class-D address that RDM allows. Class-D addresses in the range 224.0.0.0 through 226.0.0.0 are often used for other specific non-RDM purposes.

Pool Size – This is the number of contiguous class-D addresses reserved by RDM for use by this D-Server.

Port – This is the port number used by the IBM RDM MTFTP Service that is installed on this D-Server. The default is 1758.

If you select the default multicast configuration addresses and pool size values as listed, RDM will to use multicast addresses in the range 226.0.0.1 to 226.0.0.50. Make sure that the multicast pool does not overlap with multicast addresses being used by other applications in their networks.

For more multicast address information, go to http://www.iana.org/assignments/multicast-addresses to identify ranges of valid multicast addresses and those with predetermined values.

10. Click **Finish** to close the setup program.
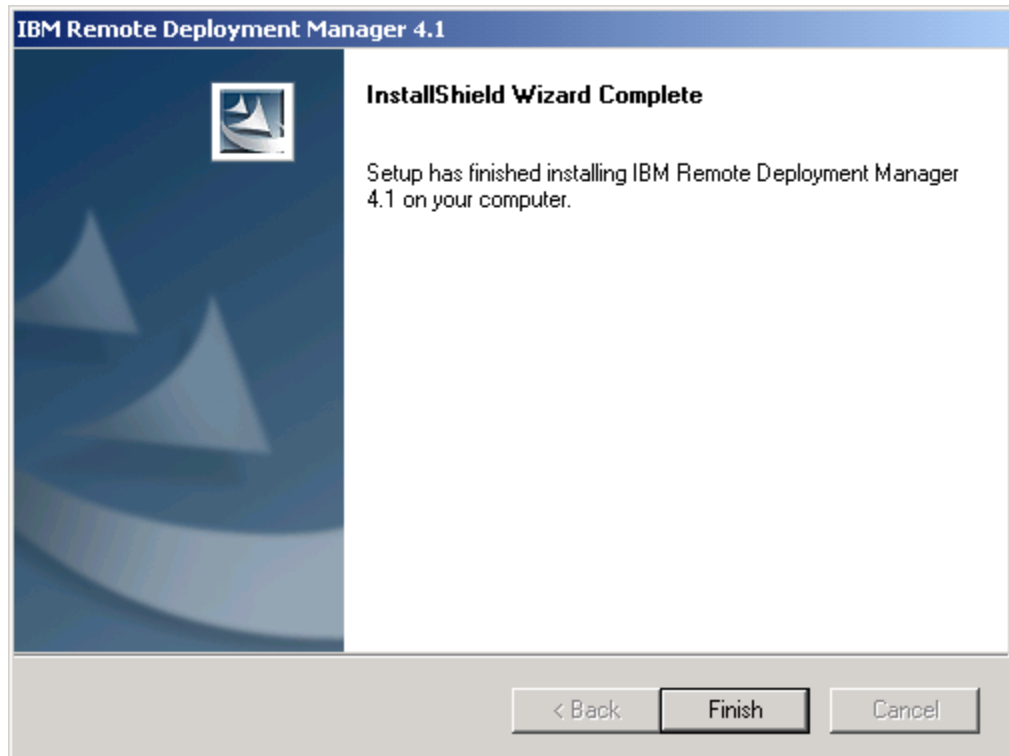
The IBM Director Server status icon in the lower right of the Console window will change from a red diamond (stopped) to a green triangle (starting), and then to a circle (running), indicating the IBM Director Console is ready to use. The transition from a green triangle to a green circle can take ten minutes or longer, depending on your system. During this transition, RDM (and Director, if not previously started) is setting up its databases.

Installing RDM (unattended)

RDM supports unattended installation (also called a "silent installation") of all three of its features (Server, Console, and Deployment Server). Complete the following steps to perform an unattended installation:

1. Create a setup.iss file that contains all the information that describes the installation. Normally, you would input this during an attended installation. To create this file, enter the following command:

```
setup.exe /r /f1"c:\temp\setup.iss"
```

The target directory (c:\temp in this example) must already exist. You must create this directory if it does not exist.

2. Update the *setup.iss* file if necessary.

3. Run the following silent installation using the setup file you just created. Enter the following command:

```
setup.exe /s /f1"c:\temp\setup.iss"
```

4. View the setup.log file to validate that the installation worked properly. By default, the file is created in the same directory that contains the setup.exe file.

The following command-line parameters are valid for setup.exe:

- /r (record mode)
- /s (silent mode)
- /f1"<response file path and file name>"
- /f2"<log file path and file name>" (If the installation is successful, the log file contains ResultCode=0.) The file setup.log is the default if /f2 is not specified on the command line.
- /x (uninstall RDM 4.1)
- /uninst (uninstall RDM 4.1 without reading the setup.iss script)
- /verbose"<log file full path and file name>" (for debugging)

Note: Director Agent does not support silent installation on Windows XP or Windows 2003.

Uninstalling RDM

When you uninstall RDM Server, you are prompted whether to remove the entire RDM product or individual RDM components (Server, Deployment Server, or Console).

From the Windows desktop of the administrator console or at the computer on which you installed RDM, complete the following steps to remove RDM:

1. Click **Start**.

2. Click **Settings**.

3. Click **Control Panel**.

4. Click **Add/Remove Programs**.

5. Click **Remote Deployment Manager 4.1**.

6. Click **Add/Remove**.

7. Click **Yes**.

Alternatively, you can run the setup.exe program that you installed from the product CD:

1. Click **Remove** to remove all installed components.

2. Click **OK** to confirm that you want to completely remove the application and all of its components.

3. Click **Yes** to continue uninstalling.

4. When RDM is uninstalled, click **Finish**. If IBM Director is running, you will receive prompts verifying that IBM Director is stopping and starting.

Chapter 4. Configuration

This chapter describes the configuration of DHCP Server, routers, switches and hubs.

Configuring the DHCP Server

For RDM Server and RDM Console to communicate properly with systems, your Microsoft or other DHCP server must be configured properly. This means that:

- DHCP scopes must be defined for each subnet that contains RDM systems.

- DHCP option 3 must be configured in all cases.

- DHCP option 60 must be configured only when RDM Server and the DHCP server are on the same computer.

Perform this configuration on any DHCP server.

Using Microsoft DHCP Server on Windows 2000 Server or Advanced Server

To configure a Microsoft DHCP server on Windows 2000 Server or Advanced Server, you can use the DHCP manager to configure scopes and set option 3. If the DHCP server is on the same computer as RDM Server, configure DHCP option 60 using the Microsoft NETSH.EXE program or the PXEDHCP.BAT program in the RDM\bin directory

Note: Typically, you will already have option 3 configured properly, and if applicable, the RDM installation program will have configured option 60. Therefore, it might not be necessary for you to do the DHCP configuration as described in this section.

To configure the Microsoft DHCP server using the DHCP Manager and using NETSH.EXE, complete the following steps:
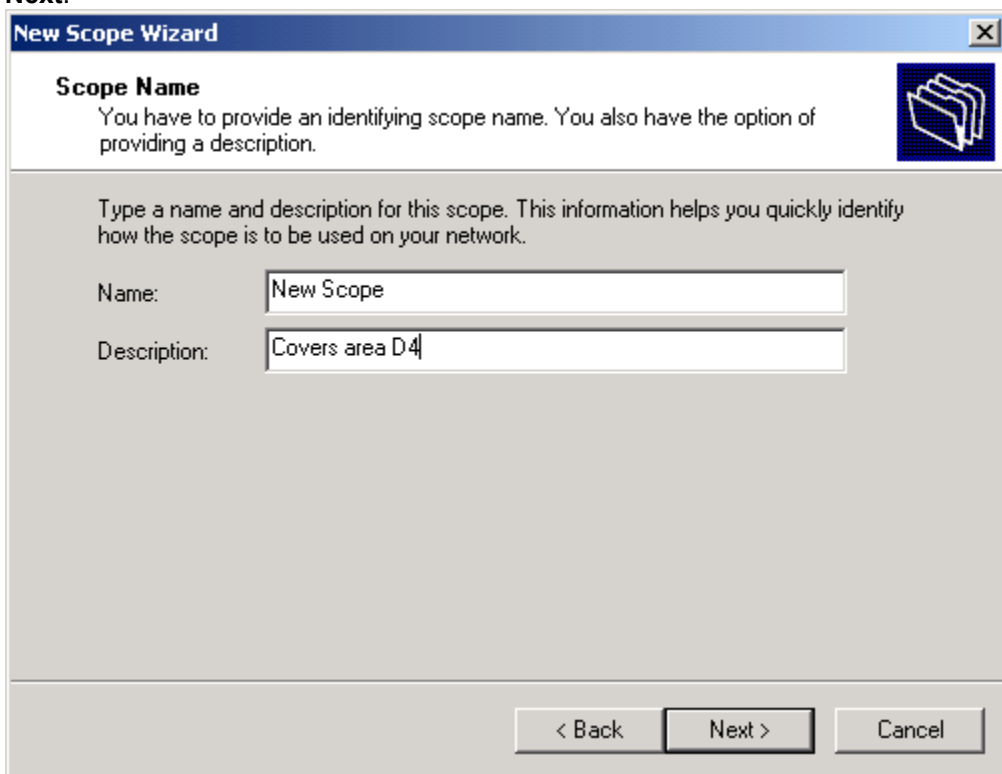
1.   Click **Start → Programs → Administrative Tools → DHCP**.

2.   In the DHCP window, right-click the server node and click **New Scope**.
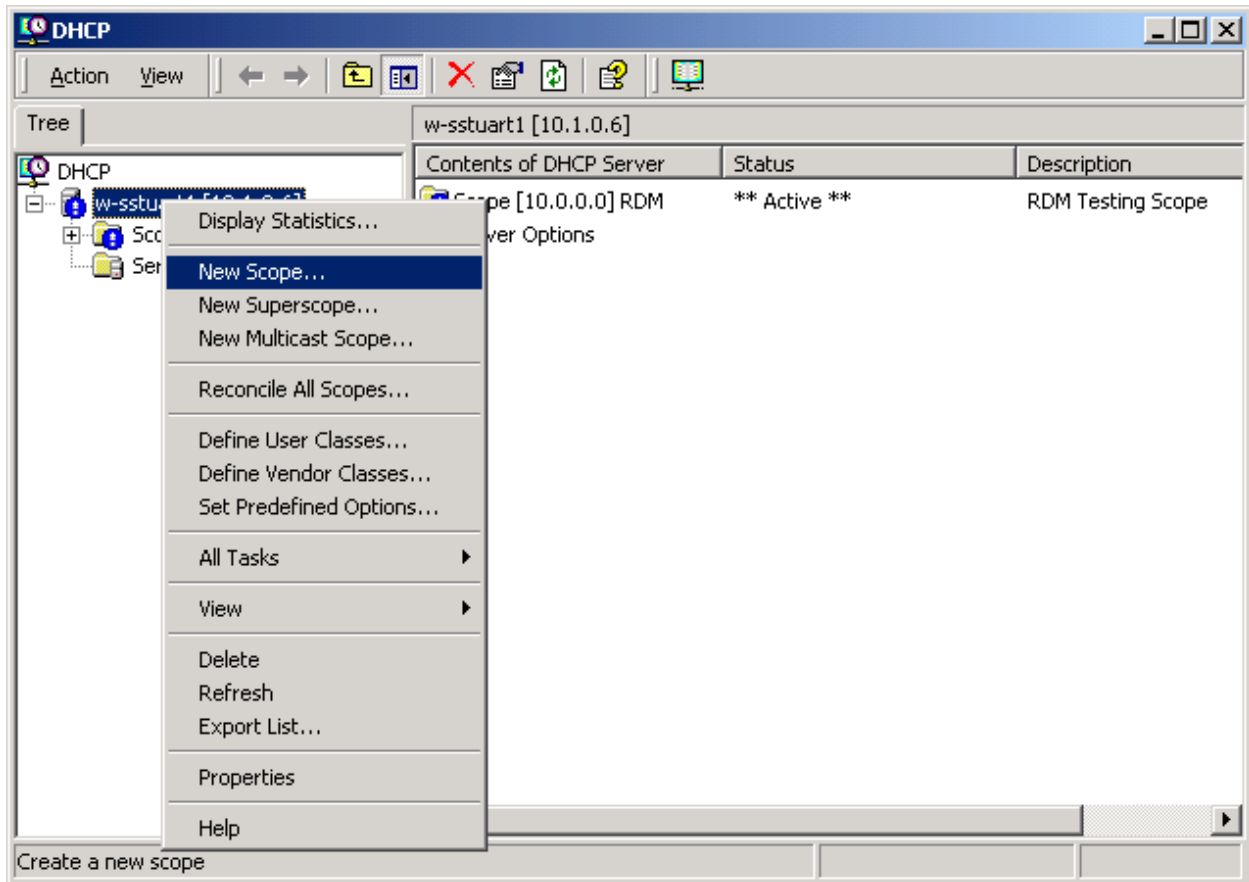
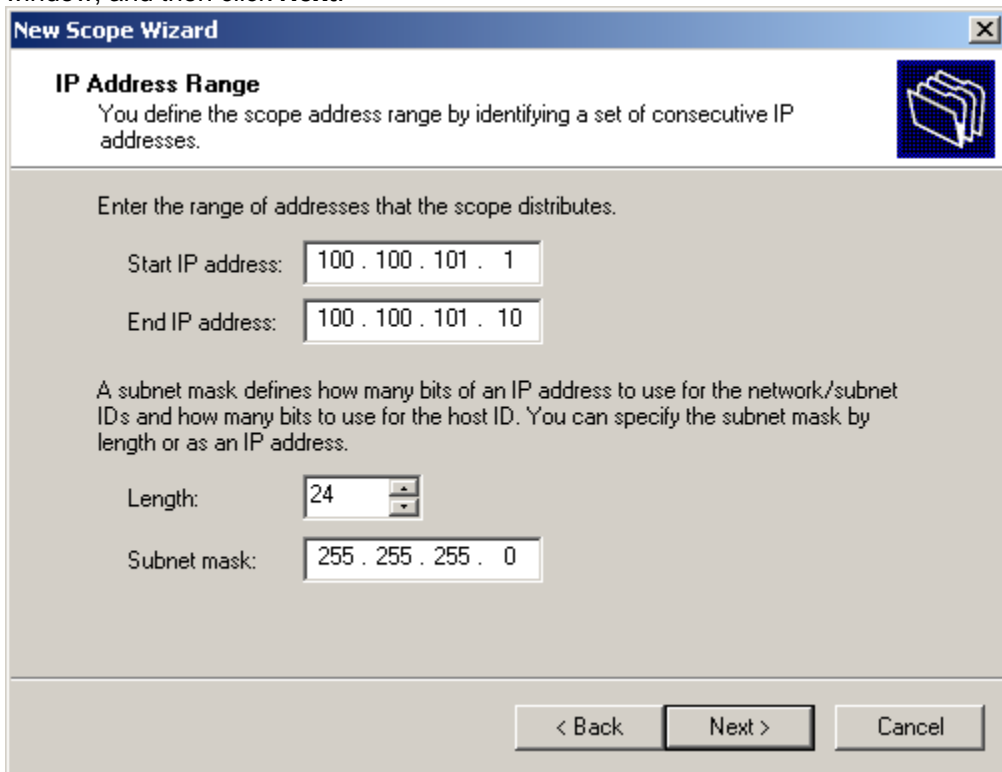A New Scope wizard will guide you through creating the scope.

3. In the first window, click **Next**.

4. Type a name and, optionally, a description, in the Scope Name window; then, click **Next**.


5. Type the start and end IP addresses and subnet mask in the IP Address Range window, and then click **Next**.

6. If you want to exclude any IP addresses from the scope, do so in the Add Exclusions window; then, click **Next**.

7. Specify the lease time in the Lease Duration window; then, click **Next**.

8. In the Configure DHCP Options window, click **Yes** for configuring DHCP options; then, click **Next**.
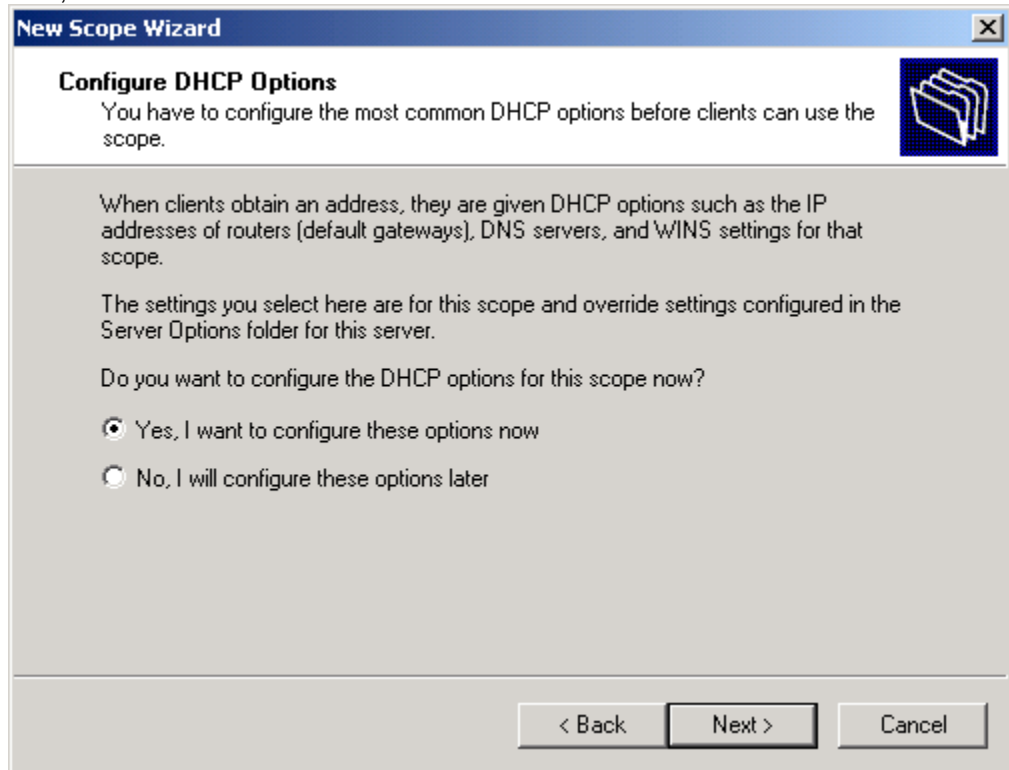
9. If your DHCP server, RDM Server, and all other systems are on an isolated subnet, type the IP address of the RDM Server and click **Add**. Otherwise, type the IP address
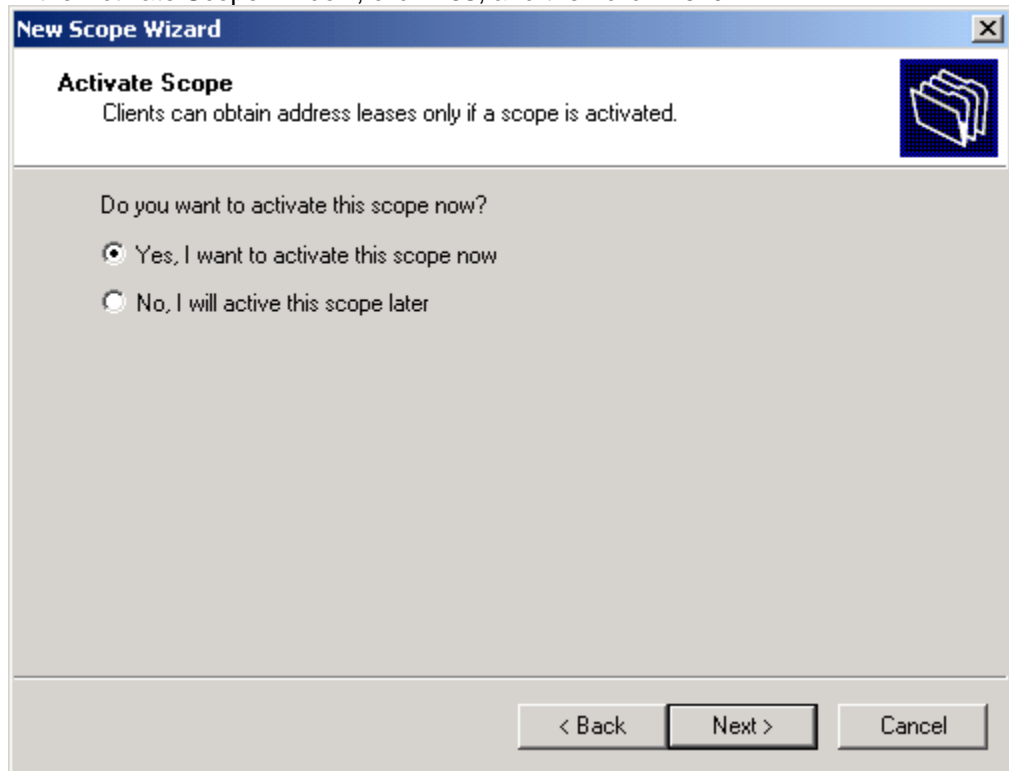
of your router and click **Add**, and then click **Next**.
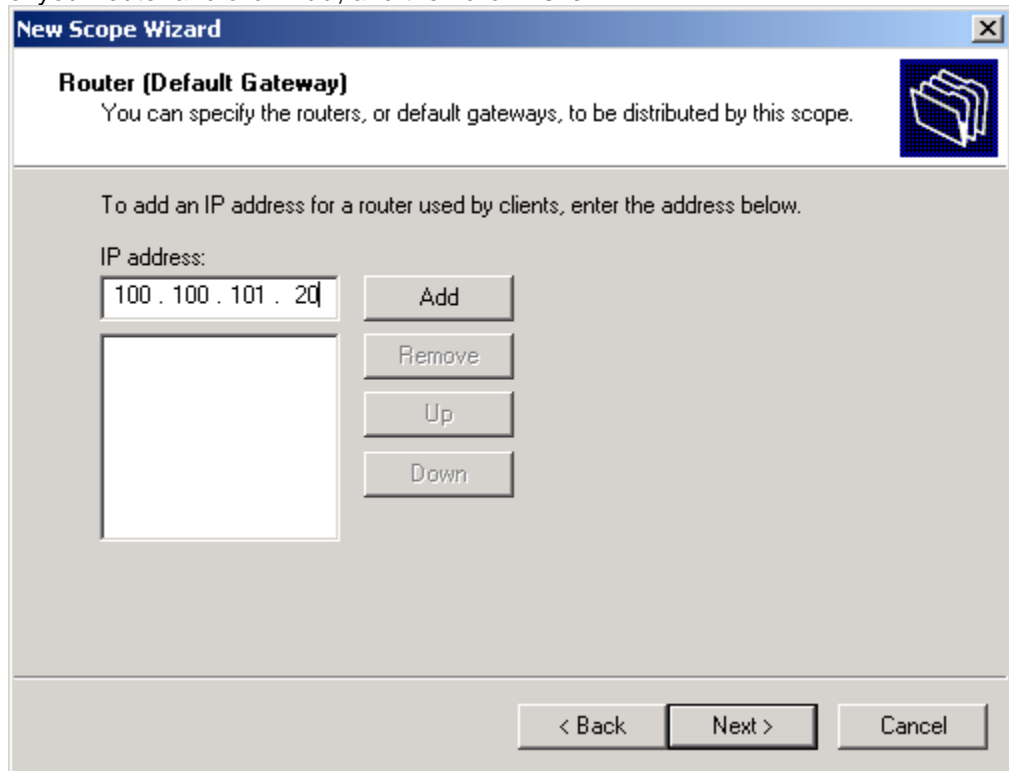
10. (Optional) Type information in the Domain Name and DNS Servers window. Click **Next**.

11. Type information in the WINS Servers window. Click **Next**.

12. In the Activate Scope window, click **Yes**, and then click **Next**.

13. In the last window, click **Finish**.

14. From a command window, run the following commands on the DHCP server *only if RDM is installed on that same server* to configure option 60:

```
netsh dhcp server add optiondef 60 PxeOption STRING 0 PXEClient

netsh dhcp server set optionval 60 STRING PXEClient
```

To configure option 60 using PXEDHCP.BAT instead of the netsh command, complete the following steps:

   a.   From a command window, change to the bin directory under the RDM installation directory.

   b.   Run the command PXEDHCP.BAT

The syntax of the command is:

```
PXEDHCP {L | R}
```

where

L   Specifies that the DHCP service is on the RDM Server. In this case, PXEDHCP configures option 60.

R   Specifies that the DHCP service is on the RDM Server. In this case, PXEDHCP configures option 60.

Example:

```
pxedhcp L
```

Configuring routers

When a system is first attached to the network using PXE, it sends out DHCPDISCOVER messages requesting an IP address and a boot file. The DHCPDISCOVER message is a UDP broadcast message and, as such, will not normally be forwarded by a router. Consequently, RDM Server will not detect it. You need to configure the router to forward such messages:

- On a Cisco router, type the `IP helper-address` configuration command on the router interface to which a system is attached.

- On an IBM router, type the `enable bootp forwarding` configuration command.

These commands instruct the router to forward the messages related to DHCP to RDM Server.

Also, you must specify a gateway address when the IP scope is specified for a system subnet. If a system receives a DHCPOFFER message in response to the DHCPDISCOVER message, you must specify a gateway address to which it can send a corresponding DHCPREQUEST message.

Use RDM in a routed environment, the following conditions must be satisfied:

- Subnet Directed-broadcast forwarding must be enabled.

- Spanning tree protocol for ports to which systems are connected must be disabled.

- Proxy ARP forwarding must be enabled.

- The scope for the RDM system subnet must have a correct router entry for the subnet.

- BOOTP/DHCP forwarding must be enabled. The destination addresses must include the address of the RDM Server, and at least one DHCP server that serves the RDM system subnet. The destination address might either be the network address of the servers, or their individual fixed IP addresses.

These are the *absolute minimal conditions that must be satisfied* before RDM will work in a routed environment. If your network policy will not allow any of these conditions to be satisfied, then RDM cannot be used in the environment. Check your router documentation for the necessary configuration commands.

Configuring switches and hubs

After the routers are configured, you configure the switches and hubs. Specifically, you must disable spanning tree protocol (STP) on all ports connected to systems. It is not necessary to disable STP on ports connected to switches or routers.

Multicast/IGMP/ICMP should be enabled on both switches and routers. If multicast is not enabled, the tasks will be performed as unicast but this will severely impact performance.

Starting RDM

To start RDM, start IBM Director. Complete the following steps:

1. Click **Start → Programs → IBM Director Console**.

2. Type your server name, user ID, and password on the IBM Director login screen.

RDM tasks are found in the right Tasks pane of IBM Director Console.

General RDM options and the RDM D-Server management options are available through the IBM Director menu path **Tasks → Remote Deployment**.
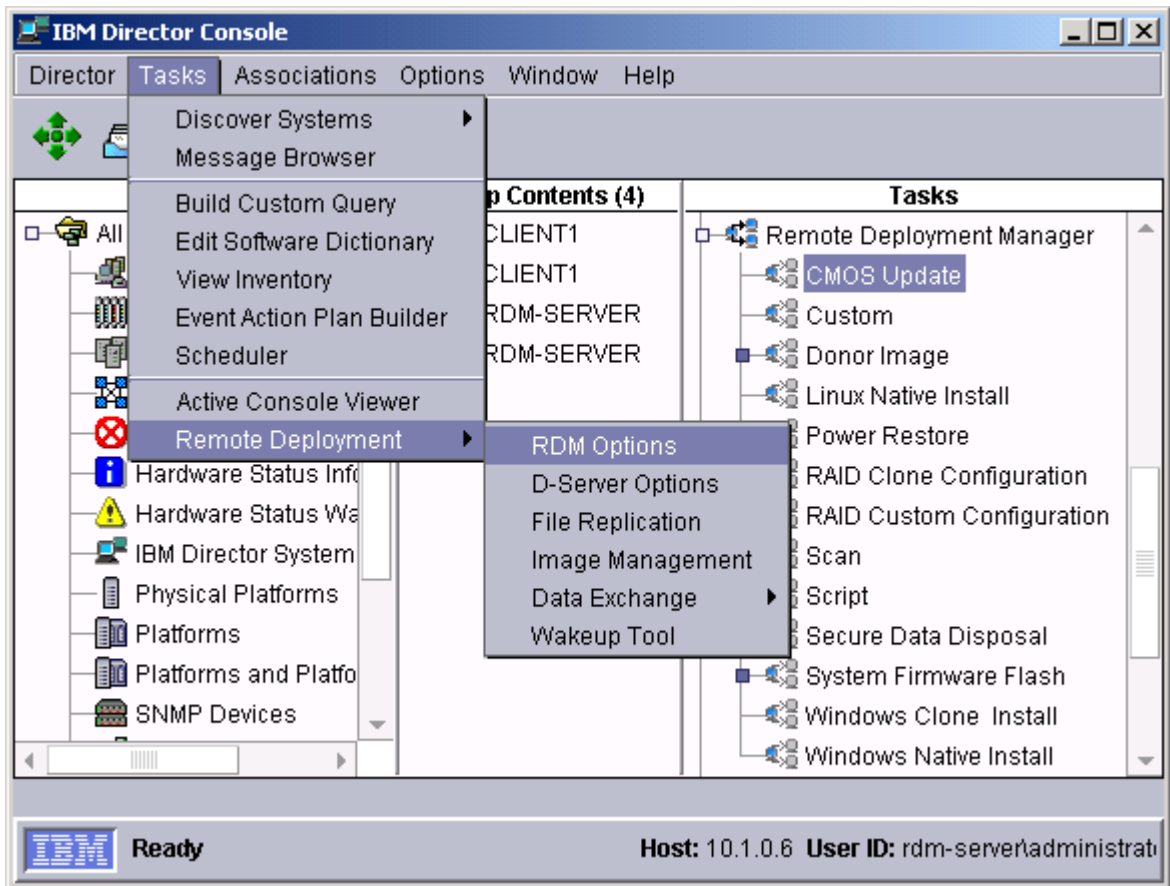
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