

IBM Remote Deployment Manager 4.20



Installation and Configuration Guide

Note: Before using this information and the product it supports, read the general information in Appendix C, “Notices,” on page 71.



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About this book

This book provides information about installing and configuring IBM® Remote Deployment Manager (RDM) 4.20. In addition to presenting an overview of RDM and its prerequisites, it provides information about the following topics:

- Planning an RDM environment
- Installing RDM
- Configuring remote deployment servers
- Modifying, repairing, and uninstalling RDM

How this book is organized

Chapter 1, “Introducing Remote Deployment Manager,” on page 1 contains an overview of RDM and its components.

Chapter 2, “System requirements,” on page 5 contains information about system requirements and supported operating systems.

Chapter 3, “Planning your RDM installation,” on page 9 contains information about network requirements and types of RDM installations. It also contains information about configuring routers, switches, and hubs, as well as procedures for configuring a DHCP service running on either Microsoft® Windows® or Linux®.

Chapter 4, “Installing RDM on Linux,” on page 29 contains instructions for installing RDM Server, RDM Console, and RDM Deployment Server on Linux.

Chapter 5, “Installing and upgrading RDM on Windows,” on page 41 contains instructions for installing or upgrading RDM Server, RDM Console, and RDM Deployment Server on Windows.

Chapter 6, “Configuring remote deployment servers,” on page 57 contains information about starting IBM Director Console, adding a remote deployment server to the RDM environment, and configuring its settings.

Chapter 7, “Modifying, repairing, and uninstalling RDM,” on page 63 contains information about modifying, repairing, and uninstalling RDM.

Appendix B, “Getting help and technical assistance,” on page 69 contains information about getting help and technical assistance.

Appendix C, “Notices,” on page 71 contains product notices and trademarks.

Notices that are used in this document

This document contains the following notices that highlight key information:

- **Notes:** 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 is placed just before the instruction or situation in which damage could occur.

RDM documentation

The following documents are available in Portable Document Format (PDF) from the IBM Remote Deployment Manager 4.20 Web site at <http://www.ibm.com/pc/support/site.wss/document.do?Indocid=MIGR-56662>:

- *IBM Remote Deployment Manager 4.20 Installation Guide* Third Edition, October 2004 (rdm420_installconfig_guide.pdf)
- *IBM Remote Deployment Manager 4.20 User's Reference* Third Edition, October 2004 (rdm420_userref_guide.pdf)
- *IBM Remote Deployment Manager 4.20 Compatibility and Configuration Guide* Sixth Edition, October 2004 (rdm420_compat_guide.pdf)

Note: Check this Web page regularly for new or updated RDM documentation.

The *IBM Remote Deployment Manager 4.20 Compatibility and Configuration Guide* lists hardware that IBM has tested with RDM.

You also can download RDM white papers from http://www.ibm.com/servers/eserver/xseries/systems_management/sys_migration/rdm.html. The white papers include a troubleshooting guide and provide additional information about using RDM.

For planning purposes, the following IBM Director documents are available in Portable Document Format (PDF) from the IBM Director 4.20 Web site at <http://www.ibm.com/pc/support/site.wss/document.do?Indocid=MIGR-55606>:

- *IBM Director 4.20 Installation and Configuration Guide* Third Edition, July 2004 (dir4.20_docs_install.pdf)
- *IBM Director 4.20 Systems Management Guide* Third Edition, July 2004 (dir4.20_docs_sysmgt.pdf)

In addition, the following IBM Redbooks™ documents might be of interest:

- *IBM eServer BladeCenter Systems Management with IBM Director V4.1 and Remote Deployment Manager V4.1* (REDP-3776)
- *Implementing Systems Management Solutions using IBM Director* (SG24-6188)

You can download these documents from the IBM Redbooks Web site at <http://www.ibm.com/redbooks/>.

Note: Be sure to note the date of documents and to determine the level of RDM software to which the Redbooks documents refers.

RDM resources on the World Wide Web

The following Web pages provide resources for understanding, using, and troubleshooting RDM and other deployment and systems-management tools.

IBM Remote Deployment Manager page

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

This Web page provides an overview of IBM Remote Deployment Manager. From this Web page, you can download the latest RDM documentation and white papers. The white papers provide a troubleshooting guide and information about using RDM.

IBM ServerGuide page

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

This Web page provides an overview of the IBM ServerGuide™ program.

IBM ServerGuide Scripting Toolkit page

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

This Web page provides an overview of IBM ServerGuide Scripting Toolkit and links to the latest version of the toolkit for download.

IBM UpdateXpress page

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

This Web page provides an overview of IBM UpdateXpress. It also contains links to pages from which you can download UpdateXpress, order an UpdateXpress CD, or purchase a subscription to UpdateXpress updates.

IBM ServerProven page

<http://www.ibm.com/pc/us/compat/index.html>

The ServerProven® Web page provides information about xSeries®, BladeCenter™, and IntelliStation® hardware compatibility with IBM systems-management tools.

IBM Support page

<http://www.ibm.com/pc/support/>

This is the IBM Support Web site for IBM hardware and systems-management software.

IBM Systems Management Software: Download/Registration page

http://www.ibm.com/pc/us/eserver/xseries/systems_management/dwnl.html

Use this Web page to download IBM systems-management software, including IBM Director.

IBM xSeries Systems Management page

http://www.ibm.com/pc/ww/eserver/xseries/systems_management/index.html

This Web page presents an overview of IBM systems management and IBM Director. Click **IBM Director** for the latest information and documentation.

Chapter 1. Introducing Remote Deployment Manager

IBM Remote Deployment Manager (RDM) is a flexible and powerful tool that you can use to remotely perform configuration, deployment, and retirement operations on both IBM and non-IBM systems. You can use RDM to perform the following tasks:

- Update system firmware
- Modify configuration settings
- Install operating systems and applications
- Back up and recover primary partitions
- Securely erase data from disks

RDM is an IBM Director extension. RDM integrates seamlessly with IBM Director; you can use the same administrative console to perform both deployment and management tasks.

RDM environment and terminology

A *system* is a server, workstation, desktop computer, mobile computer (laptop), or point-of-sale system.

The systems in an RDM environment are referred to in the following ways:

- A *management server* is a server on which both IBM Director Server and RDM Server are installed.
- A *management console* is a system on which both IBM Director Console and RDM Console are installed.
- A *remote deployment server* is a system on which RDM Deployment Server is installed. This system must be in a different subnet than the management server. RDM Console can be installed on this system also.
- A *target system* is a system against which an RDM task is run.

RDM components

The RDM software has three components:

- RDM Server
- RDM Console
- RDM Deployment Server (also known as D-Server)

RDM Server

RDM Server is the main component of Remote Deployment Manager. It contains the application logic, monitors the status of RDM tasks, and stores data both in the IBM Director database and in its own database.

RDM Server must be installed on the management server. When you install RDM Server, RDM Console and RDM Deployment Server are installed automatically also.

RDM Console

RDM Console is the graphical user interface (GUI) component of Remote Deployment Manager. RDM Console must be installed on any management console from which a system administrator will remotely access the management server and perform RDM tasks.

RDM Deployment Server (D-Server)

RDM Deployment Server (also known as D-Server) handles communication between RDM Server and target systems. Using Multicast Trivial File Transfer Protocol (MTFTP) and Trivial File Transfer Protocol (TFTP), it also delivers commands, data files, and applications to target systems.

The instance of RDM Deployment Server that is installed on the management server contains the *master repository*, which is the collection of files that RDM uses to run tasks on target systems. These files can include system environments, images, utilities, and batch files.

The instance of RDM Deployment Server that is installed on a remote deployment server contains a *remote repository*.

The following table lists information about the services that RDM Deployment Server contains.

Table 1. RDM Deployment Server (D-Server) services

| Service name | What it does |
|---------------------------------|---|
| RDM D-Server service | Relays communication between RDM Server and the target systems. |
| PowerQuest Unicast Image Server | Transfers PowerQuest-formatted images between RDM Deployment Server and target systems. These images are used with the Get Donor, Power Restore, and Windows Clone Install tasks. |

How RDM works

RDM uses Wired for Management (WfM) standards, including the Preboot Execution Environment (PXE), to perform tasks on target systems.

RDM automatically listens on the local area network (LAN) for new PXE-enabled systems that start (boot) from the network. When RDM discovers a PXE-enabled system that does not have an entry in the IBM Director database, it runs the default scan task on the system. The task queries the system for basic hardware information and stores the data in the IBM Director database. RDM then assigns a default name to the system, in the form *MachinetypeMachinemodel-Serialnumber*, and an object that represents the new system is displayed in IBM Director Console. You now can run RDM tasks on the target system.

The following steps occur when you run a task on a target system:

1. RDM Deployment Server sends a wake-up packet to the target system. This packet contains the media access control (MAC) address of the network interface card (NIC) that is present in the target system; if the NIC supports Wake on LAN[®], it can power-on the system.

Note: If the target system is an IBM blade server, RDM might use a BladeCenter management module command to power-on the system.

2. The target system powers-on and starts (boots) from the network. It then broadcasts a DHCPDISCOVER message. It receives an IP address from the DHCP service and the fully qualified name of an RDM bootstrap loader program from RDM Deployment Server.
3. The target system downloads and runs the RDM bootstrap loader program. The RDM bootstrap loader program sends a message to RDM Deployment Server, asking for instructions, and RDM Deployment Server relays the message to RDM Server.
4. RDM Server sends the fully qualified name of a system environment to the target system.
5. The RDM bootstrap loader program creates a virtual diskette drive A in memory, downloads the system environment from the RDM repository, and then installs that system environment on the target system.
6. The target system starts (boots) from the virtual diskette drive A. The rdagent program starts automatically. This program sets standard environment variables that are used by all RDM tasks.
7. The rdagent program then runs in a loop, requesting a command from the task command list, running the command, and reporting the success of the operation to RDM Server. The task is completed when the final command is run.

Chapter 2. System requirements

This chapter contains information about the following topics:

- Hardware and software requirements
- Supported operating systems

Hardware and software requirements

This section contains information about system requirements for deployment systems (systems on which RDM is installed) and target systems.

Deployment systems

The following table lists the minimum software, random access memory (RAM), hard disk space, and hardware that are needed by the systems on which RDM is installed.

Table 2. Minimum hardware and software requirements for RDM

| Requirements | RDM Server | RDM Console | RDM Deployment Server |
|--|--|---|---|
| Software | <ul style="list-style-type: none">• IBM Director Server 4.20 or later• PostgreSQL¹ (Management servers running Linux only) | IBM Director Console 4.20.2 or later | None |
| Memory (RAM) | 1024 MB | 1024 MB | 1024 MB |
| Temporary disk space on system partition | 50 MB | 50 MB | 50 MB |
| Disk space for RDM programs | 400 MB | 100 MB | 400 MB |
| Network adapter | At least one Ethernet or Token Ring adapter, with TCP/IP connectivity | At least one Ethernet or Token Ring adapter, with TCP/IP connectivity | At least one Ethernet or Token Ring adapter, with TCP/IP connectivity |

¹ The version of PostgreSQL depends on the Linux distribution that is running on the management server:

- Red Hat[®] Enterprise Linux AS, version 2.1, requires PostgreSQL 7.1
- Red Hat Enterprise Linux AS, version 3.0, requires PostgreSQL 7.3
- SuSE Linux Enterprise Server 8.0 requires PostgreSQL 7.2

Important: For installations of RDM Server and RDM Deployment Server, make sure that sufficient disk space is available for the RDM repository. The actual disk space that is needed for the RDM repository depends on the number and size of the image files that it contains.

To run Remote Storage Configuration tasks against FAS*t*T storage servers, you must install FAS*t*T Storage Server on the management server and modify the **path** environment variable so that it includes the directory that contains SMcli.exe.

Target systems

Target systems must contain the following hardware:

- A supported 32-bit Intel® Pentium® (or equivalent) processor that complies with the Wired for Management (WfM), version 2.0, specification
- An Ethernet or Token Ring network adapter that supports Preboot Execution Environment (PXE) protocols, version 1.0, 2.0, or 2.1.

Notes:

1. You cannot deploy Linux to target systems that contain network adapters that support only PXE 1.0.
2. Some systems do not support the PXE protocols completely; some RDM functions fail on specific systems. See the *Remote Deployment Manager 4.20 Compatibility and Configuration Guide* for system-specific information.

Supported operating systems

This section lists the operating systems upon which RDM Server, RDM Console, and RDM Deployment Server are supported.

Note: If the management server is running Linux, any remote deployment servers must have the same Linux distribution installed.

RDM Server

You can install RDM Server on the following operating systems:

- Red Hat Enterprise Linux AS, version 2.1 (Quarterly Update 5 required)
- Red Hat Enterprise Linux AS, version 3.0, for Intel x86 (Update 3 or later required)
- SUSE LINUX Enterprise Server 8, for Intel x86 (Service Pack 3 or later required)
- Windows 2000, Advanced Server and Server Edition (Service Pack 4 or later required)
- Windows Server 2003 Enterprise, Standard, and Web Editions

RDM Console

You can install RDM Console on the following operating systems:

- Red Hat Enterprise Linux AS, version 2.1 (Quarterly Update 5 required)
- Red Hat Enterprise Linux AS, version 3.0, for Intel x86 (Update 3 or later required)
- SUSE LINUX Enterprise Server 8, for Intel x86 (Service Pack 3 or later required)
- Windows 2000, Advanced Server, Professional, and Server Edition (Service Pack 4 or later required)
- Windows Server 2003, Enterprise, Standard and Web Edition
- Windows XP Professional Edition (Service Pack 1 required)

RDM Deployment Server (D-Server)

You can install RDM Deployment Server on the following operating systems:

- Red Hat Enterprise Linux AS, version 2.1 (Quarterly Update 5 required)
- Red Hat Enterprise Linux AS, version 3.0, for Intel x86 (Update 3 or later required)
- SUSE LINUX Enterprise Server 8, for Intel x86 (Service Pack 3 or later required)

- Windows 2000, Advanced Server, Professional, and Server Edition (Service Pack 4 or later required)
- Windows Server 2003, Enterprise, Standard and Web Edition
- Windows XP Professional Edition (Service Pack 1 required)

Chapter 3. Planning your RDM installation

This chapter provides the information about the following topics:

- Network requirements
- Types of RDM installations
- Configuring routers, switches, and hubs
- Configuring a DHCP service to work with RDM

Network requirements

An RDM environment must meet the following minimum requirements:

- IBM Director Server (version 4.20.2 or later) and RDM Server 4.20 must be installed on the management server.
- Routers, switches, and hubs must be correctly configured.
- DHCP service must be installed and correctly configured.
- The target systems must be PXE-enabled. All IBM systems come configured for PXE network boot. Non-IBM systems must be configured to start (boot) from the network before you can use RDM with them.

Important: For each subnet in an RDM environment, RDM must be the only application that uses a PXE service.

Types of RDM installations

There are two basic types of RDM installations:

- RDM Server is installed on a management server.
- RDM Server is installed on a management server, and RDM Deployment Server is installed on one or more remote deployment servers, each of which is located on another subnet.

Note: You can install as many instances of RDM Console as are needed to provide system administrators with remote access to the management server.

RDM can be installed on a single local area network (LAN), in an environment with several subnets, or in a wide area network (WAN).

Single-LAN environment

This section contains illustrations of single-LAN environments.

In Figure 1, RDM is used on a single LAN. The LAN includes a management server on which a DHCP service is running, a management console, and target systems.

DHCP option 3 is configured with the IP address of the management server, because there is no router in this environment. Because the DHCP service is configured on the management server, DHCP option 60 must be configured.

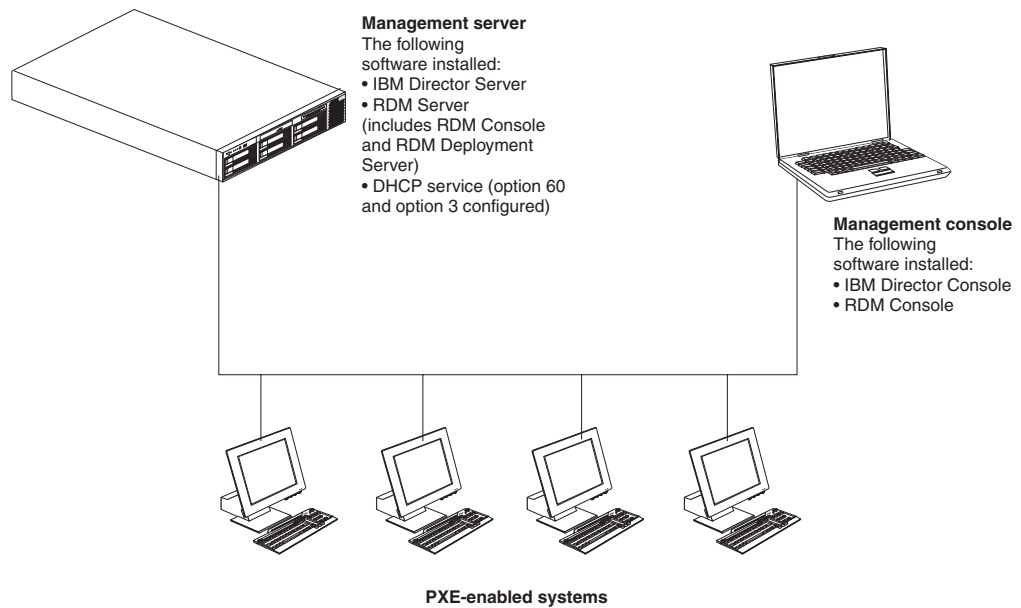


Figure 1. Single-LAN environment example one

In Figure 2, RDM again is used on a single LAN. The LAN includes a management server, a DHCP server, a management console, and the target systems.

DHCP option 3 is configured with the IP address of the management server, because there is no router in this environment.

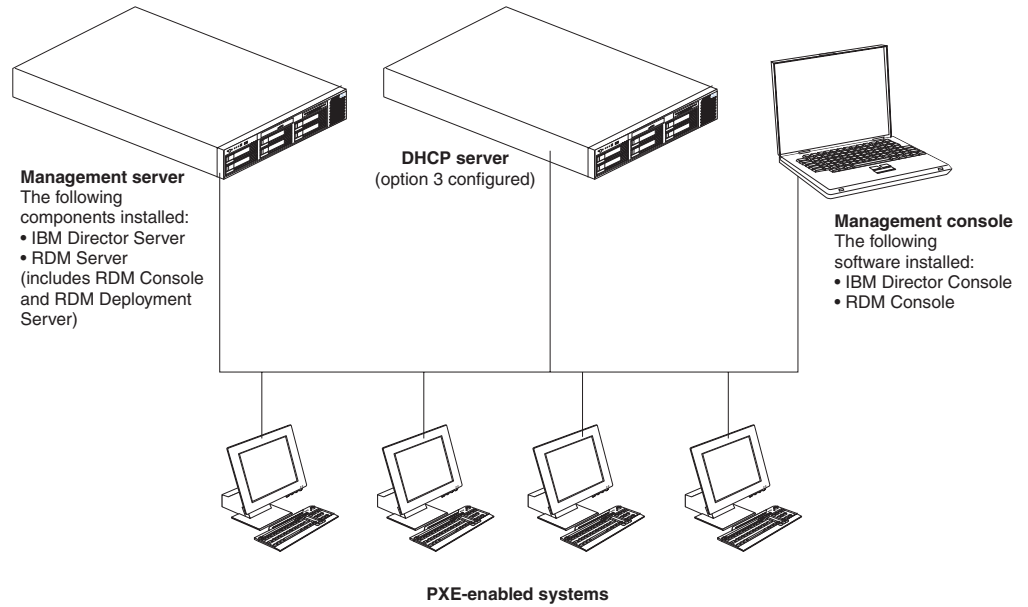


Figure 2. Single-LAN environment example two

Routed-network environment

This section includes illustrations of several ways that RDM can be configured in an environment that includes several subnets. In each example, the target systems start (boot) from the network either locally or through an IP router. The router must support BOOTP relay agent function, and DHCP option 3 must be configured with the IP address of the router.

In Figure 3, the environment includes a DHCP server, a management server, a router, and target systems. The DHCP server and the management server are on the same subnet. Because there are two subnets, DHCP option 3 is configured with the IP address of the router.

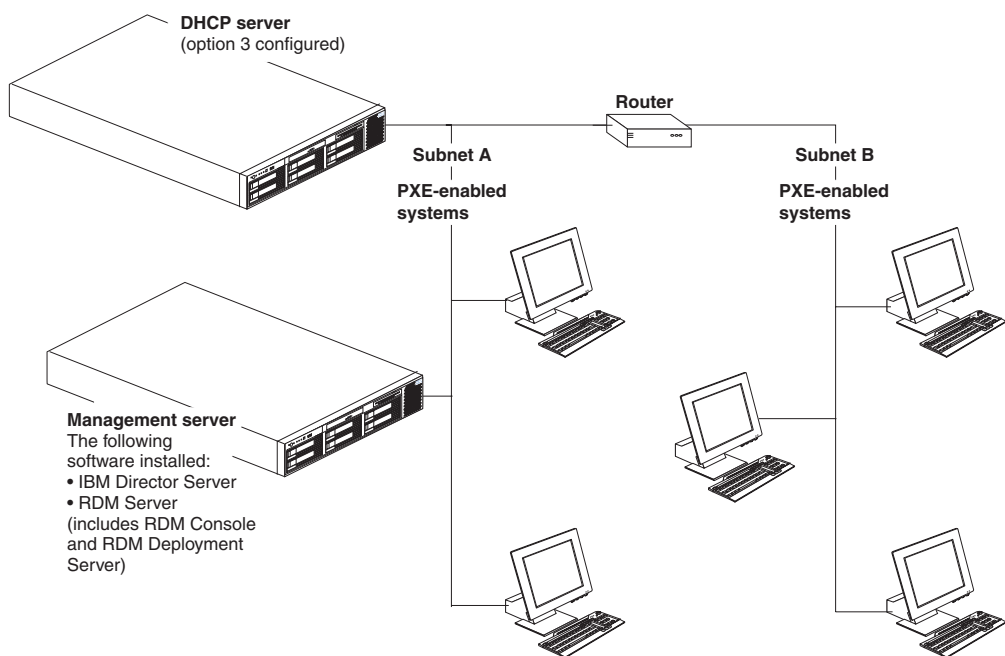


Figure 3. Routed-network environment example one

In Figure 4, the environment includes a DHCP server, a management server, a router, and target systems. The DHCP server and the management server are on different subnets. Because there are two subnets, DHCP option 3 is configured with the IP address of the router.

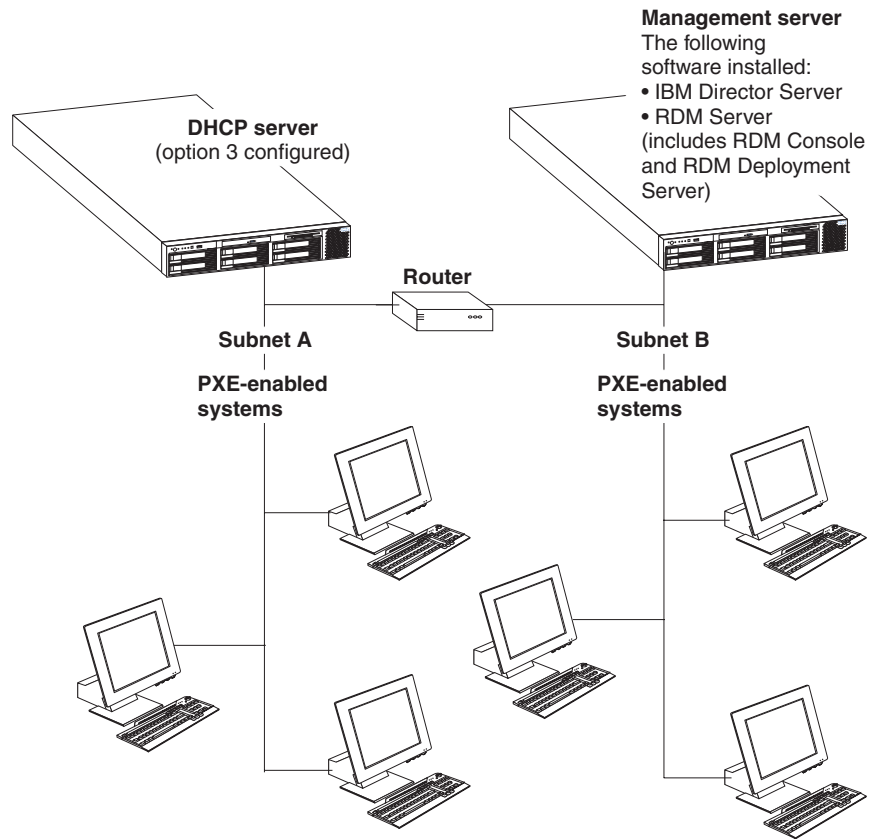


Figure 4. Routed-network environment example two

WAN environment

In figure 5, RDM is used in a wide area network (WAN). The environment includes four LANs: Atlanta, Boston, Chicago, and New York.

RDM Server is installed on a server on the Chicago LAN. To reduce the impact of network traffic and improve performance, RDM Deployment Server is installed on a server on each of the other LANs. This ensures that the files and data that are sent to the target systems are transmitted at LAN speed.

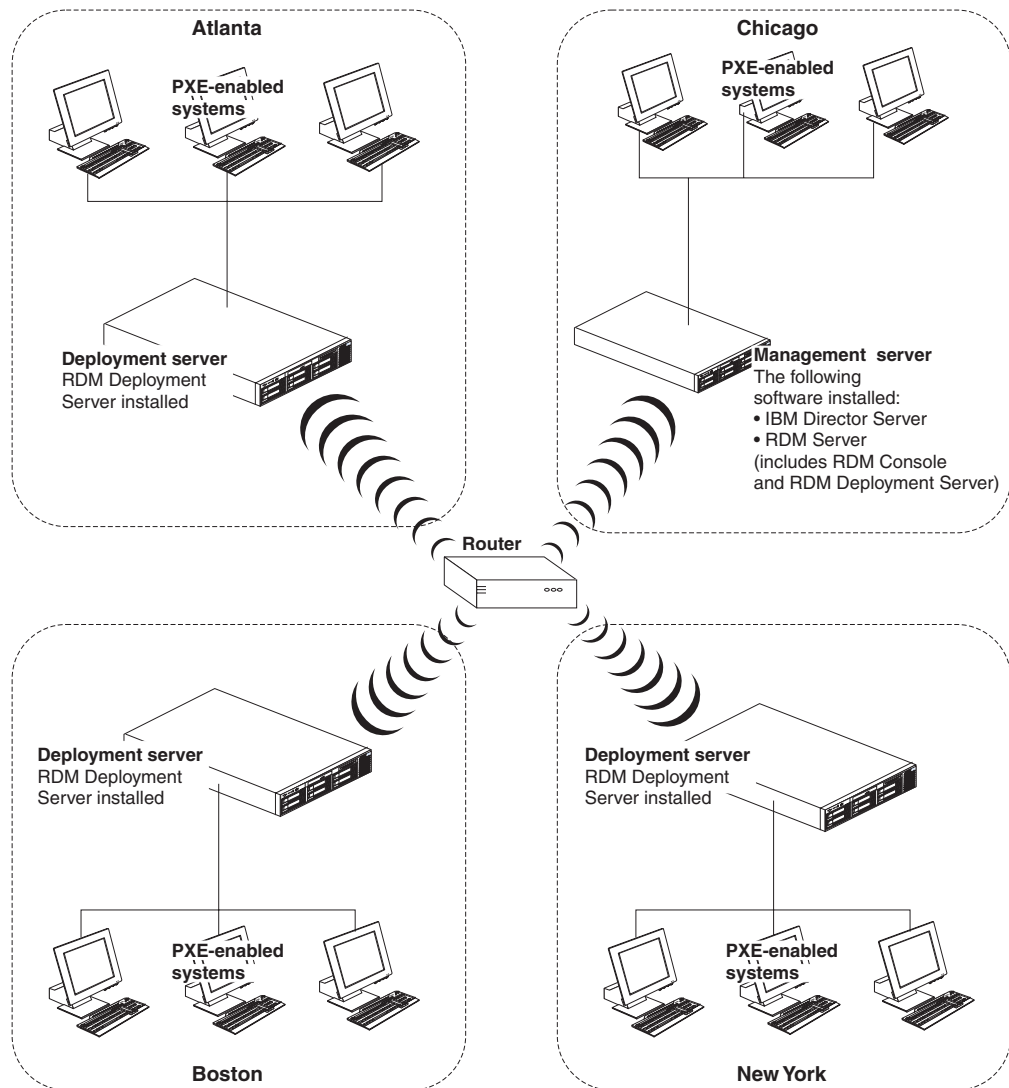


Figure 5. WAN environment example

For security, network traffic is restricted between the remote sites (Atlanta, Boston, and New York) and the management server. The routers and firewalls must permit HTTP messages to be transmitted between the remote deployment servers and the management server.

Note: Figure 5 shows a single subnet in each LAN. Each LAN also could contain multiple subnets.

Configuring routers, switches, and hubs

This section includes information about configuring routers, switches, and hubs to work in an RDM environment.

Requirements

For RDM to work in a routed environment, the following conditions must be met:

- The routers must support the following protocols:
 - Internet Control Message Protocol (ICMP)
 - Internet Group Message Protocol (IGMP)
 - Bootstrap Protocol (BOOTP)
- Spanning-tree protocol (STP) must be disabled on ports that are connected to target systems. (Do not disable STP on ports that are connected to switches or routers.)
- Subnet-directed broadcast forwarding must be enabled.

Note: This is not the same as broadcast forwarding. Do not enable all broadcast forwarding.

- Proxy Address Resolution Protocol (ARP) forwarding must be enabled.
- BOOTP/DHCP forwarding must be enabled. The BOOTP forwarding addresses must include the address of the management server. If DHCP service is not enabled on the management server, the BOOTP forwarding addresses must include at least one DHCP server. (A BOOTP forwarding address can be either the network address of the server or a static IP address.)
- The DHCP scope for a subnet that contains target systems must have a correct router entry for the subnet.
- You must use the **autonegotiate** setting for all network interface card (NIC), router, and switch configuration settings.

Important: Specifying a value, such as 100 Mb full duplex, can result in slower network performance. Overall network performance might be reduced by a factor of two to 10 times. Many RDM tasks and operations might perform poorly or fail.

If any of these conditions cannot be met, RDM cannot be used in the environment. See the documentation that came with your routers to determine what features and protocols they support.

Configuring routers to forward DHCP broadcast messages

You must configure routers to forward DHCP broadcast messages to RDM Deployment Server. When a PXE-enabled target system first starts (boots) from the network, it sends out DHCPDISCOVER messages that request an IP address and a boot file. This DHCPDISCOVER message is a UDP broadcast message and is not forwarded by a router unless DHCP broadcast messages are forwarded.

To configure a router to forward DHCP broadcast messages to RDM Deployment Server, use one of the following procedures:

- (Cisco router) Enter the IP helper-address configuration command on the router interface to which target systems are attached.
- (IBM router) Type the enable bootp forwarding configuration command.

See the documentation that came with your router for more information.

Configuring the DHCP service

To use RDM, a DHCP service must be running on a subnet that is connected to the management server. The DHCP service can be running on the management server, or it can be enabled on another server.

The DHCP service must be configured in the following way:

- A scope must be defined for each subnet that contains target systems.
- A gateway router address must be configured for each scope.
- (If the DHCP service is running on the management server only) For each scope, the DHCP service must be configured to answer a PXE client DHCP request with the DHCP service vendor-class-identifier value (option 60) set to **PXEClient**.

This section provides instructions for configuring a DHCP service running on supported Linux and Windows operating systems.

Configuring the DHCP service on Linux

Complete the following steps to configure a DHCP service on Linux:

1. Open an ASCII text editor and modify the `dhcpd.conf` file in an ASCII text editor. By default, this file is in the `/etc` directory.
2. Add the following line at the beginning of the file:
`ddns-update-style interim;`
3. Set the `subnet` value to the IP address of the local system.
4. Set the `netmask` value to the netmask value for the local subnet.
5. Set the `option routers` value to the gateway IP address.
6. Set the `option subnet-mask` value to the netmask value for the local subnet.
7. Edit the `range` line. Type the first and the last class-D (multicast) IP address for the range of addresses that are assigned to RDM Deployment Server.
8. Set the `default-lease-time` value to 21600.

Note: The value is the number of seconds. The default lease time is six hours.

9. Set the `max-lease-time` value to 43200.

Note: The value is the number of seconds. The maximum lease time is 12 hours.

10. (If the DHCP service is running on the management server or a remote deployment server) At the end of the `dhcpd.conf` file, add the following text (all on one line):

```
class "PXE"{match if substring(option vendor-class-identifier,0,9)="PXEClient";
option vendor-class-identifier "PXEClient";}
```
11. Save the modified file.

Configuring the DHCP service on Windows

This section provides instructions for configuring a DHCP service running on Windows 2000, Advanced Server or Server Edition. (Use similar procedures if your DHCP service is on Windows 2003.) This section provides information about performing the following tasks:

- Running the New Scope wizard
- Configuring DHCP option 60
- Configuring DHCP option 3

Running the New Scope wizard

Complete the following steps to use the New Scope wizard to configure the DHCP service:

1. Click **Start Programs** → **Administrative Tools** → **DHCP**. The DHCP window opens.
2. Right-click the server node and click **New Scope**

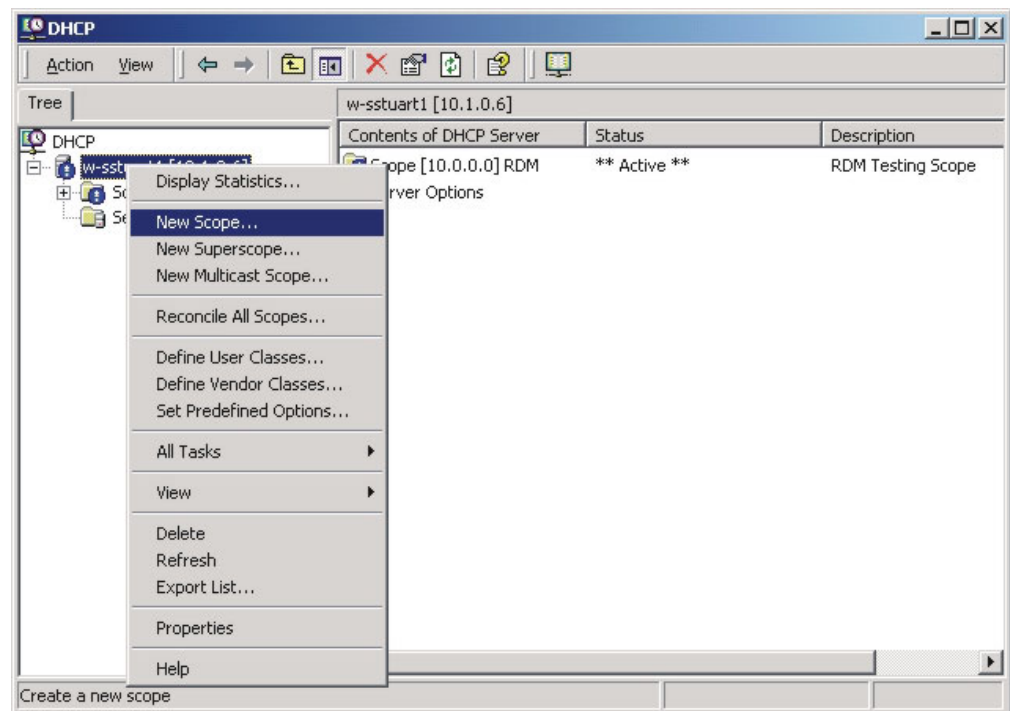


Figure 6. Configuring DHCP server: DHCP window

3. Click **Next**. The Scope Name window opens.

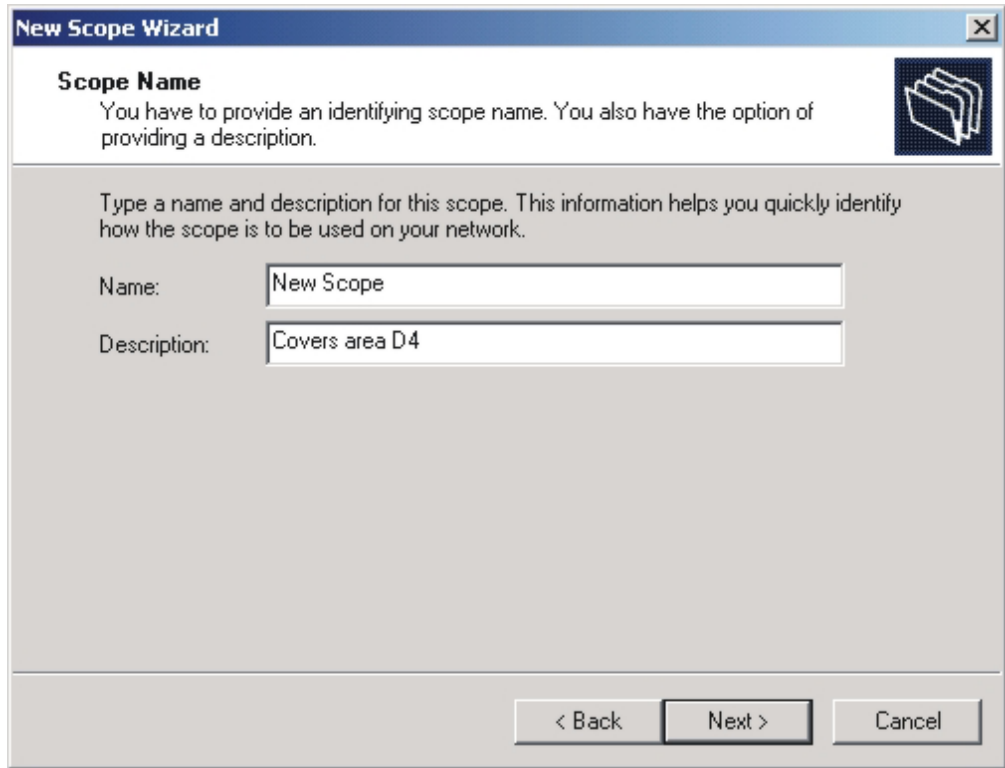


Figure 7. Configuring DHCP server: Scope Name window

4. In the fields, type a name and an optional description; then, click **Next**. The IP Address Range window opens.

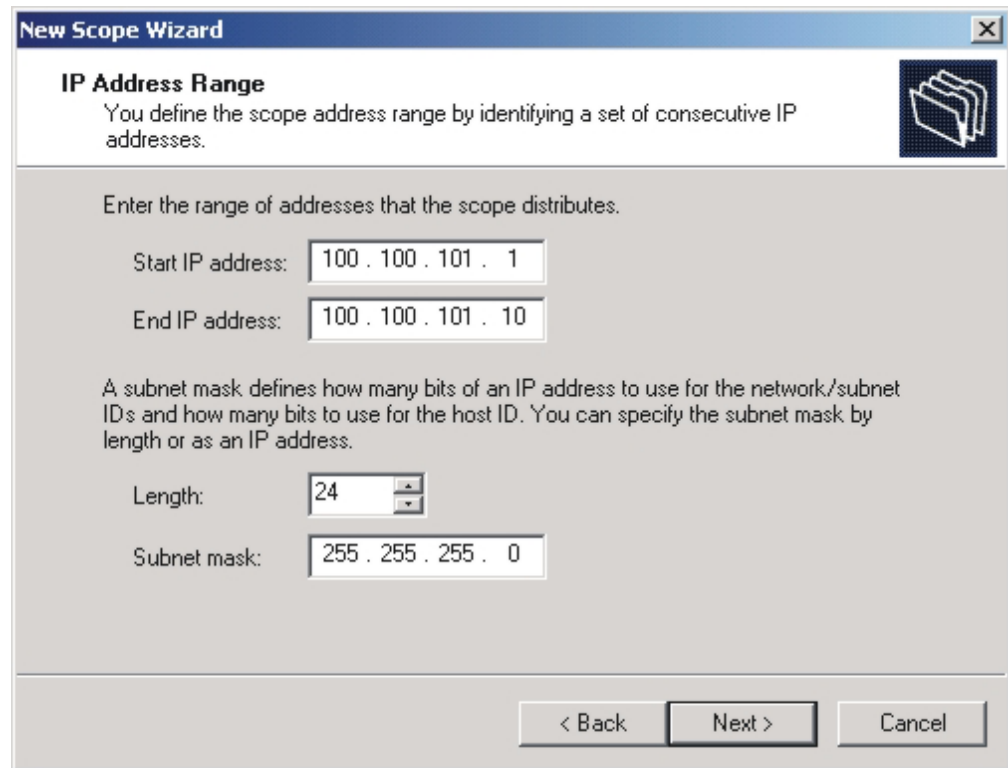


Figure 8. Configuring DHCP server: IP Address Range window

5. Define the scope:
 - a. In the **Start IP address** field, type the starting IP address of the range.
 - b. In the **End IP address** field, type the ending IP address of the range.
 - c. Specify the subnet mask by either typing a length in the **Length** field or typing an IP address in the **Subnet mask** field.
6. Click **Next**. The Add Exclusions window opens.

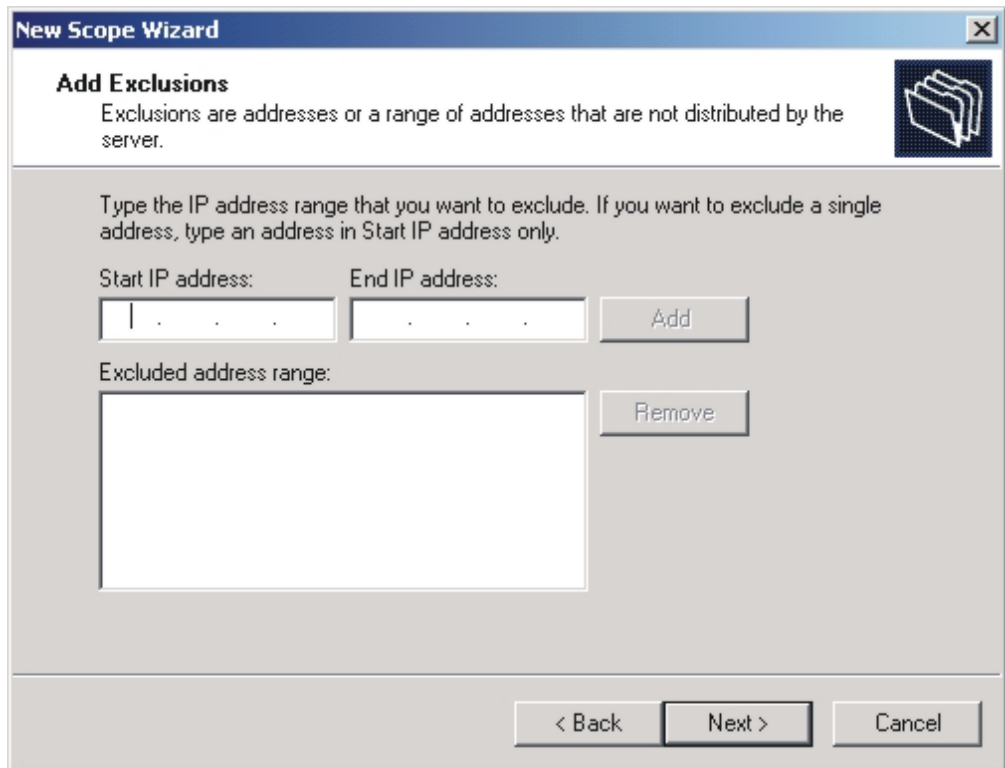


Figure 9. Configuring DHCP server: Add Exclusions window

7. Type the IP address range that you want to exclude, if any; then, click **Add**. Repeat until you have specified all IP address ranges that you want to exclude.
8. Click **Next**. The Lease Duration window opens.

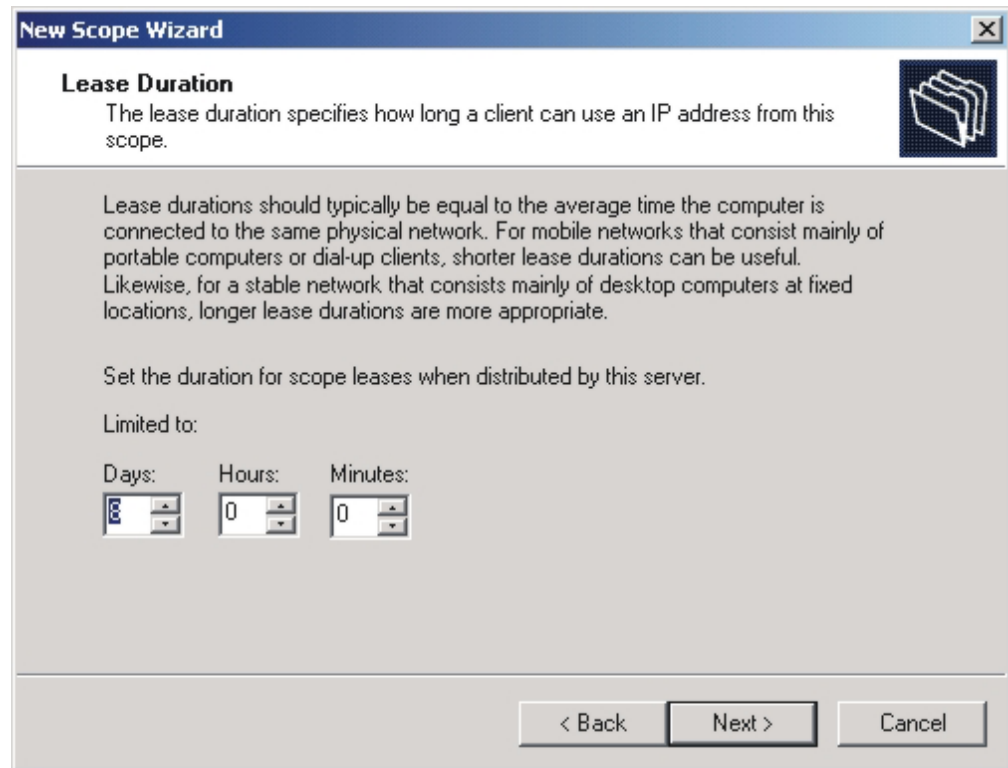


Figure 10. Configuring DHCP server: Lease Duration window

9. Specify the lease duration; then, click **Next**. The Configure DHCP Options window opens.

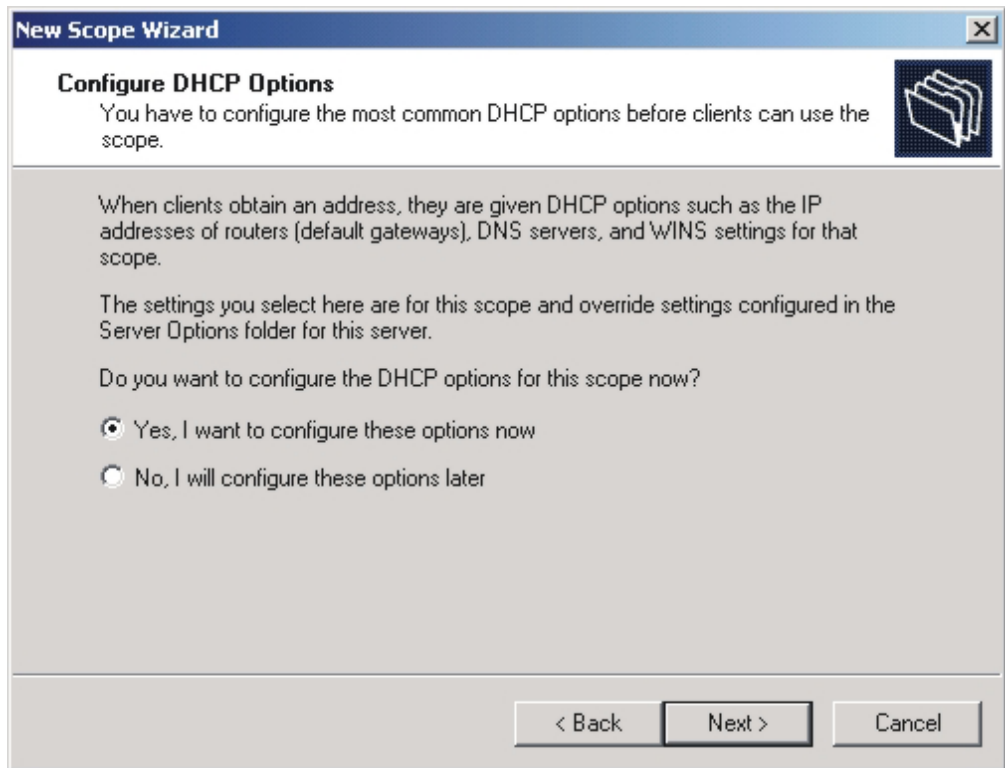


Figure 11. Configuring DHCP server: Configure DHCP Options window

10. Select **Yes, I want to configure these options now**; then, click **Next**. The Router (Default Gateway) window opens.

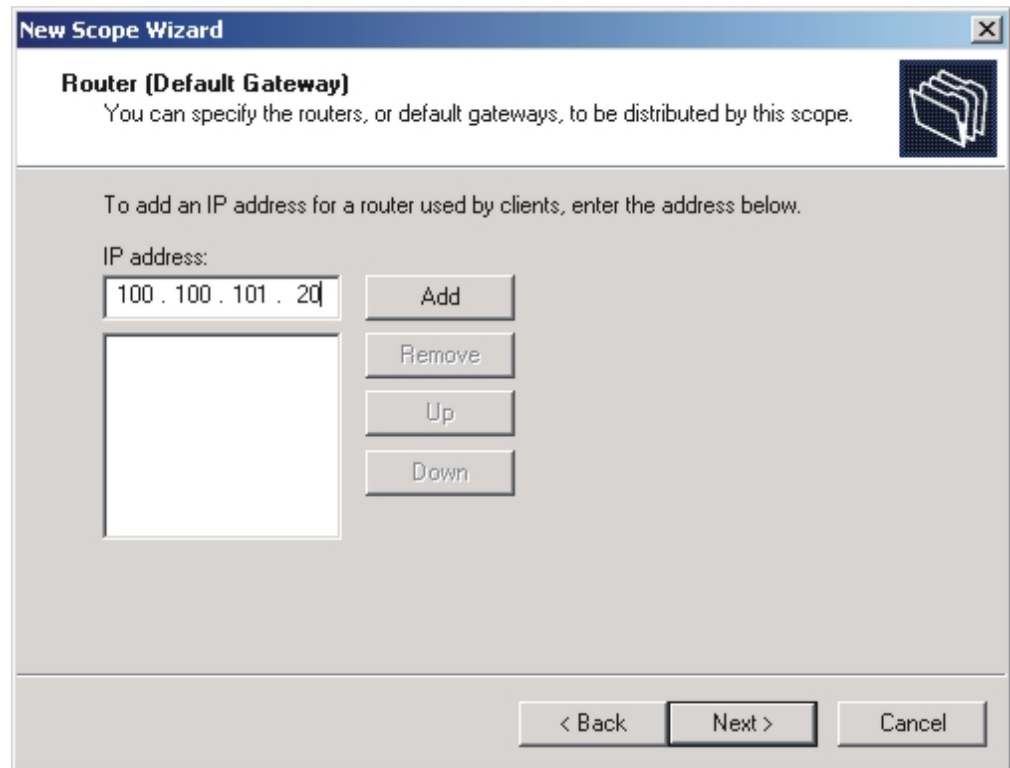


Figure 12. Configuring DHCP server: Router (Default Gateway) window

11. In the **IP address** field, if the DHCP service, management server, and all target systems are on an isolated subnet, type the IP address of the management server. Otherwise, type the IP address of the router in the **IP address** field. Click **Add**.
12. Click **Next**. The Domain Name and DNS Servers window opens.

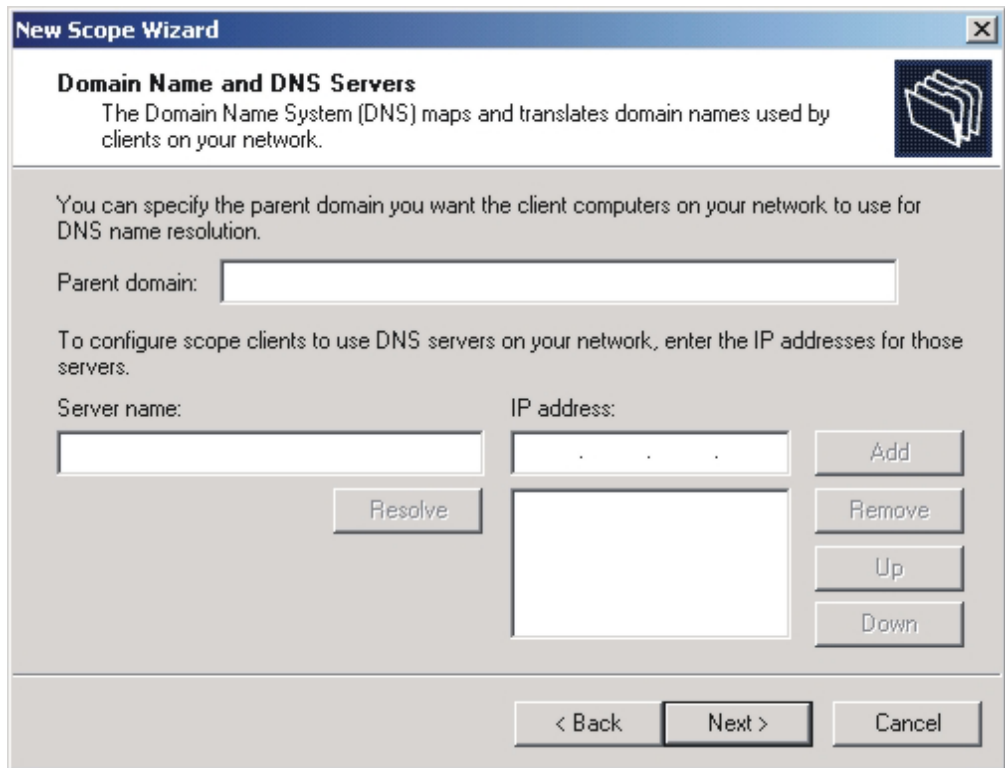


Figure 13. Configuring DHCP server: Domain Name and DNS Servers window

13. (Optional) Type the domain name information; then, click **Next**. The WINS Servers window opens.

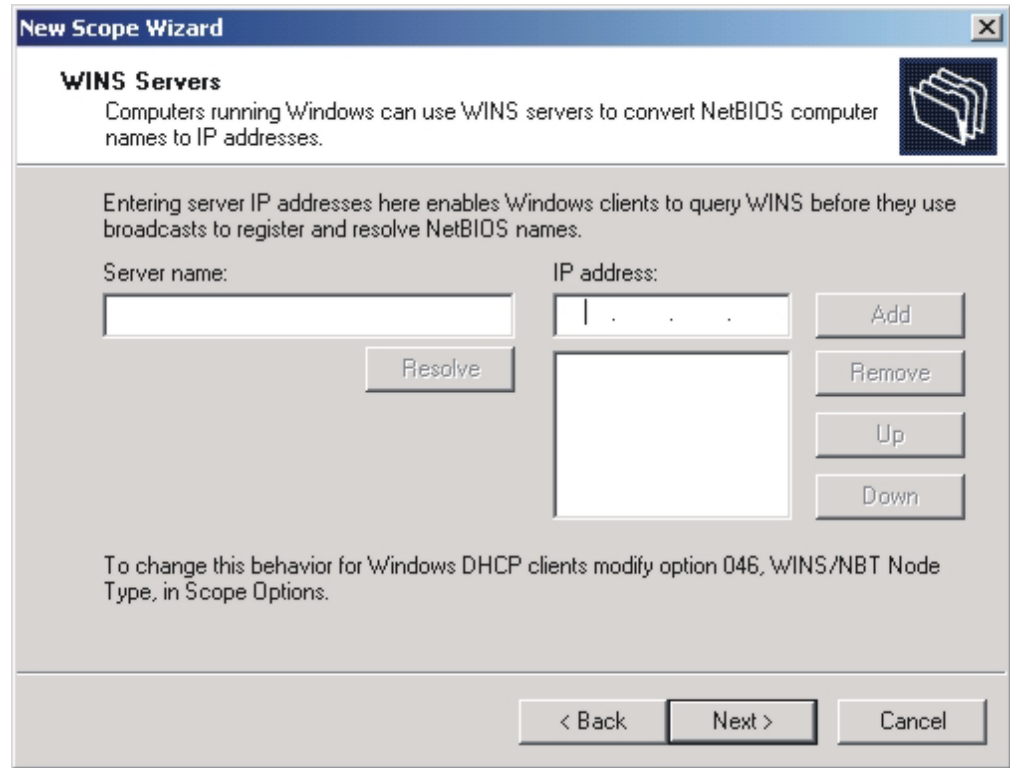


Figure 14. Configuring DHCP server: WINS Servers window

14. (Optional) Type the Windows Internet Naming Service (WINS) server information; then, click **Next**. The Activate Scope window opens.

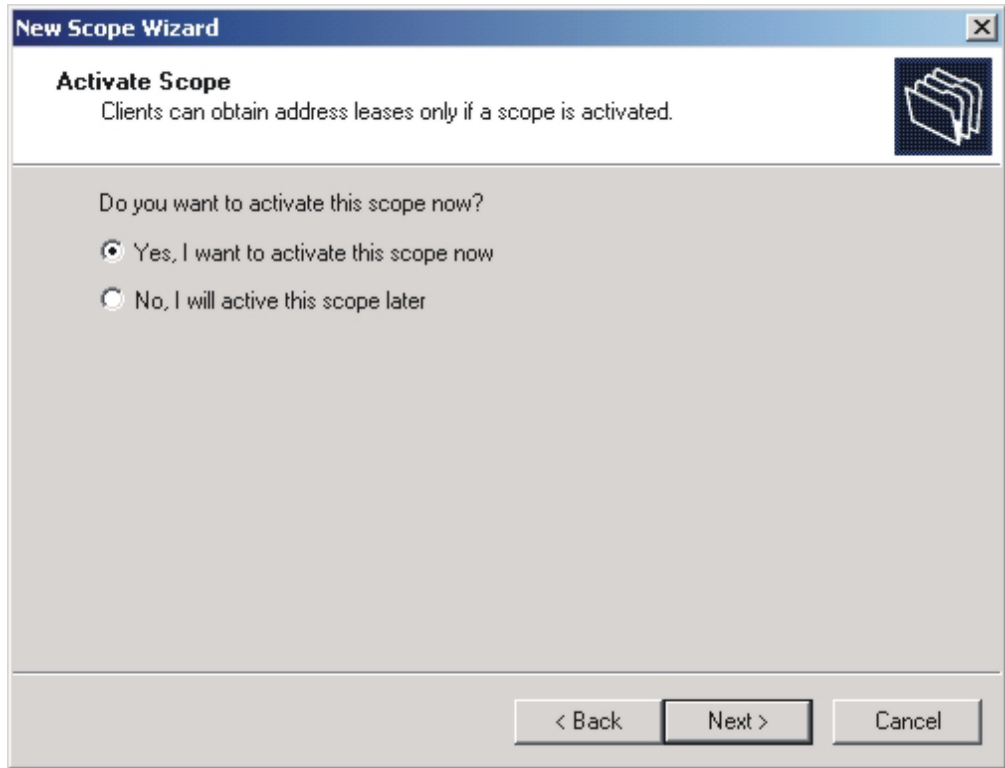


Figure 15. Configuring DHCP server: Activate Scope window

15. Select **Yes, I want to activate this scope now**; then, click **Next**. The Completing the New Scope Wizard window opens.
16. Click **Finish**.

Configuring DHCP option 60 using the pxdhcp.bat file

If the DHCP service is running on the management server or remote deployment server, option 60 must be configured. If the server is running Microsoft DHCP, you can configure option 60 during the installation of RDM Server or RDM Deployment Server. Otherwise, you must configure DHCP option 60 by running the pxdhcp.bat file.

Complete the following steps to configure option 60 by using the pxdhcp.bat file:

1. From a command prompt, change to the RDM\bin directory.
2. Type the following command and press Enter:

```
pxdhcp L
```

Configuring DHCP option 3

Complete the following steps to configure DHCP option 3:

1. Click **Start** → **Programs** → **Administrative Tools** → **DHCP**. The DHCP window opens.
2. Right-click the server node and click **Set Predefined Options**. The Predefined Options and Values window opens.

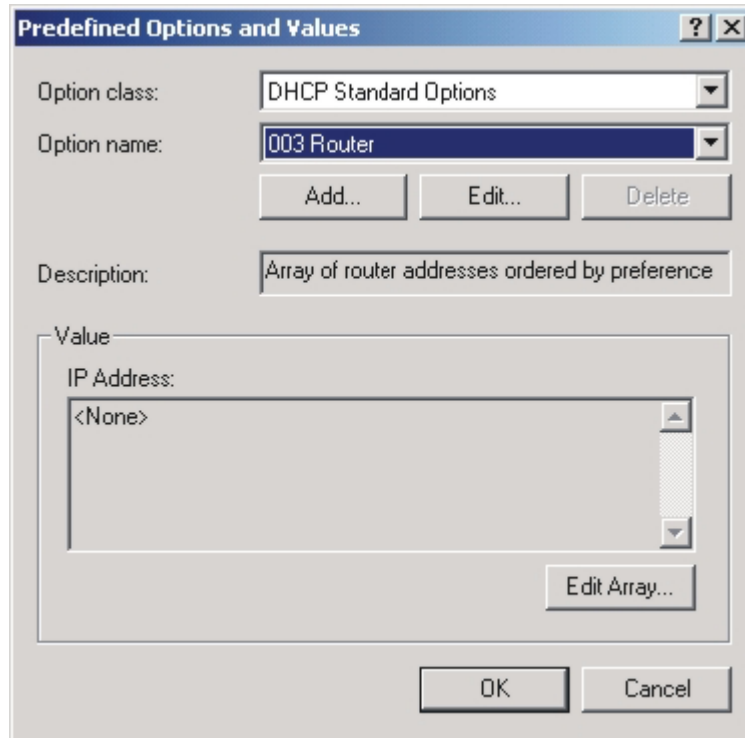


Figure 16. Configuring DHCP option 3: Predefined Options and Values window

3. In the **Option name** field, select **003 Router** and click **Edit Array**. The IP Address Array Editor window opens.

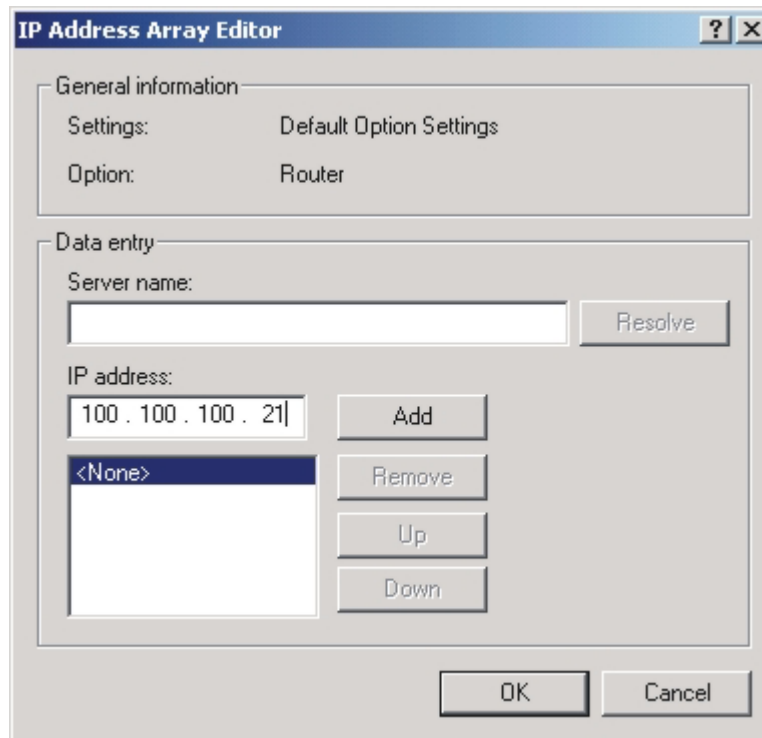


Figure 17. Configuring DHCP option 3: IP Address Array Editor window

4. In the **IP address** field, type the IP address of the router and click **Add**. If the RDM environment is an isolated subnet, such as that illustrated in Figure 2 on page 11, type the IP address of the management server.
5. Click **OK**.

Chapter 4. Installing RDM on Linux

This chapter provides instructions for installing RDM Server, RDM Console, and RDM Deployment Server on Linux.

Notes:

1. Before installing RDM, make sure that the mtools package is installed and that issuing the mdir command generates a list of the contents of the drive. For more information about mtools, see the documentation that came with the Linux distribution.
2. RDM Server and RDM Console are not supported on the Gnome desktop environment.

Overview

The following table lists the Linux installation scripts.

Table 3. Linux installation scripts

| Type of RDM installation | Script name |
|----------------------------------|-------------------------|
| RDM Server | installRDMServer |
| RDM Console | installRDMRemoteConsole |
| RDM Deployment Server (D-Server) | installRDMRemoteDServer |

All three scripts have customizable fields. The customizable fields are at the top of each script file, in the “User Configuration” section and do not have to be in any specific order.

The following figure contains the “User Configuration” section of the script that is used to install RDM Server.

```
#-----#
# Start of User Configuration Section                                     #
#-----#
#-----#
# SRCDIR = The location where the RDM RPMs can be found.  If the RPMs are #
# in the same directory as this script, leave SRCDIR as is.             #
#-----#
export SRCDIR=`pwd`
#-----#
# postgresqluser = The user name for the database (default value is postgres, #
# must be a valid Linux user name on the RDM server).                  #
#-----#
export postgresqluser=postgres
#-----#
# End of User Configuration Section                                     #
#-----#
#####
```

Figure 18. “User Configuration” section of installation script

If you install RDM Server or RDM Deployment Server (D-Server), you are prompted for certain data. The prompts that are part of the RDM Server installation are a subset of those that are part of the RDM Deployment Server (D-Server) installation.

The following table lists the information for which you are prompted during an installation of RDM Server and RDM Deployment Server (D-Server). It also lists the valid values for these fields.

Table 4. Prompts and applicable values for Linux installations

| Prompt | Applicable values |
|--|---|
| IP address of management server | IP address. |
| HTTP port on management server | 1024-65535. By default, this is set to 1234. Note: This HTTP port must not be in use by any other application running on the management server. |
| IP address of remote deployment server* | IP address. |
| HTTP port on remote deployment server* | 1024-65535. By default, this is set to 1234. Note: This HTTP port must not be in use by any other application running on the management server. |
| MTFTP start port | 4016-65535. By default, this is set to 4016. |
| Mtftp port range | 50-61519. By default, this is set to 50. |
| Enable Multicast | yes or no |
| Multicast start address | IP address in the 226.0.1.1 to 239.255.255.1 range. By default, this is set to 226.0.1.1 |
| Multicast port number | 70-65535. By default, this is set to 1758. |
| Multicast pool size | Number in the 10-255 range. By default, this is set to 50. |
| Host name | Host name. |
| Whether a DHCP service is enabled | y (yes) or n (no). |
| * RDM Deployment Server (D-Server) installation only | |

By default, RDM is installed in /opt/IBM/RDM.

Installing RDM Server

This section provides instructions for installing RDM Server. When you install RDM Server, RDM Console and RDM Deployment Server are installed automatically also. You can perform either an attended or unattended installation of RDM Server.

Note: Before you install RDM Server, make sure that the following prerequisites have been met:

- IBM Director Server 4.20.2 or later is installed. The IBM Director database is enabled and the IBM Director ServerRAID™ Manager feature is installed.
- The applicable version of PostgreSQL is installed. See “Hardware and software requirements” on page 5 for more information.
- The management server is connected to the network.

Performing an attended installation

Complete the following steps to perform an attended installation of RDM Server on Linux:

1. Insert the *IBM Remote Deployment Manager 4.20* CD into the CD-ROM drive.
2. If the CD does not automount, go to step 3. If the CD automounts, type the following command and press Enter:

```
umount /mnt/cdrom
```

where *mnt/cdrom* is the mount point of the CD-ROM drive.

3. Type the following command and press Enter:

```
mount -t iso9660 -o map=off /dev/cdrom /mnt/cdrom
```

where *dev/cdrom* is the specific device file for the CD-ROM block device and *mnt/cdrom* is the mount point of the CD-ROM drive.

4. Change to the directory where the installation script is located. Type the following command and press Enter:

```
cd /mnt/cdrom/linux/
```

where *mnt/cdrom* is the mount point of the CD-ROM drive.

5. If you want to customize the installation, go to step 6. If you want to accept the default settings for the installation, type the following command and press Enter:

```
./installRDMServer
```

Go to step 10.

6. To customize the installation, copy the installation script to a local directory. Type the following command and press Enter:

```
cp installRDMServer /directory/installRDMServer
```

where *directory* is the local directory.

7. Open an ASCII text editor and modify the “User configuration” section of the *installRDMServer* script. This script is fully commented.

You can specify the path to the installation CD and the user name for the database.

8. Save the modified installation script.
9. To install IBM RDM Server, type the following command and press Enter:

```
/directory/installRDMServer
```

where *directory* is the local directory to which you copied the installation script.

10. When the following prompt is displayed, type the IP address of the management server and press Enter:

```
IP address of management server? (www.xxx.yyy.zzz)
```

11. When the following prompt is displayed, type the number of the HTTP port that is to be used for communication between the management server and remote deployment servers; then, press Enter:

```
HTTP port on management server? (1024 - 65535, default 1234)
```

12. When the following prompt is displayed, type the number of the first MTFTP port; then, press Enter:

```
MTFTP start port (4016 - 65535 default 4016)
```

13. When the following prompt is displayed, type the number of contiguous MTFTP ports that are reserved for use by RDM Server; then, press Enter:
Mtftp port range? (50 - 61519, default 50)
14. When the following prompt is displayed, type the first class-D (multi-cast) IP address for the range of addresses that are assigned to RDM Server; then, press Enter:
Multicast start address (226.0.1.1 - 239.255.255.1, default 226.0.1.1)
15. When the following prompt is displayed, type the port number of the MTFTP service; then, press Enter:
Multicast port? (70 - 65535, default 1758):
16. When the following prompt is displayed, type the number of contiguous class-D addresses that are reserved for use by RDM Server; then, press Enter:
Multicast pool size (10 - 255, default 50)
17. When the following prompt is displayed, type either y or n and press Enter:
Enable Multicast (yes/no, default yes)?
18. When the following prompt is displayed, either press Enter to accept the host name that is displayed or type the host name of the management server and press Enter:
Hostname? (default *host name*)
19. When the following prompt is displayed, type either y or n and press Enter:
Is DHCP daemon enabled on this machine (yes/no, default no)?

The information that you provided during the installation process is displayed.
20. When the following prompt is displayed, type either y or n and press Enter:
Is this correct (yes/no)?

If you type n, return to step 10 on page 31.
21. To unmount the CD-ROM drive, complete the following steps:
 - a. Type `cd /` and press Enter.
 - b. Type the following command and press Enter:
`umount /mnt/cdrom`

where `mnt/cdrom` is the mount point of the CD-ROM drive.
22. Remove the *IBM Remote Deployment Manager 4.20* CD from the CD-ROM drive.

Performing an unattended installation

This section contains information about creating a response file and performing an unattended installation of RDM Server on Linux.

Creating a response file

Complete the following steps to create a response file:

1. Using an ASCII text editor, create a response file that contains the following text:
MasterDServerIpAddress=
2. Set MasterDServerIpAddress to the IP address of the management server.

3. If you want to accept the default settings, go to step 5. Otherwise, to customize the installation, add the following text to the response file:

```
MasterDServerHttpPort=  
MCast=  
MCastStartAddress=  
MCastPoolSize=  
MCastPort=  
MftpServerStartPort=  
MftpServerPortRange=  
LocalDhcpServer=
```

4. Configure the optional settings:
 - a. Set `LocalDhcpServer` to yes if the DHCP service is running on the remote deployment server. By default, this is set to no.
 - b. Set `MasterDServerHttpPort` to the number of the HTTP port that is used for the management server.
 - c. Set `MCast` to no if you do not want to enable MTFTP. By default, this is set to yes.
 - d. Set `MCastStartAddress` to the first class-D (multi-cast) IP address for the range of addresses that are assigned to RDM Deployment Server.
 - e. Set `MCastPoolSize` to the number of class-D addresses that are reserved for use by RDM Deployment Server.
 - f. Set `MCastPort` to the port number that is assigned to the MTFTP service. This port is used to download files from the instance of RDM Deployment Server running on the management server to the instance of RDM Deployment Server running on the remote deployment server.
 - g. Set `MftpServerStartPort` to the first port number for the range of ports that are used by the MTFTP service.
 - h. Set `MftpServerPortRange` to the number of ports that are reserved for use by the MTFTP service.
5. Save the response file.

Note: You also can use the answer file for an unattended installation of RDM Server on Windows. To do so, you first must run the DOS2UNIX command against the file. See the DOS2UNIX man page for more information.

Performing the installation

Complete the following steps to perform an unattended installation of RDM Server on Linux:

1. If necessary, copy the response file to a location accessible from the system on which you will install RDM Server.
2. Insert the *IBM Remote Deployment Manager 4.20* CD into the CD-ROM drive.
3. If the CD does not automount, go to step 4. If the CD automounts, type the following command and press Enter:

```
umount /mnt/cdrom
```

where `mnt/cdrom` is the mount point of the CD-ROM drive.

4. Type the following command and press Enter:

```
mount -t iso9660 -o map=off /dev/cdrom /mnt/cdrom
```

where `dev/cdrom` is the specific device file for the CD-ROM block device and `mnt/cdrom` is the mount point of the CD-ROM drive.

5. Change to the directory where the installation script is located. Type the following command and press Enter:

```
cd /mnt/cdrom/linux/
```

where *mnt/cdrom* is the mount point of the CD-ROM drive.
6. Type the following command and press Enter:

```
installRDMServer -f ResponseFile
```

where *ResponseFile* is the fully qualified name of the response file.
7. To unmount the CD-ROM drive, complete the following steps:
 - a. Type `cd /` and press Enter.
 - b. Type the following command and press Enter:

```
umount /mnt/cdrom
```

where *mnt/cdrom* is the mount point of the CD-ROM drive.
8. Remove the *IBM Remote Deployment Manager 4.20* CD from the CD-ROM drive.

Installing RDM Console

Note: Before you install RDM Console, make sure that IBM Director Console 4.20.2 or later is installed.

Complete the following steps to install RDM Console on Linux:

1. Insert the *IBM Remote Deployment Manager 4.20* CD into the CD-ROM drive.
2. If the CD does not automount, go to step 3. If the CD automounts, type the following command and press Enter:

```
umount /mnt/cdrom
```

where *mnt/cdrom* is the mount point of the CD-ROM drive.

3. Type the following command and press Enter:

```
mount -t iso9660 -o map=off /dev/cdrom /mnt/cdrom
```

where *dev/cdrom* is the specific device file for the CD-ROM block device and *mnt/cdrom* is the mount point of the CD-ROM drive.

4. Change to the directory where the installation script is located. Type the following command and press Enter:

```
cd /mnt/cdrom/linux/
```

where *mnt/cdrom* is the mount point of the CD-ROM drive.

5. If you want to customize the installation, go to step 6. If you want to accept the default settings for the installation, type the following command and press Enter:

```
./installRDMRemoteConsole
```

Go to step 10 on page 35.

6. To customize the installation, copy the installation script to a local directory. Type the following command and press Enter:

```
cp installRDMRemoteConsole /directory/installRDMRemoteConsole
```

where *directory* is the local directory.

7. Open an ASCII text editor and modify the “User configuration” section of the `installRDMRemoteConsole` script. This file is fully commented. You can specify the location of the RPM files.
8. Save the modified installation script.
9. To install IBM RDM Console, type the following command and press Enter:

```
/directory/installRDMRemoteConsole
```

where *directory* is the local directory.
10. To unmount the CD-ROM drive, complete the following steps:
 - a. Type `cd /` and press Enter.
 - b. Type the following command and press Enter:

```
umount /mnt/cdrom
```

where *mnt/cdrom* is the mount point of the CD-ROM drive.
11. Remove the *IBM Remote Deployment Manager 4.20* CD from the CD-ROM drive.

Installing RDM Deployment Server (D-Server)

You can perform either an attended or unattended installation of RDM Deployment Server.

Performing an attended installation

Complete the following steps to perform an attended installation of RDM Deployment Server (D-Server) on Linux:

1. Insert the *IBM Remote Deployment Manager 4.20* CD into the CD-ROM drive.
2. If the CD does not automount, go to step 3. If the CD automounts, type the following command and press Enter:

```
umount /mnt/cdrom
```

where *mnt/cdrom* is the mount point of the CD-ROM drive.

3. Type the following command and press Enter:

```
mount -t iso9660 -o map=off /dev/cdrom /mnt/cdrom
```

where *dev/cdrom* is the specific device file for the CD-ROM block device and *mnt/cdrom* is the mount point of the CD-ROM drive.

4. Change to the directory where the installation script is located. Type the following command and press Enter:

```
cd /mnt/cdrom/linux/
```

where *mnt/cdrom* is the mount point of the CD-ROM drive.

5. If you want to customize the installation, go to step 6 on page 36. If you want to accept the default settings for the installation, type the following command and press Enter:

```
./installRDMRemoteDServer
```

Go to step 10 on page 36.

6. To customize the installation, copy the installation script to a local directory. Type the following command and press Enter:

```
cp installRDMRemoteDServer /directory/installRDMRemoteDServer
```

where *directory* is the local directory.

7. Open an ASCII text editor and modify the “User configuration” section of the `installRDMRemoteDServer` script. This script is fully commented. You can specify the location of the RPM files.
8. Save the modified installation script.
9. To install RDM Deployment Server, type the following command and press Enter:

```
/directory/installRDMRemoteDServer
```

where *directory* is the local directory to which you copied the installation script.

10. When the following prompt is displayed, type the IP address of the management server and press Enter:
IP address of management server? (www.xxx.yyy.zzz)
11. When the following prompt is displayed, type the number of the HTTP port that is to be used for communication between the management server and remote deployment servers; then, press Enter:
HTTP port on management server? (1024 - 65535, default 1234)
12. When the following prompt is displayed, type the IP address of the remote deployment server and press Enter:
IP address of this remote D-Server? (www.xxx.yyy.zzz)
13. When the following prompt is displayed, type the number of the HTTP port that is to be used for communication between the management server and the remote deployment server; then, press Enter:
HTTP port on this remote D-Server? (1024 - 65535, default 1234)
14. When the following prompt is displayed, type the number of the first MTFTP port; then, press Enter:
MTFTP start port (4016 - 65535 default 4016)
15. When the following prompt is displayed, type the number of contiguous MTFTP ports that are reserved for use by RDM Deployment Server; then, press Enter:
Mtftp port range? (50 - 61519, default 50)
16. When the following prompt is displayed, type the first class-D (multi-cast) IP address for the range of addresses that are assigned to RDM Deployment Server; then, press Enter:
Multicast start address (226.0.1.1 - 239.255.255.1, default 226.0.1.1)
17. When the following prompt is displayed, type the port number of the MTFTP service; then, press Enter:
Multicast port? (70 - 65535, default 1758):
18. When the following prompt is displayed, type the number of contiguous class-D addresses that are reserved for use by RDM Deployment Server; then, press Enter:
Multicast pool size (10 - 255, default 50)
19. When the following prompt is displayed, type either yes or no and press Enter:
Enable Multicast (yes/no, default yes)?:

20. When the following prompt is displayed, either press Enter to accept the host name that is displayed or type the host name of the management server and press Enter:
 Hostname? (default *host name*)
21. When the following prompt is displayed, type either y or n and press Enter:
 Is DHCP daemon enabled on this machine (yes/no, default no)?

 The information that you provided during the installation process is displayed.
22. When the following prompt is displayed, type either y or n and press Enter:
 Is this correct (yes/no)?

 If you type n, return to step 10 on page 36.
23. To unmount the CD-ROM drive, complete the following steps:
 - a. Type `cd /` and press Enter.
 - b. Type the following command and press Enter:
`umount /mnt/cdrom`

 where *mnt/cdrom* is the mount point of the CD-ROM drive.
24. Remove the *IBM Remote Deployment Manager 4.20* CD from the CD-ROM drive.

Performing an unattended installation

This section contains information about creating a response file and performing an unattended installation of RDM Deployment Server (D-Server) on Linux.

Creating a response file

Complete the following steps to create a response file:

1. Using an ASCII text editor, create a response file that contains the following text:
 MasterDServerIpAddress=
 IpAddress=
2. Set `MasterDServerIpAddress` to the IP address of the management server and set `IpAddress` to the IP address of the remote deployment server.
3. If you want to accept the default settings, go to step 5 on page 38. Otherwise, to customize the installation, add the following text to the response file:
 MasterDServerHttpPort=
 HttpPort=
 MCast=
 MCastStartAddress=
 MCastPoolSize=
 MCastPort=
 MtftpServerStartPort=
 MtftpServerPortRange=
 LocalDhcpServer=
4. Configure the optional settings:
 - a. Set `LocalDhcpServer` to yes if the DHCP service is running on the remote deployment server. By default, this is set to no.
 - b. Set `MasterDServerHttpPort` to the number of the HTTP port that is used for the management server.
 - c. Set `HttpPort` to the number of the HTTP port that is used for the remote deployment server.
 - d. Set `MCast` to no if you do not want to enable MTFTP. By default, this is set to yes.

- e. Set `MCastStartAddress` to the first class-D (multi-cast) IP address for the range of addresses that are assigned to RDM Deployment Server.
 - f. Set `MCastPoolSize` to the number of class-D addresses that are reserved for use by RDM Deployment Server.
 - g. Set `MCastPort` to the port number that is assigned to the MTFTP service. This port is used to download files from the instance of RDM Deployment Server running on the management server to the instance of RDM Deployment Server running on the remote deployment server.
 - h. Set `MtftpServerStartPort` to the first port number for the range of ports that are used by the MTFTP service.
 - i. Set `MtftpServerPortRange` to the number of ports that are reserved for use by the MTFTP service.
5. Save the response file.

Note: You also can use the answer file for an unattended installation of RDM Deployment Server on Windows. To do so, you first must run the DOS2UNIX command against the file. See the DOS2UNIX man page for more information.

Performing the installation

Complete the following steps to perform an unattended installation of RDM Deployment Server (D-Server) on Linux:

1. If necessary, copy the response file to a location accessible from the system on which you will install RDM Deployment Server.
2. Insert the *IBM Remote Deployment Manager 4.20* CD into the CD-ROM drive.
3. If the CD does not automount, go to step 4. If the CD automounts, type the following command and press Enter:

```
umount /mnt/cdrom
```

where *mnt/cdrom* is the mount point of the CD-ROM drive.

4. Type the following command and press Enter:

```
mount -t iso9660 -o map=off /dev/cdrom /mnt/cdrom
```

where *dev/cdrom* is the specific device file for the CD-ROM block device and *mnt/cdrom* is the mount point of the CD-ROM drive.

5. Change to the directory where the installation script is located. Type the following command and press Enter:

```
cd /mnt/cdrom/linux/
```

where *mnt/cdrom* is the mount point of the CD-ROM drive.

6. Type the following command and press Enter:

```
installRDMRemoteDServer -f ResponseFile
```

where *ResponseFile* is the fully qualified name of the response file.

7. To unmount the CD-ROM drive, complete the following steps:
 - a. Type `cd /` and press Enter.
 - b. Type the following command and press Enter:

```
umount /mnt/cdrom
```

where *mnt/cdrom* is the mount point of the CD-ROM drive.

8. Remove the *IBM Remote Deployment Manager 4.20* CD from the CD-ROM drive.

Chapter 5. Installing and upgrading RDM on Windows

This chapter contains instructions for installing RDM Server, RDM Console, and RDM Deployment Server on Windows. If you are upgrading from Remote Deployment Manager 4.11, go to “Upgrading RDM” on page 56.

Performing an attended installation of RDM

This section contains procedures for performing attended installations of RDM Server, RDM Console, RDM Deployment Server.

Installing RDM Server

This section provides instructions for installing RDM Server. When you install RDM Server, the InstallShield wizard automatically installs RDM Console and RDM Deployment Server.

Note: Before you install RDM Server, make sure that the following prerequisites have been met:

- IBM Director Server is installed. The IBM Director database is enabled and ServeRAID™ Manager feature is installed.
- The management server is connected to the network.

Complete the following steps to install RDM Server on Windows:

1. Use an operating-system account with administrator privileges to log on to the management server.
2. Insert the *IBM Remote Deployment Manager 4.20* CD into the CD or DVD drive. If the installation process starts automatically and the InstallShield wizard starts, go to step 4. Otherwise, click **Start** → **Run**.
3. In the **Open** field, type the following command and press Enter:
`d:\setup\setup.exe`

where *d* is the drive letter of the CD or DVD drive. The installation program starts, and the “Welcome to the InstallShield Wizard” window opens.

4. Click **Next**. The License Agreement window opens.
5. Click **I accept the terms in the license agreement**; then, click **Next**. The Setup Type window opens.

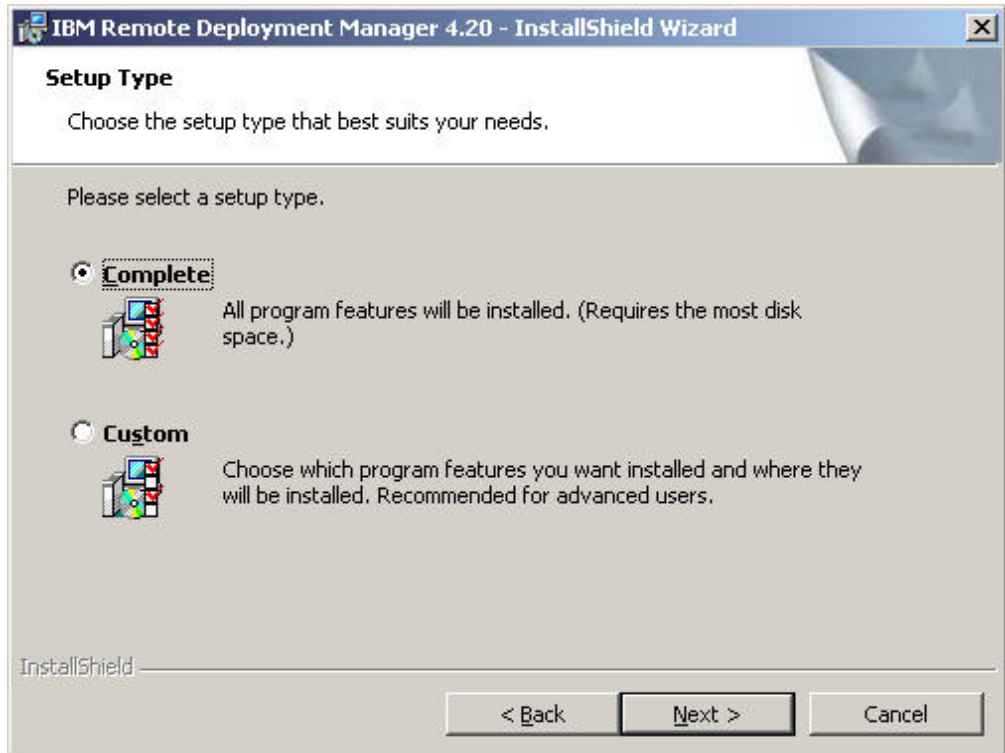



Figure 19. Installing RDM Server on Windows: Setup Type window

6. To install RDM in the default location, click **Complete** and go to step 9 on page 43. Otherwise, click **Custom**; then, click **Next**. The Custom Setup window opens.
7. Click  to the left of **RDM Server**. A menu opens.

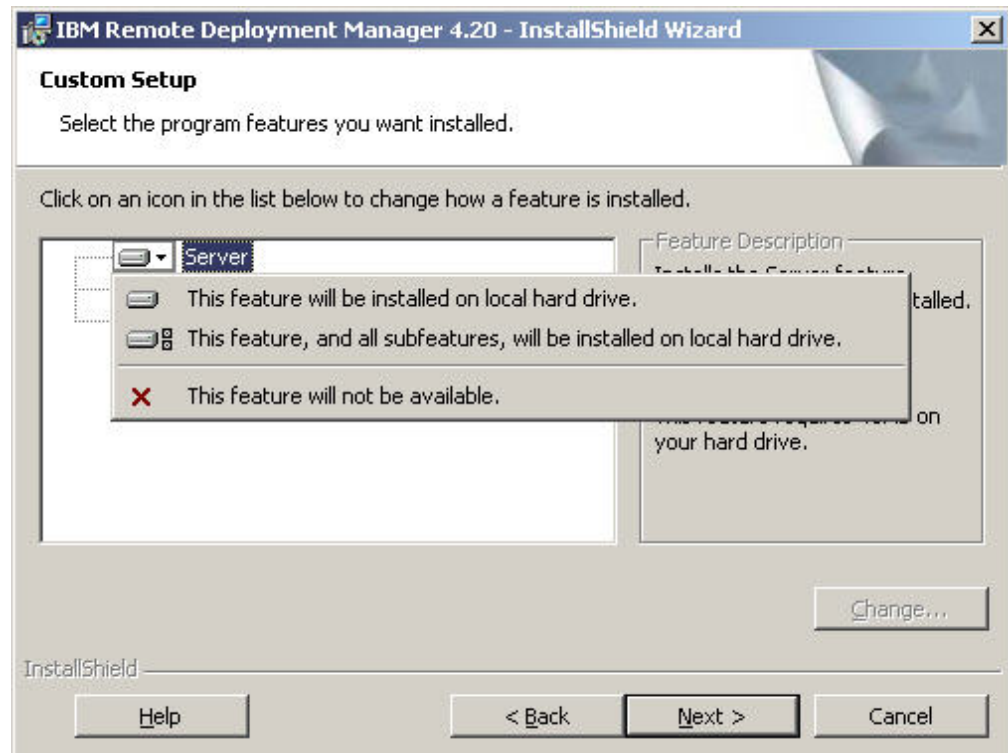


Figure 20. Installing RDM Server on Windows: Custom Setup window

8. Click either **This feature will be installed on local hard drive** or **This feature, and all subfeatures, will be installed on local hard drive**.

By default, RDM Server is installed in *d*:\Program Files\IBM\RDM, where *d* is the drive letter of the hard disk drive. To install RDM in a different location, click **Change**.

Note: Before you install RDM in other than the default location, be aware of the following restrictions:

- The length of the path must be 28 characters or fewer.
- The path is read according to DOS-style conventions. For example, the installation program converts C:\Program Files\IBM\RDM\ to C:\Progra~1\IBM\RDM\.
- If the path length is more than 28 characters, RDM will not function, although it will appear to be installed correctly.

9. Click **Next**. The following message is displayed: "The Console and DServer are both part of Server and will be installed."
10. Click **OK**. The D-Server Configuration window opens.

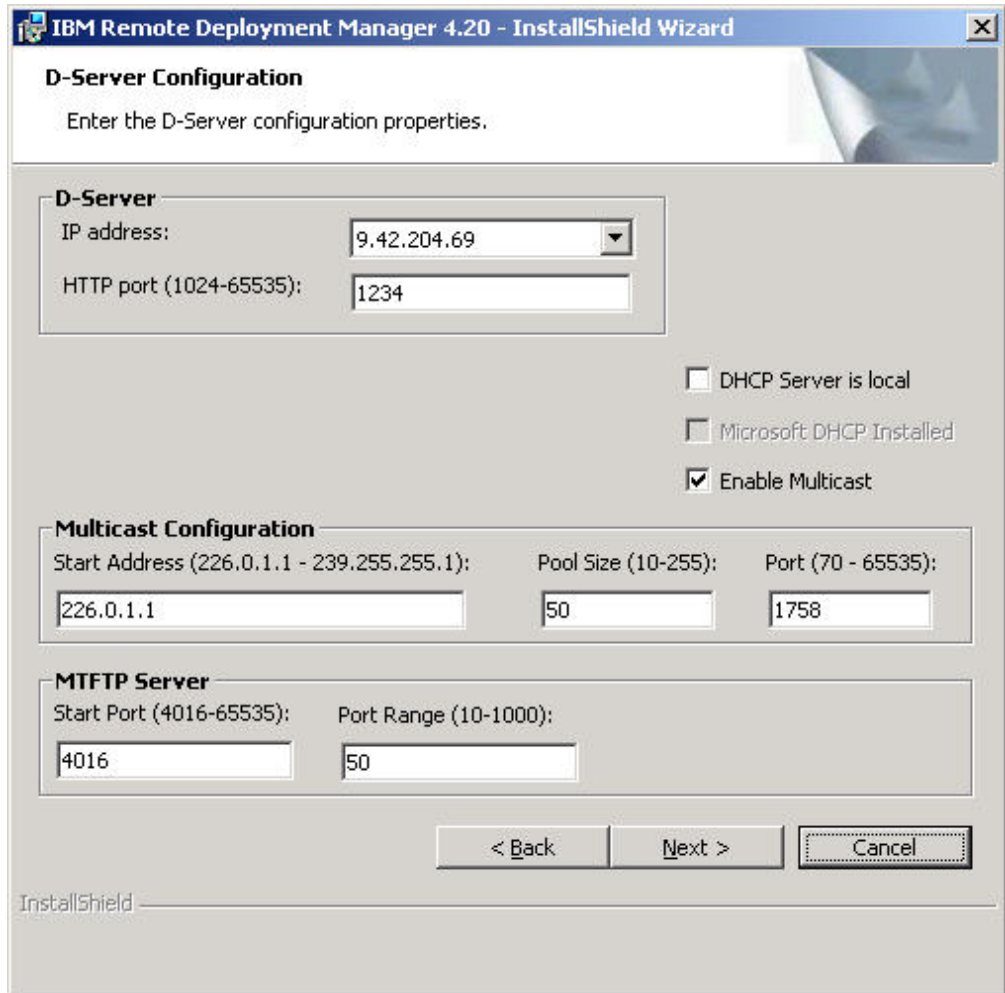


Figure 21. Installing RDM Server on Windows: D-Server Configuration window

11. Configure RDM Deployment Console (D-Server):

- a. In the **D-Server IP address** field, type or select the IP address of the management server. If the management server contains multiple NICs, select the IP address of the NIC that is used for the RDM subnet.
- b. In the **D-Server HTTP port** field, type the number of the HTTP port that is used for communication between the management server and any remote deployment servers. This is the port on which RDM Deployment Server receives HTTP messages. By default, this is set to 1234.

Note: This HTTP port must not be in use by any other application running on the management server.

- c. If the DHCP service is running on the management server, select the **DHCP Server is local** check box. If you are using Microsoft DHCP, select the **Microsoft DHCP Installed** check box; this automatically configures option 60.
- d. Select the **Enable Multicast** check box to enable the use of the MTFTP protocol.

12. Configure the multicast IP addresses:
 - a. In the **Start Address** field, type the first class-D (multicast) IP address for the range of addresses that are assigned to RDM Deployment Server. By default, this is set to 226.0.1.1.
 - b. In the **Pool Size** field, type the number of contiguous class-D addresses that are reserved for use by RDM Deployment Server. By default, this is set to 50.
 - c. In the **Port** field, type the port number that is assigned to the MTFTP service. This port is used to download files from the instance of RDM Deployment Server running on the management server to target systems. By default, this is set to 1758.

Note: Make sure that the multicast IP addresses are not in use by other applications. For more information, go to <http://www.iana.org/assignments/multicast-addresses>.

13. Configure the MTFTP server:
 - a. In the **Start Port** field, type the first port for the range of ports that are assigned to the MTFTP server. By default, this is set to 4016.
 - b. In the **Port Range** field, type the number of contiguous ports that are reserved for use by the MTFTP server. By default, this is set to 50.
14. Click **Next**. The Ready to Install the Program window opens.
15. Click **Install** to begin the installation. The installation process might take several minutes to be completed.
16. When the InstallShield Wizard Completed window opens, click **Finish**.

Installing RDM Console

Note: Before you install RDM Console, make sure that IBM Director Console is installed and that the system is connected to the network.

Complete the following steps to install RDM Console on Windows:

1. Use an operating-system account with administrator privileges to log on to the system.
2. Insert the *IBM Remote Deployment Manager* CD into the CD or DVD drive. If the installation process starts automatically and the InstallShield wizard starts, go to step 4. Otherwise, click **Start → Run**.
3. In the **Open** field, type the following command and press Enter:

```
d:\setup\setup.exe
```

where *d* is the drive letter of the CD or DVD drive. The installation program starts, and the “Welcome to the InstallShield Wizard” window opens.

4. Click **Next**. The License Agreement window opens.
5. Click **I accept the terms in the license agreement**; then, click **Next**. The Setup Type window opens.

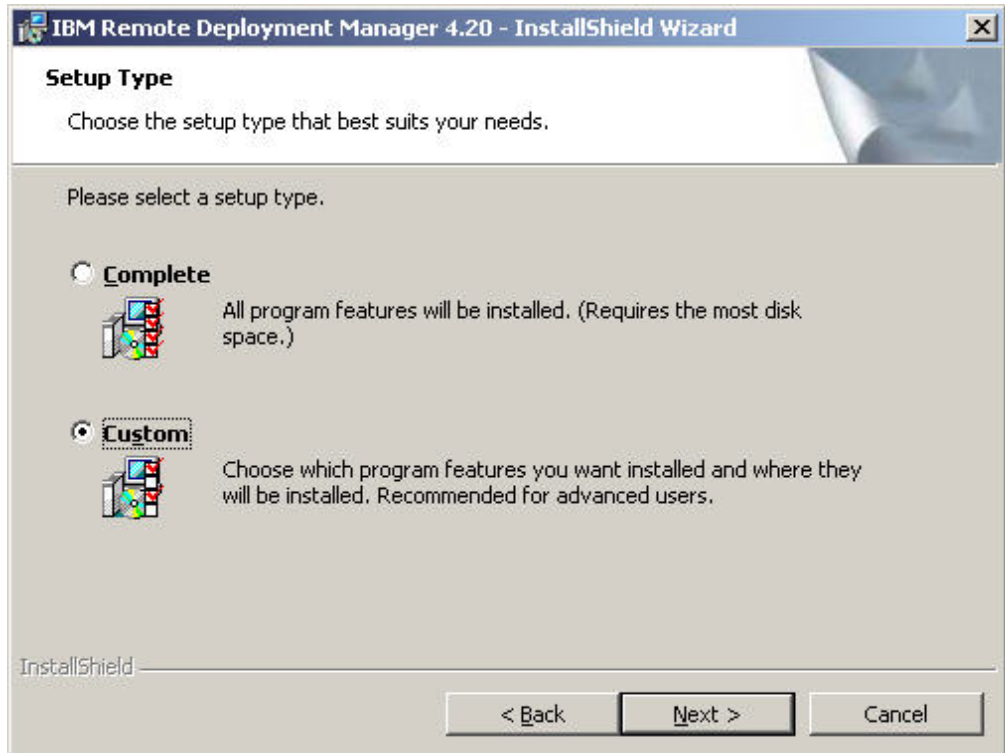


Figure 22. Installing RDM Console on Windows: Setup Type window

6. Click **Custom**; then, click **Next**. The Custom Setup window opens.
7. Click  to the left of **RDM Console**. A menu opens.

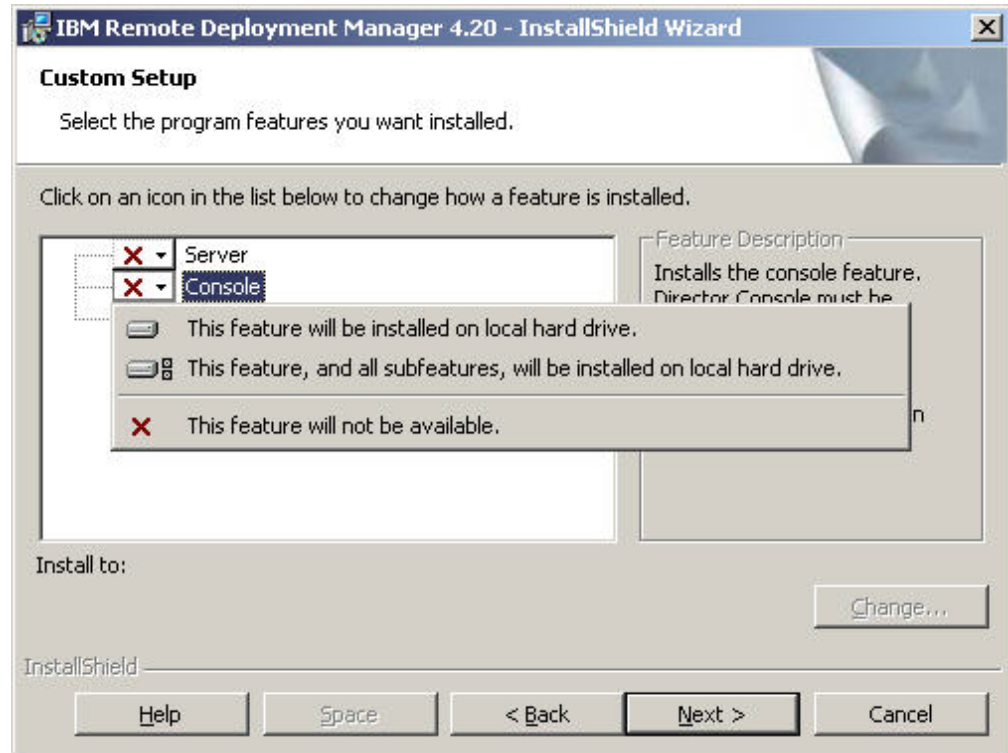


Figure 23. Installing RDM Console on Windows: Custom Setup window

8. Click either **This feature will be installed on local hard drive** or **This feature, and all subfeatures, will be installed on local hard drive**.

By default, RDM Console is installed in `d:\Program Files\IBM\RDM`, where `d` is the drive letter of the hard disk drive. To install RDM in a different location, click **Change**.

Note: Before you install RDM in other than the default location, be aware of the following restrictions:

- The length of the path must be 28 characters or fewer.
- The path is read according to DOS-style conventions. For example, the installation program converts `C:\Program Files\IBM\RDM\` to `C:\Progra~1\IBM\RDM\`.
- If the path length is more than 28 characters, RDM will not function, although it will appear to be installed correctly.

9. Click **Next**. The Ready to Install the Program window opens.
10. Click **Install** to begin the installation. The installation process might take several minutes to be completed.
11. When the InstallShield Wizard Completed window opens, click **Finish**.

Installing RDM Deployment Server

Notes:

1. Before you install RDM Deployment Server, make sure that the system is connected to the network.
2. You cannot install RDM Deployment Server on a server on which IBM Director Server is already installed.

Complete the following steps to install RDM Deployment Server:

1. Use an operating-system account with administrator privileges to log on to the system.
2. Insert the *IBM Remote Deployment Manager* CD into the CD or DVD drive. If the installation process starts automatically and the InstallShield wizard starts, go to step 4. Otherwise, click **Start → Run**.

3. In the **Open** field, type the following command and press Enter:

```
d:\setup\setup.exe
```

where *d* is the drive letter of the CD or DVD drive. The installation program starts, and the “Welcome to the InstallShield Wizard” window opens.

4. Click **Next**. The License Agreement window opens.
5. Click **I accept the terms in the license agreement**; then, click **Next**. The Setup Type window opens.

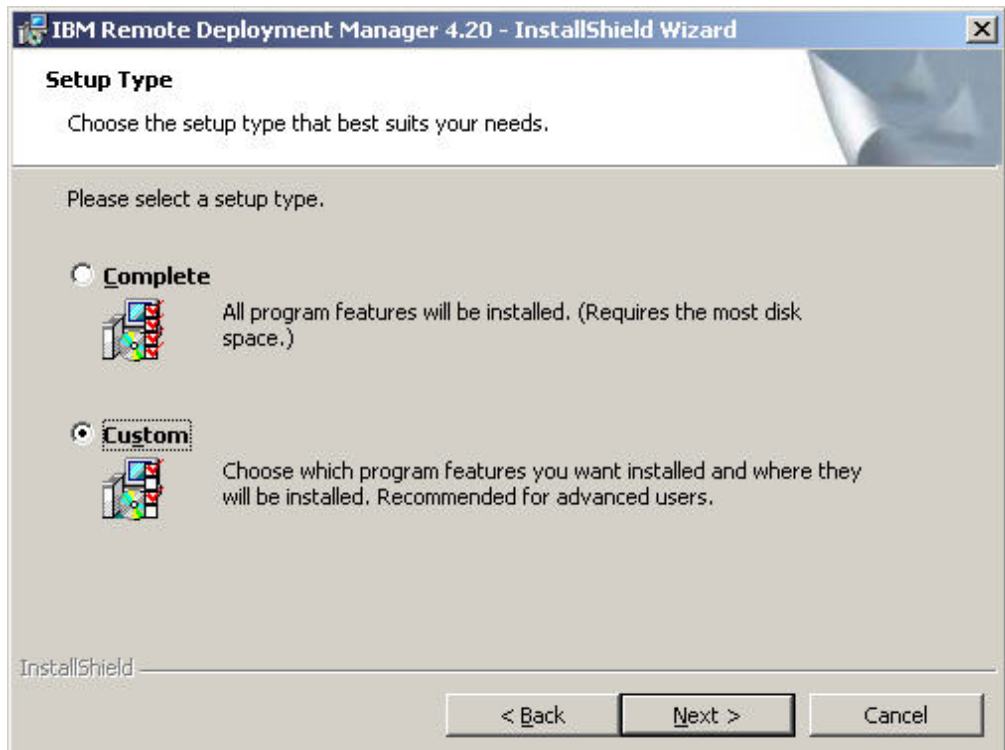



Figure 24. Installing RDM Deployment Server (D-Server) on Windows: Setup Type window

6. Click **Custom**; then, click **Next**. The Custom Setup window opens.
7. Click  to the left of the feature name. A menu opens.

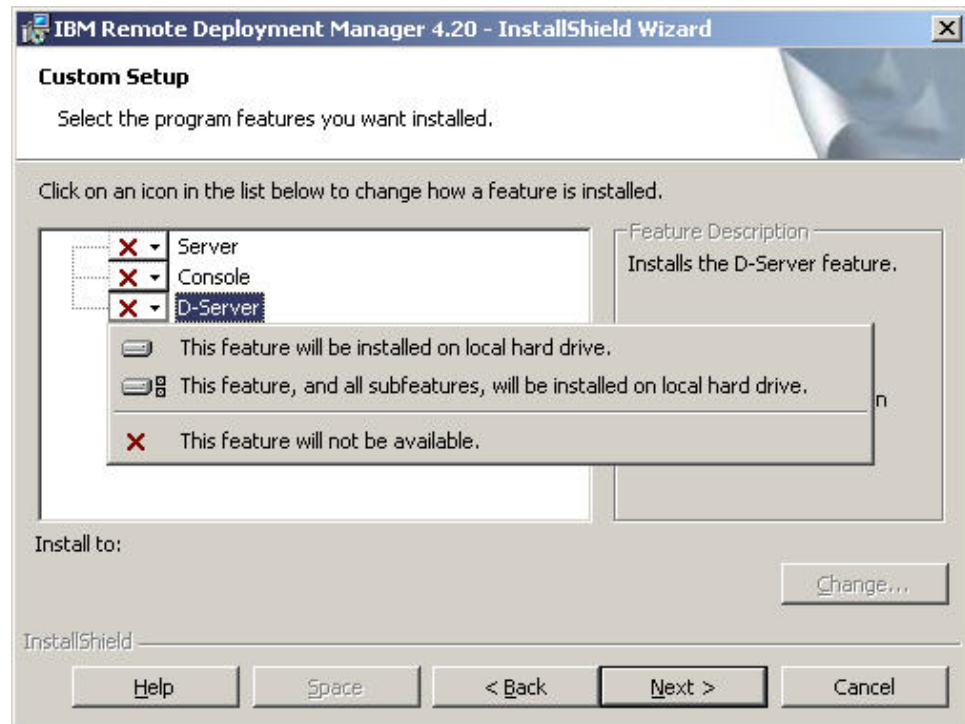


Figure 25. Installing RDM Deployment Server (D-Server) on Windows: Custom Setup window

8. Click either **This feature will be installed on local hard drive** or **This feature, and all subfeatures, will be installed on local hard drive**.

By default, RDM is installed in `d:\Program Files\IBM\RDM`, where *d* is the drive letter of the hard disk drive. To install RDM in a different location, click **Change**.

Note: Before you install RDM in other than the default location, be aware of the following restrictions:

- The length of the path must be 28 characters or fewer.
- The path is read according to DOS-style conventions. For example, the installation program converts `C:\Program Files\IBM\RDM\` to `C:\Progra~1\IBM\RDM\`.
- If the path length is more than 28 characters, RDM will not function, although it will appear to be installed correctly.

9. Click **Next**. The D-Server Configuration window opens.

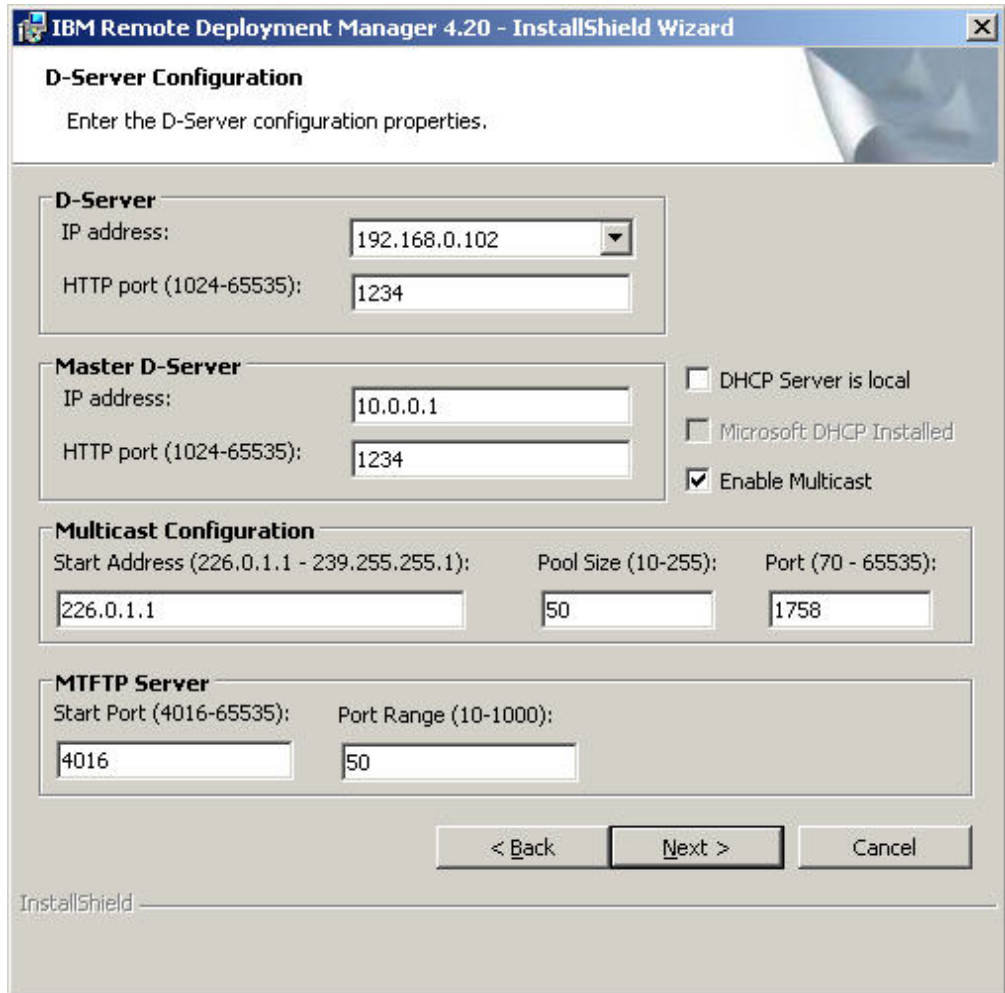


Figure 26. Installing RDM Deployment Server on Windows: D-Server Configuration window

10. Configure RDM Deployment Server (D-Server):

- a. In the **D-Server IP address** field, select the IP address of the remote deployment server. If the remote deployment server contains multiple NICs, select IP address of the NIC that is used for the RDM subnet.
- b. In the **D-Server HTTP port**, type the number of the HTTP port that is used for communication between the remote deployment server and the management server. This is the port on which Remote Deployment Server receives HTTP messages. By default, this is set to 1234.

Note: This HTTP port must not be in use by any other application running on the remote deployment server.

- c. If the DHCP service is running on the remote deployment server, select the **DHCP Server is local** check box. If you are using Microsoft DHCP, select the **Microsoft DHCP Installed** check box; this automatically configures option 60.
- d. Select the **Enable Multicast** check box to enable the use of the MTFTP protocol.

11. Provide information about the management server:
 - a. In the **Master D-Server IP address** field, type the IP address of the management server. If the management server contains multiple NICs, select the IP address of the NIC that is used for the RDM subnet.
 - b. In the **Master D-Server HTTP port** field, type the number of the HTTP port that is used for communication between the management server and remote deployment server. This is the port on which the instance of RDM Deployment Server running on the management server receives HTTP messages. By default, this is set to 1234.
12. Configure the multicast IP addresses:
 - a. In the **Start Address** field, type the first class-D (multicast) IP address for the range of addresses that are assigned to RDM Deployment Server. By default, this is set to 226.0.1.1.
 - b. In the **Pool Size** field, type the number of contiguous class-D addresses that are reserved for use by RDM Deployment Server. By default, this is set to 50.
 - c. In the **Port** field, type the port number that is assigned to the MTFTP service. This port is used to download files from the instance of RDM Deployment Server running on the remote deployment server to the target systems. By default, this is set to 1758.

Note: Make sure that the multicast IP addresses are not in use by other applications. For more information, go to <http://www.iana.org/assignments/multicast-addresses>.
13. Configure the MTFTP server:
 - a. In the **Start Port** field, type the first port for the range of ports that are assigned to the MTFTP server. By default, this is set to 4016.
 - b. In the **Port Range** field, type the number of contiguous ports that are reserved for use by the MTFTP server. By default, this is set to 50.
14. Click **Next**. The “Ready to Install the Program” window opens.
15. Click **Install** to begin the installation. The installation process might take several minutes to be completed.
16. When the “InstallShield Wizard Completed” window opens, click **Finish**.

Performing an unattended installation of RDM

You can perform an unattended installation of RDM by using a response file, which provides answers to the questions that are posed by the InstallShield wizard. You can use this method to create a standard installation file that can be used on many systems. This section includes instructions for creating a response file and performing an unattended uninstallation of RDM.

Creating a response file

This section contains information about default response file values and instructions for creating response files for different types of RDM installations.

Default response file values

For installations of RDM Server or RDM Deployment Server, the installation program uses default values unless the response file contains alternate values. For example, in either of the following situations, the RDM installation program will use the default values:

- The response file does not include an element
- The response includes an element, but the element is not assigned a value.

The following table lists the elements of response files that have default values:

Table 5. Elements of responses files for RDM Server and RDM Deployment Server

| Element | What it specifies | Default value |
|-----------------------|--|---------------|
| HttpPort= | The number of the HTTP port that is used for communication between the management server and any remote deployment servers. Note: This port must not be in use by any other application running on the local system. | 1234 |
| MCast= | Whether MTFTP is enabled. Possible values are yes or no. | yes |
| MCastStartAddress= | The first class-D (multicast) IP address for the range of addresses that are assigned to RDM Deployment Server. | 226.0.1.1 |
| MCastPoolSize= | The number of contiguous class-D addresses that are reserved for use with RDM Deployment Server. | 50 |
| MCastPort= | The port number that is assigned to the MTFTP service. This port is used to download files from the instance of RDM Deployment Server that is running on the management server. | 1758 |
| MtftpServerStartPort= | The first port for the range of ports that are assigned to the MTFTP service | 4016 |
| MtftpServerPortRange= | The number of contiguous ports that are reserved for use by the MTFTP service. | 50 |
| LocalDhcpServer= | Whether the DHCP service is running on the local server. Possible values are yes or no. Note: If the DHCP service is running on the local server, LocalDhcpServer must be set to yes | no |
| MicrosoftDHCP= | Whether the DHCP service is produced by Microsoft. Possible values are yes or no. Setting MicrosoftDHCP to yes automatically configures option 60. | no |

Creating a response file for an installation of RDM Server

Complete the following steps to create a response file:

1. Using an ASCII text editor, create a text file that contains the following text:

```
[common]
InstallType=Server
InstallDir=C:\Program Files\IBM\RDM
[dServer]
IpAddress=IPaddress
```

where *IPaddress* is the IP address of the management server. If the server contains multiple NICs, select the IP address of the NIC that is used for the RDM subnet.

2. If you want to install RDM in other than the default location, set `InstallDir` equal to the fully qualified path of the directory where you want to install RDM.

Note: Before you install RDM in other than the default location, be aware of the following restrictions:

- a. The length of the path must be 28 characters or fewer.
 - b. The path is read according to DOS-style conventions. For example, the installation program converts `C:\Program Files\IBM\RDM\` to `C:\Progra~1\IBM\RDM\`.
 - c. If the path length is more than 28 characters, RDM will not function, although it will appear to be installed correctly.
3. If you want to accept the default settings for the installation, go to step 5. Other wise, add the following text to the `[dServer]` section of the response file:

```
HttpPort=
MCast=
MCastStartAddress=
MCastPoolSize
MCastPort=
MftpServerStartPort=
MftpServerPortRange=
LocalDhcpServer=
MicrosoftDHCP=
```

4. Assign values to the elements that you want to customize. See Table 5 on page 52 for information about default and applicable values.
5. Name the response file `silent.ini`.

Creating a response file for an installation of RDM Console

Complete the following steps to create a response file:

1. Using an ASCII text editor, create a text file that contains the following text:

```
[common]
InstallType=Console
InstallDir=C:\Program Files\IBM\RDM
```

2. If you want to install RDM in other than the default location, set `InstallDir` equal to the fully qualified path of the directory where you want to install RDM.

Note: Before you install RDM in other than the default location, be aware of the following restrictions:

- The length of the path must be 28 characters or fewer.
- The path is read according to DOS-style conventions. For example, the installation program converts `C:\Program Files\IBM\RDM\` to `C:\Progra~1\IBM\RDM\`.

- If the path length is more than 28 characters, RDM will not function, although it will appear to be installed correctly.
3. Name the response file silent.ini.

Creating a response file for an installation of RDM Deployment Server

Note: You also can use this procedure to install both RDM Deployment Server and RDM Console.

Complete the following steps to create a response file:

1. Using an ASCII text editor, create a text file that contains the following text:

```
[common]
InstallType=Type
InstallDir=C:\Program Files\IBM\RDM
[dServer]
MasterDServerIpAddress=IPaddress1
IpAddress=IPaddress2
```

where:

- *Type* is either DServer or Console, DServer.
- *IPaddress1* is the IP address of the management server.
- *IPaddress2* is the IP address of the remote deployment server.

If either server contains multiple NICs, specify the IP address of the NIC that is used for the RDM subnet.

2. If you want to install RDM in other than the default location, set *InstallDir* equal to the fully qualified path of the directory where you want to install RDM.

Note: Before you install RDM in other than the default location, be aware of the following restrictions:

- The length of the path must be 28 characters or fewer.
 - The path is read according to DOS-style conventions. For example, the installation program converts C:\Program Files\IBM\RDM\ to C:\Progra~1\IBM\RDM\.
 - If the path length is more than 28 characters, RDM will not function, although it will appear to be installed correctly.
3. If you want to accept the default settings for the installation, go to step 5 on page 53. Other wise, add the following text to the [dServer] section of the response file:

```
HttpPort=
MCast=
MCastStartAddress=
MCastPoolSize
MCastPort=
MtftpServerStartPort=
MtftpServerPortRange=
LocalDhcpServer=
MicrosoftDHCP=
```

4. Assign values to the elements that you want to customize. See Table 5 on page 52 for information about default and applicable values.
5. Name the response file silent.ini.

Installing RDM

Complete the following steps to install RDM:

1. Change to the directory that contains the RDM installation file, setup.exe. This file is in the setup directory on the *IBM Remote Deployment Manager 4.20 CD*.
2. From the command prompt, type the following command and press Enter:
`setup.exe /s /v"/qInterface!+ SILENTFILE=directory\silent.ini"`

where:

- Where *Interface* is one of the following values:
 - **n** specifies that no GUI is displayed.
 - **r** specifies that a reduced-size GUI with a normally-sized progress bar is displayed
 - **b** specifies that a normally sized interface with a reduced-size progress bar is displayed.
- **!** is an optional command that specifies that the GUI does not contain Cancel buttons. (You cannot issue this command if *Interface* is **n**, because **n** specifies that no GUI is displayed.)
- **+** is an optional command that specifies that a window opens when the installation is completed.
- *directory* is the fully qualified path of the silent.ini file.

Notes:

- a. SILENTFILE must be typed in uppercase, as shown.
- b. If the directory path contains a space, enclose the directory and file name in quotation marks, and add a backslash (\) after SILENTFILE=.

The following table contains example of commands that can be issued to install RDM.

Table 6. Examples of commands issued to perform an unattended installation of RDM on Windows

| Command | What it does |
|--|--|
| <code>setup.exe /s /v"/qb SILENTFILE=c:\temp\silent.ini"</code> | Performs an unattended installation of RDM. A normally sized GUI with a reduced-size progress bar is displayed. |
| <code>setup.exe /s /v"/qn+ SILENTFILE=c:\temp\silent.ini"</code> | Performs an unattended installation of RDM. No GUI is displayed during the installation, although a window opens when the installation is completed. |
| <code>setup.exe /s /v"/qn SILENTFILE=\"c:\Program Files\silent.ini\""</code> | Performs an unattended installation of RDM. No GUI is displayed. Because RDM is installed in the Program Files directory, a backslash (\) is issued after SILENTFILE=. |

Upgrading RDM

Notes:

1. Before you upgrade to RDM 4.20, you must upgrade to IBM Director 4.20.2.
2. When you upgrade to RDM 4.20, the command lists for existing tasks are modified. The command lists that are modified are backed up to a `commandList.bak` file in the task directory.

Consider the following points about upgrade paths:

- You can upgrade to RDM 4.20 only from RDM 4.11.
- If RDM 4.1 is installed, you have two options. You can upgrade to RDM 4.11 and then upgrade to RDM 4.20, or you can uninstall RDM 4.1 and then install RDM 4.20.
- If LCCM or a version of RDM earlier than 4.1 is installed, you must uninstall the application; then, install RDM 4.20. You can export your target systems from RDM 3.2 or earlier and then import them into RDM 4.20.

If you upgrade any RDM software component (RDM Server, RDM Console, or RDM Deployment Server), you must upgrade all RDM software. The levels of RDM software that are running on the management server, management console, and all remote deployment servers must be identical.

During the upgrade, the installation program detects the RDM software components (RDM Server, RDM Console, or RDM Deployment Server) that are installed and upgrades those components.

Complete the following steps to upgrade from RDM 4.11 to RDM 4.20:

1. Use an operating-system account with administrator privileges to log on to the system.
2. Insert the *IBM Remote Deployment Manager 4.20* CD into the CD or DVD drive. If the installation process starts automatically and the InstallShield wizard starts, go to step 4. Otherwise, click **Start** → **Run**.
3. In the **Open** field, type the following command and press Enter:
`d:\setup\setup.exe`

where *d* is the drive letter of the CD or DVD drive. The installation program starts, and the “Welcome to the InstallShield Wizard” window opens.

4. If you want to view the readme file that comes with RDM Server, click **View Readme**; otherwise, click **Next** to continue. The License Agreement window opens.
5. Read the terms of the license agreement; then, click **Yes** to accept the terms. The Setup Type window opens.
6. Click **Next**. The “Ready to Install the Program” window opens.
7. Click **Install** to begin the upgrade. The upgrade process might take several minutes to be completed.
8. When the InstallShield Wizard Completed window opens, click **Finish**.

Chapter 6. Configuring remote deployment servers

If your RDM environment includes remote deployment servers, you must add them to the RDM database. This chapter describes how to start IBM Director Console, add a remote deployment server to the RDM database, and enable and configure the settings for a remote deployment server.

Starting IBM Director

Complete the following steps to start IBM Director Console:

1. To start IBM Director Console, take one of the following actions:

| | |
|--------------------|--|
| For Linux | From a command prompt, type the following command and press Enter: twgcon |
| For Windows | Click Start → Programs → IBM Director Console . |

The IBM Director Login window opens.



Figure 27. IBM Director Login window

2. In the **IBM Director Server** field, type the name of the management server.
3. In the **User ID** field, type one of the following strings:

| | |
|--------------------|----------------------------|
| For Linux | <i>UserID</i> |
| For Windows | <i>ComputerName\UserID</i> |

where:

- *UserID* is a valid IBM Director user ID.
 - *ComputerName* is either the local computer name or the domain, depending on whether the IBM Director service account has domain or local privileges
4. In the **Password** field, type the password that corresponds to the user ID.
 5. Click **OK**. IBM Director Console starts.

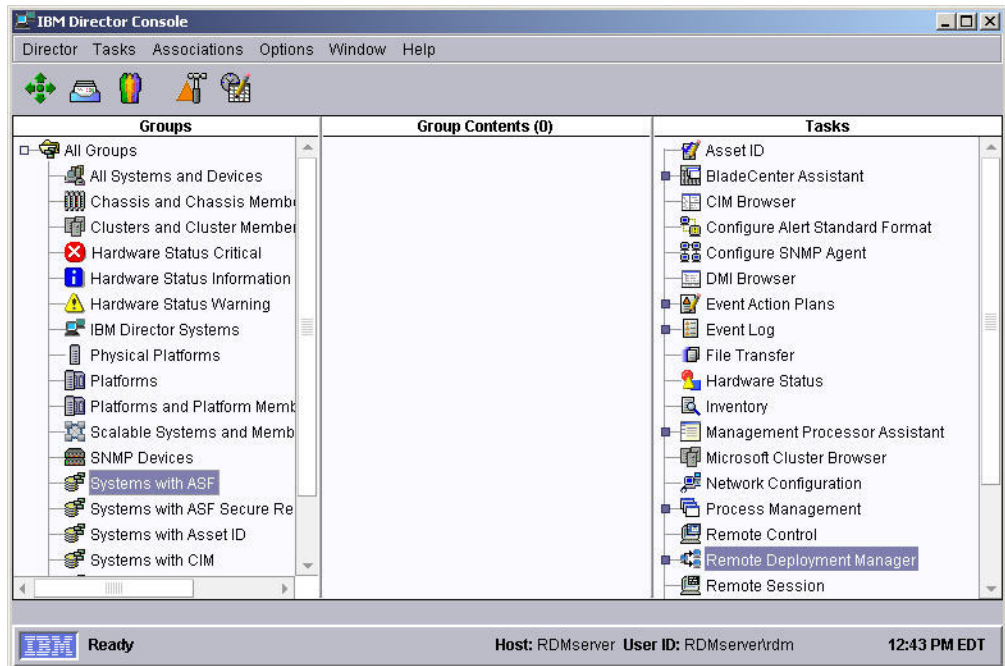


Figure 28. IBM Director Console

Adding a remote deployment server

After you install RDM Deployment Server on a remote server, you must add the remote deployment server to the RDM database.

Complete the following steps to add a remote deployment server to the RDM database:

1. From IBM Director Console, click **Tasks** → **Remote Deployment Manager** → **Options** → **Change D-Server Options**. The Deployment Server Management Options window opens.

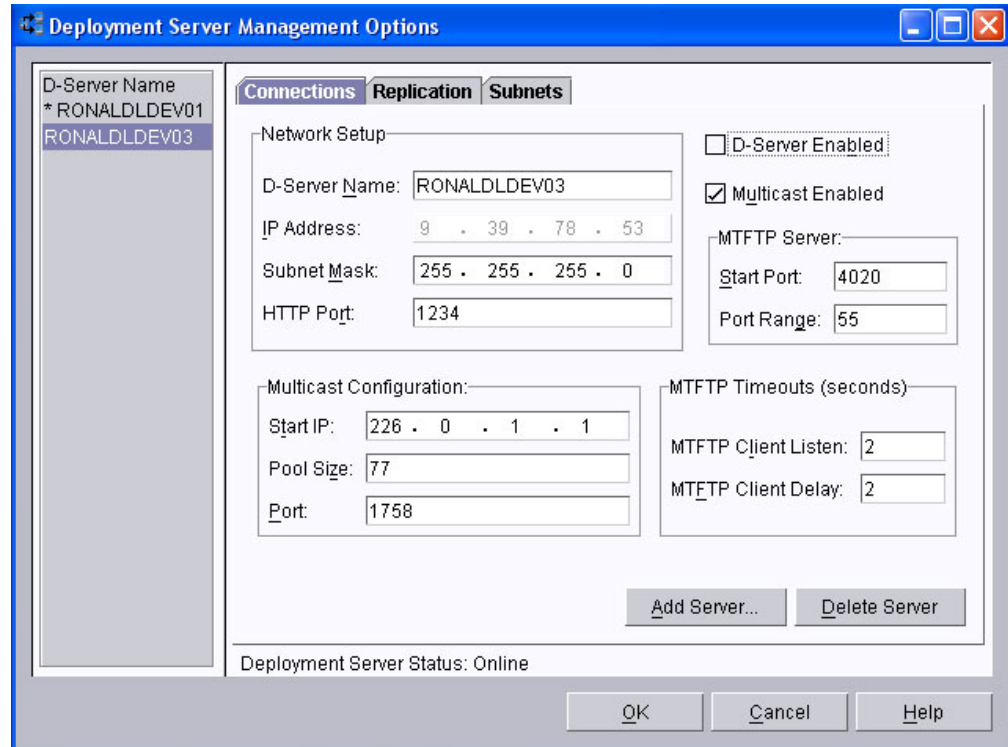


Figure 29. Adding a remote deployment server: Deployment Server Management Options window

2. Click **Add Server**. The Add D-Server window opens.

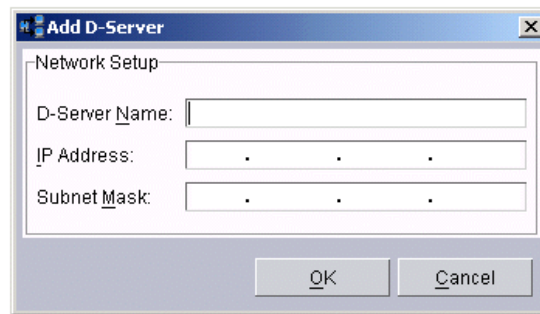


Figure 30. Adding a remote deployment server: Add D-Server window

3. Provide information about the remote deployment server:
 - a. In the **D-Server Name** field, type the name of the remote deployment server.
 - b. In the **IP Address** field, type the IP address of the remote deployment server.
 - c. In the **Subnet Mask** field, type the subnet mask of the remote deployment server.
4. Click **OK**. The name of the remote deployment server now is displayed in the left pane of the Deployment Server Management Options window.

Enabling and configuring a remote deployment server

Complete the following steps to enable and configure settings for a remote deployment server:

1. From IBM Director Console, click **Tasks** → **Remote Deployment Manager** → **Options** → **Change D-Server Options**. The Deployment Server Management Options window opens, and the Connections page is displayed.

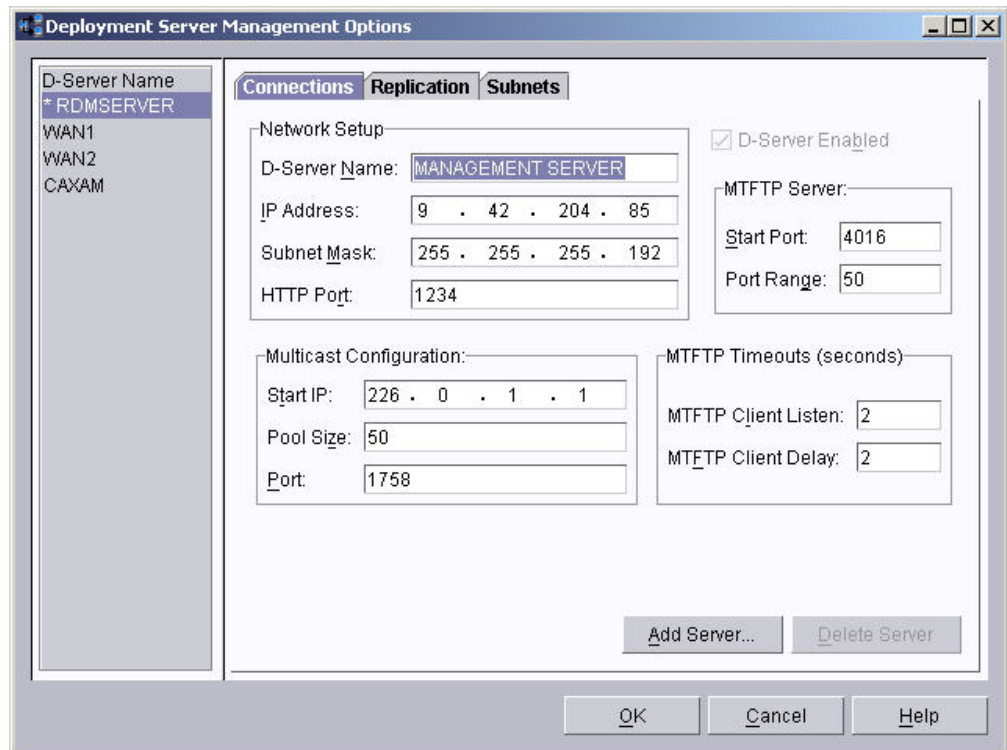


Figure 31. Configuring settings for a remote deployment server: Connections page

2. In the **D-Server Name** pane, click the remote deployment server for which you want to configure settings.
3. Select the **D-Server Enabled** check box.
4. (Optional) Configure the MTFTP settings:
 - a. In the **Start IP** field, type the first class-D (multicast) IP address for the range of addresses that are assigned to RDM Deployment Server. By default, this is set to the IP address that was selected when RDM Deployment Server was installed.
 - b. In the **Pool Size** field, type the number of contiguous class-D addresses that are reserved for use by RDM Deployment Server. By default, this is set to the pool size that was selected when RDM Deployment Server was installed.
 - c. In the **Port** field, type the port number that is assigned to the MTFTP service. This port is used to download files from the instance of RDM Deployment Server that is installed on the management server to the target system. By default, this is set to the port that was selected when RDM Deployment Server was installed.

5. (Optional) Configure the MTFTP timeouts:
 - a. In the **MTFTP Client Listen** field, type the number of seconds that a target system monitors the network to determine whether a file is being transmitted on the network. When this time interval is exceeded, the target system requests the file from RDM Deployment Server. By default, this is set to 2 seconds.
 - b. In the **MTFTP Client Delay** field, type the number of seconds that a client system with an incomplete file transmission waits before requesting the file from RDM Deployment Server. By default, this is set to 2 seconds.

Note: If you change the MTFTP Client Listen and the MTFTP Client Delay values, the values are not transmitted to the target systems; the default value of 2 seconds is used.

6. Click the **Replication** tab. The Replications page is displayed.

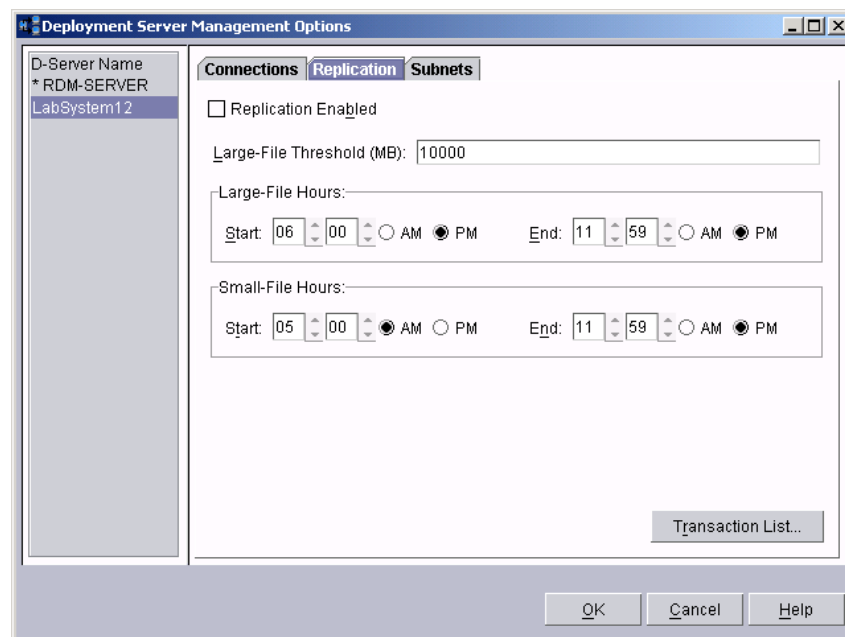


Figure 32. Configuring settings for a remote deployment server: Replication page

7. Configure the replication settings for the remote deployment server:
 - a. Select the **Replication Enabled** check box to enable the remote deployment server to get files directly from the management server.
 - b. In the **Large-File Threshold (MB)** field, type the size (in MB) at which the remote deployment server will consider a file to be large.
 - c. In the **Large-File Hours** fields, select the range of time in which a large file can be replicated.
 - d. In the **Small-File Hours** field, select the range of time in which a small file can be replicated.

Note: To view the replication transactions that are waiting to be run, click **Transaction list**.

- e. Click **OK**.
8. Click the **Subnets** tab. The Subnets page is displayed.

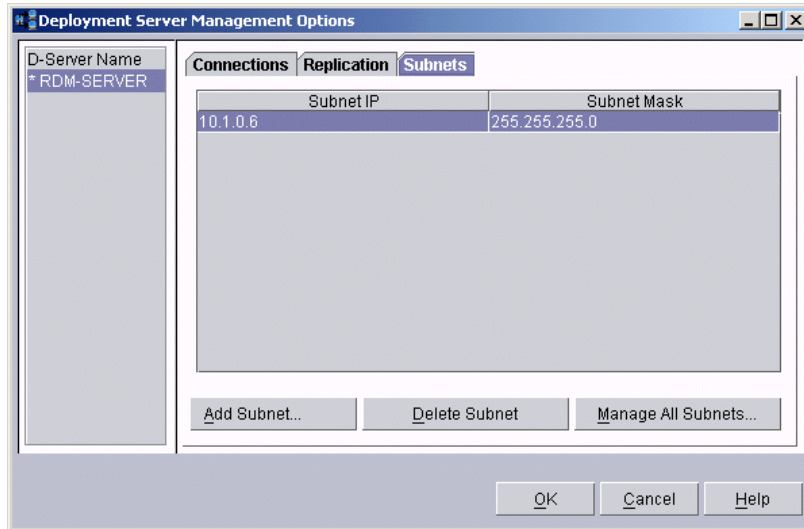


Figure 33. Configuring settings for a remote deployment server: Subnets page

9. Define the subnets that the remote deployment server will serve:
 - a. Click **Add Subnet**. The Add Subnet window opens.

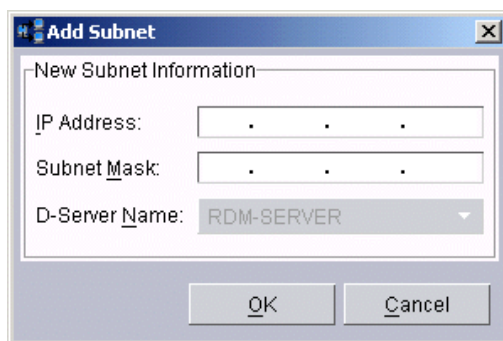


Figure 34. Configuring settings for a remote deployment server: Add Subnet window

- b. In the **IP Address** field, type the IP address.
 - c. In the **Subnet Mask** field, type the subnet mask.
 - d. Click **OK**. The subnet is assigned to the remote deployment server and is displayed in the Subnets page.
 - e. Repeat steps 9a through 9d for each additional subnet.

Chapter 7. Modifying, repairing, and uninstalling RDM

This chapter contains information about modifying, repairing, and uninstalling RDM running on Windows. It also includes information about uninstalling RDM running on Linux.

Modifying, repairing, and uninstalling RDM on Windows

Note: You can modify an installation of RDM Console by installing RDM Deployment Server. You also can modify an installation of RDM Deployment Server by installing RDM Console. However, you cannot modify an installation of RDM Server.

Complete the following steps to modify, repair, or uninstall an RDM software component:

1. Click **Start** → **Settings** → **Control Panel**. The “Control Panel” window opens.
2. Double-click **Add/Remove Programs**. The “Add/Remove Programs” window opens.
3. Click **IBM Remote Deployment Manager 4.20**.
4. Perform one of the following actions:

To uninstall RDM

Click **Remove**. When the following prompt is displayed, click **Yes**:

Are you sure you want to remove IBM Remote Deployment Manager 4.20 from your computer?

To modify or repair RDM

Click **Change**. The InstallShield wizard starts. Follow the on-screen instructions.

Uninstalling RDM running on Linux

Complete the following steps to uninstall RDM:

1. To change to the directory where the uninstallation script is located, type the following command and press Enter:

```
cd /opt/IBM/RDM/bin
```

2. Type one of the following commands and press Enter:

| | |
|--------------------------------|-----------------------------------|
| To uninstall RDM Server | <code>./uninstallRDMServer</code> |
|--------------------------------|-----------------------------------|

| | |
|---------------------------------|------------------------------------|
| To uninstall RDM Console | <code>./uninstallRDMConsole</code> |
|---------------------------------|------------------------------------|

| | |
|---|--|
| To uninstall RDM Deployment Server | <code>./uninstallRDMRemotedServer</code> |
|---|--|

Appendix A. Terminology summary and abbreviation list

This appendix provides a summary of Remote Deployment Manager (RDM) terminology and a list of abbreviations that are used in the following RDM publications:

- *Remote Deployment Manager 4.20 Installation and Configuration Guide*
- *Remote Deployment Manager 4.20 User's Reference*

RDM terminology summary

The following terminology is used in the RDM publications.

A *system* is a server, workstation, desktop computer, mobile computer (laptop), or point-of-sale system.

The *RDM software* has three components:

- RDM Server
- RDM Console
- RDM Deployment Server (D-Server)

The hardware in an RDM environment is referred to in the following ways:

- A *management server* is a server on which both IBM Director and RDM Server is installed.
- A *management console* is a system on which both IBM Director Console and RDM Console are installed.
- A *remote deployment server* is a system on which RDM Deployment Server is installed. This system must be in a different subnet than the management server. RDM Console can be installed on this system also.
- A *target system* is a system on which an RDM task is run.

Abbreviations

The following table lists abbreviations that are used in the RDM publications.

Table 7. Abbreviations used in IBM Director

| Abbreviation | Definition |
|--------------|--|
| A | |
| AIA | asset information area |
| ARP | Address Resolution Protocol |
| ASCII | American Standard Code for Information Interchange |
| B | |
| BIOS | basic input/output system |
| BOOTP | Bootstrap Protocol |
| C | |
| CD | compact disc |
| CD-R | compact disc–recordable |
| CD-R/W | compact disc–read write |
| CD-ROM | compact disc–read-only memory |

Table 7. Abbreviations used in IBM Director (continued)

| Abbreviation | Definition |
|--------------|--|
| CMOS | complementary metal oxide semiconductor |
| D | |
| DBCS | double-byte character set |
| DCC | Direct Client Connection |
| DHCP | Dynamic Host Configuration Protocol |
| DOS | disk operating system |
| DNS | domain name system |
| DVD | digital video disc |
| E | |
| EEPROM | electrically erasable programmable read-only memory |
| F | |
| FAStT | Fibre Array Storage Technology |
| FAT | file allocation table |
| FTP | File Transfer Protocol |
| G | |
| GB | gigabyte |
| Gb | gigabit |
| GRUB | Grand Unified Boot Loader |
| GUI | graphical user interface |
| H | |
| HAL | hardware abstraction layer |
| HBA | host bus adapter |
| HTTP | Hypertext Transfer Protocol |
| I | |
| IBM | International Business Machines Corporation |
| ICMP | Internet Control Message Protocol |
| ID | identifier |
| IDE | integrated drive electronics (?) |
| IGMP | Internet Group Message Protocol |
| IMAP | Internet Message Access Protocol |
| IP | Internet Protocol |
| IPX/SPX | Internet Package Exchange/Sequenced Package Exchange |
| IRC | Internet Relay Chat |
| IRC DCC | Internet Relay Chat Direct Client Connection |
| IRQ | interrupt request |
| ISP | Internet service provider |
| J | |
| JRE | Java™ Runtime Environment |

Table 7. Abbreviations used in IBM Director (continued)

| Abbreviation | Definition |
|--------------|--|
| K | |
| KB | kilobyte |
| KBps | kilobytes per second |
| Kb | kilobits |
| Kbps | kilobits per second |
| L | |
| LAN | local area network |
| LCCM | LANClient Control Manager |
| LDAP | Lightweight Directory Access Protocol |
| LILO | Linux Loader |
| LUN | logical unit number |
| M | |
| MAC | media access control |
| MB | megabyte |
| MBps | megabytes per second |
| Mb | megabit |
| Mbps | megabits per second |
| MD5 | message digest 5 |
| MTFTP | Multicast Trivial File Transfer Protocol |
| N | |
| NetBEUI | NetBIOS Extended User Interface |
| NetBIOS | network basic input/output system |
| NFS | network file system |
| NIS | network information service |
| NIC | network interface card |
| NMO | native managed object |
| NTFS | Windows NT [®] 4.0 file system |
| P | |
| PC | personal computer |
| PC-DOS | personal computer–disk operating system |
| PDF | Portable Document Format |
| PFA | Predictive Failure Analysis |
| POP3 | Post Office Protocol, version 3 |
| PXE | Preboot Execution Environment |
| R | |
| RAID | redundant array of independent disks |
| RAM | random access memory |
| RDM | IBM Remote Deployment Manager |
| RFID | radio frequency identification |
| RPM | Red Hat Package Manager |

Table 7. Abbreviations used in IBM Director (continued)

| Abbreviation | Definition |
|--------------|---|
| S | |
| SAN | storage area network |
| SATA | serial advanced technology attachment |
| SCSI | small computer system interface |
| SDA | IBM Software Delivery Assistant |
| SID | security identifier |
| SMA | IBM System Migration Assistant |
| SMB | server message block |
| SMBIOS | System Management BIOS |
| SMP | symmetric multiprocessing |
| SMTP | Simple Mail Transfer Protocol |
| SSH | Secure Shell |
| STC | System/Task Configuration |
| STP | Spanning Tree Protocol |
| T | |
| TCP/IP | Transmission Control Protocol/Internet Protocol |
| TFTP | Trivial File Transfer Protocol |
| U | |
| UDP | User Datagram Protocol |
| UUID | universal unique identifier |
| W | |
| WAN | wide area network |
| WfM | Wired for Management |
| WINS | Windows Internet Naming Service |

Appendix B. 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. This appendix contains information about where to go for additional information about IBM and IBM products, what to do if you experience a problem with your xSeries or IntelliStation® system, and whom to call for service, if it is necessary.

Before you call

Before you call, make sure that you have taken these steps to try to solve the problem yourself:

- Check all cables to make sure that they are connected.
- Check the power switches to make sure that the system is 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 *Hardware Maintenance Manual and Troubleshooting Guide* on the IBM *xSeries Documentation* CD or in the *IntelliStation Hardware Maintenance Manual* at the IBM Support Web site.
- Go to the IBM Support Web site at <http://www.ibm.com/pc/support/> 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 publications that are provided with your system and software. The information that comes with your system also describes the diagnostic tests that you can perform. Most xSeries and IntelliStation systems, operating systems, and programs come with information that contains troubleshooting procedures and explanations of error messages and error codes. If you suspect a software problem, see the information for the operating system or program.

Using the documentation

Information about your IBM xSeries or IntelliStation system and preinstalled software, if any, is available in the documentation that comes with your system. That documentation includes printed books, online books, readme files, and help files. 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 <http://www.ibm.com/pc/support/> and follow the instructions. Also, you can order publications through the IBM Publications Ordering System at <http://www.elink.ibm.com/public/applications/publications/cgibin/pbi.cgi>.

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 xSeries and IntelliStation products, services, and support. The address for IBM xSeries information is <http://www.ibm.com/eserver/xseries/>. The address for IBM IntelliStation information is <http://www.ibm.com/pc/us/intellistation/>.

You can find service information for your IBM products, including supported options, at <http://www.ibm.com/pc/support/>.

Software service and support

Through IBM Support Line, you can get telephone assistance, for a fee, with usage, configuration, and software problems with xSeries servers, IntelliStation workstations, and appliances. For information about which products are supported by Support Line in your country or region, go to <http://www.ibm.com/services/sl/products/>.

For more information about Support Line and other IBM services, go to <http://www.ibm.com/services/>, or go to <http://www.ibm.com/planetwide/> for support telephone numbers. In the U.S. and Canada, call 1-800-IBM-SERV (1-800-426-7378).

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