IBM Remote Support Manager for Storage

Planning, Installation and User's Guide

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> **Note:**
> Before using this information and the product it supports, be sure to read the information in "Notices" on page 69.

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About this document

This guide provides details about planning, installation and using the IBM® Remote Support Manager for Storage (RSM for Storage) application.

Who should read this document

This document is intended for system operators and service technicians who have extensive knowledge of fibre channel and network technology.

How this document is organized

This document is organized as follows:

Chapter 1, "Planning for RSM for Storage," on page 1 provides an overview of RSM for Storage and planning details to help you configure RSM for Storage.

Chapter 2, "Installation overview," on page 7 provides instructions for installing the hardware and software necessary for using RSM for Storage.

Chapter 3, "Installing the SLES 10 operating system," on page 9 provides instructions for installing the SLES 10 operating system.

Chapter 4, "Installing the SLES 9 operating system," on page 17 provides instructions for installing the SLES 9 operating system.

Chapter 5, "Installing the RHEL 4 AS, Update 4 operating system," on page 25 provides instructions for installing the RedHat RHEL 4 operating system.

Chapter 6, "Configuration," on page 31 provides instructions for configuring RSM for Storage.

Chapter 7, "Installing updates to RSM for Storage," on page 37 provides instructions for installing RSM for Storage updates.

Chapter 8, "Using RSM for Storage," on page 39 provides an overview of the RSM for Storage programs, details on the different types users for RSM for Storage, and information about managing the RSM for Storage application.

Appendix A, "Troubleshooting," on page 53 addresses problems with the server that the Remote Support Manager is running on.

Appendix B, "Planning worksheets," on page 59 provides worksheets to help you gather the necessary information to successfully install and configure RSM for Storage.

Appendix C, "Filtered events," on page 65 provides a list of events that are not reported to IBM Service.

Appendix D, "Customizing the firewall," on page 67 provides details to help you customize the firewall settings.

Notices and statements used in this document

The caution and danger statements used in this document also appear in the multilingual *IBM Safety Information* document provided with your Remote Support Manager for Storage product. Each caution and danger statement is numbered for easy reference to the corresponding statements in the safety document.

The following types of notices and statements are used in this document:

- **Note:** These notices provide important tips, guidance, or advice.
- **Important:** These notices provide information or advice that might help you avoid inconvenient or problem 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.
- **Caution:** These statements indicate situations that can be potentially hazardous to you. A caution statement is placed just before the description of a potentially hazardous procedure step or situation.
- **Danger:** These statements indicate situations that can be potentially lethal or extremely hazardous to you. A danger statement is placed just before the description of a potentially lethal or extremely hazardous procedure step or situation.

Getting information, help, and service

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 section contains information about where to go for additional information about IBM and IBM products, what to do if you experience a problem with your RSM for Storage 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.
- Check for technical information, hints, tips, and new device drivers at the following Web site:

  www.ibm.com/storage/techsup.htm
- Use an IBM discussion forum on the IBM Web site to ask questions.

You can solve many problems without outside assistance by following the troubleshooting procedures that IBM provides in the online help or in the documents 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 System x® 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 the System x system and preinstalled software, if any, is available in the documents that come with your system. This includes printed documents, online documents, readme files, and help files. See the troubleshooting information in your system documentation for instructions on how to use the diagnostic programs. The troubleshooting information or the diagnostic programs might tell you that you need additional or updated device drivers or other software.

Web sites

IBM maintains pages on the World Wide Web where you can get the latest technical information and download device drivers and updates.

- For storage subsystem information, go to the following Web site:

www.ibm.com/servers/storage/support/disk/

The support page has many sources of information and ways for you to solve problems, including:

- – Diagnosing problems using the IBM Online Assistant
- – Downloading the latest device drivers and updates for your products
- – Viewing frequently asked questions (FAQ)
- – Viewing hints and tips to help you solve problems
- – Participating in IBM discussion forums
- – Setting up e-mail notification of technical updates about your products

- • For the latest information about IBM System x products, services, and support, go to the following Web site:

  www.ibm.com/eserver/xseries/

- • You can order publications through the IBM Publications Ordering System at the following Web site:

  www.elink.ibmlink.ibm.com/public/applications/publications/cgibin/pbi.cgi/

Hardware service and support

You can receive hardware service through IBM Integrated Technology Services. Go to the following Web site for support telephone numbers:

www.ibm.com/planetwide/

Service is available for storage subsystems attached to the RSM for Storage system according to the same terms and conditions of the maintenance agreement or warranty in effect for the attached subsystems.

All subsystems to be monitored by the RSM for Storage application must be within warranty or covered by a current maintenance agreement.

Fire suppression systems

A fire suppression system is the responsibility of the customer. The customer's own insurance underwriter, local fire marshal, or a local building inspector, or both, should be consulted in selecting a fire suppression system that provides the correct level of coverage and protection. IBM designs and manufactures equipment to internal and external standards that require certain environments for reliable operation. Because IBM does not test any equipment for compatibility with fire suppression systems, IBM does not make compatibility claims of any kind nor does IBM provide recommendations on fire suppression systems.

RSM for Storage does not report fires or potential fires.

How to send your comments

Your feedback is important in helping us to provide the most accurate and high-quality information. If you have comments or suggestions for improving this publication, you can send us comments electronically by using these addresses:

- Internet: starpubs@us.ibm.com
- IBMLink™ from U.S.A.
- IBMLink from Canada
- IBM Mail Exchange

You can also mail your comments by using the Reader Comment Form in the back of this manual or direct your mail to:

International Business Machines Corporation
Information Development
Dept. GZW
9000 South Rita Road
Tucson, AZ 85744–0001
U.S.A.

Chapter 1. Planning for RSM for Storage

This chapter provides an overview of RSM for Storage and planning details to aid in the configuration of RSM for Storage.

What RSM for Storage does

The IBM Remote Support Manager for Storage (RSM for Storage) application is an application that installs on an IBM System x server running Novell SUSE Linux® Enterprise Server 9, SUSE Linux Enterprise Server 10, or Red Hat Enterprise Linux 4 Advanced Server, and provides problem reporting and remote access for IBM Service for the DS3000 and DS4000 families of IBM storage subsystems.

The problem reporting provided by the RSM for Storage application automatically creates an entry in IBM's call management system for each subsystem that reports a problem. This is the equivalent of placing a voice call to IBM Service for a problem. Once in the system, problems are responded to with the same priority as specified by the maintenance agreement in place for the product.

RSM for Storage controls security for remote access by managing hardware and software components of the server it is installed on. Once installed, the server should be considered to be a single purpose appliance for problem reporting and remote access support for your storage subsystems. Only applications approved by IBM and specified in this document should be installed. (Management of the internal firewall and other configuration changes made by the software might prevent other applications from working.)

Remote access is provided by an external modem attached to the server. This connection provides IBM Service with a command line interface to the server. All bulk data transfers for logs and other problem determination files are sent to IBM via e-mail or by FTP using the server's Ethernet interface. Isolation of remote and local users of the system from other devices on your intranet is performed by an internal firewall that is managed by the RSM for Storage application. Remote users do not have the ability to change any security features of the application.

Monitoring of storage subsystems is performed by your existing IBM Storage Manager application which is configured to send SNMP traps to the Remote Support Manager when critical events are detected. Configuration of the management application is addressed later in this document.

The Remote Support Manager's user interface allows you to control and view status of four management areas:
- System configuration
- Reporting
- Remote access
- Internal firewall

Your configured contact person for the Remote Support Manager will also receive e-mails of status changes in these areas.

Supported products

The RSM for Storage application supports the subsystems, management applications and other SAN devices outlined in the following sections.

Storage subsystems

The RSM for Storage application supports the DS3000 and DS4000 families of mid-range storage subsystems and FAStT200 and FAStT500 subsystems. The storage subsystems must be covered under warranty or a current IBM maintenance agreement to be eligible to use the RSM for Storage application.

Storage management applications

The RSM for Storage application works with the Event Monitor of IBM Storage Manager. While you can use other applications for routine management of your storage subsystems, Storage Manager's Event Monitor must be running. The RSM for Storage application supports the DS3000 and DS4000 families of mid-range storage subsystems.

Other SAN devices

While RSM for Storage does not support problem reporting for other SAN devices (such as switches), you can specify other devices in the RSM for Storage configuration in order to permit IBM Service to access the management ports of these devices for problem determination. Remote access to these devices must be enabled by the administrator of the Remote Support Manager when access is required.

How many do I need?

One RSM for Storage system can support up to 50 subsystems. The RSM for Storage system must have IP connectivity to the Ethernet management ports of the subsystems.

If your storage is spread geographically across many time zones, and you do not have 24 hours coverage by administrative users. it may be desirable to have more than one RSM for Storage system.

RSM for Storage system must not require authorization through a firewall in order to access storage subsystems or your company's e-mail server.

Prerequisite hardware

The RSM for Storage application has the following hardware prerequisites.

Server

The RSM for Storage software is designed to run on a System x (xSeries) server, and most System x servers can be used. Please refer to the *RSM for Storage Compatibility Guide* for the minimum server requirements, and a list of the specific servers that have been tested with the RSM software and. If you choose to use a server that has not been specifically tested with the RSM software, the setup and configuration of the server's BIOS, and installation of the Linux OS may be different that what is included in the documentation for the RSM software and you will need to contact IBM System x support for questions related to these other servers.

Note: The internal firewall that runs on the RSM for Storage server will prevent the use of this server as a general purpose management station.

For more information about operating the internal firewall, see "Security" on page 48.

Modem

The RSM for Storage application is designed to work with an external modem attached to the first serial port.

The functional requirements for the modem are minimal and most "Hayes-compatible" external modems can be used. The modem should have a minimum speed of 56K bps supporting either V.90 or V.92, and support the following "AT" commands:

ATH0	Hangup
Z	Reset to default settings
&W	Save as default
S0=0	Do not answer
D	Dial
&F	Load factory default
I3	Report software version
I4	Report product information
V1	Report results in word form
X3	Report all results, but disable dial tone detection
X4	Report all results with dial tone detection

Be sure to use a modem and power cord appropriate for your country or region.

The RSM for Storage application has been tested with the following modems:
*   Multitech Multimodem® II MT5600BA
*   Multitech MultiModem ZBA MT5634ZBA

Refer to the *RSM for Storage Compatibility Guide* for updated information about which modems are supported.

You will need to contact your IT support staff for installation and problem resolution related to the modem.

Prerequisite software

The RSM for Storage application is supported on SUSE Linux Enterprise Server 9 Service Pack 3 from Novell, SUSE Linux Enterprise Server 10, or RHEL 4 Advanced Server from Red Hat. Refer to the *RSM for Storage Compatibility Guide* for current information or ordering one of the products.

The RSM for Storage application receives SNMP traps from the Event Monitor included with IBM Storage Manager. The RSM for Storage application can not be installed on the same system used to manage your storage network. Your management station must have IBM Storage Manager 9.16 or later installed. It is recommended that you always use the latest version of IBM Storage Manager and controller firmware that is available.

Network connections

The RSM for Storage system requires an Ethernet connection to the management ports of the storage subsystems to be monitored and the management station running IBM Storage Manager's Event Monitor.

It also requires an Ethernet connection to your SMTP server and the Internet. If your SAN management LAN is separate from your intranet (that provides access to your SMTP server and the Internet), you will need a second Ethernet port or adapter in the RSM for Storage server.

Notes:

1. RSM for Storage system must not require authorization through a firewall in order to access storage subsystems or your company's e-mail server.
2. Log files for each problem are sent as attachments to the e-mail alert. The log files are in ZIP format and could possibly be filtered by your e-mail filter. Please see "E-mail Transport Options" on page 45 for more information.

Note:
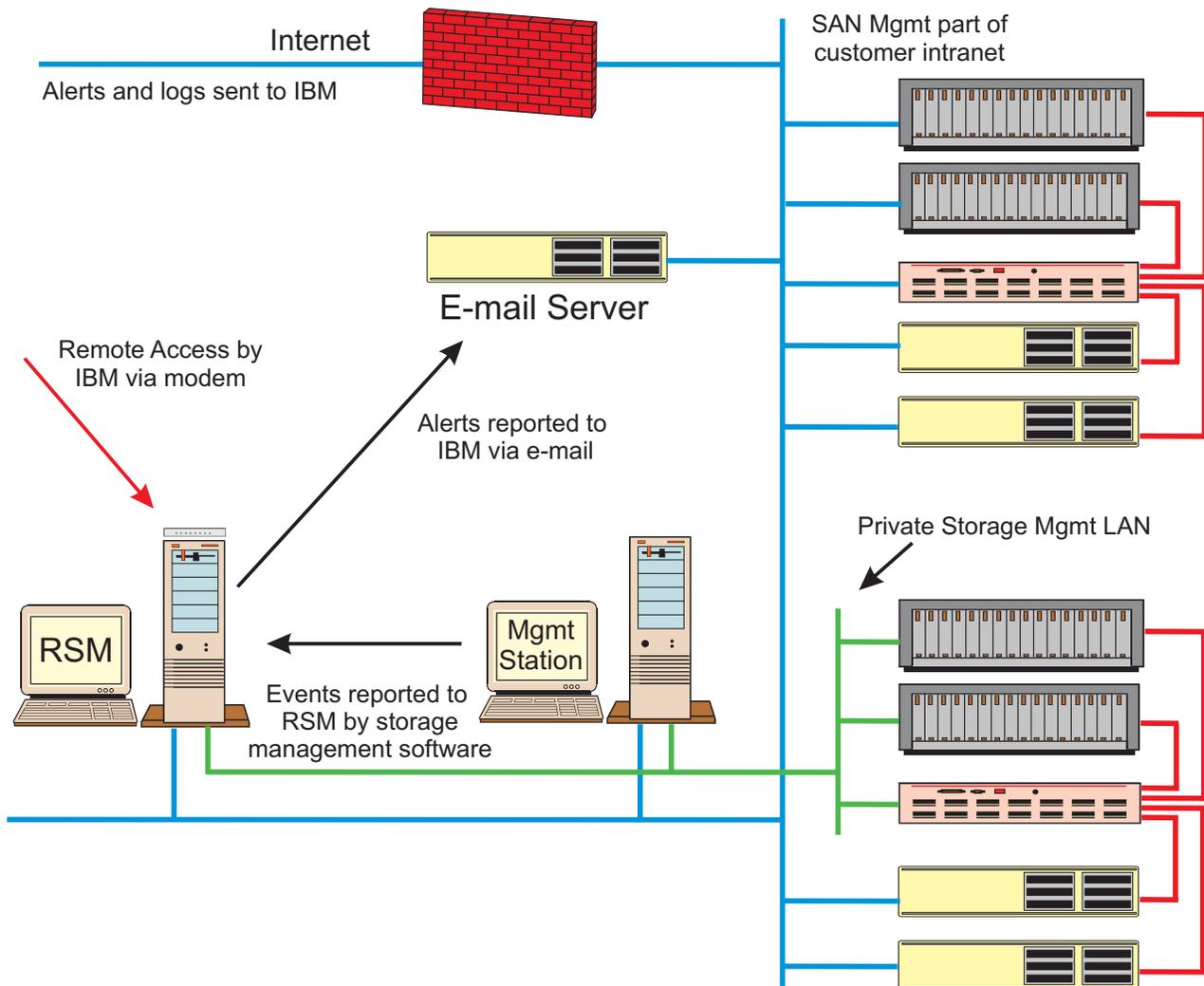
Figure 1. Network connection topology

Physical preparation

__ • Choose a server that meets the minimum requirements. See the *RSM for Storage Compatibility Guide* for more information.

__ • Download the latest BIOS for the server.

__ • Verify that Serial Port A is enabled in BIOS Setup.

__ • Choose a modem. See the *RSM for Storage Compatibility Guide* for more information.

__ • Arrange for an analog phone line connection.

__ • Obtain a Linux operating system. See the *RSM for Storage Compatibility Guide* for more information.

Information you will need

To successfully install and configure RSM for Storage, you will need to gather various types of information including:

- Network setup information for the RSM for Storage server
- Company information and contact details
- Connection information
- Information on the storage subsystems to be monitored

Appendix B, "Planning worksheets," on page 59 provides detailed worksheets to help you gather the information needed to successfully install and configure RSM for Storage.

Information used during the installation of the operating system

The following network setup information will be used during the installation of the Linux OS. Use "Worksheet #1: Network setup information for the RSM for Storage server" on page 59 to record this information.

- Time zone where the RSM for Storage system will be located
- Root user password
- Hostname for the server (ibmrsm is suggested)
- Your company's Domain Name
- IP addresses of your Domain Name Servers

  It is recommended that you use static IP addresses for all network resources and management systems. The RSM for Storage system and the storage subsystems monitored by it must have static IP addresses.

- Static IP address to be assigned to the server
- Netmask for the server
- Gateway IP address

If a second Ethernet connection is required to reach the Internet and your SMTP server, you will need the information above for this port as well.

Information used during configuration of RSM for Storage

In addition to your company name and address, you will need to configure contact people, connection information for the RSM for Storage system, and each storage system to be monitored.

Contact people: At least one contact person must be defined as the primary contact for the RSM for Storage system.

If your storage subsystems are not physically located at the same location as the RSM for Storage system, you must define additional contacts for each different location. The following information is needed when configuring contact people:

- Name and e-mail address
- Primary phone number and the hours to call this number
- Alternate phone number and the hours to call this number
- Time zone

Use "Worksheet #4: Contact people" on page 61 to gather the necessary information to configure contact people.

Connection information for the RSM for Storage system: You will need to gather the following information to configure the connection for RSM for Storage system:

- IP address of your company's e-mail (SMTP) server
- Location of the server
- Address, City, State, and Postal Code
- Country or region
- Phone number for the modem

Use "Worksheet #3: Connection information for the RSM for Storage system" on page 60 to gather the appropriate information needed to successfully configure the connection for the RSM for Storage system.

Information for each storage subsystem to be monitored: Gather the following information for the storage subsystems that will be monitored by RSM for Storage:

- Storage subsystem name

  Note: This must be the same name used to identify the subsystem in IBM Storage Manager.
- Static IP address of the controllers in each subsystem
- Location of subsystem
- Address, city state, postal code
- Country or region
- Contact person for this subsystem
  (One of the previously configured contacts)
- IBM machine type, model and serial number
- Ensure that the storage subsystem is covered under warranty or a current IBM maintenance agreement.

Use "Worksheet #5: Information for each Storage Subsystem to be monitored" on page 62 to gather the appropriate information needed to successfully configure the subsystems to be monitored by RSM for Storage.

Information for other SAN devices: Additional devices such as SAN switches can be configured to be accessible from the RSM for Storage system. The RSM for Storage application will not monitor these for problems, but the system can be used to provide remote access for problem resolution if necessary.

Only the hostname and IP address of each device are required. Use "Worksheet #6: Information for other SAN devices to be accessible from the RSM for Storage system" on page 63 to gather the appropriate information for additional devices.

Chapter 2. Installation overview

This chapter provides detailed instructions for installing the hardware and software necessary for using RSM for Storage, instructions for verifying connectivity and details for configuring RSM for Storage.

Hardware installation

Use the following sections to install the appropriate hardware necessary for RSM for Storage to work in your environment.

Server

1. Install the server using the setup instructions that came with the server.
2. Connect one Ethernet cable from the server to an Ethernet switch or hub providing connection to your SAN Management LAN.
3. If the Internet and your company's e-mail (SMTP) server are not accessible from your SAN Management LAN, connect a second Ethernet cable from the server to the Ethernet switch or hub providing connection to the Internet and e-mail server.

Modem

Install the modem using the setup instructions that came with the modem, and then do the following:

1. Connect the serial cable from the modem to the first serial port on the server. Figure 2 shows you how to make this connection.

   Note: If your server has two server ports, port #1 is typically the one next to the keyboard connector.

Serial Port #1   (to modem)   **Serial Port #2   (not used)**
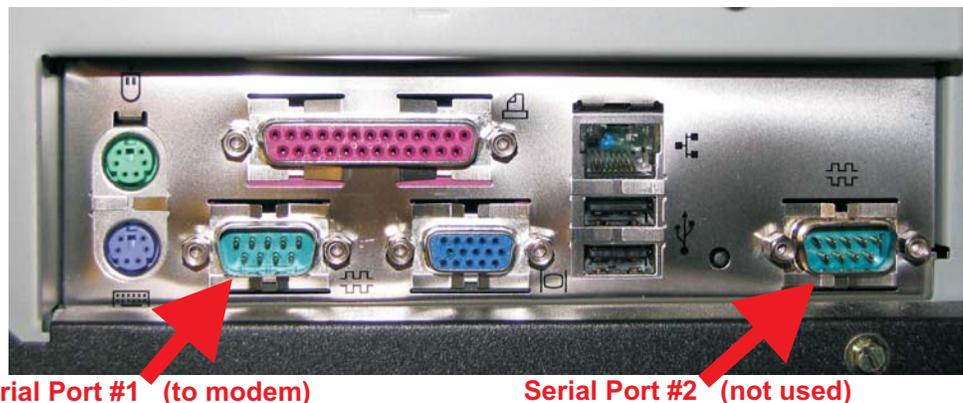
Figure 2. Serial port connection

2. Connect an analog phone line to the proper connector on the modem. Note that many modems have two connectors labeled LINE and PHONE. Make sure the analog phone cord is plugged into the connector labeled "LINE".

Software installation

This section provides instructions for installing the Linux(R) operating system, RSM for Storage, and updates to RSM for Storage. Before you begin installing the operating system, you will need to gather network setup information for the RSM for Storage server.

Updating the server firmware

1. Go to: http://www.ibm.com/support
   - Under **Support by product**, click **Servers**.
   - Under **Product Support**, click **System x**
   - Under **Popular Links**, click **Software and device drivers**.
   - Click your system type
2. If you are using one of the servers that has been tested with RSM for Storage, refer to the *RSM for Storage – Installation Hints and Tip* document for additional information.
3. Note that to update the firmware before loading an operating system, you should download the DOS versions of the updates. Also, on the individual firmware pages, look for the link: **New firmware update file formats**. This page explains how to create the media for each of the available file formats for the update.
4. After updating the server firmware, load the BIOS defaults:
   - When the prompt Press F1 for Configuration/Setup is displayed, press **F1**.
   - Select **Load Default Settings** and press **Enter**.
   - Exit BIOS Setup and reboot the system.

The Remote Support Manager is supported on Linux SLES 10, SLES 9 (SP 3) and Red Hat RHEL 4 AS (Update 4).

Chapter 3, "Installing the SLES 10 operating system," on page 9 contains instructions for installing the SLES 10 operating system.

Chapter 4, "Installing the SLES 9 operating system," on page 17 contains instructions for installing the SLES 9 operating system.

Chapter 5, "Installing the RHEL 4 AS, Update 4 operating system," on page 25 contains instructions for installing the Red Hat RHEL 4 operating system.

Chapter 3. Installing the SLES 10 operating system

Some System x servers have been tested with RSM for Storage and specific instructions for configuring the BIOS and starting the Linux installation for those servers can be found in the *RSM for Storage- Installation Hints and Tips* document at http://www.ibm.com/servers/storage/disk/rsm.

Part 1 – SLES 10 installation

Start the installation procedures in the *RSM for Storage- Installation Hints and Tips* document.

The *RSM for Storage- Installation Hints and Tips* document will refer you back to this document. Continue with either Part 2 or Part 3 of these instructions.

Depending on your hardware, there may be additional configuration screens presented that are not referenced here. Contact your IT support staff for assistance.

Part 2- SLES 10 installation

1. Power on the computer and as the system performs the POST and initialization, insert CD #1 for SLES 10 in the CD-ROM drive. The system should boot from the CD-ROM.
2. Click **Installation** from the first screen.
3. Click your language.
4. Respond to the license agreement.
5. During the System Analysis, there may be pop-ups to install drivers for detected devices, answer **Yes** or **OK**.

Part 3- SLES 10 installation

1. On the Installation Settings screen, select **New Installation** and click **Next**.
2. On the Clock and Time Zone screen, do the following:
   a. Set the Region and Time Zone.
   b. Set the Hardware Clock Set To: UTC.
   c. Change the Time and Date.
   d. Click **Next**.
3. On the Installation Settings screen, do the following:
   a. Click **Partitioning** and do the following:
      1) Select **Create Custom Partition Setup** and click **Next**.
      2) For Hard Disk: select **1** and click **Next**.
      3) For Installing: click **Use entire disk** and click **Next**.
   b. Click **Software**, the Software Selection and System Tasks window opens.
   c. Click the **Details** button at the bottom of the list.
      1) With the Filter: (upper left of screen) set to **Patterns**, check or uncheck the following applications as indicated. Some selections may already be checked.
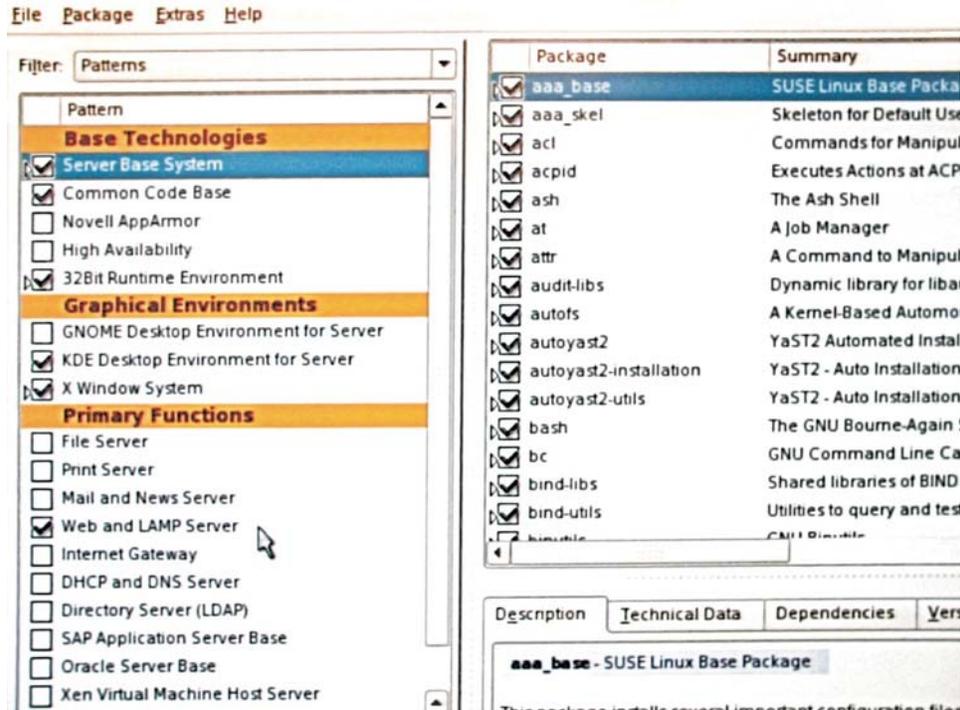
Figure 3. Patterns selection window

    a) Check **Server Base System** (should already be checked).

    b) Check **Common Code Base**.

    c) Uncheck **Novell AppArmor**.

    d) Uncheck **GNOME Desktop for Server**.

    e) Check **KDE Desktop Environment for Server** (required).

    f) Check **X Window System**.

    g) Uncheck **Print Server**.

    h) Check **Web and LAMP Server**.

2) With the Filter: set to **Search**, do the following:

    a) Type mgetty in the search window and click **Search**.

    b) In the right window, check the box to the left of the **mgetty** package.

    c) Repeat steps 2a and 2b for **expect**.

    d) Repeat steps 2a and 2b for **net-snmp**.

    e) Repeat steps 2a and 2b for **minicom**.
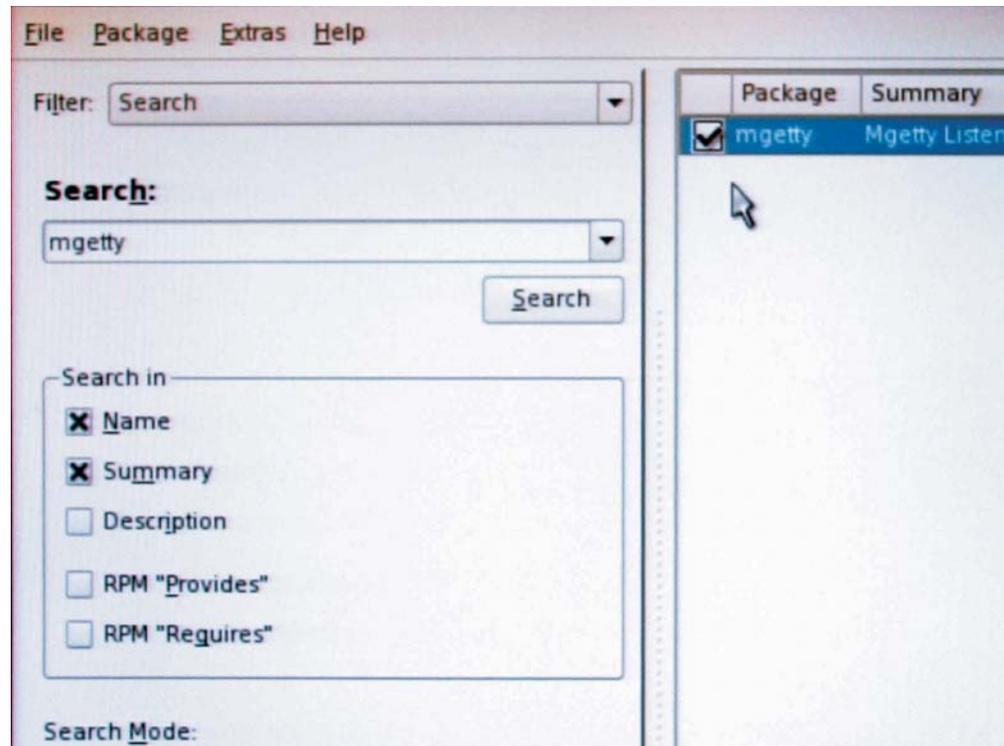
Figure 4. Filter: Search selection window

    3) Click **Accept** in the lower right of the screen.

  d. Click **Continue** if any Automatic Changes are suggested.

  e. Click **Accept** in the lower right of the screen.

  f. Click **Install** on the Confirm Installation screen. (It may take a long time to prepare the hard disk.)

    Note: After the first CD is loaded, the system automatically re-boots and presents the initial menu, allow the system to default to the Boot from Hard Disc selection.

4. Insert additional CDs when prompted.

5. On the Hostname and Domain Name screen, do the following:

  a. Type `ibmrsm` for the Host Name. (If you have another Remote Support Manager installed in your intranet, add a number to the name.)

  b. Enter your Domain Name.

  c. Uncheck Change Hostname via DHCP.

  d. Click **Next**.

6. Provide a password for the root user and click **Next**.

7. On the Network Configuration screen, click **Network Interfaces**.

If you are not sure how to enter network configuration information, check with your network administrator.

The server running the Remote Support Manager must be able to reach the storage subsystems to be monitored, your e-mail (SMTP) server and the Internet. Depending on your network topology this may require one or two network interfaces for this system.

The first Ethernet port is automatically configured for DHCP. You should assign a static IP address for this system.

Click on the name to highlight it and then click **Edit**.

a. Define a static IP address for this system by doing the following:

   1) Click **Static Address Setup** and enter the static IP address and Subnet Mask for the system.

   2) Click **Hostname and Name Server** and do the following:

      a) Verify that the previously entered hostname and domain name are correct.

      b) Enter the IP addresses of the name servers in your intranet.

      c) Click **OK**.

   3) Click **Routing** and do the following:

      a) Enter the IP address of the Default Gateway.

      b) Click **OK**.

b. Click **Next** to return to the Network Card Configuration Overview and do the following:

   1) If your storage subsystems are on a private LAN, you will need to configure a second Ethernet port to be able to access an SMTP e-mail server and the Internet. Additional unconfigured network adapters/ports will appear in the box at the top of the screen. Click the port to configure and then **Edit** to configure additional ports.

   2) Click **Next** to exit Network Card Configuration Overview.

   3) Click **Next** to exit Network Configuration.

   Note: It is not necessary to configure the firewall or modem as these will be managed by the RSM for Storage application.

8. On the Test Internet Connection screen, do the following:

a. Click **Yes** and **Next**.

b. If the test fails, check with your network configuration and verify that the previously entered configuration is correct. You can click **Back** to return to the Network Configuration menus.

c. If the test continues to fail contact your IT support staff. You can resolve the network problem after the installation of the OS has completed. Continue the installation by clicking **No, Skip This Test** and **Next**.

d. If the test is successful, you will be given the option to install Online Updates.

These may include security updates and should be installed. Load only the recommended security patches.

Attention: If you were required to install any device drivers at the start of the installation, *do not* install any kernel updates.

9. On the Installation Settings screen, click **Next**.

10. On the User Authentication Method screen, select **Local** and click **Next**.

11. On the Add a New Local User screen, click **Next** and **Yes** to the pop-up window. (RSM for Storage will create users when it is installed.)

12. Review the Release Notes and then click **Next**.

13. On the Hardware Configuration screen, you should change the monitor and screen resolution to 1024x768 or 1280x1024 if supported by your monitor. To change the settings click each of the following settings to the right of Monitor under the Graphics Cards section:

a. Monitor Type

b. Aspect Ratio

c. Resolution

14. Click **Next** to exit the Hardware Configuration window.

15. On the Installation Completed screen, uncheck Clone this system for AutoYaST, and click **Finish**.

16. On the Login screen, do the following:

    a. Click Session Type (in the lower left corner of the screen), select **KDE** and click **OK**.

    b. Log in as user `root` using the previously entered password.

    c. If you are asked if you want to make KDE the default for future sessions, click **Make Default**.

17. Continue with verification of network connectivity in the next section.

Verify IP connectivity of the server and Linux OS

Your server should now be configured as a Linux system. To verify the IP connectivity of the server and Linux OS, do the following:

1. Open a console window by clicking the shell icon and use the "ping" command to verify that you can contact the following devices.

   To open a console window, click on the icon of a monitor in the bottom left of the screen. Type: `ping ip_address` (use the IP address of your e-mail (SMTP) server).

   You should see a response similar to the following:

   ```
   > ping 192.168.1.10
   PING 192.168.1.10 (192.168.1.10) 56(84) bytes of data
   64 bytes from 192.168.1.10:icmp_seq1: =1 ttl=64 time=0.093 ms
   64 bytes from 192.168.1.10:icmp_seq1: =1 ttl=64 time=0.078 ms
   64 bytes from 192.168.1.10:icmp_seq1: =1 ttl=64 time=0.071 ms
   ```

2. Cancel the ping by pressing **Ctrl-C**.

   If the IP address cannot be reached, you will see a "Network is unreachable" message or something similar to the following:

   ```
    > ping 172.24.6.10
   PING 192.168.1.10 (192.168.1.10)  56(84) bytes of data
   From this_systems_IP_address: icmp_seq=1 Destination Host Unreachable
   From this_systems_IP_address: icmp_seq=1 Destination Host Unreachable
   From this_systems_IP_address: icmp_seq=1 Destination Host Unreachable
   ```

3. Cancel the ping by pressing **Ctrl-C** at the same time.

4. Repeat the ping test using the address of a controller for one of your storage subsystems.

5. Open a Web browser and verify that you can reach www.ibm.com and do the following:

    a. Click the icon in the lower left of the screen to bring up the applications menu.

    b. Select **Internet –> Web Browser**.

    c. Type `www.ibm.com` in the address bar and verify that the Web site is accessible.

   If any of these checks fail, contact your IT support staff.

You can use the YaST tool to review the Network Interface settings that were entered during the installation of the OS.

1. Click the icon in the lower left of the screen to bring up the application menu.

2. Select **System –> YaST** to start YaST.
3. Click on **Network Devices** and then **Network Card**.

When you can successfully ping a storage subsystem and your company's e-mail (SMTP) server and you can reach IBM's Web site, you are ready to continue with installation of the RSM for Storage application (see 14).

RSM for Storage installation on SLES 10

You can download the RSM for Storage application from the following Web site:

www.ibm.com/storage/disk/ rsm

To install RSM for Storage on SLES 10, do the following:
1. Log in to the server as the root user.
2. Insert the Remote Support Manager CD into the CD-ROM drive, and continue with one of the following:
   - If the Autorun dialog box displays, click **Yes** to install RSM for Storage.
   - If the Autorun dialog box does not display, do the following:
     a. Open a console window (click on the monitor icon on the lower left side of the screen).
     b. Type the following into the window:

     ```
     cd /
     mkdir -p /media/cdrom
     mount -r -t iso9660 /dev/cdrom /media/cdrom
     cd /media/cdrom
     ./autorun.sh
     ```

   There will be a number of status messages as the software is installed. When the installation is complete, remove the CD from the drive.
3. Open a console window and do the following:
   a. Create the password for user admin. This is the user and password that will be used to configure and manage the Remote Support Manager:
      - Type `rsm-passwd admin`.
      - Type `passwd admin`.
   b. Create the password for user "lservice". This is the user and password that can be used locally by IBM Service. This user cannot configure or change any of the security aspects of Remote Support Manager. It can be used to view, acknowledge and close alerts.
      - Type `rsm-passwd lservice`.
      - Type `passwd lservice`.
   c. Logout as root by clicking the SuSE icon and selecting **Logout**. Then select **End Current Session** in the End Session for root window.
   d. On the Login screen, do the following:
      1) Click Session (in the lower left corner of the screen), select **KDE** and click **OK**.
      2) Log in as user "lservice" using the previously entered password.
      3) If you are asked if you want to make KDE the default for future sessions, click **Make Default**.
   e. Let the desktop do its first time initialization.

f. Click the **Konsole** icon in the bottom tray, then close the window. This adds the RSM for Storage icons to the desktop. The next time you login as "lservice," the background appearance will be changed to an RSM for Storage background.

g. Log out by clicking **Logout → End Current Session**.

h. On the Login screen, do the following:

   1) Click Session (in the lower left corner of the screen), select **KDE** and click **OK**.

   2) Log in as user admin using the previously entered password.

   3) If you are asked if you want to make KDE the default for future sessions, click **Make Default**.

i. Let the desktop do its first time initialization.

j. Click the Konsole icon in the bottom tray, then close the window. This adds the RSM for Storage icons to the desktop. The next time you login as admin the background appearance will be changed to an RSM for Storage background.

Note: You should always log in to the server running the RSM for Storage as the admin user. The root user account should only be used for system maintenance and upgrades.

Continue with Chapter 6, "Configuration," on page 31.

Chapter 4. Installing the SLES 9 operating system

Some System x servers have been tested with RSM for Storage and specific instructions for configuring the BIOS and starting the Linux installation for those servers can be found in the *RSM for Storage- Installation Hints and Tips* document at http://www.ibm.com/servers/storage/disk/rsm.

Part 1 – SLES 9 installation

Start the installation procedures in the *RSM for Storage- Installation Hints and Tips* document.

The *RSM for Storage- Installation Hints and Tips* document will refer you back to this document. Continue with either Part 2 or Part 3 of these instructions.

Depending on your hardware, there may be additional configuration screens presented that are not referenced here. Contact your IT support staff for assistance.

Part 2- SLES 9 installation

1. Insert CD labeled SLES 9 Service Pack 3 in the CDROM drive and reboot the computer. After booting with Service Pack 3 CD #1, you will be prompted to insert Disk 1. This is CD #1 of the base SLES 9 set. You will be prompted for other service pack or base CDs as you go through the installation.
2. Click **Installation** from the first screen.
3. Respond to the license agreement.
4. Click your language and click **Accept**.
5. On the Installation Settings screen, click **New Installation**.

   If prompted that an operating system is already installed, select **New Installation** and click **Ok**.

Part 3- SLES 9 installation

1. On the Installation Settings screen do the following:
   a. Click **Keyboard Layout** and select a keyboard layout.
   b. Click **Partitioning**.
      1) Select **Create Custom Partition Setup** and click **Next**.
      2) For Hard Disk: select **1** and click **Next**.
      3) For Installing: click **Use entire disk** and click **Next**.
   c. Click the **Change** button and then **Software**.
   d. Click the **Detailed Selection** button.
      1) In the left window, in addition to the default selections, click **Simple Webserver**.
      2) In the left window, in the Filter menu, select **Search**.
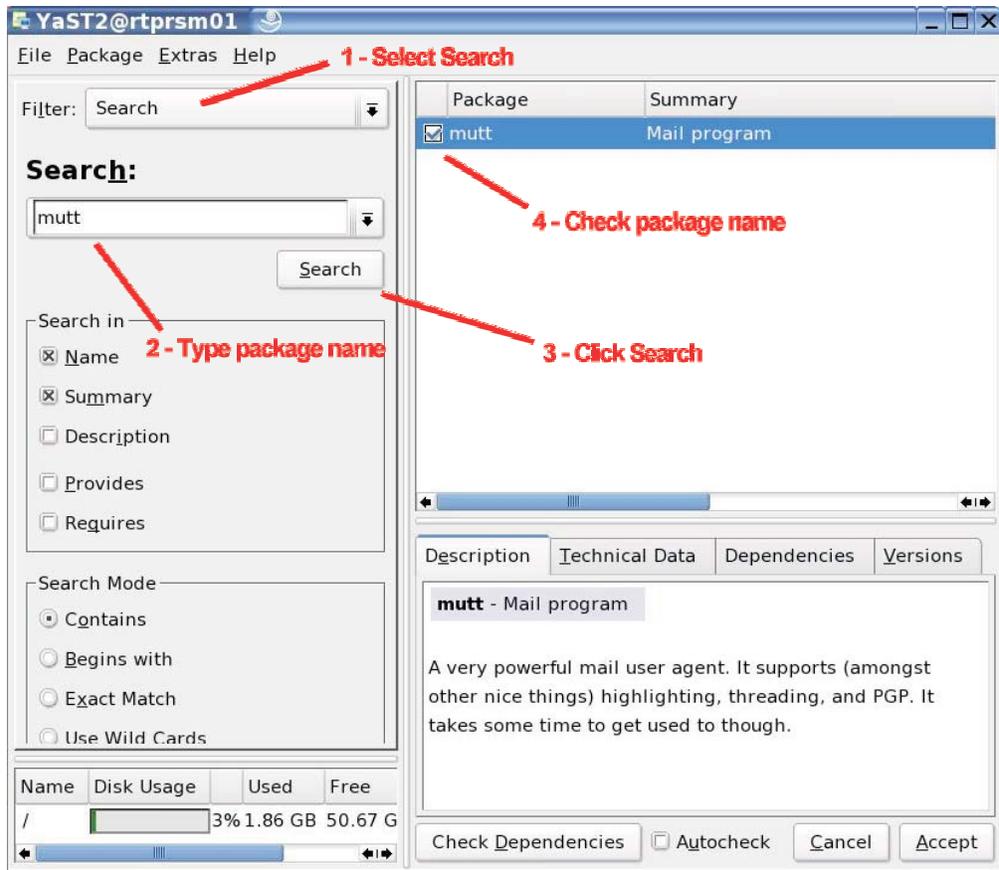
Figure 5. Package selection window

       a) Type `mgetty` in the search window and click **Search**.

       b) In the right window, check the box to the left of the mgetty package.

       c) Repeat steps 2a) and 2b) for `expect`, and `minicom`.

   3) Click **Accept** in the lower right of the screen.

   4) Cick **Continue** if any Automatic Changes are suggested.

  e. Click the **Change** button.

   1) Select **Time zone** and set the Hardware clock to use UTC.

   2) Click **Accept** in the lower right of the screen.

  f. Click **Accept** in the lower right of the Installation Settings screen.

  g. Click **Yes**, install to start the installation.

  Note: After the CDs are loaded, the system automatically reboots and presents the initial menu, allow the system to default to the Boot from Hard Disc selection.

2. Insert additional CDs when prompted.

3. Provide a password for the "root" user and click **Finish**.

4. On the Network Configuration screen, click the **Change** button and then click **Network Interfaces**. Then do the following:

  a. Click **Network Interfaces**.
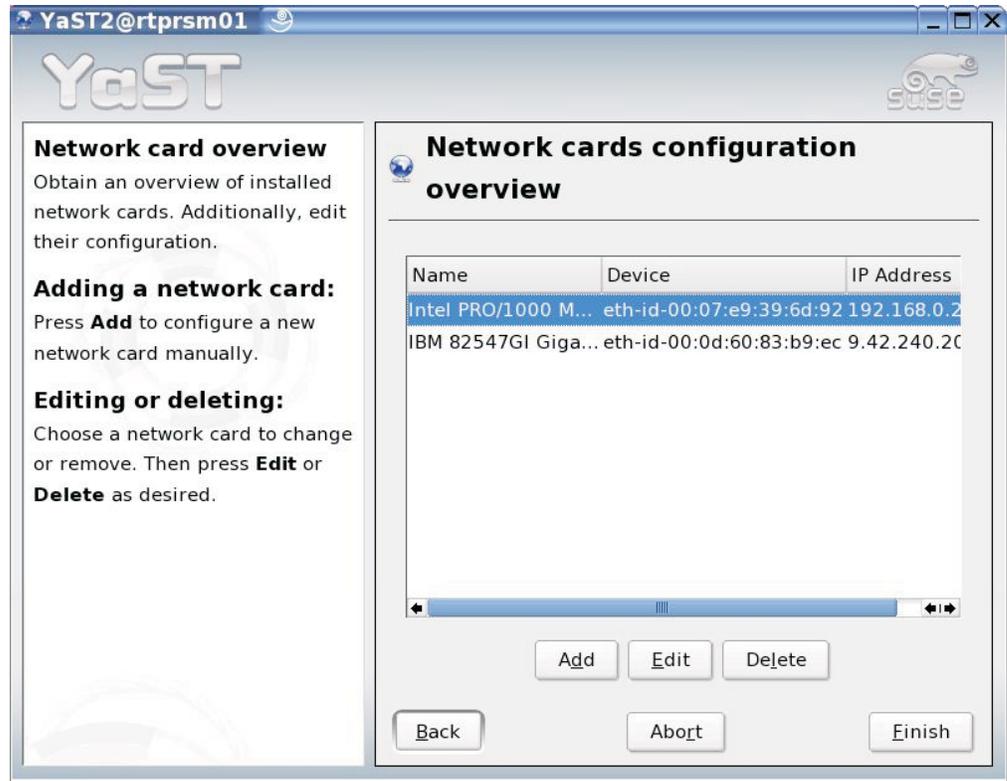
If you are not sure how to enter network configuration information, check with your network administrator.

The server running the Remote Support Manager must be able to reach the storage subsystems to be monitored, your e-mail (SMTP) server and the Internet. Depending on your network topology this may require one or two network interfaces for this system.

The first Ethernet port is automatically configured for DHCP. You should assign a static IP address for this system.
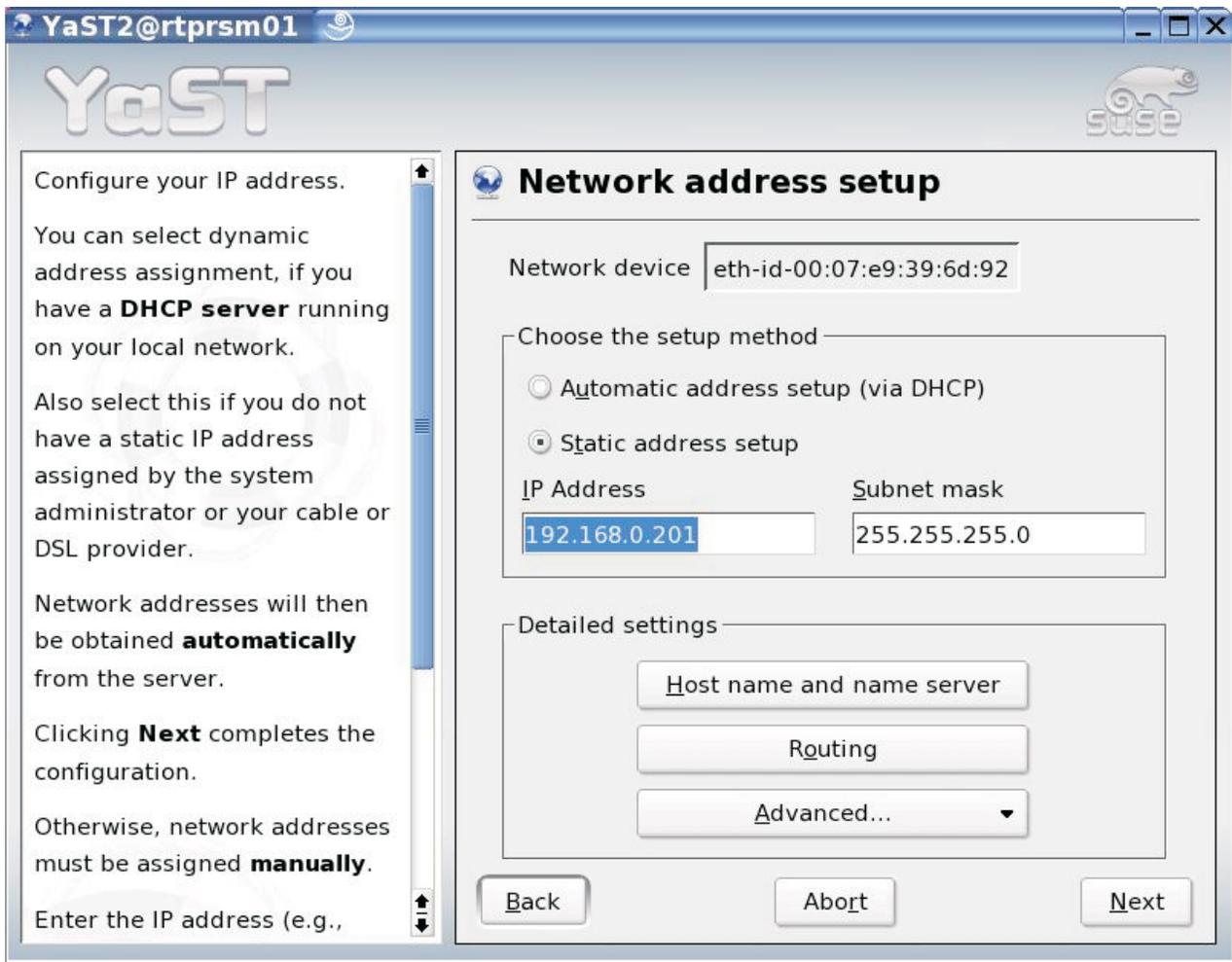
Click on the name to highlight it and the click **Edit**.

1) Define a static IP address for this system:

   a) Click **Static Address Setup** and enter the static IP address and Subnet Mask for the system.

   b) Enter the IP addresses of the Name Servers in your intranet.

   c) Click **Routing** under Detailed Settings to configure the Default Gateway, then click **OK**.

   d) Setup your Domain Name Server, refer to "Worksheet #1: Network setup information for the RSM for Storage server" on page 59 for more information.

2) Click **Next** to return to the Network Card Configuration Overview.

   a) If your storage subsystems are on a private LAN, you need to configure a second Ethernet port to be able to access an SMTP e-mail server and the Internet. Additional un-configured network adapters/ports appear in the box at the top of the screen. Click the port to configure and then **Edit** to configure additional ports.

   b) Click **Next** to exit Network Card Configuration Overview.

   c) Click **Next** to exit Network Configuration.

   Note: It is not necessary to configure the firewall at this time because this will be managed by the RSM for Storage application.

5. On the Test Internet Connection screen, do the following:

   a. Click **Yes** and **Next**.

   b. If the test fails, check with your network configuration and verify that the previously entered configuration is correct. You can click **Back** to return to the Network Configuration menus.

   c. If the test continues to fail, contact your IT support staff. You can also resolve the network problem after the installation of the operating system has completed. Continue the installation by clicking **No, Skip This Test** and **Next**.

   d. If the test is successful, you will be given the option to install Online Updates.

   e. These may include security updates and should be installed. You can install them now or at a later time. The recommended patches may include kernel patches. If you were required to install any hardware drivers from a diskette or CDROM during the OS installation, you should not install any kernel patches.

6. On Service Configuration screen, select **Skip Configuration** and click **Next**.

7. On User Authentication Method screen, select **Local** and then click **Next**.

8. On Add a New Local User screen, click **Next** and **Yes** to the pop-up window. (RSM for Storage application will create users when it is installed.)

9. Review the Release Notes and then click **Next**.

10. On Hardware Configuration screen, you should change the monitor and screen resolution to 1024 x 768 or higher if supported by your monitor. To change the settings:

    a. Click **Change** and then **Graphics Cards**.

    b. Click **Monitor** and the **Properties** button.

       1) Select the monitor, color and resolution for your monitor and then click **OK**, and then **Finish**.

       2) Click **Finalize**.

       3) Follow on-screen instructions for testing the settings.

    c. Click **Next** to exit the Hardware Configuration screen.

11. On Installation Completed screen, click **Finish**.

12. Log in as user root using the previously entered password.

13. Depending on your system configuration, you might be prompted for screen or monitor configuration after logging in for the first time.

14. If you did not start the installation by booting the Disk 1 from SLES 9 Service Pack 3, you can install the service pack now.

    a. Load Disk 1 for the service pack in the CDROM drive.

    b. Following the directions to install all recommended patches. You can normally accept all of the defaults.

15. Continue with verification of network connectivity in the next section.

Verify IP connectivity of the server and Linux OS

Your server should now be configured as a Linux system. To verify the IP connectivity of the server and Linux OS, do the following:

1. Open a console window by clicking the shell icon and use the "ping" command to verify that you can contact the following devices.

   To open a console window, click on the icon of a monitor in the bottom left of the screen. Type: `ping ip_address` (use the IP address of your Gateway.

Refer to "Worksheet #1: Network setup information for the RSM for Storage server" on page 59 for more information. You should see a response similar to the following:

```
 > ping 192.168.1.10
PING 192.168.1.10 (192.168.1.10)  56(84) bytes of data
64 bytes from 192.168.1.10:icmp_seq1: =1 ttl=64 time=0.093 ms
64 bytes from 192.168.1.10:icmp_seq1: =1 ttl=64 time=0.078 ms
64 bytes from 192.168.1.10:icmp_seq1: =1 ttl=64 time=0.071 ms
```

2. Cancel the ping by pressing **Ctrl-C** at the same time.

   If the IP address cannot be reached, you will see a "Network is unreachable" message or something similar to the following:

```
 > ping 172.24.6.10
PING 192.168.1.10 (192.168.1.10)  56(84) bytes of data
From this_systems_IP_address: icmp_seq=1 Destination Host Unreachable
From this_systems_IP_address: icmp_seq=1 Destination Host Unreachable
From this_systems_IP_address: icmp_seq=1 Destination Host Unreachable
```

3. Cancel the ping by pressing **Ctrl-C** at the same time.
4. Repeat the ping test using the address of a controller for one of your storage subsystems.
5. Open a Web browser and verify that you can reach www.ibm.com and do the following:
   a. Click the icon in the lower left of the screen to bring up the applications menu.
   b. Select **Internet –> Web Browser**.
   c. Type www.ibm.com in the address bar and verify that the Web site is accessible.

   If any of these checks fail, contact your IT support staff.

You can use the YaST tool to review the Network Interface settings that were entered during the installation of the OS.

1. Click the icon in the lower left of the screen to bring up the application menu.
2. Select **System –> YaST** to start YaST.
3. Click on **Network Devices** and then **Network Card**.

When you can successfully ping a storage subsystem and your company's e-mail (SMTP) server and you can reach IBM's Web site, you are ready to continue with installation of the RSM for Storage application on page 22.

RSM for Storage installation on SLES 9

CAUTION:
Do not proceed with RSM for Storage Installation until installation of the operating system is complete and you have successfully verified connectivity.

You can download the RSM for Storage application from www.ibm.com/storage/disk/rsm.

To install RSM for Storage, log in to the server as root. Insert the Remote Support Manager for Storage CD into the CDROM drive, and continue with one of the following:

1. If the Autorun dialog box displays, click **Yes** to install RSM for Storage and continue to Step 3.
2. If the Autorun dialog box does not display, open a console shell window by clicking the monitor icon on the lower left side of the screen and do the following:
   a. Type the following into the window:
   ```
   cd /
    mkdir -p /media/cdrom
    mount -r -t iso9660 /dev/cdrom /media/cdrom
    cd /media/cdrom
    ./autorun.sh
   ```
   There will be a number of status messages as the software is installed.
3. When the installation is complete, remove the CD from the drive.

In the console shell window, do the following:
1. Create the passwords for user "admin": type `rsm-passwd admin` to set the password for the RSM for Storage browser interface.

   This is the user and password that will be used to configure and manage the Remote Support Manager.
2. Next, type `passwd admin` to set the password for the Linux login.
3. Create the password for user "lservice": type `rsm-passwd lservice` to set the password for the RSM for Storage browser interface.

   This is the user and password that can be used locally by IBM Service. This user cannot configure or change any of the security aspects of the Remote Support Manager. It can be used to view, acknowledge and close alerts.
4. Next, type `passwd lservice` to set the password for the Linux login.
5. Logout as ″root″ by clicking the N icon and selecting logout. Then select Logout in the End Session for ″root″ window.
6. Log in as "lservice".
7. Let the desktop do its first time initialization and wait approximately 15 seconds for the icons to appear.
8. Click on the shell console icon in the bottom tray, then close the window. This adds the RSM for Storage icons to the desktop. The next time you login as "lservice" the background appearance will be changed to an RSM for Storage background.
9. Logout as ″lservice″ by clicking the N icon and selecting logout. Then select Logout in the End Session for lservice window.
10. Log in in as "admin".
11. Let the desktop do its first time initialization.
12. Click on the monitor icon in the bottom tray, then close the window. This adds the RSM for Storage icons to the desktop. The next time you login as "lservice" the background appearance will be changed to an RSM for Storage background.

Note: Normally, you should always log in to the server running the RSM for Storage as the "admin" user. Continue with Chapter 6, "Configuration," on page 31.

Chapter 5. Installing the RHEL 4 AS, Update 4 operating system

Some System x servers have been tested with RSM for Storage and specific instructions for configuring the BIOS and starting the Linux installation for those servers can be found in the *RSM for Storage- Installation Hints and Tips* document at http://www.ibm.com/servers/storage/disk/rsm.

Part 1 – RHEL 4 AS, Update 4 installation

Start the installation procedures in the *RSM for Storage- Installation Hints and Tips* document.

The *RSM for Storage- Installation Hints and Tips* document will refer you back to this document. Continue with either Part 2 or Part 3 of these instructions.

Depending on your hardware, there may be additional configuration screens presented that are not referenced here. Contact your IT support staff for assistance.

Part 2- RHEL 4 installation

1. Power on the computer and as the system performs the POST and initialization, insert CD #1 for RHEL 4, U4 in the CDROM. The system should boot from the CDROM.
2. Press the **Enter** key to install in graphical mode.
3. It is recommended that you perform the Media Check, especially if you downloaded and burned your Linux installation CDs.
4. Click **Next** on the welcome screen
5. Select your **Language** and click **Next**.
6. Select your **Keyboard** and click **Next**.
7. If presented with the Upgrade Examine Screen, select **Install Red Hat Enterprise AS** and click **Next**.
8. Select **Automatically Partition** and click **Next**.
9. Go to "Part 3- RHEL 4 installation."

Part 3- RHEL 4 installation

1. On the Automatic partitioning screen, if any existing partitions are shown, select **Remove all partitions on this system**, and click **Next**. Click **Yes** if you are asked to confirm removal of existing partitions.
2. On the Disk Setup screen, click **Next**.
3. On the Boot Loader Configuration screen, click **Next**.
4. On the Network Configuration screen, do the following:
   a. Click **Edit** to configure the first Ethernet port.
      1) Uncheck **Configure using DHCP**.
      2) Check **Activate on Boot**
      3) Enter the IP address and Netmask for the RSM for Storage system.
      4) Click **OK**.

b. If you require two Ethernet connections in order to connect to both your storage subsystems and your company's email and Internet gateways, highlight the second Ethernet port and click **Edit** to configure, otherwise go to step 5.

   1) Uncheck **Configure using DHCP**.
   2) Check **Activate on Boot**.
   3) Enter the IP address and Netmask for the RSM for Storage system.
   4) Click **OK**.

c. Enter the hostname and domain for this system (such as ibmrsm01.your.company.com)

d. Enter the IP addresses of your Gateway and Domain Name Servers (DNS).

e. Click **Next**.

5. On the Firewall Configuration screen, do the following:

   a. Click **No Firewall**. (The firewall will be managed by the RSM for Storage application.)

   b. For the Enable SELinux option, select **Disabled**.

   c. Click **Next** and then **Proceed**.

6. Select any additional language support and click **Next**.

7. On the Time Zone Selection screen, select your Time Zone and click **Next**.

   a. Select your Time Zone.

   b. Check **System clock uses UTC**.

   c. Click **Next**.

8. Enter the Root Password and click **Next**.

9. On the Package Installation Defaults screen, check **Customize software packages to be installed**, and click **Next**.

10. On the Package Group Selection screen check or un-check the following applications as indicated. (Some selections might already be checked).

    a. Check **X Window System**. (Should already be checked)

    b. Uncheck **Gnome Desktop Environment**.

    c. Check **KDE Desktop Environment**.

    d. Check **Graphical Internet**.

    e. Check **Text-based Internet**. (Should already be checked)

    f. Check **Server Configuration Tools**. (Should already be checked)

    g. Check **Web Server**. (Should already be checked)

    h. Check Mail Server. Click **Details for Mail Server** and check **postfix**, then click **OK**

    i. Uncheck **Windows File Server**.

    j. Check **Development Tools**. Click **Details for Development Tools** and check **expect**, then click **OK**

    k. Check **Administration Tools**. (Should already be checked)

    l. Check **System Tools**. Click **Details** and check **net-snmp-utils**, then click **OK**

    m. Uncheck **Printing Support**.

11. Click **Next** to exit the Package Group Selection screen

12. On the About to Install screen click **Next** to start the installation, click **Continue**, and do the following:

a. Insert additional CDs when prompted.

b. When the installation is complete, remove the CD from the drive and reboot the system.

13. Click **Next** on the Welcome screen.

14. Respond to license agreement.

15. Set the date and time.

16. Select the monitor type and set the display resolution to a minimum of 1024 X 768.

17. Complete the Red Hat Login information and click **Next**.

18. On the System User screen, click **Next** and then **Continue**.

19. On the Additional CDs screen click **Next**.

20. On the Finish Setup screen click **Next**.

21. On the login screen, do the following:

a. Click on **Session** and select **KDE**.

b. Login in as root.

22. A Sound server information message may appear: check **Do not show this message again** and then click **OK**.

23. Continue with verification of network connectivity in the next section.

Verify IP connectivity of the server and Linux OS (RHEL 4, Update 4)

Your server should now be configured as typical a Linux system. To verify connectivity, do the following:

1. Open a terminal console window (click the red hat icon in the lower left and select **System Tools -> Terminal Program - Super User Mode**) and use the `ping` command to verify that you can contact the following devices:

a. Type: `ping` *ip_address* (use the IP address of your e-mail (SMTP) server You should see a response similar to the following

```
> ping 192.168.1.10
PING 192.168.1.10 (192.168.1.10)  56(84) bytes of data
64 bytes from 192.168.1.10:icmp_seq1: =1 ttl=64 time=0.093 ms
64 bytes from 192.168.1.10:icmp_seq1: =1 ttl=64 time=0.078 ms
64 bytes from 192.168.1.10:icmp_seq1: =1 ttl=64 time=0.071 ms
```

b. Cancel the ping by pressing **Ctrl+C**.

c. If the IP address cannot be reached, you will see a **Network is unreachable** message or something similar to the following:

```
> ping 172.24.6.10
PING 192.168.1.10 (192.168.1.10)  56(84) bytes of data
From this_systems_IP_address: icmp_seq=1 Destination Host Unreachable
From this_systems_IP_address: icmp_seq=1 Destination Host Unreachable
From this_systems_IP_address: icmp_seq=1 Destination Host Unreachable
```

d. Cancel the ping by pressing **Ctrl+C**.

2. Repeat the ping test using the address of a controller for one of your storage subsystems. Open a web browser and verify that you can reach www.ibm.com:

a. Click the icon in the lower left of the screen to bring up the applications menu.

b. Select **Internet –> Firefox Web Browser**.

c. Type `www.ibm.com` in the address bar and verify that the web site is accessible.

3. If any of these checks fail, contact your IT support staff.

4. To review the Network Interface settings that where entered during the installation of the OS, click the Red Hat icon in the lower left of the screen and select **System Settings -> Network**.

5. When you can successfully ping a storage subsystem and your company's e-mail (STMP) server; and can reach IBM's web site, you are ready to continue with installation of the Remote Support Manager application on page

RSM for Storage installation on RHEL 4

You can download the RSM for Storage application from the following Web site:

www.ibm.com/storage/disk/ rsm

To install RSM for Storage, log in to the server as root. Insert the Remote Support Manager for Storage CD into the CDROM drive, and continue with one of the following:

1. 1. Right click on the CDROM icon on the desktop and select **Mount**.

2. Double click on the autorun.sh file to start the RSM for Storage installation

3. If the RSM for Storage can not be started with the above procedure, do the following

   a. Open a console shell window by clicking the Red Hat icon on the lower left side of the screen and select **System–>Terminal Program–>Super User Mode**.

   b. Type the following into the window:

   ```
   cd /
   mkdir -p /media/cdrom
   mount -r -t iso9660 /dev/cdrom /media/cdrom
   cd /media/cdrom
   ./autorun.sh
   ```

   There will be a number of status messages as the software is installed.

4. When the installation is complete, remove the CD from the drive.

In the console shell window, do the following:

1. Create the passwords for user ″admin″:

   a. Type `rsm-passwd admin` to set the password for the RSM for Storage browser interface. This is the user and password that will be used to configure and manage the Remote Support Manager.

   b. Type `passwd admin` to set the password for the Linux login.

2. Create the password for user ″lservice″:

   a. Type `rsm-passwd lservice` to set the password for the RSM for Storage browser interface. This is the user and password that can be used locally by IBM Service. This user can not configure or change any of the security aspects of the Remote Support Manager. It can be used to view, acknowledge and close alerts.

   b. Next, type `passwd lservice` to set the password for the Linux login.

3. Log out by clicking the red hat icon in the lower left and selecting **Logout ...**, then selecting **Logout** in the End Session for ″root″ window.

4. On the login screen, do the following:

   a. Click on **Session** and select **KDE**.

   b. Log in in as the "lservice" user.

5. Let the desktop do its first time initialization.

6. A Sound server information message may appear: check **Do not show this message again** and then click **OK**.

7. Open a terminal console window, click the Red Hat icon in the lower left and select **System Tools → Terminal**, then close the window. This adds the RSM for Storage icons to the desktop. The next time "lservice" logs in, the background appearance will be changed to an RSM for Storage background.

8. Then select **Logout** in the End Session for lservice window.

9. On the login screen, do the following:

   a. Click on **Session** and select **KDE**.

   b. Log in as the "admin" user.

10. Let the desktop do its first time initialization.

11. A Sound server information message may appear: check **Do not show this message again** and then click **OK**.

12. Open a terminal console window, click the Red Hat icon in the lower left and select **System Tools -> Terminal**, then close the window. New icons have been placed on the desktop to facilitate management of RSM for Storage. The next time 'admin' logs in, the background appearance will be changed to a RSM for Storage background.

13. Continue with Chapter 6, "Configuration," on page 31.

Chapter 6. Configuration

This section provides detailed configuration information for the following:
- "RSM for Storage"
- "IBM Storage Manager" on page 32
- "Modem connectivity" on page 33
- "Activation" on page 33

RSM for Storage

To configure RSM for Storage, do the following:

Note: The Appendix B, "Planning worksheets," on page 59 can help you get through this configuration process.

1. Launch the RSM for Storage user interface by clicking the **Manage** icon on the desktop.
2. If this is the first time you have started the browser, the summary status will be Configuration Incomplete.
3. Log in to the RSM for Storage application as "admin".
4. Select **Update Configuration** and then provide the requested information for the following configuration areas:
   a. Contacts
   b. Company
   c. Connections
   d. Storage
   e. Switches

   For additional information about any of the configuration fields, click on the help link in the upper right of each page.

   Appendix B, "Planning worksheets," on page 59 are provided to help you fill in the required information for these areas.

   If any information is missing or appears to be incorrectly formatted, a status of Incomplete will be shown and the specific field on that page that is incomplete will be flagged with an asterisk. Click on the help link for the page for suggestions how to correct the problem.
5. When each configuration section shows a status of OK, an option to run a Configuration Test will be available at the bottom of the screen.

   The RSM for Storage Configuration Test will verify connectivity to all configured devices. Click **Refresh Status** until the test completes and the results are shown. Any problems are indicated by a status of Problem and the specific device will be flagged with a double asterisk. Click on the areas indicating a problem to determine which device and/or IP address could not be reached. Additional information about test results are written to the Activity Log. Click the icon on the desktop to view the Activity Log. Refer to the Online Help for suggestions on resolving the problem.

   Re-run the configuration test until all problems are resolved.

IBM Storage Manager

This section defines the configuration changes you must make to your management application when attaching RSM for Storage to a DS3000 or DS4000 product or a mix of DS3000 and DS4000 products.

Notes:

1. The subsystem name used in IBM Storage Manager must match exactly (including case) the name used configured in the RSM for Storage application.
2. These changes must be made in IBM Storage Manager running on your management station, not on the RSM for Storage system.

Configure SNMP traps to be sent to the Remote Support Manager

The RSM for Storage system sends alerts to IBM Service when SNMP traps with event information are received from the subsystems being monitored. SNMP traps are sent by the IBM Storage Manager client and/or the IBM Storage Manager's Event Monitor service. As the Storage Manager Client may not always be running, it is recommended that the Event Monitor be installed.

Note: The Event Manager is installed during the installation of the IBM Storage Manager. For information about determining whether Event Manager is installed, refer to the documentation that came with your subsystem.

To send traps to the RSM for Storage system, configure the RSM for Storage system as a destination for SNMP traps in the Storage Manager client. This configuration will also be applied to the Event Monitor (if installed) on that same system.

Note: The following procedure assumes that all subsystems managed by the storage manager will be configured for reporting in the RSM for Storage application. If this is not the case, configure individual subsystems in step 2 below. Do not configure any subsystem that is not covered by warranty or a current maintenance contract.

1. Select **Task Assistant** from the View menu pull-down.
2. Click the **Configure Alerts** button.
3. Select **All storage subsystems**, and then click **OK**.
4. Select the **SNMP** tab.
5. Enter the IP address of the RSM for Storage system in the Trap Destination window.
6. Click **Add**.
7. Click **validate** to send a test trap the RSM for Storage system.

   The RSM for Storage application ignores test alerts such as these, but you can verify that it was received by viewing the RSM for Storage Activity Log. Click on the magnifying glass icon on the desktop labeled Activity Log. The reception of the test alert and the fact that it was ignored should be logged.

Storage Manager passwords

Storage Manager has a privileged mode of operation. If a password has been entered for the admin user, then any attempt to change the configuration of the subsystem will require the "admin" password. It is recommend that the admin password be set. If you choose to have IBM Service make configuration changes for you, you will need to provide them with the admin password or disable it for the duration of the service action.

Shell access Security

DS3000 and DS4000 subsystems provide a way to access the controller shell environment using the rlogin protocol. rlogin has limited security and is generally considered a security risk. Storage Manager provides a way to disable the rlogin support in the subsystems controllers and it is generally recommended that it be disabled. If IBM Service requires access to the shell, they will need to contact you to have rlogin access enabled.

Modem connectivity

Communication between the modem and server

During configuration of the Remote Support Manager, you performed a configuration test (See "RSM for Storage" on page 31). Part of this test is to verify that the RSM for Storage software can communicate with the modem. If the configuration test completed without errors then the modem is connected to the correct serial port and is communicating with the RSM for Storage software.

Remote access to the modem

On the RSM for Storage Remote Access page, click **Enable Remote Access**. This will enable the modem to answer when called. Verify modem connectivity by calling the modem phone number from a voice phone.

Most modems will either flash an led or you may hear a sound when a call is being received.

1. If there is no indication that a call is being received:
    a. Plug the phone cable into a voice phone and verify that a dial tone is present.
    b. If a dial tone is present, dial the number again and verify that the phone you connected rings.
    c. Reconnect the phone cord to the modem connector labeled line #1.
2. Check the cable connection between the modem and the server and verify that the cable is connected to serial port #1.
3. Try again to verify the modem connectivity by calling the modem phone number from a voice phone.
4. Check the instructions that came with the modem and review any troubleshooting information.

Activation

Before the Remote Support Manager for Storage will send alerts to IBM it must be activated by contacting IBM Service. This is also the last step in verifying correct operation of the RSM for Storage.

On the RSM for Storage user interface, click **Remote Access** and enable remote access.

Call the number for IBM Service for your region and give the IBM Machine Type and Serial Number of one of the storage subsystems to be monitored by the RSM for Storage. Go to www.ibm.com/planetwide for support telephone numbers in your country or region. When you are contacted by the disk subsystem support team, verify that you are talking with DASD Support for DS3000 or DS4000 and tell them you are activating a RSM for Storage system.

Provide IBM Service with the phone number of the modem attached to the RSM for Storage system. IBM Service will dial into the system, verify that the configuration is correct and the activate the system.

Note: If you decide to install the RSM for Storage application on another server, you will need to contact IBM Service to obtain a new Activation key for the new server.

IBM Service will also generate a test alert to verify that the system can send an e-mail, and create a problem report in IBM's call management system. IBM Service will call the primary contact for the RSM for Storage system to confirm that the problem report was received.

When the RSM for Storage system is ready to receive events, the System Status will be OK.
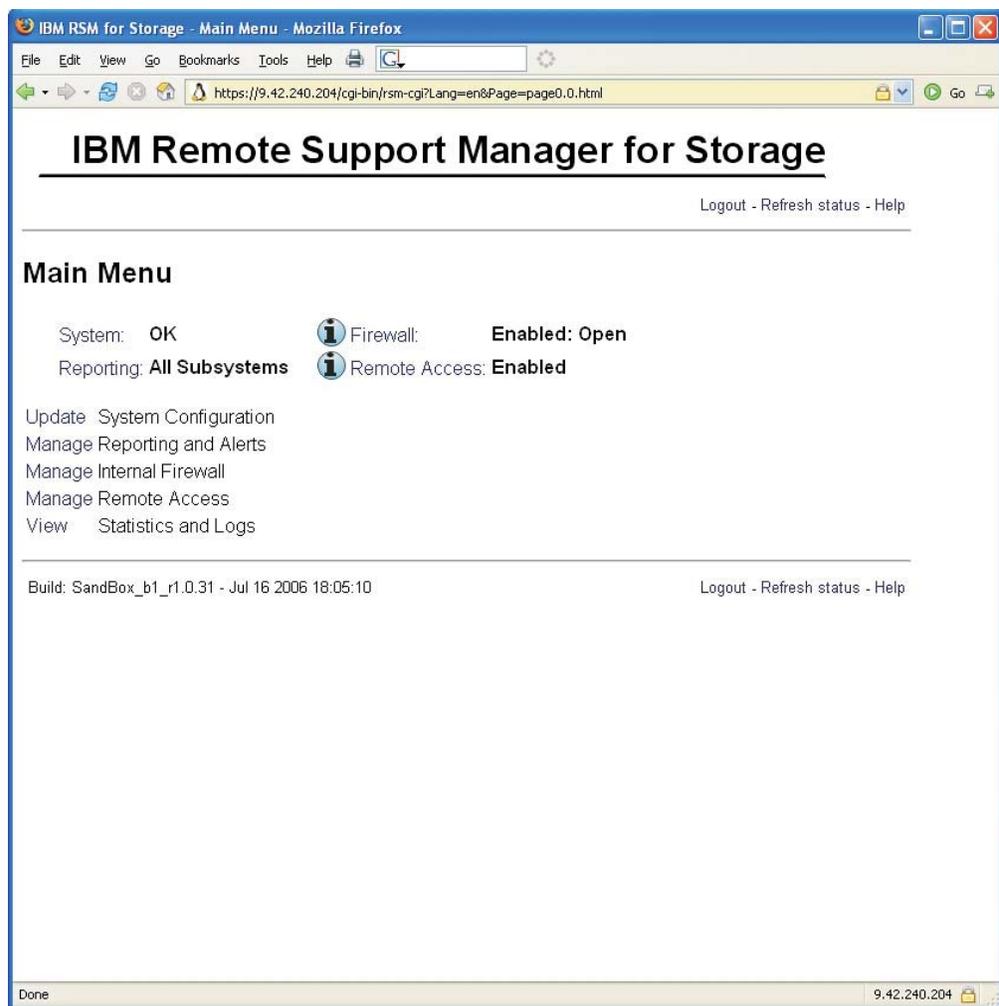
Figure 6. Example of a configured system

You can leave the browser session running, but you will need to select **Refresh status** to see changes in status.

Note: After 10 minutes of no activity on the user interface, you will be prompted to log in again.

Backing up your configuration

After your RSM system is operational, take a few minutes to make a backup copy of your configuration file and store it on another system.

See"Saving and restoring configuration files" on page 45.

Chapter 7. Installing updates to RSM for Storage

Updates to the Remote Support Manager software will be distributed as a CDROM Image file (.iso) or as a compressed (.zip) file. You can burn a CDROM from the ISO file or you can download the ZIP file directly to the RSM for Storage server.

All configuration files will be preserved during the update process. Some updates may require that additional configuration details be provided after the update. If additional configuration information is required for the update, the System status will be Incomplete and you need to supply the new information before the RSM for Storage system will send alerts to IBM.

Open a web browser and go to http://www.ibm.com/servers/storage/disk/rsm. The download page will contain the following files:

ibm_sw_ds4krsm_x.x.xx_linux_32-64.zip – Download directly in the /packages directory on the RSM server

ibm_sw_ds4krsm_x.x.xx_linux_32-64.iso – Burn to a CDROM

ibm_sw_ds4krsm_x.x.xx_linux_32-64.txt – The Readme file contains specific information about this new version

ibm_sw_ds4krsm_x.x.xx_linux_32-64.chg – The Change History file explains the new function problems fixed in this version

If new configuration information is not required, all previously configured information should be present and the RSM for Storage system should be operational.

You can expect to update your RSM for Storage software each time a new version of controller firmware is installed on your storage subsystems.

Updating the RSM for Storage using a ZIP file

Login to the Remote Support Manager server as the "root" user.

The download site may be accessible by the RSM for Storage system without needing to disable the RSM for Storage internal firewall. IBM's external server and web site links do sometimes change however, and if the site can not be reached, you will need to disable the RSM for Storage firewall during the download.

Open a web browser and go to http://www.ibm.com/storage/disk/rsm.

The .txt file contains specific instructions for installing the update. The .chg file contains details about the changes made in this and previous versions.

1. Download the .zip file into the /packages directory on the RSM system.
2. Open a console window and type the following into the window.

   Note: x.x.xx is the version number of the RSM software you just downloaded.

   ```
   cd /packages
   unzip ibm_sw_ds4krsm_x.x.xx_linux_32-64.zip
   cd /packages/rsm-x.x.xx
   ./rsm-setup
   ```

Launch the Remote Support Manager user interface by clicking on the icon labeled **Manage** on the desktop.

If additional configuration information is required for the update, the System status will be Incomplete and you will need to supply the new information. All previously entered configuration information should be present and the Remote Support Manger should be operational. Refer to the readme.txt and changes.txt files in the `/packages/rsm-x.x.xx` directory for more information.

Updating RSM for Storage using a CDROM

The CDROM image can be downloaded from http://www.ibm.com/servers/storage/disk/rsm.

The .txt file contains specific instructions for installing the update. The .chg file contains details about the changes made in this and previous versions. Download the .ISO file and burn a CD, and do the following:

1. Login to the Remote Support Manager server as the *root* user.
2. Close all open windows on the desktop.
3. Insert the RSM for Storage CD into the CDROM drive, and do the following:

   For **SLES 9** and **SLES 10**:

   a. In a few seconds, the OS should recognize the CD and a prompt to run the program will appear.
   b. Click **Yes** to start the autorun file.

   For **RHEL 4**:

   a. Right click on the CDROM icon on the desktop and select **Mount**.
   b. Double click the CDROM icon on the desktop. The contents of the CD should be displayed.
   c. Double click on the **autorun.sh** file to start the RSM for Storage installation.
4. When the installation is complete, remove the CD from the drive.
5. Launch the Remote Support Manager user interface by clicking on the icon labeled **Manage** on the desktop.

If additional configuration information is required for the update, the System status will be Incomplete and you will need to supply the new information. All previously entered configuration information should be present and the Remote Support Manger should be operational. Refer to the readme.txt and changes.txt files in the `/packages/rsm-x.x.xx` directory for more information.

Chapter 8. Using RSM for Storage

This chapter provides an overview of the RSM for Storage programs, details on the different types of users for RSM for Storage, and information about managing the RSM for Storage application.

User IDs and desktops

During installation, the RSM for Storage software creates three user IDs:

admin This is the Administrative user that can perform management and configuration tasks.

lservice
This is the Local Service user intended for use by IBM Service when on-site.

rservice
This is the Remote Service user that is used exclusively for remote access to the system.

The local desktops for the admin and lservice users are setup with different backgrounds so you can easily tell which user is logged into the RSM for Storage system. The lservice user has some restrictions on directories it can access that prevent it from changing any configuration that might affect security of the system.

Icons

The desktop has four icons to launch RSM for Storage programs.

Manage
Starts a Web browser and opens the management page for RSM for Storage.

Help Starts a Web browser and opens the master help page.

Activity Log
Opens a console window and displays the most recent entries in the Activity Log. The Activity Log contains time stamped entries for actions performed by the RSM for Storage application.

Security Log
Opens a console window and displays the most recent entries in the RSM for Storage Security Log. This log contains time stamped entries for actions performed by the RSM for Storage application that affect the security of the system.

Notification e-mails

The RSM for Storage application sends e-mails to notify you about important changes in status.

Remote Access notifications are sent when:
- Remote access is enabled or disabled.
- A remote user connects or disconnects from the system.

- The remote access automatic timeout is about to expire and the system has one or more active alerts. Timeout warnings are sent at 4 hours, 2 hours and 1 hour before the timeout occurs.

Alert Status notifications are sent when an alert has been sent to IBM Service.

Daily Status e-mails serve as a heartbeat notification that the RSM for Storage system is operational. It includes the summary status for the system and status for alerts that may be active for storage subsystems.

Firewall Status notifications are sent when the internal firewall for the RSM for Storage system is enabled or disabled.

Ping Checks of the configured SMTP sever and Management Station are performed each half hour. Ping Check notifications are sent when two ping checks in a row fail.

Ignored Event notifications are sent when an event is received that is configured to be ignored by the RSM for Storage system. These are events for which a response by IBM Service is not usually required. See Appendix C, "Filtered events," on page 65 for a description of these events.

Phone Line Check notification is sent if the RSM for Storage system can not verify that an active phone line is connected to the modem. The check is run daily after midnight local time.

E-mail contacts

When the RSM for Storage application was configured, you selected one of the contact persons to be the Primary Contact for the RSM for Storage system. Additional contacts might have been associated with different storage subsystems.

Table 1. E-mail contacts

Notification	Primary contact	Subsystem contact
Remote Access is enabled or disabled.	X	
Remote User connects and logs into the RSM for Storage system or logs out.	X	
Firewall is enabled or disabled.	X	
Remote Access is about to expire or has expired.	X	X
An alert occurs for a subsystem.	X	X
Daily status updates at local noon.	X	
Daily status updates at local noon when a subsystem has an active alert.		X
Daily phone line check fails.	X	
Ping Check fails	X	

Browser interface

Management of the RSM for Storage system is performed with a Web browser.

The management page can be accessed on the RSM for Storage system with the URL: localhost, or by clicking the Manage icon on the desktop.

Remote management can be performed using HTTPS by specifying the hostname of the RSM for Storage system or its IP address. (for example: https://192.168.1.100).

During installation of the RSM for Storage software, self-signed SSL certifications are created for use with the HTTPS interface. Any warnings you receive from your browser can be ignored.

Management pages

There are four management areas:
- System configuration
- Firewall
- Remote access
- Reporting and alerts

System configuration

The system configuration page allows you to specify the following:
- Company name and address.
- One or more contact people that IBM Service should call or e-mail when responding to a problem report.
- Connection information about the RSM for Storage system.
- Storage subsystems to be monitored by the RSM for Storage system.
- Other SAN devices.
- System activation.

There are two validation checks made on configuration information.

The first check occurs when you click the Update Configuration button on each configuration page. This verifies the format and content of each configuration field. Any problems will be indicated with a Configuration Incomplete status.

When all configuration Incomplete problems have been fixed, an option will be available at the bottom on the System Configuration page to run a Configuration Test. This test checks that the RSM for Storage system has IP connectivity to all configured SAN devices and that the system can communicate with the attached external modem. Any problems detected during the test are will be indicated with a Configuration Problem status.

Note: The RSM for Storage application will not process any events until all configuration errors are corrected and the System Activation step has been completed.

For more information refer to Chapter 2, "Installation overview," on page 7 or "Configuration procedures and issues" on page 44.

Firewall

The firewall page provides status for the RSM for Storage server internal firewall. The purpose of the internal firewall is to limit the scope of access that local and remote users of the system have to your network.

The normal state for the firewall is Enabled:Closed which means that the firewall is operational and configured to allow SNMP traps to be received and e-mails to be sent, however, access to other devices on your network is not allowed.

The Enabled:Open state means that access to one or more other devices has been enabled. The firewall allows access to any storage subsystem that has an active alert, and also storage subsystems and other SAN devices that have been placed in Service Access mode.

Service Access mode allows you to manually allow access to a device from the RSM for Storage system. You can select storage subsystems or "Other SAN Devices" that you have previously configured.

Disabling the firewall allows unrestricted access from the RSM for Storage system to your network. To maintain the security of your network, disabling the firewall will also disable remote access. Likewise, enabling Remote Access will automatically enable the firewall.

Remote access

The Remote Access page provides controls and status for Remote Access to the RSM for Storage system. Enabling Remote Access unlocks the rservice user id and allows the modem to answer an in coming call.

Once enabled, and a remote user connects to the system, the status will change to Active.

You can select to have Remote Access automatically enabled when an alert is sent to IBM Service. Or you can wait to be contacted by IBM Service by phone before manually enabling it.

This page also allows you to set the Remote Access Timeout. This guarantees that the system will return to a secure state, without intervention. If the problem is difficult to resolve, or occurs intermittently, you may need to refresh the timeout to allow IBM Service more time to work on the problem.

If you disable Remote Access while a remote user is connected, the remote user will be disconnected.

Reporting and alerts

Normally all configured storage subsystems will be enabled for reporting. This means that the RSM will accept and process any events related to the subsystem. If you are relocating a subsystem or performing any task that might generate events (that IBM does not need to respond to), you can disable reporting until the subsystem is fully operational again.

While you are making configuration changes to the RSM for Storage application, the Reporting Status may be "Suspended". This is a reminder that no events will be processed by the RSM for Storage system while any configuration problems exist.

This page will show a summary of all alerts being tracked by the RSM for Storage application and allow you to view details about alerts that are active for each subsystem.

When a subsystem first reports a problem, an alert is sent to IBM Service. Once IBM has been alerted to a problem, additional alerts for that subsystem are held at the RSM for Storage system. IBM will respond to the alert either by connecting to the RSM for Storage system or calling you.

If IBM Service connects to the RSM for Storage system, they will either acknowledge or close all of the alerts for the subsystem. Alerts are acknowledged to indicate they have been seen by IBM Service but work on the problem has not been completed. Closing all of the alerts for a subsystem indicates that service is complete.

When all alerts for a subsystem are closed, the RSM for Storage application will consider the next event from that subsystem to be a new problem and an alert will be sent to IBM Service.

The Reporting and Alerts page will show the number of alerts sent, acknowledged and pending for each subsystem that has active alerts.

Pending alerts are ones that are candidates to be sent to IBM Service, but are being held at the RSM for Storage system for one of three reasons.

Holding
> Another alert has already been sent to IBM Service for the subsystem.

Queued
> The RSM for Storage application attempted to send the alert, but received an error. The most likely cause is a network problem that prevents the RSM for Storage application from reaching the SMTP server. The RSM for Storage application will attempt to re-send the alert every few minutes.

Waiting
> IBM Service was remotely connected to the RSM for Storage system when the alert occurred. If all other alerts have been closed and the remote user disconnects without acknowledging this alert, it will then be sent to IBM Service as a new problem.

Navigation links and status summary

Navigation links at the top and bottom of each page allow you to move backwards to any previous level.

At the top of each page two lines of summary status for the four management areas are displayed. You can navigate to any of the management pages by clicking on the names in the summary status lines.

In addition to the text status, icons are used when your attention is required:

Table 2. Status summary icons

	An information status indicates a normal condition that is expected when a change to reporting, firewall, or remote access status occurs.
	A condition that usually requires your attention or awareness.
	This indicates a problem that prevents the RSM for Storage system from reporting subsystem problems to IBM.

Help pages

Each of the management pages in the browser interface has a link to a help page:

Refer to these help pages for questions about the meaning of status indications, controls, options or format of configuration fields.

In addition, the help page for the Main Menu contains a link to a master help index page that has general help for the following topics.
- Desktop icons
- Systems users and capabilities
- Browser user interface
- Command line utilities
- Configuring IBM Storage Manager to work with RSM for Storage
- Saving and restoring configuration files
- Troubleshooting

Configuration procedures and issues

The following sections provide detailed information about the following configuration procedures:
- Adding a new subsystem
- Changing who receives e-mails
- Changing passwords
- Saving and restoring configuration files

Adding a new subsystem

To add a new subsystem, do the following:
1. Ensure that the new subsystem is covered under warranty or a current IBM maintenance agreement.
2. Add the subsystem to the RSM for Storage configuration by doing the following:

a. Use the exact hostname used in IBM Storage Manager.

b. Make sure to enter the correct IBM machine type, model and serial number.

c. Include the IP addresses of the controllers.

d. Include the location of the subsystem.

e. Select the contact person that is physically near the subsystem.

3. Run the Configuration Test to verify IP connectivity and hostname.

E-mail Transport Options

The RSM for Storage software can send e-mail to your SMTP server to be forwarded to the destination, or it can send e-mails directly to the destination.

The default configuration value for the SMTP server IP address is ″DIRECT″, which will cause the RSM for Storage system to send e-mails directly to the destination. You may also specify the IP address (xxx.xxx.xxx.xxx) of your SMTP e-mail server.

If using DIRECT, one reason that e-mails may not be delivered is because your company's firewall may only forward e-mails sent from your e-mail server. Specifying the IP address of your SMTP e-mail server should resolve this problem.

If using the IP address of your SMTP e-mail server, one reason that e-mail may not be delivered is because the filtering on your e-mail server may be blocking e-mails sent by the RSM for Storage system. Some e-mail filtering programs may forward e-mails sent by the RSM for Storage system but will remove the ZIP file attachment that contains the log files. Check with the administrator of your e-mail server to determine if a special rule for the RSM for Storage system is required.

Changing who receives e-mails

To change who receives e-mail notifications, do the following:

1. Add or verify the person's information in the Contacts page in System Configuration.

2. To change the primary contact person for the RSM, check the box at the bottom of the configuration page for that person.

3. To change the contact for a specific storage subsystem, go to the subsystem's configuration page and choose from the list of configured contact people. The contact for a subsystem should be physically near the subsystem so they can work with IBM Service if required.

Changing passwords

Use the command `rsm-passwd` to set the passwords for the RSM for Storage browser user interface:

1. Log in to the server running the Remote Support Manager application as the "root" user.

2. Open a console window and type: `rsm-passwd admin` or `rsm-passwd lservice`.

To change the Linux log in passwords, use the command `passwd`.

Saving and restoring configuration files

The configuration files are stored in the directory: /etc/rsm. These files can be backed up by saving them to a floppy diskette or by using FTP to store them on another machine.

Note: When you update the RSM for Storage software, the configuration files are preserved. However if you should ever need to install the RSM for Storage software on a new server, having a backup copy will save considerable time.

Saving the configuration files

Log in to the server running the Remote Support Manager application as the "root" user. Open a console window and type: `rsm-cfg-save`. The program will create a compressed file containing the configuration files. This file is stored as: /packages/rsm-configuration-files.zip. You can then choose to save the file to diskette, or exit the program and manually FTP the file to another machine.

How to FTP the configuration file to another machine: Use the Remote Support Manager's user interface to disable the internal firewall. Note that while the firewall is disabled, the RSM for Storage application will continue to process events, but will not automatically enable Remote Access.

Attention: Be sure and remember to re-enable the firewall.

As the root user, open a console window and:

1. Run the `rsm-cfg-save` program as described in the previous section.
2. Use FTP to copy the file /packages/rsm-configuration-files.zip to another machine.
3. Close the console window.

Use the Remote Support Manager's user interface to re-enable the internal firewall.

Restoring saved configuration files

Place the saved configuration file (rsm-configuration-files.zip) in the /packages directory. As the root user, open a console window and do the following:

1. Run the `rsm-cfg-restore` program.
2. Run `rsm-stop`.
3. Run `rsm-start`.
4. Close the console window.

Power off/on sequence

If you are powering your SAN off for maintenance, the RSM for Storage system should powered off first and back on last, in order to prevent reporting of events that may be associated with power cycling of other devices.

Working with IBM Service

This section provides details about using RSM for Storage to work with IBM Service to resolve issues.

Enabling remote access

On the Remote Access management page, you have the option of allowing remote access to be automatically enabled when an alert is sent to IBM. This allows IBM to connect to the RSM for Storage system without needing to first speak with the contact person for the system. If you choose to disable this function, IBM Service will contact you to have remote access enabled manually when an alert is received.

Acknowledging alerts

The acknowledge state of an alert is an indication that IBM Service has seen or is aware of the alert. When IBM Service dials into the RSM for Storage system they will view the existing alerts and acknowledge them. In some situations, IBM Service may not require remote access to the RSM or subsystem in order to determine the cause of a problem and may call you to discuss the problem resolution. You can also acknowledge (or close) alerts.

Closing alerts

The RSM for Storage application sends a single alert to IBM Service for each subsystem. Additional alerts that occur after the first alert is sent to IBM, are available for examination in the RSM for Storage application. When all of these active alerts for a subsystem are closed, the next alert will again be sent to IBM Service.

When intermittent problems are occurring, it may be necessary for all alerts for the subsystem to be closed, so the RSM for Storage application can be used to automatically notify IBM when the problem recurs.

IBM Service will normally close all alerts for a subsystem then dialed into the RSM for Storage system, but resolution of the problem does not require dialing into the RSM for Storage system. You might be asked to close the existing alerts so that the RSM can resume sending alert to IBM.

Closing an alert in the RSM for Storage application, does not close the problem report with IBM Service.

Remote access timeout

To ensure that you do not have to remember to disable remote access to the RSM for Storage system in order to make it secure, the RSM for Storage application will automatically disable Remote Access based on a timeout. You can configure this timeout for between 12 and 96 hours. Some intermittent problems may require occasional access by IBM Service over a period of days and it may be necessary for you to extend the timeout. To extend the Remote Access Timeout, click the "Update Remote Access Timeout" button on the Remote Access management page.

Providing additional privileges

When the RSM for Storage sends an alert to IBM, it often will contain all the information needed to identify the problem. When IBM Service dials into the RSM for Storage system, they will be able to connect to those subsystems that have reported a problem. Depending on how you have specified options in IBM Storage Manager, IBM's access may be limited to viewing configuration and downloading logs. If additional access is required to resolve a problem, you may need to:

- Provide IBM with the password for the subsystem.
- Enable RLOGIN for the subsystem so the controller's shell interface can be accessed.

Performance issues or other concerns that do not trigger an alert

When you place a voice call to IBM for Service, you can provide IBM Service with access to the RSM for Storage system and to storage subsystems, switches or hosts in your network. You can manually enable Remote Access to the RSM for Storage system and place any configured storage subsystem or other SAN device

in Service Access mode and provide IBM Service with the phone number of the modem connected to the RSM for Storage system.

Note that the RSM for Storage system is normally used by the IBM Support Centers supporting storage subsystems. Support Centers for other devices such as switches will not be familiar with uses of the RSM for Storage system and may not have immediate access to the internal IBM tools that enable log in to the RSM for Storage system.

Event filtering and handling

The RSM for Storage application does not directly monitor storage for problems. Your existing IBM Storage Manager application already polls each subsystem looking for problems. Storage Manager is configured to send critical events to the RSM for Storage systems as SNMP traps.

Ignored Events

Any SNMP trap that does not come from a DS3000 or DS4000 subsystem via Storage Manager is ignored.

Events that are received for a storage subsystem that is not configured or has had reporting disabled are ignored.

A few events reported by Storage Manager do not usually require a response by IBM Service. These are normally reported to the configured contact person for the subsystem via e-mail. See Appendix C, "Filtered events," on page 65 for a list of events that are ignored by the RSM for Storage Application.

Duplicates

Some failures result in duplicate event codes being sent to the RSM for Storage system. When duplicate events are detected, a duplicate count is incremented for the previous Alert.

Security

Adding a modem to one of your systems creates a potential entry point for unauthorized access to your network. The RSM for Storage application modifies many characteristics and behaviors of the system it is installed on to protect this entry point and to maximize the amount of control you have in managing remote access. To ensure the integrity of these controls, you should consider the server the RSM for Storage application is installed on to be a single purpose appliance.

RSM for Storage application controls initial access to the system by remote users and then limits the scope of access a remote user has to your network.

Access to the RSM for Storage system

Modem access to the system has four layers of control.

- The modem is configured to only answer when Remote Access is enabled by the RSM for Storage application.

  You can manually enable and disable remote access, or you can choose to have remote access automatically enabled when a storage subsystem reports a problem. When remote access is enabled a timer is started which will automatically disable remote access when it expires. You don't have to remember to make the system secure after service has been completed.

The person identified as the primary contact for the RSM for Storage system is notified by e-mail whenever a change in the remote access settings occurs and all state changes are also written to the Security Log.

- The userid reserved for remote access (rservice) is only valid when Remote Access is enabled. Attempts to log in using the root, admin or lservice userids are rejected.

  Note: For this reason you should not create additional users on this system.

- The initial login password is changed daily at midnight UTC. IBM Service has an internal tool that provides the current password for RSM for Storage systems.

- After validation of the initial login password, remote users are presented with a challenge string, which also requires access to an internal IBM tool in order to obtain the correct response. The response also includes an IBM employee user name that is recorded in the RSM for Storage Security Log.

Scope of access to your network

The following sections provide detailed information about the different user access permissions and privileges available in your network.

User permissions and privileges

Once a remote user has logged into the RSM for Storage system, that user will have all of the privileges of a normal user that is logged into the system locally. The only users that should exist on the system are those created by the RSM for Storage application (such as admin, lservice and rservice).

- **root** has complete control of the system and should be used only for installation of software or maintenance.

- **admin** performs configuration and management of the RSM for Storage application. The password for this user is set by the root user of the system.

- **lservice** is primarily intended for use by on-site IBM Service. This user can acknowledge and close alerts and view configuration settings. The lservice user can log into the system locally and is also recognized by the RSM for Storage browser interface.

- **rservice** is used by IBM Service and is only valid on the remote modem connection.

The Switch User (su) command is disabled to prevent a normal user from attempting to become "root" and have unrestricted access to the system. The RSM for Storage application makes other changes in program and directory permissions to limit what programs and files these users can access.

IP connections

The remote connection made by IBM into the RSM for Storage system is a console interface and programs that can initiate an IP connection on this interface are removed from the system during installation of the RSM for Storage application.

The following programs are removed from the system during installation of the RSM for Storage application:

- rcp
- rsh
- rexec
- tftpd
- vsftpd

- telnetd

Note: rlogin, which is required for shell access to DS3000 and DS4000 storage subsystems, is not removed.

The only daemons (or services) running on the RSM for Storage system are snmptrapd, sshd and httpd, which listen for SNMP traps, secure shell session requests and HTTP(S) requests respectively.

Note: While the secure shell daemon is running, it is not normally used for management of the RSM for Storage system and you must disable the RSM for Storage firewall before attempting to connect with a secure shell client.

Firewall states

The RSM for Storage application manages an internal firewall that limits the IP destinations that can be accessed by local and remote users of the system. The "rules" for inbound and outbound IP traffic that control the internal firewall are managed dynamically by the RSM for Storage application. There are three general states the firewall can be in:

Disabled:
All IP traffic is permitted both into and out of the system.

Enabled:Closed:
This the normal state when there are no active alerts present and the system is waiting for notification from IBM Storage Manager of a problem.
- The firewall will accept incoming SNMP traps, ping, traceroute and HTTPS requests.
- Outbound traffic for DNS, ping, traceroute, IBM's WWW and FTP sites and port 25 of your configured SMTP (e-mail) server.
- There is no access to any of your configured SAN devices or other addresses except as previously noted.
- Forwarding of IP traffic is also disabled, which prevents the system from being used as a router.

Enabled:Open:
In this state outbound access to one or more configured storage systems or other configured SAN devices also permitted. Access is allowed only to those devices that have active alerts or those that you have placed in Service Access mode.

Side effects of the firewall operation

The internal firewall is managed to allow access to specific devices in your network only at the time they require service. For this reason, the RSM for Storage system will not be suitable for running management applications such as IBM Storage Manager or IBM Director.

Customizing the firewall

If you determine that it is appropriate for all local and remote users of the RSM for Storage system to be able to access other systems in your network at any time, you can create a configuration file that will enable access to them through the internal firewall. This configuration file can only be created or modified by the root user. See Appendix D, "Customizing the firewall," on page 67.

The Linux system management tool (YaST) tool may show that the Linux firewall is disabled or "managed by another program". This is expected as the RSM for Storage application is managing the firewall.

Log in to SAN devices

While the RSM for Storage application can limit the scope of access to your network, you must ensure that passwords and services running on your SAN devices are secure. DS3000 and DS4000 controllers have two levels of user login: Operator and Administrator.

The RSM for Storage system includes the Storage Manager CLI program (SMcli) which is used to access storage controllers. The default permissions for SMcli are that of an operator that can view settings and download logs, but cannot change the configuration or load new software. Access to the administrator commands require use of a password. It is recommended that you install this password and provide it to IBM Service when required to resolve a problem.

A lower level of access to the controller is the shell interface. The controller shell can be accessed from the RSM for Storage system with RLOGIN without a password (if the RLOGIN service is enabled for the controller). IBM Storage Manager has an option to disable RLOGIN and it is recommend that RLOGIN normally be disabled. IBM Service will contact you if shell access is required to resolve a problem.

The RSM for Storage application enables you to place other configured SAN devices in Service Access mode thereby allowing IP connections to them from the RSM for Storage system. You should ensure that proper user Ids and passwords are in place for these systems and provide them to IBM Service as required.

Appendix A. Troubleshooting

This appendix provides information for troubleshooting and resolving problems while working with RSM for Storage.

Hardware problems with the server

This section addresses problems with the server that the Remote Support Manager is running on. If you are having problems with the operation of the Remote Support Manager application see "Problems with operation of the Remote Support Manager" on page 56.

Remote Support Manager interactions with server problem determination

Because the Remote Support Manager application automatically controls an internal firewall, you should stop the Remote Support Manager before trouble shooting a possible hardware problem. You can also uninstall the Remote Support Manger application . Configuration files are not removed during an uninstall, and you can quickly re-install it after resolving the hardware problem without needing to re-configure it or perform the activation.

To stop the Remote Support Manager

Log in to the server as the "root" user Open a console window and type: `rsm-stop`. If there are events being processed, this may take while to complete. When the rsm-stop program completes, the system should now function as a normal workstation.

To re-start the Remote Support Manager

Log in to the server as the "root" user Open a console window and type: `rsm-start`.

General tips for troubleshooting problems with System x servers

IBM System x servers have front panel status indicators and often "Light Path Diagnostics" to identify failing components. If you do not have the documentation for your server, check the inside of the cover for an information label.

System x (xSeries) servers also have a system log that can accessed during POST by pressing the F1 key during the boot process.

Refer to the documentation that came with your System x server for more information. To place a service call for the System x server, call IBM Service and provide the IBM Machine Type and Serial number of the server.

IBM System x Service and Support may ask you to download and run a program called "Dynamic System Analysis". This program should operate normally provided that the Remote Support Manager has been stopped.

Problems with the external modem

- "Quick physical checks" on page 54
- "None of the indicators light" on page 54
- "Configuration test problems" on page 54
- "Verifying the Serial port is enabled in the BIOS" on page 55

Quick physical checks

1. Serial cable is connected to the modem and serial port #1 on the RSM for Storage system. If your server has more than one server port, port #1 is typically next to the keyboard connection.
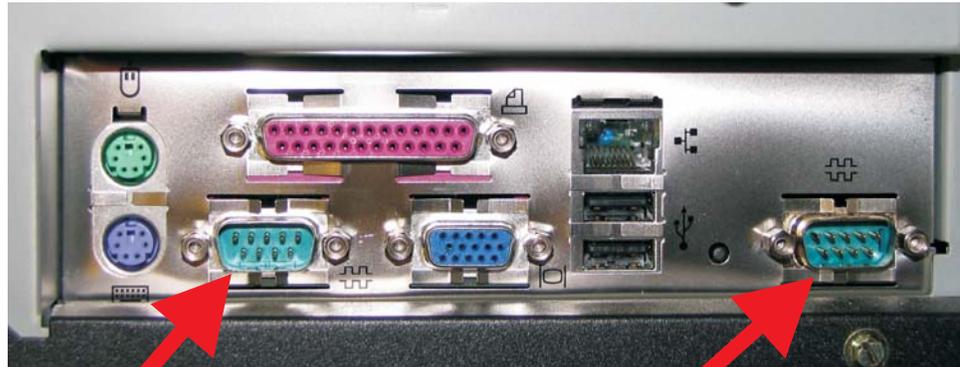
Serial Port #1 (to modem)   **Serial Port #2 (not used)**

2. Phone line:
   - Modem is connected to an analog phone line.
   - Phone cable is inserted in the LINE connector on the modem.
3. Modem powers on. See next section.

None of the indicators light

When you turn on the modem, the LED indicators on the front panel should flash briefly as the modem runs a self-test. If the LEDs remain off, the modem is probably not receiving power. Make sure the modem's power switch is on.

If your modem has a separate power supply, make sure the power supply is firmly connected to the modem and the power supply's power cord is firmly connected to both to the power supply and the wall outlet or power strip.

If your modem is on, try moving the power code to a different outlet. Test that the outlet is live by plugging another device, such as a lamp, into it.

The modem or power supply may be defective. If you have another, try swapping modems. If the problem goes away, the first modem or power supply might be defective. Call the modem manufacturer's technical support for assistance.

Configuration test problems

If the modem is not detected when the Configuration Test is run, the modem phone number on the ″Connections″ configuration page will be flagged with a double asterisk. The Activity Log will also contain an error message related to the modem.

If no problem is indicated, the system is able to communicate with the modem.

Possible causes of a configuration test error

1. The serial port is disabled in the BIOS (see procedure in the next section).
2. The serial cable is plugged into the wrong serial port (see previous section).

3. Try resetting your modem by turning it off and on.

4. If the modem is on, the cable is plugged into the correct port, the fault might be in the serial cable.

   - Make sure it is firmly connected at both ends.
   - If this the first time you have used the cable, it may be damaged.
   - Check the cable description on the packaging to make sure the cable is the right one for your computer.
   - If you are using a serial cable other than the one that came with the modem, make sure it is not a "Null Modem" cable.

5. The serial port might be defective.

6. The modem might have a problem beyond the scope of the user guide. If another modem is available , try swapping modems. If the problem goes away, have customer call Multi-Tech Technical Support for assistance (see the Multi-Tech documentation for contact information).

Verifying the Serial port is enabled in the BIOS

1. Press F1 when prompted after rebooting the server.

2. When the Setup menu appears, select Devices and I/O ports.

3. Verify that Serial Port A is not disabled.

   If it is, set it to auto configure or Port 3F8. Press Esc to return to the main menu.

4. Save the changes and exit Setup.

The modem will not answer

If the configuration Test passes, but the modem will not answer, make sure that Remote Access is enabled in the RSM for Storage application. This will enable the modem to answer when called.

Verify modem connectivity by calling the modem phone number from a voice phone. If there is no indication that a call is being received:

- Plug the phone cable into a voice phone and verify that a dial tone is present.
- If a dial tone is present, dial the number again and verify that the phone you just connected rings.
- Reconnect the phone cord to the modem connector labeled line #1.

Check the instructions that came with the modem and review any troubleshooting information.

The Phone Line Check fails

The Phone Line Check attempts to verify that an active phone line is connected to the modem. This check is run during the Configuration Test and daily after midnight local time. If the check fails to verify that an active phone line is present, an email is sent to the primary contact for the RSM system.

There is a configuration field on the RSM browser interface under **System Configuration -> Connections**. This field should be filled in with the shortest phone number required to dial the RSM modem from inside your company's phone system. The Phone Line Check will attempt to dial its own number and expect to receive a BUSY signal if the line is OK.

There may be some combinations of modems, regional phone companies or internal company phone systems where this check can not be performed accurately. If you know the phone line is working and keep getting Phone Line Check failures, the word DISABLE should be entered in the configuration field.

Problems with operation of the Remote Support Manager

Configuration problems and various other issues can occur during operation of RSM for Storage. The following sections provide details for troubleshooting these problems.

Configuration problems

Most configuration problems will be detected when the information is entered or when the **Test Configuration** option is selected. The Configuration Test will verify that all of the configured devices and the SMTP e-mail server can be reached via the Ethernet interface.

Correct any Configuration Incomplete errors and then Run the Configuration Test (on the System Configuration page).

If any problems are indicated, review the RSM for Storage Activity Log. To open the Activity Log, go to the RSM for Storage system desktop and click the Activity Log icon.

You can also open the Activity Log by selecting View Statistics and Logs from the Main Menu.

Other problems

The following section provides details for troubleshooting and resolving some of the miscellaneous issues that can occur during operation of RSM for Storage.

Icons for RSM for Storage on the desktop are missing or do not work

The most likely cause is that the Gnome desktop was selected instead of KDE during the installation of the Operating System.

1. Log out.
2. On the login screen for the desktop, click **Session**, if KDE is listed as a choice select it and log in as root.
3. If not, as the root user, use YaST to install the software for the KDE desktop.

4. Re-install the RSM for Storage software. (Your configuration files will not be affected).
5. Log in as "lservice", wait about 15 seconds for KDE to initialize the desktop, then open a console by clicking the shell icon.

   The desktop icons will be configured for RSM for Storage.
6. Log out, and then log in as "admin". Open a console window and the desktop icons will be configured for RSM for Storage.

Events for a subsystem are not reported by RSM for Storage

The RSM for Storage application relies on your existing IBM Storage Manager application to detect problems in your storage subsystem and report them to the RSM for Storage system as SNMP traps. To resolve this problem, do the following:

1. Verify that the IP address of the RSM for Storage system is correctly specified as a destination for SNMP traps in Storage manager. (See page32 in the installation section). Use the **Validate** button on the SNMP configuration window in Storage Manager to send a test trap to the RSM for Storage system. Receipt of the trap can be verified in the RSM for Storage Activity Log.
2. It is possible to configure IBM Storage Manager to report events for all subsystem or individual subsystems. It is also possible to reach the Configure Alerts dialogs from either the Task Assistant or from the Edit menu in the Enterprise Window. If alerts were configured starting from the Edit menu in the Enterprise Management window, then alerts may have been configured for the storage subsystem highlighted in the Enterprise Management window. Use the Task Assistant as described on page 32 in the installation section) to configure alerts for all subsystems.
3. If events are reported sometimes, but not at others, IBM Storage Manger's Event Monitor may not be running on the management station.

   The Event Monitor is an installation option for Storage Manager that monitors subsystems for problems when the Storage Manager client is not running. You must reinstall IBM Storage Manger to activate the Event Monitor.

   There is no special configuration for the Event Monitor. Configuring SNMP traps in the Storage Manager client also configures the Event Monitor.

RSM does not indicate a problem that appears in Storage Manager

Storage Manager may not be configured to send SNMP traps to the RSM for Storage system. There are two ways to enter the alert configuration menus in Storage Manager:

- If you select Configure Alerts from the Enterprise Management windows and have a subsystem highlighted, your configuration will apply only to that subsystem.
- If you start from the Task Assistant, you will be given the option of configuring alerts for All Storage Subsystems or an Individual Storage Subsystem.

Reporting for the subsystem may have been disabled in the RSM for Storage system.

The event may be one that the RSM for Storage system ignores because it is a problem that usually does not require a response by IBM Service.

Multiple e-mails about the same problem

Storage Manager can be configured to send e-mail notifications when a problem is detected. When RSM for Storage is installed, e-mail alerts in Storage Manager should be disabled.

To disable e-mail alerts in Storage Manager, do the following:

1. Select **Configure Alerts in Storage Manager's Task Assistant** and select **All Storage Subsystems**.

2. On the E-mail Tab, delete any configured e-mail destinations.

Email notifications from the RSM for Storage have a subject of "RSM for Storage..."

Email notifications from Storage Manager usually have a subject of "Critical Alert for..."

A problem detected by the RSM for Storage application, but no e-mail was sent and the status of the alert is "Queued"

The RSM for Storage system could not ping the SMTP server when it tried to send an alert to IBM Service. The alert to IBM is retried every five minutes. Customer notifications are not retired.

E-mail received that said the event was ignored and not sent to IBM Service

Some events that do not normally require a response by IBM Service are ignored by the RSM for Storage system. The customer is notified when this situation occurs. See Appendix C, "Filtered events," on page 65 for more information.

After an earlier problem was resolved, the RSM stopped sending alerts to IBM

The RSM for Storage system only sends a single alert to IBM for each problem. Reporting will not resume until all active alerts for a subsystem are closed.

Note: The daily status e-mail will include this information.

I/O error message in IBM Storage Manager when trying to validate SNMP trap configuration

If you have an internal firewall installed on the management station running Storage Manager, make sure it allows access to the RSM for Storage system.

Log files are not sent to IBM

Log files sent to IBM with each alert are in ZIP format. Some e-mail servers may have filters that block attachment of the ZIP file to the outbound email. Check your e-mail server configuration to see if this can be changed to allow ZIP files from the RSM for Storage system.

An alternative solution is to have the RSM for Storage system send e-mails directly. See "E-mail Transport Options" on page 45.

Appendix B. Planning worksheets

The installation and configuration of RSM for Storage requires a variety of information about network setup, contacts, and connections. The worksheets provided in this appendix will help you gather this information so that you can successfully install and configure RSM for Storage.

Worksheet #1: Network setup information for the RSM for Storage server

This information will be used during the installation of the Linux OS. (Check with your network administrator to obtain this information)

Hostname for the server   _____ (ibmrsm is suggested)

Your company's Domain Name _____

It is recommend that you use static IP addresses for all network resources and management systems.
The server that the RSM for Storage application is installed on must have a static IP address.

IP address to be assigned to the server ____.____.____. ____

Subnet Mask for the server: ____._____._____.____

Gateway IP address: ____._____._____.____

If a second Ethernet connection is required to reach the Internet and your SMTP server:

Subnet Mask for the second   ____._____._____.____

IP address of your Domain Name Server   ____._____._____.____

Worksheet #2: Company information

Company Name _____

Address #1   _____

Address #2   _____

Worksheet #3: Connection information for the RSM for Storage system

This information will be used to configure connections to the RSM for Storage system.

IP address of your company's e-mail (SMTP) server _____

Location of the server _____   (building, floor, city, state)

Country or region server is in _____

Phone number of the modem _____

Internal number to dial the RSM modem _____
This field should be filled in with the shortest phone number required to dial the RSM modem from inside your company's phone system.

Worksheet #4: Contact people

Contact person for RSM for Storage

This is the person that will receive status e-mail from the Remote Support Manager and will be the default contact for subsystems monitored by the Remote Support Manager:

Name _____

E-mail address _____

Primary phone number _____

Hours to call primary number _____

Alternate phone number _____

Hours to call alternate number _____

Time zone _____

Other contact people may be configured and associated with specific storage subsystems. These contacts will only receive e-mail directly related to those storage subsystems. This is useful if a single Remote Support Manager installation is monitoring subsystem in different locations.

Note: You can configure up to 20 contact people in the RSM for Storage product.

Contact #__

Name _____

E-mail address _____

Primary phone number _____

Hours to call primary number _____

Alternate phone number _____

Hours to call alternate number _____

Time zone _____

Contact #__

Name _____

E-mail address _____

Primary phone number _____

Hours to call primary number _____

Alternate phone number _____

Hours to call alternate number _____

Time zone _____

Contact #__

Name _____

E-mail address _____

Primary phone number _____

Hours to call primary number _____

Alternate phone number _____

Hours to call alternate number _____

Time zone _____

Worksheet #5: Information for each Storage Subsystem to be monitored

Storage subsystem #__

Storage subsystem name _____

IP address of controller #1 _____

IP address of controller #2 _____ (if present)

Location of subsystem _____ (building, floor, city, state)

Country subsystem is in. _____

Contact Person for this subsystem _____

IBM Machine Type and model _____ (8 characters: TTTT-MMM)

IBM Serial Number _____ (7 characters)

Storage subsystem #__

Storage subsystem name _____

IP address of controller #1 _____

IP address of controller #2 _____ (if present)

Location of subsystem _____ (building, floor, city, state)

Country subsystem is in. _____

Contact Person for this subsystem _____

IBM Machine Type and model _____ (8 characters: TTTT-MMM)

IBM Serial Number _____ (7 characters)

Storage subsystem #__

Storage subsystem name _____

IP address of controller #1 _____

IP address of controller #2 _____ (if present)

Location of subsystem _____ (building, floor, city, state)

Country subsystem is in. _____

Contact Person for this subsystem _____

IBM Machine Type and model _____ (8 characters: TTTT-MMM)

IBM Serial Number _____ (7 characters)

Worksheet #6: Information for other SAN devices to be accessible from the RSM for Storage system

Gather the following information for the SAN devices to be accessible from the RSM for Storage system.

Note: You can configure up to 10 SAN devices.

 # __

Name _____

IP Address _____

#__

Name _____

IP Address _____

#__

Name _____

IP Address _____

#__

Name _____

IP Address _____

#__

Name _____

IP Address _____

Appendix C. Filtered events

The following events are not reported to IBM Service. However, you will receive an e-mail from the RSM for Storage system when these events occur.

Table 3. Filtered events

Event code	Event text
6200	FlashCopy® repository logical drive capacity - threshold.
6202	FlashCopy logical drive failed.
none	The persistent monitor running on Host xxxxxxx cannot reach the indicated Storage Subsystem.
none	The persistent monitor running on Host xxxxxxx can now reach the indicated Storage Subsystem.
4011	Logical Drive not on preferred path due to ADT/RDAC.

Appendix D. Customizing the firewall

The file /etc/rsm/rsm-firewall.conf provides a way to allow access to specific IP addresses from the RSM for Storage system.

IP addresses listed in this file, will always be accessible to all local and remote users of the RSM for Storage system. Include one address on each line of the file as shown below:

```
ADDRESS ip_address
```

OR

```
ADDRESS ip_address/netmask
```

After changing the rsm-firewall.conf file, you need to stop and restart the RSM for Storage application. Enter `rsm-stop` followed by `rsm-start`.

Note: Any active alerts will be lost when the RSM-stop command is run, so this update should be performed when there are no active alerts.

A second firewall configuration file is used to list IP addresses for IBM's external Web and FTP sites. This file is contained in the /etc/rsm directory and is named rsm-firewall-ibm.conf. Files in this directory cannot be modified by the Local Service user or the remote IBM user.

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Planning, Installation and User's Guide

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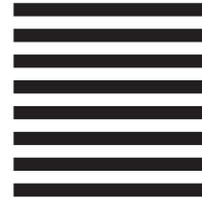
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