# Sun HighGround™ Storage Resource Manager for Exchange Servers

Case Study

Version 4.0.3

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Part No. 816-2260-10
September 2001, Revision A

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# Preface

This guide has been developed as a reference tool for Sun HighGround™ Storage Resource Manager for Exchange Servers (Sun HighGround SRM for Exchange Servers) users who have already installed the product and are interested in customizing the product to meet the needs of their environment.

## Before You Read This Guide

Before you read this guide, you should install Sun HighGround SRM for Exchange Servers. For information on installing HighGround SRM for Exchange Servers, see the *Sun HighGround™ SRM and Sun HighGround™ SRM for Exchange Servers Configuration and Installation Guide*. For information on using the Sun HighGround SRM for Exchange Servers software, see the Sun HighGround SRM for Exchange Servers Help.

## How This Guide Is Organized

This guide is organized as follows:

- Chapter 1 is a documentation roadmap that provides a list of related Sun HighGround SRM for Exchange Servers reference documents.
- Chapter 2 presents key Sun HighGround SRM for Exchange Servers concepts that you must understand before reading the rest of the guide.
- Chapter 3 introduces a Sun HighGround SRM for Exchange Servers case study that demonstrates how the product has been implemented in a typical environment.

- Chapters 4-9 provide examples of how Sun HighGround SRM for Exchange Servers is being used in the case study to solve distributed storage resource management problems and proactively manage storage resources.

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**Note –** This is not an installation guide. For installation instructions, see the *Sun HighGround™ SRM and Sun HighGround™ SRM for Exchange Servers Configuration and Installation Guide.*

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# Related Documentation

| To learn about: | See: | Located: |
|---|---|---|
| Late-breaking information about Sun HighGround SRM | *Sun HighGround™ SRM Release Notes* | Sun HighGround SRM CD-ROM |
| Screen-by-screen installation help | Sun HighGround SRM Installation Help | Help button on each dialog box in the installation |
| Page-specific descriptions of the product, including product usage, security, and troubleshooting tips | Sun HighGround SRM for Exchange Servers Online Help | **Help for this page** button in user interface. To access the entire help file, click on the Contents button in the Help window. |

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CHAPTER 1

# Documentation Roadmap

A wide variety of electronic and printed documentation is available for Sun HighGround™ Storage Resource Manager for Exchange Servers (SRM for Exchange Servers). The following tables show where to find the information you need.

## Implementers

| To learn about: | See this: | Located here: |
|---|---|---|
| Installation prerequisites and SQL configuration guidelines | *Sun HighGround™ SRM and Sun HighGround™ SRM for Exchange Servers Configuration and Installation Guide* | Provided with Sun HighGround SRM for Exchange Servers |
| Screen-by-screen online help for Sun HighGround SRM for Exchange Servers Server and Agent installation | Installation Help | Sun HighGround SRM CD-ROM |

# End Users

| To learn about: | See this: | Located here: |
|---|---|---|
| Functional overviews of each product<br>“How do I?”<br>Report descriptions<br>Page-specific help | Sun HighGround SRM for Exchange Servers Help | **Help** button on Sun HighGround SRM for Exchange Servers web.<br><br>**Help on this page** button throughout Sun HighGround SRM for Exchange Servers |

# Everyone

| To learn about: | See this: | Located here: |
|---|---|---|
| Technical troubleshooting tips and tricks | Knowledge Base | http://www.highground.com/ |
| Prepurchase information | FAQ | http://www.sun.com/storage/software |

CHAPTER 2

# Introduction

Read this guide to become familiar with the basic concepts of Sun HighGround SRM for Exchange Servers. Using a case study, this guide describes how a company has solved some of its business problems by implementing Sun HighGround SRM for Exchange Servers and fully leveraging its rich feature set.

This guide assumes:

- You have successfully installed Sun HighGround SRM for Exchange Servers and at least one Sun HighGround SRM for Exchange Servers Agent.
- Sun HighGround SRM for Exchange Servers has started to collect data.
- You have started Sun HighGround SRM for Exchange Servers and have viewed some of its reports.
- You are using Sun HighGround SRM for Exchange Servers's main page (the web page) as a starting point for your work.

## Architectural Overview

Sun HighGround SRM for Exchange Servers is an Intranet web site that is based on a flexible, efficient architecture designed to grow as your Microsoft Exchange organization grows. Sun HighGround SRM for Exchange Servers is designed from the ground up using industry standards, and puts to practical use many of Microsoft's Intranet tools and technologies.

Sun HighGround SRM for Exchange Servers is made up of the following components:

| Component | Description |
|---|---|
| Management Database | Central repository based on Microsoft SQL Server® that stores information collected by Sun HighGround SRM Agents. |
| Management Server | Service that runs on Windows NT 4.0 Server, Microsoft Internet Information Server 4.0®, or Windows 2000 that manages communication between the Management Database and the Sun HighGround SRM for Exchange Servers Agents. The Management Server also performs database management. |
| Agent | Service that runs on any Microsoft Exchange Server. The Agent runs on behalf of the Management Server, and gathers server, file system, mailbox, public folder, and message information from the system on which it is installed. |
| Web | Collection of Active Server Pages, HTML and DHTML pages, and JavaScript that enables you to monitor your Microsoft Exchange activity and storage from any web browser. |

The following terms are used throughout this document:

- NAS (Network Attached Storage) – These file servers connect to the network.
- SAN (Storage Area Network) – These Fibre Channel switches connect the network to storage devices.
- DAS (Dual Attached Stations) – These devices are part of the Fibre Distributed Data Interface, offering access to the LAN
- Sun HighGround SRM for Exchange Servers architecture is efficient and results in minimal network impact because the Agent is based on nonintrusive DCOM technology. The Agents "wake up" and execute scans according to schedules that you determine, so no unnecessary polling takes place. Viewing Sun HighGround SRM for Exchange Servers's web pages consumes little network bandwidth; it's just like viewing any other intranet web site. Network traffic is kept to a minimum because most of the data processing is performed by the Sun HighGround SRM for Exchange Servers Agent, which then sends the status data back to the Sun HighGround SRM Server. When not scanning, agents do not use any server resources.

# Key Concepts

Before beginning the Sun HighGround SRM for Exchange Servers case study, it is important that you become familiar with the following key Sun HighGround SRM for Exchange Servers concepts:

- Policies
- Capacity management
- Capacity planning
- Consumption management
- Backup process management
- Grouping resources
- Scanning
- Security
- Configuring reports

## Policies

Sun HighGround SRM for Exchange Servers allows you to set policies for storage, capacity and consumption management. Specific policies include the following:

| Policy | Purpose |
|---|---|
| Mailbox quota | Sets limits for mailbox size, number of messages in a mailbox, single message size within each mailbox, and space consumed by end-users and groups. |
| Spike detection | Defines the rate at which you expect your Exchange database files to grow, for example, 24 MB per hour. Sun HighGround SRM for Exchange Servers notifies you when your growth rate exceeds this expected rate. For example, if one hundred people are in a distribution list of an e-mail message, and more than one person replies to **all**, an e-mail storm could occur. Sun HighGround SRM for Exchange Servers can detect when e-mail storms occur and send alerts to notify you. |
| File system capacity | Sets alerts for when the free space partitions containing Exchange database files drops below a specified level. |
| Message aging | Defines the age of messages that display in mailboxes and public folder reports. |

| Policy | Purpose |
|---|---|
| Backup status | Defines your expectations for the efficiency and timing of the Exchange Server backup process. For example, backups should occur every night; if this does not happen, Sun HighGround SRM for Exchange Servers notifies you. |
| Public folders | Sets limits for public folder size, single message size within each public folder, and space consumed by public folders. |
| Server availability | Sets alerts for when a new Exchange Server is found, and for when an existing server is missing. |

## Capacity Management

You can use Sun HighGround SRM for Exchange Servers reports to discover how much Exchange Server space is available to your company, identify excesses and shortages, and avoid the risk of running out of space.

You set policies to manage the free space on the Exchange Servers. For example, you can define spike detection and file system capacity alerts to notify the system administrator when a server is in danger of running out of space.

**Note –** To ensure that no unnecessary scanning takes place, Sun HighGround SRM for Exchange Servers scans only those file systems containing information specific to Exchange, for example EDB files and log files.

See Chapter 4 for details.

## Capacity Planning

Once you have analyzed the state of your Exchange Servers, you need to forecast your future storage needs. Sun HighGround SRM for Exchange Servers saves information about your servers and displays historical disk-space consumption trends in line graphs. Use information about this prior consumption to predict future needs, for example when a server will run out of space, which server is in need of additional capacity, the capacity required for mailboxes of new employees, or how much space a department needs for a round of hiring.

See Chapter 7 for details.

## Consumption Management

Sun HighGround SRM for Exchange Servers provides key reports and policies to monitor and control how critical Exchange storage resources are consumed. For example, Sun HighGround SRM for Exchange Servers allows you to identify the mailboxes and public folders consuming the most space on the Exchange Servers. Also, Sun HighGround SRM for Exchange Servers allows you to identify the largest messages along with their attachments within these mailboxes and public folders. For instance, the owners of the largest mailboxes might be employees in Customer Support, who would naturally have a large number of messages; an employee in a different department might be expected to consume less mailbox and public folder space. These messages that employees in Customer Support are receiving may also have numerous Word attachments associated with each message, ultimately increasing the size of the Exchange Server's Information Stores. If a mailbox is exceptionally large, Sun HighGround SRM for Exchange Servers's mailbox drill down reports allow you to determine how and why so much space is used, for example, large attachments associated with messages.

Once you have analyzed disk-space consumption patterns and excesses, Sun HighGround SRM for Exchange Servers allows you to reclaim disk space highlighted as stale and unused resources, and design policies to manage and educate users about how they consume space on the Exchange Servers. Your methods can vary from notifying the users when their saved messages are older than two years, to disabling the ability to send and receive mail because a user allowed a mailbox to grow too large.

A final option for consumption management is the ability to group users in mailbox groups and perform cost accounting and chargeback for a group's messaging storage resource consumption.

See Chapter 5 for details.

## Backup Process Management

The mailboxes and public folders on your Exchange Servers must be backed up properly. Sun HighGround SRM for Exchange Servers provides comprehensive reports and alerts to manage the efficiency of your backup processes.

For example, if your backups are scheduled to take place between 3 and 5 A.M., and employees arriving at 7 A.M. regularly experience e-mail down-time because the backups are still running, then you need information about why this is happening. Sun HighGround SRM for Exchange Servers reports on backup duration and status, and can be configured to send you alert notification when a backup takes too long to complete.

See Chapter 6 for details.

## Activity Analysis

To determine how much traffic is passing through your Exchange Servers and to determine which servers are the most and least busy, use Sun HighGround SRM for Exchange Servers's Activity Advisors.

See Chapter 8 for details.

## Grouping Resources – Mailboxes and Servers

With Sun HighGround SRM for Exchange Servers you have multiple options for grouping mailboxes and servers. Use mailbox groups to manage user quotas, user space consumption, departmental chargeback, and to analyze activity levels of groups. Use server groups to optimize performance and scan times.

See the section, "Grouping Resources - Mailboxes and Servers," for details.

## Scanning — Automatic Data Collection

Sun HighGround SRM for Exchange Servers scans the Exchange Server's disks, partitions and information stores. The information is then stored in the database and used by the Sun HighGround SRM for Exchange Servers server. Each scan can be scheduled or done on demand (**Scan Now**). All reports are updated automatically after each scan.

Sun HighGround SRM for Exchange Servers performs the following scans:

| Quick Scan | Detailed Scan |
|---|---|
| • Runs every 15 minutes (by default; you can change this to suit your needs)<br>• Checks for activity analysis, for example, spike conditions<br>• Performs server activity analysis<br>• Checks event log for backup analysis<br>• Performs capacity analysis, for example, file system space information | • Runs once a day during off hours (by default; you can change this to suit you needs)<br>• Searches the information stores for details on messages, mailboxes, and public folders<br>• Quota, user, and group information |

## When Servers and Mailboxes Appear in Reports

Sun HighGround SRM for Exchange Servers detects new resources during scans. If you have installed at least one Sun HighGround SRM for Exchange Servers Agent, and you add a new Exchange Server to your organization, it appears in Sun HighGround SRM for Exchange Servers reports as an unmanaged resource. Any mailboxes on the new server display in reports only after you install a Sun HighGround SRM for Exchange Servers Agent on that server, and a scan completes.

## Security

Your user account's security settings determine your ability to view and set options in Sun HighGround SRM for Exchange Servers. Sun HighGround SRM for Exchange Servers uses a local Windows NT security group, **SRMAdmin** — created when Sun HighGround SRM for Exchange Servers is installed — to view reports and make changes to Configuration and Policy pages. Membership in **SRMAdmin** is based on Windows NT userid and password, and is controlled by you.

Members of the SRMAdmin security group have access to all Sun HighGround SRM for Exchange Servers reports and configuration. Members within the SRMLive DrillDown security group can access message information and delete messages from the Information Store. Users without proper privileges cannot use the Sun HighGround SRM for Exchange Servers interface except for over-quota users, who are granted privileges to view the over-quota notifications and the report on their own mailboxes. See the *Sun HighGround™ SRM and Sun HighGround™ SRM for Exchange Servers Configuration and Installation Guide* for more information on security groups.

## Configuring Reports

The Report Size page lets you specify how many of the following object types are included in Sun HighGround SRM for Exchange Servers reports (values shown are defaults).

CHAPTER 3

# ABC Industries and Microsoft Exchange

This chapter illustrates how ABC Industries uses Sun HighGround SRM for Exchange Servers to solve some common storage problems.

**Note –** All solutions in this document are stated in general terms. For detailed "How To" information, see the Sun HighGround SRM for Exchange Servers Help.

## Company Overview

ABC Industries corporate headquarters are in Massachusetts. It has sales and production sites across North and Central America, Europe and Africa. Each office is configured as an Exchange Site within the Exchange Organization. The company's Exchange infrastructure looks like this:

- Corporate headquarters -- 30 Exchange Servers and growing
- 6 Regional offices -- 2 Exchange Servers each
- 20 Branch offices -- 1 Exchange Server each
- **Summary:** 62 Exchange Servers within 27 locations.

ABC Industries has installed Sun HighGround SRM for Exchange Servers Agents on each Exchange Server. Remote sites are managed from the corporate headquarters by the director of IT, Janet, and the senior system administrator, Andy.

# Problems to be Solved

Before implementing Sun HighGround SRM for Exchange Servers, the IT department faced the following Exchange management issues:

| Issue | Description | Impact |
|---|---|---|
| Space-related crashes | A server in a remote office ran out of space and crashed, which corrupted the Exchange database. E-mail in and out of that office was down for three days before the problem was identified and corrected. | Lost revenue and productivity from downtime. |
| Total capacity guesswork | There was no way to determine how much server space was available or had been used across the entire organization. Also, there was no way to identify which Exchange Servers were over- or under-utilized. In fact, the Exchange infrastructure topology was so difficult to map that it was largely ignored. | Time-intensive manual processes take away from other activities. |
| Difficulty reclaiming disk space | If a server was found to be in danger of running out of space, Andy had to send general e-mails asking people to delete unnecessary messages. Individual users might save excessive numbers of old or large messages, but there was no way to identify who had the largest messages, mailboxes, or public folders. | Wasted space, decreased return on investment (ROI) on the Exchange Server. |
| Purchasing mistakes | Last year, Janet ordered 12 new Exchange Servers to cover the company's messaging needs for the coming year. She wished she could have taken advantage of dropping hardware prices by purchasing only a few servers per quarter, but she had no way to predict the growth of mailboxes and public folders. | Spending money by blindly adding disk space. |

| Issue | Description | Impact |
|---|---|---|
| Backup duration, status, and efficiency | Servers were backed up every night, but each server had to be manually checked in the morning to see if the backup had completed successfully. The only way they knew if a backup was still running when business hours began was if they got a phone call from users who could not access their mail. | Lost revenue from downtime. One day the backup process failed, and Andy didn't know about it until four days later, when the server crashed. He had to restore from an old backup tape and lost 4 days of e-mail activity, including e-business transactions. |
| Enforcing quotas | Individual mailboxes were getting out of control and consuming too much disk space. Management tried to enforce end-user quotas based on space consumed by mailboxes. However, the end result was a flood of calls to the Help Desk, as users who exceeded their quota lost their send and receive capabilities. This was a frustrating situation for all resulting in downtime and lost revenues. Andy's easy but ineffective solution was to raise the quotas of all users. ABC Industries really needed a way to enforce quotas without raising the number of calls to the Help Desk. | Increase in Help Desk staff fielding customer calls. |
| Hold Groups Accountable for Exchange Disk Space Usage | When Janet needed approval to purchase additional Exchange Servers, the CFO would ask for more supporting information to back up her estimates. This would have been easy if she could have held groups accountable and performed chargebacks for actual disk space used; however, there was no easy way to collect data on disk usage by group. She had Andy calculate the information manually on a spreadsheet, but it was a misuse of her staff resources. | Misuse of IS resources from manually calculating user disk consumption. |

# Company Goals

The ABC Industries IT department has the following goals for managing the company's Exchange Servers:

| Objective | Sun HighGround SRM for Exchange Servers Solution |
|---|---|
| The IT department wants to:<br>Ensure that every server has enough free space to stay up and running.<br>Measure the total current storage capacity of servers across the organization.<br>Identify and delete mailboxes owned by former employees.<br>Identify the servers and partitions most at risk of running out of space.<br>Discover disk space consumption trends to plan and justify future Exchange Server purchases. | **Capacity Management** – Sun HighGround SRM for Exchange Servers identifies how much space is used on all Exchange Servers in all locations through one centralized view.<br>**Capacity Planning** – Sun HighGround SRM for Exchange Servers helps determine how much space the IT department will need to budget in the coming 8-12 months.<br>**Consumption Management –** Sun HighGround SRM for Exchange Servers allows you to enforce quotas and policies for end-users and groups, plus answers the question, “How do users consume space on the Exchange Servers?” |
| The IT department wants to:<br>Ensure that the busiest servers are the most robust.<br>Identify bottlenecks.<br>Balance existing and future traffic among all Exchange Servers.<br>Track historical activity levels.<br>Add new employee mailboxes to servers that can handle the load. | **Activity Analysis** – Sun HighGround SRM for Exchange Servers identifies the nature of all Exchange Server traffic. |

| Objective | Sun HighGround SRM for Exchange Servers Solution |
|---|---|
| The IT department wants to:<br>Define companywide policies for backing up the Exchange Servers.<br>Avoid exceeding the backup window.<br>Ensure that every message in the company's Exchange environment is consistently backed up and recoverable.<br>Predict growth in backup window.<br>Avoid the time-intensive process of manually checking backup success. | **Backup Process Management** – Sun HighGround SRM for Exchange Servers determines the amount of time a backup takes and how successful it was. |
| The IT department wants to report mailbox and public folder space consumption by departmental group to allow charging departments based on their actual consumption of disk space. | **Cost Accounting & Chargeback –** Sun HighGround SRM for Exchange Servers helps you determine consumption by department, and take action as needed. |
| The IT department wants to manage the messaging infrastructure with maximum efficiency. | **Sun HighGround SRM for Exchange Servers** – Sun HighGround SRM for Exchange Servers's automated report, alert, and policy enforcement capabilities reduce hands-on management and increase efficiency. |

# Stages of Implementation

When Janet and Andy first implemented Sun HighGround SRM for Exchange Servers, they proceeded in the following stages to improve their Exchange usage within the organization:

| Stage | Description |
|---|---|
| Identify Areas of Risk | They first had to answer the question, "Where am I at risk?" This might include hardware capacity and levels and rates of disk space usage. |

| Stage | Description |
|---|---|
| Gain Control | Once they established the state of their current Exchange resources, the IT department needed to take steps to avert server overload. These steps might include balancing the traffic and storage needs across the organization, and reigning in excessive users. |
| Plan Ahead | After getting their Exchange Servers into a safe zone, they needed to make estimates for future management. This involved trending analysis and capacity planning. |
| Establish Policies | At this point, the IT department knew how much Exchange Server space they had available, and how much they would require in the coming year. The final implementation stage involved setting user expectations for mailbox use. At ABC Industries this included making sure that users understood limits for the size of a mailbox, the size of a message, the length of time a message could be saved, and also that they would elicit a restriction on their mailbox use if they abused the company policy. |

CHAPTER 4

# Capacity Management

To begin the Exchange capacity management project, the IT department uses Sun HighGround SRM for Exchange Servers to achieve the following key objectives:

| Objective | Solution |
|---|---|
| Locate and identify the servers and file systems most at risk of running out of space | Server Capacity Planning advisors provide information about servers, by group, including free space and percent used. |
| Measure the total storage capacity of servers across the organization | Total Exchange Capacity reports identify the largest messages, mailboxes, and public folders, and provide information about how space is consumed. |

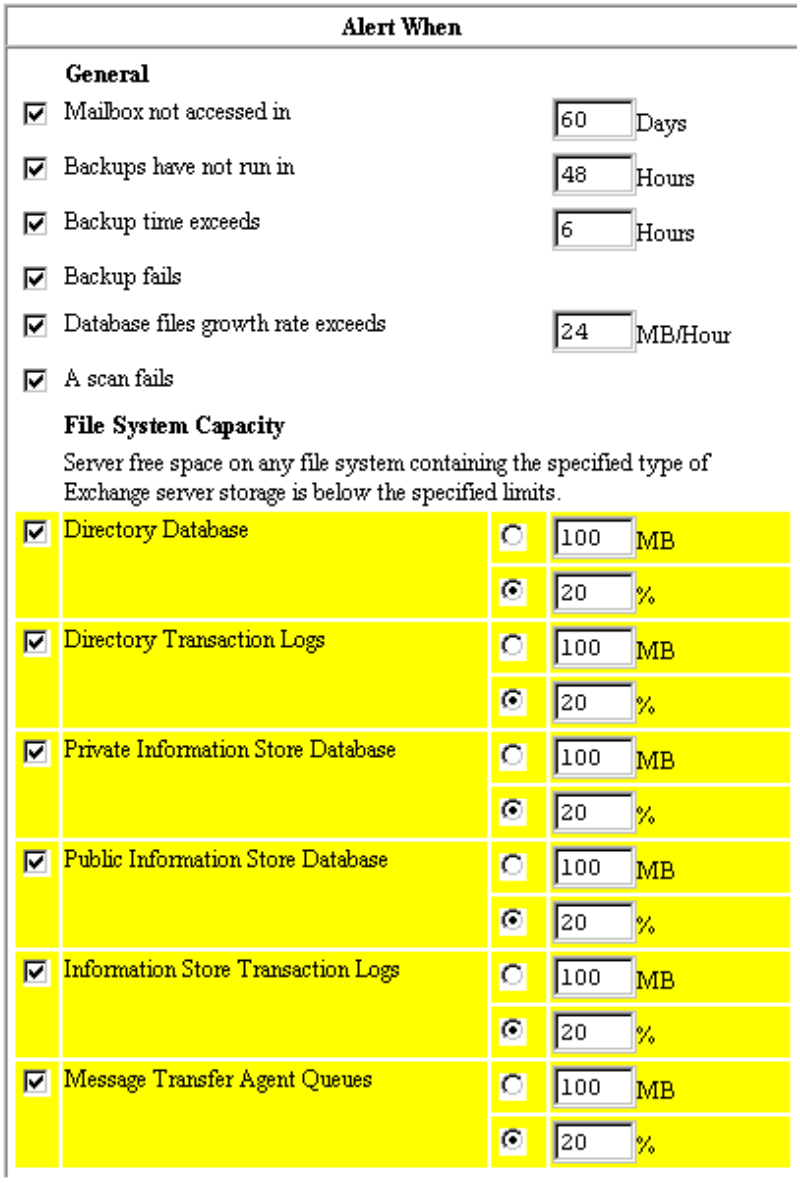
## Identifying Servers at Risk of Running Out of Space

The IT department has been tasked with proactively avoiding costly downtime by eliminating every “out of disk space” related crash. Before they used Sun HighGround SRM for Exchange Servers, Janet and Andy had to address this issue one server at a time, by manually checking the file system space used.

Janet used Sun HighGround SRM for Exchange Servers’s ADVISORS: Capacity Planning for Group <server group name> page to determine which servers had the least or the most free space.

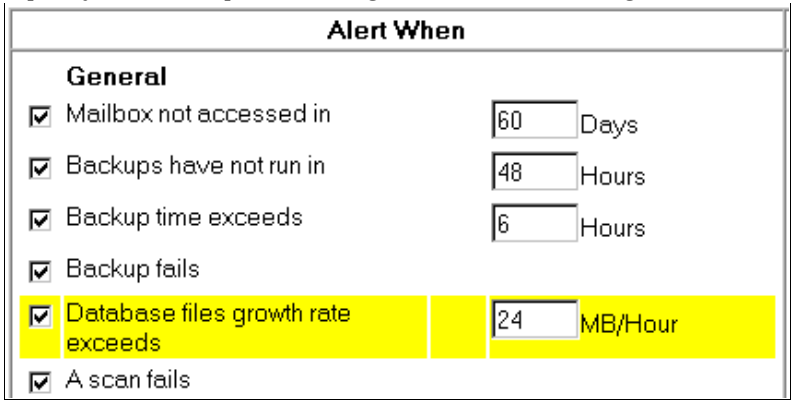
When she accessed this report for the first server group, she saw that two servers contained partitions running at 83% used capacity, while four others were operating at only 21%.

Janet used this information to transfer data between the servers as a load-balancing action. After that, she designed the policy shown in the following graphic for managing server free space.




Janet is now alerted if free space falls below 20%. This is critical for partitions containing the dynamic Public and Private Information Store databases.

In addition, to avoid a sudden out-of-space condition she designed the following policy to detect spikes in the growth rate of Exchange database files:




If this growth rate is exceeded, a Sun HighGround SRM quick scan detects it and Janet is alerted so that she can research the cause of the spike in e-mail activity and avoid costly downtime.

# Measuring Server Capacity Across the Organization

The REPORTS: Summary for <organization> page provides key information about the Exchange Servers in the organization, including the number of sites, the number of managed and unmanaged servers, and summary information about each server's assets, mailboxes and public folders. Andy had never before had access to this type of centralized view of information for all his distributed Exchange Servers.

Andy used the following steps to configure this page:

He installed Sun HighGround SRM for Exchange Servers Agents on all the Exchange Servers in the organization.

He created server groups based on server location via the CONFIGURATION: Properties for New Server Group page.

He used the CONFIGURATION: Membership for <group name> page to populate those groups, keeping in mind that some servers are grouped to solve other business problems.

CHAPTER 5

# Consumption Management

In the past two years, e-mail use has increased enormously at ABC Industries. The IT budget has been overrun and extended repeatedly to cover storage and management costs, but two underlying problems consistently undercut their every effort:

- Everyone has a mailbox, and the common practice is to save every message forever. Default folders like Sent Items balloon to, in some cases, 50 MB. Employees use e-mail for almost all communication, business and personal. Messages are regularly sent, with attached uncompressed files, to long address lists.
- Perhaps most insidious is the use of public folders as a virtual file server. Users dump messages into public folders without a thought about maintaining them. This compounds the disk consumption problem, because this message space is difficult to attribute to a single user. Quota enforcement is very difficult in this situation.

## Objectives and Solutions

The ABC Industries CFO gave the IT department the task of reducing costs by controlling:

- The disk space consumption on Exchange Servers
- The time required to manage disk space usage.

Janet and Andy drafted a list of objectives, and mapped their needs to Sun HighGround SRM for Exchange Servers features and functions.

| Objective | Solution |
|---|---|
| Identify primary causes of server space consumption. | Use Consumption Management advisors to identify which mailboxes and public folders are consuming too much space on the Exchange Servers. See the section, "Discovering Resource Consumption." |
| Manage users according to their functional area or department. | Populate mailbox groups to reflect the corporate infrastructure. See the section, "Grouping Resources." |
| Set reasonable and fairly enforced quotas for mailbox size. | Set a graduated quota policy that identifies users who are near their quota limit as well as those who exceed it. See the section, "Determining and Setting Mailbox Quotas." |
| Reduce and reclaim disk space usage in part by identifying and deleting mailboxes owned by users who are no longer employees of ABC Industries. | Use the server reports, Most idle mailboxes/public folders to identify unused mailboxes and public folders for proactive handling. See the section, "Reclaiming Disk Space." |

# Overview: What is Consumption Management?

Managing user consumption of disk space involves the following activities:

| Activity | Description |
|---|---|
| Understanding trends | By observing current mailbox and message sizes, along with changes over time, Janet and Andy discovered trends in mailbox and public folder growth along with general usage patterns by different groups. |
| Grouping resources | By placing mailboxes into groups, the IT department can manage users according to their department, functional area, or geographical location. |
| Setting policies | A key component of achieving these objectives is the implementation of a comprehensive set of policies, including quota management, to address the rampant consumption of disk space by end-users. |
| Defining quotas | To maintain communication with employees across the organization, Janet defined a graduated quota for mailbox space. She set three thresholds in the mailbox policy: an initial size under which all users could operate without notice, and two additional size limits including a maximum size for the mailbox. |

| Activity | Description |
|---|---|
| Defining alerts | At ABC Industries, Sun HighGround SRM for Exchange Servers has been configured to automatically send a customizable e-mail notification when a user exceeds the first threshold. Additional alerts notify users of approaching or imposed policy enforcement. |
| Enforcing policies | Sun HighGround SRM for Exchange Servers empowers Janet and Andy to enforce quota limits. Janet decided that users who exceeded the second threshold would lose sending privileges. |
| Educating Users | Most employees at ABC Industries do not understand the impact of their e-mail usage. Setting corporate policies helps employees learn to manage the size of their mailboxes and, for those who use them, public folders. |

Some users are responsible for larger amounts of storage consumption than others. With Sun HighGround SRM for Exchange Servers you can identify the most active users who are consuming the most mailbox and public folder space on the Exchange Servers. For instance, someone in Customer Support would naturally have a large number of messages, but an employee in a different department might be expected to consume less mailbox and public folder space.

Once you have analyzed e-mail consumption trends, Sun HighGround SRM for Exchange Servers allows you to design policies to manage and educate users about how they consume space on the Exchange Servers.

# Discovering Resource Consumption

To identify which users were consuming too much space on the Exchange Servers, Andy accessed the Consumption Management advisor and sorted the mailboxes by message space.

Andy also used the All Users report and sorted it by total space consumed to find the user whose mailbox was taking up the most space.

The largest mailbox, 165 MB, belonged to Tim Aitken, a senior Support engineer. Using the drilldown functionality of Sun HighGround SRM for Exchange Servers's mailbox reports, Andy accessed information about the largest folders (in this case, Inbox) and oldest messages (2 years old).

From the Largest messages in all mailboxes report, Andy found that Jim Pownell, a long-time salesman for ABC Industries, had 20 MB of messages in his mailbox, many containing at least three Word attachments each. Jim also had very large messages in his mailbox with non work-related attachments. One message in particular had a file named- snowman.avi- that was 10 MB in size. Andy informed Jim of the problem and warned Jim that these messages would be deleted unless requested otherwise. Within two days the old messages had been deleted or moved.

# Grouping Resources – Mailboxes and Servers

With Sun HighGround SRM for Exchange Servers, you can create logical groupings for mailboxes. All mailboxes belonging to a particular group inherit the properties of that group. When based on cost centers, mailbox groups also enable the ability to issue group-based cost accounting or chargeback reports.

Mailbox groups, based on Windows NT security groups, Exchange Servers, sites or groups of servers, provide a management method reflective of your departmental structures. If you have a particular group of users who require more mailbox space, for example, Customer Support, you can account for this by placing those mailboxes in a single group and granting them higher quotas.

You can also place servers into groups. For example, if your company has remote offices, you can manage each office's servers in separate groups.

## Grouping Resources by Department

At the most basic level, you can group resources vertically, that is, by department. ABC Industries has a standard corporate infrastructure, generally presented as a tree in which group leaders in laterally positioned departments report to VPs, who in turn report to the CEO.

This grouping has some obvious benefits. For example, grouping all Support personnel together allows Andy to assign them a higher quota level. Additionally, Janet can identify the messaging storage expenditures of each department in the company. Now she can account for storage costs and even charge departments for their resource consumption and save money in the IT budget.

## Lateral Grouping

When a company like ABC Industries, which places emphasis on executive privileges, formulates policies, there is usually a separate standard for upper and middle management. Lateral grouping accounts for cross-departmental structures. Janet asked Andy to draw up the following chart, describing the general distribution of authority.

For example, Andy initially set up policies according to department, and members of the Engineering group were given a mailbox size limit of 50 MB. After two weeks, Andy received an alert informing him that Jane Smith's mailbox had exceeded the maximum size allowed by quota and, according to policy, had been shut down. As it turned out, Jane Smith was the VP of Engineering and should have been granted a higher limit.

For more about policies and mailbox groups, see the topic, "Setting Mailbox Quota Policies by Group."

# Reclaiming Disk Space

A key component of consumption management is reclaiming disk space. By regularly salvaging disk space from unused or idle mailboxes and public folders, Janet can increase the return on her department's investment in Exchange storage and avoid costly downtime by shortening the duration of the backup process.

Janet and Andy use the following steps to reclaim disk space:

| Step | Description |
|---|---|
| Identify | Andy uses Sun HighGround SRM for Exchange Servers's reports and advisors to locate and qualify disk space that can be reclaimed. |
| Rectify | Then he notifies the users that consume the most space, and asks them to delete specific types of messages, for example, very old messages. If the messages are not deleted, Andy can delete the messages, and messages with large attachments, from the Single Message report. |
| Solidify | Finally, to prevent disk space from being wasted again, Andy set policies for mailbox and public folder use, including enforceable quotas on message, mailbox, and public folder size. |

# Identifying Disk Space Consumed by Large, Old, or Unused Messages

Janet used the following Sun HighGround SRM for Exchange Servers reports to identify who was consuming disk space with old messages.

| Sun HighGround SRM for Exchange Servers Report | Findings | Actions |
|---|---|---|
| **REPORTS:** Summary for <server group name> Mailboxes with the most old messages | Some mailboxes contained over 700 messages over 365 days old. Many messages had large attachments. | Janet notified each mailbox owner that (s)he could reduce the mailbox size by deleting messages older than 365 days. Janet then deleted the messages, if they were not deleted or moved within the specified time-frame. |
| **REPORTS:** Summary for <server group name> Public Folders with the most old messages | Of the 200 public folders in the organization, 125 were stuffed with old messages. | Group leaders were informed that messages more than one year old must be deleted. |
| **REPORTS:** Summary for <server group name> Most idle mailboxes & Most idle Public Folders | Some mailboxes and public folders had not been accessed in six months, for example, mailboxes belonging to former employees. | Janet deleted unused mailboxes and public folders. For more information, see the following section, "Unaccessed Mailboxes." |
| **REPORTS:** Largest Messages in a Mailbox or Public Folder | Some mailboxes and public folders contained messages with numerous large attachments, increasing the size of the messages considerably. | Janet informed users that messages over a certain size should be deleted or moved. If not, the messages would be deleted within a certain amount of time. |
| **REPORTS:** Largest Old Messages in Mailboxes or Public Folders | Many of the largest messages in mailboxes and public folders were over six months old. | Janet deleted unused mailboxes or inform users that certain messages need to be deleted or moved. If not, the messages would be deleted within a certain amount of time. |

## Unaccessed Mailboxes

When employees leave ABC Industries, company policy states that their user accounts are deleted, along with their mailboxes.

However, sometimes interdepartmental communication breaks down and the IT staff are not notified of a personnel change. In these isolated cases the Most Idle Mailbox Report helps Janet and Andy locate mailboxes that are not being used. Janet configured this report to show only those mailboxes that have not been used in three months.

1. She opened the Configure Report Size page and scrolled down to the Mailboxes section.
2. She set Mailboxes are idle after: 3 months.

To discover lapsed users, she followed these steps:

1. She opened the POLICIES: Server Group Alert Settings page.
2. She set Sun HighGround SRM for Exchange Servers to send an alert when a mailbox had not been accessed in 90 days.

## Determining and Setting Mailbox Quotas

To manage user consumption of Exchange Server space, the IT department decided to impose quotas on the number and total size of e-mail messages that users could keep in their mailboxes. Andy and Janet did not want to set an arbitrary quota level that might be too high or too low, so they used the following Sun HighGround SRM for Exchange Servers reports to determine an appropriate quota level to be assigned to user and mailbox groups.

| Sun HighGround SRM for Exchange Servers Report | Findings | Resulting Quota |
|---|---|---|
| **ADVISORS:** Capacity Planning for <server group> | 80% of all used space on the Exchange Servers was attributable to 20% of the mailboxes. | Andy identified the largest mailboxes and notified the owners about how to reduce the number of messages. |
| **REPORTS:** Summary for <server group name> Mailboxes using the most space | While most users maintained a 45 MB mailbox, a few had allowed their saved messages to exceed 2000 MB. | Janet determined that 45 MB was a reasonable threshold, and that no mailboxes should exceed 70 MB. |
| **REPORTS:** Summary for <server group name> Mailboxes with the most messages | Some mailboxes had as few as 1000 messages, and several mailboxes were home to 10,000 saved messages. | Median message count was 2500. Janet adopted that number as the initial threshold. 5000 was set as the upper limit. |

| Sun HighGround SRM for Exchange Servers Report | Findings | Resulting Quota |
|---|---|---|
| **REPORTS:** Oldest messages in all mailboxes | Some messages were four years old, but the majority of messages were between one day and two years old. | Janet set a threshold of 365 days. Messages older than 365 days caused an alert to be sent. |
| **REPORTS:** Summary for <server group name> Mailboxes with the most old messages | Some mailboxes had few messages older than one year, but the larger mailboxes contained over 700. | Janet decided that 250 old messages were enough to alert the mailbox owner, with 500 as the upper limit. |
| **REPORTS:** Summary for <server group name> Mailboxes using the most old message space | The largest mailboxes contained 20 MB of old message space. | 14 MB of old message space was to be allotted to each mailbox, with thresholds of 5 and then 10 MB. |

**Note –** Over-quota users are automatically notified as a result of the next scheduled detailed scans. When a mailbox reaches its predefined quota limit, Andy and the mailbox owner receive an alert about the over-quota condition. This communication to the users was found to significantly reduce calls to the help desk. End-users were notified that they were about to exceed a policy and were provided with simple steps to correct the problem. These steps educated the user about managing mailbox size and increased awareness of how messaging consumes space on the corporate Exchange Servers.

This customizable e-mail alert includes, by default, a link to an Sun HighGround SRM for Exchange Servers web page.

When the user opens this web page, information is clearly presented about the over-quota condition, and it is possible to view the mailbox report and check the mailbox status. The user can then fix the problem. Once Sun HighGround SRM rescans the mailbox, the user's privileges are returned.

## Setting Mailbox Quota Policies by Group

Based on the results of their capacity planning, Janet set quotas for each mailbox group via the group's POLICIES: Mailbox Group Alert Settings page and assigned a System Administrator (Andy) to be notified when any member of the group exceeded the quota assigned to the group.

Andy and Janet have devised different policies for different group types, and they use Sun HighGround SRM for Exchange Servers's quota management features to implement the solution appropriate for each group. Janet customized the alert e-mail messages for each group to conform to company policy. Janet created different e-mail messages for each quota condition and each of these messages were different for executives versus end-users. She based the messages on the following criteria:

| Group | Criteria |
|---|---|
| Executive groups | Larger space allotment, no quota enforcement. Flexible policies and quotas allow for these groups to consume a larger amount of space per user. |
| End user groups | Strict enforcement of mailbox size and message age. The majority of space consumed on the Exchange Servers was attributable to these groups. |

CHAPTER 6

# Backup Process Management

ABC Industries needs to plan its backup strategy effectively. The network bandwidth and the media throughput and capacity are known; now ABC Industries needs to understand the data growth of the Exchange Servers, and the amount of time available in its backup window.

Currently, backups have been consistently overrunning the backup window (the time allotted to complete the backup during off-hours). IT has to terminate any backups that are still running in the morning, so that the backups do not interfere with production work during regular hours. When the backup continues to take too long, Andy is forced to purchase another Exchange Server to increase bandwidth.

Most problematic of all is the necessity to perform manual checks on all Exchange Servers every morning to see if the backup was successful.

| Objective | Sun HighGround SRM for Exchange Servers Solution |
|---|---|
| Avoid exceeding the backup window. | Server Group Alerts notify the system administrator about backup status and timing. |
| Define companywide policies for backing up the Exchange Servers. | POLICIES: Server Group Alert Settings page. For more about this, see the section, “Setting Policies for Backup.” |
| Ensure that all Exchange data is consistently backed up.<br>Predict backup growth.<br>Avoid time-intensive practice of manually checking each server to see if the backup was successful. | Backup Advisors page provides reports on backup effectiveness, growth in the backup window, backup timing, and backup trending. |

# Backup Strategy

Janet and Andy manage the backup process by exception, as described in the following list:

| Situation | Solution |
|---|---|
| Exceeding a backup window | There used to be no way to determine if a backup process had overrun its window and if it had, why. Now, Andy receives an alert when this happens, and Sun HighGround SRM for Exchange Servers's Backup Advisors provided him with information about the volume of data backed up and how long it took to perform the backup over a period of time. To solve the problem, Andy used Sun HighGround SRM for Exchange Servers to reduce the size of the Exchange Information Stores and log files, with the direct result of shortening the backup process from five hours to only three. For more information, see Chapter 5. |
| Failed backup | If a backup does not run or complete as expected, Sun HighGround SRM for Exchange Servers alerts Andy so that he can fix the problem right away. |

# Setting Policies for Backup

Before ABC Industries started using Sun HighGround SRM for Exchange Servers, IT had to manually check each Exchange Server to ensure that the scheduled backup had occurred, and that it had functioned within acceptable parameters.

As you might expect, this was a serious drain on reources and morale. However, Sun HighGround SRM for Exchange Servers provides hands-free determination of backup occurrence and success.

Sun HighGround SRM for Exchange Servers alerts the IT department, if any online or offline server backups fail or exceed the backup window.

No longer does Andy have to purchase a new Exchange Server to increase bandwidth, but can instead leverage the features of Sun HighGround SRM for Exchange Servers to reclaim space, shrink the Exchange Information Store, and shorten the backup.

CHAPTER 7

# Capacity Planning

To begin the Exchange capacity planning project, the IT department uses Sun HighGround SRM for Exchange Servers to achieve the following key objectives:

| Objective | Sun HighGround SRM for Exchange Servers Solution |
|---|---|
| Track the aggregate growth rate of Information Stores in the Exchange organization | View the History of Storage Growth for <server name> charts to analyze consumption trends, and then make predictions based on that data. |
| Analyze growth rate of Information Stores in Exchange Server groups | ADVISORS: Capacity Planning for <server group name> report shows growth rates for specific server groups. |
| Accurately plan and justify purchases for the coming year, taking full advantage of dropping server prices | Trend the weekly disk space utilization for servers over an extended period of time to determine the overall rate of disk consumption. |

## Track Growth Rates for the Exchange Organization and Server Groups

Janet needs to understand how quickly all Information Stores are growing, both at the organization level and with specific server groups. To understand this information, Janet analyzes the Advisors Capacity reports. Here, she sees all her managed Exchange Servers and servers in specific groups with the amount of space used in each file system that contains information on Exchange. By viewing the graph from this report, she sees which servers are consuming space at the fastest rates.

For more granular details on how quickly messages are hitting the Information Store, Janet turns to the Server Report in the Report section. She picks a server with a high growth rate, and displays the chart for Mailbox Messages. The chart tells Janet the growth in the rate of messages to that server, which can be attributed to the 10 new mailboxes she recently added to that server.

# Accurately Planning Future Storage Requirements

By charting Exchange Information Store trends of the Advisors Capacity report, Janet was able to accurately budget money for Exchange purchases for the coming year. Initially, money to purchase 10 additional Exchange Servers was budgeted to keep up with the growing demand for messaging.

After measuring current server capacity and consumption trends with Sun HighGround SRM for Exchange Servers, she realized that optimizing the current set of servers could fill their messaging needs for the next 3 months, at which time she could purchase 3 more. Over the coming 9-12 months she could make smaller purchases at increasingly lower cost, as the price of hardware continues to drop.

Janet had no problem getting the purchase plan approved from finance, because she was armed with critical Sun HighGround SRM for Exchange Servers trending reports. These reports clearly depicted how quickly capacity was being consumed plus the impact of adding new employee mailboxes to servers.

## Predicting Departmental Growth

Engineering hired three new employees in June. Andy noticed that the addition of their mailboxes caused an increase of 10 MB by mid-August. Based on this information, he allocated 100 MB for the 30 new hires expected in December.

Sun HighGround SRM for Exchange Servers's trending charts, showing the history of storage usage on Exchange Servers, proved to be a valuable report in justifying his purchase requests.

In addition, Janet tracked the aggregate growth of server groups to determine where the vital areas of consumption were, and to predict how they would continue to grow. For example, to identify the servers that were running out of disk space at the fastest rate, she used the History of Mailbox Message Space for All Server Groups chart to see which server group was nearing its aggregate capacity limit. She found that one group, Support, had grown from 10 GB on July 1 to 40 GB on October 1.

CHAPTER 8

# Activity Analysis

To completely manage their Exchange Servers, the IT department needs to manage and plan for traffic activity on each server in the organization.

| Objective | Sun HighGround SRM for Exchange Servers Solution |
|---|---|
| Identify Exchange Servers that have the most message traffic and balance traffic among existing servers, so that no one server is overloaded<br>Ensure that the busiest servers are the most robust. | ADVISORS: Activity, Average Messages per Day |
| Identify the Exchange Server with the most disk activity | ADVISORS: Activity, Average Disk I/O's per Day |

Janet and Andy had tried to capture this information before, but ran into difficulties because the information had to be collected from each server individually, and trending capabilities were not available. Sun HighGround SRM for Exchange Servers provides a series of reports on Activity Analysis, found in the Advisors section.

## ADVISORS: Activity – Average Messages per Day Reports

With these reports, Janet and Andy can, with one central view, identify the Exchange Server within the entire organization that has the most message traffic. This information is critical to Janet and Andy. They discovered that the server receiving the most messages was an older machine in need of a memory and processor upgrade. This problem was quickly fixed by replacing the older machine with a newer, more powerful server. Andy and Janet also found the information useful in deciding which server to use for mailboxes of new employees.

## ADVISORS: Activity – Average Disk I/O per Day

Again, Janet and Andy wanted to see, in one central view, the Exchange Server with the most disk activity. They are able to obtain this information with the Average Disk I/O per Day report. Armed with this data, they saw that the traffic load was unbalanced, and some servers were in danger of crashing due to lack of disk space, while other servers disks were not nearly as active. This led to the action of load balancing, and moving some of the more active mailboxes to a server with less disk activity.

## ADVISORS: Activity – Trending Analysis

In order to be proactive and ensure Exchange is running efficiently on the network, Janet and Andy need to analyze trends on server activity. Because scans automatically run and update Sun HighGround SRM for Exchange Servers on an ongoing basis, historical data on server activity is collected and can be viewed in a graph. The resulting trending information identifies the increase in server activity and messaging traffic over time, and lets Janet and Andy identify future stress points, bottlenecks, and potential areas of failure before they become a problem.

CHAPTER 9

# Cost Accounting and Chargeback

Departments at ABC Industries are being held more and more accountable for all expenditures, including messaging. The departmental managers need to be able to predict future usage for budgetary reasons.

| Objective | Sun HighGround SRM for Exchange Servers Solution |
|---|---|
| Report consumption by departmental group to allow charging departments based on their actual consumption of disk space. | Group mailboxes and public folders by server.<br>View each group's consumption of storage and charge those groups for space consumed.<br>View individual user consumption of storage and charge those user groups for space consumed. |

## Accounting for Messaging Storage Costs

It is important for Janet to account for the cost of Exchange Server disk space by answering the question: Who is consuming resources, and how much?

ABC Industries' four main departments have different messaging requirements:

| Department | Requirement |
|---|---|
| Sales | 4 GB of messaging storage on two Exchange Servers |
| Marketing | 3 GB on two servers |
| Engineering | 1 GB on a single Exchange Server |
| Support | 8 GB across four servers |

The REPORTS: Summary for All Mailbox Groups page displays information about how much space each mailbox group consumes. This provides the basis for Andy to account for costs incurred by each department, and shifts the burden of cost onto those who benefit.

The report clearly identifies the various groups Andy set, and the total mailbox space consumed by each group. Andy only needs to assign a value for the cost of storage space used, which he then applies to each group.

The REPORTS: All mailboxes for chargeback reports display information about individual users' space consumption by Exchange Server, site, organization or server group. Andy grouped mailboxes by server and used the REPORTS: All mailboxes for chargeback by server group report to view the individual users consuming the most space.

Because each department dedicates a portion of its budget for e-mail usage, it is important to notify any group or department head if the department is at risk of going over budget. Andy configures the POLICIES: Mailbox Group Alert Settings page to notify him when a group is about to exceed its storage quota. This enables Andy to inform a department when it is about to exceed its quota, and then take action to reclaim disk space and stay under budget.

# Departmental and Group Chargeback

Janet's next step will be to leverage the cost-accounting capabilities of Sun HighGround SRM for Exchange Servers by adding a cost per unit of consumption and issue chargeback reports to all the departments in ABC Industries.