NCR UNIX SVR4 MP-RAS

OperationsAdvantage BASE Administrator's Guide

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Preface

Who Should Read This Book

This book is for system administrators who use the OperationsAdvantage BASE to manage system resources.

What You Should Know

Before using this book, you should

- Know that prior to the 2.03 release of NCR UNIX SVR4 MP-RAS operating system, OperationsAdvantage BASE (OA/BASE) was referred to as Open System Administrator (OSA).
- Be familiar with the NCR UNIX SVR4 MP-RAS operating system. For more information about the operating system, read the *User Guide: Introduction to NCR UNIX SVR4*.
- Understand the types of tasks a system administrator is required to perform. Read the *NCR UNIX SVR4 MP-RAS Administrator Guide: OA&M Menu Interface* (BD10-2265-G000) and *NCR UNIX SVR4 MP-RAS Administrator Guide: Command Line Interface* (BD10-2266-K000) manuals for a description of system administrator tasks.
- Be familiar with the X Window System (X) and the window manager used on your system. In particular, you should know how to start and stop X, start and stop your window manager, and manage the windows on your display. For more information about the X Window System, read *X Window System User's Manual (Motif) (SWS)* (BST0-2113-8200)
- Know how to start OperationsAdvantage and use the menu interface to perform system administration tasks.

Related Publications

Other publications you might find useful are:

- *NCR RAID Manager 3.0 User Guide for UNIX V.4*
- *Volume Manager System Administrator Guide (SWS)*
- *Volume Administrator (Visual) Guide*
- *Volume Manager Reference Manual*
- *Installing NCR UNIX SVR4 MP-RAS*
- *NCR UNIX SVR4 MP-RAS Administrator Guide: Command Line Interface (Devices and Networks, Volume 2)*
- *NCR UNIX SVR4 MP-RAS Programmer's Guide: STREAMS*
- *Presentation Engine Administrator Guide*
- *NCR UNIX SVR4 MP-RAS Ramdisk User's Guide*
- *NCR WorldMark Hardware Service Manual*
- *Performance Monitor Programming Guide*

How To Use This Book

This book describes how to perform system administration tasks available through OperationsAdvantage BASE. Use this book with the *NCR UNIX SVR4 MP-RAS Administrator Guide: OA&M Menu Interface* manual. This book describes and provides instructions for using the following OperationsAdvantage BASE components:

- Backup and Restore
- Hardware Manager
- Batch Manager
- Remote Services

In addition, it introduces the Volume Manager and Administrator, RAID Manager, and Journaling File System components of OA/BASE.

- For an overview of the complete OperationsAdvantage BASE, read Chapter 2, "Using the OA/BASE Menus."

- For instructions on using the OperationsAdvantage BASE backup and restore service, read Chapters 6 through 8, “Configuring Backup Table Entries,” “Backing Up Information” and “Restoring Information.”
- For instructions on managing networks in OperationsAdvantage BASE, read Chapter 15, “Managing Networks.”
- For instructions on using the OperationsAdvantage BASE Hardware Manager, read Chapter 16, “Using the Hardware Manager.”
- For instructions on using the OperationsAdvantage BASE Remote Services, read Chapter 17, “Remote Services.”

Conventions Used in This Book

The tasks in this book are presented in a format that includes some or all of the terms listed below.

- **Why/When** - Reasons and times for performing the task.
- **Before You Start** - Things to do before you begin the task.
- **Menu Selections** - The sequence of selections that provide access to the menu you use to perform the task.
- **Procedure** - The actions you take in performing the task.
- **Display** - Information that is displayed on your screen.

The following conventions are used in this book:

- Key terms are printed in **bold** type and defined when they are first introduced.
- The following type identifies text that you must enter exactly as shown:

  ```
  # login su
  ```

- Path names and filenames appear in italics. For example:

  The */etc/profile* file defines the standard environment for all users.

- The following type identifies output from a screen or command:

  ```
  Press the Return key to continue.
  ```

- Utilities, commands, user names, package names and terminal keys appear in boldface type. For example:

  The **cpio** command backs up files.

- Menu selections appear in brackets. For example:

  Use the <Internal Options> menu selection.

- Numbered lists denote specific order; lists with bullets do not denote order.

Chapter 1

Being A System Administrator

Duties of a System Administrator

The system administrator is the person charged with the day-to-day maintenance and operation of the system. These duties include the following:

- Configuring the system (both hardware and software)
- Installing application packages
- Updating operating system software
- Adding, removing, and modifying users
- Adding, removing, and modifying controllers, disk devices, and tape devices
- Adding, removing and modifying terminals and printers
- Providing system security
- Backing up on removable media, individual files, and directories as well as the entire system
- Restoring files, directories, and the entire system if these files become corrupt or lost
- File configuration and management
- vfstab file and crontask configuration
- System analysis (performance and diagnostics)
- Network configuration
- Hardware management

Warning: Do NOT delete files that you did not create! Some software packages move current files to make room for their own files. When you remove these software packages, the current files must be available to be moved back to their original locations.

Scheduling System Administrator Duties

The system administrator has duties that should be performed on a regular basis. Some of these tasks might need to be performed every day; others can be performed at less-frequent intervals. Use the schedule of tasks listed here as a guide. Your system requirements might dictate a different schedule. For example, a credit card processing center that accesses a large number of customer accounts daily might back up many records several times each day. A system that is being used as a server, which contains files that are read by other users but not updated often, might need only a weekly backup.

Use this information and adjust it to the needs of your particular system.

Initial Tasks

Perform the following initial tasks:

- Read ALL of this chapter and, if you are not familiar with the menus, read Chapter 2, “ Using the OA/BASE Menus
- Get your system up and running by following the procedures in Chapter 3, “ Starting Up and Shutting Down

Daily Tasks

Back up selected files and directories, such as any files that changed during the last 24 hours.

Weekly Tasks

The following tasks should be performed weekly:

- Back up (and verify) important partitions or directories such as */home* and */opt*.
- Check all file systems (**fsck**).
- Examine the system error log.

Monthly Tasks

The following tasks should be performed monthly:

- Back up (and verify) the entire system.
- Change the password for the **osa** login.
- Examine the system logs.

Periodic Tasks

The following tasks should be performed periodically:

- Add and delete users.
- Set up groups.
- Add new applications.
- Logically add new hardware; that is, make your system software aware of the new hardware.
- Start up or shut down the system.
- Replace passwords for users who forget their passwords.
- Restore user files from backup.
- Add system devices.

Access the System

An experienced system administrator frequently uses any of the following logins:

- **root** login
- *user_id* login
- **sysadm** or **osa** login

If you are not familiar with command-line procedures, you should use either the sysadm or osa login command, depending on the type of system administration package you prefer. This guide describes the OperationsAdvantage BASE (OA/BASE) interface.

Regardless of which method you use for system administration, you should use that method consistently. Both the OperationsAdvantage BASE and **sysadm** interfaces manipulate system information stored in the system's object table (*/etc/device.tab).* UNIX utilities run from the command line do NOT manipulate the object table. Performing some tasks through the menus and others from the command line can cause unpredictable results.

The system administration menus provide the safest way to perform tasks on your system for the following reasons:

- They prevent you from removing important files.
- They automatically perform all steps in the procedure you select and verify the results.
- They update the object table so that other functions will work off of the most current information.

For example, when you perform a backup through the menus, the menus verify the data as well as write it to removable media.

You can access the OperationsAdvantage BASE menus in one of three methods:

- Log in as **osa** and enter the **osa** password.
- Log in as **root** and enter the **osa** command.
- Log in with your login name and enter **osa** and the **osa** password.

The osa Login

The **osa** login allows you to access the OA/BASE menus directly. To log off, exit the OA/BASE menus.

The following shows the **osa** login:

```
login: osa
password:
```

See Chapter 3, " Starting Up and Shutting Down" for detailed start and stop procedures.

The root Login

The **root** login permits you to access the system from the **root** prompt (#) and perform any command. This login also lets you overwrite files written by any user, even system files. There is no record of who logs in as **root**. Anyone who knows the root password can do so. The **root** login is NOT for the inexperienced user. To log off, enter a CTRL-D or exit <ENTER>.

Logging in as root and performing commands from the command line are described in the *NCR UNIX SVR4 MP-RAS Administrator Guide: Command Line Interface*.

The following shows the root login:

```
NCR infoprod
RELEASE 3.02.00
    login: root
    password:
```

Because the root login provides complete control over the system, few (if any) people other than the system administrator should know the root password. However, because some system problems can be fixed only by root, make sure that someone who knows the root password is available when users are logged on the system.

What Is OperationsAdvantage BASE?

OperationsAdvantage BASE (OA/BASE) is an optional tool for managing all the administrative aspects of your NCR Server. These tasks range from the most basic, such as adding a new user, to the most complex, such as replacing a failed disk drive while your system remains online.

Graphical User Interface

OA/BASE provides a graphical user interface for performing system administration tasks. It runs under the X Window System, and you can use your favorite window manager, such as *mwm* or *twm*, to manage the displays.

OA/BASE & Operations Advantage

OA/BASE is a component of Operations Advantage. Operations Advantage is one of the NCR Family of System Management applications.

OA/BASE and OA&M

OA/BASE is an optional system administration tool. The standard system administration tool for NCR UNIX SVR4 MP-RAS is NCR Enhanced OA&M, which is a character-based, menu-driven system administration interface. OA/BASE provides all the features of NCR Enhanced OA&M, plus some additional features. Some of the additional features are part of OA/BASE, while others are optional and must be purchased separately.

OA/BASE Components

To meet the wide and varied range of system administration needs, OA/BASE consists of two parts: the OA/BASE base and the OA/BASE optional features.

The OA/BASE base provides the basic system administration tasks that are common to most computing environments, such as managing users, creating and managing file systems, and making backups of information stored on your System 3000.

The OA/BASE optional features provide tools for performing tasks that are not needed on small systems, but are very beneficial for large, enterprise-wide systems. For example, OA/BASE Hardware Manager will give you the ability to monitor the status of hardware components and replace failed disk drives online. This is very important if you have an NCR 3550 running mission-critical applications.

OA/BASE Base Features

The OperationsAdvantage BASE base provides the following basic system administration features required for all types of systems:

- Backup and restore services
- Device management
- File system management
- Software installation and removal
- Printer management
- User management
- Machine configuration, information, and analysis
- Network utilities management
- Micro Channel configuration and management
- Port management
- Task scheduling service
- System setup service
- Remote management service

OA/BASE Optional Features

In addition to the OA/BASE base, you can also purchase any of the following optional OA/BASE features:

- Performance Monitor
- Hardware Manager
- OperationsAdvantage TASK

Other Features

The following features are not part of, nor dependent upon, OA/BASE, but you can access them through OA/BASE. Using them through OA/BASE allows you to use one tool for all of your system administration tasks.

- RAID Manager
- Volume Manager Administration
- Journaling File System

Chapter 2

Using the OA/BASE Menus

Starting OA/BASE from the Command Line

To start OA/BASE from the command line, you must be logged in as **root**. Logging in as **root** and performing commands from the command line are described in the *NCR UNIX SVR4 MP-RAS Administrator Guide: Command Line Interface.*

If xdm is running

To start OA/BASE with **xdm** running, do the following:

1. Log in as **root**.
2. Make sure that X Windows is already running on your system. If **xdm** is running on your system, X Windows starts when the system goes multi-user. Also, when the **xdm** daemon is started, it automatically starts a Presentation Engine daemon, which must be running to start the OA/BASE application.
3. Start a window manager (if one is not already started). The following command starts the Motif window manager:

   ```
   # mwm &
   ```

4. Start Open Systems Administrator:

   ```
   # osa &
   ```

Note: If you are running OA/BASE from a terminal other than the console, perform the steps in the procedure "If **xdm** is not running."

If xdm is not running

To start OA/BASE if **xdm** is not running:

1. Log in as **root.**
2. To start X Windows, enter the following commands:

   ```
   # PATH=$PATH/usr/bin/X11 export PATH
   # xinit &
   ```

3. Start a window manager (if one is not already started). The following command starts the Motif window manager:

   ```
   # mwm &
   ```

4. To start an Engine, perform one of the following commands:

   – If your DISPLAY variable is set correctly, enter:

   ```
   # PE -r
   ```

   – If your DISPLAY variable is not set or is set incorrectly, set the DISPLAY variable. For example:

   ```
   # PE -r -d display
   ```

   For example, if display is the X station “xpubs5," enter:

   ```
   # PE -r -d xpubs5:0
   ```

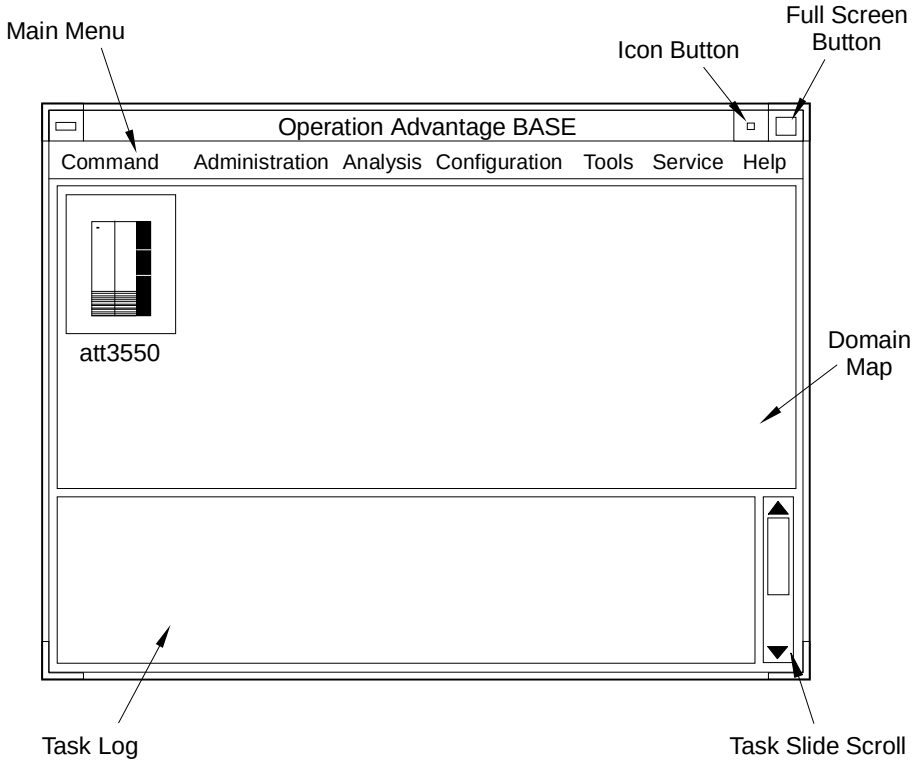
5. Start Open System Administrator:

   ```
   # osa &
   ```

A frame similar to Figure 2-1 appears on your screen.

For additional information about starting applications or the Presentation Engine, see the *Presentation Engine Administrator Guide*.

Figure 2-1. OperationAdvantage Base Screen



Logging In as OSA

If xdm is running

To start OA/BASE by logging in as **osa** with **xdm** running, log in as **osa** and provide the administrative password.

Note: If you are running OA/BASE from a terminal other than the console, perform the steps in the procedure "If **xdm** is not running."

If xdm is not running

To start OA/BASE by logging in as **osa**, without **xdm** running:

1. Log in as **root.**
2. To start X Windows, enter the following commands:

```
# PATH=$PATH/usr/bin/X11 export PATH
# xinit &
```

3. To start an engine manually, perform one of the following commands:
   - If your DISPLAY variable is set correctly, enter:

     ```
     # PE -r
     ```

   - If your DISPLAY variable is not set or is set incorrectly, set the DISPLAY variable. For example:

     ```
     # PE -r -d display
     ```

     For example, if display is the X station "xpbus5", enter:

     ```
     # PE -r -d xpubs5:0
     ```

4. Log in as **osa** and provide the administrative password.

Note: If you want to allow OA/BASE logins from remote systems, you must edit the */etc/defaults/login* file and comment out the following line:

```
CONSOLE=/dev/console
```

Important!

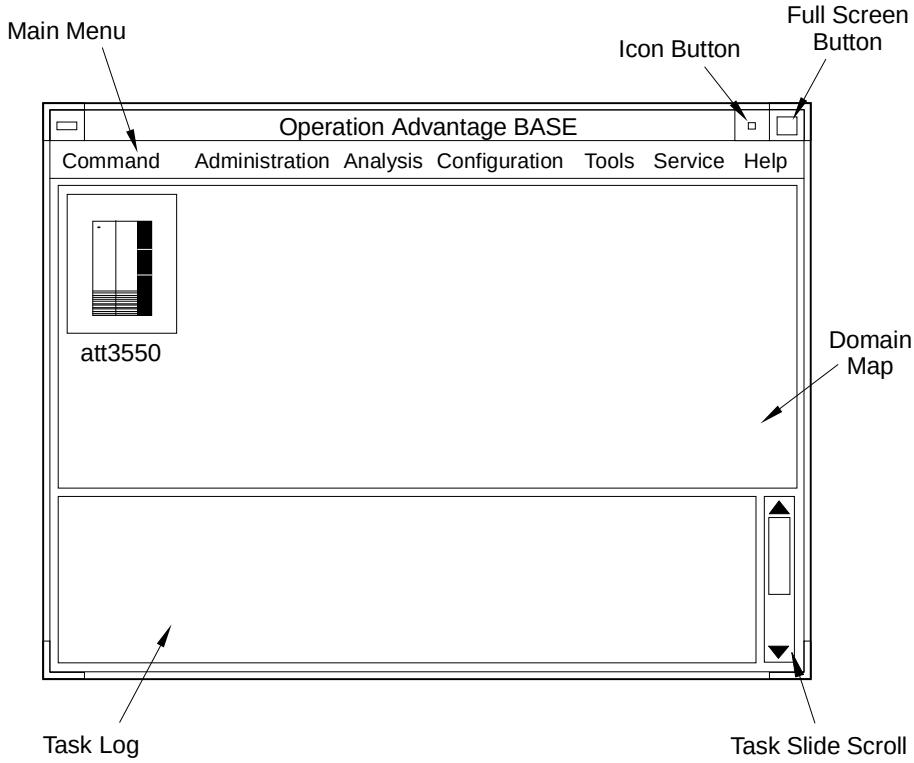
Since OA/BASE runs under X Windows, it uses a virtual terminal. If the operating system PANICs, the system might appear to be hung. If this happens, try pressing ALT-PRTSC-H to get back to the login window. If this works, you can then use ALT-PRTSC-F2 (for the R3 X server) or ALT-PRTSC-F1 (for the R5 X server) to get back to the virtual terminal. If it does not work and if your system has a dump switch, reset the system by pressing the dump/reset switch.

OA/BASE Menu

When you first start OA/BASE, the OA/BASE main menu, shown in Figure 2-2, appears on your screen. If the Customer Support Facility software package is installed, an Alert message appears also.

The OA/BASE menu is divided into three parts: Main Menu, Domain Map, and Task Log.

Figure 2-2. OperationAdvantage BASE Main Menu



Main Menu

The main menu provides a series of pull-down menus that allow you to select various administrative tasks. The top-level menu items are as follows:

- Command - common command-line tasks. See the *NCR UNIX SVR4 MP-RAS Administrator Guide: Command Line Interface* for additional information.
- Administration - common administrative tasks.
- Analysis - tasks for analyzing system problems and performance.
- Configuration - tasks for setting up and configuring the system hardware and software (Micro Channel, file system management).
- Tools - interfaces to general add-on tools.
- Service - support for system hardware services (shutdown, reboot).
- Help - online help is available for the help facility, the displayed window, the software version, and context sensitivity.

Domain Map

The system icon buttons represent your domain of systems, which can be managed using OA/BASE. Select a system to manage by clicking the icon button representing that system. Any task that you select is performed on the selected system.

Note: In release 3.00.00 or greater of OA/BASE, the local system is the only system available for managing in your domain.

Task Log

Each time you select a task, a log message is displayed on the bottom window. The task log notifies you that your task has been started and will display shortly. Remember that each time you select a task, a new instance of that task will be queued. Use the task slide scroll to view messages that appear above or below the view.

Selecting a Task

To choose a selection from the menus, do the following:

- Point the cursor to the menu heading that contains the command that you want to perform in the Main Menu.
- Press the left mouse button. A cascading menu appears below the menu heading.
- Select the menu item or command that you want to perform.

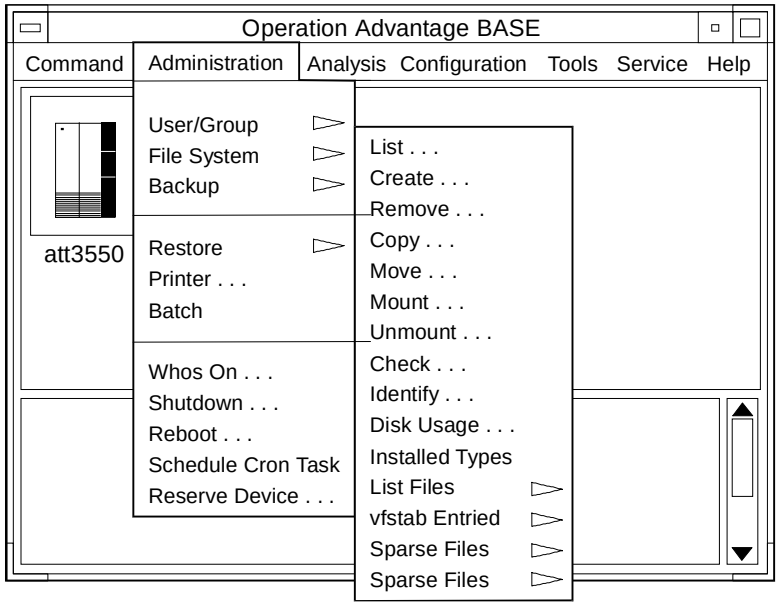
Menu items that have an arrow to the right of the item have a cascading menu associated with them. Menu items that have trailing ellipses (...) have System Management applications associated with them. Menu items that are half-intensity cannot be selected and are not installed on your system.

Note: When you click your mouse button, make sure that you press it hard enough for your selection to register. The menu button you “press” with your mouse should actually look as if it is being pressed, and your cursor should look like a watch.

Moving Through the Menu Levels

Continue selecting menu choices until you reach the specific task that you want to perform. To locate a task, navigate through two or three levels of command lists. Figure 2-3 displays some of the menu lists and commands available from the main menu.

Figure 2-3. Main Menu Lists and Commands



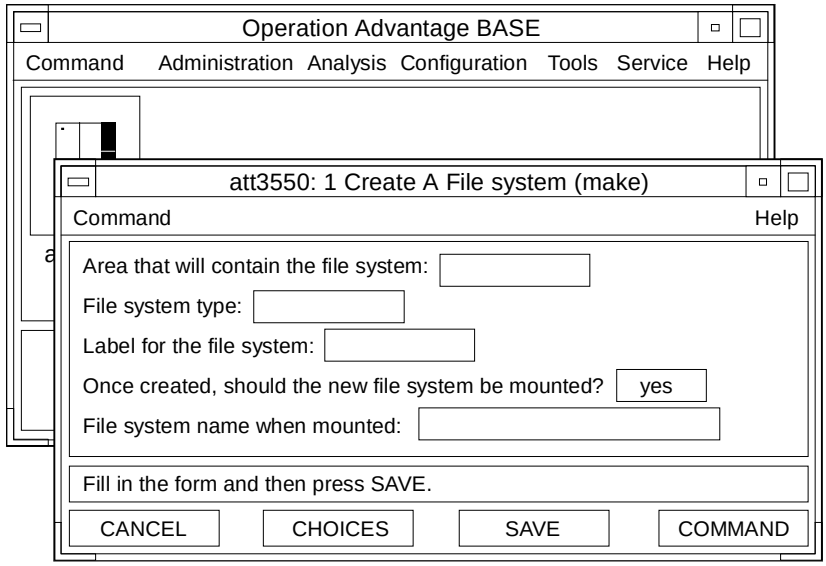
Since you want to create a file system, point your cursor to <File System> and click your mouse button. Select <Create> from the next command list. The menu shown in the following figure appears on your screen.

Providing Information on Forms

Some tasks do not require any input; when you select them from the menu, they run immediately. However, some tasks do require you to provide some information before the task can be performed. For example, if you want to back up a file, you must specify the name of the file to back up and the name of the device to which the backup should be written.

When OA/BASE needs information from you before it can perform a task, a form for entering information appears of your screen. See the “Completing Form” section of this chapter for instructions on filling in forms. To view the form shown in Figure 2-4, select <Configuration><File System> <Create> by using the mouse.

Figure 2-4. Create File System Form



Completing Form

When OA/BASE requires information from you, it displays a form with blank areas for you to fill in. You can fill in the necessary information in one of two ways: by typing in the appropriate information or by choosing from a list of possible entries.

For instance, when adding a user, you can specify any unique user name.

However, in other cases, you must choose from a list of possible entries. For example, if you want to mount a file system, you must specify a defined file system name. You can display the list of choices by clicking on the CHOICES button at the bottom of the frame. Use the CHOICES button whenever possible.

Entering Information

Your cursor is automatically positioned in the top field of the form. To enter information in that field, simply begin typing and press ENTER to move the cursor to the next field. To enter information in another field, point your cursor to the desired field, click to select the field, and begin typing. In some situations an error message might appear and halt you from moving to another field. You must complete that field first.

Using CHOICES

Click on the CHOICES button at the bottom of the frame to display a list of file system entries. To choose an entry from the display, point to it with your cursor and click your mouse button.

If you know the name of the file system entry you want to enter, you can type it directly onto the form if you wish. However, pressing CHOICES eliminates the possibility of making an error while typing in a value.

Changing Default Values

Whenever a default value is defined by OA/BASE, it automatically appears in the form.

To change the default, perform the following steps:

1. Point your cursor in front of the first character in the field.
2. Press the left mouse button and hold it down.
3. While pressing the left mouse button, drag your cursor to the end of the field. The entire field should be highlighted.
4. Type in the new value for the field.

Note: Do not change a default value unless it is absolutely necessary.

Performing Tasks

Once you have filled in the information on the form, click on the SAVE button at the bottom of the screen to perform the task using the information you entered.

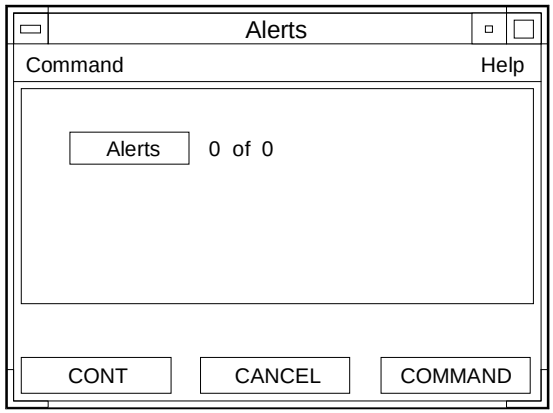
Note: You can exit the current frame at any time by clicking on the CANCEL button for the current frame.

Responding to Messages

Sometimes OA/BASE does not require you to enter any information before performing a task. Instead, OA/BASE displays a message frame and instructs you to press the SAVE or CONT button at the bottom of the frame to perform the task.

Figure 2-5 shows an OA/BASE warning that requires you to press the CONT button to perform the task or the CANCEL button to cancel the operation and return to the menu.

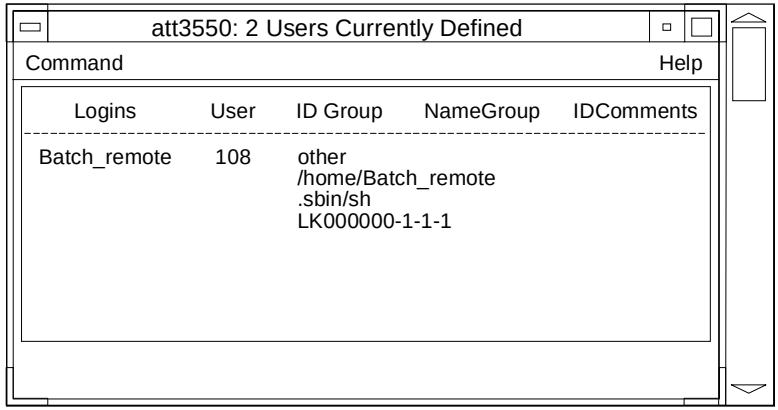
Figure 2-5. OA/BASE Warning



Using Scroll Bars

The area below or next to the message window is a scroll bar. The scroll bar window indicates how much of the message is displayed. If the entire message is displayed, the entire scroll bar window is filled in. If the message is not completely displayed, as in Figure 2-6, part of the scroll bar window remains blank. The width of the blank portion indicates how much of the message is not shown (only a small part in this example).

Figure 2-6. Scroll Bars



Using the Horizontal Scroll Bar

To display the rest of the message, perform one of the following procedures:

- Point your cursor to the scroll bar, hold down your left mouse button, and move your mouse to the right. As you move the scroll bar with your mouse, the rest of the message scrolls across the message window.
- Click on the left or right scroll bar arrows for a set scroll increment.

Using the Vertical Scroll Bar

Some tasks generate output that is longer vertically than the window OA/BASE creates to display them. In this case, a vertical scroll bar appears along the right side of the window. To display the rest of the output, perform one of the following procedures:

- Scroll the contents of the window up or down by pointing to the scroll bar, holding your left mouse button, and moving the scroll bar up or down.
- Click on the up or down scroll bar arrows.

Using Combination Scroll Bars

In some cases, output might be both too wide and too long for the display window. In these cases, the display window has both horizontal and vertical scroll bars.

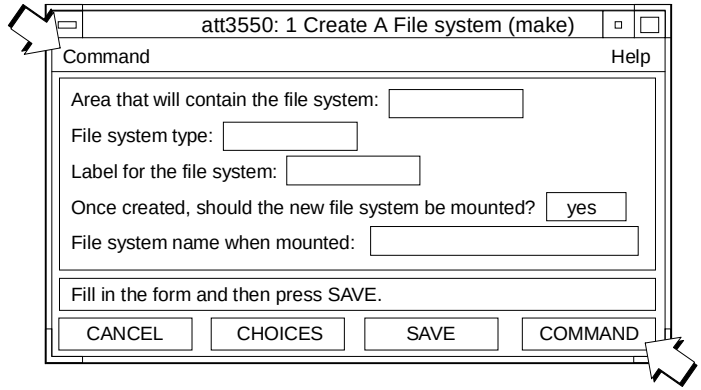
Using OA/BASE Commands

There are a number of commands you can issue through OA/BASE. To enter a command, select it in one of the following ways:

- Point the mouse to the COMMAND button in the top left section of the menu, click the left mouse button and choose the command from the frame that appears.
- Select the COMMAND button at the bottom of the frame and type in the command name that you want to perform.

Figure 2-7 shows the different areas of the frame where you can enter commands.

Figure 2-7. Adding Commands to Frames



The following commands are available:

- CANCEL - Cancels the current command or activity and closes the associated frame.
- CLEANUP - Cancels all frames on the screen, except for the OA/BASE main menu.
- EXIT - Cancels all frames on the screen and quits the OA/BASE application.
- REFRESH - Redraws the screen.

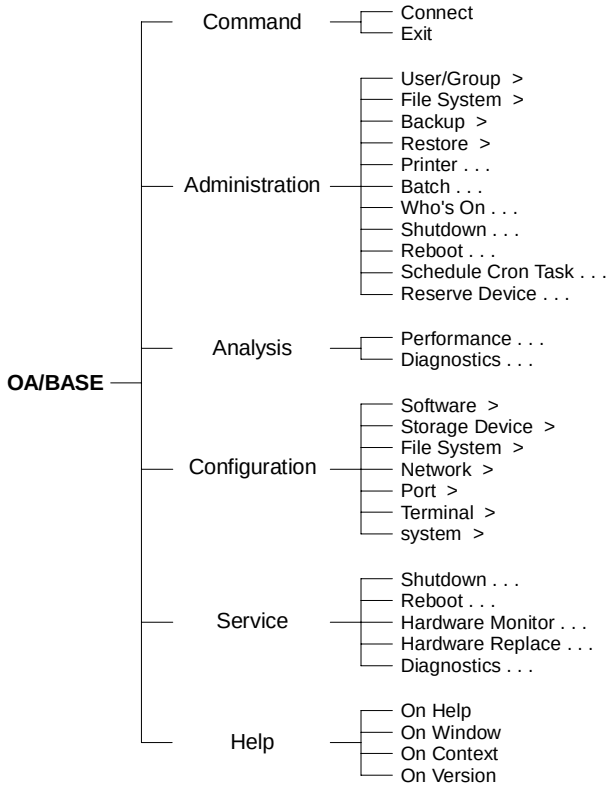
- UPDATE - Temporarily clears the screen and updates the contents of a frame.

Navigating Through the OA/BASE Menu Structure

Figure 2-8 shows the menu hierarchy for OA/BASE. You can use this figure as a quick reference to see which submenu selections are under the major menu choices.

The tasks presented in this guide list all of the menu selections required to perform each task.

Figure 2-8. OA/BASE Menu Hierarchy

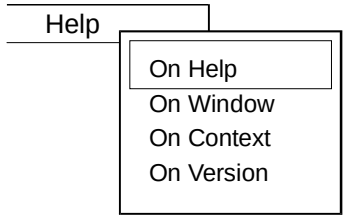


OA/BASE Help

Displaying the HELP Screen for the Main Menu

To display the help menu selection, point the cursor to the HELP button in the main menu, and click the left mouse button. The help menu shown in Figure 2-9 appears:

Figure 2-9. Help Menu



All selections from the main help menu refer to the main OA/BASE window. Online help specific to individual OA/BASE tasks is available from each task window.

There are four categories of online help available through OA/BASE:

- On help
- On window
- On context
- On version

On Help

This method provides information on how to use the help facilities.

On Window

This method displays information on the main window feature and gives a description for each main menu heading.

On Context

The method initiates the context-sensitive help. When selected, the cursor changes to a question mark. Any menu task you select will display a help window describing the function of the task instead of performing the actual task. The cursor returns to normal mode after a task is selected. If you want to exit context-sensitive mode without displaying a help window, choose “On Context” again. Follow the steps described in the beginning of this chapter, when selecting a menu item.

On Version

This method displays version and release information.

Displaying Command Descriptions

If you point the cursor to the ON COMMAND button and click the left mouse button, you can display a description of the following commands:

- Cancel
- Cleanup
- Exit
- Refresh
- Update

OA/BASE Express Mode

Express mode is a shortcut you can take to access a specific menu or form from the shell prompt (#) without going through the menus. You can use this shortcut only if you know exactly what menu or form you want to display.

To access a specific menu or task, enter the following command after the prompt:

```
# osa task
```

The task parameter specifies the name of the task you want to perform. For example, suppose you want to mount a file system. Entering the following command accesses the form for mounting a file system:

```
# osa mountfsys
```

Keep in mind that when you use express mode, you cannot access any menus or forms higher in the menu tree than the one you originally accessed with express mode. For example, if you entered the above command to mount a file system, you could not go back up the menu tree to the <File System> <Create> <Check> or <Mount> menu. See Table 2-1 for descriptions of available express mode commands and the associated menu or form.

Table 2-1. Express Mode Commands

Express Mode Command	Menu or Form
addon	System Add-on Tools menu
addgroup	Add Users or Groups form
adduser	Add Users or Groups form
analysis	System Analysis Tools menu
backup	Backup Services menu
bar	Backup and Restore Services menu
chglogin	Modify Users or Groups form
chgname	Modify Users or Groups form
chgshell	Modify Users or Groups form

Express Mode Commands (Continued)

Express Mode Command	Menu or Form
config	System Hardware/Software Configuration menu
configuration	System Hardware/Software Configuration menu
delgroup	Remove Users or Groups menu
deluser	Remove Users or Groups menu
diskmgmt	Storage Device Operations menu
dumpadm	Manage Dump Areas menu
files	Manage File Systems menu
harddisk	Storage Device Operations menu
installpkg	Install Software Package form
lsgroup	List Users or Groups form
lsuser	List Users or Groups form
machinemgmt	Machine Configuration Display and Shutdown menu
makefsys	Create, Copy, or Move a File System menu
Express Mode Command	Menu or Form
modgroup	Modify Users or Groups form
moduser	Modify Users or Groups form
mountfsys	Mount File System form
netservices	Network Services Management menu
networks	Network Services Management menu
powerdown	Shutdown display
restore	Restore Services menu
removepkg	Remove Software Package form
services	System Services menu
setup	System Name, Date/Time menu
syssetup	System Name, Date/Time menu

Express Mode Command	Menu or Form
softwaremgmt	Software Installation and Information menu
umountfsys	Unmount File System form
usermgmt	User Login and Group Administration menu

You can express mode to a form or menu by specifying the menu label. For example, if you wanted to express mode to the **Store Interaction with a Software Package** utility, you would type:

```
osa interact
```

interact is the menu label under the <Software Installation and Information Management> menu that selects the **Store Interaction with a Software Package** utility.

In addition, if you wanted to express mode to the **Remove a Software Package** utility which is selected with the <remove> menu label under <Software Installation and Information Management> menu, you would type:

```
osa remove
```

The **remove** label is also used to select several other utilities such as **Remove User or Group** and **Remove a Terminal from a Port**. If a label refers to more than one utility, OA/BASE will display a special <Express Mode> menu that displays all the different utilities that the specified label references. You can then select the utility you intended from this menu.

Chapter 3

Starting Up and Shutting Down

Starting Up the System

Procedure

Use the following procedure to start up your system:

1. Turn on the console terminal.
2. Turn on the main unit.
3. Monitor the startup process from the system console.

Output

The startup software performs diagnostic tests on all the hardware components of your system. This process takes about five minutes on smaller systems, such as the 33XX. On larger systems, such as the 3450 and 3550, it takes longer. Brief messages are displayed for each diagnostic test during start up.

When all system startup tests are complete, the system loads the operating system software. A series of messages advises you of the actions taken. The messages that appear on the screen depend on the hardware and software configuration of your system.

The start up process is complete when the following message appears on the screen:

```
login:
```

Shutting the System Down

Why/When

You should always shut down the system before you turn the power switch OFF at the main unit. A system shutdown logs all users off the system and stops all software processes.

Menu Selections

<Administration>
<Shutdown>

Procedure

To shut down the system, do the following:

1. A frame showing a list of users currently on the system appears. Press CONT to continue with the shutdown or CANCEL to stop the shutdown. If you press CONT, a new form appears.
2. Enter the number of seconds you want to wait before the shutdown process begins. Enter any value between 0 and 9999. A value of 0 causes the shutdown to begin immediately. If other users are logged on, give them time to log off the system so they do not destroy or lose files.
3. Press SAVE to begin the shutdown procedure.

Rebooting the System

Why/When

Rebooting the operating system kills most active processes and forces the machine into a condition similar to that during power up. After you install a software package that requires re-initialization of the system for proper operation, reboot the system.

Menu Selections

<Administration>

<Reboot>

Procedure

To reboot the system, do the following:

1. A frame showing a list of users currently on the system appears. Press CONT to continue with the reboot or CANCEL to stop it. If you press CONT, a new form appears.
2. Enter the number of seconds you want to wait before the reboot process begins. Enter any value between 0 and 9999. A value of **0** causes the reboot to begin immediately. If other users are logged on, give them time to log off the system so they do not destroy or lose files.
3. Press SAVE to begin the reboot procedure.

Chapter 4

Performing Routine Administrative Tasks

Displaying Configuration Information

Why/When

Use this task to display the amount of memory on your system and the types of devices attached to it.

Menu Selections

<Configuration>
<System>
<List>

Display

Information similar to the following example appears on your screen. Depending on your system's configuration, this frame may take several minutes to appear.

```
NCR UNIX System Configuration
System Peripherals:
    CMOS:
      Component Object Type       : CMOS
      Battery Charge              : 7.20
      Field Replaceable Unit Name : Auxiliary Battery
      CMOS Battery Charge         : OK
```

This example shows information about only one component in the system. Similar information is displayed for every component in your system, such as fans, Micro Channel boards, power supplies, and disks.

Displaying System Name and Network Name

Why/When

Use this task to display only the system name and the network name.

The system name is used by the system to identify this machine. The network name is used by various communication networks to identify this machine. These names can be identical.

Menu Selections

<Configuration>
<System>
<Node Name>
<display>

Display

After you select the <display> button, information similar to the following example appears on your screen:

```
System-Name:          trantor

Network Node-Name:    trantor
```

Setting the Date, Time, and Time Zone

Why/When

Perform this task when you initially set up your system to establish the correct date, time, and time zone. Setting these values correctly is important since this date and time information is used for many procedures, including backing up the system and performing scheduled tasks.

Menu Selections

<Configuration>
<System>
<Date/Time>

Procedure

To set the date, time, and time zone, do the following:

1. Enter the appropriate information on the form:
   - *Date* — Specify by month, day and year.
   - *Time* — Specify in minutes and hours.
   - *AM/PM* — Specify morning or afternoon.
   - *Timezone* — Specify time zone you are in.
   - *Is daylight savings time observed?* — Answer **no** if your location never observes daylight savings time (DST). Otherwise, answer **yes**, regardless of whether your location is currently experiencing DST.
2. Press SAVE. A message confirming the changes appears on your screen. All logins and processes currently running continue to see the old time and date information, except for **cron**(1), which is restarted to pick up the new time and date.

3. Log out and log in again for time and date changes to take effect for your login.

Determining Who Is On System

Why/When

Use this task to display who is logged in to the system before you go single-user, shut down, or make other changes to the system that affect a users' ability to access the system.

This task prints the login, terminal device number, and sign-on date and time of each user currently on the system.

Menu Selections

<Administration>
<Whos On>

Display

Information similar to the following example appears on your screen:

```
ID          Terminal Number     Sign-on Date and Time
sysadm        console           OCT 14 8:05
norah         s01               OCT 14 11:31
```

Setting System Name and Network Name

Why/When

Set the system name and network name when you install the system for the first time.

Menu & Button Selections

<Configuration>
<System>
<Node Name>
<set>

Procedure

To set the system name and network name, do the following:

1. Enter the desired information on the form:
   - *System name* — The name your system knows your machine by. This name must consist of 1 to 14 alphanumeric characters. You can also include dash (-) and underscore (_) characters in the system name.
   - *Network node* — The name your network knows your machine by. This name must consist of 1 to 14 alphanumeric characters. You can also include dash (-) and underscore (_) characters in the system name.
2. Press SAVE. A message confirming the new system and node names appears. If you changed your system's node name, make sure you change any references within the network to the new node name as well.

Displaying the System Date and Time

Why/When

Use this procedure when you want to check the time, time zone, or date setting.

Menu Selections

<Configuration>
<System>
<Date/Time>

Display

Information similar to the following example appears on your screen:

```
Date:                              March 14, 1995
Time:                              09:51
AM/PM:                             AM
Timezone:                          Eastern
Daylight savings time observed?    yes
```

Displaying the Status of a Second Serial Port (COM2)

Why/When

Use this task to display the configuration status of the second serial port on your system, if one is available.

Menu Selections

<configuration>

<Second Serial Port>

<status>

Display

After you select the <status> option, a message similar to the following appears on your screen:

```
Second Serial Port (COM2) is enabled.
```

If a message beginning with "*** Important Notice ***" is displayed, please follow the instructions given under that message.

Enabling a Second Serial Port (COM2)

Why/When

Use this task to enable the second serial port on your system.

Menu Selections

<configuration>

<Second Serial Port>

<enable>

Procedure

After you select the <enable> option, ***one* of the following** will occur:

Port Enabled

A message will be displayed, indicating that the second serial port is enabled. (No user input is required.)

Kernel Rebuild Request

A form requesting a kernel rebuild will be displayed:

- If you want the kernel to be rebuilt, select **yes** and press SAVE. A kernel rebuild screen will appear, followed by a message indicating that second serial port is enabled. You must then reboot the system for the changes to be effective.
- If you do not wish to rebuild the kernel, select **no**. A message will be displayed, indicating that the kernel rebuild and reboot have to be performed at a later time.

  Note: The port will not be enabled until you rebuild the kernel.

IRQ Conflict

The second serial port (COM2) must use Interrupt Request (IRQ) level 3. If one or more devices are already using IRQ 3, a form containing a list of those devices will be displayed:

- If you want these devices to be moved to other IRQ levels, perform the following steps:

    1. Select **yes** and press SAVE. A form with the list of the devices using IRQ 3 will be displayed.

    2. Select a new IRQ for each of those devices from the CHOICES list.

    3. Press SAVE. A message requesting a kernel rebuild and reboot will be displayed.

    4. Select **yes** and press SAVE to rebuild the kernel.

    5. Reboot the system to make the changes take effect.

- If you do not want to move the listed devices to another IRQ, select **no** and press SAVE.

COM2 Cannot Be Enabled

If the second serial port can not be enabled, a message will be displayed explaining the failure.

Disabling a Second Serial Port (COM2)

Why/When

Use this task to disable the second serial port on your system, if available.

Menu Selections

<configuration>

<Second Serial Port>

<disable>

Procedure

After you select the <disable> option, ***one* of the following** will occur:

Port Enabled

A message will be displayed, indicating that the second serial port has been disabled. (No user input is required)

Kernel Rebuild Request

A form requesting a kernel rebuild will be displayed:

- If you want the kernel to be rebuilt, select **yes** and press SAVE. A kernel rebuild screen will appear, followed by a message indicating that second serial port is enabled. You must then reboot the system for the changes to be effective.
- If you do not wish to rebuild the kernel, select **no**. A message will be displayed, indicating that the kernel rebuild and reboot have to be performed at a later time. **Note:** The port will not be disabled until you rebuild the kernel.

COM2 Cannot Be Disabled

If the second serial port cannot be disabled, a message will be displayed explaining the failure.

Setting the System Password

Why/When

Use this task to assign, remove, or lock an administrative or system password.

Menu Selections

<Administration>
<User/Group>
<Define Password Info>

Procedure

To assign, remove, or lock an administrative or system password, do the following:

1. Enter the login name of the administrative or system login whose password you want to change. Press CHOICES for a list of login names for your system.
2. Press SAVE. A form for entering password information appears.
3. Change the information on the form as desired:
   - *Password status* — Choose from *lock* (locks password so that login can not be used), *new password* (assigns a new password), or *no password* (requires user to set a password upon logging in).
   - *Maximum number of days the password is valid* — Users must change their passwords when this number of days have passed. If blank, passwords are valid indefinitely.
   - *Minimum number of days allowed between password changes* — Users must keep a password at least this number of days. The default value is zero.

- *Number of days for warning message* — Users receive a warning for this number of days that their passwords expire soon.

4. Press SAVE. A display similar to the following example appears on your screen:

```
guest PS 00/00/00 30 100
```

- *guest* is the login name.
- *PS* specifies that the password is set.
- *00/00/00* specifies the expiration date (not set in this example).
- *30* is the minimum number of days between password changes.
- *100* is the maximum number of days that the password is valid.

Checking the File System

Why/When

This task checks a file system and attempts to repair errors. This task does not allow you to check the root (/) file system.

Before You Start

The file system must not be mounted. Make sure you know the following information:

- The name of the device that contains the file system
- The file system type

Menu Selections

<Configuration>
<File System>
<Check>

Procedure

To check the file system, do the following:

1. Enter the following information on the form:
   - *Area that contains the file system* — This value can be a disk slice, removable media, or a volume. Press CHOICES for a list of areas containing file systems.
   - *File system type* — The file system type, such as **ufs** or **s5.** The correct value is usually entered automatically when you enter the area containing the file system.

2. Press SAVE. A form asking for the type of checking appears on your screen.
3. Specify the type of checking you want to perform.
   - Choose *check only* to identify problems but take no action. This is the safest method for preventing data loss.
   - Choose *interactive fix* to identify problems and specify whether they should be fixed.
   - Choose *automatic fix* to automatically fix any problems identified. Choosing this option can result in lost or destroyed data.
4. Press SAVE. If you selected *check only*, information similar to the following example appears on your screen:

```
** /dev/dsk/c0t6d0s3  (NO WRITE)
** Last Mounted on  /home1
   ** Phase 1 - Check Blocks and Sizes
   ** Phase 2 - Check Pathnames
   ** Phase 3 - Check Connectivity
   ** Phase 4 - Check Reference Counts
   ** Phase 5 - Check Cyl groups
   1923 files, 8408 used, 86691 free (243
   frags, 21612 blocks, 0.3% fragmentation)
```

5. This screen shows that the file system is okay. If the system finds errors when checking this file system, these errors are listed on the screen also.

Adding a Scheduled Task

Why/When

Use this task to schedule a task to be done at a later time that you designate.

Menu & Button Selections

<Administration>
<Schedule Cron Task>
<add>

Procedure

To schedule a task to be done at a later time, do the following:

1. Enter the following information on the form:
   - *Month(s) of the Year* — The months in which to run this task. Enter **all** for all months, or press CHOICES for a list of months.
   - *Day(s) of the Month* — The days of the month on which to run this task. Specify by number **01** to **31** or **all** for every day. Press CHOICES for a list of days of the month.
   - *Day(s) of the Week* — The days of the week on which to run this task. Specify as **Su**, **M**, **T**, **W**, **Th**, **F**, **S**, or **all.** Press CHOICES for a list of days of the week.
   - *Hour(s) of the Day* — The hours at which to run this task. Specify as **00** to **23**, or **all.**
   - *Minute(s) past the Hour* — The minutes past the hour at which to run this task. Specify as **00** to **59** or **all.**
   - *Task* — The full pathname and name of the task you want to schedule. The task can be up to 42 characters long.
2. Press SAVE. The scheduled job information appears on the screen.

3. Press CONT to confirm that this information is correct.

Changing a Scheduled Task

Why/When

Use this task to change the attributes associated with the task to be performed. The name of the task to be performed cannot be changed with this menu selection.

Menu & Button Selections

<Administration>
<Schedule Cron Task>
<change>

Procedure

To change a scheduled task, do the following:

1. A list of scheduled tasks appears on your screen. Select the task you want to change by highlighting it and pressing ENTER.
2. Change the items you want to change.
   - *Month(s) of the Year* — The months in which to run this task. Enter **all** for all months, or press CHOICES for a list of months.
   - *Day(s) of the Month* — The days of the month on which to run this task. Specify by number **01** to **31** or **all** for every day. Press CHOICES for a list of days of the month.
   - *Day(s) of the Week* — The days of the week on which to run this task. Specify as **Su**, **M**, **T**, **W**, **Th**, **F**, **S**, or **all.** Press CHOICES for a list of days of the week.
   - *Hour(s) of the Day* — The hours at which to run this task. Specify as **00** to **23**, or **all.**

- *Minute(s) past the Hour* — The minutes past the hour at which to run this task. Specify as **00** to **59** or **all.**

3. Press SAVE. The changed job information appears on the screen.
4. Press CONT to confirm that this information is correct.

Deleting a Scheduled Task

Why/When

Use this task to delete a scheduled task when you no longer need to perform it on a regular basis.

Menu & Button Selections

<Administration>
<Schedule Cron Task>
<delete>

Procedure

To delete a scheduled task, do the following:

1. A list of scheduled tasks appears on your screen. Select the task you want to delete by highlighting it and pressing ENTER. If you want to delete more than one task, press MARK to select all the tasks you want to delete, and then press ENTER. A list of tasks to be deleted appears on your screen.
2. Press CONT to confirm that you want to delete the tasks listed.

Displaying Scheduled Tasks

Why/When

Use this task to display a list of tasks currently scheduled on your system.

Menu & Button Selections

<Administration>
<Schedule Cron Task>
<display>

Display

Information similar to the following example appears on your screen:

```
Task1: /bin/su root -c “/sbin/cleanup>/dev/null”
   Month(s): All
   Date(s): All
   Weekday(s): Su
   Hour(s): 5
   Minute: 17
```

This example displays the information for only one scheduled task. The frame displays the months, days, weekdays, hours and minutes after the hour at which the task is to be done for all scheduled tasks on your system.

Chapter 5

Managing File Systems

Creating A File System

Why/When

Use this task to create a file system and leave it empty (except for the directory structure and a *lost+found* directory).

Before You Start

Determine the device name for the slice that will contain the file system.

Note: In OA/BASE release 2.03 or later, the OA/BASE Object Table management and the **mktable** utility have been enhanced to provide support for objects associated with ramdisk devices. These objects include ramdisk logical disk storage devices, ramdisk partitions, ramdisk slices, and ramdisk volumes for Volume Manager. After the ramdisk package is installed and a ramdisk has been configured, ramdisk slices and volumes will appear in the OA/ BASE CHOICES list for certain file system menu options. For additional information, see the *Ramdisk User's Guide.*

Menu Selections

<Administration>
<File System>
<Create>

Procedure

To create a file system:

1. Enter the following information on the form:

- *Area that will contain the file system* — The location where the file system is to be created (usually a disk slice such as *c1t0d0s3*). Press CHOICES for a list of available areas.
- *File system type* — The type of file system to be used on the new file system, such as **s5** or **ufs** (normally, a file system for a hard disk is **ufs** and a file system for removable media is **s5**). Press CHOICES for a list of file system types**.**
- *Label for the file system* — An alias for the file system, consisting of one to six alphanumeric characters. The label is an optional field; it is not required.
- *Once created, should the new file system be mounted?* — Answer **yes** if you want the file system to be entered in */etc/vfstab* so that it is mounted automatically when it is created and when the system boots. Answer **vfs_yes** if you want the file system to be entered in */etc/vfstab* but do not want the file system mounted automatically when it is created or when the system boots. This response adds an entry to */etc/vfstab* with automount set to **no**. Answer **vfs_no** if you do not want an entry added in */etc/vfstab* or the file system mounted at the time it is created or the system boots.
- *File system name when mounted* — The name of the directory on which the file system is to be mounted, if you responded **yes** or **vfs_yes** to mounting the file system. This directory must not be the name of an existing file system mount point or a directory that is already used. If the directory does not exist, it will be created.

2. Press SAVE. A new form appears.
3. Enter the following information:
   - *Name of prototype file* — For **s5** file systems, the full path name of the prototype file that contains information needed to create the file system. If you do not specify a prototype file, the system creates a file system with a root directory and a *lost+found* directory. The prototype file is described in the **mkfs**(1M) manual page.
   - *Number of Blocks in File System* — The number of blocks the file system is to have. This value must be less than or equal to the number of blocks on the device where the file system is to be located.

- *Block size in Bytes* — The number of bytes in each physical block. Press CHOICES for a list of valid values.
- *Number of Files* — This value is calculated automatically based on the file system size.
- *Fragment Size in Blocks* — For **ufs** file systems, the smallest amount of disk space that will be allocated to a file. Press CHOICES for a list of valid values.

4. Press SAVE.
5. If you are creating the file system on removable media, insert the media into the drive and press SAVE to continue.

Moving a File System

Why/When

Use this task to create a file system and move in files from a directory or an existing file system. This task allows you to migrate a directory or a file system to a larger area.

Before You Start

Determine the device name for the slice that will contain the file system.

If you are moving a critical file system (such as */usr* or */var*), go into single-user mode before attempting the move. This ensures that files will not change during the move. Special directories or file systems (such as */*, */etc*, */sbin*, and */proc*) cannot be moved.

Note: In OA/BASE release 2.02 or later, the OA/BASE Object Table management and the **mktable** utility have been enhanced to provide support for objects associated with ramdisk devices. These objects include ramdisk logical disk storage devices, ramdisk partitions, ramdisk slices, and ramdisk volumes for Volume Manager. After the ramdisk package is installed and a ramdisk has been configured, ramdisk slices and volumes will appear in the OA/ BASE CHOICES list for certain file system menu options. For additional information, see the *Ramdisk User's Guide*.

Menu Selections

<Administration>
<File System>
<Move>

Procedure

To move a file system:

1. Enter the following information on the form:
   - *Area that will contain the file system* — The location where the file system is to be created (usually a disk slice such as *c1t0d0s3*). Press CHOICES for a list of available areas.
   - *File system type* — The type of file system to be used on the new file system, such as **s5** or **ufs** (normally, a file system for a hard disk is **ufs** and a file system for removable media is **s5**). Press CHOICES for a list of file system types.
   - *Label for the file system* — An alias for the file system, consisting of one to six alphanumeric characters. The label is an optional field; it is not required.
   - *Once created, should the new file system be mounted?* — Answer **yes** if you want the file system to be entered in */etc/vfstab* so that it is mounted automatically when it is created and when the system boots. Answer **vfs_yes** if you want the file system to be entered in */etc/vfstab* but do not want the file system mounted automatically when it is created or when the system boots. This response adds an entry to */etc/vfstab* with automount set to **no**. Answer **vfs_no** if you do not want an entry added in */etc/vfstab* or the file system mounted at the time it is created or the system boots.
   - *File system name when mounted* — The name of the directory on which the file system is to be mounted, if you responded **yes** or **vfs_yes** to mounting the file system. This directory name can be the name of an existing file system. If the directory does not exist, it will be created.
2. Press SAVE. A new form appears.
3. Enter the following information:

- *Name of prototype file* — For **s5** file systems, the full path name of the prototype file that contains information needed to create the file system. If you do not specify a prototype file, the system creates a file system with a root directory and a *lost+found* directory. The prototype file is described in the **mkfs**(1M) manual page.
- *Number of Blocks in File System* — The number of blocks the file system is to have. This value must be less than or equal to the number of blocks on the device where the file system is to be located.
- *Block size in Bytes* — The number of bytes in each physical block. Press CHOICES for a list of valid values.
- *Number of Files* — This value is calculated automatically based on the file system size.
- *Fragment Size in Blocks* — For **ufs** file systems, the smallest amount of disk space that will be allocated to a file. Press CHOICES for a list of valid values.

4. Press SAVE.
5. If the source file is found to be busy, a message might ask you to log out and log in as **movefs**. This can occur if OA/BASE is using the file system you are trying to move. There is no password for this login. When the move is completed, you are returned to the proper menu.

Mounting File Systems

Why/When

File systems must be mounted before you can access them.

Before You Start

Determine the following information:

- The device name for the system you are mounting. File system device names are located in the */dev* directory.
- What file systems are currently mounted and on what directory they are mounted. You can obtain this information by selecting the following menu sequence:

  <Administration>
  <File System>
  <List>

- The directory on which you plan to mount the file system.
- If you do not know the file system type to be mounted, you can have the system identify the file system type by selecting the following menu sequence:

  <Administration>
  <File System>
  <Identify>

Menu Selections

<Administration>
<File System>
<Mount>

Procedure

To mount a file system:

1. Enter the following information in the first menu:
   - *Area that contains the file system* — The location where the file system resides (usually a disk slice such as *c1t0d0s3*). Press CHOICES for a list of available areas.
   - *File system name when mounted* — If you have entered this file system in */etc/vfstab*, the name of the file system when mounted is automatically entered when you enter the area name. If not, enter the name of the directory on which the file system is to be mounted. This directory must not be the name of an existing file system. If the directory does not exist, it will be created.
   - If the file system name is entered, but you want to mount it on a different directory, enter the directory name where you want it to be mounted.
2. Press SAVE. A new form appears.
3. Enter the following information:
   - *File system type* — If you have entered this file system in */etc/vfstab*, the file system type is entered automatically. If not, enter the type of file system to be used, such as **s5** or **ufs** (normally, a file system for removable media is **s5** and a file system for a hard disk is **ufs**). Press CHOICES for a list of file system types.
   - *Read and write privileges* — Type of read and write privileges which should be allowed for the file system. Choose *read-write* or *read only*.
   - *Should setuid programs be allowed* — Choose from *yes*, *no*, or *na* (not applicable to this file system). The default is *yes.*
   - *File System Specific Options* — Enter any file system specific options. See the **mount**(1M) manual page for more information about file system specific options.
4. Press SAVE.

Unmounting A File System

Why/When

Unmount a file system when you do not want users to access it. For example, you might unmount a file system to check and repair it.

Note: You cannot unmount the root file system.

Before You Start

Be sure no one is using the file system you plan to unmount. The place at which one file system is attached (mounted) to another file system is called the **mount point**.

Menu Selections

<Administration>
<File System>
<Unmount>

Procedure

To unmount a file system:

1. Enter the name of the file system you want to unmount. Press CHOICES for a list of mounted file systems.
2. Press SAVE. A new form appears.
3. Enter **yes** when asked whether you want to unmount the file system.
4. Press SAVE.

Adding Vfstab Defaults

Why/When

Use this task to add file system defaults for devices. File system defaults are stored in the file system defaults table (*/etc/vfstab*). They are used by file system checking and mounting operations when booting the system or when performing other administrative tasks that involve the file system.

Menu Selections

<Administration>
<File System>
<Vfstab Entries>
<Add>

Procedure

To add file system defaults for devices:

1. Enter the following information.
   - *Area that contains the file system* — The location where the file system resides (usually a disk slice such as *c1t0d0s3*). Press CHOICES for a list of available areas.
   - *File system name when mounted* — Name of the directory on which the file system is to be mounted.

     Note: The directory must exist and be available.
2. Press SAVE. A new form showing the default information appears.
3. Enter the changes you want to make:

- *Should the file system be automatically mounted at boot* — Answer **yes** if you want the file system to be mounted automatically whenever the system boots. If you answer **no**, you must mount the file system before you can access it.
- *File system type* — Enter the type of file system to be used, such as **s5** or **ufs** (normally, a file system for removable media is **s5** and a file system for a hard disk is **ufs**). Press CHOICES for a list of file system types.
- *Pass number for parallel fsck grouping (fsck pass)*—Enter "-" for no fsck, 1 for sequential fsck, or 2-99 for parallel fsck. See the *Command Line Interface Administrator Guide* for more detail on parallel fsck.
- *Read and write privileges*—Type of read and writer privileges that should be allowed for the file system. Choose read-write or read-only.
- *Should setuid programs be allowed* — Choose from yes, no, or na (not applicable to this file system). The default is yes.
- *File System Specific Options* — Enter any file system specific options. See the mount(1M) manual page for more information about file system specific options.

4. Press SAVE. You are notified that the device has been added as a default.

Displaying Vfstab Defaults

Why/When

Use this task to display file system defaults for the file system entries in the file system defaults table (*/etc/vfstab*) on your system. You might need these defaults as information to enter in other tasks.

Menu Selections

<Administration>
<File System>
<Vfstab Entries>
<List>

Procedure

To display file system defaults:

1. Enter the following information:
   - *Area that contains the file system* — The location where the file system resides (usually a disk slice such as *c1t0d0s3*). Press CHOICES for a list of available areas, or enter **ALL** to display all file system defaults**.**
   - *File system name when mounted* — Name of the directory on which the file system is to be mounted. This information appears automatically when you enter the area that contains the file system.
2. Press SAVE. A display listing the mount device, file system name, whether the file system is automatically mounted at boot time, ***fsck*** option, file system type, and any file system type-specific mount options for the file systems you specified appears on your screen.

Modifying Vfstab Defaults

Why/When

Use this task to change the current file system defaults for an entry in the file system defaults table (*/etc/vfstab*) on your system.

Menu Selections

<Administration>
<File System>
<Vfstab Entries>
<Modify>

Procedure

To change the current file system defaults:

1. Enter the following information:
   - *Area that contains the file system* — The location where the file system resides (usually a disk slice such as *c1t0d0s3*). Press CHOICES for a list of available areas.
   - *File system name when mounted* — Name of the directory on which the file system is to be mounted. This information appears automatically when you enter the area that contains the file system.
2. Press SAVE. A new form appears.
3. Enter the following information:
   - *Area that contains the file system* — The location where the file system resides (usually a disk slice such as *c1t0d0s3*).
   - *File system name when mounted* — Name of the directory on which the file system is to be mounted.

- *File system type* — If you have entered this file system in */etc/vfstab*, the file system type is entered automatically. If not, enter the type of file system to be used, such as **s5** or **ufs** (normally, a file system for removable media is **s5** and a file system for a hard disk is **ufs**). Press CHOICES for a list of file system types.
- *fsck group*—The pass number for fsck grouping. Enter "-" for no fsck, 1 for sequential fsck, or 2-99 for parallel fsck. See the *Command Line Interface Administrator Guide* for more detail on parallel fsck.
- *Mount file system at boot* — Should the file system be mounted when the system boots? Choose yes to have it automatically mounted or no to leave the file system unmounted.
- *Read and write privileges* — Type of read and write privileges which should be allowed for the file system. Choose read-write or read only.
- *Should setuid programs be allowed* — Choose from yes, no, or na (not applicable to this file system). The default is yes.
- *File System Specific Options* — Enter any file system specific options. See the mount(1M) manual page for more information about file system specific options.

4. Press SAVE. A message that the file system defaults were modified successfully appears on your screen.

Removing Vfstab Defaults

Why/When

Use this task to remove a file system entry in the file system defaults table (*/etc/vfstab*) on your system. This task logically removes a file system from the system by marking its area free in the object table.

Menu Selections

<Administration>
<File System>
<Vfstab Entries>
<Remove>

Procedure

To remove a file system entry in the file system defaults table:

1. Enter the following information:
   - *Area that contains the file system* — The location where the file system resides (usually a disk slice such as *c1t0d0s3*). Press CHOICES for a list of available areas.
   - *File system name when mounted* — Name of the directory on which the file system is to be mounted. This information appears automatically when you enter the area that contains the file system.
2. Press SAVE. A message that the file system defaults have been removed successfully appears.

Displaying Files According to Age

Why/When

You might want to be able to isolate older files so that you can remove them from the system.

Menu Selections

<Administration>
<File System>
<List Files>
<By Age>

Procedure

To display files according to age:

1. Enter the following information:
   - *Directory to be searched* — The full pathname of the directory (and its subdirectories) that you wish to search.
   - *Age of files to be reported, in days* — The minimum number of days that have elapsed since the files were last modified. Enter a value from **0** through **999**. The default is **90** (days).
2. Press SAVE. A list of all files that have not been modified in the number of days specified appears on your screen. The list includes the name of the file, the owner, the file size (in characters), and the date the file was last accessed.

Displaying File Size

Why/When

You might want to isolate bigger files so that you can remove them from the system.

Menu Selections

<Administration>
<File System>
<List Files>
<By Size>

Procedure

To display files according to size:

1. Enter the following information:
   - *Directory to be searched* — The full pathname of the directory (and its subdirectories) that you wish to search.
   - *Number of large files to be reported* — The number of files you wish to display. Enter a value from **0** through **999**. The default is **10** (files).
2. Press SAVE. A list of the specified number of largest files appears on your screen. The list includes the name of the file, the owner, the file size (in characters), and the date the file was last accessed.

Listing Mounted File Systems

Why/When

Use this task to list mounted file systems, the permissions they have, and the file system defaults they were mounted with.

Menu Selections

<Administration>
<File System>
<List>

Display

Information similar to the following example appears on your screen:

```
File System    Mount Device   Type   Mount Options
-----------    ------------   ----   -------------
    /             /dev/root    ufs    rw,suid
    /proc         /proc        ufs    suid,rw,no
    /dev/fd       /dev/fd      ufs    rw,suid
    /stand        /stand       ufs    rw,suid
```

Displaying Disk Usage

Why/When

Use this task to see how much space on each file system is in use. You might need to know this information in order to manage disk space efficiently.

Menu Selections

<Administration>
<File System>
<Disk Usage>

Procedure

To display the disk usage:

1. When the following message appears, press CONT to continue or CANCEL to quit:

```
Disk use processing involves accessing each disk
mounted on your system. In environments with remotely
mounted file systems, processing may appear to be
slow.
```

2. If you press CONT, a display similar to the following appears on your screen:

```
FILE SYSTEM USAGE AS OF 03/14/95 10:44:56

 File        Free        Total       Percent
 System      Blocks      Blocks      Full
 ------      ------      ------      -------
 /           55384       132870      58%
 /dev/fd     0           0           0
 /proc       0           0           0
 /stand      4063        10240       60%
```

Identifying File System Type

Why/When

Use this task to help you find the type of a specific file system. Several administrative tasks (such as mounting a file system) require that you know the type of the file system with which you are working.

Menu Selections

<Administration>
<File System>
<Identify>

Procedure

To identify the type of file system:

1. Enter the area name of the file system to be identified (usually a disk slice such as *c1t0d0s3*). Press CHOICES for a list of available areas.
2. Press SAVE. The file system type is displayed on your screen.

Displaying File System Type

Why/When

Use this task to display the types of file systems that can be mounted on your system. These include add-on file system types that can be installed by the system administrator and file system types that are included as part of the core operating system.

Menu Selections

<Administration>
<File System>
<Installed Types>

Display

A list of all file system types installed on your system, similar to the following example, appears on your screen:

```
Installed File System Types

    bfs
    fifos
    namefs
    s5
    specfs
    ufs
```

Checking a File System

Why/When

You should check the file system whenever the following conditions exist:

- The system cannot enter multi-user mode because of file system problems.
- Messages on your screen indicate that the file system is corrupt or has problems.
- It is the scheduled time to check the file system.

Note: You cannot check the root file system using the menus. However, the root file system is checked whenever you reboot the system.

Before You Start

Make sure that no other user is using the file system while you are checking it.

Menu Selections

<Administration>
<File System>
<Check>

Procedure

To check a file system:

1. Enter the following information on the form:
   - *Area that contains the file system* — This value can be a disk slice, removable media, or a volume. Press CHOICES for a list of areas containing file systems.

- *File system type* — The file system type, such as ufs or s5. The correct value is usually entered automatically when you enter the area containing the file system.

2. Press SAVE. A form asking for the type of checking appears on your screen.
3. Specify the type of checking you want to perform.
   - Choose *check only* to report problems but take no action. This is the safest method for preventing data loss.
   - Choose *interactive fix* to identify problems and specify whether or not they should be fixed.
   - Choose *automatic fix* to automatically fix any problems identified. Choosing this option may result in lost or destroyed data.
4. Press SAVE. If you selected the *check only* type, information similar to the following example appears on your screen:

```
** /dev/dsk/c0t6d0s3  (NO WRITE)
** Last Mounted on  /home1
   ** Phase 1 - Check Blocks and Sizes
   ** Phase 2 - Check Pathnames
   ** Phase 3 - Check Connectivity
   ** Phase 4 - Check Reference Counts
   ** Phase 5 - Check Cyl groups
   1923 files, 8408 used, 86691 free (243 frags, 21612
   blocks, 0.3% fragmentation)
```

This screen display shows that the file system is okay. If the system finds errors when checking this file system, these errors are also listed on the screen.

Removing File System

Why/When

Use this task to remove a file system entry from */etc/vfstab* and mark its area free in the object table.

Before You Start

Make sure no users are using the file system and unmount it.

Menu Selections

<Administration>
<File System>
<Remove>

Procedure

To identify remove a file system:

1. Enter the following information:
   - *Area that contains the file system* — The location where the file system resides (usually a disk slice such as *c1t0d0s3*). Press CHOICES for a list of available areas.
   - *File system name when mounted* — The name of the directory on which the file system is mounted. This information appears automatically when you enter the area that contains the file system.
2. Press SAVE. A message that the file system was removed successfully appears.

Checking Files for Sparseness

Why/When

Use this task to check files for sparseness and save the file names to a list file for later use.

Menu Selections

<Administration>
<File System>
<Sparse Files>
<Check>

Procedure

To check files:

1. Enter the following information:
   - *Directory to analyze* — The full pathname of the directory (and its subdirectories) to search.
   - *Names or templates of file names to analyze* — The names of files to check. You can use wildcard characters to analyze all or selected files.
   - *Show files which would increase at least this percent*— The percentage by which these sparse files would increase if they were moved by ordinary means. Only files that would increase by at least this percentage are displayed.
   - *Save the filenames in a list-file for later use* — Enter **yes** to write a list of files that moving will increase by the specified amount to a file as well as to the screen. You can use this file with the <copy_file> and <pack_file> menu operations. Enter **no** to write the results on the screen only. If you enter **yes**, a prompt for the name of the list file appears on the form.

2. Press SAVE. A list of files that packing would increase by at least the specified amount appears.

Copying or Moving Sparse Files

Why/When

Use this task to copy or move sparse files to another directory.

Menu Selections

<Administration>
<File System>
<Sparse Files>
<Copy/Move>

Procedure

To copy or move sparse files:

1. Enter the following information:
   - *Source directory* — The full pathname of the directory where the sparse files exist.
   - *Name, template, or list-file of file names to copy* — The name of the files to copy or move. You can use wildcard characters to copy all or selected files. If you created a list file with the <check_file> menu operation, you can enter its name to copy all of the files in the list.
   - *Destination directory* — The full pathname of the directory you are copying or moving sparse files to.
   - *Delete source files after copying* — Enter **yes** to move the files to the new directory or **no** to copy them, leaving the original files intact.
2. Press SAVE. A list of copied or moved files appears.

Packing Sparse Files

Why/When

Use this task to pack sparse files and to delete the original sparse files after performing the pack.

Menu Selections

<Administration>
<File System>
<Sparse Files>
<Pack>

Procedure

To pack sparse files:

1. Enter the following information:
   - *Directory containing files* — The full pathname of the directory where the sparse files exist.
   - *Names, templates, or list-files of file names to pack*— The name of the files to pack. You can use wildcard characters to pack all or selected files. If you created a list file with the <check_file> menu operation, you can enter its name to pack all of the files in the list.
   - *Suffix for packed files* — Specify the file name suffix used to identify packed sparse files. The default is **.Q**.
   - *Delete original files after packing* — Enter **yes** to delete the original file after it is packed or **no** to keep both the original sparse file and the packed version.
2. Press SAVE. A list showing the status of all files packed appears.

Unpacking Sparse Files

Why/When

Use this task to unpack sparse files and delete the packed files maintained by the system.

Menu Selections

<Administration>
<File System>
<Sparse Files>
<Unpack>

Procedure

To unpack sparse files:

1. Enter the following information:
   - *Directory containing packed files* — The full pathname of the directory where the packed files exist.
   - *Suffix identifying packed files* — Specify the file name suffix used to identify packed sparse files. The default is **.Q**.
   - *Names or templates of file names to unpack* — The name of the files to unpack. You can use wildcard characters to unpack all or selected files.
   - *Delete packed files after unpacking* — Enter **yes** to delete the packed file after it is unpacked or **no** to keep both the packed file and the unpacked version.
2. Press SAVE. A list showing the status of all files unpacked appears.

Chapter 6

Configuring Backup Table Entries

Creating a File/Directory Backup Table Entry

Why/When

The OperationsAdvantage BASE backup service stores the names of files and directories to back up, the destination system, the destination output device, and other information about backups in backup tables. Before you can back up files or directories, you must first configure a backup table entry in the file/directory backup table, */etc/bkup/config/bkfullfile.tab*, for the files or directories you want to back up. Use the following procedure to configure a file/directory backup table entry.

Before You Start

If you want to back up information to a device connected to a remote system, both your local system and the remote system must be running the OperationsAdvantage BASE Remote Service (OSARS) server. Each system must also recognize the other as an OperationsAdvantage BASE domain nameserver. See Chapter 17, “Remote Services,” for instructions on setting up administrative domains.

Menu & Button Selections

<Administration>
<Backup>
<Configure>
<Files>
<add>

Procedure

To create a file/directory backup table entry:

1. Enter the name of the backup table entry. This name must be unique; if it already exists, you will be asked to enter a unique name. The backup table entry name can contain only letters, numbers, underscores, and periods.
2. Press SAVE. A new frame appears on your screen.
3. Enter the following information on the form:
   - *Source* — Can be *User Entered List* or *Full Path of Backup List*. Enter *User Entered List* if you want to enter the names of the files or directories to back up on this form. Enter *Full Path of Backup List* if you have already created a file that contains the names of the files or directories to back up. Press CHOICES to select these entries.
   - *Full Path of User Entered List* — If *Source* is *User Entered List*, enter a list of data to back up. Each entry must be on a separate line. The backup utility writes this information list to a file in the */etc/bkup/filelists* directory. If *Source* is *Full Path of Backup List*, enter the full pathname of the file containing a list of files or directories to back up (one per line). This file must already exist.
   - *Destination System* — The name of the system to which the destination backup device is connected. The default is your local system; you can enter the name of any system configured as a name server in your OperationsAdvantage BASE domain. Press CHOICES for a list of recognized destination systems.
   - *Destination Device* — The full pathname of the backup device. You can back up to any of the following types of devices: cartridge tape (150 MB or 525 MB), digital audio tape (DAT), 8 mm Exabyte tape, 3480 tape stacker, and reel-to-reel magnetic tape. The device must be in the Device Table */etc/device.tab*. Press CHOICES for a list of available destination devices.

- *Changer Element(s) (Low, High)* — Enter the media position in the magazine. If you specify a low position, only the one tape location specified will be used. If you specify a low position and a high position, a range of tapes will be used. If you want to use the entire magazine, then specify a low position of **1** and a high position of the number of tapes that the magazine can hold. If a backup spans magazines, then the positioning specified will apply for each magazine.

  Note: This field will appear only if you have a changer device installed.

- *Specific Owner* — The name of a user who must own all files to be backed up. This field is optional.
- *Specific Group* — The name of a group that must own all files to be backed up. This field is optional.
- *Days Since Modification* — A number of days ranging from 0 through 999. Only files that have been modified in this number of days are backed up. The default value 000 causes all files to be backed up.
- *Cross File System Boundaries* — Specify whether to cross file system boundaries when backing up a file system. For example, if */home* and */home/becky* are separate mountable file systems and you answer **yes,** a backup of */home* includes a backup of */home/becky*. If you answer **no,** only */home* is backed up.
- *Verify Backup* — Enter **yes** to verify the completed backup. Verifying the backup increases the time required to run the backup, but assures greater data integrity.

4. Press SAVE. A message stating that the entry was created successfully appears on your screen.
5. Press CANCEL to close the frame.

Creating a File System Backup Table Entry

Why/When

The OperationsAdvantage BASE backup service stores the names of file systems to back up, the destination system, the destination output device, and other information in backup tables. Before you can back up any file system, you must first configure a backup table entry in the file system backup table, */etc/bkup/config/bkfilesys.tab*, for the file system you want to back up.

Before You Start

If you want to back up information to a device connected to a remote system, both your local system and the remote system must be running the OperationsAdvantage BASE Remote Service (OSARS) server. Each system must also recognize the other as an OperationsAdvantage BASE domain nameserver. See Chapter 17, “Remote Services,” for instructions on setting up administrative domains.

Note: If you are performing a remote backup of the */* or */usr* file system, you must perform the backup on a device that is the same kind of device as one that is installed on the local system. (For example, only backup to a 5GB Exabyte if a 5GB Exabyte is installed on the local system or only backup to a DAT device with hardware data compression turned ON if there is a DAT that supports hardware data compression in the local machine.) The */* and */usr* file system restore can only be performed in maintenance or single-user mode. Therefore, the network will not be up and you must have access to the appropriate device at that time.

Menu & Button Selections

<Administration>
<Backup>
<Configure>
<File Systems>
<add>

Procedure

To create a file system backup table entry:

1. Enter the name of the backup table entry. This name must be unique; if it already exists, you will be asked to enter a unique name. The backup table entry name can contain only letters, numbers, underscores, and periods.
2. Press SAVE. A new frame appears on your screen.
3. Enter the following information:
   - *File Systems* — Enter a list of file systems to back up. Each entry must be on a separate line. The */usr* file system must be configured alone. The */* file system can only be configured with */stand*. The file systems must be listed as a mountpoint in the Device Table.
   - *Destination System* — The name of the system to which the destination backup device is connected. The default is your local system; you may enter the name of any system configured as a name server in your OperationsAdvantage BASE domain. Press CHOICES for a list of recognized destination systems.
   - *Destination Device* — The full pathname of the backup device. You can back up to any of the following types of devices: cartridge tape (150 MB or 525 MB), digital audio tape (DAT), 8 mm Exabyte tape, 3480 tape stacker, and reel-to-reel magnetic tape. Press CHOICES for a list of available destination devices. These devices must be listed in the Device Table.
   - *Changer Element(s) (Low, High)* — Enter the media position in the magazine. If you specify a low position, only the one tape location specified will be used. If you specify a low position and a high position, a range of tapes will be used. If you want to use the entire magazine, then specify a low position of **1** and a high position equal to the number of tapes that the magazine can hold. If a backup spans magazines, then the positioning specified will apply for each magazine.

     Note: This field will appear only if you have a changer device installed.

- *Verify Backup* — Enter **yes** to verify the completed backup. Verifying the backup increases the time required to run the backup, but assures greater data integrity.

4. Press SAVE. A message stating that the entry was created successfully appears on your screen.
5. Press CANCEL to close the frame.

Creating a Raw Disk Slice Backup Table Entry

Why/When

The OperationsAdvantage BASE backup service stores the names of raw disk slices to back up, the destination system, the destination output device, and other information in backup tables. Before you can back up any raw disk slices, you must first configure a backup table entry in the raw disk slice backup table, */etc/bkup/config/bkslice.tab*, for the raw slice you want to back up.

Before You Start

If you want to back up information to a device connected to a remote system, both your local system and the remote system must be running the OperationsAdvantage BASE Remote Service (OSARS) server. Each system must also recognize the other as an OperationsAdvantage BASE domain nameserver. See Chapter 17, “Remote Services,” for instructions on setting up administrative domains.

Menu & Button Selections

<Administration>
<Backup>
<Configure>
<Raw Slices>
<add>

Procedure

To create a raw disk slice backup table entry:

1. Enter the name of the backup table entry. This name must be unique; if it already exists, you will be asked to enter a unique name. The backup table entry name can contain only letters, numbers, underscores, and periods.
2. Press SAVE. A new frame appears on your screen.
3. Enter the following information:
   - *Source Name of Raw Slice* — Enter the name or the alias of the raw slice to back up. Only one slice can be configured at a time.
   - *Destination System* — The name of the system to which the destination backup device is connected. The default is your local system; you can enter the name of any system configured as a name server in your OperationsAdvantage BASE domain. Press CHOICES for a list of recognized destination systems.
   - *Destination Device* — The full pathname of the backup device. You can back up to any of the following types of devices: cartridge tape (150 MB or 525 MB), digital audio tape (DAT), 8 mm Exabyte tape, 3480 tape stacker, and reel-to-reel magnetic tape. Press CHOICES for a list of available destination devices. The devices must be listed as in the device table.
   - *Changer Element(s) (Low, High)* — Enter the media position in the magazine. If you specify a low position, only the one tape location specified will be used. If you specify a low position and a high position, a range of tapes will be used. If you want to use the entire magazine, then specify a low position of **1** and a high position equal to the number of tapes that the magazine can hold. If a backup spans magazines, then the positioning specified will apply for each magazine.

     Note: This field will appear only if you have a changer device installed.
   - *Verify Backup* — Enter **yes** to verify the completed backup. Verifying the backup increases the time required to run the backup, but assures greater data integrity.
4. Press SAVE. A message stating that the entry was created successfully appears on your screen.
5. Press CANCEL to close the frame.

Changing a File/Directory Backup Table Entry

Why/When

Use the following procedure to change an existing file/directory backup table entry. For example, you might want to back up additional files or change the destination device.

Menu & Button Selections

<Administration>
<Backup>
<Configure>
<Files>
<modify>

Procedure

To change a file/directory backup table entry:

1. Enter the name of the backup table entry you want to modify. Press CHOICES for a list of configured backup table entries.
2. Press SAVE. A new frame appears on your screen.
3. Enter the new information in the fields you want to modify:
   - *Source* — Can be *User Entered List* or *Full Path of Backup List.* Enter *User Entered List* if you want to enter the names of the files/directories to back up on this form. Enter *Full Path of Backup List* if you have already created a file that contains the names of the files/directories to back up. Press CHOICES to select these entries.

Note: If you created the configuration with *Full Path of Backup List*, this list will be expanded, which allows modification of the list on this screen. When your changes are saved, a new list will be created under */etc/bkup/filelists*, even if you did not modify the list. The configuration can be modified without changing the original backup list.

- *Full Path of User Entered List* — If *Source* is *User Entered List*, enter a list of data to back up. Each entry must be on a separate line. The backup utility writes this information list to a file in the */etc/bkup/filelists* directory. If *Source* is *Full Path of Backup List*, enter the full pathname of the file containing a list of files/directories to back up (one per line). This file must already exist.
- *Destination System* — The name of the system to which the destination backup device is connected. The default is your local system; you can enter the name of any system configured as a name server in your OperationsAdvantage BASE domain. Press CHOICES for a list of recognized destination systems.
- *Destination Device* — The full pathname of the backup device. You can back up to any of the following types of devices: cartridge tape (150 MB or 525 MB), digital audio tape (DAT), 8 mm Exabyte tape, 3480 tape stacker, and reel-to-reel magnetic tape. Press CHOICES for a list of available destination devices.
- *Changer Element(s) (Low, High)* — Enter the media position in the magazine. If you specify a low position, only the one tape location specified will be used. If you specify a low position and a high position, a range of tapes will be used. If you want to use the entire magazine, then specify a low position of **1** and a high position equal to the number of tapes that the magazine can hold. If a backup spans magazines, then the positioning specified will apply for each magazine.

  Note: This field will appear only if you have a changer device installed.
- *Specific Owner* — The name of a user who must own all files to be backed up. This field is optional.
- *Specific Group* — The name of a group that must own all files to be backed up. This field is optional.

- *Days Since Modification* — A number of days ranging from 0 through 999. Only files that have been modified in this number of days are backed up. The default value, **000**, causes all files to be backed up.
- *Cross File System Boundaries* — Specify whether to cross file system boundaries when backing up a file system. For example, if */home* and */home/becky* are separate mountable file systems and you answer **yes,** a backup of */home* includes a backup of */home/becky*. If you answer **no,** only */home* is backed up.
- *Verify Backup* — Enter **yes** to verify the completed backup. Verifying the backup increases the time required to run the backup, but assures greater data integrity.

4. Press SAVE. A message stating that the entry was modified successfully appears on your screen.
5. Press CANCEL to close the frame.

Changing a File System Backup Table Entry

Why/When

Use the following procedure to change an existing file system backup table entry. For example, you may want to back up additional file systems or change the destination device.

Menu Selections

<Administration>
<Backup>
<Configure>
<File Systems>
<modify>

Before You Start

If you are performing a remote backup of the */* or */usr* file system, you must perform the backup on a device that is the same kind of device as one that is installed on the local system. (For example, only backup to a 5GB Exabyte if a 5GB Exabyte is installed on the local system or only backup to a DAT device with hardware data compression turned ON if there is a DAT which supports hardware data compression in the local machine.) The */* and */usr* file system restore can only be performed in maintenance or single-user mode. Therefore, the network will not be up and you must have access to the appropriate device at that time.

Procedure

To change a file system backup table entry:

1. Enter the name of the backup table entry you want to modify. Press CHOICES for a list of configured backup table entries.

2. Press SAVE. A new frame appears on your screen.
3. Enter the new information in the fields you want to modify:
   - *File Systems* — Enter a list of file systems to back up. Each entry must be on a separate line.
   - *Destination System* — The name of the system to which the destination backup device is connected. The default is your local system; you can enter the name of any system configured as a name server in your OperationsAdvantage BASE domain. Press CHOICES for a list of recognized destination systems.
   - *Destination Device* — The full pathname of the backup device. You can back up to any of the following types of devices: cartridge tape (150 MB or 525 MB), digital audio tape (DAT), 8 mm Exabyte tape, 3480 tape stacker, and reel-to-reel magnetic tape. Press CHOICES for a list of available destination devices.
   - *Changer Element(s) (Low, High)* — Enter the media position in the magazine. If you specify a low position, only the one tape location specified will be used. If you specify a low position and a high position, a range of tapes will be used. If you want to use the entire magazine, then specify a low position of **1** and a high position equal to the number of tapes that the magazine can hold. If a backup spans magazines, then the positioning specified will apply for each magazine.

     Note: This field will appear only if you have a changer device installed.
   - *Verify Backup* — Enter **yes** to verify the completed backup. Verifying the backup increases the time required to run the backup, but assures greater data integrity.
4. Press SAVE. A message stating that the entry was modified successfully appears on your screen.
5. Press CANCEL to close the frame.

Changing a Raw Disk Slice Backup Table Entry

Why/When

Use the following procedure to change an existing raw disk slice backup table entry. For example, you may want to back up additional slices or change the destination device.

Menu & Button Selections

<Administration>
<Backup>
<Configure>
<Raw Slices>
<modify>

Procedure

To change a raw disk slice backup table entry:

1. Enter the name of the backup table entry you want to modify. Press CHOICES for a list of configured backup table entries.
2. Press SAVE. A new frame appears on your screen.
3. Enter the new information in the fields you want to change:
   - *Source Name of Raw Slice* — Only one slice per tag can be entered into the field.
   - *Destination System* — The name of the system to which the destination backup device is connected. The default is your local system; you can enter the name of any system configured as a name server in your OperationsAdvantage BASE domain. Press CHOICES for a list of recognized destination systems.

- *Destination Device* — The full pathname of the backup device. You can back up to any of the following types of devices: cartridge tape (150 MB or 525 MB), digital audio tape (DAT), 8 mm Exabyte tape, 3480 tape stacker, and reel-to-reel magnetic tape. Press CHOICES for a list of available destination devices. These devices must be listed in the Device Table.
- *Changer Element(s) (Low, High)* — Enter the media position in the magazine. If you specify a low position, only the one tape location specified will be used. If you specify a low position and a high position, a range of tapes will be used. If you want to use the entire magazine, then specify a low position of **1** and a high position equal to the number of tapes that the magazine can hold. If a backup spans magazines, then the positioning specified will apply for each magazine.

  Note: This field will appear only if you have a changer device installed.
- *Verify Backup* — Enter **yes** to verify the completed backup. Verifying the backup increases the time required to run the backup, but assures greater data integrity.

4. Press SAVE. A message stating that the entry was modified successfully appears on your screen.
5. Press CANCEL to close the frame.

Listing File/Directory Backup Table Entries

Why/When

Perform this task when you want to view the configuration for a specific file/directory backup table entry or for all file/directory backup table entries. For example, you might want to know which device a particular backup table entry uses.

Menu Selections

<Administration>
<Backup>
<List>
<Files>

Procedure

Follow the procedure below to list or view a file/directory backup table entry:

1. Enter either the name of a specific backup table entry you wish to display, or **all** to display all file/directory backup table entries. Press CHOICES for a list of configured backup table entries.
2. Press SAVE. A frame similar to the following example appears:

```
tag:bk1
source:/etc/bkup/filelists/bk1
   destdev:phantom:/dev/rmt/c0t0d0s0
   verify:no
   criteria:owner=,group=,modified=,fsboundary=no
```

The *tag* is the name of the backup table entry. The *source* is the name of the file containing the list of files/directories to back up. The *destdev* is the destination system and device. The *verify* field specifies whether to verify the backup when it completes. *Criteria* specifies the specific owner (if any), the specific group (if any), the days since modification, and whether to cross file system boundaries.

3. Press CANCEL to close the frame.

Listing File System Backup Table Entries

Why/When

Perform this task when you want to view the configuration for a specific file system backup table entry or for all file system backup table entries. For example, you may want to know which device a particular backup table entry uses.

Menu Selections

<Administration>
<Backup>
<List>
<File Systems>

Procedure

To list or view a file system backup table entry:

1. Enter either the name of a specific backup table entry you wish to display, or **all** to display all file system backup table entries. Press CHOICES for a list of configured backup table entries.
2. Press SAVE. A frame similar to the following example appears:

```
tag:bk2
source:/etc/bkup/filelists/bk2
   destdev:phantom:/dev/rmt/c0t0d0s0
   verify:no
   criteria:
```

   The *tag* is the name of the backup table entry. The *source* is the name of the file containing the list of file systems to back up. The *destdev* is the destination system and device. The *verify* field specifies whether to verify the backup when it completes. *Criteria* is only used for file or directory backup table entries.

3. Press CANCEL to close the frame.

Listing Raw Disk Slice Backup Table Entries

Why/When

Perform this task when you want to view the configuration for a specific raw disk slice backup table entry or for all file system backup table entries. For example, you might want to know which device a particular backup table entry uses.

Menu Selections

<Administration>
<Backup>
<List>
<Raw Slices>

Procedure

To view the configuration for a raw disk slice backup table entry:

1. Enter either the name of a specific backup table entry you wish to display, or **all** to display all file system backup table entries. Press CHOICES for a list of configured backup table entries.
2. Press SAVE. A frame similar to the following example appears:

```
tag:bk3
source:/etc/bkup/filelists/bk3
   destdev:phantom:/dev/rmt/c0t0d0s0
   verify:no
   criteria:
```

The tag is the name of the backup table entry. The source is the name of the file containing the list of raw slices to back up. **destdev** is the destination system and device. The verify field specifies whether to verify the backup when it completes. Criteria is only used for file/directory backup table entries.

3. Press CANCEL to close the frame.

Removing File/Directory Backup Table Entries

Why/When

Use this procedure to delete an existing entry from the file/directory backup table.

Menu & Button Selections

<Administration>
<Backup>
<Configure>
<Files>
<remove>

Procedure

To delete an entry from the file/directory backup table:

1. Enter the name of the backup table entry you want to delete. Press CHOICES for a list of configured backup table entries.
2. Press SAVE. A message stating that the entry was removed successfully appears on your screen.
3. Press CANCEL to close the frame.

Removing File System Backup Table Entries

Why/When

Use this procedure to delete an existing entry from the file system backup table.

Menu & Button Selections

<Administration>
<Backup>
<Configure>
<File Systems>
<remove>

Procedure

To delete an entry from the file system backup table:

1. Enter the name of the backup table entry you want to delete. Press CHOICES for a list of configured backup table entries.
2. Press SAVE. A message stating that the entry was removed successfully appears on your screen.
3. Press CANCEL to close the frame.

Removing Raw Disk Slice Backup Table Entries

Why/When

Use this procedure to delete an existing entry from the raw disk slice backup table.

Menu & Button Selections

<Administration>
<Backup>
<Configure>
<Raw Slices>
<remove>

Procedure

To delete an entry from the raw disk slice backup table:

1. Enter the name of the backup table entry you want to delete. Press CHOICES for a list of configured backup table entries.
2. Press SAVE. A message stating that the entry was removed successfully appears on your screen.
3. Press CANCEL to close the frame.

Chapter 7

Backing Up Information

What You Should Know Before You Perform a Backup

Before you perform a backup, you should consider the following:

- File systems under the control of Volume Manager are backed up and restored using the <OA/BASE> (OperationsAdvantage BASE) Menu.
- If you have file systems that are controlled by Volume Manager, be sure to back up the databases and the entire slices where the databases are located.

Setting the Compression Method

Why/When

Use this task to set the compression method to be used for all backups originating on the system. The methods that can be selected are *none*, *hardware*, *software* and *both*. Compression will reduce the amount of media required to backup data on your system.

Menu Selections

<Administration>
<Backup>
<Set Compression>

Procedure

To set the compression method:

1. Enter the compression method that you want implemented. The method options are:
   - *none* - no data compression will be used for backups.
   - *hardware* - data compression will be attained by the compression algorithm used by the tape drive.

   Note: If you selected hardware data compression, the tape drive being used must be capable of data compression or the backup will be created without data compression. If a backup is created with hardware data compression, the backup must be restored on a drive with compression capabilities that uses the same compression algorithm.

   - *software* - all backups will be created using the adaptive Lempel-Ziv coding.
   - *both* - backups will be created using both software and hardware compression capabilities.

2. Press SAVE.

Setting Longlisting

Why/When

Use this task to change the setting for the creation of a longlisting when a backup is performed. A longlisting will enable you to view file details about the backups that have been performed.

Note: If longlisting is not set, the search for an individual file cannot be performed from the <Administration> <Restore> <Query Catalog> menu function.

Menu Selections

<Administration>
<Backup>
<Set Longlisting>

Procedure

The current selection for the creation parameter for catalog longlisting is displayed on the form that appears. The default entry is **yes**, which will cause a longlisting to be created during a backup. The longlistings file information can become large and affect disk space. If you experience system degradation, you might want to turn off the creation of longlistings to improve system performance. Enter **no** in the request form to prevent a longlisting from being created.

Backing Up Specific Entries

Why/When

Back up a specific table entry when you wish to create an external copy of the information configured in the entry, but you do not need a backup of the entire system. For example, you might want to back up only the files in a particular file system.

Before You Start

Before you can back up any information, you must first configure a backup table entry listing the files, directories, file systems, or raw disk slices you want to back up. See "Creating a File/Directory Backup Table Entry," "Creating a File System Backup Table Entry," or "Creating a Raw Disk Slice Backup Table Entry" in Chapter 6, "Configuring Backup Table Entries."

Note: If the backup table entry contains sparse files, you should use the <File System Management> menus to pack the files before backing them up. If you do not know whether sparse files exist, use the <File System Management> menus to detect them. See Chapter 5, "Managing File Systems," for instructions on using the <File System Management> menus.

Note: In the OA/BASE release 2.02, the OA/BASE Object Table management and the **mktable** utility have been enhanced to provide support for objects associated with ramdisk devices. These objects include ramdisk logical disk storage devices, ramdisk partitions, ramdisk slices, and ramdisk volumes for Volume Manager. After the ramdisk is installed and configured correctly, the ramdisk devices will appear in the OA/BASE Choices list for certain menu options. For additional information, see the *Ramdisk User's Guide.*

Menu Selections

<Administration>

<Backup>
<Start>

Procedure

To back up specific entries:

1. Enter **no** to specify that you do NOT want to perform a full system backup.
2. Enter **no** to specify that you do NOT want to start all configured backups of a specific type.
3. Enter the names of the backup table entries to start. Each entry must be on a separate line. Press CHOICES for a list of configured backup table entries.

   Note: If the backup table entry mentioned in step three is configured for a root file system or a /usr file system, then a choice is provided to make the backup loadable. A loadable backup option is provided only on systems installed with Release 3.02 of the OSA package. Further, the backup will be made loadable only if the load image has been installed on the system along with the OSA package.

   A *loadable backup* contains root *or/* and */usr* file system backup (in addition to another file system backup being optional) along with the load image. A *load image* is an image of a file system containing the necessary utilities required to restore corrupted root, */usr* and/or */var* file system. A loadable backup can be used to boot a system using the boot flex provided as a part of install media and perform a restore.
4. If you have specified any *file/directory* backup entries in Step 3, then an option is provided to exclude files from the backup. Use this option if you want to exclude files from the backup.
5. Specify whether to perform a full or incremental backup. Answer *incremental* to back up only those files that have changed since the last full backup or *full* to back up all files.

6. Press SAVE. A warning that data to be backed up should be inactive appears on your screen. You can perform backups in multiuser mode, but if any data being backed up is active, it could cause the data on the backup media to be wrong.
7. Press START to continue. A message instructing you to insert the backup media appears on your screen. If the tape is already in the drive, you will not be prompted to insert the tape.
8. Insert the tape, type **y**, and press ENTER to begin.

   If the tape currently has a backup on it, the tag is displayed and you are asked if you wish to overwrite it.

   When performing file system and raw slice backups, the backup utility writes all disk slicing and configuration information from the object table to the backup media so you can use it to rebuild a disk, if necessary.

   It also displays a recommended label for your backup media. Use this label on your backup media to make it easier to restore the correct information.
9. Press ENTER when instructed. The backup frames on your screen close.

Backing Up All Entries of a Specific Type

Why/When

Back up all backup table entries of a specific type when you wish to create an external copy of the information configured in the entries, but you do not need a backup of the entire system. For example, you might want to back up all raw slice entries, but not the file systems.

Before You Start

Before you can back up any information, you must first configure a backup table entry listing the files, directories, file systems, or raw disk slices you want to back up. See “Creating a File/Directory Backup Table Entry,” “Creating a File System Backup Table Entry,” or “Creating a Raw Disk Slice Backup Table Entry” in Chapter 6, “Configuring Backup Table Entries.”

Menu Selections

<Administration>

<Backup>

<Start>

Procedure

To back up all entries of a specific type:

1. Specify that you do NOT want to perform a full system backup.
2. Specify that you want to start all configured backups of a specific type.

3. Specify the type of backup you want to perform (*file/directory*, *file system*, or *raw slice*). Press CHOICES for a list of types. You can select any combination of one, two, or three types.

4. If you have specified any *file/directory* backup entries in Step 3, then an option is provided to exclude files from the backup. Use this option if you want to exclude files from the backup.

5. Specify whether to perform a full or incremental backup. Answer *incremental* to back up only those files that have changed since the last full backup or *full* to back up all files.

   Notes: If the type of backup chosen in step 3 is a file system backup and if any of the file system backup table entries are configured for root file system or /usr file system backup, then a choice is provided to make the backup loadable. A loadable backup option is provided only on systems installed with Release 3.02 of the OSA package. Further, the backup will be made loadable only if the load image has been installed on the system along with the OSA package.

   A *loadable backup* contains root *or/*and */usr* file system backup (in addition to another file system backup being optional) along with the load image. A *load image* is an image of a file system containing the necessary utilities required to restore corrupted root, */usr* and/or */var* file system. A loadable backup can be used to boot a system using the boot flex provided as a part of install media and perform a restore.

6. Press SAVE. A warning that data to be backed up should be inactive appears on your screen. You can perform backups in multiuser mode, but if any data being backed up is active, it could cause the data on the backup media to be wrong.

7. Press START to continue. If the tape has not been placed in the drive, a message instructing you to insert the backup media appears on your screen.

8. Insert the tape and type **y** and press ENTER to begin.

   If the tape currently has a backup on it, the tag is displayed and you are asked if you wish to overwrite it.

The backup utility writes the information specified in the backup table entry to the media and, if specified in the table entry, verifies the backup. For file system and raw slice backups, the backup utility also writes all disk slicing and configuration information from the object table to the backup media so you can use it to rebuild a disk, if necessary.

It also displays a recommended label for your backup media. Use this label on your backup media to make it easier to restore the correct information.

9. Press ENTER when instructed. The backup frames on your screen close.

Backing Up the Full System

Why/When

You should perform this procedure in the following cases:

- Before or after major changes to your system as well as at the scheduled time for a complete system backup
- Immediately after completing the initial setup of your system
- Immediately after installing a system update package or application that required a re-link of the kernel
- Immediately after reconfiguring your system (that is, before adding new disks, partitioning disks, and creating or moving file systems)
- Immediately before installing a system update package or application that requires a re-link of the kernel, if you do not have a current complete system backup
- Immediately before reconfiguring your system (that is, adding new disks, partitioning disks, and creating or moving file systems), if you do not have a current complete system backup

This task does not back up the entire system automatically; it backs up only the information configured to be backed up in the file system and raw disk slice backup tables. To back up your entire system, make sure that these two backup tables contain entries for all of the file systems and raw data slices on your entire system. Include the Volume Manager database as necessary.

Menu Selections

<Administration>
<Backup>
<Start>

Procedure

To back up the full system:

1. Specify that you want to start a full system backup. A warning that data to be backed up should be inactive appears on your screen. You can perform backups in multi-user mode, but if any data being backed up is active, it could cause the data on the backup media to be wrong.
2. Press START to continue after the warning is displayed. If the tape is not already in the drive, a message instructing you to put the backup media in the device appears on your screen.
3. Insert the tape and type **y** and press ENTER to begin.

   If the tape currently has a backup on it, the tag is displayed and you are asked if you wish to overwrite it.

   The backup utility first backs up all entries in the file system backup table, followed by the entries in the raw slice backup table. If either of these tables is empty or does not exist, a message is displayed on the screen. The backup utility also writes all disk slicing and configuration information from the object table to the backup media so you can use it to rebuild a disk, if necessary.

   It also displays a recommended label for your backup media. Use this label on your backup media to make it easier to restore the correct information.
4. Press ENTER when instructed. The backup frames on your screen close.

Listing Scheduled Backups

Why/When

Use this procedure to list the scheduling details of a previously scheduled backup operation.

Menu Selections

<Administration>
<Backup>
<Schedule>
<List>

Procedure

To list the scheduling details of a previously scheduled backup operation:

1. Enter the name of the scheduled backup you want to list. Press CHOICES for a list of scheduled backup entries.
2. Press SAVE. A screen similar to the following displays:

```
Name:  bat1
Backup Table Entry Name:  bkfilesys.tab:all
   Mail:  root
   Write: none
   Schedule Month:  all
   Schedule Day:  all
   Schedule Hour:  16
   Schedule Minute: 30
   Schedule Year: 95
```

Adding Scheduled Backups

Why/When

Use this procedure to create a new scheduled backup job.

Menu Selections

<Administration>
<Backup>
<Schedule>
<Add>

Procedure

To create a new scheduled backup job:

1. Enter the name of the scheduled backup job. This name must be unique; if it already exists, you will be asked to enter a unique name. The scheduled backup job name can only contain letters, numbers, underscores, and periods.
2. Press SAVE. A new form appears on your screen.
3. Enter the following information in the form. All fields must be filled in.
   - *Type of Backup* — Full system, table, or entry name. If you select *full system*, you will schedule a backup of all configured file system and raw slice entries. If you select *table*, you will schedule a backup of all configured entries for a specific backup table that you enter on the Backup Table Name field. If you select *entry name*, you will schedule a backup of the specific backup table entry names that you enter on the Backup Table Entry Name field. Press CHOICES to select the type of backup.

- *Full or Incremental Backup* — Enter **Full** to perform a full backup or **incremental** to perform an incremental backup. A full backup must have been performed before an incremental backup can be performed.
- *Backup Table Entry Name* — The name of the backup table entry you wish to schedule.
- *Schedule Month* — The months you want to schedule the backup. Month names should be in the format *jan*. Place a comma between month names. Enter **all** for all months. Use the CHOICES button to complete the selections.
- *Schedule Day* — The day names or numbers you want to schedule the backup. Day names should be in the format *mon, tue, wed*. Place a comma between day names or numbers. Enter **all** for all days.
- *Schedule Hour* — The two digit number of the hour you want to schedule a backup.
- *Schedule Minute* — The two digit number of the minute you want to schedule a backup.
- *Schedule Year* — The last two digits of the year that you want to schedule the backup.
- *User to Inform* — Enter the mail address of the person who is to receive notification. The mail message would be sent to the user in any of the three below mentioned cases:.
  a. When the scheduled backup has completed.
  b. When the End of Media has been reached and the next media has to be inserted.
  c. When the media being inserted is either defective or write-protected.
- *Backup to be made loadable* — Type **yes** if you want to make the backup loadable.

  Note: A loadable backup option is provided only on systems installed with Release 3.02 of the OSA package. Further, at the time of backup, it will be made loadable only if any of the backup table entries specified for the backup are configured for root or */usr* file system backup and the load image has been installed on the system along with OSA package.

A *loadable backup* contains root *or/and /usr* file system backup (in addition to another file system backup being optional) along with the load image. A *load image* is an image of a file system containing the necessary utilities required to restore corrupted root, */usr* and/or */var* file system.

Warning: This backup is for all configured backups of a specific type. You should verify that no device conflicts exist or you might lose backup data.

4. Press SAVE. The following message appears on the screen:

```
Scheduled Backup: 5_19
  Backup Table Entry Name: bkfilesys.tab
  Full or Incremental: incremental
  Destination Device: unknown device
  Scheduled Month: apr
  Scheduled Day: all
  Scheduled Time: 02:30
  Scheduled Year:  95
  Loadable: no
  Inform bhough by mail upon completion.

IF YOU WISH TO CONFIRM PRESS “CONFIRM“
OTHERWISE PRESS “CANCEL”
```

5. Press CONFIRM to confirm. A message is displayed on the screen.

```
bksched: backup job successfully scheduled.
Press ENTER to Continue.
```

6. Press ENTER, then click CANCEL. The <Add Scheduled Backup> menu appears again. You can enter another name of a backup job you want to schedule, or press CANCEL to return to the main OA/BASE menu.

Modifying Scheduled Backups

Why/When

Use this procedure to modify an existing scheduled backup job.

Menu Selections

<Administration>
<Backup>
<Schedule>
<Modify>

Procedure

To modify a scheduled backup:

1. Enter the name of the scheduled backup job you want to modify. Press CHOICES for a list of scheduled backup jobs.
2. Press SAVE. A new form appears on your screen.

```
Scheduled Backup: 5_19
Backup Table Entry Name: bkfilesys.tab
   Full or Incremental: incremental
   Backup Table Entry Name: all
   Scheduled Month: apr
   Scheduled Day: all
   Scheduled Hour: 02
   Scheduled Minute: 30
   Scheduled Year: 95
   User to Inform: bhough
   Backup to be loadable:
```

3. Change the fields that you want modified.

   Warning: This backup is for all configured backups of a specific type. You should verify that no conflicts exist or you might lose backup data.

4. Press SAVE. A screen similar to the following appears:

```
Scheduled Backup: 5_19
     Backup Table Entry Name: bkfilesys.tab
     Full or Incremental: incremental
     Destination Device: unknown device
     Scheduled Month: apr
     Scheduled Day: all
     Scheduled Time: 02:30
     Scheduled Year:  95
     Inform bhough by mail about the status of backup. .

IF YOU WISH TO CONFIRM PRESS “CONFIRM“
OTHERWISE PRESS “CANCEL”
```

5. Press CONFIRM to modify the scheduled backup. A screen similar to the following appears:

```
bksched:  backup job successfully modified.
Press ENTER to continue.
```

6. Press ENTER, then click CANCEL. The Backup Schedule menu appears.
7. Enter the name of another backup job you want to modify, or press CANCEL to return to the main OA/BASE menu.

Adding Date for Suspension of Scheduled Backups

Why/When

Use this procedure to add a date on which to suspend scheduled backups.

Menu & Button Selections

<Administration>
<Backup>
<Schedule>
<Suspend>
<add>

Procedure

To add a suspension date:

1. Enter the following information on the form that appears:
   - *Year* — The last two digits of the year on which scheduled backups should be suspended.
   - *Month* — The month on which scheduled backups should be suspended.
   - *Day* — The day scheduled backups should be suspended.
2. Press SAVE. A messages appears confirming that the scheduled backups have been suspended for the date you have chosen.

Listing Dates for Suspended Backups

Why/When

Use this procedure to list the dates when scheduled backups are suspended.

Menu & Button Selections

<Administration>
<Backup>
<Schedule>
<Suspend>
<list>

Display

A display similar to the following appears on your screen:

```
04/06/95
07/04/95
```

Removing a Date for Suspended Backups

Why/When

Use this procedure to remove a date for suspension of backups.

Menu & Button Selections

<Administration>
<Backup>
<Schedule>
<Suspend>
<remove>

Procedure

To remove a date for suspended backups:

1. Select the date to be removed from the screen that appears.
2. Press SAVE.

Setting the Reminder for Scheduled Backups

Why/When

Use this procedure to start or stop the mail reminder for scheduled backups.

Menu Selections

<Administration>
<Backup>
<Schedule>
<Set/Unset Reminder>

Procedure

To set the remainder for scheduled backups:

1. Enter **yes** in the form that appears if you wish to change the state of the mail reminder.
2. Press SAVE. A message appears confirming that the reminder message has been changed.

Viewing Scheduled Results

Why/When

Use this task to view scheduled backup output and statistics. This information is available only after a scheduled backup has been started. The backup output is saved for only the last run unless the job is run more than one time in a day. If so, all outputs for that day are saved and will not be removed until the next calendar day.

Menu Selections

<Administration>
<Backup>
<View Scheduled Results>

Procedure

To view the results of a scheduled backup:

1. Enter the name of the scheduled backup you want to view. Press CHOICES for a list of available backup names.
2. Press SAVE. A screen similar to the following appears:

```
job:  bat1
Logfile:  /etc/batch.d/log/bat1.1

   Starting Time:  Wed June 28 16:38:01 EDT 1995

   nodename:  3550

   tag:  bat1
   type: full
   date: Tue Jun 27 16:41:48 1995
   compression method: sw
```

Removing Scheduled Backups

Why/When

Use this procedure to remove a scheduled backup job.

Menu Selections

<Administration>
<Backup>
<Schedule>
<Remove>

Procedure

To remove a scheduled backup job:

1. Enter the name of the scheduled backup job you want to remove. Press CHOICES for a list of scheduled backup jobs.
2. Press SAVE. A new form appears on your screen.

```
Scheduled Backup: 5_19
     Backup Table Entry Name: bkfilesys.tab
     Full or Incremental: incremental
     Destination Device: unknown device
     Scheduled Month: apr
     Scheduled Day: all
     Scheduled Time: 02:30
     Scheduled Year:  95
     Inform bhough by mail upon completion.

IF YOU WISH TO REMOVE THIS SCHEDULED BACKUP
PRESS “CONFIRM”.  IF YOU DO NOT WISH TO REMOVE IT
PRESS “CANCEL”.
```

3. Press CONFIRM to remove the scheduled backup. A screen similar to the following appears:

```
bksched:  backup job successfully removed.
Press ENTER to continue.
```

4. Press ENTER to continue. The Backup Schedule menu appears.
5. Enter the name of another backup job you want to remove, or press CANCEL to return to the main OA/BASE menu.

Reserving Raw Areas

Why/When

This task reserves a raw area by making it unavailable to others so that it can be used exclusively for a particular task. **Raw areas** are data areas on a disk that are not controlled by a file system. For example, they might contain space used by a database. Use this task to reserve a raw area that is protected from being used by other operations.

Menu & Button Selections

<Configuration>
<Storage Device>
<Raw Area>
<reserve_area>

Procedure

To reserve a raw area:

1. Enter the name of the device to be reserved. Raw areas are slices, such as *c1t0d0s6*.
2. Press SAVE.

Chapter 8

Restoring Information

What You Should Know Before You Perform a Restore

Restoring an executable file or shared library while it is in use could cause process failure and data corruption. For example, never restore the cpio command or the shared library */usr/lib/libc.so.1*, *tape.io*, *tape.so* or *changes.so* to a live system. Always restore them from the maintenance mode. The file systems */dev/fd* and */dev/proc* should never be restored.

CAUTION: Extreme caution should be used when restoring files under */usr*. If */usr* is a separate file system, the *root* user must use the Bourne shell, and NOT the Korn shell at login. Because the Korn shell is located under the */usr/bin* directory, the root user will not be able to log in and will not be able to bring the system into single user mode if */usr* is unmountable for further restores. You can define the default shell to be used at login in the last field of the */etc/passwd* file. This will prevent the problem of not being able to log in to your system after reboot when */usr* is not mounted and needs to be restored.

Viewing the Backup Catalog

Why/When

This task allows you to query the backup catalog for information about past backups.

Menu Selections

<Administration>
<Restore>
<Query Catalog>

Procedure

To view the backup catalog, do the following:

1. Enter the following information on the form that appears on your screen:
   - *Type of Inquiry* can be *Backup Table Entry Name*, *Specific Search Data*, or *Full Path of Backup List*.

     If *Type of Inquiry* is *Backup Table Entry Name*, enter the name of the backup table entry about which you wish to inquire.

     If *Type of Inquiry* is *Specific Search Data*, enter the name of the specific item about which you wish to inquire. The item can be a file, directory, file system, or raw disk slice.

     Note: If Longlisting is not set, you cannot perform the Specific Data Search. If *Type of Inquiry* is *Full Path of Backup List*, enter the full pathname of a file containing a list of files or directories about which you wish to inquire. The file must be a file used to create a backup table entry and it must currently be in the backup catalog data.

- *Longlisting* can be *yes* for a listing of each file contained on the specified backup or *no* for a brief entry from the catalog that displays attributes such as the date it was backed up, the source and destination, whether it is full or incremental, and so on.
- *Criteria* can be either *Latest Occurrence* to view information about only the most recent occurrence of the information requested or *All Occurrences* to view information about all entries in the catalog of the information requested.

  Note: If *Longlisting* is set and you select the longlisting option, a listing of each file contained on the specified backup is also displayed.

2. Press SAVE. A message that shows the following information about the inquiry is displayed on your screen:
   - Backup table entry name containing the information
   - Date and time the backup was created
   - Name of file containing a list of files, directories, file system, or slice backed up
   - Name of device backup media was created on
   - Type of backup (full or incremental)
   - Label on backup media
   - Name of backup instance

Listing the Contents of Backups

Why/When

This task allows you to view a listing of the contents of backup media for file, directory and file systems backups. You cannot perform this procedure on raw slice backups or on or from a remote system.

Menu Selections

<Administration>
<Restore>
<List Backup Contents>

Procedure

To view the contents of a backup, do the following:

1. Enter the name of the device from which the backup media is to be read. Press CHOICES for a list of devices.
2. Press SAVE. A screen similar to the following appears:

```
Insert Tape 1 into Drive c0t3d0s0.  Type 'y'
followed by <ENTER> when ready.
(default: y) [y,n,?,q]
```

3. Insert the tape into the drive. Type **y** and press ENTER.

Verifying Backup Media

Why/When

Use this procedure to verify the integrity of backup media. This procedure will verify the check sum of the selected media.

Menu Selections

<Administration>
<Restore>
<Verify Backup Media>

Procedure

To verify the integrity of backup media, do the following:

1. Enter the following information on the form that appears on your screen:
   - *Source System*— The system name of the system where the source device is located. This is the nodename by which the system is known to the communications network. The name you use must be known to this machine.
   - *Source Device* — The storage device where the backup media is located.
   - *Search for Specific Backup Data on Media* — Enter **no** if you want to consider all backups on the media and determine which ones to verify as they are displayed. Enter **yes** if you want to search for specific backup types or data, and only consider those for verification. If you enter **yes** in this field, two more fields will be displayed that allow you to select the type of data to search for, and the specific data to search for.
2. Press SAVE. A screen similar to the following appears:

```
Insert Tape 1 into Drive c0t3d0s0.  Type 'y'
followed by <ENTER> when ready.
```

```
(default: y) [y,n,?,q]
```

3. Insert the tape into the drive. Type **y** and press ENTER.

Restoring Files and Directories

Why/When

This task allows you to restore files or directories that were backed up as a file and directory backup or as part of a file system backup.

The type of backup is determined when the backup table entry is configured. See Chapter 6, “Configuring Backup Table Entries,”in this guide for additional information.

Before You Start

The file system on which the files and directories reside must be mounted for the data to be restored successfully.

Note: In release 3.00 and previous releases of OA/ BASE, you cannot restore directories and files to another location.

If you perform an unconditional restore of files and directories from a *File System Type Backup,* the file system will be recreated automatically.

If you perform an unconditional restore of files and directories from a *File and Directory Type Backup* and the destination file system is missing or not mounted, files and directories are recreated and restored under the root file system.

If you perform a conditional restore of files and directories from a *File System Type Backup*, the file system will not automatically be recreated unless the destination file system is missing or not valid.

If you perform a conditional restore of files and directories from a *File and Directory Type Backup* and the destination File System is not mounted or missing, files and directories are recreated and restored under the root file system.

Menu Selections

<Administration>
<Restore>
<Start>

Procedure

To restore files or directories, do the following:

Note: If the file system containing the files you are restoring is mounted on a mirrored logical volume, you can detach the mirrored plex before restoring the files to improve the performance of the restore. You can then reattach the plex after the restore. See the Volume Manager documentation for instructions on detaching and reattaching plexes.

1. Enter the following information on the form that appears on your screen:
   - *Source System* is the name of the system from which the backup media is to be read.
   - *Source Device* is the name of the device from which the backup media is to be read.
   - In the *Search for Specific Backup Data on Media?* field, answer **no** to be prompted at every backup instance found on the media as to whether to restore this instance. If you answer **yes**, the following two fields will appear:
   - In the *Type of Search to be Done* field, enter CHOICES for a file list (for a backup that was made using a specific file list), **tagname** for a specific tag, **instance** for a specific backup instance, or **source name** for a specific source slice or file system.
   - In the *Specific Data to Search For* field, enter the tag, file list, instance, or source name to search for.
   - In the *Overwrite files that have been modified since backup?* field, answer **yes** to overwrite files that have been modified since the last backup and therefore perform an unconditional restore. Answer **no** to perform a conditional restore.

– In the *Limit Restore to Specific Files* field, answer **yes** to limit restore to specific files or answer **no** to restore all files. If you answer **yes**, the next two fields will appear:

```
Source of Files to Restore
Specific Files to Restore
```

– In the *Destination Directory for Restore* field, enter a relative path or location to restore data.

This field enables you to restore backup data to a relative path or location. This will allow restoration of multiple copies of the same file to different locations. If this is left blank, then the backup data will be restored to the original location. If the data is to be restored to a relative path, the data entered on this line must be a valid directory on the system. The relative path is also subject to */usr* and / restore checking. A relative path of */usr* cannot be used to restore files from a backup of a */usr* file system backup, and a relative path of / cannot be used to restore files from a backup of / file system. For example, if a relative path of */tmp* is specified, then a file named */home/joe/myfile* will be restored to the location */tmp/home/joe/myfile*. The full file path will be preserved with the relative path prepended.

Note: For backups made with OSA, the following is true. If you are restoring files that were backed up as part of a file system, leave off the initial / in the path name. For example, if you backed up a file system called */home/becky* and you want to restore a file named */home/becky/schedule*, specify the pathname *home/becky/schedul*e. Also, if you are restoring files in the */usr* file system from a file system backup tape, you must specify the pathnames relative to */usr*. For example, if you want to restore the file */usr/lib/mousemgr* from a backup tape of the */usr* file system, specify the pathname *lib/mousemgr*.

Table 8-1 describes how to specify the file and directory names for the User Entered List or as they are contained in the Restore List:

Table 8-1. File and Directory Names

Type of Backup Pathname Format	File and Directory	File System
For files	*/filename or /dirname/./filename*	*filename or dirname/../filename*
For directories	*/dirname/* or /.../dirname/**	*dirname/* or .../dirname/**

2. Press SAVE. A message instructing you to insert the backup media appears on your screen.
3. Insert the correct backup media and press **y** and ENTER.

   Note: If the backup contains packed sparse files, use the <File System Management> menus to unpack the files after restoring them. See *NCR UNIX SVR4 MP-RAS Administrator Guide: OA&M Menu Interface* for instructions on using the <File System Management> menus.

Restoring File Systems

Why/When

This task enables you to restore complete file systems if a system problem or operator error causes files to be lost or corrupted.

Before You Start

If the file system is mounted on a mirrored logical volume, you can detach the mirrored plex before restoring to improve the performance of the restore. You can then reattach the plex after the restore. See the Volume Manager documentation for instructions on detaching and reattaching plexes.

If the disk to which you are restoring a file system has been repartitioned or resliced by a previous restore, you should perform an unconditional restore to ensure that the file system is remade properly.

Note: In OA/BASE release 2.03 and later, the OA/BASE Object Table management and the **mktable** utility are enhanced to provide support for objects associated with ramdisk devices. These objects include ramdisk logical disk storage devices, ramdisk partitions, ramdisk slices, and ramdisk volumes for Volume Manager. After the ramdisk package is installed and a ramdisk has been configured, ramdisk slices and volumes will appear in the OA/BASE CHOICES list for certain file system menu options. For additional information, see the *Ramdisk User's Guide.*

Menu Selections

<Administration>
<Restore>
<Start>

Procedure

To restore file systems, do the following:

1. Enter the following information on the form that appears on your screen:
   - *Source System* is the name of the system from which the backup media is to be read.
   - *Source Device* is the name of the device from which the backup media is to be read.
   - In the *Search for Specific Backup Data on Media?* field, answer **no** to be prompted at every backup instance found on the media as to whether to restore this instance. If you answer **yes**, the following fields will appear:
   - In the *Type of Search to be Done* field, enter CHOICES for a file list (for a backup that was made using a specific file list), **tagname** for a specific tag, **instance** for a specific backup instance, or **source name** for a specific source slice or file system.
   - In the *Specific Data to Search For* field, enter the tag, file list, instance, or source name to search for.
   - In the *Overwrite files that have been modified since backup?* field, answer **yes** to overwrite files that have been modified since the last backup, or answer **no** to perform a conditional restore.

     Note: If the file system is mounted on a volume and one of the disks that makes up the volume is repartitioned or resliced, the file system will be automatically remade whether "overwrite" is specified or not. You may want to restore from tape using a file and directory listing so that the file system is not remade. Doing this does run the risk of the data on the volume being partially corrupted.

   - In the *Limit Restore to Specific Files* field, answer **yes** to limit restore to specific files or answer **no** to restore all files. If you answer **yes**, the next two fields will appear:

     ```
     Source of Files to Restore
     Specific Files to Restore
     ```

– In the *Destination Directory for Restore* field, enter a relative path or location to restore data.

  This field enables you to restore backup data to a relative path or location. This will allow restoration of multiple copies of the same file to different locations. If this is left blank, then the backup data will be restored to the original location. If the data is to be restored to a relative path, the data entered on this line must be a valid directory on the system. The relative path is also subject to */usr* and / restore checking. A relative path of */usr* cannot be used to restore files from a backup of a */usr* file system backup, and a relative path of / cannot be used to restore files from a backup of / file system. For example, if a relative path of */tmp* is specified, then a file named */home/joe/myfile* will be restored to the location */tmp/home/joe/myfile*. The full file path will be preserved with the relative path prepended.

  Note: For backups made with OSA, the following is true. If you are restoring files that were backed up as part of a file system, leave off the initial / in the path name. For example, if you backed up a file system called */home/becky* and you want to restore a file named */home/becky/schedule*, specify the pathname *home/becky/schedule*. Also, if you are restoring files in the */usr* file system from a file system backup tape, you must specify the pathnames relative to */usr*. For example, if you want to restore the file */usr/lib/mousemgr* from a backup tape of the */usr* file system, specify the pathname *lib/mousemgr*.

2. Press SAVE. A message instructing you to insert the backup media appears on your screen.

3. Insert the correct backup media and press **y** and ENTER.

   Note: If the backup contains packed sparse files, use the File System Management menus to unpack the files after restoring them. See the *NCR UNIX SVR4 MP-RAS Administrator Guide: OA&M Menu Interface* for instructions on using the File System Management menus.

Restoring Raw Disk Slices

Why/When

This task enables you to restore raw disk slices if a system problem or operator error causes data to be lost or corrupted.

Before You Start

If the raw data area resides on a volume, you must start the volume before you can restore the data. See the *Volume Manager System Administrator Guide* or the *Volume Administrator (Visual) Guide* for instructions on starting volumes.

Note: If the file system that contains the files you are restoring is mounted on a mirrored logical volume, you can detach the mirrored plex before restoring to improve the performance of the restore. You can then reattach the plex after the restore. See the Volume Manager documentation for instructions on detaching and reattaching plexes.

Menu Selections

<Administration>
<Restore>
<Start>

Procedure

To restore raw disk slices, do the following:

1. Enter the following information on the form that appears on your screen:
   - *Source System* is the name of the system from which the backup media is to be read.

- *Source Device* is the name of the device from which the backup media is to be read.
- In the *Search for Specific Backup Data on Media?* field, answer **no** to be prompted at every backup instance found on the media as to whether or not to restore this instance. If you answer **yes**, the following two fields will appear:
- In the *Type of Search to be Done* field, enter CHOICES for a file list (for a backup that was made using a specific file list), **tagname** for a specific tag, **instance** for a specific backup instance, or **source name** for a specific source slice or file system.
- In the *Specific Data to Search For* field, enter the tag, file list, instance, or source name to search for.
- In the *Overwrite files that have been modified since backup?* field, answer **yes** to overwrite files that have been modified since the last backup, or answer **no** to perform an unconditional restore.
- In the *Limit Restore to Specific Files* field, answer **yes** to limit restore to specific files or answer **no** to restore all files. If you answer **yes**, the next two fields will appear:

  ```
  Source of Files to Restore
  Specific Files to Restore
  ```

- In the *Destination Directory for Restore* field, enter a relative path or location to restore data.

  This field enables you to restore backup data to a relative path or location. This will allow restoration of multiple copies of the same file to different locations. If this is left blank, then the backup data will be restored to the original location. If the data is to be restored to a relative path, the data entered on this line must be a valid directory on the system. The relative path is also subject to */usr* and / restore checking. A relative path of */usr* cannot be used to restore files from a backup of a */usr* file system backup, and a relative path of / cannot be used to restore files from a backup of / file system. For example, if a relative path of */tmp* is specified, then a file named */home/joe/myfile* will be restored to the location */tmp/home/joe/myfile*. The full filepath will be preserved with the relative path prepended.

Note: For backups made with OSA, the following is true. If you are restoring files that were backed up as part of a file system, leave off the initial / in the path name. For example, if you backed up a file system called */home/becky* and you want to restore a file named */home/becky/schedule*, specify the pathname *home/becky/schedule*. Also, if you are restoring files in the */usr* file system from a file system backup tape, you must specify the pathname(s) relative to */usr*. For example, if you want to restore the file */usr/lib/mousemgr* from a backup tape of the */usr* file system, specify the pathname *lib/mousemgr*.

– In the *Specific Files to Restore* field, enter *User Entered Restore List* or *Full Path of Restore List*. If the source of the files is *User Entered List*, enter the names of the files or directories to restore. If the source of the files is *Full Path of Restore List*, enter the full pathname of a file containing a list of files to restore. You can selectively restore individual files from a backup tape. To restore a full directory, use */../dir_name/**. Do not use the file list used for backups if it contains directories. You must enter either specific file names or names of the form */../dir_name/**.

2. Press SAVE. A message instructing you to insert the backup media appears on your screen.

3. Insert the correct backup media and press **y** and ENTER.

   Note: If the backup contains packed sparse files, use the File System Management menus to unpack the files after restoring them. See the *NCR UNIX SVR4 MP-RAS Administrator Guide: OA&M Menu Interface* for instructions on using the File System Management menus.

Restoring from an OA&M Backup

Why/When

This task allows you to restore data from a backup tape created with the **sysadm** backup utility instead of the OperationsAdvantage BASE **backup** utility. If you used the **sysadm** Personal Backup, select *Personal_Restore*; if you used System Backup, select *System_Restore.*

Menu Selections

<Administration>
<Restore>
<OAM Restore>
<Personal Restore or System Restore>

Procedure

To restore data from a backup tape that was created with the **sysadm** utility, do the following:

1. Enter the following information on the form that appears on your screen:
   - In the *Overwrite files that have been modified since backup?* field, answer **yes** to restore the files (even if they have been modified) or **no** to restore only those files that have not changed since the backup.
   - *Source Device* is the name of the device from which the backup media is to be read.
2. Press SAVE. A message instructing you to insert the backup media appears on your screen.
3. Insert the correct backup media and press **y** and press ENTER to start.

Setting the Catalog Rotation Period

Why/When

This task allows you to change the length of time that backup history is saved in the catalog. Any backup history information older than the number of weeks specified is purged from the system.

Menu Selections

<Administration>
<Restore>
<Set Catalog Rotation>

Procedure

To set the catalog rotation period, do the following:

1. Enter the number of weeks that you wish to save backup history in the catalog. The minimum value is 1; the maximum is 999.

   Note: If the value has not been set at the time of the first backup, it is set to five weeks by default.

2. Press SAVE.

Restoring After a Catastrophic System Failure

Why/When

If all of the computer file systems (such as */*, */stand*, */usr*, and */var*) are destroyed, use the following procedure to restore the system with backup tapes that you have already created. This procedure applies if you created your system backup through OperationsAdvantage BASE or OSA. If you created your system backup through **sysadm**, see the *NCR UNIX SVR4 MP-RAS Administrator Guide: Command Line Interface.*

Note: Restore after a catastrophic system failure will fail if the root, /usr, or /var file system is under Volume Manager control. It is recommended that the root, /usr, or /var file system is moved to a non-Volume Manager slice before performing the back up.

Note: If you have a 4300 system, and it had a diagnostic partition, you need to re-install the diagnostic partition before you use the backup tapes to restore the system file systems. See the procedure for installing a diagnostic partition in the WorldMark 4300 User Guide.

Procedure

Note: This procedure requires you to use the boot media distributed with the operating system. In addition, if you are using non-loadable backups, the install media (Tape/CD-ROM) is required to complete this procedure. Use the information in Table 8-2 to complete the restore procedure with loadable backup media or non-loadable backup media.

Table 8-2. Restore Procedures

Procedure	If using loadable backup media	If using non-loadable backup media...
1. Insert the bootable media (boot flex or Core CD-ROM) provided with the installation media.	Insert the loadable backup tape into the tape drive.	Insert the install CD-ROM into the CD-ROM drive or insert the install tape into the tape drive.
2. If the system is on, restart it. If the system is off, turn it on. From the startup subsystem (SUS) menus, boot your system using the media chosen in Step.	Go to Step 3.	A message displays on your screen asking if you want to: `Perform installation` `Perform system maintenance` `Perform system restore` `Perform keyboard setup` Choose Perform system restore. Go to step 3.

3. A menu is displayed on your screen asking if you want to either restore *root*, */usr* or */var* file systems. Choose either *root* restore, */usr* restore, or */var* restore.
4. A list of tape devices available on your system is displayed. Specify the tape drive containing the backup tape.

   Note: If only one tape drive is present in the system, it is chosen by default.
5. Insert the tape containing the backup of the file system into the tape drive selected in Step 4 (if it is already not present in the tape drive).

6. If you chose *root* restore in step 3, a menu is displayed asking if you want to restore *root* file system only, */stand* file system only, or both. Choose the appropriate option.

   Note: It is better to choose both *root* file system and */stand* file system restore.

7. A prompt appears asking if you want to re-partition and re-slice the disk. After reading the following notes, decide whether or not you want to re-partition and slice the disk to match the disk configuration at the time of the backup:

   Note: If you answer **y**, the disk is repartitioned and sliced, and any data currently on the disk is destroyed. (This is not necessary if the disk is already partitioned and sliced properly.)

   If you do not want the slicing to match what it was at the time of the backup, slice the disk prior to restore, answer n when prompted for repartitioning and reslicing.

   Note: If a running system is not available for performing these tasks, you may repartition and reslice the disk in the system maintenance mode. However, be sure that each slice is large enough to hold the file systems that you are restoring. See the *NCR UNIX SVR4 MP-RAS Administrator Guide: Command Line Interface* for information about repartitioning and reslicing in maintenance mode.

8. A prompt appears that asks the following question:

   ```
   If the configuration of the disk has changed (e.g.
   addition of a Diagnostic Partition) since the time of
   backup, the dump table must be cleared, since the dump
   table entries may be invalid after restore.

   Would you like to clear the dump table now?
   ```

   Answer **y** or **n** depending on whether the configuration of the disk has changed. If you select **y**, the following message will be displayes:

   ```
   Please update dump table after system comes up, by
   referring to the entries in /etc/dumpnodes file.
   ```

9. A prompt appears, asking if you would like to perform a unconditional restore. Decide after reading the following note.

Note: An *unconditional restore* remakes the file system and restores all files on the tape; a *conditional restore* does not remake the file system or overwrite newer files.

10. A prompt appears, asking if you would like the restore to be interactive. Type **y** to restore displayed instances, and press ENTER.
11. Once the restore is complete, press ENTER to go back to menu displayed in step 3.
12. To restore the *root* file system, */usr* file system, or */var* file system, repeat steps 4 through 10. Then, after removing the flex from the flex drive, choose the Quit option to reboot the system. The system reboots from the hard disk.
13. Restore all other user data (if any) as explained in the sections: Restoring Files and Directories, Restoring File Systems, and Restoring Raw Disk Slices.

Restoring a Corrupted root, /usr, Or /var File System

Why/When

If the *root*, */usr*, or */var* file system becomes corrupt, preventing the system from running, use the following procedure to restore it from a backup tape you have already created. This procedure applies if you created your system backup through OperationsAdvantage BASE. If you created your system backup through **sysadm**, see the *NCR UNIX SVR4 MP-RAS Administrator Guide: OA&M Menu Interface*.

If all of your system file systems (such as */, /stand, /usr,* and */var)* are destroyed, use the procedures in the "Restoring After a Catastrophic System Failure" section.

Note: Restore after a catastrophic system failure will fail if the *root*, */usr*, or */var* file system is under Volume Manager control. It is recommended that the *root*, */usr*, or */var* file system is moved to a non-Volume Manager slice before performing the back up.

Procedure

To restore a corrupted *root*, */usr*, or */var* file system, follow the steps in Table 8-3.

Table 8-3. Restore a Corrupted root, /usr, Or /var File System

Procedure	If using loadable backup media	If using non-loadable backup media...
1. Insert the bootable media (boot flex or Core CD-ROM) provided with the installation media.	Insert the loadable backup tape into the tape drive.	Insert the install CD-ROM into the CD-ROM drive or insert the install tape into the tape drive.

Procedure	If using loadable backup media	If using non-loadable backup media...
2. If the system is on, restart it. If the system is off, turn it on. From the startup subsystem (SUS) menus, boot your system using the media chosen in Step 1.	Go to Step 3.	A message displays on your screen asking if you want to: `Perform installation` `Perform system maintenance` `Perform system restore` `Perform keyboard setup` Choose Perform system restore. Go to step 3.

3. A menu is displayed on your screen asking if you want to restore either: *root*, /usr, or /var file systems. Choose the file system you wish to restore.

4. A list of tape devices available on your system is displayed. Specify the tape drive containing the backup tape.

   Note: If only one tape drive is present in the system, it is chosen by default. Insert the tape containing the backup of */usr* file system into the tape drive selected (if it is already not present in the tape drive) and press ENTER.

5. A prompt appears asking if you want to re-partition and re-slice the disk. After reading the following notes, answer whether or not you want to re-partition and slice the disk to match the disk configuration at the time of the backup:

   Note: If you enter **y**, the disk is repartitioned and sliced, and any data currently on the disk is destroyed. This is not necessary if the disk is already partitioned and sliced properly.

   If you do not want the slicing to match what it was at the time of the backup, slice the disk prior to restore, answer n when prompted for repartitioning and reslicing.

Note: If a running system is not available for performing these tasks, you may repartition and reslice the new disk while in the system maintenance mode. However, be sure that each slice is large enough to hold the file systems that you are restoring. See the *NCR UNIX SVR4 MP-RAS Administrator Guide: Command Line Interface* for information about repartitioning and reslicing in maintenance mode.

6. A prompt appears, asking if you would like to perform a conditional restore. Decide after reading the following note:

   Note: An *unconditional restore* remakes the file system and restores all files on the tape; a *conditional restore* does not remake the file system or overwrite newer files.

7. A prompt appears, asking if you would like the restore to be interactive.
8. To restore display instances, type **y** and press ENTER.
9. Once the restore is complete, press ENTER to go back to the menu displayed in step 3.
10. Choose the Quit option from the menu. The system will be rebooted.

Chapter 9

Managing Users

Adding a User

Why/When

Before a user can access the system, you must add the user to the system so that a home directory is set up. Adding a user includes the following:

- Specifying a login name
- Placing the user in a group
- Defining a home directory
- Defining the user's shell
- Specifying whether the user should have system administrator privileges
- Setting values for the user in the */etc/passwd* and */etc/shadow files*

Before You Start

You need to know each user's login name, group, password information, and whether the user should have system administration privileges.

Menu Selections

<Administration>
<User/Group>
    <Add>

Procedure

To add a user:

1. Enter **user** at the *User or group:* prompt**.**
2. Press SAVE. A new form appears on your screen.

3. Enter the following information in the form:
   - *Comments* — Any helpful information about the user you are adding (such as the full name of the user). This field is optional. The entry can consist of one or more characters, but cannot include the colon (:) character.
   - *Login* — The login name of the user you are adding. This name consists of one to eight characters and cannot include the colon character (:).
   - *User ID* — The system automatically assigns this number and it appears on the screen, but you can change it if you wish. The system reserves User IDs between 0 and 100.
   - *Primary group* — The main group the user belongs to. The default group appears on the screen, but you can change it. Press CHOICES for a list of defined groups.
   - *Supplementary group(s)* — The names of any other groups this user belongs to. Press CHOICES for a list of defined groups. This field is optional.
   - *Home directory* — The user's login directory. When you enter the login name, this name automatically appears in the pathname on this screen. Again, you can change this default.
   - *Shell* — The shell the user will work in. The default appears on the screen.
   - *Login inactivity* — The maximum number of days allowed between uses of a login ID before that login ID is declared invalid. A value of zero indicates this feature is not being used.
   - *Login expiration date* — Date when the user will no longer be able to log onto the system using this login name. If this field is blank, it indicates that the login never expires. Specify this date as *mm/dd/yy*.
   - *System Administrative Privileges* — Whether the user should be allowed system administrative privileges. Default is *no*.

4. Press SAVE. The following message appears briefly on the bottom line of the screen, and then a new form appears:

   `Adding loginname to the system.`

5. Enter the following information in the form**:**

   – *Password status* — Choose from *lock* (locks password so that login can not be used), *no password* (requires user to set a password upon logging in the next time), or *password* (assigns a new password). Press CHOICES to select the password status.

   – *Maximum number of days the password is valid* — Users must change their passwords after this number of days. If this field is left blank, the password is valid indefinitely.

   – *Minimum number of days allowed between password changes* — Users must keep a password at least this number of days.

   – *Number of days for warning message* — Users receive a warning that their passwords expire soon for this number of days.

6. Press SAVE. A message that the system is defining password information appears, followed by information similar to the following example:

   ```
   darcy     PS     12/31/95     3     90     2
   ```

   In this example, *darcy* is the login name, *PS* specifies that the password is set, *12/31/95* is the expiration date, *3* is the minimum number of days between password changes, *90* is the maximum number of days the password is valid, and *2* is the number of days the system will send a warning message that it is time to change the password.

   WARNING: Code exists now that will allow uid aging. A user's uid can be aged in months and the file *letc/default/userdel* can control the default behavior of *userdel*. A *uidage=0* in that file will turn aging off while a number other than zero will turn it on. See *userdel* for more information.

Adding a Group

Why/When

You must explicitly add a group to the system before you can add users to the group. You place users in the same group for the following reasons:

- To simplify administration and control of users who are working on the same project
- To restrict users to certain commands or applications or both
- To prevent users in one group from accessing another group's files
- To restrict users from global access to the system

Menu Selections

<Administration>
<User/Group>
    <Add>

Procedure

To add a group:

1. Enter **group** at the *User or group:* prompt. You can also press CHOICES and select *group*.
2. Press SAVE. A new form appears.
3. Enter the following information:
   - *Group name* — Name of the group you are adding. This name consists of one to eight characters and cannot include the colon character (:).
   - *Group ID* — Number might already be assigned by default. The system reserves Group IDs between 0 and 100.

- *Primary member(s)* — Names of users who primarily belong to this group. These users must already be added to the system. Press CHOICES for a list of defined users.
- *Supplementary member(s)* — Names of users who are secondary members of this group. These users must already be added to the system. Press CHOICES for a list of defined users.

4. Press SAVE. The following message appears on your screen:

   `Group group was added to the system.`

Defining Defaults for Adding Users

Why/When

Use this task to define the characteristics of new users without redefining them for each one.

Menu Selections

<Administration>
<User/Group>
    <Define Defaults>

Procedure

To define the defaults for new users:

1. Change the defaults you wish to change:
   - *Primary group membership* — The group users are automatically placed in when they are added to the system. Press CHOICES for a list of defined groups.
   - *Base home directory* — The directory in which accounts for new users are created. The path of each user's home directory is the base directory, followed by the user's login ID. For example, if you define a base directory of user as the home directory and create a user account with the login ID **norah**, the home directory is */user/norah*. The default */user* appears on the screen.
   - *Skeletal home directory* — A directory containing programs and tools that may be useful to new users and that are automatically copied into each new user's home directory. The default */etc/skel* appears on the screen.
   - *Shell* — The shell the user will work in. The default */sbin/sh* appears on the screen.

- *Login Inactivity* — The maximum number of days allowed between uses of a login ID before that login ID is declared invalid.
- *Login expiration date* — Date when the user will no longer be able to log onto the system using this login name. Enter this date in the form *mm/dd/yy*. If blank, no default is assumed.

2. Press SAVE. A display similar to the following example appears on your screen:

```
group=users,4   basedir=/home  skel=/etc/skel
shell=/sbin/sh  inactive=0     expire=05/31/95
```

Listing Users

Why/When

Use this procedure to perform the following tasks:

- Display the names of all users who have accounts on your system
- Print a list of all users who have accounts on your system, particularly after you do the following:
  - Set up and add users to your system initially
  - Add a new user to your system

Menu Selections

<Administration>
<User/Group>
    <List>

Procedure

To list users who have accounts on your system:

1. Enter **user** at the *User or group:* prompt**.**
2. Press SAVE. A display listing all users defined on your system appears on your screen. The display includes the login name, user ID, group name, group ID, and comments for each user.

Listing Groups

Why/When

Use this procedure to display all groups on your system.

Menu Selections

<Administration>
<User/Group>
    <List>

Procedure

To list the groups on your system:

1. Enter **group** at the *User or group:* prompt, or press CHOICES and select *group*.
2. Press SAVE. A list of all groups defined on your system appears on your screen. The display lists the group name, group ID, primary members, and supplementary members for each group.

Modifying Attributes of Users

Why/When

Use this task to change a user's login name, user ID, primary or supplementary groups, home directory, shell, or system administrator privileges.

Menu Selections

<Administration>
<User/Group>
    <Modify>

Procedure

To modify a user's attributes:

1. Enter **users** at the *Users or group:* prompt.
2. Press SAVE. A new form appears.
3. Enter the login name of the user whose attributes you wish to change. Press CHOICES for a list of defined users.
4. Press SAVE. A form displaying information about that user appears.
5. Enter the changes you want to make. You can modify the following attributes by typing in a new value:
   - *Comments* — Any helpful information about the user (such as the user's full name). This field is optional. The entry can consist of one or more characters but cannot include the colon(:) character.
   - *Login* — The login name of the user.

- *User ID* — The system automatically assigns this unique number, but you can change it if you wish. The system reserves the User IDs between 0 and 100.
- *Primary group* — The main group the user belongs to. Press CHOICES for a list of defined groups.
- *Supplementary group(s)* — The names of any other groups this user belongs to. Press CHOICES for a list of defined groups. This field is optional.
- *Home directory* — The user's login directory.
- *Shell* — The shell the user will work in.
- *Login inactivity* — The maximum number of days allowed between uses of a login ID before that login ID is declared invalid.
- *Login expiration date* — Date when the user will no longer be able to log onto the system using this login name.
- *System Administrative Privileges* — Whether the user should be allowed system administrative privileges.

6. Press SAVE. A message that the user attributes have been modified successfully appears.

Modifying Attributes of Groups

Why/When

Use this task to change a group's name, group ID, primary or supplementary members.

Menu Selections

<Administration>
<User/Group>
    <Modify>

Procedure

To modify a group's attributes:

1. Enter **groups** at the *Users or groups:* prompt, or press CHOICES and select *groups*. Press SAVE. A new form appears.
2. Enter the name of the group whose attributes you wish to change. Press CHOICES for a list of defined groups.
3. Press SAVE. A form listing information about the selected group appears on your screen.
4. Enter the changes you want to make. You can modify the following attributes by typing in a new value:0
    - *Group name* — Name of the group.
    - *Group ID* — Number might already be assigned by default. The system reserves Group IDs between 0 and 100.
    - *Primary member(s)* — Names of users who primarily belong to this group. These users must already be added to the system. Press CHOICES for a list of defined users.

- *Supplementary member(s)* — Names of users who are secondary members of this group. These users must already be added to the system. Press CHOICES for a list of defined users.

5. Press SAVE.

Defining User Password Information

Why/When

To keep your system secure from unauthorized users, you should assign passwords to each user who has access to the system. Use this task to specify, for each user, a password status and a length of time the password is in effect before the user must choose a new one.

Menu Selections

<Administration>
<User/Group>
    <Define Password Info>

Procedure

To define user password information:

1. Enter values for the following fields**:**
   - *User login* — The login name for the user whose password information you want to define. When you type in this name, present values for other questions might appear. Press CHOICES for a list of users.
   - *Password status* — Choose from *lock* (locks password so that login can not be used), *no password* (requires user to set a password upon logging in the next time), or *password* (assigns a new password). Press CHOICES to select the password status.
   - *Maximum number of days the password is valid* — Users must change their passwords after this number of days.
   - *Minimum number of days allowed between password changes* — Users must keep a password at least this number of days.

- *Number of days for warning message* — Users receive a warning that their passwords expire soon for this number of days.

2. Press SAVE. A display of the new information similar to the following example appears on your screen:

```
norah   PS   00/00/00   0   100
```

This output means that user norah's password status is set as follows: *norah* is the login name, *PS* specifies that the password is set, *00/00/00* is the expiration date (not set in this example), *0* is the minimum number of days between password changes, and *100* is the maximum number of days the password is valid.

Removing Users

Why/When

Remove any user who no longer needs or has permission to access your system. This prevents unauthorized users from accessing your system undetected through an inactive login name.

Before You Start

Back up any files and directories belonging to the user. Look in the */var/mail* directory. If it contains a file that has the same name as the user, the user has mail. If the user has mail, either save any mail that is in the */var/mail/username* directory or delete the mail.

If you remove a user who has mail on your system, the user's mail remains on the system and can be removed only through the *root* login.

Menu Selections

<Administration>
<User/Group>
    <Remove>

Procedure

To remove users from your system:

1. Enter **user** after the *User or group:* prompt**.**
2. Press SAVE. A form asking the login name appears.
3. Enter the login name of the user you want to remove.

4. Press SAVE. A form asking whether to remove the user's home directory and files appears.
5. Specify whether you want to remove the user's home directory and files.
6. Press SAVE. The following message appears on your screen:

   `User` *`user`* `was removed from the system.`

Removing Groups

Why/When

Remove a group when you no longer need the group on your system. This action removes the group entry from the */etc/group* file.

Do NOT delete the following groups:

```
root   uucp    lp      other    tty
sys    mail    bin     adm      daemon
```

Before You Start

You must remove all users from the group before you remove the group.

Menu Selections

<Administration>
<User/Group>
    <Remove>

Procedure

To remove a group from your system:

1. Enter **group** after the *User or group:* prompt, or press CHOICES and select *group.*
2. Press SAVE. A form asking for the name of the group to remove appears.
3. Enter the name of the group you want to remove. Press CHOICES for a list of groups.

4. Press SAVE. A display showing the group name, group ID, lists of primary and supplementary membership, and a note about invalid references to the group ID that remain on the system appears on your screen.
5. Press CONT to confirm that you want to remove the group. A message that the group was deleted successfully appears.

Chapter 10

Installing and Removing Software Packages

Adding an Installation Defaults File

Why/When

Before installing or removing any packages, you should consider the values for your installation default parameters. These are the parameters the system uses for instructions when it encounters problems in both interactive and non-interactive installations.

Menu Selections

<Configuration>
<Software>
    <Installation Defaults>
    <Add>

Procedure

To add an installation defaults file, do the following:

1. Enter the following information on the form:
   - *Installation defaults filename* — The filename for the installation defaults file you are creating (a name that describes how the file is to be used). This filename can be up to 14 characters.
   - *Default base directory for packages* — The directory the packages are automatically sent to. Enter **ask** if you want to be prompted during installation for the default base directory or **default** if you want the base directory specified by the package.
   - *List of users to notify* — A comma-separated list of users the system should notify if the installation or removal of a package begins modifying the system. Press CHOICES for a list of users.

- *Action* — Which action the system should take for each situation listed. For example, what is the system to do if it discovers that the package is already partially installed? Not all options are available for each situation, but appropriate ones do appear in the CHOICES menu.
- *ask* — Prompts the operator for a decision if a problem is encountered.
- *nocheck* — Precludes the system checking for the problem.
- *nochange* — Causes the installation to continue without the source of conflict (such as conflicting files).
- *quit* — Terminates the installation.
- *newonly* — Allows only new instances of packages to be installed. If you select this action, new instances of existing packages are not installed and existing packages are not overwritten.
- *overwrite* — Overwrites a different instance of the package with the newer package.
- *unique* — Instructs the install service to try to install the package by creating another package instance.

2. Press SAVE. A message that the installation default file you specified has been added appears on your screen.

Displaying an Installation Defaults File

Menu Selections

<Configuration>
<Software>
    <Installation Defaults>
    <List>

Procedure

To display an installation defaults file, do the following:

1. Enter the name of the installation defaults file you wish to view. Press CHOICES for a list of installation defaults files.
2. Press SAVE. The rest of the default information appears on the form. This information is similar to the following example:

```
Installation defaults filename: default
Default base directory for packages: default
List of users to notify: root

    ACTION    SITUATION
    ask        Incorrect run level during installation
                or removal
    nocheck    Package contains a pathname in conflict
               with other packages
    nocheck    Package contains a setuid/getuid process
    nocheck    Package contains scripts which may
                affect security
    ask        Package dependencies are not met during
               installation
    ask        Package dependencies are not met during
               removal
    ask        Disk space requirements are not met
    ask        Packaging is already partially installed
    overwrite  A different version of the package is
              already installed
```

Changing an Installation Defaults File

Menu Selections

<Configuration>
<Software>
    <Installation Defaults>
    <Modify>

Procedure

To change an installation defaults file, do the following:

1. Enter the name of the installation defaults file you wish to view. Press CHOICES for a list of installation defaults files.
2. Press SAVE. The rest of the default information appears on the form. Enter the desired changes on the form. You can change any of the following:
   - *Default base directory* — A directory the packages are automatically sent to.
   - If you want to be prompted during installation for the default base directory, enter **ask**.
   - If you want to use the base directory specified by the package, enter **default**.
   - *List of users to notify* — The users the system should notify if the installation or removal of a package begins modifying the system.
   - *Action* — Which action the system should take for each situation listed. For example, what is the system to do if it discovers that the package is already partially installed. Not all options are available for each situation, but appropriate ones do appear in the <choices> menu.
   - *ask* — Prompts the operator for a decision if a problem is encountered.
   - *nocheck* — Precludes the system checking for the problem.

- *nochange* — Causes the installation to continue without the source of conflict (such as conflicting files).
- *quit* — Terminates the installation.
- *newonly* — Allows only new instances of packages to be installed. If you select this action, new instances of existing packages are not installed and existing packages are not overwritten.
- *overwrite* — Overwrites a different instance of the package with the newer package.
- *unique* — Instructs the install service to try to install the package by creating another package instance.

3. Press SAVE. A message that the administrative file has been modified appears on your screen.

Removing an Installation Defaults File

Menu Selections

<Configuration>
<Software>
    <Installation Defaults>
    <Remove>

Procedure

To remove an installation defaults file, do the following:

1. Enter the name of the installation defaults file you want to remove. Press CHOICES for a list of installation defaults files.
2. Press SAVE. A message notifying you that the administrative file has been removed appears on your screen.

Installing a Software Package

Why/When

Use this task to install a software package from an external device or from a directory where it is stored.

Menu Selections

<Configuration>
<Software>
    <Install>

Procedure

To install a software package, do the following:

1. Enter the following information:
   - *Package location* — The device on which the software to be installed resides (for example, */dev/dsk/c100t5d0s0*) or a pathname to a directory where the software is spooled. Press CHOICES for a list of possible package locations.
   - *Package name(s)* — The name of the packages you want to install. You can specify a specific package, multiple packages on the same volume, or all packages. You can also leave this response blank and the system prompts you later to select the packages you want to install from a list it provides.
   - *Pathname to response file* — The pathname of the file that specifies responses.
   - *Installation defaults filename* — The name of the file that specifies default characteristics of the installed package.
2. Press SAVE.

3. Insert the installation media in the device drive and type **go**.
4. Press ENTER.

Storing Packages

Why/When

You can store a package in a spool directory without actually installing it. You can install it from this directory at a later time.

Menu Selections

<Configuration>
<Software>
    <Spool>

Procedure

To store a package in a spool directory, do the following:

1. Enter the following information on the form:
   - *Location of software to be read in* — The device on which the software to be stored resides (for example, *f0t*) or enter a pathname to a directory where the software is spooled. Press CHOICES for a list of possible package locations.
   - *Package name(s)* — The name of the packages to be read in. You can specify a specific package, multiple packages on the same volume, or all packages. You can also leave this response blank and the system prompts you later to select the packages you want to install from a list it provides.
   - *Directory where package should be spooled* — The directory where the package should be spooled.
2. Press SAVE. A prompt instructing you to insert the media appears.
3. Insert the media in the device drive and type **go**.

Storing Interaction with Packages

Why/When

When you install a package in non-interactive mode, you must prepare answers for the questions that a package installation script would ask you during the installation process. Your answers are stored in a file called a response file.

Menu Selections

<Configuration>
<Software>
    <Store Interactions>

Procedure

To store package installation instructions in a response file, do the following:

1. Enter the following information:
   - *Package location* — The device on which the software to be stored resides (for example, */dev/rdsk/f0t*) or enter a pathname to a directory where the software is spooled.
   - *Package name(s)* — The name of the packages to be read in. You can specify a specific package, multiple packages on the same volume, or all packages. You can also leave this response blank and the system prompts you later to select the packages you want to install from a list it provides.
   - *Path to response file* — The path to the file in which the interaction entries are to be stored.
2. Press SAVE.

3. Insert the media in the device drive and type go. Any installation questions appear on your screen. (See *Installing NCR UNIX SVR4* for an explanation of installation questions and responses.)
4. Enter the responses for all questions and press ENTER. A message that the responses have been stored successfully appears.

Checking Installed Packages

Why/When

Use this task to check the integrity of a package after it has been installed on your system or stored on a device. This task determines if an object has been modified by software or other actions since it was installed.

Menu & Button Selections

<Configuration>
<Software>
    <Check>
    <installed>

Procedure

To check the integrity of an installed package, do the following:

1. Enter the following information on the form:
   - *Package identifier(s) to check* — A comma-separated list of the names of packages you want to check. Press CHOICES for a list of packages, or enter **all** to check all installed packages.
   - *Pathname(s) to check* — The pathnames of the packages you want to check, or **all** to check all pathnames.
2. Enter **yes** or **no** to specify the checks you want to perform. You can perform the following checks:
   - Check for attribute consistency?
   - Check for content consistency?
   - Check for hidden files?
   - Correct all detected inconsistencies?
   - Check files which are likely to have changed?

- Display each pathname as it is verified?

3. Press SAVE. The information about the packages scrolls on your screen.

Checking Packages against Original Media

Why/When

Use this task to check an installed package against the original media it was installed from.

Menu & Button Selections

<Configuration>
<Software>
    <Check>
    <original>

Procedure

To check an installed package against its original media, do the following:

1. Enter the following information:
   - *Location of software* — The device that contains the package to be used to check installed software (for example, *f0t*) or a pathname to a directory where the software is spooled.
   - *Package identifier(s)* — The names of packages you want to check.
   - *Pathname(s) to check* — The pathnames of the packages you want to check.

2. Enter **yes** or **no** to specify the checks you want to perform. You can perform the following checks:
   - Check for attribute consistency?
   - Check for content consistency?
   - Check for hidden files?
   - Correct all detected inconsistencies?

- Check files which are likely to have changed?
- Display each pathname as it is verified?

3. Press SAVE.
4. Insert the media in the device drive and type **go**. The package information scrolls on the screen.

Checking Spooled Packages

Why/When

Use this task to check for changes in a spooled package.

Menu & Button Selections

<Configuration>
<Software>
    <Check>
    <spooled>

Procedure

To check for changes in a spooled package, do the following:

1. Enter the following information on the form:
   - *Location of software* — Pathname of the directory where the software is spooled.
   - *Package identifier(s)* — Names of the packages you want to check.
   - *Pathname(s) to check* — Pathnames of the packages you want to check.
   - *Display each pathname as it is verified?* — Whether each pathname should be displayed as the package is verified.
2. Press SAVE. The information about the packages scrolls on the screen.

Listing Installed Software Packages

Why/When

Use this task to display information about installed packages.

Menu Selections

<Configuration>
<Software>
    <List>

Procedure

To display information about an installed package, do the following:

1. Enter the following information on the form:
   - *Location of software* — Press CHOICES to select either *installed, spool,* or *media.*
   - *Package name(s)* — Names of the packages or the word **all** to list all packages currently installed. Press CHOICES for a list of packages.
   - *Category of packages* — Press CHOICES to select either *system, utilities,* or *application.*
   - *Amount of information to display* — Press CHOICES to select either *short, medium,* or *long.*
   - *Short* produces a one-line per package table that displays the package type (*system* or *application*), package name, and a short description.
   - *Medium* produces a two-line per package tape that displays the package name, a short description, its architecture type (for example, *i386),* and its version number.

- *Long* lists the package name, description, category, architecture, version, vendor, install date, status, and number of files for each package. If you select *long*, it takes longer to display package information.

2. Press SAVE. The package information appears on your screen.

Removing Software Packages

Menu Selections

<Configuration>
<Software>
    <Remove>

Procedure

To remove an installed package, do the following:

1. Enter the following information on the form:
   - *Location of package to be removed* — Device software currently is on. Press CHOICES for a list of devices.
   - *Package name(s) to be removed* — Names of the packages to be removed. Press CHOICES for a list of packages.
2. Press SAVE.
3. Press CONT to confirm that you want to remove this package. For each package that you remove, you see messages about removing, verifying, processing, and executing. The system may rebuild the kernel after removing certain packages.

   When a package has been removed, the following message appears:

   `Removal of <pkgname> was successful.`

Chapter 11

Managing Storage Devices

Device Types

Your computer can use a combination of the following types of Small Computer System Interface (SCSI) magnetic or optical data storage devices:

- Hard disks
- Flexible diskettes
- Tapes
- Other SCSI devices
- Ramdisk

Hard Disks

The UNIX operating system stores all system software and user files on hard disks. These disks are available in a variety of sizes with flexible amounts of storage capacity that allow you to add more devices as your storage needs change.

Flexible Diskettes

Flexible diskettes are generally used to load software packages or user files onto the hard disk, to back up user files, and sometimes to back up file systems.

Tapes

Tapes are used primarily to back up files and file systems at high speeds or to restore individual files. Because of their high storage capacity, tapes are an efficient way to store data.

SCSI Devices

Small Computer System Interface (**SCSI**) devices are a group of devices that adhere to the American National Standards Institute (ANSI) standard for connecting intelligently-interfaced peripherals to computers. The **SCSI bus** is a daisy-chained arrangement originating at the same SCSI adapter card. SCSI devices do not require major hardware or software changes and are therefore easily adaptable to your computer.

To get the information you need to administer SCSI devices, you should refer to two sets of manuals: those for the computer and those for the SCSI device. The book for the SCSI device should contain information about the device that will be useful in adding the device to your system. For example, a SCSI disk book has information about cylinders, heads, and sectors, and how these items translate into blocks. It should also contain information about disk capacity, where to find bad block information, and the disk type.

Ramdisk

In OA/BASE release 2.03 and later, the OA/BASE Object Table management and the **mktable** utility are enhanced to provide support for objects associated with ramdisk devices. These objects include ramdisk logical disk storage devices, ramdisk partitions, ramdisk slices, and ramdisk volumes for Volume Manager.

After the ramdisk package is installed and a ramdisk has been configured, ramdisk slices and volumes will appear in the OA/BASE CHOICES list for certain file system menu options. For additional information, see the *Ramdisk User's Guide.*

Configuring a Fixed Disk

To configure a fixed disk for your system, you might have to perform the following steps:

- Format the disk if it is unformatted.

  If configuring a Disk Array or a stand alone disk that is part of a Disk Array, use the RAID Manager to configure and format the disk(s). See the *NCR RAID Manager 3.0 User Guide for UNIX V.4* for additional information.

- Mark bad blocks.
- Partition the disk if you plan to install a second operating system on this disk or if you need to specify an active partition.
- Slice the disk if you do not want to use the default slicing.
- Move a file system to each slice or create a file system on each slice.

This chapter contains the procedures to perform these tasks except for moving or creating a file system. To move or create a file system, see Chapter 5, “Managing File Systems.”

Formatting Fixed Devices

Why/When

Use this task to format SCSI hard drives. Formatting imposes an addressing scheme onto the media. Formatting a disk that has already been used erases any data that is on the disk.

Menu Selections

<Configuration>
<Storage Device>
    <Format>
<Fixed Device>

Disk Array

Use RAID Manager to configure and format a disk that is part of a Disk Array. See the *NCR RAID Manager 3.0 User Guide for UNIX V.4* for additional information.

Procedure

To format a hard drive:

1. Enter the name of the fixed device that you want to format.
2. Press SAVE.

Formatting Removable Devices

Why/When

Format flexible diskettes before you use them for storing information. Formatting imposes an addressing scheme onto the media. Formatting a diskette that has already been formatted and used to store data, erases all of the data on the diskette.

When formatting flexible diskettes, it is a good idea to format the entire box at one time and label the box so you know that the diskettes in that box are already formatted. An alternative is to buy pre-formatted flexible diskettes. Make sure that they have been formatted for your NCR UNIX SVR4 system rather than for some other operating system, such as DOS.

Menu Selections

<Configuration>
<Storage Device>
    <Format>
<Removable Device>

Procedure

To format a diskette:

1. Enter the name of the device drive that will contain the volume to be formatted.
2. Press SAVE.
3. Specify the format density you desire, (might be displayed, depending on which device you specify)**.** The manufacturer's label on the diskette should indicate the density. Choose **high** or **low**.
4. Insert the diskette you want to format and press CONT.

Displaying Bad Blocks

Why/When

Data is stored on a disk in small units called **blocks**. A block is a contiguous section of the disk. Different disks may have different block sizes. A bad block is a block that cannot be relied on to contain data without changing it. When data is stored on a disk, you expect to be able to read that data and be sure it is the same as when it was written. Use this task to display the bad blocks listed on your system.

Menu Selections

<Configuration>
<Storage Device>
    <Bad Block>
    <List>

Procedure

To display bad blocks:

1. Enter the following information on the form:
   - *Device Name* — For example, *c1t0d0sa*.
   - *List Type* — Choose between *field-grown defect list* (those detected by the system) and *manufacturer's defect list* (those reported by the assembly plant).
   - *Display Format* — Choose between *bytes_from_index* (displaying a block location as a byte offset) and *physical_sector* (displaying block location as a physical sector).

2. Press SAVE. If you specify *bytes_from _index* as your display format, you see output similar to the following, listing bad blocks on your system according to cylinder, head, and offset.

```
Cylinder  Head  Offset
--------  ----  ------
     10    14  21857
     11    14  21857
     12     8  14959
     13    14  21860
     15    14  21860
```

If you specify *physical_sector* as your display format, you see output similar to the following, listing bad blocks on your system according to cylinder, head, and sector.

```
Cylinder  Head  Sector
--------  ----  ------
     10    14      37
     11    14      37
     12     8      37
     13    14      37
     15    14      37
```

Marking Bad Blocks

Why/When

Use this task to add a defective block to the field grown defect list.

Menu Selections

<Configuration>
<Storage Device>
    <Bad Block>
<Mark>

Procedure

To mark a bad block:

1. Enter the following information on the form:
   - *Device Name* — For example, *c1t0d0sa.*
   - *Bad Block Format* — Specify the format you will use to enter the number: *decimal* for decimal number or *hex* for hex number.
   - *Bad Block Number* — Enter the number of the bad block, given in the format you specified above.
2. Press SAVE.

Partitioning Devices

Why/When

Use this task to divide a fixed disk into partitions. A fixed disk may contain up to four of these partitions. If you create a UNIX partition, the Volume Table of Contents (*vtoc*) structure and the Physical Device information (*pdinfo*) structure are also initialized. This task should also be used to change the active UNIX or DOS partition.

Before You Start

You must logically remove all file systems present on the disk you want to partition. If you want to restore these file systems after you have partitioned the disk, back them up before you remove them. You can logically remove them by selecting the following menu sequence: <Configuration>, <File System>, <Remove> or <Administration>, <File System>, <Remove>. See Chapter 5, “Managing File Systems,” for more information about removing file systems.

Menu Selections

<Configuration>
<Storage Device>
<Partition>

Procedure

This procedure consists of four phases; accessing the partitioning screen, deleting the default partitioning, creating partitions, and changing active partitions.

Accessing the Partitioning Screen

The first step of the procedure to partition devices is to access the partitioning screen.

1. Enter the name of the device you want to partition on the form.
2. Press SAVE. A warning appears. This screen gives you an opportunity to cancel the operation before you destroy any information on the disk.
3. Press ENTER to continue. A display similar to the following appears:

```
Partition Status    Type    Start  End   Length  %
========= ======    ====    =====  ===   ======  ==
  1       Active UNIX System    0  774     775  100
  1.  Create a UNIX partition.
  2.  Change Active (Boot from) partition
  3.  Delete a partition
  4.  Exit (Update a disk configuration and exit)
  5.  Cancel (Exit without updating disk configuration)
```

   The number of cylinders that appears on this screen differs according to the size of your disk. The disk in this example is 100 MB.

4. Select an action from the partitioning screen.
   - If you are satisfied with the default setup, select item **4** to exit the partitioning task.
   - If you are not satisfied with the default setup, continue with the next section to change it.

Deleting the Default Partitioning

Before you can create a new partition, you must first have space in the partition table. If no space exists you will need to delete an existing partition.

1. Delete the default partition by pressing **3**. The following message appears:

```
Enter the number of the partition you want to
delete.
```

2. Enter the number of the partition you want to delete. The following message appears:

```
Do you want to delete partition1?  This will erase
all files and programs in this partition (type “y”
or “n”).
```

3. If there are no files and programs that you need to save in that partition, press **y**. The partition you specified is deleted and the partitioning menu reappears. You now have room to create a partition.

   Note: If you attempt to delete a NCR_Diag(diagnostic partition), you receive the following message before the delete confirmation:

   ```
   WARNING:  Attempting to remove the Diagnostic
   Partition. Removing the partition could prevent
   remote support and possibly violate your support
   contract.  To continue with the removal type "y".
   To prevent the removal and the delete function type
   "n" (n is the default).
   ```

4. If you enter **y**, the partition delete will continue.

Creating Partitions

After you have deleted a partition, you have room on your hard disk to create a new partition. You must create a UNIX system partition.

1. Create a UNIX partition by pressing **1**.

   If the disk still contains defined partitions, the new UNIX partition is added after the end of the last defined partition and occupies the remaining space on the disk. If no partitions are defined, the UNIX partition occupies the entire disk.

2. Specify this partition as the Active partition (that is, the one that is booted when the system is turned on or reset). To specify an active partition, see the “Changing Active Partitions” section.

   The partition menu appears again, showing the partition you just created in the partition table.

   Note: You can specify only one active partition for each disk at any given time.

3. When you have created the UNIX partition , save the information in the partition menu and exit the process by typing the number **4.**

Changing Active Partitions

After you have created a partition, you need to specify that this partition is the *active partition*. That is the one that is booted when the system is turned on or reset.

Note: You must specify an active partition for each disk on your system in order to access that disk.

1. Press **2** from the Partition menu. A message will appear. Enter the following information:

   ```
   Enter the number of the partition you want to access on th
   e SCSI disk (or enter 0 for none):
   ```

2. Press **1**, **2**, **3**, or **4**, depending on which partition you wish to specify as the active partition. If you made partition 1 the active partition, the following message will appear and the partition menu will reflect that partition 1 is “Active” in the status field.

   ```
   Partition 1 is now the accessible partition on the
   SCSI disk.
   ```

Slicing UNIX Partitions

Why/When

This task allows you to subdivide the UNIX partition into finite pieces. Slice 0 represents the entire capacity of the UNIX partition, while slices 1-15 represent the subdivided capacity.

Before You Start

Before you can modify slices that contain file systems, you must logically remove them by selecting the following menu sequence: <Configuration>, <File System>, <Remove> or <Administration>, <File System>, <Remove>. See Chapter 5, “Managing File Systems,” for more information about removing file systems.

Some slices used by the system (such as, *root, /var,* etc.) have a recommended minimum size. See the *Installing NCR UNIX SVR4 MP-RAS* book to determine the recommended values for these slices.

Menu Selections

<Configuration>
<Storage Device>
<Slice>

Procedure

This procedure consists of three phases; accessing the slicing screen, accepting current slicing, and changing the current slicing.

Accessing the Slicing Screen

To access the slicing screen:

1. Enter the name of the device you want to slice.
2. Press SAVE. Information similar to the following example appears on your screen:

```
SLICE#  TAG         SIZE     START    END
0       *BACKUP     2675459  1        2675459
1       *ROOT       1596129  1079331  2675459
2       *SWAP       1048576  30755    1079330
3       USR         0        0        0
4       USR         0        0        0
5       USR         0        0        0
6       USR         0        0        0
7       *BOOT       34       1        34
8       USR         0        0        0
9       USR         0        0        0
a       *STAND      30720    35       30754
b       USR         0        0        0
c       USR         0        0        0
d       USR         0        0        0
e       USR         0        0        0
f       USR         0        0        0
Free Space: 0

     Slice # (0-f)
     (X) eXit and update
     (Q) Quit without update

Enter choice:
```

Note: The values in this example do not represent actual values. The number of columns and their headings can differ from this example, depending on the type of disk and file system you are using.

Accepting Current Slicing

To accept the current slicing:

1. If you want to accept the slicing as shown, press **X**. The table appears again. Check to be sure that this is the slicing you want to implement. If you need to re-edit the screen, press **y**. If you are satisfied, press **n**.
2. When the screen appears again, press **n.**

Changing the Current Slicing

To change the current slicing:

1. Decide which slices you want to create and how big they should be. Note that any new slices you wish to create should replace one of the slices with a "tag" of *USR*. You can also modify some of the required slices (SWAP, and DUMP) to suit your needs.

   If you are creating a slice in order to move the */usr* or */var* file systems, the size should be large enough to hold these file systems. Swap and dump space may be made up of multiple slices. The size of the dump slice(s) should be equal to the amount of memory.

   The size of the swap slice(s) depends on variables that are unique to each customer environment. These variables include memory size, the typical number of processes running on the system at any time, and the types of applications (processes) that are used on the system. If you are not sure how much swap space to configure, you may want to consider using the following algorithm to determine the size of your swap slice(s).

   Note: This algorithm is based solely on the amount of memory in the system and might not be the optimum amount of swap space for your system.

   ```
   256 MB _swap = 2 * mem size
   > 256 MB _swap = mem size
   ```

2. Make the necessary calculations to figure where each slice will start and how large it will be.

   The numbers given in the slicing table reflect 512-byte blocks. To convert these file system sizes into megabytes, take the number of 512-byte blocks and divide by 2048. For example, 32,768 blocks is equal to 16 megabytes (32,768 / 2048 = 16).

   To convert megabytes into 512 byte blocks, simply multiply the number of megabytes by 2048. For example, 16 megabytes is equal to 32,768 blocks (16 x 2048 = 32,768).

3. Enter the number of the slice you want to modify (0-f), but do NOT press RETURN.
4. Enter the size of the slice in 512-byte blocks.
5. Enter the starting sector of the slice.

Be sure that the slice does not overlap the next slice. In other words, the starting sector of the slice plus its size must not be greater than the starting sector of the next slice on the disk. If any conflicts arise, the system reduces the size of the slice being edited so that it does not overlap any other slices.

6. Repeat steps 4 and 5 until the table is complete and you have created all slices properly.
7. When you have edited the slices and are satisfied with the new slicing information, press **X.** The table appears again for you to recheck and re-edit slices if necessary**.** If you are not satisfied with the slicing repeat steps 4 and 5 or enter **Q** to exit without changing slicing information.
8. Check to be sure that this is the slicing you want to implement.
   - If you need to re-edit the screen, press **y** and return to the instructions for editing the table.
   - If you are satisfied, press **n**.
9. Press ENTER to return to the regular menus. A message that the update of slices is complete appears on your screen.

Displaying Information about Storage Devices

Why/When

Use this task to display slicing information about fixed disks.

Menu Selections

<Configuration>
<Storage Device>
<List>

Procedure

To display slicing information about fixed disks:

1. Enter the name of the device drive for which to display information (for example, *c1t0d0s0).*
2. Press SAVE. Information similar to the following example appears on your screen:

```
slice 0:          BACKUP
starting sector: 1(0x1) length: 664619(0xa242b)

slice 1:          USR
starting sector: 36(0x24) length: 332282(0x511fa)

slice 2:          USR
starting sector:332318(0x5121e)length:166141(0x288fd)

slice 3:          USR
starting sector:498459(0x79b1b)length:166141(0x288fd)

slice 7:          BOOT
starting sector: 1(0x1) length: 34(0x22)
```

Erasing the Contents of Removable Devices

Before You Start

This procedure erases all data from the specified removable device. If you want to save any of the data from the removable device, make sure that you have it backed up before you erase the contents of the removable device (volume).

Menu Selections

<Configuration>
<Storage Device>
<Erase>

Procedure

To erase data from a removable device:

1. Enter the name of the device drive that will hold the volume to be erased.
2. Press SAVE.
3. Insert the volume to be erased in the device drive you specified and press CONT.

Reserving a Device

Why/When

This task reserves a device by making it unavailable to others so that it can be used exclusively for a particular task. By reserving a device, you can prevent its use by other system administration functions.

Menu & Button Selections

<Administration>
<Reserve Device>
<reserve>

Procedure

To reserve a device:

1. Enter the name of the device you want to reserve.
2. Press SAVE. A message verifying that the device has been reserved appears on your screen.

Listing Device Reservations

Menu & Button Selections

<Administration>
<Reserve Device>
<list>

Display

A display similar to the following appears on your screen:

```
Device       Key
--------     ------
f033ht       310
ctape2       312
```

The key is the process ID for which the device is reserved. For more information about device reservation, see the **devreserv**(1M) and **devfree**(1M) manual pages.

Freeing a Reserved Device

Why/When

Perform this task when you no longer need a reserved device exclusively for one task.

Menu & Button Selections

<Administration>
<Reserve Device>
<free>

Procedure

To free a reserved device:

1. Enter the name of the device you want to free.
2. Press SAVE. A message verifying that the device is free appears on your screen.

Chapter 12

Managing Reserved Areas

Adding Swap Areas

Why/When

Swap space is the secondary storage space for process images moved from system memory in order to make room for other processes. Use this task to add a swap area. When adding memory to the system, it might be necessary to add additional swap areas.

Menu & Button Selections

<Configuration>
<Storage Device>
<Swap Area>
    <add>

Procedure

To add a swap area, do the following:

1. Enter the name of the swap device. The swap device is usually a slice, such as *c1t0d0s2*.
2. Press SAVE. A warning message appears. This message explains that the amount of swap space which should be configured for a system depends upon several variables that are unique to each customer environment. These variables include memory size, the typical number of processes running on the system at any time, and the types of application (processes) that are used on the system. This screen also recommends how much swap space to configure for your system.

   Note: The recommended amount of swap space is based solely on the amount of memory in the system, and might not be the optimum amount of swap space for your system.
3. Press CONT to add swap space or CANCEL to exit this task without configuring additional swap space.

Removing Swap Areas

Why/When

Use this task to remove an existing swap area. The primary swap area */dev/swap* cannot be removed through the Open Systems Administration.

Menu & Button Selections

<Configuration>
<Storage Device>
<Swap Area>
    <remove>

Procedure

To remove an existing swap area, do the following:

1. Enter the name of the swap device you want to remove. The swap device is usually a slice, such as *c1t0d0s2*.
2. Press SAVE.

Listing Swap Areas

Why/When

Use this task to list existing swap areas.

Menu & Button Selections

<Configuration>
<Storage Device>
<Swap Area>
    <display>

Display

A screen similar to the following example appears:

```
path          dev     swaplo     blocks    free
/dev/swap     35,2       0       32768    19400
```

Displaying Swap Statistics

Why/When

Use this task to display swap statistics.

Menu & Button Selections

<Configuration>
<Storage Device>
<Swap Area>
    <statistics>

Display

A display similar to the following example appears:

```
total:13888 allocated + 3896 reserved = 17784 blocks
used, 14984 blocks available
```

Adding Dump Areas

Why/When

A dump area is the only storage space where the system saves an image of system memory after a system failure. You can only manage a dump area through the menus if you have firmware that supports dump capabilities (SUS or RBIOS). Use this task to add a dump area. When adding memory to the system, you must add additional dump space.

Menu & Button Selections

<Configuration>
<Storage Device>
<Dump Area>
    <add>

Procedure

To add a dump area, do the following:

1. A dump configuration display similar to the following example appears.

```
                  Number of Disk Blocks
Memory Size: 268013568 Required for Dump Space:523464

    Status:  Additional dump space is required.
    Current Powerfail Recovery Strategy is Shutdown.
Current Configuration:

         I/O        SCSI      SCSI
Device   Bus     Controller   Bus      Size
------   ---      ----------  ---      ----
c1t2d0s3  0          0         1      166147

Possible Choices:

         I/O    SCSI     SCSI
Device   Bus  Controller Bus   Size   Status
```

```
------   ---  ---------- ---   ----   ------
c1t0d0s1   0    0        1    332292  Free-Available
c1t2d0s2   0    0        1    166146  Free-Available
c1t2d0s1   0    0        1    332292  Free-Available
c1t6d0s2   0    0        1    332293  Free-Available
c1t6d0s1   0    0        1    332292  Free-Available
c10t0d0s1  0    1        0    524288  Free-Available
```

2. Press CONT to add a dump area.
3. Enter the name of the dump device. The dump device is usually a disk slice such as *c1t0d0s6*.
4. Press SAVE. The dump configuration display is updated to reflect the additional dump area when the task is completed successfully.

Removing Dump Areas

Why/When

Use this task to remove existing dump space.

Menu & Button Selections

<Configuration>
<Storage Device>
<Dump Area>
    <remove>

Procedure

To remove a dump area, do the following:

1. A dump configuration display similar to the following example appears.

```
                  Number of Disk Blocks
Memory Size: 268013568 Required for Dump Space:523464

Status: No additional dump space is required.
        Current Power fail Recovery Strategy is
Power-fail Recovery.

Current Configuration:

           I/O       SCSI     SCSI
Device     Bus     Controller  Bus    Size
------     ---     ----------  ----   ----
c10t0d0s1   0          1        0    524288
```

2. Press CONT to remove a dump area.
3. Enter the name of the dump device you want to remove. The dump device is usually a slice, such as *c10t0d0s1*.
4. Press SAVE. The dump configuration display is updated to reflect the removal of the dump area when the task is completed successfully.

Displaying Dump Areas

Why/When

Use this task to display information about existing dump areas.

Menu & Button Selections

<Configuration>
<Storage Device>
<Dump Area>
    <display>

Display

A screen similar to the following example appears:

```
                    Number of Disk Blocks
Memory Size: 268013568 Required for Dump Space:523464
Status: No additional dump space is required.
        Current Power fail Recovery Strategy is
Powerfail Recovery.

Current Configuration:

             I/O      SCSI      SCSI
Device       Bus    Controller   Bus     Size
------       ---    ----------   ----    ----
c10t0d0s1     0       1          0     524288
```

Saving Dump Area to a Tape Device

Why/When

Use this task to save a copy of the system dump area(s) and UNIX Kernel in order to perform causal analysis after a system failure.

Menu & Button Selections

<Configuration>
<Storage Device>
<Dump Area>
    <Save>
        <tape>

Procedure

To save a dump area to tape, do the following:

1. Enter the name of the tape device to be used.
2. Enter the full pathname of the UNIX Kernel you wish to save. The Kernel that should be saved is one that the system was running when a memory image was last written to the dump area(s).
3. Enter a dump identification label to include in the media header. This is an optional field that can contain up to 40 characters including spaces. Information such as customer name, date, and trap type from a system panic might be useful to include in the label.
4. Press SAVE. A display similar to the following example appears as the dump area is copied to tape.

```
Checking status of /dev/rmt/c0t0d0s0.
Checking whether /dev/rmt/c0t0d0s0 supports
compression
Writing tape label.
Dump area: Saved 48.567.
```

Saving Dump Areas to One or More Files

Why/When

Use this task to copy a core memory image or dump, from the system's dump areas to one or more files. Since dump areas can be quite large, it might be necessary to split the copy of the dump areas into multiple files.

Menu & Button Selections

<Configuration>
<Storage Device>
<Dump Area>
    <Save>
        <file>

Procedure

To save a dump area to a file, do the following:

1. A display similar to the following will appear on your screen. This display reports the number of free 512-byte blocks in each file system. Review this information carefully because it will be helpful when saving a dump from the system dump area(s).

```
FILE SYSTEM USAGE AS OF 07/15/95  11:15:22

File                                Free
System                              Blocks
------                              ------
/                                    36276
/ISC                                540795
/dev/fd                                  0
/export/PKGS                         40636
/export/Products/sablime            111978
/mnt1                                 2520
/opt/cdrom                               0
/proc                                    0
/stand                               23206
```

```
/testfs                                  12843
/usr                                     18172
/var                                     35721
```

2. Press CONT and enter the following information:
   - *File Name:* Enter the directory and file name in which to save the dump. The file must reside in an existing directory and a mounted file system. A file will be created if it does not exist.
   - *Size [523456]:* Enter the number of 512-byte blocks to be saved in the file name specified. The default value is the total number of blocks in the dump which are not assigned to a file. The file size specified cannot be greater than the number of free blocks in the file system. The size will be aligned on a four Kbytes boundary. A display similar to the following will appear on your screen:

     ```
     Enter “h” for help or “q” to quit

         File Name:
         Size [523456]:  280200

         Blocks Remaining: 243256
         File List: /dumpsave/save1=280200
     ```

3. Enter additional file names and file sizes until all of the space is allocated.
4. Enter the full pathname of the UNIX Kernel you wish to save. The Kernel which should be saved is the one that the system was running when a memory image was last written to the dump area(s).
5. Enter the file name in which to save the UNIX Kernel. The file must reside in an existing directory and a mounted file system. A file will be created if it does not exist.
6. Press RETURN to save the dump. A message similar to the following one appears on your screen, displaying the percentage of the dump that has been saved. This process can take several minutes.

   ```
   Dump area: Saved 2,600
   ```

7. When this procedure is completed, press ENTER to return to the menus.

Displaying System Recovery Strategy

Why/When

This task displays the system recovery strategy. The recovery strategy is used in the event that there is a loss of power to the system. If you do not have enough dedicated dump space configured, the recovery strategy will be automatically set to *shutdown***.** If the recovery strategy is set to *power-fail*, dump areas serve as storage for a core (memory) image during a power-fail recovery.

Menu & Button Selections

<Configuration>
<Storage Device>
<Dump Area>
<Strategy>
    <display>

Display

A screen similar to the following example will appear on your screen.

```
The current Power-fail Recovery Strategy is Power-
fail Recovery.

    Press CANCEL to return to the previous frame.
```

Setting System Recovery Strategy

Why/When

This task allows you to set the system recovery strategy. The recovery strategy is used in the event that there is a loss of power to the system. If you do not have enough dump space configured, you will not be allowed to set the system recovery strategy.

Menu & Button Selections

<Configuration>
<Storage Device>
<Dump Area>
<Strategy>
    <set>

Procedure

To set the system recovery strategy, do the following:

1. Enter the system recovery strategy you want to set. Valid values include *shutdown* or *power-fail*. If the recovery strategy is set to *power-fail*, dump areas serve as storage for a core (memory) image during power-fail recovery.
2. Press SAVE. A message verifying the new value of the system recovery strategy appears on your screen.

Reserving Raw Areas

Why/When

This task reserves a raw area by making it unavailable to others so that it can be used exclusively for a particular task. **Raw areas** are data areas on a disk that are not controlled by a file system. For example, these areas might contain space used by a database. Use this task to reserve a raw area to protect it from being used by other operations.

Menu & Button Selections

<Configuration>
<Storage Device>
<Raw Area>
    <reserve_area>

Procedure

To reserve a raw area, do the following:

1. Enter the name of the device to be reserved. Raw areas are slices, such as *c1t0d0s6*.
2. Press SAVE.

Freeing Reserved Areas

Why/When

Use this task to free an existing raw area that is currently reserved.

Menu & Button Selections

<Configuration>
<Storage Device>
<Raw Area>
    <free_area>

Procedure

To free a reserved area, do the following:

1. Enter the name of the device to be freed. Raw areas are slices, such as *c1t0d0s6*.
2. Press SAVE.

Chapter 13

Managing the Print Service

Understanding Print Service Management

Why/When

You must add a new printer to the system before users can send print requests to it.

Preliminary Tasks

Your first tasks in managing the LP Print Service are to physically connect your printers to your computers and install the LP Print Service utilities so that they are available from the OperationsAdvantage interface.

Before users can submit requests for print jobs, you must also perform the following tasks:

1. Start the LP Print Service.
2. Add printers to the system.
3. Accept print requests for each printer.
4. Enable each printer.

Management Tasks

Managing the LP Print Service can involve the following tasks:

- **Configure printers for the print server**

  Configuration can involve adding new printers to the system and providing information about them, listing current configurations, modifying existing configurations, or removing printers from the system.

- **Manage classes of related printers**

  If you have multiple printers on your system, you might want to place them in groups, or classes, according to their characteristics to make printing and administering the LP Print Service easier.

- **Manage filters for processing special requests**

  Filters convert a file from one data format to another, handle special modes of printing, or detect printer defaults. You can add, change, remove, list, and restore a filter.

- **Manage pre-printed forms**

  You can add, list, modify, and remove directions for printing special forms such as invoices or checks.

- **Assign print queue priorities to users**

  If your system is a busy one, you might find it useful to assign priorities to ensure that the most important documents get printed before less important ones.

- **Perform daily printer service operations**

  You need to accept and reject requests, enable and disable individual printers, mount and unmount forms or fonts, set defaults for printer destinations, and stop and start the LP Print Service on a regular basis.

- **Manage active print requests**

  You can cancel, hold, resume, and remove active print requests.

- **Display the status of the LP Print Service**

  You can display the status of forms, printers, print requests, print wheels, and character sets.

- **Configure connections to remote systems**

  You can add, display, modify, and remove connections to remote systems.

Menu & Button Selections

<Administration>
<Printer>
    <printers>
        <add>

Procedure

To add a printer to your system:

1. Enter the following information and press SAVE:
   - *Printer name* — A name you give to the printer. It must contain less than 14 printable characters and begin with an alphanumeric character; for example, *laser1*.
   - *System name* — Enter the name of the system to which the printer is physically connected.
   - *Printer type* — A generic name for a printer, usually derived from the manufacturer's name. Press CHOICES for a list of printer types. The information for a particular type of printer must be contained in the *terminfo* information for printers before it will be included in this list.
   - *Similar printer to use for defaults* — A printer whose defaults can be the model for this printer. This field is optional.
   - *Do you want to use standard configurations?* — If you answer **no**, you can set your own alerts, banners, page size, character and line pitch, and other information.
   - *What is the network communication protocol?* — If you answer **tcp** or **netbios**, remote printing setup is performed (like *listen* process setup). If you answer **none**, no remote printing setup is performed.
   - *Do you want to use standard port settings?* — If you answer **no**, you can set your own baud rate, parity, carriage return delay, tab delays, and other information.

- *Device or Basic Networking address?* — If the printer is directly connected, enter the port it is connected to (such as */dev/tty00* or */dev/lp*). If connected through network, specify dialing instructions. (You must set up Basic Networking for this address to work.)
- *Select the listener network?* — If the system name is local, this field allows you to select a *listener*'s network address. If you do not want to change existing *listener*'s network address, you can select **none** from the <choices> menu**.**

  Selecting **all** from the <choices> menu, enables the *listener* to get messages from any network.

  If you specify that you want to use the standard configuration and standard port settings, a form appears listing the information you just entered. Press <CANCEL> to continue.

  If you answer that you do not want to use a standard configuration, the form titled *Configure New Printer - Local Printer Subtask* appears.

2. Enter the following information in the *Configure New Printer - Local Printer Subtask* form:
   - *Class* — Class printer belongs to.
   - *Description of the printer* — A single line of text that appears when users ask for a description of the printer.
   - *File types printable without filtering* — For example, a printer type, or simple font.
   - *Can a user skip the banner page?* — Whether user can omit page identifying file when it prints; **yes** or **no**.
   - *Default character pitch* — The spacing of columns. Use printer defaults or a number followed by **i** for inches or **c** for centimeters**.**
   - *Default line pitch* — The vertical spacing of lines. Use printer defaults or a number followed by **i** for inches or **c** for centimeters.
   - *Default page width* — Use printer defaults or a number followed by **i** for inches or **c** for centimeters.
   - *Default page length* — Use printer defaults or a number followed by **i** for inches or **c** for centimeters.

- *Command to run for alerts* — Command, such as **mail,** responsible for alerting you.
- *Frequency of alerts, in minutes* — Number of times per minute you want to be alerted of a problem. Specify a number, **once**, or **none**.
- *Printer recovery method* — Choose from **beginning**, **continue**, or **wait**.
- *Is the printer also a login terminal?* — **Yes** or **no**.

3. Press SAVE. A menu appears listing the information you just entered.
4. Press CANCEL to continue.
5. Enter the name of the removable print wheels available for this printer.
6. Enter the following information in the next form:
   - *Users allowed access to this printer* — Specify specific users, **all**, or **none**.
   - *Users denied access to this printer* — Specify specific users, **all**, or **none**.
   - *Forms allowed on this printer* — Specify specific forms, **all**, or **none**.
   - *Forms denied on this printer* — Specify specific forms, **all**, or **none**.
7. Press SAVE.

   Note: The User and Forms entries should be somewhat mutually exclusive. For example, do not specify **all** users are allowed access to the printer and **all** users are denied access to the printer at the same time.

   If you answered that you do not want to use standard port settings, another form titled *Printer Communication Setup Subtask* appears. See the information that accompanied the printer for the values you need for this form.
8. Enter the following information in this form:
   - *Baud rate* — If this is a parallel printer, ignore this field.
   - *Parity setting* — Parity setting for this printer (**odd**, **even**, or **none**).
   - *Stop bits* — Number of bits expected between columns.
   - *Character size* — Number of bits per character.

- *Hangup on loss of carrier* — Enter **y** if your printer drops DTR output control when a fault occurs.
- *XON/XOFF?* — Set this to **no** only if you have a fast filter which supports a flow control other than XOFF.
- *Whether to allow any character to restart output* — Specify **no** unless your printer expects to restart output with some character other than XON.
- *Postprocess output* — Can include delays for certain characters, tab expansion, mapping of newline and carriage return, mapping lowercase to upper case. Set this value to **yes** if your printer requires one of these adjustments.
- *Map NL to CR-NL on output* — If your printer can map a newline, return to a carriage return-newline pair, set this option to **no.** Otherwise, leave **yes.**
- *Map lowercase to uppercase on output* — If your printer cannot print lower case letters, enter **yes.**
- *Carriage return delay* — Specify how long your system should delay after issuing a carriage return, using **0** for no delay and **3** for maximum delay.
- *Newline delay* — Specify how long your system should delay after issuing a newline, using **0** for no delay and **1** for maximum delay.
- *Backspace delay* — Specify how long your system should delay after issuing a backspace, using **0** for no delay and **1** for maximum delay.
- *Formfeed delay* — Specify how long your system should delay after issuing a formfeed, using **0** for no delay and **1** for maximum delay.
- *Vertical tab delay* — Specify how long your system should delay after issuing a vertical tab, using **0** for no delay and **1** for maximum delay**.**
- *Horizontal tab delay* — Specify how long your system should delay after issuing a horizontal tab, using **0** for no delay and **2** for maximum delay. If your printer does not support tabs, enter **expand** and tabs will be expanded to an appropriate number of spaces.
- *Other options* — In the form of **<stty(1M).**

9. Press SAVE.

Before you can use a new printer, you must accept requests for it. See the task titled “Accepting Print Requests.”

If this printer is the first one added to the system, you must set it to be the default printer.

Listing Printer Configurations

Why/When

Use this task to view the characteristics of your printers.

Menu & Button Selections

<Administration>
<Printer>
    <printers>
        <list>

Procedure

To list a printer's configuration:

1. Enter the names of the printers whose configurations you want to list.
2. Press SAVE.

Display

A display similar to the following example appears:

```
printer lp00 now printing lp00-388.  enabled since
Fri Sep 25  02:14:03 EDT 1995.  available.
              Form mounted:  memo
              Content types:  simple
              Printer types:  citoh
              Description:
              Connection:  direct
```

Modifying Printer Configurations

Why/When

Use this task to change the characteristics of your printers.

Menu & Button Selections

<Administration>
<Printer>
    <printers>
        <modify>

Procedure

When you choose the modify selection after selecting a printer name, a form titled *Modify Printer Subtasks* appears. This form contains the following choices*:*

1. Select the type of information you want to change.
2. Change the values shown as desired.
   - *configure — Local Printer Configuration Subtask*
     Allows you to specify class, description, and printer type; types of files printable without filtering; character and line pitch; page width and length; alert and recovery methods; whether the printer is a login terminal.
   - *configure — Remote Printer Configuration Subtask*
     Allows you to specify class, description, and printer type; types of files printable without filtering.
   - *com_setup — Local Printer Communication Subtask*
     Allows you to specify baud rate, parity, stop bits, and character size; hangups; output control; delays for carriage return, newline, backspace, formfeed, vertical tab, and horizontal tab**.**

- *charset — Software Selectable Character Set Aliasing Subtasks*
  Allows you to change selectable character sets available for your printer.
- *printwheel — Removable Print Wheel Naming Subtask*
  Allows you to change the print wheels available for your printer.
- *access — Printer Access Setup Subtask*
  Allows you to allow and deny access to users as well as forms to be used on the printer.

Depending on the type of printer you are trying to modify, you might not be allowed to select some of these choices. For example, if you are modifying a standard printer, you cannot modify print wheels or character sets because standard printers do not use them.

3. Press SAVE.

Removing Printers from the System

Why/When

Use this task to remove a printer from the system logically when it is being removed physically.

Menu & Button Selections

<Administration>
<Printer>
    <printers>
        <remove>

Procedure

To logically remove a printer from the system:

1. Enter the name of the printer (or printers) that you want to remove.
2. Press SAVE.

Adding a New Printer Class

Why/When

Use this task to group printers into classes. Placing printers in classes can be helpful in administering the LP Print Service.

Before You Start

The printers you place in a new class during this task must already be added to the system.

Menu & Button Selections

<Administration>
<Printer>
    <classes>
        <add>

Procedure

To add a new printer class:

1. Enter the following information:
   - *New Class* — Name the class something that makes sense to you so that you will know why printers are in this class.
   - *Printers* — The names of the printers that are to be in this class.
2. Press SAVE.

Listing Printers in Classes

Why/When

Use this task to list the printers in a printer class.

Menu & Button Selections

<Administration>
<Printer>
    <classes>
        <list>

Procedure

To list the printers in a printer class:

1. Enter the names of the classes you want to list the members of.
2. Press SAVE.

Display

A message similar to the following example appears:

```
members of class
lpprinter:
            lp00
            lp01
```

Modifying the Membership of a Class

Why/When

Use this task to add or remove printers of a printer class.

Menu & Button Selections

<Administration>
<Printer>
    <classes>
    <modify>

Procedure

To add or remove a printer:

1. Enter the following information:
   - *Class name* — The name of the class you want to modify.
   - *Add or remove printers* — Whether you want to add or remove printers from this class.
2. Press SAVE.
3. List the printers you want to add or remove.
4. Press SAVE.

Removing Classes of Printers from the System

Why/When

Use this task to remove printer classes from the system.

Menu & Button Selections

<Administration>
<Printer>
    <classes>
        <remove>

Procedure

To remove a printer class:

1. Enter the names of the classes you want to remove from the system.
2. Press SAVE.

Adding a Filter

Why/When

A filter is a program you can use to convert a user's file from one data format to another so it can be printed properly on a given printer, to handle the special modes of printing that users might request (such as two-sided printing, landscape printing, draft or letter quality printing), or to detect printer faults and notify the LP Print Service of printer faults. Before you can use a filter, you must add it to the system.

Menu & Button Selections

<Administration>
<Printer>
    <filters>
        <add>

Procedure

To add a print filter:

1. Enter the following information:
   - *New filter* — The name you want to call the new filter.
   - *Model filter* — The name of the filter you want to use as a model for the new filter. Press CHOICES for a list of filters available as models.
2. Press SAVE. A new form appears.
3. Enter the following information:
   - *Filter command* — The full pathname of the filter program.
   - *Input types* — The types of input the filter can process.
   - *Output types* — The types of output the filter can produce.

- *Printer types* — The types of printers into which the filter can convert files. For most printers, this list is identical to the list of output types.
- *Printers* — The printers on which the filter can be used.
- *Fast or slow filter*— A fast filter uses little overhead in preparing a file for printing and must have access to the printer when it runs. A slow filter uses much overhead when preparing a file for printing and does not require access to a printer.
- *Existing option templates* — Templates that already exist for the model filter being used to create the new filter.
- *New filter options?* — Whether you want to add other filter options.

4. Press SAVE.
5. If you answer **yes** to adding *New filter options*, the form titled *File Options Template for xxxxxx* appears, displaying three more prompts. Enter the following information:
   - *Keyword* — identifies the type of option being registered for a particular characteristic of the filter.
   - *Pattern*
   - *Replacement* — used when the pattern matches.
6. Press SAVE.

Modifying a Filter

Why/When

Use this task to modify the characteristics of a filter. Be sure you understand what you want to change about the filter. The documentation that accompanies the printer might be of assistance in determining what changes you need to make for the filter to perform as desired.

Menu & Button Selections

<Administration>
<Printer>
    <filters>
        <modify>

Procedure

To modify a print filter:

1. Change the values as desired by entering the necessary information in the appropriate fields. You can modify the following characteristics.
   - *Filter command* — Command that invokes the filter (that is, the full pathname of the filter program).
   - *Input types* — The types of input the filter can process.
   - *Output types* — The types of output the filter can produce.
   - *Printer types* — The types of printers into which the filter can convert files. For most printers, this list is identical to the list of output types.
   - *Printers* — The printers you want to use with the filter. This value can be omitted.

- *Fast or slow filter* — Whether the filter's speed is fast or slow. A fast filter uses little overhead in preparing a file for printing and must have access to the printer when it runs. A slow filter uses a lot of overhead when preparing a file for printing and does not require access to a printer.
- *Existing option templates* — File options that are already set.
- *New file options* — The keyword, the pattern, and the replacement.

2. Press SAVE.

Displaying Filter Information

Why/When

Use this task to display information about a filter.

Menu & Button Selections

<Administration>
<Printer>
    <filters>
        <list>

Procedure

To display filter information:

1. Enter the names of the filters you want to see information about.
2. Press SAVE.

Display

Information similar to the following example appears:

```
Filter: scsi
Input types: simple
    Output types: SCSI
    Printer types: any
Printers: any
    Filter type: fast
    Command: /usr/bin/awk '{printf "s", $0}'-*
```

Restoring Filters to Default Settings

Why/When

Use this task to reset the default values for options in filters after you have changed them.

Menu & Button Selections

<Administration>
<Printer>
    <filters>
        <restore>

Procedure

To restore the default values for a filter:

1. Enter the names of the filters you want to restore.
2. Press SAVE.

Removing a Filter

Why/When

Use this task when you no longer want users to have access to a filter.

Menu & Button Selections

<Administration>
<Printer>
    <filters>
        <remove>

Procedure

To remove access to a filter:

1. Enter the names of the filters you want to remove.
2. Press SAVE.

Adding a New Form

Why/When

A **form** is paper that already contains printing, and provides blank spaces in which the printer can print additional information. The LP Print Service keeps track of which print requests need special forms mounted and which forms are currently mounted. It can also tell you when you need to mount a new form. Before you can provide a new form, you must first define its characteristics.

Menu & Button Selections

<Administration>
<Printer>
    <forms>
        <add>

Procedure

To add a new form:

1. Enter the following information:
   - *New form* — The name of the new form, which should be a name that makes sense to you and to the users of your system.
   - *Model form* — The type of form you want to use as a model for this form. If a previously defined form is similar to the form you are adding, you might want to use this older form as a model and change just the characteristics that are different in the new form.
2. Press SAVE. A new form appears.
3. Enter the following information:
   - *Page Length* — Page length of the form, normally in lines, but you can follow the number by **i** to indicate inches.

- *Page width* — Page width of the form, normally in characters, but you can follow the number by **i** to indicate inches.
- *Line pitch* — Amount of space between separate lines on the form. Follow the number with **i** to indicate lines per inch or with **c** to indicate lines per centimeter.
- *Character pitch* — Amount of space between separate characters on the form. You can follow the number with **i** to indicate characters per inch or with **c** to indicate characters per centimeter.
- *Number of pages* — Number of pages in the form.
- *Character set choice* — Character set, print wheel, or font cartridge that should be used when this form is used. Users can choose a different character set for their own print request when using this form unless you specify here that only one character set be used.
- *Ribbon color* — If the form should always be printed using a certain color ribbon, then the LP Print Service can remind you which color to use when you mount the form.
- *Comment* — Any comment you wish to make about the form. For example, you might give instructions on what the form is and when to use it.
- *Alignment pattern file* — Sample file the LP Print Service uses to fill one blank form. When mounting the form, you can print this pattern on the form to align it properly. You can also define a content type for this pattern so that the printer service knows how to print it.
- *Alert command* — Command which alerts you when the form needs mounting.
- *Number of requests* — Number of requests that should be waiting before you are alerted to mount the form.
- *Frequency of alerts in minutes* — Number of minutes between mailing alerts. A value of **once** means only mail it once, any other positive integer specifies the time between mailings.
- *Users denied* — A list of users who are denied permission to use this form.
- *Users allowed* — A list of users who are allowed permission to use this form.

4. Press SAVE.

Listing Form Attributes

Why/When

Use this task to list the attributes of a form.

Menu & Button Selections

<Administration>
<Printer>
    <forms>
        <list>

Procedure

To list the attributes of a form:

1. Enter the name of the forms whose attributes you want to see.
2. Press SAVE.

Display

Information similar to the following example appears:

```
Form: memo
page length: 66
page width: 80
number of pages: 1
line pitch: 6i
character pitch: 10i
character set choice: any
ribbon color: any

Upon any being queued: mail to lp every 1 minutes
```

Modifying a Form

Why/When

Use this task to change the characteristics of a form.

Menu & Button Selections

<Administration>
<Printer>
    <forms>
        <modify>

Procedure

To modify a form, do the following

1. Enter the name of the form you want to modify.
2. Press SAVE. A new form appears.
3. Change the fields as you desire. You can change the following fields:
   - *Page Length* — Page length of the form, normally in lines, but you can follow the number by **i** to indicate inches.
   - *Page Width* — Page width of the form, normally in characters, but you can follow the number by **i** to indicate inches.
   - *Line Pitch* — Amount of space between separate lines on the form. You can follow the number with an **i** to indicate lines per inch or with a **c** to indicate lines per centimeter.
   - *Character Pitch* — Amount of space between separate characters on the form. You can follow the number with an **i** to indicate characters per inch or with a **c** to indicate characters per centimeter.
   - *Number of Pages* — Number of pages in the form.

- *Character set choice* — Character set, print wheel, or font cartridge that should be used when this form is used. Users can choose a different character set for their own print request when using this form unless you specify here that only one character set be used.
- *Ribbon color* — If the form should always be printed using a certain color ribbon, then the LP Print Service can remind you which color to use when you mount the form.
- *Comment* — Any comment you wish to make about the form. For example, you might give instructions on what the form is and when to use it.
- *Alignment pattern file* — Sample file the LP Print Service uses to fill one blank form. When mounting the form, you can print this pattern on the form to align it properly. You can also define a content type for this pattern so that the printer service knows how to print it.
- *Alert command* — Command which alerts you when the form needs mounting.
- *Number of requests* — Number of requests that should be waiting before you are alerted to mount the form.
- *Frequency of alerts in minutes* — Number of minutes between mailing alerts. A value of **once** means only mail it once, any other positive integer specifies the time between mailings.
- *Users denied* — A list of users who are denied permission to use this form.
- *Users allowed* — A list of users who are allowed permission to use this form.

4. Press SAVE.

Removing Forms

Why/When

Use this task when you no longer want users to have access to a form.

Menu & Button Selections

<Administration>
<Printer>
    <forms>
        <remove>

Procedure

To remove a form:

1. Enter the name of the form you want to remove.
2. Press SAVE.

Setting System Default Priorities

Why/When

Use this task to set a default priority for all print requests on your system. Assigning print queue priorities helps you ensure that the most important files get printed quickly while the less important ones are printed when the LP Printer Service is not as busy.

Menu & Button Selections

<Administration>
<Printer>
    <priorities>
        <default>

Procedure

To set default priorities:

1. Enter the priority level you want to use as a system default. Priorities range from **0** (highest) to **39** (lowest).
2. Press SAVE.

Setting System Priority Limits

Why/When

Use this task to limit the priority level that can be assigned on the system.

Menu & Button Selections

<Administration>
<Printer>
    <priorities>
        <system>

Procedure

To set a priority limit:

1. Enter the priority limit for the system. Priorities range from **0** (highest) to **39** (lowest).
2. Press SAVE.

Setting User Priority Limits

Why/When

Use this task to limit the priority level that can be assigned to specific users.

Menu & Button Selections

<Administration>
<Printer>
    <priorities>
        <users>

Procedure

To set a priority limit:

1. Enter the following information:
   - *User list* — A list of users for which you want to set priority limits.
   - *Priority Limit* — The priority limit you want to set for the users in the list. Priorities range from **0** (highest) to **39** (lowest).
2. Press SAVE.

Listing Priority Limits for Users

Why/When

Use this task to list the following print priorities for your system: system default priority, priority limit for users, priority limits for specific users.

Menu & Button Selections

<Administration>
<Printer>
    <priorities>
        <list>

Display

Information similar to the following example appears:

```
Default priority: 20
Priority limit for users not listed below: 0
   Priority     Users
      5     diane, marylee
```

Removing User Priority Limits

Why/When

Use this task to remove the priority limit for a specific user. The user is then assigned the system priority limit.

Menu & Button Selections

<Administration>
<Printer>
    <priorities>
        <remove>

Procedure

To remove a user’s priority limits:

1. Enter the names of the users whose priority limits you want to remove.
2. Press SAVE.

Accepting Print Requests

Why/When

Use this task to register a printer or class of printers with the LP Print Service. Print requests cannot be printed until a printer is accepting requests.

Menu & Button Selections

<Administration>
<Printer>
    <operations>
        <accept>

Procedure

To accept a print request:

1. Enter the names of printers or classes or both from which you want to accept requests.
2. Press SAVE.

Rejecting Print Requests

Why/When

Use this task to refuse print requests for a particular printer or class of printers. You might want to refuse requests because you need to repair the printer or because there are too many jobs already on the print queue for that printer.

Menu & Button Selections

<Administration>
<Printer>
    <operations>
        <reject>

Procedure

To refuse print requests:

1. Enter the following information:
   - *Printer(s) and/or Class(es)* — The name(s) of the printer(s) or class(es) or both for which you want to reject print requests.
   - *Reason for rejecting* — A reason for rejecting requests. For example, “Closed for repairs” or “Too many jobs queued.”
2. Press SAVE.

Enabling a Printer for Printing

Why/When

Use this task to make printers active and available for printing when the following circumstances occur:

- You previously disabled the printer to fix a problem.
- The system disabled the printer for some reason.
- The printer is disabled for any reason.

Menu & Button Selections

<Administration>
<Printer>
    <operations>
        <enable>

Procedure

To enable a printer:

1. Enter the names of the printers you want to enable.
2. Press SAVE.

Disabling a Printer from Printing

Why/When

Use this task to disable a printer before servicing it.

Menu & Button Selections

<Administration>
<Printer>
    <operations>
        <disable>

Procedure

To disable a printer:

1. Enter the following information:
   - *Printer(s)* — The names of the printers you want to disable.
   - *What should happen to any requests currently printing?* — Choose among restarting the requests when the printer is enabled again, waiting to finish the requests until the printer is enabled, or canceling the requests.
   - *Reason for disabling* — A reason for disabling the printer**.** For example, you might disable a printer because you need to repair it.
2. Press SAVE.

Mounting a Form or Font on a Printer

Why/When

Use this task to make a form, print wheel, or font cartridge accessible on a printer.

Before You Start

If you are mounting a print wheel or a font cartridge, be sure it is in the printer.

Menu & Button Selections

<Administration>
<Printer>
    <operations>
        <mount>

Procedure

To mount a form or font:

1. Enter the following information:
   - *Printer* — The name of the printer you want to mount the form or font on.
   - *Form to be mounted* — The name of the form to be mounted.
   - *Print wheel to be mounted* — The name of the print wheel or font cartridge to be mounted.
   - *Print an alignment pattern* — Whether to print an alignment pattern.
2. Press SAVE.

Unmounting a Form or Font on a Printer

Why/When

Use this task to make a form or font inaccessible on a printer.

Menu & Button Selections

<Administration>y
<Printer>
    <operations>
        <unmount>

Procedure

To unmount a form or font:

1. Enter the following information:
   - *Printer* — The name of the printer from which you want to unmount the form or font.
   - *Unmount the current form* — Whether to unmount the current form.
   - *Unmount the current wheel* — Whether to unmount the current print wheel.
2. Press SAVE.

Setting Default Printer Destinations

Why/When

Use this task to designate a printer or class of printer as the default destination for system print jobs.

Menu & Button Selections

<Administration>
<Printer>
    <operations>
        <set default>

Procedure

To set a default printer destination:

1. Enter the name of the printer or printer class you want to name as the default destination.
2. Press SAVE.

Starting the Print Service

Why/When

Use this task to start the LP Print Service if it is stopped. The LP Print Service must be started before users can print requests or perform administrative functions on printers.

Before You Start

Determine the state of the LP Print Service. To do this, look at the description to the right of the word *control* on the form. If the phrase is *Start the Printer Service*, the LP Print Service is currently stopped.

Menu & Button Selections

<Administration>
<Printer>
    <operations>
        <control>

Procedure

When you select *control* from the form, the system starts the LP Print Service. After you perform this procedure, the phrase to the right of the word *control* on the form changes to *Stop the Printer Service*.

Stopping the Print Service

Why/When

This procedure causes the LP Print Service to stop all printing within seconds. Any print requests that have not finished printing will print in their entirety after the LP Print Service is restarted.

Use this procedure to stop the LP Print Service without also stopping the UNIX system.

Before You Start

Determine the state of the LP Print Service. To do this, look at the description to the right of the word *control* on the form. If the phrase is *Stop the Printer Service*, the LP Print Service is currently stopped.

Menu & Button Selections

<Administration>
<Printer>
    <operations>
        <control>

Procedure

When you select *control* from the form, the system stops the LP Print Service. After you perform this procedure, the phrase to the right of the word *control* on the form changes to *Start the Printer Service*.

Canceling Print Requests

Why/When

Use this task when you do not want a print request to be printed.

Menu & Button Selections

<Administration>
<Printer>
    <requests>
        <cancel>

Procedure

To cancel a print request:

1. Enter one of the following:
   - The printers on which you want to cancel requests
   - The print request IDs of the requests you want to cancel
   - The names of the users whose requests you want to cancel
2. Press SAVE.

Holding Print Requests

Why/When

Use this task to hold print requests when you need to shut down a printer or when you want to print a request farther down in the queue before earlier requests.

Menu & Button Selections

<Administration>
<Printer>
    <requests>
        <hold>

Procedure

To hold a print request:

1. Enter the request IDs of the requests you want to hold. Press CHOICES for a list of the current print requests.
2. Press SAVE.

Releasing Held Print Requests

Why/When

Use this task to resume print requests you have previously held.

Menu & Button Selections

<Administration>
<Printer>
    <requests>
        <release>

Procedure

To release a held print request:

1. Enter the request IDs of the held requests you want to release. Press CHOICES for a list of the current print requests.
2. Press SAVE.

Moving Print Requests

Why/When

Use this task to move requests from one printer to another under the following circumstances:

- The original printer needs to be repaired
- The load of print requests is unequally distributed among printers

Menu & Button Selections

<Administration>
<Printer>
    <requests>
        <move>

Procedure

To move a print request:

1. Enter the following information:
   - The printers whose requests you want to move
   - The request IDs of the requests you want to move
   - The printer you want to move the requests to
2. Press SAVE.

Displaying the Status of Forms

Why/When

Use this task to determine whether forms are available, whether they are mounted, and which printers they are mounted on.

Menu & Button Selections

<Administration>
<Printer>
    <status>
        <forms>

Procedure

To display the status of a form:

1. Enter the names of the forms whose status you want to see.
2. Press SAVE.

Display

If you display the status of forms named *order*, *memo*, and *address*, a message similar to the following example appears:

```
form order is available to you
form memo is available to you, mounted
on printer1
form address is available to you
```

Displaying the Status of Printers

Why/When

Use this task to display whether printers are enabled, accepting or rejecting requests, and printing requests.

Menu & Button Selections

<Administration>
<Printer>
    <status>
        <printers>

Procedure

To display the status of a printer:

1. Enter the names of the printers whose status you want to see.
2. Press SAVE.

Output

A message similar to the following example appears:

```
printer printer1 now printing printer1-
386.enabled since Wed Nov 25 02:14:03 EST 1995.available.
    printer lp0 is idle.  enabled since
    Mon Nov 23 14:38:27 EST 1995.  available.
```

Displaying the Status of Print Requests

Why/When

Use this task to display whether print requests are printing, held, or canceled.

Menu & Button Requests

<Administration>
<Printer>
    <status>
        <requests>

Procedure

To display the status of a print request:

1. Enter one of the following:
   - Request-IDs of the print requests whose status you want to see
   - Printers or classes of printers whose print request status you want to see
   - Names of users whose print request status you want to see
2. Press SAVE.

Display

A message similar to the following example appears:

```
lp0-386    root    34198     Nov 23  14:34
     on lp0, form memo
```

Displaying the Status of Print Wheels and Character Sets

Why/When

Use this task to determine whether print wheels and character sets are mounted or unmounted.

Menu & Button Selections

<Administration>
<Printer>
    <status>
        <wheels>

Procedure

To display the status of print wheels or character sets:

1. Enter the name of the print wheel or character set for which you want to see the status.
2. Press SAVE.

Adding a New System Connection

Why/When

Use this task to add a new remote system connection to the LP Print Service on this machine.

Note: The remote connection MUST also be defined through the Network Service for this new connection to work correctly. See Chapter 15, “Managing Networks.”

Menu & Button Selection

<Administration>
<Printer>
    <systems>
        <add>

Procedure

To add a new system connection:

1. Enter the following information:
   - *System name* — Name of the system for which you want to add the connection.
   - *Scheduler type* — Type of scheduler on the remote system. Choose between the default *s5* (System V) and *bsd* (SunOS).
   - *Connection timeout* — Amount of time, in minutes, the system should wait before dropping the connection.
   - *Retry period* — Length of time, in minutes, the system should wait before trying to reestablish a connection to the remote system when the connection was dropped abnormally.
   - *Comment* — Any comments you want to make.
2. Press SAVE.

Displaying Available System Connections

Why/When

Use this task to display information about systems that have remote connections to your system's LP Print Service.

Menu & Button Selections

<Administration>
<Printer>
    <systems>
        <display>

Procedure

To display the available system connections:

1. Enter the names of the systems whose connections you want to see.
2. Press SAVE.

Display

The screen displays a message similar to the following example:

```
System:                    columbia
Type:                      s5
Connection timeout:         never
Retry failed connections:  after 10 minutes
Comment:                   none
```

Modifying a System Connection

Why/When

Use this task to modify the connections of remote systems to your system's LP Print Service.

Menu & Button Selections

<Administration>
<Printer>
    <systems>
        <modify>

Procedure

To modify a system connection:

1. Modify the characteristics of the system connection you wish to change. You can change the following characteristics:
   - *System name* — Name of the system you want to add the connection to.
   - *Scheduler type* — Type of scheduler on the remote system. Choose between the default *s5* (System V) and *bsd* (SunOS).
   - *Connection timeout* — Amount of time, in minutes, the system should wait before dropping the connection.
   - *Retry period* — Length of time, in minutes, the system should wait before trying to reestablish a connection to the remote system when the connection was dropped abnormally.
   - *Comment* — Any comments you want to make.
2. Press SAVE.

Removing a System Connection

Why/When

Use this task to make a remote system unable to access your system's LP Print Service.

Menu & Button Selections

<Administration>
<Printer>
    <systems>
        <remove>

Procedure

To remove a system connection:

1. Enter the names of the systems you want to remove.
2. Press SAVE.

Chapter 14

Managing Ports

Adding a Port Monitor

Why/When

A **port** is the place at which a peripheral device is physically connected to its controller, which is part of the computer hardware. The two most typical port monitors are ***ttymon***, which controls login access, and ***listen***, which monitors a network. Use this task to create the supporting directory structure for a port monitor and to add an entry for it in the Service Access Facility file.

Menu Selections

<Configuration>
<Port>
    <Monitor>
        <Add>

Procedure

To add a port monitor:

1. Enter the following information:
   - *Port monitor tag* — Unique name (up to 14 alphanumeric characters) you assign to identify a particular port monitor to the Service Access Controller.
   - *Port monitor type* — Group of port monitors that are different invocations of the same entity. Examples are *ttymon* and *listen*. This name can consist of up to 14 alphanumeric characters.
   - *Command to start the port monitor* — Full pathname of the command, for example, */usr/lib/saf/ttymon.*
   - *Version number* — Version number of the port monitor's database file.

- *Start port monitor immediately?* — The default is *yes*. If the field is set to *no*, port monitor must be started using the menus.
- *Start state* — The state the port monitor should be in when it is started (*enabled* or *disabled*).
- *Restart count* — The number of times the port monitor is restarted when it fails before it is placed in a failed state. For greatest availability, choose a number greater than 0, for example, 999.
- *File name of the port monitor configuration script* — The port monitor configuration script is copied to the port monitor configuration script file. For *ttymon* port monitors, no configuration script is necessary.
- *Comments* — Comments associated with the port monitor entry and displayed when a user requests information about this port monitor.

2. Press SAVE. A message at the bottom of the screen notifies you that the port monitor has been successfully added.

Modifying Port Monitors

Why/When

Use this task to change the characteristics of port monitors.

Menu Selections

<Configuration>
<Port>
<Monitor>
<Modify>

Procedure

To modify a port monitor:

1. Select the name of the port monitor you want to modify.
2. Modify the fields you want changed. You can change the following fields:
   - *Start port monitor immediately?* — The default is *yes*. If the field is set to *no*, port monitor must be started using the menus.
   - *Start state* — The state the port monitor should be in when it is started (*enabled* or *disabled*).
   - *Restart count* — The number of times the port monitor is restarted when it fails before it is placed in a failed state. For greatest availability, choose a number greater than 0, for example **999**.
   - *Command to start the port monitor* — Full pathname of the command that starts the port monitor, for example, */usr/lib/saf/ttymon*.
   - *Comments* — Comments associated with the port monitor entry and displayed when a user requests information about this port monitor.

3. Press SAVE. A message at the bottom of the screen notifies you that the port monitor has been successfully modified.

Removing a Port Monitor

Why/When

Use this task to remove a port monitor from the system.

Menu Selections

<Configuration>
<Port>
    <Monitor>
        <Remove>

Procedure

To remove a port monitor:

1. Select the port monitor you wish to remove.
2. Press SAVE.

Enabling a Port Monitor

Why/When

Use this task to enable a port monitor after it has been disabled for any reason.

Menu Selections

<Configuration>
<Port>
    <Monitor>
        <Enable>

Procedure

To enable a port monitor:

1. Select the port monitor you wish to enable.
2. Press SAVE.

Disabling a Port Monitor

Why/When

Use this task to disable a port monitor before servicing it.

Menu Selections

<Configuration>
<Port>
    <Monitor>
        <Disable>

Procedure

To disable a port monitor:

1. Select the port monitor you wish to disable.
2. Press SAVE.

Starting a Port Monitor

Why/When

Use this task to start the port monitor if it has stopped. A port monitor cannot work if it is not activated.

Menu Selections

<Configuration>
<Port>
    <Monitor>
        <Start>

Procedure

To start a port monitor:

1. Select the port monitor you wish to start.
2. Press SAVE.

Stopping a Port Monitor

Why/When

Use this task to stop a port monitor before servicing it. Stopping a port monitor typically stops the services under the port monitor.

Menu Selections

<Configuration>
<Port>
    <Monitor>
        <Stop>

Procedure

To stop a port monitor:

1. Select the port monitor you wish to stop.
2. Press SAVE.

Listing All Port Monitor Information

Why/When

Use this task to list the port monitor tag, port monitor type, flags, recount value, status, and command for all port monitors on the system.

Menu & Button Selections

<Configuration>
<Port>
    <Monitor>
        <List>
            <all>

Output

Information similar to the following example appears:

```
PMTAG           PMTYPE      FLGS    RCNT      STATUS
COMMAND

ttymon3         ttymon       -       0        ENABLED
/usr/lib/saf/ttymon#

pm1             listen                        DISABLED
/usr/lib/saf/ttymon#
```

PMTAG is the port identifier. *PMTYPE* is the port monitor type (for example, **ttymon** and **listen**), *FLGS* specifies the currently running flags (**d** means do not enable when started; **x** means do not start the port monitor; the default is started and enabled). *RCNT* is the number of times a port monitor can fail before being placed in a failed state. *STATUS* can be *NOTRUNNING*, *STARTING*, *DISABLED*, or *ENABLED*.

Listing Information About a Particular Port Monitor

Why/When

Use this task to list the port monitor tag, port monitor type, flags, recount value, status, and command for a particular port monitor.

Menu & Button Selections

<Configuration>
<Port>
    <Monitor>
        <List>
            <by pmtag>

Procedure

To list information about a port monitor:

1. Select the port monitor you want information about.
2. Press SAVE. Information similar to the following example appears:

```
PMTAG      PMTAG       FLGS    RCNT    STATUS
COMMAND
-------------------------------------------------
ttymon3    ttymon       -      0       ENABLED
 “usr/lib/saf/ttymon” # “ ”
-------------------------------------------------
```

PMTAG is the port identifier. *PMTYPE* is the port monitor type (for example, **ttymon** and **listen**), *FLGS* specifies the currently running flags (**d** means do not enable when started; **x** means do not start the port monitor; the default is started and enabled). *RCNT* is the number of times a port monitor can fail before being placed in a failed state. *STATUS* can be *NOTRUNNING*, *STARTING*, *DISABLED*, or *ENABLED*.

Listing Information About a Particular Type of Port Monitor

Why/When

Use this task to list the port monitor tag, port monitor type, flags, recount value, status, and command for a particular type of port monitor.

Menu & Button Selections

<Configuration>
<Port>
    <Monitor>
        <List>
            <by type>

Procedure

To list information about a port monitor type:

1. Select the type of port monitor you want information about.
2. Press SAVE. Information similar to the following example appears:

```
PMTAG      PMTAG      FLGS     RCNT      STATUS
COMMAND
-------------------------------------------------
ttymon3    ttymon      -        0        ENABLED
 “usr/lib/saf/ttymon” # “ ”
-------------------------------------------------
```

PMTAG is the port identifier. *PMTYPE* is the port monitor type (for example, **ttymon** and **listen**), *FLGS* specifies the currently running flags (**d** means do not enable when started; **x** means do not start the port monitor; the default is started and enabled). *RCNT* is the number of times a port monitor can fail before being placed in a failed state. *STATUS* can be *NOTRUNNING*, *STARTING*, DISABLED, or *ENABLED*.

Adding a Service to a Particular Port Monitor

Why/When

Use this task to add a service to a specific port monitor. OperationsAdvantage considers a service to be a process that is started. There are no restrictions on the functions a service can provide.

Menu & Button Selections

<Configuration>
<Port>
    <Service>
        <Add>
            <add to one>

Procedure

To add service to a port monitor:

1. Select the port monitor you wish to add a service to.
2. Enter the following information:
   - *Service tag* — The tag associated with the port service you are adding, for example, the simple filename of the port associated with this service.
   - *Service invocation identity* — The login ID the service runs as, for example, *root*.
   - *Port/service state — ENABLED* or *DISABLED.*
   - *utmp entry to be created for this service* — Specify **Yes** or **No.** Choose **Yes** if you are going to enter login for the Service command following.

- *Version number* — Number of the port monitor's database file.
- *File name of the port service configuration scripts* — This file name is the full path name of the script file (optional). For *ttymon* services, no configuration file is necessary.
- *Comments* — Comments associated with the port monitor entry and displayed when a user requests information about this port monitor (optional).

3. When you are satisfied with your answers on this form, press SAVE to access the next one. The choices on the next form depend on the type of port monitor you are adding this service to.
   - If you are adding a service to a *ttymon* port monitor, go to step 4.
   - If you are adding a service to a *listen* monitor, go to step 5.

4. Enter the following information for adding a service to a *ttymon* port monitor:
   - *TTY device* — Full pathname of the TTY device associated with the service (for example, */dev/term/s00*).
   - *ttylabel* — Initial terminal setting for the device (for example, 9600).
   - *Service command* — Full pathname of the command to be invoked when the connection is successful (for example */usr/bin/login*).
   - *TTY line options:* — Specify *yes* or *no* for each of the following: *Connect-on-carrier*, *Bidirectional*, *Wait-Read*, and *Wait-Read-Count*. Choose *no* for *Hangup*.
   - *Hangup* — Choose *no* for hangup.
   - *Connect-on carrier* — *Ttymon* will invoke the service when the carrier detect indication has been received.
   - *Bidirectional* — Outgoing and incoming calls are accepted.
   - *Wait-Read* — Wait until N wait-read-counts have been received before sending a prompt message.
   - *Wait-Read-Count* — Number of N counts for wait-read, if it is set to **yes**.

- *Timeout value* — Number of seconds connection should be open and active without activity. If nothing is typed during this time period after the prompt is sent, the line is hung up. If you specify timeout as **0**, no timeout occurs.
- *On Hook Delay* — The number of seconds a dial-in port should be kept on hook to guarantee disconnection. A value of 6 is typical for modem lines. The default, 0, is used for all other lines.
- *Prompt message* — Message that appears on the TTY device when the connection is made (for example, *login:).*
- *Modules to be pushed on the stream* — They are pushed in the order they are specified (optional).
- *Disabled response message* — The message that is printed when port or service is disabled (optional).

5. Enter the following information for adding a service to a *listen* port monitor:
   - *Service type* — A *listen* port monitor provides two services: *spawn a service* or *pass file descriptor* to a server.
   - *spawn a service* - The *listen* port monitor will invoke the service specified in the next field.
   - *pass file descriptor* - File descriptor established will be passed through the pipe specified in the next field.
   - *Full service command line OR name of a STREAMS pipe* — If you specified the type of service as spawning a service, enter a full command line for the service to be invoked. If you specified the type of service as passing file descriptor to a standing server, enter the full name of the pipe for passing file descriptors.
   - *Modules to be pushed* (optional)
   - *Server's private address* — Address that the *listen* port monitor will monitor (optional).
   - *Scheme* - Simple authentication scheme or the full pathname of the authentication scheme. You can include arguments. (optional)
6. Press SAVE.

Adding a Service to All Port Monitors of a Particular Type

Why/When

Use this task to add a service to all port monitors of a particular type.

Menu & Button Selections

<Configuration>
<Port>
    <Service>
        <Add>
            <add to many>

Procedure

To add service to all port monitors of a particular type:

1. Select the port monitor type you wish to add a service to from the list provided.
2. Enter the following information:
   - *Service tag* — The tag associated with the port service you are adding, for example, the filename of the port associated with this service.
   - *Service invocation identity* — The login ID the service runs as, for example, *root*.
   - *Port/service state — ENABLED* or *DISABLED.*
   - *utmp entry to be created for this service* — Specify *Yes* or *No*. Choose *Yes* if you intend to specify login for the Service Command field below.
   - *Version number* — Number of the port monitor's database file.

- *File name of the port service configuration scripts* — This file name is the full path name of the script file (optional). For *ttymon* services, no configuration file is necessary.
- *Comments*— Comments associated with the port monitor entry and displayed when a user requests information about this port monitor (optional).

3. When you are satisfied with your answers on this form, press SAVE to access the next one. The choices on the next form depend on the type of port monitor you are adding this service to.
   - If you are adding a service to a *ttymon* port monitor, go to step 4.
   - If you are adding a service to a *listen* monitor, go to step 5.

4. Enter the following information for adding a service to a *ttymon* port monitor:
   - *TTY device* — Full pathname of the TTY device associated with the service (for example, */dev/term/s00*).
   - *ttylabel* — Initial terminal setting for the device (for example, 9600).
   - *Service command* — Full pathname of the command to be invoked when the connection is successful (for example */usr/bin/login*).
   - *TTY line options:* — Specify **yes** or **no** for each of the following: *Connect-on carrier*, *Bidirectional*, *Wait-Read*, and *Wait-Read-Count*. Choose *no* for *Hangup*.
   - *Hangup* — Choose *no*.
   - *Connect-on carrier* — *Ttymon* will invoke the service when the carrier detect indication has been received.
   - *Bidirectional* — Outgoing and incoming calls are accepted.
   - *Wait-Read* — Wait until N wait-read-counts have been received before sending a prompt message.
   - *Wait-Read-Count* — Number of N counts for wait-read, if it is set to **yes**.

- *Timeout value* — Number of seconds connection should be open and active without activity. If nothing is typed during this time period after the prompt is sent, the line is hung up. If you specify timeout as **0**, no timeout occurs.
- *On Hook Delay* — The number of seconds a dial-in port should be kept on hook to guarantee disconnection. A value of **6** is typical for modem lines. The default, **0**, is used for all other lines.
- *Prompt message* — Message that appears on the TTY device when the connection is made (for example, *login:).*
- *Modules to be pushed on the stream* — Pushed in the order they are specified (optional).
- *Disabled response message* — Message that is printed when port or service is disabled (optional).

5. Enter the following information for adding a service to a *listen* port monitor:
   - *Service type* — A *listen* port monitor provides two services: *spawn a service* or *pass file descriptor* to a server.
   - *spawn a service* — The *listen* port monitor will invoke the service specified in the next field.
   - *pass file descriptor* — File descriptor established will be passed through the pipe specified in the next field.
   - *Full service command line OR name of a STREAMS pipe* — If you specified the type of service as spawning a service, enter a full command line for the service to be invoked. If you specified the type of service as passing file descriptor to a standing server, enter the full name of the pipe for passing file descriptors.
   - *Modules to be pushed* (optional*)*
   - *Server's private address* — Address that the *listen* port monitor will monitor (optional).
   - *Scheme*—Simple authentication scheme or the full pathname of the authentication scheme. You can include arguments. (optional)
6. Press SAVE.

Modifying Port Services

Why/When

Use this task to change the characteristics of a port monitor service. Note that the characteristics you can change differ depending on the type of port monitor you are modifying.

Menu Selections

<Configuration>
<Port>
    <Service>
        <Modify>

Procedure

To modify port services:

1. Select the port services you want to modify.
2. Modify the fields you want to change. For a *ttymon* service, you can change the following values:
   - *Port service state — ENABLED* or *DISABLED***.**
   - *Create utmp* — **Yes** or **No**. Choose **Yes** if you intend to choose login for the Service Command field below.
   - *Ttylabel — (*For example, 9600.*)*
   - *Tty line options — Hangup*, *Bidirectional*, *Connect-on carrier*, and *Wait-Read*.
   - *Hangup* — Choose **no**.
   - *Connect-on carrier — Ttymon* will invoke the service when the carrier detect indication has been received.
   - *Bidirectional* — Outgoing and incoming calls are accepted.

- *Wait-Read* — Wait until N wait-read-counts have been received before sending a prompt message.
- *Wait-Read-Count* — Number of N counts for wait-read, if it is set to **yes**.
- *Timeout value* — Number of seconds connection should be open and active without activity. If nothing is typed during this time period after the prompt is sent, the line is hung up. If you specify timeout as **0**, no timeout occurs.
- *On Hook Delay* — The number of seconds a dial-in port should be kept on hook to guarantee disconnection. A value of **6** is typical for modem lines. The default, **0**, is used for all others.
- *Service invocation identity* — Login name used for service (for example, *root*).
- *Name of TTY device* — Full pathname of TTY device associated with the service (for example, */dev/term/s00*).
- *Service command* — Full pathname of the command to be invoked when the connection is successful (for example */usr/bin/login*).
- *Modules to be pushed* (optional field).
- *Prompt message* — Message that appears on the TTY device when the connection is successful (for example, *login:).*
- *Disabled response message*
- *Comments*

For a *listen* service, you can change the following values:

- *Port service state — ENABLED* or *DISABLED*.
- *Create utmp*— **Yes** or **No**.
- *Service invocation identity — (root,* for example.)
- *Service type — Spawn a service* or *pass file descriptor* to server.
- *Full service command line OR name of a STREAMS pipe* — If you specified the service type as spawning a service, enter a full command line for the service to be invoked (for example */usr/bin/login*). If you specified the service type as passing a file descriptor, enter the full name of the pipe for passing file descriptors.

- *Modules to be pushed* — List of pushable module names, separated by commas that are pushed on the STREAM as specified.
- *Server's private address* — Address *listen* port monitors on behalf of the service.
- *Scheme*—Simple authentication scheme or the full pathname of the authentication scheme. You can include arguments. Changing the scheme to an empty string removes it.
- *Comments.*

3. Press SAVE.

Removing a Service

Why/When

Use this task to remove a service when you no longer want it to be performed by a port monitor.

Menu Selections

<Configuration>
<Port>
    <Service>
        <Remove>

Procedure

To remove a service from a port monitor:

1. Choose all services you want to remove.
2. Press SAVE.

Enabling a Service

Why/When

Use this task to enable a service that has been disabled for any reason.

Menu Selections

<Configuration>
<Port>
    <Service>
        <Enable>

Procedure

To enable a service on a port monitor:

1. Select all services you want to enable.
2. Press SAVE.

Disabling a Service

Why/When

Use this task to disable a service before correcting problems.

Menu Selections

<Configuration>
<Port>
    <Service>
        <Disable>

Procedure

To disable a service on a port monitor:

1. Select all services you want to disable.
2. Press SAVE.

Listing All Port Monitor Service Information and Status

Why/When

Use this task to list the port monitor tag, port monitor type, service tag, flags, ID, and port monitor service information for all port services.

Menu & Button Selections

<Configuration>
<Port>
    <Service>
        <List>
            <all>

Display

Information similar to the following example appears:

```
PMTAG            PMTYPE       SVCTAG    FLGS  ID  SCHEME
<PMSPECIFIC>

tty1             ttymon        s00       u    root   -
/dev/term/s00 -- /usr/bin/login -9600 - login -#

ttymon3          ttymon        s01       u    root   -
/dev/term/s01 -- /usr/bin/login -9600 - login -#
```

Listing Port Services for a Particular Port Monitor

Why/When

Use this task to list the port monitor tag, port monitor type, service tag, flags, ID, and port monitor service information for all port services of a particular port monitor.

Menu & Button Selections

<Configuration>
<Port>
    <Service>
        <List>
            <by pmtag>

Procedure

To list the services of a particular port monitor:

1. Select the port monitors for which you wish to list service.
2. Press SAVE.

Display

Information similar to the following example appears:

```
PMTAG            PMTYPE       SVCTAG    FLGS  ID  SCHEME
<PMSPECIFIC>

ttymon3          ttymon         s01       u   root   -
/dev/term/s01 -- /usr/bin/login -9600 - login -#
```

Listing Port Services for a Particular Type of Port Monitor

Why/When

Use this task to list the port monitor tag, port monitor type, service tag, flags, ID, and port monitor service information for all port services of a particular type of port monitor.

Menu & Button Selections

<Configuration>
<Port>
    <Service>
        <List>
            <by type>

Procedure

To list the services of a particular port monitor type:

1. Select the port monitor types for which you wish to list service.
2. Press SAVE.

Display

Information similar to the following example appears:

```
PMTAG            PMTYPE       SVCTAG    FLGS  ID  SCHEME
<PMSPECIFIC>

tty1             ttymon        s00        u   root  -
/dev/term/s00 -- /usr/bin/login -9600 - login -#
```

```
ttymon3          ttymon        s01        u   root  -
/dev/term/s01 -- /usr/bin/login -9600 - login -#
```

Adding a Terminal to a Port

Why/When

A terminal must be added logically to the system through the menus or through the command line before the system can recognize its presence.

Note: You cannot add a terminal to a serial controller using this menu. To add a terminal to one of these controllers, you must:

1. Add a port monitor.
2. Add a port service.

Menu Selections

<Configuration>
<Terminal>
    <Quick Setup>
        <Add>

Procedure

To add a terminal to a port:

1. Enter the following information on the form:
   - *Port Number(s)* — The number(s) of the port(s) to which you want to add terminal(s). For example, */dev/term/s01*.
   - *Speed* — The speed at which these terminals operate.

2. Press SAVE. The following messages appear:

```
Please wait, terminal setup in progress . . .
The port /dev/term/s01 was setup.
```

   Note: the terminal setup can take several minutes before the final message appears.

If you do not receive a login prompt on the terminal you have added, you might need to configure your terminal by adding it to the appropriate port monitor table.

Removing a Terminal From a Port

Why/When

Use this task to remove a terminal logically when it is being removed physically.

Menu Selections

<Configuration>
<Terminal>
    <Quick Setup>
        <Remove>

Procedure

To remove a terminal from a port:

1. Specify the numbers of the ports you want to remove terminals from.
2. Press SAVE. The menu titled **WARNING:** informs you that the terminal was successfully removed.

Creating TTY Line Settings and Hunt Sequences

Why/When

This task allows you to add line setting entries to */etc/ttydefs* and specify hunt sequences. A **hunt sequence** is a list of baud rate values (for example, *1200, 2400, 4800, 9600*). During a baud rate search, the system goes down the list, trying each rate until it finds one that matches the speed of the terminal.

Menu Selections

<Configuration>
<Terminal>
    <Line Settings>
        <Add>

Procedure

To add a line sequence entry:

1. Enter the following information on the form:
   - *Ttylabel* — Usually, but not always, a baud rate (for example, **1200**).
   - *Enable autobaud?* — Whether *ttymon* should determine the line speed of a TTY port and set the speed accordingly (**y** or **n**).
   - *Baud rate* — Press CHOICES for the available baud rates.
   - *Nextlabel* — Baud rate the system should attempt to use if the *ttylabel* rate is not compatible. This value establishes the hunt sequence.
   - *Initial line settings* — Terminal line characteristics that take effect when a user first accesses a port with that *ttylabel.*

- *Final line settings* — Terminal line characteristics that take effect just before the system starts the service associated with a port with a given *ttylabel*. The settings must be in the same format as the arguments to the **stty** command.

2. Press SAVE. A message confirming that the line settings with the *ttylabel* you specified have been added successfully appears.

Listing TTY Line Settings and Hunt Sequences

Why/When

Use this task to specify a list of the baud rates the system should use when attempting to communicate with a terminal.

Menu Selections

<Configuration>
<Terminal>
    <Line Settings>
        <List>

Procedure

To list the TTY line settings:

1. Select the *ttylabel* for the line whose settings you want to list.
2. Press SAVE. If you chose the *Ttylabel 19200*, the current display looks similar to the following example:

```
Ttylabel       -19200
Initial Flags  -19200 opost onlcr tab3 ignpar ixon
ixany parenb istrip echoe echok isig cs7 cread
Final Flags    -19200 opost onlcr sane tab3 ignpar
ixon ixany parenb istrip echo echoe ichok isig cs7
cread
Autobaud       no
NextLabel      9600
19200          19200 Baud
cread          Enable Receiver
cs7            7 Bit Character
echo           Enable Echo
echoe          Echo Erase Character as
               Backspace/Space/Backspace
echok          Echo New-line after Linekill
```

```
        ignpar          Ignore Characters with Parity Errors
        isig            Enable Signals
        istrip          Strip Characters
```

Removing TTY Line Settings and Hunt Sequences

Why/When

This task allows you to remove line setting entries from */etc/ttydefs*. If an entry was part of a hunt sequence, you should adjust other entries in the list to maintain a proper sequence.

Menu Selections

<Configuration>
<Terminal>
    <Line Settings>
        <Remove>

Procedure

To remove TTY line settings:

1. Select the *ttylables* you want to remove.
2. Press SAVE. The following message appears:

```
All MARK[ed] ttylabels are removed.  You may need
to recheck the hunt sequences.
```

Chapter 15

Managing Networks

Understanding the Basic Networking Utilities

The **Basic Networking Utilities** (**BNU**) **Package** is a part of your base operating system. It lets computers using the UNIX operating system communicate with each other and with remote terminals. These utilities range from those used to copy files between computers (*uucp* and *uuto*) to those used for remote logins and command execution (*cu*, *ct*, and *uux*).

Administration Tasks

Administering the Basic Network involves the following steps:

1. Set up the basic networking facility and configure the basic networking files.
2. Maintain your basic networking files so that your operations continue to run smoothly.
3. Identify and correct common problems in basic networking operations and administration.

Initial Setup Tasks

When you are initially setting up your network, you should add to the system in the following order:

1. Devices
2. Systems
3. Systems to poll

Adding a Modem

Why/When

Use this task to add a modem to the system and register an appropriate port service for the modem.

Menu & Button Selections

<Configuration>
<Network and Modem Admin>
    <Modem Setup>
        <Add>

Before You Start

The system must not have a port monitor named *modemmgmt* that is being used for something else.

You may also want to have the modem manufacturer's manual to help you specify the following information:

- Appropriate dialer and initialization strings
- Speeds supported by the modem
- Switch settings to set up

Procedure

To add a modem:

1. Specify that you want to add a modem by selecting **Add** from the menu. A message appears if there are no ports currently available for adding a modem. To free a port so that one is available for adding a modem, see the task "Removing a Modem" in this chapter.

2. Enter the type of modem in the form. Press CHOICES for a list of the available dialer strings. The type of modem is associated with the dialer strings in the */etc/uucp/Dialers* file.
3. Specify which type of calls the modem and port should handle. Press CHOICES until the option you want appears. You can choose one of the following:
   - *Bidirectional* — Incoming and outgoing calls.
   - *Only Incoming* — Only incoming calls.
   - *Only Outgoing* — Only outgoing calls.
4. Enter the speed label of the port to which the modem will be connected. The speed label represents a profile of the port and defines the bit rate, parity, and flow control for the port. Press CHOICES for a list of speed labels.
5. Enter the port where the modem is to be connected. Press CHOICES for a list of available serial ports.
6. Enter the initialization string used to start the modem. Press CHOICES for a list of initialization strings.
7. Enter a number that corresponds to the timeout for initialization. The units are in seconds. This number will be added to 15 seconds to compute the total timeout value. For example, if you enter **2** or **3** in this field, the timeout will be 17 or 18 seconds, respectively. A zero is also accepted as a valid value.
8. Press SAVE. The system displays a *ttymon* port monitor named *modemmgmt* if one does not exist.

Add a Modem with the UUCP Menu

You can use the UUCP menu to logically add a modem to the system.

Menu & Button Selections

<Configuration>

<Network and Modem Admin>
<UUCP>
<devices>
<add>

Procedure

To add a modem:

1. Specify that you want to add a modem.
2. Change the device type and modem type if necessary in the form. Choose the type of modem whose command language is used by your modem.
3. Enter the following information in the form:

   Port — The port you want the modem to use. Press CHOICES for a list of available ports.

   Speed — The speed of the port, if necessary.
4. Press SAVE. Information similar to the following example appears:

```
The following entry will now be made in the
file /etc/uucp/Devices:

    Type       Line       Line2       Class
    ACU        term/00     -           Any

    Dialer-Token Pairs

HayesSmartm2400
```

5. Press ENTER to confirm that this information is correct.

Modifying Modem Settings

Why/When

Use this task to change the speed label, dialer string, initialization string, or call direction of a modem connected to the system.

Menu & Button Selections

<Configuration>
<Network and Modem Admin>
    <Modem Setup>
        <Modify>

Procedure

To modify a modem:

1. Specify that you want to modify a modem by selecting Modify from the menu. A message appears if there are no modems added to the system.
2. Enter the port to which the modem is connected. Press CHOICES for the list of ports configured for the modem.

   A modem is considered to exist on a port if there is an Auto Call Unit (ACU) entry for it in the */etc/uucp/Devices* file, or if a *ttymon* service has been started for that port. For information about starting a *ttymon* port service for a modem, see the task “Adding a Modem.”
3. Press SAVE to display a form. The modem type is listed on the form.
4. Change the modem type on the form, if necessary. Press CHOICES for the list of modem types and dialer strings in the */etc/uucp/Dialers* file.

5. Change the speed label of the modem, if necessary. The speed label represents a profile of the port and defines the bit rate, parity, and flow control for the port. Press CHOICES for a list of speed labels in the */etc/ttydefs* file.
6. Change the initialization string used to start the modem, if necessary. Press CHOICES for a list.
7. Change which type of calls the modem should handle, if necessary. Choose one of the following:
   - *Bidirectional* — Incoming and outgoing calls.
   - *Only Incoming* — Only incoming calls.
   - *Only Outgoing* — Only outgoing calls.
8. Press SAVE.

Removing a Modem

Why/When

Use this task to remove a modem connected to the system. The modem is removed from the */etc/uucp/Devices* and */etc/uucp/Modems* files.

Menu & Button Selections

<Configuration>
<Network and Modem Admin>
    <Modem Setup>
        <Remove>

Procedure

To remove a modem:

1. Specify that you want to remove a modem by selecting Remove from the menu. A message appears if there are no modems on the system.
2. Enter the port to which the modem is connected. Press CHOICES for the list of ports configured for modems.

   A modem is considered to exist on a port if there is an Auto Call Unit (ACU) entry for it in the */etc/uucp/Devices* file, or if a *ttymon* service has been started for that port. For information about starting a *ttymon* port service for a modem, see the task “Adding a Modem.”
3. Press SAVE. Information about the port appears.
4. Press CONT to remove the modem, or press CANCEL to keep the modem.

Listing Ports Configured for Modems

Why/When

Use this task to list ports configured for a modem.

Menu & Button Selections

<Configuration>
<Network and Modem Admin>
    <Modem Setup>
        <List>

Procedure

To list ports configured for modems:

1. Specify that you want to list the ports configured for a modem by selecting List from the menu. A message appears if there are no modems configured for the system.
2. Enter the port to be listed. Press CHOICES to display the set of ports configured for modems.

   A modem is considered to exist on a port if there is an Auto Call Unit (ACU) entry for it in the */etc/uucp/Devices* file, or if a *ttymon* service has been started for that port. For information about starting a *ttymon* port service for a modem, see the task “Adding a Modem.”
3. Press SAVE. Information about the port appears.

Editing Modem-related UUCP Files

Why/When

Use this task to directly edit the following modem-related files in the *uucp* database on the system:

/etc/uucp/Devices
/etc/uucp/Modems
/etc/uucp/Systems
/etc/uucp/Dialers
/etc/uucp/Dialcodes

Note: You should know how to use these files and understand the semantics of each field in an entry. You can press HELP to display detailed help information for each field.

Menu & Button Selections

<Configuration>
<Network and Modem Admin>
    <Modem Setup>
        <Edit>

Procedure

You can use the following procedures to add, list, modify, or remove information.

Add Modem-related Information

To add information to a *uucp* file:

1. Specify that you want to edit a file by selecting Edit from the menu.
2. Choose the type of *uucp* file you want to edit:

Devices
Modems
Dialers
Systems
Dialcodes

3. Choose Add. You can add the following information to the following files:
   - *Devices or Modems* — A device type, device name, dialer port (801 dialers only), speed, and dialer token pairs. The information will be added to the */etc/uucp/Devices* and */etc/uucp/Modems* files, respectively.
   - *Dialers* — A dialer string name, translation string, and chat sequence. The information will be added to the */etc/uucp/Dialers* file.
   - *Systems* — A system name, time, type of device used to dial the system, transfer speed, phone number of the system, and login sequence. The information will be added to the */etc/uucp/Systems* file.
   - *Dialcodes* — A dial code name or dial sequence. The information will be added to the */etc/uucp/Dialcodes* file.

4. Press SAVE to add the information.

List Modem-related Information

To list information in a *uucp* file:

1. Specify that you want to edit a file by selecting Edit from the menu.
2. Choose the type of *uucp* file for which you want to see information:

   Devices
   Modems
   Dialers
   Systems
   Dialcodes

3. Choose List.
4. The entries in the selected *uucp* file are displayed.

Modify Modem-related Information

To modify information in a *uucp* file:

1. Specify that you want to edit a file by selecting Edit from the menu.
2. Choose the type of *uucp* file you want to edit:

   Devices
   Modems
   Dialers
   Systems
   Dialcodes
3. Choose Modify.
4. From the displayed menu, select the line you want to change.
5. Press ENTER.
6. You can use the displayed form to change the following information for the following types of files:
   - *Devices or Modems* — A device type, device name, dialer port (801 dialers only), speed, and dialer token pairs. The information will be changed in the */etc/uucp/Devices* and */etc/uucp/Modems* files, respectively.
   - *Dialers* — A dialer string name, translation string, and chat sequence. The information will be changed in the */etc/uucp/Dialers* file.
   - *Systems* — A system name, time, type of device used to dial the system, transfer speed, phone number of the system, and login sequence. The information will be changed in the */etc/uucp/Systems* file.
   - *Dialcodes* — A dial code name or dial sequence. The information will be changed in the */etc/uucp/Dialcodes* file.
7. Press SAVE to change the information.

Remove Modem-related Information

To remove information from a *uucp* file:

1. Specify that you want to edit a file by selecting Edit from the menu.

2. Choose the type of *uucp* file you want to edit:

   Devices
   Modems
   Dialers
   Systems
   Dialcodes

3. Choose Remove.
4. In the displayed menu, select the line you want to remove.
5. Press ENTER. Information about the entry appears.
6. Press CONTINUE to remove the information, or CANCEL to keep the information.

Displaying Cables for Connecting a Modem

Why/When

Use this task to show the pin-out diagrams of cables that can be used to connect a modem to a system. (The pin-out details are available in the */etc/uucp/Cables* file.)

Menu & Button Selections

<Configuration>
<Network and Modem Admin>
    <Modem Setup>
        <Cables>

Procedure

To display information about cables:

1. Specify that you want to see cable information by selecting <Cables> from the menu.
2. Choose a cable from the menu. The system displays a pin-out diagram.

Adding a Direct Device

Why/When

Use this task to logically add a direct device to the system.

Menu & Button Selections

<Configuration>
<Network and Modem Admin>
    <UUCP>
        <devices>
            <add>

Procedure

To add a direct device:

1. Specify that you want to add a direct device.
2. Enter the following information in the form:
   - *Port* — The port you want the modem to use. Press CHOICES for a list of available ports.
   - *Speed* — The speed of the port, if necessary.
3. Press SAVE. Information similar to the following example appears:

```
The following entry will now be made in the
file /etc/uucp/Devices:

    Type       Line       Line2       Class
    Direct     term/00    -           9600

    Dialer-Token Pairs
    uudirect
```

4. Press ENTER to confirm that this information is correct.

Adding a Generic Device

Why/When

Use this task to add a generic device to the system. A generic device is one that is not covered by the direct, modem, and network selections.

Menu & Button Selections

<Configuration>
<Network and Modem Admin>
    <UUCP>
        <devices>
            <add>

Procedure

To add a generic device:

1. Specify that you want to add *other*.
2. Enter the following information in the next menu:
   - *Device type* — Name by which you want to refer to the device.
   - *Port* — Port you want to use. Press the CHOICES key for a list of available ports.
   - *Dialer port* — Necessary only if the port does not make its own calls (for example, a modem with an 801 Automatic Calling Unit).
   - *Speed* — Speed of the port, if necessary.
   - *Dialer and token values* — Value of first dialer and first token. Press the CHOICES key to see a list of the available dialer. The token value is the sting you want sent to the dialer.
3. Press SAVE. Information similar to the following example appears:

```
The following entry will now be made in the
file /etc/uucp/Devices:

    Type       Line       Line2       Class
    test       term/00    -           any

    Dialer-Token Pairs
```

4. Press ENTER to confirm that this information is correct.

Adding a Network

Why/When

Use this task to add a network to the system.

Menu & Button Selections

<Configuration>
<Network and Modem Admin>
    <UUCP>
        <devices>
        <add>

Procedure

To add a network:

1. Specify that you want to add a network.
2. Enter the following information in the next menu:
   - *Network Name* — Name of network you are adding.
   - *Port* — The port you want the device to use.
   - *Dialer type* — Type of dialer used. Choose either *TLIS* to enable basic networking to login to remote system or *TLI* to prevent basic networking from login to remote system**.**
3. Press SAVE.

   Information similar to the following example appears:

```
The following entry will now be made in the
file /etc/uucp/Devices:

    Type       Line       Line2       Class
    TCP         tcp         -           -
```

```
Dialer-Token Pairs

TLIS
```

4. Press ENTER to confirm that this information is correct.

Listing Devices Available to Basic Networking

Why/When

Use this task to list the ports to which a type of device is attached.

Menu & Button Selections

<Configuration>
<Network and Modem Admin>
    <UUCP>
        <devices>
            <list>

Procedure

To lists the ports for a device:

1. Specify the type of device you want to list and the ports to which it is attached.
2. Press SAVE. Information similar to the following example appears:

```
TYPE   LINE    LINE2  CLASS DIALER TOKEN-PAIRS
ACU    term/00  -      9600   hayes     \T
Direct term/s00 -      9600   uudirect  \D
```

Removing Devices from the List of Devices Available to BNU

Why/When

Use this task to remove a device from the basic networking utility.

Menu & Button Selections

<Configuration>
<Network and Modem Admin>
    <UUCP>
        <devices>
            <remove>

Procedure

To remove a device from the networking utility:

1. Enter the following information:
   - *Device type* — The type of device you want to remove.
   - *Port* — The port to which the device you want remove is attached.
2. Press SAVE.
3. Select the device you want to remove.
4. Press SAVE.
5. Verify that you want to remove the device by pressing CONT.

Adding Remote Systems

Why/When

This task allows you to add remote systems to the Networking Database, telling your system about other systems with which it can communicate.

Menu & Button Selections

<Configuration>
<Network and Modem Admin>
    <UUCP>
        <systems>
            <add>

Procedure

To add a remote system:

1. Enter the following information on the form:
   - *System* — The node name of the system you want to contact.
   - *Days and times to call* — The days and times you want your system to contact the remote system.
   - *Device category* — The category of the device used to make the connection to the remote system (for example, a modem).

2. Press SAVE. Depending on the entry you make for the Device category, the system requests more information in one or more of the following forms:
   - Device type
   - Speed
   - Phone number

- Network name
- Network address

Display

The <Add a System> menu displays, enabling you to verify the system that you will be adding.

Listing Remote Systems

Why/When

This task allows you to list systems in the Networking Database.

Menu & Button Selections

<Configuration>
<Network and Modem Admin>
    <UUCP>
        <systems>
            <list>

Procedure

To list the remote systems in the Networking Database:

1. Enter the name of the system you want to list or choose *ALL* to list all systems.
2. Press SAVE.

Display

A display similar to the following will appear:

```
SYSTEM       TIME   TYPE   CLASS  PHONE  LOGIN

paradox2     Any    Acu    9600   7438 login: nuucp word:
xyzncr3450   Any    Dir    Any    direct in:--in:
```

Removing Remote Systems

Why/When

This task allows you to remove systems from the Networking Database, so that your system does not attempt to contact it.

Menu & Button Selections

<Configuration>
<Network and Modem Admin.>
    <UUCP>
        <systems>
            <remove>

Procedure

To remove a remote system from the Networking Database:

1. Enter the name of the system you wish to remove.
2. Move the cursor to the item you want to remove and press ENTER.
3. Verify that the displayed information is correct by pressing CONT.

Adding Polling

Why/When

This task allows you to tell your system which systems to contact and when to contact them.

Before You Start

Make sure that the system you want to poll is already added to your system.

Menu & Button Selections

<Configuration>
<Network and Modem Admin>
    <UUCP>
        <polling>
            <add>

Procedure

To add polling to your system:

1. Enter the following information:
   - *System* — The system you want to add to the database.
   - *Times* — The times at which this system is to be polled.
2. Verify that the information displayed in the menu is correct by pressing CONT.

Listing Times for Automatic Polling

Why/When

This task allows you to list the systems that are contacted automatically by your system and the times when contact is attempted.

Menu & Button Selections

<Configuration>
<Network and Modem Admin>
    <UUCP>
        <polling>
            <list>

Procedure

To list the times for automatic polling:

1. Enter the name of the system for which you want to know the time of automatic polling.
2. Press SAVE.

Removing Polling

Why/When

This task allows you to tell your system which systems not to contact.

Menu & Button Selections

<Configuration>
<Network and Modem Admin>
    <UUCP>
        <polling>
            <remove>

Procedure

To remove polling from your system:

1. Enter the name of the system you no longer want your system to contact automatically.
2. Press SAVE.

Displaying Network Selection Configuration

Why/When

Use this task to display the ID, device name, semantics, protocol family, and visibility for each network selection on your system.

Menu & Button Selections

<Configuration>
<Network and Modem Admin>
    <UUCP>
        <polling>
            <display>

Display

Information similar to the following example appears:

```
Network ID  Network Device  Semantics ProtoFamily Visible
----------  --------------  --------- ----------- -------
ticlts      /dev/ticlts     tpi_clts  loopback     yes
ticots      /dev/ticots     tpi_cots  loopback     yes
ticotsord   /dev/ticotsord   tpi_cots_ord loopback  yes
tcp         /dev/tcp        tpi_cots  inet         yes
udp         /dev/udp        tpi_clts  inet         yes
raw         /dev/raw        tpi_raw   inet         no
icmp        /dev/raw        tpi_raw   inet         no
```

Modifying Network Selection Configuration

Why/When

Use this task when you want to modify a network selection on your system.

Menu & Button Selections

<System Services>
<Network Services Administration>
    <selection>
        <modify>

Procedure

To modify a network selection:

1. Select the item you want to modify.
2. Modify the characteristics you wish to change. You can modify the following characteristics:
   - *Network identifier* — Unique identifier used to identify the network. This name can be up to 14 characters and can not contain spaces or colons.
   - *Default network* — Whether this network should be tried by network selection when $NETPATH is not set (specify **Yes** or **No**).
3. Press SAVE.

Creating Service Information for Loopback Protocols

Why/When

Use this task to add service names to the service files for the loopback protocols. Applications can use the name-to-address mapping facility to obtain the addresses of machines and services.

Menu & Button Selections

<System Services>
<Network Services Administration>
    <name_to_address>
        <loopback>
            <services>

Procedure

To add service names to the service files:

1. Enter the name of the service available on this machine.
2. Press SAVE. A message that the service name has been added to the following files appears on your screen:
   - */etc/net/ticots/services*
   - */etc/net/ticotsord/services*
   - */etc/net/ticlts/services*

Chapter 16

Using the Hardware Manager

Hardware Manager Overview

The Hardware Manager is an optional component of OperationsAdvantage. Not all NCR System 3000 and Series 5000 models support all Hardware Manager features. Several additional features for the NCR 4300 that has the SMIS Baseboard installed are described in this chapter. The Hardware Manager provides the following features:

- A hardware map that graphically displays all hardware components in your system and their status.
- A utility for displaying or modifying the power margining status of the system.
- A utility for setting the system wake-up time and optionally shutting down the system.
- Utilities for replacing failed hardware components. Some components can be replaced while the system is in service; others require the system to be out of service.
- Utilities to add devices to your system while the server remains in service.

Display on NCR 4300 Servers With SMIS Baseboard Installed

Any authorized person using an NCR 4300 server with the Standard Management Interface Software (SMIS) Baseboard package installed can view details for the following:

- Baseboard voltages
- Baseboard temperatures
- Fan status
- Memory subsystem (such as single bit or double bit errors)
- Internal backup system (UPS) battery status (such as battery low or battery fail)
- Power supply status (such as voltage, current, power supply fail, and AC fail)

The details displayed for each component depend upon the information entered into the Management Information Format (MIF) file. For detailed information on building MIF files, refer to "Appendix A: MIF Files" in the *NCR Standard Management Interface Software (SMIS) User's Guide*. SMIS supports the Desktop Management Interface (DMI).

The following SMIS Baseboard instrumentation has been obtained from the MIF file and integrated with the OperationsAdvantage BASE software to implement the displaying of these details:

Group: ID	Attribute: ID
Temperature Sensor	Component Information, Short Name, Current Reading, Current Upper Status, and Current Lower Status
Cooling Sensors	Component Information and Current Status
Voltage Sensor	Component Information, Short Name, Current Reading, Current Upper Status, and Current Lower Status
Security Sensor	Current Status and Short Name
Status Display	Contents of Display and Short Name
System Control	System Power Status and Event Logging Capability
Memory Array	Component Information, Maximum Memory Capacity, No of Memory Device Sockets, No of Memory Device Sockets Used, SIMMs, Last Single-Bit Error, Array Error Type, Short Name, and Last Multi-Bit Error
Memory Device	Component Information, Device Locator, and Size
Power Supply	Component Information, Operational State, Total Output Power, and Short Name
UPS Battery	Component Information, Operational State, Battery Status, Battery Voltage, Battery Current, and Short Name

Note: You may also view these hardware details by typing **prtconf** at the command line and pressing the ENTER key.

Viewing the Hardware Map

Why/When

Display the hardware map to view information about the hardware components in your system. These hardware components include the auxiliary battery, the console, disks, boards, fans, power supplies, flex disk drives, tape drives, and the system front panel.

Menu & Button Selections

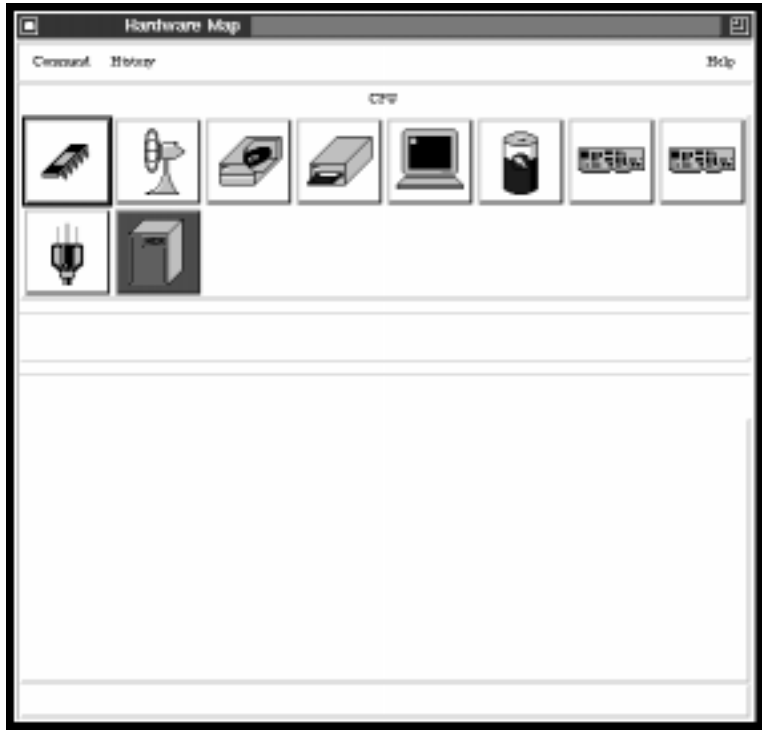
<Service>
<Hardware Management>
    <map>

Display

A frame similar to Figure 16-1 appears on your screen.

If any components are in a failed state, the box surrounding the icon is red. For example, assume that the box around the fan in Figure 16-1 is red. This indicates that at least one fan is not working. To determine which fan failed, point your cursor to the fan icon and click the mouse button. A new frame showing all fans appears on your screen. The failed fan is marked with a slash symbol.

Figure 16-1. Hardware Map



Components of the Screen

The Hardware Manager map is comprised of the following four main sections:

- Main Menu
- System Class Display
- System Object Display
- Object Information Display

Main Menu

The main menu consists of a series of pull-down menus that you select to perform administrative tasks. Some tasks are available all the time, and some are only available when a system object connected to that task has been selected.

System Class Display

The hardware component icon buttons represent the types of hardware components available on your system. Select a hardware component by clicking the icon button that represents that component. The name of the selected component appears in text above the icon pane window. To view the component name represented by an icon, move the pointer to the icon button, and press and hold the left mouse button. The selected component name will appear. To select that component, release the mouse button. If you do not wish to select that component, move the pointer away from the icon button and release the mouse button.

System Object Display

After a component has been selected, this pane will be updated to display icon buttons representing the status of the physical components selected that are in your system. The components are displayed by their location in the system. A status of OK or a red circle with a line through it will appear to the right of each icon button. Select an object to manage by clicking the icon button representing the component. Once a system object component is selected, you can select administrative tasks to perform on that component from the Command menu.

Object Information Display

After a system object component has been selected, information about the characteristics and status of that object will appear in this window pane.

Viewing Component Details

Procedure

To see more information about any component, point your cursor to that component and click the mouse button. A new frame showing either all instances of that component type or, if there is only one instance of that type of object, information about that component will appear on your screen. The contents of the status frame will vary for the different types of components. When you are finished looking at the displays, use your mouse to choose another icon. To clear the display, click on the icon that you viewed originally.

Auxiliary Battery

The hardware map displays the following information about the auxiliary battery (CMOS Battery):

- Battery status (*OK* or *FAILED*)
- Battery charge (in volts)
- Field Replaceable Unit name

Fans and Fan Trays

The hardware map displays the following information about the fans and fan trays:

- Status (*OK* or *FAILED*)
- Current Consumed: (in Amps)
- Power Consumed: (in Watts)

Display for NCR 4300 With SMIS Baseboard Installed

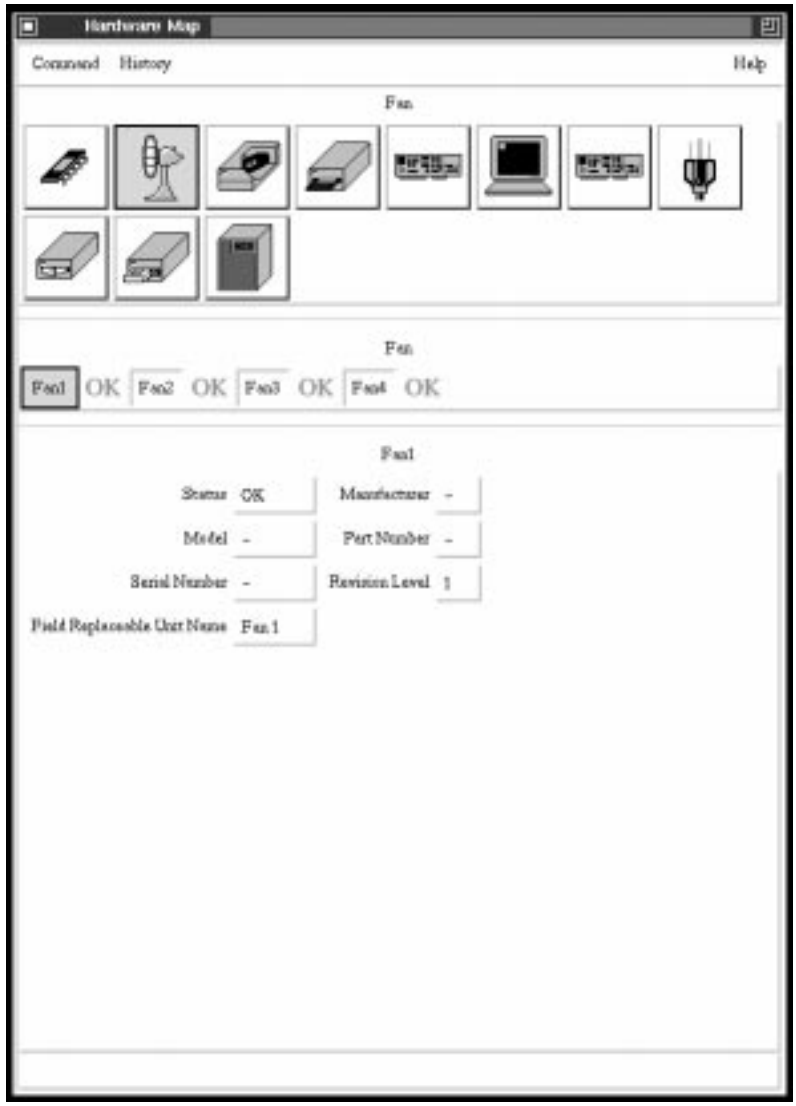
Possible information for the fans on the NCR 4300 server with the SMIS Baseboard package installed includes the following (depending upon what information is in the MIF file):

- Manufacturer

- Model
- Part Number
- Serial Number
- Revision Level
- Field Replaceable Unit Name
- Status

Figure 16-2 shows an example of a display for a fan on the NCR 4300 server with SMIS Baseboard installed:

Figure 16-2. Fan Display with SMIS Baseboard Installed



Fixed Disk Drives

The hardware map displays the following information about the fixed disks:

- IO Bus Location

- Location
- Firmware Revision Level
- Bus Number on Controller
- Power State
- Disk Capacity (formatted)
- Auto-Reallocate Sector on Read Error
- LUNs (Logical Unit Names)
- SCSI Model Identifier
- SCSI ID (physical unit number [**PUN**])
- Field Replaceable Unit name
- Cache status (*ON* or *OFF*)
- Auto-Reallocate Sector on Write Error (*ON* or *OFF*)
- Controller Number on Bus

Boards

The hardware map displays the following information about the local peripheral board, memory boards, processor boards, primary Micro Channel backplane, and power supply interface:

- Personality Type
- Configuration ID
- Module Diagnostic Result
- Module Command
- SUS Version Compatible
- EEPROM Version Number
- Current Consumed: (in Amps)
- Power Consumed: (in Watts)
- CAT Bus Slot Number
- Assembly/Revision Number
- Module Status
- Module State
- Tracer Number
- Field Replaceable Unit Name

Monitor

The hardware map displays the following information about the console:

- Active Console
- Parity (*EVEN*, *ODD*, or *NONE*)
- Field Replaceable Unit name
- Baud Rate
- Number of bits per character

Power Supply

The hardware map displays the following information about the power supplies:

- Status (*OK* or *FAILED*)
- Conversion Type (DC/DC or AC/DC)
- Current Supplied: (in Amps)
- Power Supplied: (in Watts)
- Field Replaceable Unit Name
- AC status (*OK* or *FAILED*)
- DC status (*OK* or *FAILED*)
- Charging PBS (*OK* or *FAILED*)
- Power Supply Type

Display on NCR 4300 With SMIS Baseboard Installed

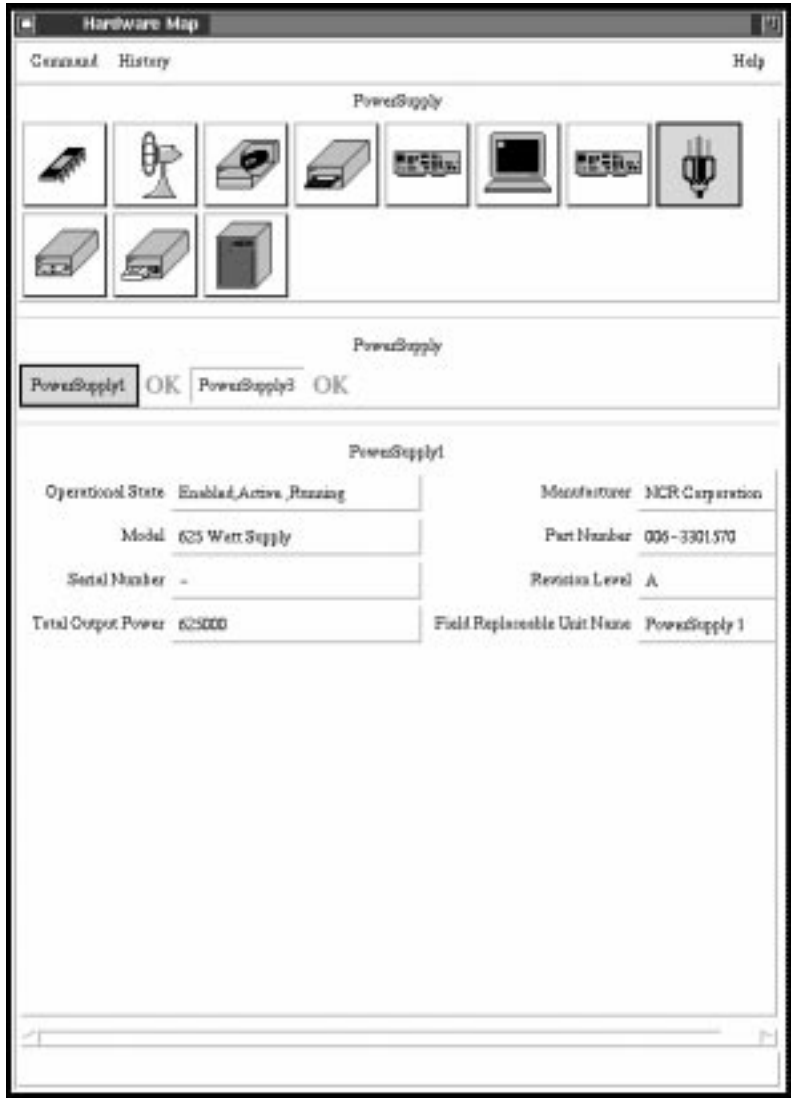
Possible information for the power supply on the NCR 4300 server with the SMIS Baseboard package installed includes the following (depending upon what information is in the MIF file):

- Manufacturer
- Model
- Part Number
- Serial Number

- Revision Level
- Total Output Power
- Field Replaceable Unit Name
- Operational State

Figure 16-3 shows an example of the details for a power supply:

Figure 16-3. Power Supply Details



Removable Media

The hardware map displays the following information about the removable media drives:

- Location
- SCSI Model Identifier
- Controller Number on Bus
- SCSI ID (PUN)
- Field Replaceable Unit Name
- Firmware Revision Level
- IO Bus Location
- Bus Number on Controller
- Power State (*ON* or *OFF*)

System

The hardware map displays the following information about the system:

- Temperature status (*NORMAL*, *HIGH*, or *VERY HIGH*)
- Temperature (centigrade)
- Security Switch Position (*LOCKED* or *UNLOCKED*)
- SUS Version Number
- Internal Disk Array (*PRESENT* or *NOT PRESENT*)
- CMOS Internal Device Table Status (*VALID* or *INVALID*)
- Independently Powered Internal Disk Array (*PRESENT* or *NOT PRESENT*)
- Power Switch Position (*ON* or *OFF*)
- Power supply margining (*NORMAL*, *HIGH*, or *LOW*)
- Total Number of CPUs

Display on NCR 4300 With SMIS Baseboard Installed

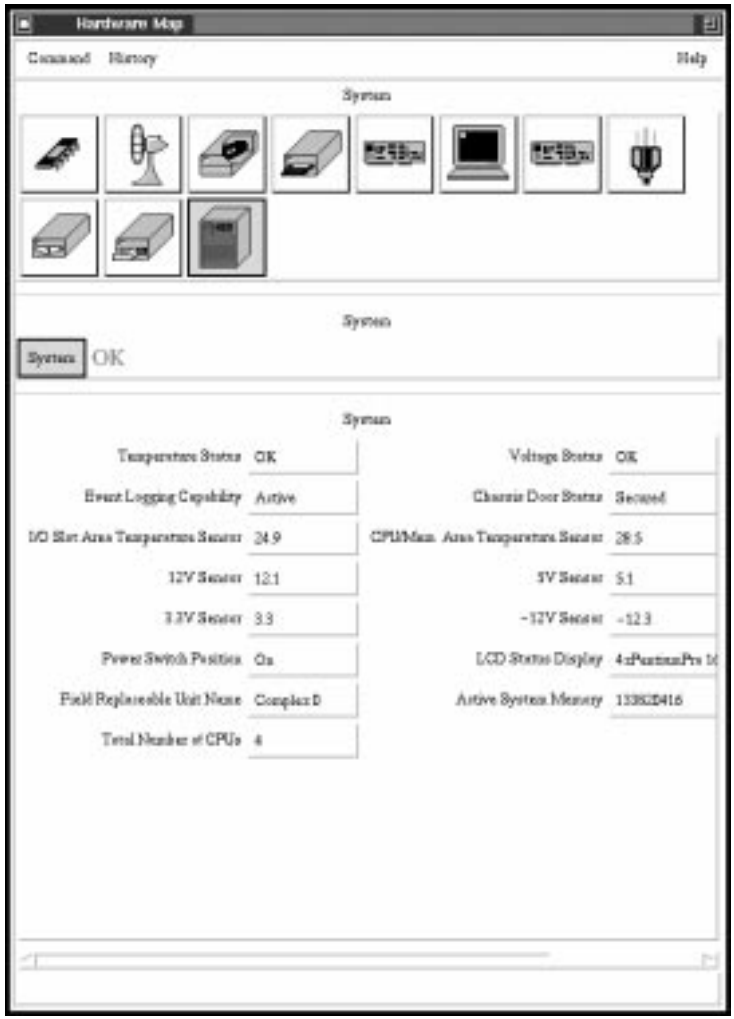
Possible information for the system on an NCR 4300 server with the SMIS Baseboard package installed includes the following (depending upon what information is in the MIF file):

- I/O Slot Area Temperature Sensor
- CPU/Mem Area Temperature Sensor
- 12V Sensor
- 5V Sensor
- 3.3V Sensor
- -12V Sensor
- Power Switch Position
- LCD Status Display
- Field Replaceable Unit Name
- Active System Memory
- Total Number of CPUs
- Temperature Status

- Voltage Status
- Event Logging Capability
- Chassis Door Status

Figure 16-4 shows an example of the details for a system:

Figure 16-4. System Details



Flex Disk Drive

The hardware map displays the following information about the flex disk drives:

- Diskette Drive Description
- Capacity
- Field Replaceable Unit Name
- Physical Location
- Power State

IDT_Slot

The hardware map displays the following information about the empty internal device table slots:

- Location
- Field Replaceable Unit Name
- Power Status (*ON* or *OFF*)

PBS Battery

The hardware map displays the following information about the power backup system battery:

- PBS Charge (*OK* or *FAILED*)
- Field Replaceable Unit Name

Display for NCR 4300 with SMIS Baseboard

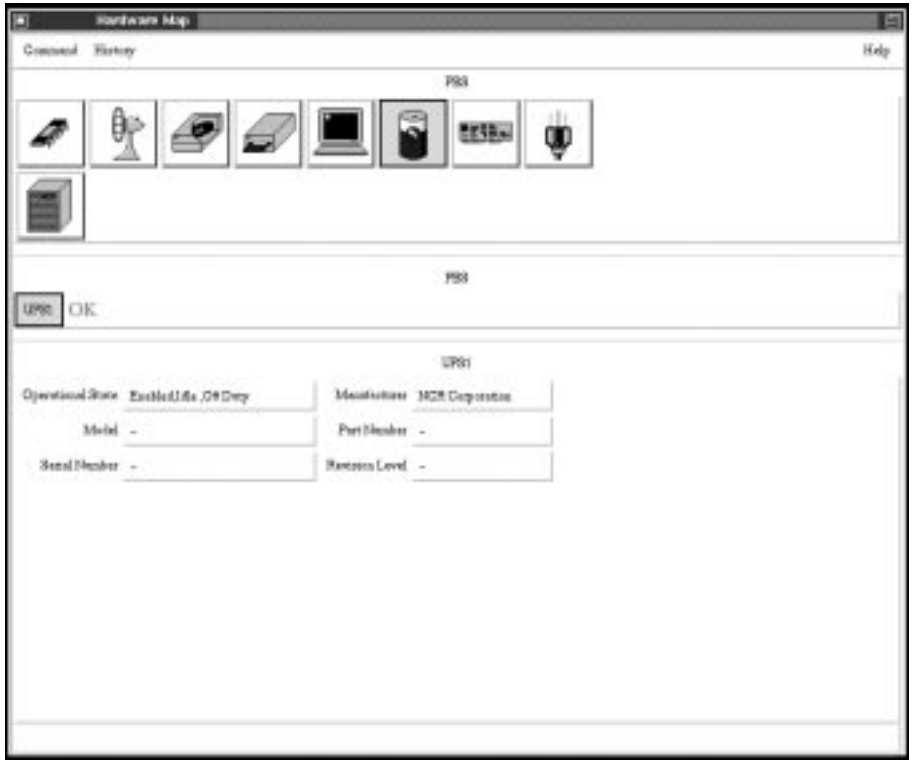
Possible information for the power backup system battery on an NCR 4300 server with the SMIS Baseboard package installed includes the following (depending upon what information is in the MIF file):

- Manufacturer
- Model
- Part Number
- Serial Number

- Revision Level
- Total Output Power
- Field Replaceable Unit Name
- Operational State

Figure 16-5 is an example of a display of the power backup system battery information:

Figure 16-5. Power Backup System Battery Information



Memory

Information for memory is now available on NCR 4300 servers as follows.

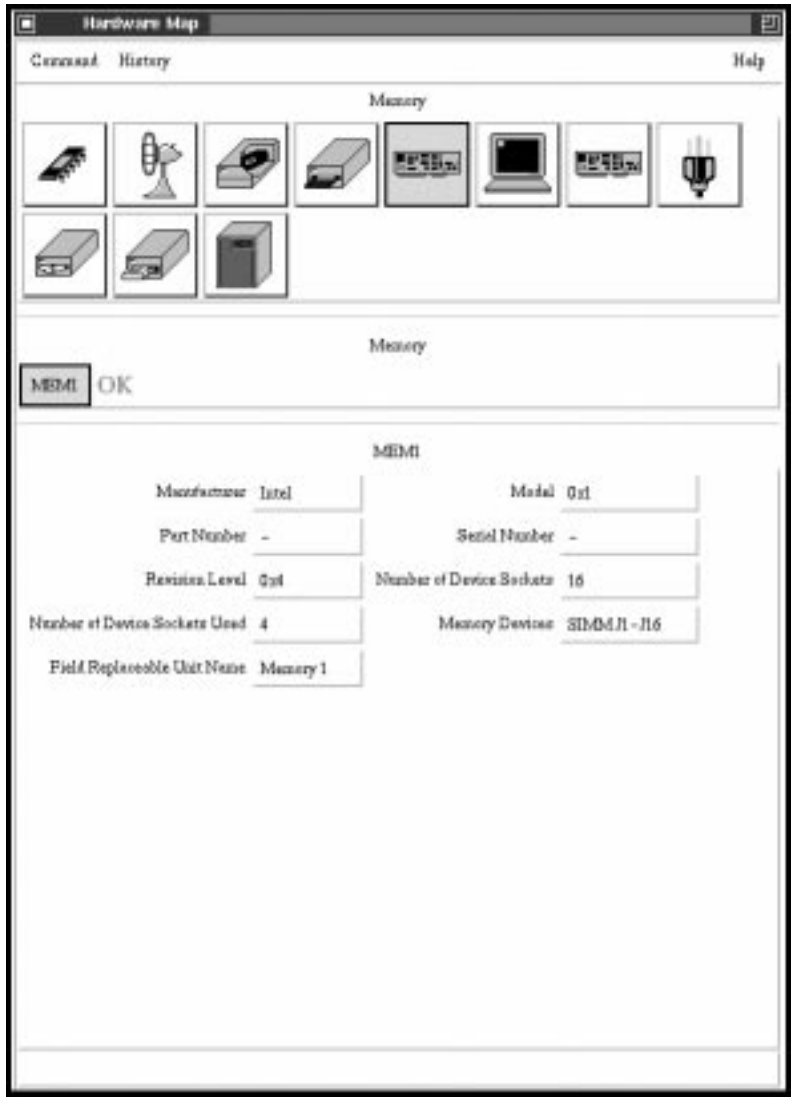
Display on NCR 4300 With SMIS Baseboard Installed

Possible information for memory on an NCR 4300 server with the SMIS Baseboard package installed includes the following (depending upon what information is in the MIF file):

- Manufacturer
- Model
- Part Number
- Serial Number
- Revision Level
- Number of Device Sockets
- Number of Device Sockets Used:
- Memory Devices
- Field Replaceable Unit Name

Figure 16-6 shows an example of the display for memory on an NCR 4300 server with SMIS Baseboard installed.

Figure 16-6. Memory Display with SMIS Baseboard Installed



Setting Power Margining

Why/When

NCR field engineers can margin the power supplies to isolate certain types of hardware errors. On the NCR 3550, this applies to all power supplies. On the NCR Series 5000, only the DC/DC power supplies are affected. Since this task can cause unpredictable results, system administrators are advised against performing this task.

Menu & Button Selections

<Service>
<Hardware Monitor>
    <margining>

Procedure

To set the power margining on the NCR 3550 and NCR Series 5000 DC/DC Power Supplies:

1. Press CONT on the frame warning you that power supply margining can cause erratic and unpredictable behavior on your system.
2. Enter the desired power margining value in the *Margining* field of the frame that appears on your screen. Valid choices are *LOW* (11 Volts), *NORMAL* (12 Volts), and *HIGH* (13 Volts).
3. Press SAVE. A frame confirming the new power supply margining appears on your screen.
4. Press CANCEL to close the frame and return to the menu.

To set the power margining on the NCR Series 5000 AC/DC power supplies (FEUs), use the following command line interface:

1. To margin the FEU down, enter the following:

```
# /usr/sadm/sysadm/bin/OTperform -A FEU x.y -
M SetLowMarginingStatefunc
```

2. where *x* is the Power Shelf Controller and *y* is the FEU number. For example:

```
# /usr/sadm/sysadm/bin/OTperform -A FEU 1.3 -
M SetLowMarginingStatefunc
```

3. To return to normal, use *SetNormalMargining Statefunc* as follows:

```
# /usr/sadm/sysadm/bin/OTperform -A FEU x.y -
M SetNormalMarginingStatefunc
```

Scheduling Automatic System Wakeup

Why/When

You can shut down your system and schedule an automatic system wakeup so that your system will already be up and running when you arrive at work. For example, you might want to shut down your system in the evening when you leave, and if you begin work at 8:00 A.M., schedule your system to wake up at 7:00 A.M.

Note: This feature is not supported on all NCR System 3000 or Series 5000 models.

Menu & Button Selections

<Service>
<Hardware Monitor>
    <wakeup>

Procedure

To set your system's wakeup time:

1. Enter **yes** on the frame that asks if you want to set a wakeup time before shutting down the system.
2. Press SAVE. A frame asking for the wakeup time appears on your screen.
3. Enter the following information:
   - *Year* — The last two digits of the current year or, if the current date is within seven days of the end of the year, the next year. If you leave this field blank, the current year is used.
   - *Month* — The current month or, if the current date is within seven days of the end of the month, the next month. If you leave this field blank, the current month is used.

- *Day* — The day of the month when you want the system to wake up. The day must be within seven days of the current date. If you leave this field blank, the current day is used.
- *Hour* — The hour when you want the system to wake up. The wakeup time must be at least 30 minutes from the current time.
- *Minute* — The minute when you want the system to wake up. The wakeup time must be at least 30 minutes from the current time.
- *Second* — The second when you want the system to wake up. The wakeup time must be at least 30 minutes from the current time.

4. Press SAVE. The system shuts down and powers off. For the system to wake up at the scheduled time, you must leave the power switch in the ON position. To override the automatic wakeup, move the power switch to the STANDBY position and then back to ON.

   Note: On the NCR 3450, you must turn the power switch to the OFF position for the automatic wakeup to work. In this case, the Hardware Manager will prompt you at the appropriate time to move the power switch from the ON position to the OFF position.

Managing System Components

The Hardware Component Replacement feature provides the software support necessary for in-service component replacement. Therefore, in-service component replacement is only available if you purchase both OperationsAdvantage and the Hardware Component Replacement. This feature is only available on System 3000 and Series 5000 models with hardware that supports in-service component replacement.

Replaceable Components

The Hardware Component Replacement feature allows you to replace the following components while the system is in service:

- SCSI fixed disks
- SCSI removable media devices
- SA400 flex disk drives
- Cooling fans

On Series 5000 models with hardware that supports this feature, the following components can also be replaced while the system is in service:

- Power Shelf Controllers
- Power supplies
- Batteries

For fixed disks, flex disk drives, and tape drives, the amount of time it will take to replace the component is about 15 minutes plus the time it takes to initialize the device. For cooling fans, the replacement time is only a few seconds (the time it takes to pull out a fan tray and insert a new one).

Note: In-service component replacement is only available for those components which are physically inside the system.

Although an Internal Disk Array resides within the system, these components (disk drives, fans, array controllers) must be serviced using RAID Manager. See the *RAID Manager User's Guide* for additional information.

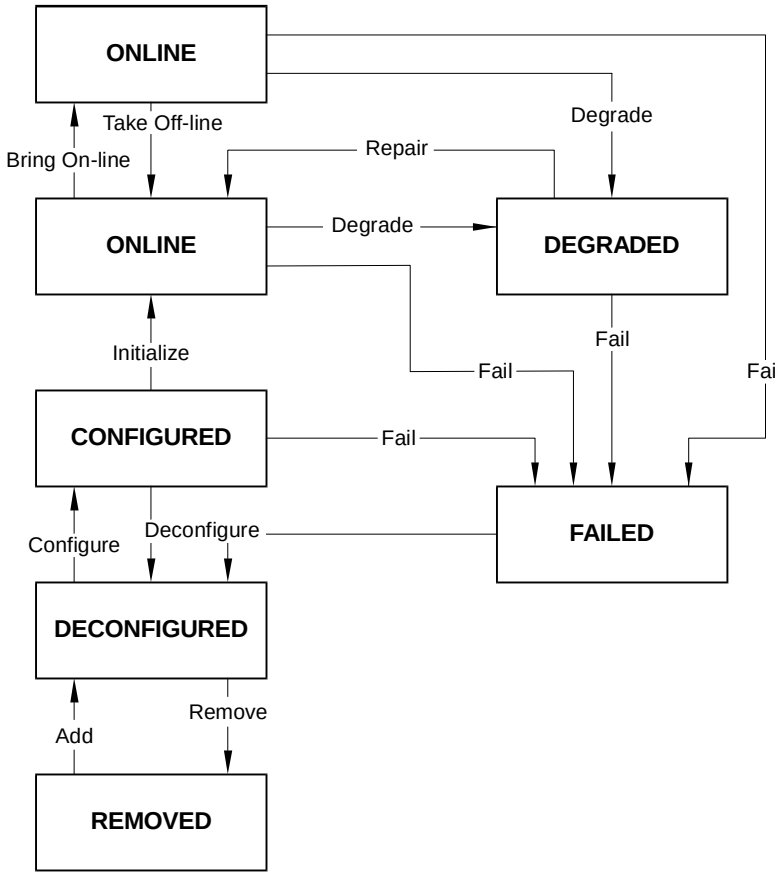
Component States

The Hardware Manager keeps track of the state of the components in the system. The Component Replacement feature provides utilities for changing the states of the various components. Figure 16-7 shows the various states (in the boxes) and the utilities for changing from one state to another (the arrows between the boxes). The following states are valid:

- *REMOVED*
  No component is present, or the component has been logically removed (powered off) or is ready to be manually powered off.
- *DECONFIGURED*
  The component is powered on and is physically present in the system, but is not available to the software. The component is "logically deconfigured" and, if NCR system firmware is present, the device tables are updated accordingly. This will cause the Power On Self Test (POST) logic to leave the component disabled after startup.

- *CONFIGURED*
  The component is physically present and is available to the operating system software; it is "logically configured" and, if NCR system firmware is present, the device tables are updated accordingly. This allows the POST logic to attempt to enable the component during system startup. The component must be initialized in some manner before it can be brought to the *OFFLINE* state. If the component state depends on the state of other child objects such as media or logical devices, the child objects must also be initialized. For fixed disks, the disk must be rebuilt to its original file system state before the disk is considered initialized.
- *OFFLINE*
  The component is physically present, available to the system, and is initialized for use. However, it is not yet actively in use in the system. Any child objects are initialized for use.
- *ONLINE*
  The component is actively in use in the system.
- *DEGRADED*
  The component is actively in use in the system, but has reported degrading conditions which may be recovered without replacing the component. The component may be either repaired or replaced.
- *FAILED*
  The component is actively in use in the system, but has reported a failure which requires the component to be replaced or repaired.

Figure 16-7. Component States



States and Component Types

To replace a component, you must change its state from the current state to the *REMOVED* state, physically replace the component, then change its state from *REMOVED* to *ONLINE*. Note that not all states are valid for all types of components, as shown in Table 16-1.

Table 16-1. Valid Component States

State	Fixed Disks	Cooling Fans	Tape & Removable Media	Flex
REMOVED	✓	✓	✓	✓
DECONFIGURED	✓		✓	✓
CONFIGURED	✓		✓	
OFFLINE	✓		✓	✓
ONLINE	✓	✓	✓	✓
DEGRADED	✓			
FAILED	✓	✓	✓	✓

The <remove> and <replace> menu options automatically lead you through all states of component replacement.

Volume Manager Disks

If you are replacing a SCSI disk under Volume Manager control, there may be some special considerations. If the disk you are replacing contains part of a plex, but it is not the last plex in the volume, the Hardware Manager detaches and dissociates the plex before you replace the disk. It reattaches the plex afterward. This scenario occurs if you have mirrored disks.

However, if the disk you are replacing contains part of the last (or only) plex in the volume, the Hardware Manager cannot detach and dissociate it. This scenario occurs if you have disk striping, but not disk mirroring. In this case, you MUST detach and dissociate the plex through the Volume Administrator, use the Hardware Manager to replace the disk, and then reattach the plex through the Volume Administrator.

If a disk contains slices that are part of a volume, the Hardware Manager might report that the disk is in a DEGRADED state after it is replaced. If this happens, you should restore the volume data and then bring the disk online.

For detailed information about replacing a mirrored root disk, see Appendix B, “Replacing a Root Disk.”

See the *Volume Manager System Administrator* Guide for instructions on detaching and dissociating plexes from volumes.

Internal Disk Array Considerations

Disk drives which are part of an Internal Disk Array must be managed by the OperationsAdvantage RAID Manager menus. See the *RAID Manager User’s Guide* for additional information.

Replacing Cooling Fans

Why/When

Replace the entire fan tray whenever one of the fans in the tray fails. You must replace a failed fan as soon as possible to keep the system from overheating.

Menu Selections

<Service>
<Hardware Management>

Procedure

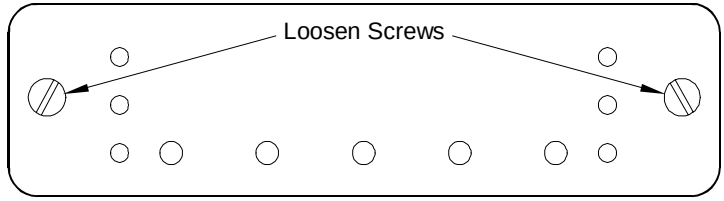
To replace a cooling fan:

1. Use your mouse to click on the cooling fan icon.
2. Select the component name of the fan or fan tray that you want to replace.
3. From the Hardware Management Command menu, select <Manage>.
4. From the Command menu, select <Remove>.

   The status of the removal will be displayed in the information area which appears at the bottom of the Component Management window.
5. Open the system doors and locate the fan tray you want to replace. Depending on which fan tray you are replacing, you might need to open either the front doors or the back doors of the system. The fan trays are labeled inside your system.
6. Loosen the screws at each end of the fan tray, shown in Figure 16-8, grasp them, and pull the fan tray toward you.

   Caution: If only one fan in a tray failed, the fan that did not fail is still running.

Figure 16-8. Fan Tray



7. Insert the new fan tray.

   The component state in the detailed status table is updated to *ONLINE*. (It might take several seconds to update the detailed status table.)

Replacing Power Supplies

Why/When

On some Series 5000 models with hardware that supports this feature, you can replace power supplies while the system remains in service in multiuser mode. You should replace a power supply when it fails diagnostic tests or generates errors indicating that it has failed. A failed power supply should be replaced as soon as possible to maintain power supply redundancy.

Menu & Button Selections

<Service>
<Hardware Management>

Procedure

To replace a power supply:

1. Use your mouse to click on the appropriate power supply icon.
2. Select the component name of the power supply that you want to replace.
3. From the Hardware Management <Command> menu, select <Manage>.
4. From the <Command> menu, select <Remove>.

   The status of the removal will be displayed in the information area which appears at the bottom of the Component Management window. When the component is removed, the following message appears in this area:

   ```
   Function Completion Status: SUCCESSFUL.
   ```
5. Open the system doors and locate the power supply that you want to replace. Depending on which power supply you are replacing (DC/DC or AC/DC), you might need to open either the front doors or the back doors of the system. The power supplies are labeled inside your system.

6. If you are replacing a DC/DC power supply, use the special tool supplied with your system to loosen the jackscrew that secures it. Grasp the power supply firmly and pull it toward you to remove it.

   If you are replacing an AC/DC (front end unit) power supply, grasp the handle on the front of the power supply and pull it toward you to remove it.

7. Insert the new power supply.

8. From the <Command> menu, select <Replace>.

   The component state in the detailed status table is updated to *ONLINE*. (It might take several seconds to update the detailed status table.)

Replacing Batteries

Why/When

On some Series 5000 models with hardware that supports this feature, you can replace power backup system batteries (Battery Interface Units) while the system remains in service in multiuser mode. You should replace a Battery Interface Unit when it fails diagnostic tests or generates errors indicating that it has failed. The battery status LED on the front panel of the system will be solid red when a Battery Interface Unit has failed. A failed Battery Interface Unit should be replaced as soon as possible to prevent the system from shutting down if a power failure occurs.

Menu & Button Selections

<Service>
<Hardware Management>

Procedure

To replace a Battery Interface Unit:

1. Use your mouse to click on the appropriate power backup system battery icon.
2. Select the component name of the Battery Interface Unit that you want to replace.
3. From the Hardware Management <Command> menu, select <Manage>.
4. From the <Command> menu, select <Remove>.

   The status of the removal will be displayed in the information area which appears at the bottom of the Component Management window. When the component is removed, the following message appears in this area:

   ```
   Function Completion Status: SUCCESSFUL.
   ```

5. Open the back doors of the system and locate the Battery Interface Unit that you want to replace. The Battery Interface Units are labeled inside your system.
6. To remove a Battery Interface Unit, grasp it firmly and pull it toward you to remove it.
7. Insert the new Battery Interface Unit.
8. From the <Command> menu, select <Replace>.

   The component state in the detailed status table is updated to *ONLINE*. (It might take several seconds to update the detailed status table.)

Replacing Power Shelf Controllers

Why/When

On some Series 5000 models with hardware that supports this feature, you can replace a power shelf controller while the system remains in service in multi-user mode. You should replace a power shelf controller when it fails diagnostic tests or generates errors indicating that it has failed. The battery status LED on the front panel of the system will be flashing amber when a power shelf controller has failed or is unknown. A failed power shelf controller should be replaced as soon as possible to prevent the system from shutting down because it is unable to manage the power subsystem.

Menu & Button Selections

<Service>
<Hardware Management>

Procedure

To replace a Power Shelf Controller:

1. Use your mouse to click on the appropriate board icon.
2. Select the component name of the power shelf controller that you want to replace.
3. From the Hardware Management <Command> menu, select <Manage>.
4. From the <Command> menu, select <Remove>.

   The status of the removal will be displayed in the information area which appears at the bottom of the Component Management window. When the component is removed, the following message appears in this area:

   ```
   Function Completion Status: SUCCESSFUL.
   ```

5. Open the front doors of the system and locate the power shelf controller that you want to replace. The power shelf controllers are labeled inside your system.
6. To remove a power shelf controller, grasp it firmly and pull it toward you to remove it.
7. Insert the new power shelf controller.
8. From the <Command> menu, select <Replace>.

   The component state in the detailed status table is updated to *ONLINE*. (It might take several seconds to update the detailed status table.)

Replacing Fixed Disks

Why/When

Replace a fixed disk when it fails diagnostics or when it generates errors that indicate it is failing. Before replacing a disk, make sure you have a recent backup of the information stored on the disk. For detailed information about replacing a root disk, see Appendix B, “Replacing a Root Disk.”

Menu Selections

<Service>
<Hardware Management>

Procedure

To replace a fixed disk:

1. Use your mouse to click on the fixed disk icon.
2. Select the device name of the disk you want to replace.
3. From the <Command> menu, select <Manage...>.
4. From the <Command> menu, select <Remove>.

   The status of the removal will be displayed in the information area which appears at the bottom of the Component Management window. When the device is in the *REMOVED* state, the following message appears in this area:

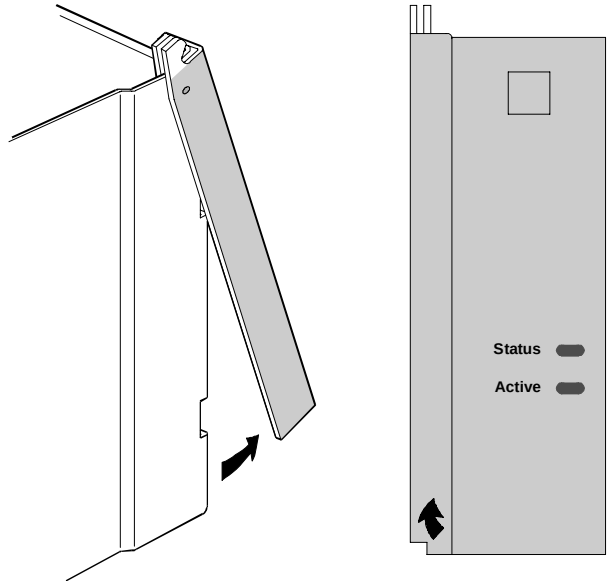
   ```
   Function Completion Status: SUCCESSFUL.
   ```

   The component state in the detailed status table is updated to *REMOVED*. (It takes several seconds to update the detailed status table.)

Note: Steps 5 through 10 below relate directly to the NCR System 3550 but are illustrative of the steps you would take to access and replace the disk in any system.

5. Open the doors on the back of your system and open the panel that covers the fixed disk bays.
6. Locate the disk you want to replace. The disk bays are marked on your system and listed in the detailed status table.
7. Lift the handle as shown in Figure 16-9 and pull the disk toward you.

Figure 16-9. Fixed Disk



8. Insert the new disk with the handle extended.
9. When the disk is fully inserted, lower the handle to the closed position.

Note: Some systems do not provide automatic strapping of drive IDs. In this case, you will need to make sure your new drive is hard strapped to the same SCSI ID as the one which is being replaced. Consult your hardware service documentation to determine if your system supports automatic strapping of drive IDs.

10. Close the panel that covers the fixed disk bays and the doors on the back of your system.
11. From the <Command> menu, select the <Replace> option. The status of the replacement will be displayed in the information area which appears at the bottom of the Component Management window. During the replacement operation, the 3550 Hardware Manager initializes the new disk to match the configuration of the old disk, so this operation takes some time. When the disk is in the *ONLINE* state, the following message appears in this area:

    ```
    Function Completion Status: SUCCESSFUL
    ```

    The component state in the detailed status table is updated to *ONLINE*. (It might take several seconds to update the detailed status table.)

    If a disk contains slices that are part of a volume, the Hardware Manager might report that the disk is in a *DEGRADED* state after it is replaced. If this happens, you should restore the volume data and then bring the disk online.
12. Use your backup media to restore the data that was on the failed disk.

Replacing Flex Disk Drives

Why/When

Replace a flex disk drive when it fails diagnostics or when it generates errors that indicate it is failing.

Menu Selections

<Service>
<Hardware Management>

Procedure

To replace a flex disk drive:

1. Use your mouse to click on the flex disk icon.
2. Select the device name of the flex disk you want to replace.
3. From the <Command> menu, select <Manage>.
4. From the <Command> menu, select <Remove>.

   The status of the removal will be displayed in the information area which appears at the bottom of the Component Management window. When the disk is in the *REMOVED* state, the following message appears in this frame:

   ```
   Function Completion Status: SUCCESSFUL
   ```

   The component state in the detailed status table is updated to *REMOVED*. (It takes several seconds to update the detailed status table.)
5. Open the doors on the front of your system and locate the flex disk drive you want to replace. The disk bay numbers are marked on your system and listed in the detailed status table.

6. Make sure that no lights are on for the device you are replacing. If lights are on, the device still has power and you must NOT remove it.
7. Grasp the flex disk drive firmly with both hands and pull it toward you.
8. Insert the new flex disk drive.
9. Close the doors on the front of your system.
10. From the <Command> menu, select the <replace> option. The status of the replacement will be displayed in the information area which appears at the bottom of the Component Management window. When the disk is in the *OFFLINE* state, the following messages appear in this area:

    ```
    Current state of component is OFFLINE
    Function Completion Status: FAILED
    ```

    The function completion status is *FAILED* because the replace procedure tried to bring the device *ONLINE* and was unable to, since media must be in the drive for it to be *ONLINE*.

    The component state in the detailed status table is updated to *OFFLINE*. (It might take several seconds to update the detailed status table.)

Replacing Tape Drives

Why/When

Replace a tape drive when it fails diagnostics or when it generates errors that indicate it is failing.

Menu Selections

<Service>
<Hardware Management>

Procedure

To replace a tape drive:

1. Use your mouse to click on the tape drive icon.
2. Select the device name of the tape drive you want to replace.
3. From the Hardware Management <Command> menu, select <Manage>.
4. From the <Command> menu, select <Remove>. The status of the removal will be displayed in the information area that appears at the bottom of the Component Management window.

   When the tape drive is in the *REMOVED* state, the following message appears in this area:

   ```
   Function Completion Status: SUCCESSFUL
   Press ENTER to continue.
   ```

   Note: On some NCR systems, if another device on the same SCSI bus is *ONLINE* (has media in the device), the Hardware Manager will not put the device in the *REMOVED* state. All devices on the SCSI bus must be *OFFLINE* before you can replace a device.

5. Press ENTER. The component state in the detailed status table is updated to *REMOVED*. (It might take several seconds to update the detailed status table.)
6. Open the doors on the front of your system and locate the tape drive you want to replace. The disk bay numbers are marked on your system and listed in the detailed status table.
7. Make sure that no lights are on for the device you are replacing. If lights are on, the device still has power and you must NOT remove it.
8. Grasp the tape drive firmly with both hands and pull it toward you.
9. Insert the new tape drive.

   Note: Some systems do not provide automatic strapping of drive IDs. In this case, you will need to make sure your new drive is hard strapped to the same SCSI ID as the one which is being replaced. Consult your hardware service documentation to determine if your system supports automatic strapping of drive IDs.
10. Close the doors on the front of your system.
11. From the <Command> menu, select the <replace> option. The status of the replacement will be displayed in the information area that appears at the bottom of the Component Management window. When the tape drive is in the *OFFLINE* state, the following messages appear in this area:

    ```
    Current state of component is OFFLINE.
    Function Completion Status: FAILED
    ```

    The function completion status is *FAILED* because the replace procedure tried to bring the device *ONLINE* and was unable to, since media must be in the drive for it to be *ONLINE*.

    The component state in the detailed status table is updated to *OFFLINE*. (It takes several seconds to update the detailed status table.)

Deleting Devices

Why/When

The delete devices option allows you to completely remove a device that you do not wish to replace. Before deleting a device, be sure that your intent is to completely remove the device from the system.

Note: If the device you are deleting is a fixed disk, make sure that you have a recent backup of the information stored on the disk.

Menu Selections

<Service>
<Hardware Management>

Procedure

To delete a device:

1. Use your mouse to select a device icon.
2. Select the slot # or device node of the device you want to delete.
3. From the Hardware Management <Command> menu, select <Manage>.
4. From the <Command> menu, select <Delete>. The status of the removal and deletion procedure will be displayed in the information area which appears at the bottom of the Component Management window. When the device is deleted, the following message appears in this area:

   ```
   Function completion status: SUCCESSFUL
   ```

Swapping Devices

Why/When

Swap a fixed disk when you want to replace a fixed disk with a disk of greater capacity, or if you want to replace a fixed disk or tape drive with another type of device.

Note: Before swapping a disk, make sure that you have a recent backup of the information stored on the disk.

Menu Selections

<Service>
<Hardware Management>

Procedure

To swap a device:

1. Use your mouse to select a device icon.
2. Select the slot # or name of the device you want to swap.
3. From the Hardware Management <Command> menu, select <Manage>.
4. From the <Command> menu, select <Delete>. The status of the removal and delete procedure will be displayed in the information area which appears at the bottom of the Component Management window. When the device is deleted, the following message appears in this area:

   ```
   Function completion status: SUCCESSFUL
   ```

5. Physically remove the device from the system, and insert a new device into the same internal media bay.

Note: Some systems do not provide automatic strapping of drive Ids. In this case, you will need to make sure your new drive is hard strapped to the same SCSI ID as the one which is being replaced. Consult your hardware service documentation to determine if your system supports automatic strapping of drive IDs.

6. From the Hardware Management <Command> menu, select <Add New Devices>.
7. The device you want to add will be automatically selected for you.
8. From the <Command> menu, select <Add Device(s)>. The status of the additional procedure will be displayed in the information area at the bottom of the Component Addition window. When the device has been successfully added, the following messages appear in this area:

   ```
   Rebuilding Object Table for devices, please wait...
   Object Table scan complete.
   ```

9. If the device you have just added is a fixed disk, you can now slice the disk, create file systems, or restore files.

   Note: The new disk should have at least the same capacity as the old disk. If the new disk is smaller, you cannot rebuild the information on to the new disk.

Adding New Devices

Why/When

The Hardware Component addition service supports in-service addition of new hardware components.

On some NCR System 3000 and Series 5000 models, the Internal Device Table in CMOS must be valid in order to perform in-service component addition. On these systems, the Internal Device Table can be rebuilt only when the system is out of service. Refer to the *Hardware Service* documentation for more information about rebuilding the Internal Device Table.

You can add a disk to your system to accomplish the following:

- Improve system performance by distributing file systems across disks
- Provide additional storage space

On some NCR systems, you can add a new disk while the system remains in service in multi-user mode. Any of the following devices can be added while the system is in service:

- SCSI fixed disks
- SCSI removable media devices

Note: Adding SA400 Flex disks is not currently supported in NCR UNIX SVR4 MP-RAS.

Menu Selections

<Service>
<Hardware Management>
    <Command>
        <Add New Devices>

Procedure

If there are no devices available for addition, the following message will appear in a popup window:

```
No devices available for addition, continue?
```

If there are devices available for addition, the Component Addition window is automatically displayed.

Note: Fixed disk devices that are part of an Internal Disk Array Subsystem are not displayed, and are not available for addition through this application. These components are managed through the Operations Advantage RAID Manager menus. See the *RAID Manager User's Guide* for additional information.

The SCSI devices displayed on the screen are displayed in the locations corresponding to the actual physical locations in your system. Other hardware components are also displayed for reference in locating the SCSI devices to be managed. Empty slots in the backplanes are represented by adapter icons. The larger media device icons represent devices that are present and acknowledged by Hardware Manager.

1. Devices that are available for addition will be listed in the information screen at the bottom of the Component Addition window and graphically displayed within the screen with a question mark icon.

   If you have not yet physically added a new device to the system, insert a new device into an internal media bay. From the <Command> menu, select <Look for Devices>.

2. Devices that are available for addition will automatically be selected for you. Use your mouse to select any device(s) you do not want to add.

3. From the <Command> menu, select <Add Device(s)>. The status of the addition procedure will be displayed in the information area at the bottom of the Component Addition window. When the device has been successfully added, the following messages appear in this area:

   ```
   Reading Object Table for devices, please wait...
   Object Table scan complete.
   ```

4. If the device you have just added is a fixed disk, you can now slice the disk, create file systems, or restore files.

Troubleshooting

Included below are some error messages that might be encountered while adding a new device to the system. Whenever possible, the recovery procedure that identifies and corrects the problem has been included with these error messages.

Message

`SCSI address of <alias> cannot be determined.`

User Action

Verify that there is a cable connecting a SCSI controller in the system to the internal media backplane for the slot in which you have inserted your disk(s).

Message

`No devices are available for addition.`

User Action

If the device you wish to add does not show up as a possible device that is available for addition, verify that the device is not reported to be powered on in the hardware map. This situation can occur if a previous attempt to add this device has failed, and you are now trying to re-add the device after correcting the error. Follow the procedure below to verify that the device is not reported to be powered on in the hardware map.

1. Use your mouse to select the empty slot icon in the hardware map.
2. Select the slot # of the device you are trying to add.
3. If the PowerState for this device is reported to be ON, select <Manage> from the Hardware Management <Command> menu.
4. Select <Delete> from the <Command> menu. The status of the removal and delete procedure will be displayed in the information area which appears at the bottom of the Component Management window.

5. When the device is deleted, select <Add New Devices> from the Hardware Management <Command> menu. The device you wish to add should now be available.

Adding New External Devices

Why/When

Use it to add new external devices to your system.

Menu Selections

<Command>
<Add New Devices>

Display

When the addition of new external devices has completed successfully, the following message will appear in the history log:

```
Device(s) successfully added!
```

Looking for New Devices

Why/When

Look for new devices to find out which devices are available to be added to your system.

Menu Selections

<Command>
<Add New Devices>

Display

If there are no devices available for addition, the following message will appear:

```
No devices are available for addition.
```

If devices are available for addition, the available component will be highlighted and display a question mark.

Changing the System View

The Component Addition screen provide a graphical display of your system. The terms *Front View* or *Rear View* appear on the title bar depending on the view that is currently displayed.

Why/When

Change the view of your system when you want to see the components of your system from the opposite angle that is displayed.

Menu Selections

<Service>
<Hardware Management>

Procedure

To change the system view, from the <Command> menu, select <Change View>.

The view name in the title bar and the display information will change to reflect the different view.

Viewing the History Log

Why/When

View the system service history log to display manual and automatic configuration activity that has occurred on the system. This information is helpful during system diagnosis and maintenance.

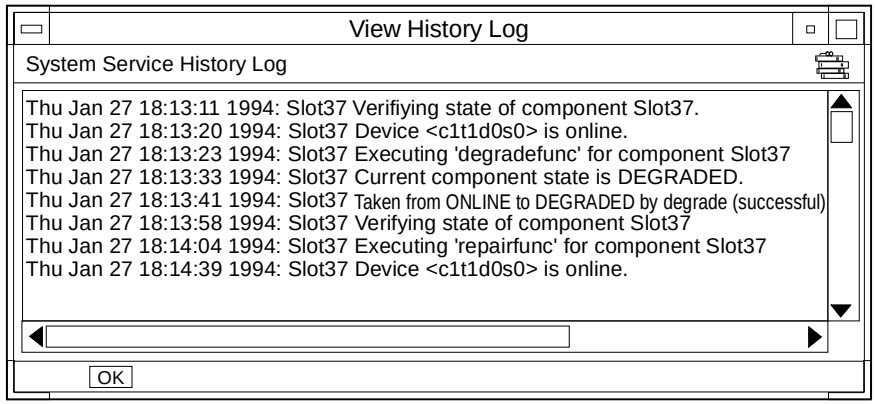
Menu Selections

<Service>
<Hardware Management>
    <History>
        <View>

Display

The log entries are displayed chronologically from oldest to most recent. A screen similar to that displayed in Figure 16-10 will appear.

Figure 16-10. History Log



Appending the History Log

Why/When

Append the history log when you want to manually add information to the log. Some types of information to include might be the name of the person who made configuration changes to the system, and any diagnostic data that might have been gathered in the event of an unsuccessful configuration (for instance, replacement or addition) change.

Menu Selections

<Service>
<Hardware Management>
    <History>
        <Append>

Procedure

To append the history log:

1. Enter the information into the History Log screen. The date and time will automatically be included with your text entry. The text you add will be preceded by a Manual Entry label.
2. Press OK to include the additional data or CANCEL to cancel the addition.

Copying the History Log

Why/When

You can copy a history log to accompany diagnostic files or a system dump when your system is being diagnosed or undergoing maintenance.

Menu Selections

<Service>
<Hardware Management>
    <History>
        <Make Copy...>

Procedure

To copy the history log:

1. Enter a filename directly, or select directories and filenames from the lists provided. You can also use a filter to display only those files and directories which satisfy a specific criteria. If you specify a filter and apply it by pressing the FILTER button, the file and directory lists are updated to display those which meet the filter criteria.
2. Select OK.

   If the filename does not exist in the selected directory, a new file with that name will be created when the copy is made. If the file already exists, the history log data will be appended to that file.

Updating Device Information

Why/When

Update the device information when you do not want to wait for the system to poll for the most current device information. Using the menus will update the selected device information automatically.

Menu Selections

Use the following menu selections after selecting the device that you want updated information about with your mouse.

<Service>
<Hardware Management>
    <Command>
        <Update Device Information>

Using the Diagnostic Tools

The OperationsAdvantage Hardware Manager provides you with several diagnostic tools that enable you to perform maintenance on your system. The following diagnostic functions are available through the Hardware Manager Service menu:

- Invoking non-integrated and integrated applications
- Managing error logs and system reports
- Performing data capture and device tally operations
- Performing diagnostic device tests

These diagnostic features will be outlined in the sections below. For further information, refer to the manual "*NCR UNIX SVR4 In-Service Diagnostics and Basic Software Maintenance*."

Invoking Non-Integrated Applications

Why/When

Use this menu selection to invoke diagnostic tasks which are not integrated into the Form and Menu Language Interpreter (FMLI) format for NCR MP-RAS. The diagnostic tasks are installed by packages other than **odm** or **sysadmin**.

Menu & Button Selections

<Service>
<Diagnostics>
    <Add-on_Apps>

Procedure

To invoke a diagnostic task, highlight the selected task from the menu and press ENTER.

Invoking Integrated Applications

Why/When

Use this menu selection to invoke diagnostic tasks which are integrated into the Form and Menu Language Interpreter (FMLI) format for NCR MP-RAS. The diagnostic tasks are installed by such packages as **fidl** or **madf**.

Menu & Button Selections

<Service>
<Diagnostics>
    <Applications>

Procedure

To invoke a diagnostic task, highlight the selected task from the menu and press ENTER.

Displaying Error Logs

Why/When

Use this menu selection to display the system error logs. You can display kernel errors, user errors, or both types of errors.

Menu & Button Selections

<Service>
<Diagnostics>
    <Reports>
    <error_report>
        <display_all>

Procedure

To display error logs:

1. Enter the date or the word **all** for the error records you want to retrieve. The date format must be *mm-dd*. Press CHOICES for a list of available dates. The error records retrieved are those that occurred on the selected date.
2. Enter **all**, **kernel,** or **user** in the Error Type field. Press CHOICES for a list of error log types. Press SAVE.

Displaying Headers Only

Why/When

Use this menu selection to display the error log record headers only.

Menu & Button Selections

<Service>
<Diagnostics>
    <Reports>
    <error_report>
        <display_headers>

Procedure

To display log headers:

1. Enter the date or the word **all** for the error records you want to retrieve. The date format must be *mm-dd*. Press CHOICES for a list of available dates. The error records retrieved are those that occurred on the selected date.
2. Enter **all**, **kernel,** or **user** in the Error Type field. Press CHOICES for a list of error log types. Press SAVE.

Clearing the Error Logs

Why/When

Use this menu selection to clear the error log files.

Menu & Button Selections

<Service>
<Diagnostics>
    <Reports>
    <error_report>
        <clear>

Procedure

To clear the error logs:

1. Enter the date or the word **all** for the error log records you want to clear. The date format must be *mm-dd*. Press CHOICES for a list of available dates. The error records cleared are those that occurred on the selected date.
2. Enter **all**, **kernel**, or **user** in the “Error Type” field. Press CHOICES for a list of error log types. Press SAVE.

Checking File Boundaries

Why/When

This task displays a list of files that are either 0 MB in size, or larger than a user specified size. Use this task to check for useless or very large files to remove them from the system.

Menu & Button Selections

<Service>
<Diagnostics>
<Reports>
    <system_check>
        <check_boundary>

Procedure

To check for boundary files:

1. Enter **local** or **all** in the File Systems to Check field**. All** will check all local and remotely mounted file systems. Press CHOICES for the file system options.
2. Enter **yes** or **no** in the "Check for zero length files" field.
3. Enter **yes** or **no** in the "Check for large files" field.
4. Enter the minimum size of large files to check for in the "Search for files greater than" field. The number entered is in megabytes (MB).
5. Press SAVE. A screen appears displaying the information you have requested.

   This task makes two passes through the selected file systems. Be aware that it will probably take a considerable period of time before the file list returns.

You might be able to save time in your search by using the task described in the section “Displaying File Size” in Chapter 5, “Managing File Systems.”

Checking Files

Why/When

This task allows you to diagnose and correct files that have been installed on your system.

When checking occurs, the files and directories with errors are displayed with the line "ERROR: <*pathname*>". The text that follows this phrase describes the type of error found. If no errors are found, the <*pathname*> is displayed.

Menu & Button Selections

<Service>
<Diagnostics>
<Reports>
    <system_check>
        <check_files>

Procedure

To check system files:

1. Enter the pathname(s) to check or enter **all.**
2. Enter **yes** or **no** in the following fields:
   - *Check for attribute consistency?*
   - *Check for content consistency?*
   - *Correct all detected inconsistencies?*
   - *List information in selected paths?*
   - *Display each pathname as it is verified?*
   - *Report on volatile files?*

3. Press SAVE. A screen appears displaying the information you have requested.

Starting Data Capture

Why/When

The **Start Capturing** operation captures and stores data that is transmitted and/or received on the specified device. This operation stores the raw captured data in a disk file that can be used later to help determine the accuracy level of the link (the communication path to/from the device).

Menu & Button Selections

<Service>
<Diagnostics>
    <Services>
        <data_capture>

Procedure

To start data capture:

1. Select the class of devices on which to perform data capture operations and press ENTER. The list of device classes includes, but is not limited to, the following:
    a. asy_devices: communication port terminal devices controlled by the **asy** driver (i.e., /dev/term/00h, /dev/term/00s)
    b. lp_ports: parallel port devices controlled by the **lp** driver (i.e., /dev/lp, /dev/lp0)
    c. stty_devices: extended 8/16 port TTY devices controlled by the **acl** and **stty** drivers (i.e., /dev/term/s00, /dev/term/s01)
2. Enter the device(s) where the data capture will begin or press CHOICES for a list of available devices.

3. Select <Start Capturing> for the data capture operation and press SAVE to display the Device Data Capture Operations screen.
4. Enter the name of the disk file where you want to store the raw captured data. The file should be placed in the following directory:

   /var/odm/datacapture

   Press SAVE.
6. Select <Stop Capturing> from the <data_capture> menu when you want to terminate the data capture on the selected device.

Stopping Data Capture

Why/When

Stop the data capture procedure when you want to terminate the capture of raw data on the selected device(s).

Menu & Button Selections

<Service>
<Diagnostics>
    <Services>
        <data_capture>

Procedure

To stop data capture:

1. Select the class of devices on which to perform data capture operations and press ENTER. The list of device classes includes, but is not limited to, the following:
    a. asy_devices: communication port terminal devices controlled by the **asy** driver (i.e., /dev/term/00h, /dev/term/00s)
    b. lp_ports: parallel port devices controlled by the **lp** driver (i.e., /dev/lp, /dev/lp0)
    c. stty_devices: extended 8/16 port TTY devices controlled by the **acl** and **stty** drivers (i.e., /dev/term/s00, /dev/term/s01)
2. Enter the device(s) where the data capture will be terminated or press CHOICES for a list of available devices.
3. Select <Stop Capturing> for the data capture operation and press SAVE. The running data capture process for the selected device will be terminated.

Listing Data Capture Files

Why/When

List capture data files from a selected device when you are performing diagnostics on your system.

Menu & Button Selections

<Service>
<Diagnostics>
    <Services>
        <data_capture>

Procedure

To list the data capture files:

1. Select the class of devices on which to perform data capture operations and press ENTER. The list of device classes includes, but is not limited to, the following:
    a. asy_devices: communication port terminal devices controlled by the **asy** driver (i.e., /dev/term/00h, /dev/term/00s)
    b. lp_ports: parallel port devices controlled by the **lp** driver (i.e., /dev/lp, /dev/lp0)
    c. stty_devices: extended 8/16 port TTY devices controlled by the **acl** and **stty** drivers (i.e., /dev/term/s00, /dev/term/s01)
2. Enter the device(s) where the search will be performed or press CHOICES for a list of available devices.
3. Select <Check Processes> for the data capture operation and press SAVE. A screen appears displaying a list of data capture files associated with the data capture processes for the device you have selected.

Formatting Data Capture Files

Why/When

Use this feature to format an active or inactive raw data capture file, and display or print the formatted output.

Menu & Button Selections

<Service>
<Diagnostics>
    <Services>
        <data_capture>

Procedure

To format the data capture files:

1. Select the class of devices on which to perform data capture operations and press ENTER. The list of device classes includes, but is not limited to, the following:
    a. asy_devices: communication port terminal devices controlled by the **asy** driver (i.e., /dev/term/00h, /dev/term/00s)
    b. lp_ports: parallel port devices controlled by the **lp** driver (i.e., /dev/lp, /dev/lp0)
    c. stty_devices: extended 8/16 port TTY devices controlled by the **acl** and **stty** drivers (i.e., /dev/term/s00, /dev/term/s01)
2. Enter the device(s) where the search will be performed or press CHOICES for a list of available devices.
3. Select <Process Data Files> for the data capture operation and press SAVE. A new screen will be displayed requiring the following information:

- *Data File Name:* Enter the complete path name of the file that was given when the data capture was started, or press CHOICES to display existing file names.
- *Processed File Name:* Enter a name for the file that will contain the formatted output. It must be a name that doesn't already exist.
- *Type of Data to Process:* Enter which data to capture. The options are *All Data*, *Input Data*, *Output Data*. The default option is All Data.
- *Report Time Stamp:* Enter **Yes** or **No**. **Yes** will cause the time and date to be displayed for each data capture record.
- *Display Processed File:* Enter **Yes** or **No**. **Yes** will cause the formatted data to be displayed.
- *Print Processed File:* Enter **Yes** or **No**. Enter **Yes** if you want to print the output to a printer.

4. Press SAVE.

Removing Inactive Data Files

Why/When

Remove inactive or processed data capture files associated with a selected device to improve system performance.

Menu & Button Selections

<Service>
<Diagnostics>
    <Services>
        <data_capture>

Procedure

To remove inactive data files:

1. Select the class of devices on which to perform data capture operations and press ENTER. The list of device classes includes, but is not limited to, the following:
    a. asy_devices: communication port terminal devices controlled by the **asy** driver (i.e., /dev/term/00h, /dev/term/00s)
    b. lp_ports: parallel port devices controlled by the **lp** driver (i.e., /dev/lp, /dev/lp0)
    c. stty_devices: extended 8/16 port TTY devices controlled by the **acl** and **stty** drivers (i.e., /dev/term/s00, /dev/term/s01)
2. Enter the device(s) where the search will be performed or press CHOICES for a list of available devices.

3. Select <Remove Files> for the data capture operation and press SAVE. A new screen is displayed for file identification. Enter the names of the files to be removed or press CHOICES to display the available file names. Press SAVE.

Clearing Device Tallies

Why/When

Tallies count specific system operations and events for specified types of devices. Peripheral device drivers maintain tally structures and have memory areas dedicated to tally activity.

Each time a tallied event occurs, the tally associated with that event is incremented. At selected intervals of time, a tally **daemon** utility determines if any tallies have exceeded their specified error threshold levels and updates system files that contain tally information.

The odm menus permit you to monitor tallies associated with the following types of devices:

- Flexible (flex) disk
- TTY devices
- SCSI devices
- Parallel printers

Menu & Button Selections

<Service>
<Diagnostics>
    <Services>
        <tallies>

Procedure

To clear device tallies:

1. Select the class of devices on which to perform tally operations and press ENTER. The list of device classes includes, but is not limited to, the following:

a. asy_devices: communication port terminal devices controlled by the **asy** driver (i.e., /dev/term/00h, /dev/term/00s)

b. lp_ports: parallel port devices controlled by the **lp** driver (i.e., /dev/lp, /dev/lp0)

c. stty_devices: extended 8/16 port TTY devices controlled by the **acl** and **stty** drivers (i.e., /dev/term/s00, /dev/term/s01)

2. Enter the name of the device in the "Device" Tally Operations screen or press CHOICES to select from a list of available devices.
3. Select <*clear_tallies*> in the "Device" Tally Operations screen for the tally operation to perform and press SAVE. A window appears displaying device tallies that were cleared.
4. Press CANCEL.

Displaying Device Tallies

Why/When

The display_tallies operation displays the complete list of tallies that have accumulated for the selected device. The display information includes:

- Name of the device associated with the tallies
- Tally ID (a number assigned to each tally)
- Current value (the number of times that this event has occurred)
- Description (information about the type of event being tallied)

Menu & Button Selections

<Service>
<Diagnostics>
    <Services>
        <tallies>

Procedure

To display device tallies:

1. Select the class of devices on which to perform tally operations and press ENTER. The list of device classes includes, but is not limited to, the following:

    a. asy_devices: communication port terminal devices controlled by the **asy** driver (i.e., /dev/term/00h, /dev/term/00s)

    b. lp_ports: parallel port devices controlled by the **lp** driver (i.e., /dev/lp, /dev/lp0)

    c. stty_devices: extended 8/16 port TTY devices controlled by the **acl** and **stty** drivers (i.e., /dev/term/s00, /dev/term/s01)

2. Enter the name of the device in the “Device” Tally Operations screen or press CHOICES to select from a list of available devices.
3. Select <*display_tallies*> in the “Device” Tally Operations screen for the tally operation to perform and press SAVE. A window appears displaying device tallies.
4. Press CANCEL.

Displaying Threshold Percentages

Why/When

The display_threshold operation displays the complete list of tallies maintained for the selected device, and shows the existing threshold percentage that has been set for each tally. The display information includes:

- Name of the device associated with the tallies
- Tally ID (a number assigned to each tally)
- Threshold (a tally/total operation ratio) percentage
- Description (information about the type of event being tallied)

Menu & Button Selections

<Service>
<Diagnostics>
    <Services>
        <tallies>

Procedure

To display threshold percentages:

1. Select the class of devices on which to perform tally operations and press ENTER. The list of device classes includes, but is not limited to, the following:

    a. asy_devices: communication port terminal devices controlled by the **asy** driver (i.e., /dev/term/00h, /dev/term/00s)

    b. lp_ports: parallel port devices controlled by the **lp** driver (i.e., /dev/lp, /dev/lp0)

    c. stty_devices: extended 8/16 port TTY devices controlled by the **acl** and **stty** drivers (i.e., /dev/term/s00, /dev/term/s01)

2. Enter the name of the device in the “Device” Tally Operations screen or press CHOICES to select from a list of available devices.
3. Select <*display_thresholds*> from the “Device” Tally Operations screen for the tally operation to perform and press SAVE. A window appears displaying the tally threshold for the device you selected.
4. Press CANCEL.

Setting Monitor Intervals

Why/When

The set_interval operation displays the current number of minutes between times when the tally **daemon** checks to see if any tally threshold have been exceeded. If a tally threshold has been exceeded, the **daemon** generates a threshold exception error record for that tally.

Menu & Button Selections

<Service>
<Diagnostics>
    <Services>
        <tallies>
        <set interval>

Procedure

In the Set Monitor Interval screen, enter the desired interval or press CHOICES for a list of available monitor intervals.

Setting Threshold Percentages

Why/When

The set_threshold operation permits you to set (or change) the threshold percentage for any tally that is maintained for the selected device.

Menu & Button Selections

<Service>
<Diagnostics>
    <Services>
        <tallies>

Procedure

To set threshold percentages:

1. Select the class of devices on which to perform tally operations and press ENTER. The list of device classes includes, but is not limited to, the following:
    a. asy_devices: communication port terminal devices controlled by the **asy** driver (i.e., /dev/term/00h, /dev/term/00s)
    b. lp_ports: parallel port devices controlled by the **lp** driver (i.e., /dev/lp, /dev/lp0)
    c. stty_devices: extended 8/16 port TTY devices controlled by the **acl** and **stty** drivers (i.e., /dev/term/s00, /dev/term/s01)
2. Enter the name of the device in the “Device” Tally Operations screen or press CHOICES to select from a list of available devices.

3. Select <*set_threshold*> in the “Device” Tally Operations screen for the tally operation and press SAVE to display the Set Threshold Percentage screen. Press CHOICES or enter the desired Tally ID and Tally Threshold and press SAVE.

Testing Terminal Devices

Why/When

Terminal device diagnostics are available for asy devices, such as built-in communication ports, stty devices, such as Extended 8/16 port tty devices, and other tty devices. The tests available include:

- Loop 3. Verify the operation of the local DTE logic and the local DCE logic.
- Pattern. Transmit continuous data pattern over the communication link connected to the selected port.
- Terminal. Verify that a selected TTY terminal can receive and transmit data correctly.

Use these test to verify or troubleshoot terminal operation.

Menu & Button Selections

<Service>
<Diagnostics>
<Test>
<asy > or
<stty> or
<other_tty>

Procedure

1. Enter the name of the device or press CHOICES to select from a list of available terminal devices. If <other_tty> is the selected terminal device type, no CHOICES are available: you must enter a device name.

2. Enter the test name or press CHOICES to select from a list of available tests.
3. Enter the number of test iterations.
4. Press CHOICES to set the desired baud rate.
5. Press CHOICES to set the parity to **Even**, **Odd**, or **None**.
6. Press CHOICES to set the number of data bits.
7. Press CHOICES to set the number of stop bits.
8. Press SAVE. A status window appears, from which you control the test and view the output. To control the test operation:
    a. Press START to start the test.
    b. Press HALT to stop the test.
    c. Press CONT to continue to the next device in the list (if multiple devices were selected) after a test loop for a device completes successfully, is halted, or an error occurs. If only one device was selected, CONT allows you to rerun the test on that device.
    d. Press CANCEL to clear the screen and return to the asy_device test definition form.

Testing HDLC WANs

Why/When

HDLC WAN (dlc) diagnostics permit you to perform in-service (Level 2) tests on the selected HDLC WAN device. The HDLC WAN tests include:

- Loop 1. Verify the adapter's internal UART.
- Loop 2. Verify the adapter UART, and test the modem cable, modem circuitry, and telephone line. You must manually create an electrical loopback to perform this test.
- Loop 4. Verify the adapter UART and the RS-232 interface. You must place a loopback connector on the RS-232 interface before running this test.
- Modem Status. Display the HDLC line (modem) status.
- Adapter Status. Display the status of the HDLC WAN adapter.
- Reset Adapter. Reset the HDLC WAN adapter, displaying the results of the reset, including the results of level 0 diagnostics.
- Link Test Statistics. Display link test statistics for the HDLC WAN device.
- Clear Test Statistics. Reset link test statistics to zero.

Menu & Button Selections

<Service>
<Diagnostics>
    <Test>
        <dlc >

Procedure

1. Enter the HDLC device name or press CHOICES to select from a list of available HDLC devices.
2. Enter the test name or press CHOICES to select from a list of available HDLC device tests.
3. Enter the number of iterations.
4. Press SAVE. The selected test is activated for the selected number of iterations.

Testing Flex Devices

Why/When

Select the flex device diagnostic tests to verify the operation of the flex drive and flex controller, or to verify the integrity of the inserted flex disk. Flex device tests include:

- Read. Verify data can be successfully read from the entire flex disk.
- Restore. Verify the recalibrate function of the flex device controller.
- Seek. Verify the device seek capability through sequential and staggered seek operations.
- Run-To-Run. Automatically run the Restore, Seek, Read, and Write tests sequentially.
- Write. Verify data can be successfully written to the entire flex disk.

Menu & Button Selections

<Service>
<Diagnostics>
    <Test>
        <flex >

Procedure

1. Enter the flex device name or press CHOICES to select from a list of available flex devices.
2. Enter the test name or press CHOICES to select from a list of available flex device tests.
3. Enter the number of iterations.
4. Press SAVE. A status window appears, from which you control the test and view the output. To control test operation:

a. Press START to start the test.

b. Press HALT to stop the test.

c. Press CONT to continue to the next device in the list (if multiple devices were selected) after a test loop for a device completes successfully, is halted, or an error occurs. If only one device was selected, CONT allows you to rerun the test on that device.

d. Press CANCEL to clear the screen and return to the flex_device test definition form.

Testing LANs

Why/When

Local Area Network (LAN) diagnostics permit you to perform in-service (Level 2) tests on the selected LAN device. These tests interact with the Integrated LAN Driver (ild) software. The LAN or ild tests include:

- Loop 1. Execute level 0 diagnostics, which includes memory and register tests, as well as hardware tests on the adapter. The network must be down to perform this test.
- Loop 2. Determine what machines are active on the network by sending out a broadcast message, and collecting the responses.
- Loop 3. Send UI frames across the network. Should be used in conjunction with data capture.
- Configuration. Display network adapter type and the current driver settings.
- Hardware. Display the ild adapter configuration (*/etc/ildconfig*).

Menu & Button Selections

<Service>
<Diagnostics>
    <Test>
        <ild >

Procedure

1. Enter the ild device name or press CHOICES to select from a list of available ild devices.
2. Enter the test name or press CHOICES to select from a list of available ild device tests.

3. Enter the number of iterations.
4. Press SAVE. If the Loop 1, Loop 2, or Configuration test is selected, a window appears for input of the PPA (physical position of the adapter in the system). If the Loop 3 test is selected, a window appears for entry of the PPA and the number of frames to transmit. If the Hardware option is selected, no additional input is required.

Testing Printer Devices

Why/When

Select the <lp_ports> device diagnostic tests to verify the operation of the selected parallel printer device. The parallel printer device tests include:

- Ripple Pattern. Print selected number of pages of all printable characters.
- Complement Pattern. Print selected number of pages of characters hex 30 and hex 4f.
- Floating Bit Pattern. Print selected number of pages of characters with 1 bit floating through four least significant bits of each character.
- Speed Test. Calculate printer speed.
- Line Feed Test. Send one carriage return/line feed to the printer, causing it to space the paper one line.
- Form Feed Test. Send one form feed control character to the printer, causing it to eject one page.
- Pattern Test. Send one 80-byte print line to the printer.

Menu & Button Selections

<Service>
<Diagnostics>
    <Test>
        <lp_ports >

Procedure

1. Enter the printer device name or press CHOICES to select from a list of available printer devices.
2. Enter the test name or press CHOICES to select from a list of available printer device tests.

3. Enter the number of iterations.
4. Press SAVE. A status window appears, from which you control the test and view the output. To control test operation:
    a. Press START to start the test.
    b. Press HALT to stop the test.
    c. Press CONT to continue to the next device in the list (if multiple devices were selected) after a test loop for a device completes successfully, is halted, or an error occurred. If only one device was selected, CONT allows you to rerun the test on that device.
    d. Press CANCEL to clear the screen and return to the lp device test definition form.

Testing RBS WAN Devices

Why/When

RBS WAN diagnostics permit you to perform in-service (Level 2) tests on the selected RBS WAN device. These tests interact with the 2780/3780 driver and the MPCA. The RBS WAN tests include:

- Loop 1. Verify the adapter's internal UART.
- Loop 2. Verify the adapter UART, and test the modem cable, modem circuitry, and the telephone line. You must manually create an electrical loopback to perform this test.
- Loop 4. Verify the adapter UART and the RS-232 interface. You must place a loopback connector on the RS-232 interface before running this test.
- Adapter Status. Display the status of the RBS WAN adapter.
- Reset Adapter. Reset the RBS WAN adapter, displaying the results of the reset, including the results of level 0 diagnostics.
- Link Test Statistics. Display link test statistics for the RBS WAN device.
- Clear Test Statistics. Reset link test statistics to zero.
- Adapter Status.
- Reset the Adapter.
- Read

Menu & Button Selections

<Service>
<Diagnostics>
    <Test>
        <rbsl>

Procedure

1. Enter the WAN device name or press CHOICES to select from a list of available RBS WAN devices.
2. Enter the test name or press CHOICES to select from a list of available RBS WAN device tests.
3. Enter the number of iterations.
4. Press SAVE. The selected test is activated for the selected number of iterations.

Testing SCSI Devices

Why/When

SCSI device diagnostics installed by the **scd** package are available through the menu selections identified below. These tests should be used to diagnose problems with such devices as SCSI hard or flexible disks, SCSI printers, SCSI CD-ROM drives, or SCSI tape drives. The SCSI device tests include:

- SCSI disk tests:
  - ID (Identify) Device. Display device characteristics.
  - Basic Functions. Verify operation of disk controller.
  - Maintenance Cylinder Write/Read. Verify maintenance cylinder operation.
  - Random Seeks. Verify device seek capability through series of seeks to random blocks on the disk.
  - Data ECC Verify. Check the complete user addressable area of the disk.
  - Random Data Write/Read (destructive). Verify disk integrity by writing random data.
  - Pattern Data Write/Read (destructive). Verify disk integrity by writing pattern data.
- SCSI disk utilities:
  - Read Block. Verify specific data blocks.
  - Read Track Format. Read and display selected track formats.
  - Assign Alternate Block. Assign alternate blocks to new flaws as required by the controller.
  - Verify Disk Format. Check entire disk for valid data format.
  - Display Factory Flaws. Display a list of factory flaws written in the locked factory flaw track of the disk.
  - Mode Sense. Examine SCSI Common Command Set (CCS) controller parameters.

  - Mode Select (destructive). Change the Mode Sense utility parameters.
  - Format Hard Disk (destructive). Physically format the disk.
  - Disk Firmware Download Utility. Download microcode firmware to selected drives attached to an ADP-92, ADP-93, Series 3 disk array, or stand-alone SCSI drive.
- SCSI CD-ROM device tests:
  - ID Device. Display controller and drive information.
  - Controller Self-Test. Test dynamic RAM controller chip.
  - Rezero. Recalibrate the drive to the start of the disk.
  - Random Seek. Verify device seek capability through random seeks.
  - Oscillating Seek. Verify device seek capability through oscillating seeks.
  - Read/Verify NCR Type Data. Verify read operation using NCR Diagnostic CD-ROM disk.
  - Read/Verify Sony Type Data. Verify read operation of Sony type B data using NCR Diagnostic CD-ROM disk.
- SCSI Write Once Read Many (WORM) device tests:
  - ID Device. Display disk drive characteristics.
  - Basic Functions. Verify operation of the disk controller and disk drive.
  - Random Seeks. Verify seek capability of the disk drive through random seeks.
  - Data ECC Verify. Verify selected user-addressable disk surface.
- SCSI tape device tests:
  - ID Device. Display tape device characteristics.
  - Data Write/Read. Verify tape integrity through data write operation.
  - Data Filemark Write/Read. Verify data filemark write operation to inserted tape.
  - Write Files. Verify tape file write operation.
  - Read Tape. Verify the tape can be read reliably.
  - Self-Test Controller. Verify proper operation of tape controller.

  - Self-Test Unit. Verify proper operation of the tape controller and drive.
  - Variable Block Data Write/Read. Verify ability to write variable length records to the tape.
  - Recover Buffered Data. Verify selected controller and drive can perform SCSI Recover Buffered Data command functions properly.
  - Unbuffered Data Write/Read. Verify unbuffered mode operation of controller and drive in unbuffered mode.
  - End-Of-Media (EOM). Verify EOM write to the tape.
  - Known Data Write. In conjunction with Known Data Read/Compare test, verifies compatibility between different tape drives.
  - Known Data Read/Compare. In conjunction with Known Data Write test, verifies compatibility between different tape drives.
  - Erase Tape. Verify the tape can be erased.
- SCSI printer device tests:
  - Identify Device. Display printer characteristics.
  - Controller Self-Test. Verify operation of the printer controller.
  - Write/Read/Compare Buffer. Verify printer buffer write operation.
  - Ripple Pattern. Print selected number of pages of all printable characters.
  - Complement Pattern. Print selected number of pages of characters hex 30 and hex 4f.
  - Floating Bit Pattern. Print selected number of pages of characters with 1 bit floating through four least significant bits of each character.
  - Speed Test. Calculate printer speed.
- SCSI flex disk tests:
  - ID Device. Display flex device characteristics.
  - Controller Self-Test. Verify operation of flex disk controller.
  - Write/Read/Compare Buffer. Verify write operation to controller's internal buffer.
  - Random Seeks. Verify seek capability of the disk through random seeks.
  - Verify Data. Verify flex disk user addressable data space.

  - Write/Read Random Data. Test flex disk using random pattern write operation.
  - Write/Read Pattern Data. Test flex disk using specified data pattern write operation.
  - Format Unit. Physically format the flex disk.
- Update Device List. Perform this function to update the list of SCSI devices.

Menu & Button Selections

<Service>
<Diagnostics>
    <Test>
        <SCSI >

Procedure

1. Enter the SCSI device name or press CHOICES to select from a list of available SCSI devices. The <Update Device List> selection with update the list of available SCSI devices.
2. Press SAVE. A SCSI Device Test menu is displayed. Select <tests (n)> to display a list of non-destructive tests. Select <tests (d)> to display a list of destructive tests.
3. From the list of tests, use MARK to select the device tests of interest. When all desired tests are marked, press ENTER.
4. A Functions menu appears. Select the desired function.
5. If the <run> function was selected to execute the test, enter the appropriate test options in the presented form. Press SAVE to start the test.

Chapter 17

Remote Services

Introduction to Remote Service

OperationsAdvantage BASE Remote Service **(OSARS)** provides a transparent way for OperationsAdvantage BASE to locate managed objects in a distributed networking environment. This simple naming/location service uses the Transport Layer Interface (TLI) to access information and the location of managed objects on the network. It relies solely on information in the object table to determine with whom it can communicate on the network.

To set up this service, you must perform the following tasks through the OperationsAdvantage BASE menus:

1. Enable the service by adding the OSARS service to the service files of all transports known to your system. These files currently include */etc/hosts* and */etc/services* for TCP/IP.
2. Add the names of the OSARS nameservers you want to communicate with over the network.
3. Start the OSARS server process on your system to enable communication between your system and the remote systems with which you want to communicate.

Enabling the Service

Why/When

Enabling the service adds the OperationsAdvantage BASE remote service to the service files of all transports available on your system. You must perform this task before you can add nameservers to your system and perform distributed operations, such as backing up files to a device on a remote system. After you enable the service once, it is then always enabled when your system boots or the OSARS server is stopped, unless you disable it with the “Disabling the Service” task.

Currently, TCP/IP is the only transport that OperationsAdvantage BASE supports.

Menu & Button Selections

<Configuration>
<Network and Modem Admin>
<Remote Service>
    <setup>
    <transports>
    <enable>

Disabling the Service

Why/When

Disabling the service removes the OperationsAdvantage BASE remote service from the service files of all transports available on your system. Once you disable the service, you cannot perform any distributed operations, such as backing up files to a device on a remote system.

Menu & Button Selections

<Configuration>
<Network and Modem Admin>
<Remote Service>
    <setup>
    <transports>
    <disable>

Adding a Nameserver to Your OSARS Domain

Why/When

If you want to perform distributed OperationsAdvantage BASE operations (such as backup, restore, or batch jobs) on another system in your domain, you must define that system as a nameserver in your OSARS domain and your nameserver must be defined in their domain. A **nameserver** is an OSARS server that will return information about its system from its object management table. A **domain** is a logical group of systems connected over a network.

Before you can actually perform distributed tasks on the nameserver, the system administrator of the nameserver must perform the “Starting the OSARS Server” task to enable the nameserver to listen for requests from other systems.

You may specify up to 32 systems as OSARS nameservers. You can configure this limit by changing the value in the */etc/OSARS_servers* file, but if you increase it, you must also increase your network connection limitation to at least two times the number of OSARS nameservers.

Before You Start

Before you can add a nameserver to your OSARS domain, first perform the “Enabling the Service” task to add the OperationsAdvantage BASE service to the service files of all transports available on your system.

Menu & Button Selections

<Configuration>
<Network and Modem Admin>
<Remote Service>

<setup>
<osa_names>
<add>

Procedure

To add a nameserver to your OSARS domain, do the following:

1. Enter the *node name* of the system to be a nameserver in your domain. The *name* must be a valid name.
2. Press SAVE. A frame displaying the following message appears:

   ```
   Add OSARS Name Server was successful.
   ```

3. Press CANCEL to close the frame.

Removing a Nameserver from Your OSARS Domain

Why/When

If you no longer want to perform distributed OperationsAdvantage BASE operations (such as backup, restore, or batch jobs) on an OSARS nameserver, you should remove that system as a nameserver in your OSARS domain.

Menu & Button Selections

<Configuration>
<Network and Modem Admin>
<Remote Service>
    <setup>
    <osa_names>
        <remove>

Procedure

To remove a nameserver from your OSARS domain, do the following:

1. Enter the *node name* of the nameserver to remove. The *name* must be a valid name. Press CHOICES for a list of defined nameservers.
2. Press SAVE. A frame displaying the following message appears:

   ```
   Remove OSARS Name Server was successful.
   ```

3. Press CANCEL to close the frame.

Listing Nameservers in Your OSARS Domain

Why/When

Perform this task if you want to know what systems in your domain are defined as nameservers for performing distributed OperationsAdvantage BASE tasks.

Menu & Button Selections

<Configuration>
<Network and Modem Admin>
<Remote Service>
    <setup>
    <osa_names>
        <list>

Procedure

A frame listing all defined nameservers appears on your screen. If no nameservers are defined, the frame is empty. Press CANCEL to close the frame.

Starting the OSARS Server

Why/When

If you want other systems to be able to perform distributed tasks (such as backup, restore, or batch jobs) on your system, you must start the OSARS nameserver on your system. This task allows system administrators for other systems in your domain to add your system as nameserver. Once the OSARS server is started, the system restarts it at each subsequent reboot.

Menu & Button Selections

<Configuration>
<Network and Modem Admin>
<Remote Service>
    <specific_ops>
        <start>

Procedure

A frame containing the following message is displayed on your screen:

```
OSARS Server started on transport tcp

Press ENTER to continue.
```

Press ENTER to close the frame.

Stopping the OSARS Server

Why/When

If you no longer want other systems to be able to perform distributed tasks (such as backup, restore, or batch jobs) on your system, you must stop the OSARS nameserver on your system. This task prevents system administrators for other systems in your domain from performing distributed tasks on your system.

Menu & Button Selections

<Configuration>
<Network and Modem Admin>
<Remote Service>
    <specific_ops>
        <stop>

Procedure

A frame containing the following message is displayed on your screen:

```
Stopping the OSARS Name Server

Press ENTER to continue.
```

Press ENTER to close the frame.

Appendix A

Archiving and Restoring Device Table Objects

In releases 2.03 and later of UNIX SVR4 MP-RAS, objects are not completely removed from the device table (*/etc/device.tab*). Instead they are archived for use in the future.

This appendix describes when archived objects might need to be restored, and provides a procedure for updating the current device table with the archived object information.

Why/When

If the **mktable**(1M) utility is executed after a disk failure or following a partially completed disk replacement, then some or all of the objects related to that device might have been archived. The **mktable** utility is executed automatically when the system is booted, when a run-level transition occurs, and every day at midnight by **cron**(1M).

The best indication that archived objects might need to be restored is if the device you wish to replace does not show up as a possible device to select using the OperationsAdvantage Hardware Component Replacement feature.

Determining the Appropriate Archive Directory

Object archives are located in the directory */var/device.archive.* This directory includes subdirectories which correspond to the last time the **mktable** utility was executed, and the archives were created. For example, the directory */var/device.archive/1995:03:16:00:00:00* was created when the **mktable** utility executed at midnight on March 16, 1995.

The archive directory which should be used to restore device table objects is the one that corresponds to the **mktable** utility execution immediately after a failure.

Example One

On March 16, 1995 at 6:00 P.M., the device table (*/etc/device.tab*) represents the system configuration correctly and completely. On March 17, 1995 at 1:00 A.M., the fixed disk in internal media slot 10 (*c10t2d0s0*) fails, and the night operator reboots the system shortly after 2:00 A.M. The directory */var/device.archive* includes the following subdirectories:

The directory which contains archived objects that might need to be restored in order to replace the disk in slot 10 is */var/device.archive/1995:03:17:02:05:39.*

Example Two

For several days, the system has been logging errors against the fixed disk in internal media slot 10 (*c10t2d0s0*). On March 16, 1995 at 3:00 P.M., the system administrator decides to replace the disk using the OperationsAdvantage Hardware Component Replacement feature. After selecting <Remove> from the Hardware Management <Command> menu, the system administrator discovers that she doesn't have a spare disk available. She places an order for a spare disk, and goes home leaving the failed disk in the "REMOVED" state. At midnight, the **mktable** utility is automatically executed by **cron.** The directory */var/device.archive* includes the following subdirectories:

1995:03:16:00:00:00

1995:03:17:00:00:00

The directory that contains archived objects that might need to be restored in order to finish replacing the disk in slot 10 is */var/device.archive/1995:03:17:00:00:00*.

Identifying Objects to Restore

The physical object that represents the failed system component should always be the first archived object which is restored. In the case of a fixed disk, the *alias* name for the physical object corresponds to the physical location of the disk in the system. (For example, the *alias* name for the fixed disk in internal media slot 10 is *Slot 10*.)

Any logical objects that are associated with the physical object must also be restored. In a fixed disk, the corresponding logical object is referenced in the physical object by the *LUNs* attribute. Logical objects can reference other logical objects. For example, the logical object defined by the *LUNs* attribute for a fixed disk also references other logical objects in the *dparts* and *dslices* attributes. The logical objects defined by the *dslices* attribute can also reference logical volume objects in the *assoc* attribute.

Example

The system administrator needs to restore archived objects in order to finish replacing the disk in internal media slot 10. The *alias* name for the physical object which corresponds to the disk in slot 10 is *Slot 10.* The system administrator determines the corresponding logical object by referencing the *LUNs* attribute in the file */var/device.archive/1995:03:17:00:00:00/Slot10.* In this case, the value of the *LUNs* attribute is *c10t2d0s0*. Additional logical objects are determined by referencing the *dparts* and *dslices* attributes in the file */var/device.archive/1995:03:17:00:00:00/c10t2d0s0*. In this case, the value of the *dparts* and *dslices* attributes are *c10t2d0s0-P1* and *c10t2d0s1, c10t2d0s7* respectively. The disk slice *c10t2d0s1* is part of a volume. The system administrator determines the corresponding volume object by referencing the *assoc* attribute in the file */var/device.archive/1995:03:17:00:00:00/c10t2d0s1*. In this case, the value of the *assoc* attribute is *usr_vol*.

In order to finish replacing the disk in internal media slot 10, the system administrator restores the following objects from the archive directory */var/device.archive/1995:03:17:00:00:00:*

slot 10, c10t2d0s0-P1, c10t2d0s1, c10t2d0s1, usr_vol

Restoring Archived Object Information

After identifying the appropriate archive directory and determining which objects to restore, execute the following commands to update the current device table (*/etc/device.tab*) with archived object information.

```
ALIAS_LIST="<alias1 alias2 alias3 ...>"
PATH=$PATH:/usr/sadm/sysadm/bin
   ARCJOVE_DIR=<archive_dir>
   export ALIAS_LIST PATH ARCHIVE_DIR
for alias in $ALIAS_LIST
do
      OTdelete -A $alias
      OTput -A $alias -I $ARCHIVE_DIR/$alias
done
mktable -n
```

Example

The system administrator in the previous example executes the following commands in order to update the current device table (*/etc/device.tab*) with archived objects. The system administrator is then able to finish replacing the disk in internal media slot 10 by using the OperationsAdvantage Hardware Component Replacement feature.

```
ALIAS_LIST="Slot10 c10t2d0s0-P1 c10t2d0s1 c10t2d0s7 usr_vol"
   PATH=$PATH:/usr/sadm/sysadm/bin
   ARCHIVE_DIR=/var/device.archive/1995:03:17:00:00:00
   export ALIAS_LIST PTHAT ARCHIVE_DIR
for alias in $ALIAS_LIST
do
   OTdelete -A $alias
   OTput -A $alias -I $ARCHIVE_DIR/$alias
   done
   mktable -n
```

Appendix B

Replacing a Root Disk

Replacing Mirrored Root Devices

Why/When

Use this procedure if the root device is mirrored using Volume Manager and will be replaced using Hardware Manager.

Procedure

For this procedure to work correctly, root mirroring should be enabled. Additionally, the root, swap, stand, and boot slices on the original root device need to be mirrored on separate disk devices.

To replace a mirrored root device, do the following:

1. Display the status of all plexes by using the following command:

   ```
   # volprint -hlp|pg
   ```

2. If the display command shows active plexes for the device to be replaced, use the following command to disassociate the plexes from the physical device.

   ```
   # volprint dis plex|name
   ```

3. Verify with *volprint -hlp* and look for *DISABLED* on all original root device plexes.

   Note: All additional file systems on the original root device (such as *usr, var,* or *home*), except the dump slice, need to be mirrored to ensure that data on the original root device is not lost.

4. Check for any Volume Manager databases on the original root device. Use the following command:

   ```
   # voladm list
   ```

5. Remove any Volume Manager databases on the original root device. Use the following command:

   ```
   # voladm rm /dev/rdsk/c101t0d0sf,0,1000
   ```

Note: Do not have volume databases located on the original root device if root mirroring is enabled. Also, you must have at least two volume databases. If you have only one volume database, add additional databases before proceeding to the next step.

6. Reallocate any dump area on the original root device to spare disk(s). Use **sysadm**.

7. Change the links to */dev/root* and */dev/rroot* from the original root device to the mirrored secondary root device. First, remove */dev/root* and */dev/rroot*:

```
# rm /dev/root
# rm /dev/rroot
```

   Next, link the secondary root slice to */dev/root* and */dev/rroot*. For example, if the secondary root slice is */dev/dks/c101t2d0s1*, use the commands:

```
# ln /dev/dsk/c101td0sl /dev/root
# ln /dev/rdsk/c101t2d0sl /dev/rroot
```

8. Format, partition, and slice the alternate device before you use it to replace the original root disk. The **format/dklayout** command will fail if attempted on the original root device. See the *Administrator Guide: Command Line Interface: Devices and Networks (Volume 2)* "Configuring Disks" chapter.

9. Before you move the mirrored disk to the original disk slot, set the file system tags (file systems identifiers).

   – The correct tag for the root slice is 0x02.
   – The correct tag for the swap slice is 0x03.
   – The correct tag for the boot slice is 0x01.
   – The correct tag for the stand slice is 0x9.

   To display the file system tags, use the commands:

```
# prtvtoc -f root.disk /dev/rdsk/root_device_name
# vi root.disk
```

   Modify *root.disk* to match the original root device, then change the tags to the correct values by entering the command:

```
# edvvtoc -f root.disk /dev/rdsk/root_device_name
```

10. Select **Y** to accept the new slicing information.
11. Using the Hardware Manager, replace the original root device with the formatted, partitioned, and sliced alternate device. For more information, see “Replacing Fixed Disks” in Chapter 16, “Using the Hardware Manager.”
12. Exit OSA.
13. Use the following commands to revive the raw disk:

    ```
    # volplex att rootvol rootplex0
    # volplex att swapvol swapplex0
    # volplex att bootvol bootplex0
    # volplex att bavol baplex0
    # volplex att volume_name plex_name &
    ```

    Use and repeat the last command only for any other plexes that might have resided on the replaced physical device.

    Note: Each command must be completed prior to initializing the next one. Each command will take some time to complete.

14. Change the links to */dev/root* and */dev/rroot* from the mirrored secondary root device to the original root device. First, remove */dev/root* and /dev/rroot:

    ```
    # rm /dev/root
    # rm /dev/rroot
    ```

    Second, link the original root slice to */dev/root* and */dev/rroot*. For example, if the original root slice is */dev/dsk/c101td0s1*, use the following commands:

    ```
    # ln /dev/dsk/c101t0d0sl /dev/root
    # ln /dev/rdsk/c101t0d0sl /dev/rroot
    ```

15. Restore any volume databases on the original root device by using the command:

    ```
    # voladm add/dev/rdsk/voldesc_name,offset,size
    ```

    For example:

    ```
    # voladm add/dev/rdsk/c101t0d0sf,0,1000
    ```

16. Reconfigure any dump area that was moved from the original root device by using **sysadm**.

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