

Bulletins and Notes for Sun386i SunOS 4.0.1

These are the documents accompanying the release of Sun386i™ SunOS™ 4.0.1:

Owner's Bulletin for Sun386i SunOS 4.0.1 – Up-to-date information for every user, including new features and corrections that are not reflected in the Owner's Set of manuals (*System Setup and Maintenance*, *User's Guide*, *SNAP Administration*, and *Advanced Skills*). This document replaces the Sun386i SunOS 4.0 *Owner's Notes*.

Installing Sun386i SunOS 4.0.1 – Only for customers who already have Sun386i systems. These are instructions for upgrading Sun386i software from Sun386i 4.0 to Sun386i 4.0.1. If you are receiving a new Sun386i system now, you do not need these instructions because Sun386i 4.0.1 software is already installed on your system.

Administrator's & Developer's Notes for Sun386i SunOS 4.0.1 – Up-to-date information for administrators and developers, plus corrections and additions to *Sun386i Advanced Administration*, *Sun386i Developer's Guide*, and other reference materials. The *Administrator's & Developer's Notes for Sun386i SunOS 4.0.1* are distributed with the Sun386i Owner's Supplement and Developer's Toolkit documentation sets, and with Application SunOS and Developer's Toolkit media for Sun386i SunOS 4.0.1. The *Administrator's & Developer's Notes for Sun386i SunOS 4.0.1* replace the document of the same name distributed with Sun386i 4.0.

Keep this bulletin with your Owner's Set of manuals for future reference as you use your Sun386i system.

Reading Sequence

If you are installing a new system, please read in this sequence:

Owner's Bulletin (this document)

Administrator's & Developer's Notes (if you need procedures described there)

If you are upgrading a system from Sun386i 4.0 to 4.0.1, please read in this sequence:

Owner's Bulletin (this document)

Installing Sun386i SunOS 4.0.1

Administrator's & Developer's Notes (if you need procedures described there)

If you have received previous copies of the *Owner's Bulletin* or the *Administrator's & Developer's Notes*, be sure to use the one with the most recent date (marked on the first page).



Sun Microsystems, Inc.
East Coast Division
Two Federal Street
Billerica, MA 01821

Part No: 814-3017-01
Revision A, December 1988

Copyright © 1983–1988 by Sun Microsystems, Inc. All rights reserved.

No part of this work covered by copyright hereon may be reproduced in any form or by any means – graphic, electronic, or mechanical – including photocopying, recording, taping, or information storage and retrieval systems, without the prior permission of the copyright owner.

Restricted rights legend: Use, duplication, or disclosure by U.S. government is subject to restrictions as set forth in subparagraph c.1.ii of the Rights in Technical Data and Computer Software clause at DFARS 52.227-7013 and in similar clauses in the FAR and NASA FAR Supplement

This software and documentation is based in part on the Fourth Berkeley Software Distribution under license from The Regents of the University of California. We acknowledge the following individuals and institutions for their role in its development: The Regents of the University of California and the Electrical Engineering and Computer Sciences Department at the Berkeley Campus of the University of California and Other Contributors.

AutoCAD is a trademark of Autodesk, Inc. DOS Windows, Sun386i, Sun-3, Sun-4, SunOS, SunView, Sun LaserWriter, PC-NFS, and Sun Organizer are trademarks of Sun Microsystems, Inc. The Sun logo and Sun Microsystems are registered trademarks of Sun Microsystems, Inc. FX-80 and Epson are trademarks of Epson America, Inc. Ethernet is a registered trademark of Xerox Corporation. Harvard Graphics is a trademark of Harvard Software, Inc. Rampage is a trademark and Intel is a registered trademark of Intel Corporation. LaserJet is a trademark of Hewlett-Packard Company. MS-DOS, Microsoft, and Microsoft Mouse are registered trademarks of Microsoft Corporation. PC DOS and PC XT are trademarks and IBM is a registered trademark of International Business Machines Corporation. UNIX is a registered trademark of AT&T in the USA and other countries. PostScript is a registered trademark of Adobe Systems, Inc. Adobe also owns copyrights related to the PostScript language and the PostScript interpreter. The trademark PostScript is only used herein to refer to material supplied by Adobe or to programs written in the PostScript language as defined by Adobe. Lotus is a registered trademark of Lotus Development Corporation. Hayes, Hayes Smartmodem 1200, and Hayes Smartmodem 2400 are registered trademarks of Hayes Microcomputer Products, Inc. Frame Maker is a trademark of Frame Technology Corporation. Interleaf is a trademark of Interleaf, Inc. Sidekick is a registered trademark of Borland International. Versatec is a trademark of Versatec, Inc. All other products or services mentioned in this document are identified by the trademarks or service marks of their respective companies or organizations.

Problems?

If you encounter problems not covered in the Sun386i documents you have received, please call us at: **(800) USA-4SUN**. Outside the U.S., call your local Sun Microsystems service office.

Important Information Before You Begin

Before you upgrade software or install a new system, follow this very important advice.

Before Installing a New System

If you are installing a new Sun386i workstation, be sure to read the section "Before Setting Up Your System" in this document. You need information in this section in order to use the *Quick Start* pamphlet and *Sun386i System Setup and Maintenance* book.

System and Network Security

If you require user account security on your system and network, you must disable the New User Accounts facility. This facility allows anyone to create a user account and access the Sun386i system and network. Disabling the New User Accounts facility helps ensure that your system's integrity is not compromised either accidentally or maliciously. For instructions on how to disable this facility, see the "Domain policies" note in the "*Sun386i SNAP Administration*" section of this bulletin.

Also, to disable root logins on the console, you must remove the `secure` field and the `-n` option from the console entry in the `/etc/ttytab` file. If you remove the `secure` field from the console in `/etc/ttytab`, be sure to disable `logintool` by removing the `-n` option so that users can still log in as root if they know the password.

DOS and Serial Port Devices

If you intend—now or in the future—to access a serial port device using DOS, you must modify the operating system to prevent problems. Follow the steps in the DOS Windows™ section of the "DOS Windows and PC Applications" chapter in this document.

Non-Sun386i Home Directories

If Sun386i users have their home directories on Sun-3™ or Sun-4™ systems, you need to update a system service called the "lock daemon" on these systems. See the section "Locking services on non-Sun386i home directory servers" in the *Administrator's & Developer's Notes for Sun386i SunOS 4.0.1*.

New Features in Sun386i SunOS 4.0.1

The following features are too recent to appear in the Sun386i printed manuals. For information about these features, see this document and the *Administrator's & Developer's Notes for Sun386i SunOS Release 4.0.1*.

New DOS Windows features – New DOS Windows features in 4.0.1 include:

- ◆ Microsoft® Windows driver. With this driver, Microsoft Windows applications can take advantage of the full Sun386i monitor screen.
- ◆ 9600 baud serial communication under DOS. DOS applications can use the Sun386i serial port and AT bus serial communication boards to transmit data at speeds up to 9600 baud. In Sun386i 4.0, the maximum speed was 4800 baud.
- ◆ Lotus®-Intel®-Microsoft (LIM) Version 4.0 expanded memory. DOS Windows supports LIM expanded memory up to 32 Mbytes per application.
- ◆ DOS file-sharing. DOS Windows supports file sharing on a per-drive basis using the EXTEND command.
- ◆ Network programming libraries and facilities. The PC-NFS™ Programmer's Tool kit, which programmers can use to write distributed network applications for PCs and Sun386i DOS Windows, has been added to the Sun386i Developer's Toolkit. To order PC-NFS Programmer's Toolkit documentation, call 1-800-334-SUNM and ask for part number PC-NFS-PTK-09.

Sun-3 and Sun-4 server support for diskless Sun386i systems – Sun386i 4.0.1 software can be installed on a Sun-3 or Sun-4 server (as well as a Sun386i server) to support Sun386i diskless systems.

Support for external 5.25-inch diskette drive – In addition to the internal Sun386i 3.5-inch diskette drive, Sun386i 4.0.1 supports a specific third-party external 5.25-inch drive for reading and writing 5.25-inch diskettes.

Improved Automatic System Installation, New User Accounts, and SNAP – Additions to these features include:

- ◆ Support for upgrading a standalone system to a master server
- ◆ Interim messages reporting progress during installation
- ◆ Script for administrators to disable or enable the full-screen login application, and to select a screenblank utility
- ◆ SNAP support for Hewlett-Packard LaserJet™ II printers
- ◆ SNAP messages suggest possible solutions if problems arise. A "Why?" button provides additional information.

Additional on-screen help handbooks – A tutorial called "Sun386i Getting Started" and a guide to improving productivity called "Desktop Productivity Tips" have been added.

Security enhancements – Security flaws in two background administration programs (sendmail and fingerd) are eliminated in 4.0.1. These flaws in UNIX® BSD systems were exposed recently by a widely-publicized "virus" (or "worm") program that attacked some systems on the Department of Defense Internet.

Contents

Before Setting Up Your System

Mouse Pad.....	7
15-inch Monochrome Monitor.....	7
Color Monitor Grounding.....	8
Installing Boards.....	9
Power Cycling Warning.....	9
Desktop Setup of the Sun386i Workstation.....	10
SCSI Terminator.....	10
Connecting Systems to a Network.....	10
DOS Window Operation.....	11

Sun386i System Setup and Maintenance

Setting Up Your System.....	12
Powering Up Your System.....	12
Your Software.....	12
Connecting Peripheral Devices.....	16
Testing Your System.....	18

Sun386i User's Guide

Getting Started.....	20
Working on the Desktop.....	21
Managing Your Files.....	22
How to Use the Text Editor.....	23
Sending and Receiving Mail.....	23
Introduction to Commands.....	23
About Applications.....	24
The Sun386i Keyboard.....	24

Sun386i SNAP Administration

System Administration Basics.....	25
Backing Up and Restoring Files.....	27
Printers, Terminals, and Modems.....	28
Expansion Unit.....	30
Users and Groups.....	32
Network Configurations.....	37
Setting Up a Network.....	37
Network Administration Basics.....	38
File System.....	45
SNAP Files.....	45
Configuring Diskful Clients.....	46

Sun386i Advanced Skills

General Notes.....	48
Customizing Your System.....	49
DOS Notes.....	51
Defaults Editor Settings.....	51

DOS Windows and PC Applications

Using DOS.....	52
MS-Windows.....	52
PC Applications.....	54
DOS Windows.....	57
DOS Devices.....	60

Printing

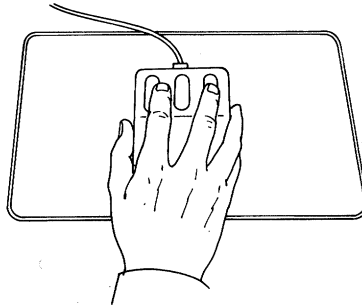
Your Default Printer.....	64
Printer Administration.....	64
Printing from a DOS Window.....	65
For More Information about Printing.....	65

Index

Before Setting Up Your System

Read the notes in this section before you set up your Sun386i workstation.

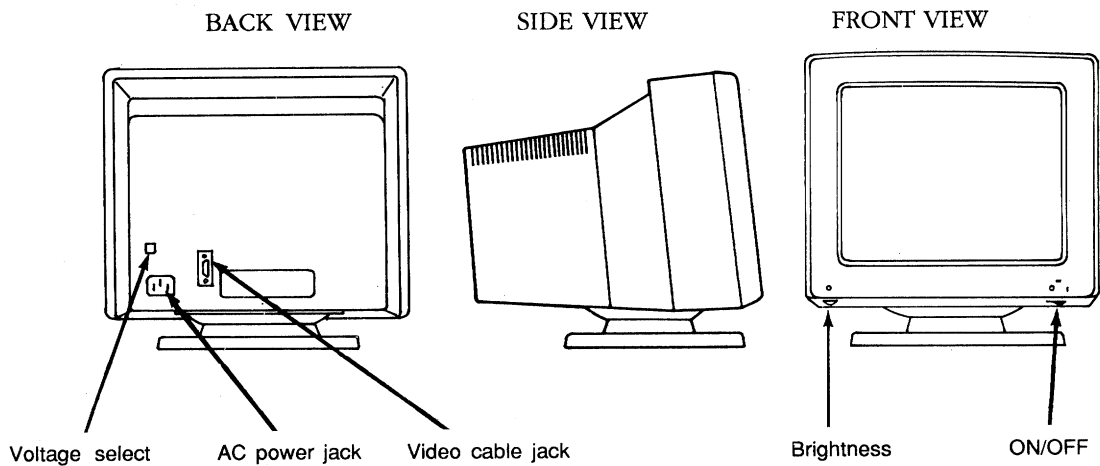
Mouse pad - The mouse pad has a rectangular shape. The *Quick Start* pamphlet neglects to mention that you should place the mouse pad on your desktop so that either one of its longer sides faces you. The mouse pad should be oriented as shown below:



15-inch monochrome monitor - If you're using the 15-inch monochrome monitor, the instructions for setting up a 15-inch monitor in the *Sun386i System Setup and Maintenance* manual and in the *Quick Start* pamphlet do not apply. Instead, the monitor should be set up just like the 19-inch monochrome monitor, as described in both *Sun386i System Setup and Maintenance* and *Quick Start*. For example, *Sun386i System Setup and Maintenance* and *Quick Start* state that you do not have to check the voltage selection switch on the 15-inch monochrome monitor. This is no longer true. You must verify that the voltage selection is correct.

To determine whether you have the 15-inch monochrome monitor, check the part number on the metal plate on the back of the monitor. The part number of this monitor is 360-1026-01 (for the 120-volt unit) or 360-1038-01 (for the 230-volt unit).

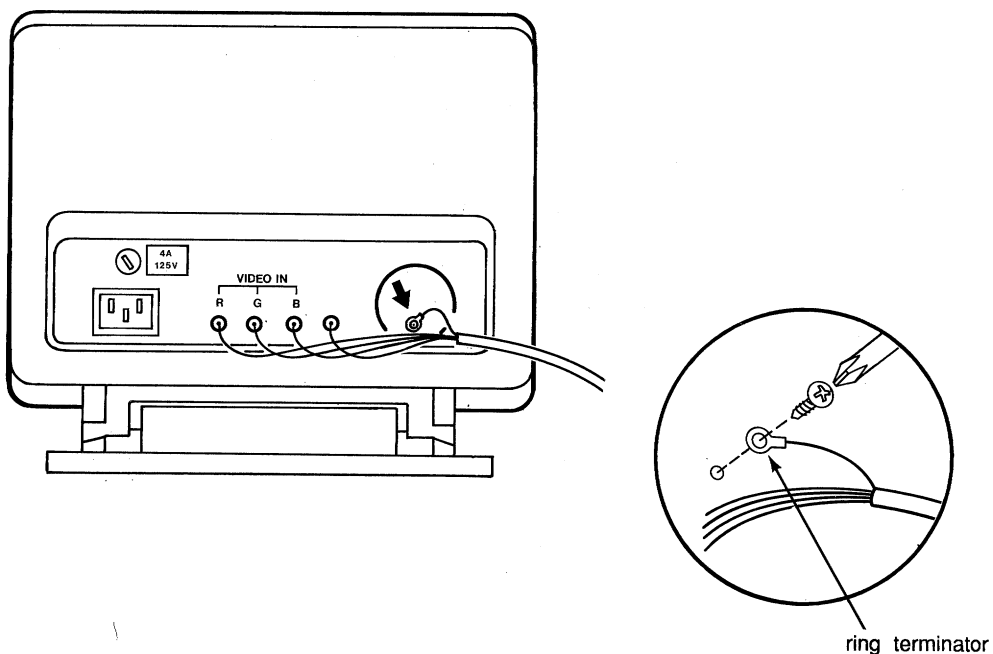
The illustrations below show the shape and basic parts of the monitor.



Color monitor grounding – Color monitors should be grounded. The *Quick Start* pamphlet and *Sun386i System Setup and Maintenance* manual indicate that you can finger-tighten the ground screw to the monitor chassis. This is not correct on all models. To ground your monitor, first check your video cable—the cable with the four color-coded jacks that connect to the monitor plugs. If the cable has a plastic bag containing a screwdriver and grounding screws, follow the instructions that are packaged in the bag with the hardware.

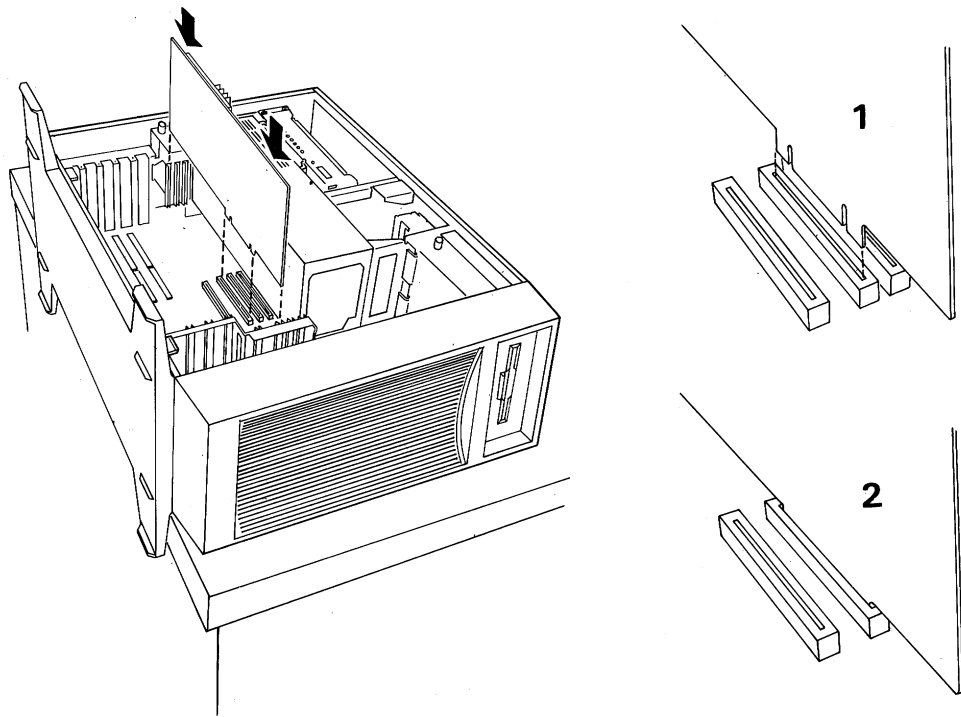
If you do not have instructions and hardware attached to your video cable, follow these instructions:

1. Use a small Phillips-head screwdriver to unscrew and remove a Phillips-head screw on the back of the monitor. Remove the screw that is closest to the “ring terminator”—a donut-shaped washer—on the video cable. (See the illustration below.)
2. Place the ring terminator over the hole from which the screw was removed.
3. Replace the screw by inserting it through the ring terminator and into the back of the monitor. Tighten the screw so that the ring terminator is flush against the monitor chassis. Your monitor is now grounded.



Installing boards – When you receive your Sun386i system, you may need to install a printed circuit board—a frame buffer board, memory board, or AT board—in your system unit. If you find an uninstalled board in the carton with your keyboard and mouse, then you should install it. You'll find illustrated instructions for installing boards in Appendix B of the *Sun386i System Setup and Maintenance* manual. Here are some additional tips to help you install a board smoothly.

- ◆ When installing the board in the slot, press down firmly on the edge of the board using the heels of your hands, until the board snaps into place.
- ◆ Check to make sure the connectors on the bottom of the board are fully inserted into the slot.
- ◆ Note that the top edge of the board is parallel to the system unit when correctly seated. One corner of the board should not be higher than the other. The boards must be fully seated before you replace the cover. The system may be damaged if you replace the cover and power up the system with a board incorrectly installed.

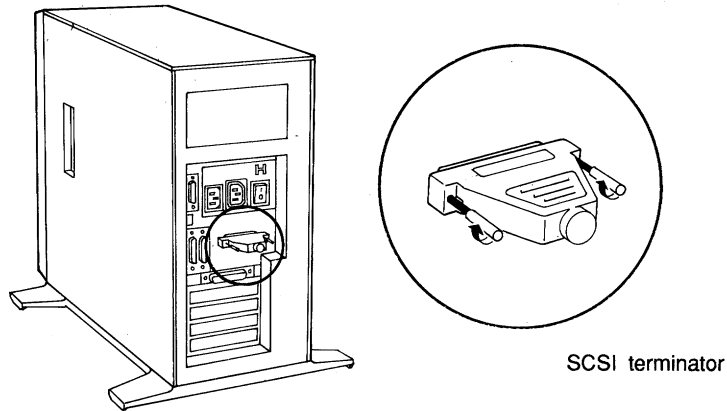


Power cycling warning – If you power cycle your system unit or your expansion unit for any reason, *always wait ten seconds between turning off the power and turning it on again!* The ten-second waiting period applies to both the system unit and expansion unit power switches.

Power cycling an electronic device means turning it off and turning it on again shortly afterwards. Generally, there is no reason to turn off your computer equipment. You may, however, decide to shut down your Sun386i workstation during its start-up procedure, and then decide to restart it again. (There is a shut down option provided for this purpose.) On the rare occasions when you turn off your workstation, remember to wait ten seconds before turning it on again.

Desktop setup of the Sun386i workstation – With the optional Desktop Kit (part no. 595-1595-01), you can position the 14-inch, 15-inch, or 16-inch monitor on the system unit on top of your desk. This configuration is possible only with the 14-inch, 15-inch, or 16-inch monitors. *Do not set up a system in the desktop configuration with a 19-inch monitor.* To set up a desktop system, you need the Desktop Kit identified above. Follow the instructions (in *Sun386i Desktop Installation*) that come with the Desktop Kit.

SCSI terminator – Every Sun386i workstation with a hard disk must have a SCSI terminator, either on the system unit or on the expansion unit. The SCSI terminator shown below is an external terminator. Very early Sun386i workstations did not have external terminators—the terminators were installed inside the unit. If you plan to attach an expansion unit to your system, you must have an *external* SCSI terminator. If you plan to attach an expansion unit to your system, and you do not have an external SCSI terminator, please contact your sales representative.



SCSI terminator

Connecting systems to a network – You can install systems more quickly and use fewer resources if you connect one at a time to the network. Although you can install multiple diskful systems simultaneously, the process will take longer per system and will make it more difficult for the server to do anything else. You *cannot* install multiple diskless systems simultaneously. Connect diskless system to the network one at a time.

When you add a Sun386i to a network that does not have a Sun386i system as the YP master server, you lose these automated features of the Sun386i:

- ◆ Automatic System Installation on a network
- ◆ All SNAP features, except Backup and Restore:
 - Automatic administration of users and groups
 - Automatic administration of systems
 - Automatic administration of printers, terminals, and modems
- ◆ Automatic creation of home directories and default files (New User Accounts)
- ◆ Automatic mounting of NFS directories for home accounts and other directories
- ◆ Mail delivery into home directories

DOS window operation – If your home directory is not on a Sun386i server, you will not be able to open a DOS window until you update the locking services on your system. The symptom of this problem is that when you select DOS Windows™ from your Desktop menu, nothing happens. If this occurs, follow the instructions in the section called "Locking services on the non-Sun386i home directory servers" in the *Sun386i Administrator's & Developer's Notes for Sun386i SunOS 4.0.1*.

Sun386i System Setup and Maintenance

The information in this section includes updates and corrections to the *Sun386i System Setup and Maintenance* manual, which shows you how to set up your system hardware, and software and how to test the system.

Setting Up Your System

15-inch monitor – As noted in the previous section, the 15-inch monitor differs from the one described in *Sun386i Quick Start* and *Sun386i System Setup and Maintenance*. If you have the 15-inch monochrome monitor, follow the instructions for setting up the 19-inch monochrome monitor.

System unit diagram – Page 15 of *Sun386i System Setup and Maintenance* has a diagram of the back panel of the system unit. This diagram shows an “80-volt power jack for the 15-inch monitor.” Because the current 15-inch monitor uses its own power supply, there is no longer an 80-volt power jack in the back of the new system units. The power jack is no longer necessary; if your system has one, ignore it.

Color monitor grounding screw adjustment – Review the information in “Before Setting Up Your System” when connecting a color monitor to your system.

Powering Up Your System

Time required to start up a diskless system – The *Sun386i System Setup and Maintenance* manual states that it takes an already assembled Sun386i workstation about two minutes to start up—from turning the power on to when you see the first login screen. This applies to systems that have already been installed on the network. The *first* time you power up a diskless system that has not been installed on the network, it takes 8 to 10 minutes before the login screen appears.

Your Software

The software your system needs to start working is already loaded on your system disk. In addition, each site must have at least one copy of the Application SunOS software on 3.5-inch diskettes or on quarter-inch tape. The notes that follow provide additional or corrected information related to Chapter 3 of *Sun386i System Setup and Maintenance*, which describes the Sun386i software.

Diskettes – There are two different densities of 3.5-inch diskettes that work with the Sun386i diskette drive. The preferred type is high-density, which can store 1.44 Mbytes of information per diskette. High-density is preferable because the SNAP back-up facility can use *only* high-density (HD) diskettes. If you use SunOS or DOS commands to store your software or data, you can use low-density (also called double-density) diskettes, which can store up to 720 Kbytes of information.

You can format diskettes from either SunOS (the system software for the Sun386i) or from DOS (the system software for the PC). Do *not* format double-density diskettes as HD diskettes—this will make them unreadable on the Sun386i.

Format commands are shown on page 43 of *Sun386i System Setup and Maintenance*. The bar command is described in the man pages (load the On-Line Manual Pages cluster) and in a note below (“Backing up files on diskettes”).

The table below shows the correct formatting command for your diskette type and the method you should use to back up and restore your files:

Diskette Type	Format Command	To Back Up	To Read
SunOS – HD diskettes	fdformat	SNAP Backup bar command	SNAP Restore bar command
SunOS – low-density diskettes	fdformat -L	bar command	bar command
DOS – HD diskettes	FORMAT A:	BACKUP or COPY	RESTORE or COPY
DOS – LD diskettes	FORMAT A: /n:9	BACKUP or COPY	RESTORE or COPY

Backing up files on diskettes – Do not use low-density diskettes, write-protected diskettes, or incorrectly formatted diskettes when using SNAP to back up files. See the “Sun386i SNAP Administration” section of this document for a description of how the SNAP facility behaves if you mistakenly use these types of diskettes.

If you use low-density diskettes to back up SunOS files, you must use the bar command. To save /home/mtravis/myfile on a low-density diskette, insert a formatted diskette into the diskette drive, open a commands window and type:

```
system:1} bar cvfZ /dev/rfd10c /home/mtravis/myfile
```

To extract the same file from the diskette, use the command:

```
system:2} bar xvfZ /dev/rfd10c /home/mtravis/myfile
```

5.25-inch DOS diskettes – If you use a 3.5-inch DOS-formatted diskette with your PC, you won't have any problems switching diskettes between the PC and the Sun386i diskette drive. If you have PC software or data on 5.25-inch DOS-formatted diskettes, there are several ways to make it available on the Sun386i workstation.

- ◆ If your network includes a Sun-3 or Sun-4 with a SunIPCTM board supporting a 5.25-inch diskette drive, you can directly load your software or data onto this Sun workstation. Then make the file(s) available to your Sun386i workstation over the network.
- ◆ If your network includes a PC computer that is running PC-NFSTM, you can mount the software or data on an available network file system. Once the files are on the network, you can store them in a directory of your choosing or copy them onto 3.5-inch diskettes using the Sun386i diskette drive.
- ◆ If you have a PC, you can attach a 3.5-inch diskette drive to your PC and copy the files onto 3.5-inch diskettes. Then you can load them onto the Sun386i from a DOS window.
- ◆ You can attach a (third-party) 5.25-inch diskette drive to your Sun386i workstation and copy the files onto the Sun386i drive. Consult your sales representative for information on 5.25-inch diskette drives that can be connected directly to a Sun386i workstation.

If you connect a 5.25-inch diskette drive to your Sun386i workstation, follow the procedure below to make this drive available through your DOS window.

1. Power up your system after connecting and powering up the diskette drive.
2. Open a Text Editor window and display the file: `~/pc/setup.pc`
3. Modify the line below by deleting the # symbol:

```
#B /etc/dos/defaults/diskette_b
```

4. Then save the file.
5. Open a Commands window. Then type:

```
dos -s
```

6. You can now open a DOS window and confirm that the diskette drive is attached by checking to see that there is a "B:" in the window's name stripe. To make sure the drive is working, put a formatted 5.25-inch diskette in the drive and display the diskette directory by typing:

```
system:2) DIR B:
```

If the drive light goes on and you see the diskette directory (assuming there are files on the diskette), you know that the drive is working.

Updated table of software clusters on diskettes – On page 50 of the *Sun386i System Setup and Maintenance* manual, there is a table describing how the system software is distributed on diskettes. The table is not accurate for Sun386i SunOS 4.0.1. The current numbering of the diskettes is 1 – 2, Recovery/Install; 3 – 13, Core SunOS; 14 – 20, Optional Clusters. (There is no change in the way SunOS is distributed on cartridge tape.) Whenever you need to insert a diskette, however, the system tells you in an onscreen message which diskette to insert, so you do not really need to know these numbers.

The sizes of the optional clusters shown on page 56 have also changed in Sun386i SunOS 4.0.1. You can obtain the current size in kilobytes of the software clusters by typing the command `loadc` in a Commands window.

Along with SunOS, there are two more diskettes: Hardware Diagnostics; and Lock Daemon Fix (to be run on systems with home accounts on a non-Sun386i server).

Loading optional clusters – You can load the optional clusters by using the `loadc` or `load` command in a Commands window. These commands are explained on pages 54–59 of the *Sun386i System Setup and Maintenance* manual. Please note the following changes in this section:

- ◆ You can load the entire set of optional clusters by typing:

```
system:3) loadc appl
```

- ◆ You can load the entire Developer's Toolkit (if you have purchased it) by typing:

```
system:4) loadc devel
```

Installing third-party software – When installing third-party software, you should follow the installation instructions provided with the software. If the instructions do not specify where to store the application, consult Chapter 6 ("Installing Third-Party Software") of *Sun386i Advanced Administration* for instructions.

Installing MS-Windows – See the “DOS Windows and PC Applications” section of this document for instructions on installing the MS-Windows driver on your Sun386i workstation. The driver enables you to install Microsoft's MS-Windows.

Installing communications packages – If you want to use communications packages, such as SunLink™ DNI (Version 6.0), you will have to modify and rebuild the kernel. In general, follow the instructions provided with the software. For SunLink DNI, follow the instructions provided in the “Sun386i Developer's Notes” section of the *Administrator's & Developer's Notes for Sun386i SunOS 4.0.1*.

Restoring Application SunOS – Restoring the system software should be done only if damage to the disk or software makes using your system impossible. This occurs rarely, if ever. The procedure you should follow is found on pages 60–64 of the *Sun386i System Setup and Maintenance* manual. There are some new developments in this procedure, and these are listed below:

- ◆ If you are installing Sun386i SunOS 4.0.1 software on a system that has two disks (one disk in the Sun386i system unit and one in an optional Sun386i expansion unit), you'll see the following menu during installation:

Which disk do you want to be your system disk?

- 1- the one in the system unit (sd2)
- 2- the one in the expansion unit (sd0)
- 3- shutdown

Enter [1 - 3]:

Normally, you should select option 1 (system unit). If you have any version of Sun386i SunOS on the disk in your system unit, the system will boot from that drive. You should not select option 2 on the menu above except under the following circumstances:

- 1. A disk is not present in the system unit.
- 2. You remove Sun386i SunOS from the system unit disk.

Only under these circumstances can you boot your system from the expansion unit disk drive (sd0).

- ◆ If you have an expansion unit attached to your system unit, always wait at least ten seconds between powering off your system unit and expansion unit and powering it on again.
- ◆ Step 7 on page 64 of *Sun386i System Setup and Maintenance* is incorrect. In this step the system asks you:

Do you want to load all the Developer's Toolkit? (y/n):

If you answer **n**, the systems asks you:

Do you want to load any of the Developer's Toolkit? (y/n):

If you answer **n**, proceed to Step 8. If you answer **y**, the procedure asks you to state whether you want to load each individual cluster.
- ◆ Step 8 on page 64 states that you should remove the last diskette and power cycle the system. Do not power down your system until you see the SunOS halted message.

Connecting Peripheral Devices

Chapter 4 of *Sun 386i System Setup and Maintenance* shows you how to connect printers, terminals, and modems that are compatible with the Sun386i workstation. You can find additional information about connecting devices to the Sun386i serial port in Appendix F of the manual. Please take note of the information below, which pertains primarily to special cases.

Printers or terminals that use a null modem cable – When setting up a printer or terminal with a null modem cable that does not implement pin 8 (DCD), you must issue commands to compensate for the missing DCD signal. Chapter 4 and Appendix F of the *Sun 386i System Setup and Maintenance* manual discuss these topics. Null modem cables in which pin 8 (DCD) is active are recommended. If you use one of the recommended cables, you do *not* need to issue the commands described below.

If you use unsupported null modem cables that do not implement the DCD signal (pin 8), follow this procedure after attaching your peripheral device:

1. Log in as root to the system that the device is attached to. See *Sun386i SNAP Administration* for instructions on logging in as root.

2. Type this command to edit the system's `rc.local` file:

```
system: SUPERUSER: 1) textedit /etc/rc.local
```

Add this line to the `rc.local` file:

```
/usr/etc/ttysoftcar -y /dev/tty<port>
```

Note that `port` stands for a lowercase letter designating the serial port. For example, for serial port A, `port` is 'a', so the line would look like this:

```
/usr/etc/ttysoftcar -y /dev/ttya
```

3. You should now reboot your system by typing the command shown below:

```
system: SUPERUSER: 2) /etc/fastboot
```

4. When you see the login screen, type your user name and password as usual. If you have enabled the soft-carrier mode in this manner, then you must disable it if you attach a modem to that port later on. To disable the soft-carrier mode for a single session, type the following command in a Commands window:

```
/usr/etc/ttysoftcar -n /dev/tty<port>
```

This disables soft-carrier mode until you reboot your system (or until you enable again it by retyping the command above with `-y` replacing `-n`). If you want to disable soft-carrier mode on a more permanent basis, remove the line you added to `rc.local` in step 2. Then reboot your system, as described in steps 3 and 4.

Versatec™ printer/plotter – This printer/plotter is not supported on the Sun386i. Therefore the following utilities are not provided:

plotf	rvcat	vpf	vtroff
railmag	rvsort	vplot	vwidth
roffbib -v	rvcat	vpsf	
rotate	vfw	vsort	
rotprt	vfontinfo	vswap	

Serial port speed – The Sun386i serial port sends and receives data at a maximum speed of 9600 bps (bits/second). The maximum speed has been incorrectly stated as 19.2 Kbps in some Sun386i brochures.

Setting up a serial printer – When setting up a serial printer, make sure that the parity setting for the Sun386i serial line and the printer match. Consult the printer manual for instructions on setting printer parity. As shipped, the Sun386i serial line is set to EVEN parity. Normally, you can adjust your printer's parity setting by toggling the DIP switches on the printer.

Modems compatible with the Sun386i – As noted in Chapter 4 of *Sun386i System Setup and Maintenance*, the Sun386i works with Hayes® and Hayes-compatible modems. One exception, however, is the Hayes 2400 Smartmodem™. The Hayes 2400 modem has no external switches. Although it works properly in dial-out mode, it must be software-configured to work properly in dial-in mode. See the “*Sun386i SNAP Administration*” section of this bulletin for instructions on configuring a Hayes 2400 modem for dial-in operation.

The Courier 2400™ modem, made by U.S. Robotics, has been tested and does work with the Sun386i. See page 80 of the *Sun386i System Setup and Maintenance* manual for a discussion of modem boards.

AT serial port driver – You can add up to two additional serial ports to your system by installing AT-compatible serial boards, and then activating the SunOS software required to operate the boards. Serial boards installed this way are accessible to both DOS and SunOS. Standard AT COM1/COM2 boards provide one or two serial ports. Multiport (4, 8, or 16) serial boards are also available from some PC equipment vendors, but you must use a third-party driver or your own custom-written driver to access them.

To install the board and make it accessible to SunOS and DOS:

1. Use the `su` command in a Commands window to become superuser. For information on using the `su` command, see *Sun386i SNAP Administration*.
2. Open the system's `rc.local` file in a Text Editor window for editing:
`system: SUPERUSER:1) textedit /etc/rc.local &`
3. Edit the file, removing the `#` symbol from the following line:
`#modload ats.o -exec ats.script -conf ats_conf && chat 'AT
serial port driver.'`
4. Save the file, and quit the Text Editor.
5. Type the following commands:

```
system: SUPERUSER:2) cd /etc/dos/defaults
```

If the serial port is to be used as COM2, type:

```
system: SUPERUSER:3) mv com2 com2.orig
```

```
system: SUPERUSER:4) ln -s /dev/ttyml com2
```

Note that `ttym1` will be created by the `modload` command in the `rc.local` file, which runs when you reboot the system in Step 8. The same is true for `ttym0`, when the serial port is COM1. If the serial port is to be used as COM1, type:

```
system: SUPERUSER:5) mv com1 com1.orig
```

```
system: SUPERUSER:6) ln -s /dev/ttyml0 com1
```

6. Check your `~/pc/setup.pc` file to ensure that the `com<n>` line you are using is *not* commented out (it should *not* have the `#` symbol at the start of the line).

7. Save your work and quit any open DOS window on your Desktop.
8. You should now reboot your system by typing the command shown below:

```
system: SUPERUSER: 7) /etc/fasthalt
```

 After you see the SunOS halted message, you can shut off your system. You must shut off your system to install the serial board in Step 9.
9. Set the switches or jumpers on the serial card or modem card for the appropriate interrupt levels and I/O addresses. You may choose COM1 (interrupt level 4, address 3f8, port name ttym0), COM2 (interrupt level 3, address 2f8, port name ttym1), or *both*. Then install the board or card in the system unit. Consult Appendix B of *Sun386i System Setup and Maintenance* as well as "Before Setting Up Your System" in this document for illustrated instructions.
10. After the board is installed, you can power up your system again. When you see the login screen, type your user name and password as usual. The serial board is now accessible, even if you need to reboot your system later on.
11. If you wish to undo the work in steps 1 - 10, you should comment out the line in Step 3 by adding the # symbol in front of the line. Then reboot your system, using the method described in Step 8.
12. If you see the message `vd load: none of the specified devices on line` in your System Messages window, this means your serial board is not connected or seated properly. In this case, shut down the system and physically reinstall the serial board. Then repeat Steps 9 and 10 above.

Testing Your System

Testing the system is explained in Chapter 5 of *Sun386i System Setup and Maintenance*. The notes that follow here provide some additional tips on running the System Exerciser.

System Exerciser requires 8 Mbytes of memory - To run the System Exerciser, you must have 8 Mbytes of memory installed on your system's memory board.

Before running the System Exerciser - To run the System Exerciser, you must disable the `screenblank` feature. The `screenblank` feature preserves the life of your screen by "blanking" it if your system is unused for 30 minutes. To disable `screenblank`, follow the steps shown below:

1. Open a Commands window and use the `su` command. See Chapter 5, page 87, of *Sun386i System Setup and Maintenance* for details.
2. When you see the superuser prompt, type the line below:

```
system: SUPERUSER: 1) ps -ax | grep screenblank
```
3. The system will return a process ID number for `screenblank`, for example:

```
419 screenblank
```
4. Then use the `kill -9` command along with the `screenblank` process ID number, as shown below:

```
system: SUPERUSER: 2) kill -9 419
```

After the System Exerciser finishes testing your system, you can enable `screenblank` by typing the following command in a Commands window:

```
/usr/bin/screenblank
```

System Exerciser and DOS - Before running the System Exerciser, close all DOS windows. Otherwise, the System Exerciser may not run properly.

Starting the System Exerciser – Start the System Exerciser by typing the following command in a Commands window:

```
system: SUPERUSER: 3) sysex -C
```

This preserves your original System Messages window on the Desktop, even after you quit the System Exerciser. Otherwise, if you simply enter **sysex** without the **-C** option, you have to bring up a new System Messages window from the Desktop menu after you quit the System Exerciser.

Diskette test – Before you start the System Exerciser diskette test, you must have a formatted diskette ready and waiting in the diskette drive. If you select all tests on the System Exerciser control panel, the diskette test will finish about one-half hour after the test begins.

Tape drive test – If there is no cartridge tape in the tape drive, the Tape Device test selection does not appear in the list of test selections. If you forget to insert a tape, you must insert a tape and then restart the System Exerciser.

Continue/Pause control button – On the control panel, below the **Quit Sysex** and **Start tests** buttons, there is a new control button labeled **Continue/Pause**. This button enables you to pause and resume the test rather than quit and start again. Here are two reasons you may want to pause and then continue the test:

- ◆ Your system fails to communicate with the diskette in the diskette drive (or the tape in the tape drive), and you believe that the diskette or tape itself may be defective. Clicking on the **Pause** button stops the test temporarily while you remove the questionable diskette (or tape) and insert a new one. When you have replaced the diskette or tape, you can click on **Continue** to resume the test where you left off.
- ◆ If you are expecting important electronic mail, or you have a pressing deadline to complete work, you can pause the System Exerciser, check your mail or perform some other work on your system, and then continue the System Exerciser without having to repeat any of its earlier tests.

Sun386i User's Guide

Getting Started

Below are descriptions of new Desktop features that do not match those discussed in Chapter 1 of the *Sun386i User's Guide*.

Logging In

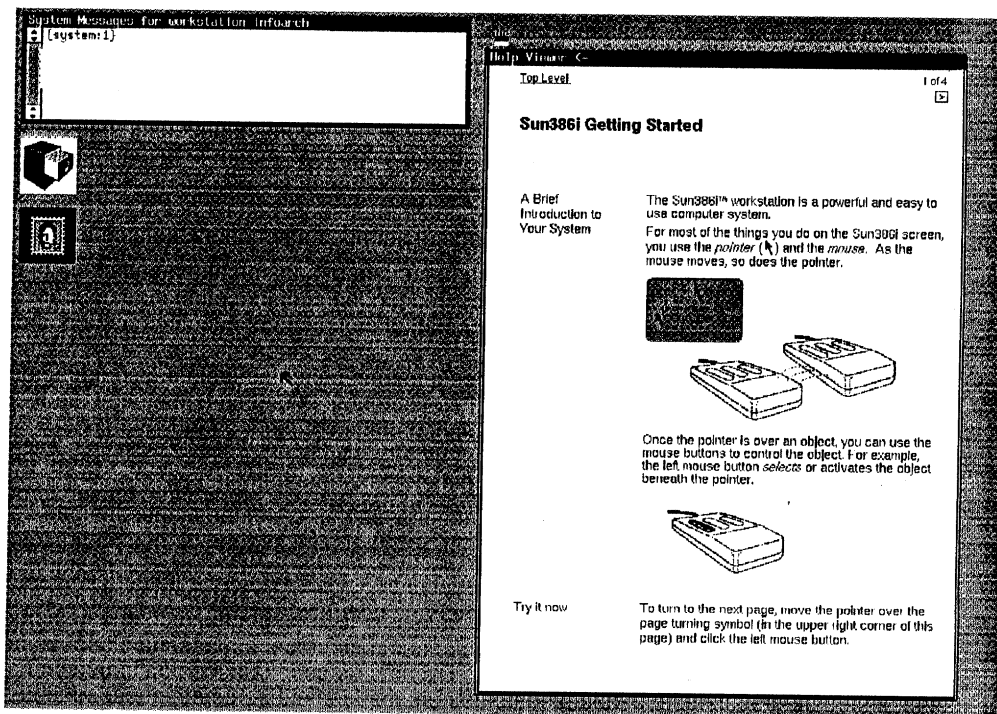
If you see the message "no home directory" after logging in – Sometimes users who create their own user accounts as they log in (see page 5 of the *Sun386i User's Guide*) may see a screen message "no home directory." If this happens to you, try logging out (type **logout** at the prompt and press **(Return)**) and then try logging in again. The network creates a record for each new user account, and if several users are joining the network at once, the network software may need a little time to catch up.

The Desktop Display

The blue background of the Desktop – If you have a color monitor, the SunView Desktop you see after you log in has a blue background (not gray, as described on in Chapter 1 of the *Sun386i User's Guide*).

You can change the color of your Desktop background; see the note on "Changing Desktop color" in the section of this bulletin called "*Sun386i Advanced Skills*."

The images on the Desktop – As shipped, the Sun386i comes ready to display a Desktop that differs somewhat from the display pictured on page 7 of the *Sun386i User's Guide*. Your Desktop display may have been customized to display particular applications, but if not, you will see this SunView Desktop display after you log in:

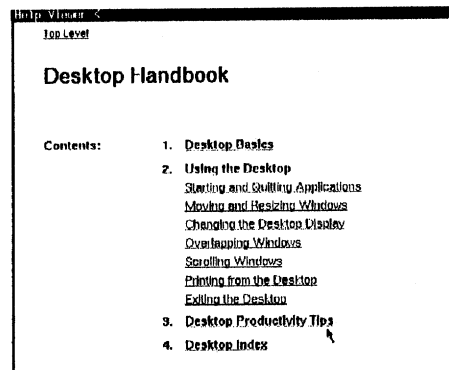


"Sun386i Getting Started" – The very first time you log in, a window opens on the Desktop labeled "Sun386i Getting Started" (see above). In this window you can read text that guides you easily through the first steps of using your system. This brief tutori-

al is your introduction to the SunView Desktop and the Help Viewer, an on-screen help facility that comes with your Sun386i.

If you read through the "Sun386i Getting Started" and follow the link provided on its last page to another Help Viewer topic called "Desktop Basics," you will change the way the Help Viewer appears the next time you log in. Instead of coming up as an open window with the "Sun386i Getting Started" loaded, it will come up as an icon with the "Help Basics" topic loaded. If you decide you want to read "Sun386i Getting Started" again, open the Help Viewer and find it in the Top Level table of contents (refer to pages 24–25 of the *Sun386i User's Guide*).

Additional information in the Help Viewer's "Desktop Handbook" – There is now a topic in the "Desktop Handbook" called "Desktop Productivity Tips" that offers ideas on how to get the best performance from your system. (See Chapter 1 in the *Sun386i User's Guide* for directions on how to use the Help facility.)



Working on the Desktop

Chapter 2 of the *Sun386i User's Guide* introduces you to the basics of working in windows on the Desktop. Here is some new information related to that chapter.

Automatic window closing – Two Desktop applications—the Help Viewer and Sun Organizer™—close to icons automatically after you have left them open and idle for 10 minutes. A message appears in the System Messages window to let you know why these applications closed. This automatic window closing frees up your system's resources to enable it to respond more quickly to the requests you make of it. In no way does the closing of these windows affect their contents. To reopen these applications, just click left on their icons. When you reopen the Help Viewer, you'll see whatever page of information you last had open. In the Organizer window you'll see the effects of your recent work on the files and directories in the current (displayed) directory. To disable or modify this feature, see the note in this document in the section "*Sun386i Advanced Skills*."

Automatic screen closing – On page 42 of the *Sun386i User's Guide*, it says that if you don't use your system for 20 minutes, the screen automatically closes the Desktop display and fills with a bouncing image of the Sun logo (this is the screenblank feature). Actually, the system can be idle for 30 minutes before the screen closes.

Copying and pasting data between windows – It's a good idea to use the **Copy** and **Paste** keys on the left keypad for performing copy and paste functions between windows. Using menu selections for these functions may result in "time-out" messages in your System Messages window and the screen freezing for 30 seconds. This problem

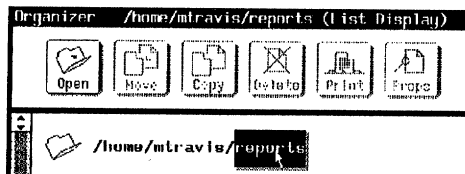
occurs most often when using menu options to paste information from a DOS window into another window.

Managing Your Files

Below is some up-to-date information about Sun Organizer, described in Chapter 3 of the *Sun386i User's Guide*.

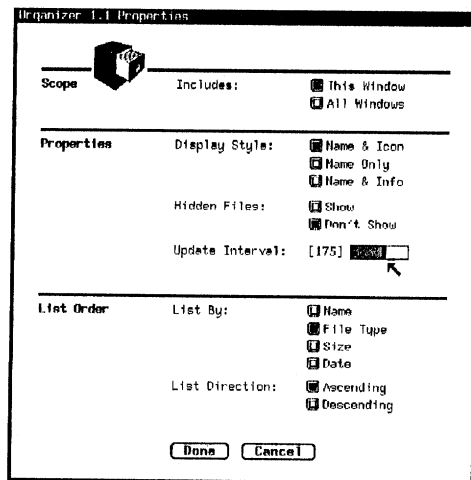
Moving the "Drop" panel out of the way – When you move or copy a file in Organizer, a small panel appears with a message asking you to select the directory or window where you want to "drop" the file. You can move this panel if it's in your way. Use the mouse to move the move/copy cursor over and onto the frame of the panel. If the cursor is placed just right on the frame of the Drop panel, you'll see a target cursor, just like the one you see when you move any window on the Desktop. Press and hold the middle mouse button, and move the panel wherever you like within the window.

Updating the Organizer display – The *Sun386i User's Guide* describes how to fill in visual "holes" left in the Organizer window after moving or deleting files by selecting **Update Display** from the Organizer menu. Another method is to double-click left on the current directory name in the path listed in the upper left corner of the window.



Organizer display properties panel – The Organizer "Props" window (described on page 69 of the *Sun386i User's Guide*) now has an Update Interval slider that gives you the option of telling Organizer how often you want the display updated.

To set the slider, press and hold the left mouse button as you slide the cursor along the slider bar. Stop when you see the interval (number of seconds) you want in the adjacent brackets.



This feature gives you greater control over your system's performance. If you want quicker response, set the Update Interval for "0". This tells Organizer not to update the display automatically. With a setting of "0", Organizer will update only when you select **Update Display** from the menu under the **Display** button.

Note: If you point and click on the far right side of the slider, instead of sliding gradually right with the mouse, you may inadvertently set a very long time interval. Just reset the interval as described above.

Why Organizer may be unable to display a file – If you can't find a file you expect to see in a directory on display in Organizer, the file you seek may be a shared network file located on a network system that is "down" or at least not working properly. For more information on shared network files, see page 136 of the *Sun386i SNAP Administration* manual.

Resizing the Organizer window – It is possible to resize the Organizer window so that it is completely off the screen. If this happens, and Organizer displays a message in a panel (such as asking you to confirm or cancel a file operation), the panel itself may be offscreen, where you can't get at it with the mouse. If this happens, press **[Return]** to confirm the operation and dismiss the message panel.

If you invoke two unrelated Organizer windows – If you invoke Organizer twice, either by command or from the Desktop menu, you will have two unrelated Organizer windows, running as two separate processes on the Desktop. In this case, you cannot copy or move files from one windows to the other. If you like the convenience of working in two Organizer windows, see page 62 of the *Sun386i User's Guide* for a description of how to open a related, second Organizer window to aid you with moving and copying files.

Tips on naming SunOS files – Sun386i Desktop applications such as Sun Organizer make it easy to create "plain English" names for SunOS files. For example, you can use spaces between words in a file name instead of the underlines or periods typically associated with SunOS files.

While file names containing spaces, asterisks (*), and question marks are acceptable in the SunOS file system, they are not always interpreted correctly by other SunOS applications and commands. Therefore, avoid creating file names containing spaces, asterisks, or question marks unless you plan to use these files only within Organizer, or within an application that supports these special characters in file names.

How to Use the Text Editor

Using the **[Esc] key to load a file** – On pages 79–80 of Chapter 4, the *Sun386i User's Guide* offers a shortcut method for loading a file in the Text Editor window using the **[Esc]** key. This method does not work.

Sending and Receiving Mail

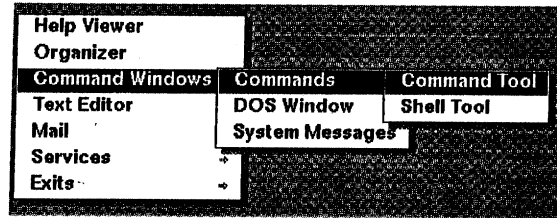
Chapter 5 of the *Sun386i User's Guide* discusses Mail, the electronic mail facility that comes installed on your Sun386i system. Note the minor change below.

Mail window name stripe – Page 99 of the *Sun386i User's Guide* states that the name stripe of the window tells you in which directory your mail arrives and is stored. Actually, the name stripe tells you the name of the current mail folder whose contents are displayed in the summary window.

Introduction to Commands

Following is some new information about command windows on your Sun386i. See Chapter 6 of the *Sun386i User's Guide* for more details.

Command windows on the Desktop menu – The Desktop menu has a pull-right menu under **Commands** that is not described in the *Sun386i User's Guide* (see the illustration below).



Command Tool is the Commands window described in Chapter 6 of the *Sun386i User's Guide*. Shell Tool, like Command Tool, is a window for entering commands directly to the system. The main difference between them is that Command Tool has a scroll bar and retains a record of past activity in the window. You can scroll backward through the window to see the commands you have entered and the results (output) of those commands. On the other hand, Shell Tool has no scroll bar and keeps no such record. Command Tool permits full text editing anywhere in the window; Shell Tool does not (only the command line can be edited). However, Shell Tool produces faster output and is therefore the better performer.

About Applications

Chapter 7 of the *Sun386i User's Guide* does not mention that PC applications developed specifically for the Intel 80286 or 80386 microprocessor may not be compatible with the Sun386i. Check the application manual to be sure the application is compatible with MS-DOS® running on an 8086 or 8088 microprocessor. If it is, it should run in DOS Windows on your Sun386i system. (Ask your Sun sales representative for up-to-date information on DOS application compatibility.)

The Sun386i Keyboard

Right keypad – Some SunOS applications cannot correctly interpret the keys on the right (numeric) keypad. For instance, the Text Editor does not properly handle input from the **Ins** and **Del** keys. These keys work in DOS applications that support them.

Num Lock key enabled in all SunView windows – When you press the **NumLock** key and then press one of the numbered keys (**R1** through **R15**) on the right keypad, the character on the upper part of the key is generated rather than its function.

The **NumLock** key now works this way in *all* SunView windows, not just in DOS Windows, as was the case in the previous release of Sun386i SunOS (4.0). If you are using an application and **NumLock** doesn't work properly, the application was probably configured to support the earlier version of Sun386i software. To correct this situation, enter the following command in any command window:

```
system:1) disablenumlock
```

This reinstates the older version of **NumLock** functionality and permits the key to work properly with your application even as it runs under the newest version of the software (4.0.1). You can enter the command "enablenumlock" if you need to restore the newest version of **NumLock** functionality to conform with other applications you may be using.

Compose key does not work in Shell Tool window – The **Compose** key, which enables you to produce special characters, works in all SunView Desktop windows with scroll bars. Thus it does not function in the Shell Tool window. For more information about the **Compose** key, see Appendix C in the *Sun386i System Setup and Maintenance* manual.

Sun386i SNAP Administration

There are two books that cover administration for the Sun386i workstation—*Sun386i SNAP Administration* and *Sun386i Advanced Administration*. This section contains corrections and additions to *Sun386i SNAP Administration*. For corrections and additions to *Sun386i Advanced Administration*, see the *Administrator's & Developer's Notes for Sun386i SunOS 4.0.1*.

The *Sun386i Advanced Administration* manual may be useful to you as a system or network administrator. This book provides information on topics such as manually installing systems and creating user accounts, installing third-party software, repartitioning disks, Yellow Pages, and advanced network administrative tasks. Every site should have at least one copy of *Sun386i Advanced Administration*. This book is part of two documentation sets—the Sun386i Owner's Supplement documentation set (part no. SR-9B), and the Sun386i Documentation Conversion Set (part no. SR-9D). The Conversion Set includes the books specific to the Sun386i workstation, not included in the SunOS 4.0 documentation set.

System Administration Basics

The following are software and documentation notes pertaining to Chapter 1 of the *Sun386i SNAP Administration* manual.

SNAP tasks – The tasks you can perform using SNAP do not include installing software or managing domain policies (setting Automatic System Installation and New User Accounts). (This is documented incorrectly on pages 8, 9, 135, and 158 of *Sun386i SNAP Administration*.) Also, all illustrations of the menu showing the SNAP categories are incorrect. SNAP does not contain the **Policies** and **Networks** categories. For details on how to set domain policies, see the note on “Domain policies” later in this section.

Root restriction using SNAP and Organizer – The superuser privileges do not apply to SNAP and you should not be superuser or root when using SNAP. If you do invoke SNAP when you are logged in as root, you will only be able to use the Backup and Restore categories. Also, as root you cannot use Organizer.

Invoking SNAP – If your system is on a network and you attempt to start SNAP when the master server (Yellow Pages master) is not working, there can be a long delay (two minutes or more) before SNAP displays an error message. If, when you start SNAP, it seems to be taking a long time, check that the master server is running.

To find out the name of the master server on your network, enter the following command:

```
system:1) ypwhich -m netid.byname
```

Then enter the following command (replacing *masterservername* with the actual name of the master server) to see if the master server is working:

```
system:2) /usr/etc/ping masterservername
```

If the master server is working, the following message will be displayed:

```
masterservername is alive
```

If the master server is *not* working, the following message will be displayed:
no answer from *masterservername*

Displaying SNAP category entries - SNAP can take several minutes to generate the list of entries for a category (in the bottom panel), depending on the number of entries in the category.

SNAP error messages - When SNAP displays an error message about a required map entry not being present in the network Yellow Pages database (YP), the names that it uses are not always the same as the Yellow Pages map names or the map's master file in /etc on the master server.

Map names used by SNAP that are not the same as file names in the directory /etc on the YP master are listed below:

Name from SNAP	Master YP (or other) File
autohome	/etc/auto.home
bootparam	/etc/bootparams
group	/etc/ypgroup
mail_alias	/etc/ypaliases
mail_aliases	/etc/ypaliases
modemcap	/etc/remote
modemcaps	/etc/remote
passwd	/etc/yppasswd
print_caps	/etc/ypprintcap
printcap	/etc/ypprintcap

SNAP task fails - If you are using SNAP to perform any administrative task and SNAP fails and displays a message stating only "Could not prepare changes to Yellow Pages," you might be able to correct the problem by rebuilding the Yellow Pages database. To do this, become superuser on the master server, enter the following commands, and then exit from superuser.

```
SUPERUSER) cd /var/yp
SUPERUSER) rm *.time
SUPERUSER) make
```

Changing the root password - Changing the root password is documented incorrectly on page 22 of *Sun386i SNAP Administration*. To change the root password, become superuser and use the passwd root command:

```
system:3) su
SUPERUSER) passwd root
Changing password for root on system.
New password:
Retype new password:
```

Where to put files – The directories listed for storing files are incorrect on page 26 of *Sun386i SNAP Administration*. If you load any of the optional Sun386i applications, called clusters, the system automatically places it in the `/files/cluster` directory. Store third-party application files in the `/files/vol` directory. See *Sun386i Advanced Administration*, Chapter 6, for details on installing application software.

Administration files – The administration files you should periodically check are incorrectly shown on page 29 of *Sun386i SNAP Administration*. These files are in the `/var/adm` directory, not the directory `/files/var/adm`.

Changing the date and time – If the date and time on a standalone system or the master server for the network differs from the actual date and time by more than a few minutes, *immediately* set the correct date and time according to the instructions on page 32 of *Sun386i SNAP Administration*, but do not exit from superuser. Then enter the following additional commands:

```
SUPERUSER) cd /var/yp
SUPERUSER) rm *.time *.push
SUPERUSER) make
```

If you are setting the date and time on the master server, first reboot the boot servers and then reboot all the other systems on the network for this change to take effect throughout the network.

Backing Up and Restoring Files

The following are software and documentation notes pertaining to Chapter 2 of *Sun386i SNAP Administration*.

Backup schedule – A daily incremental backup copies the files modified since the last daily backup, not the files modified that day as stated on page 34 of *Sun386i SNAP Administration*.

SNAP Backup media – You cannot use low density diskettes (720 Kbytes) for SNAP backups. If you try to do so, the system will display two messages in the System Messages window—one prompting you to place another diskette in the drive and one including “Missing header address mark.” These messages will also be displayed if the diskette has not been formatted or has been formatted incorrectly.

When using SNAP Backup with diskettes, make sure the diskettes are write-enabled. If you try to use SNAP to back up to write-protected diskettes, the system will display two messages in the System Messages window—one prompting you to place another diskette in the drive and one including “Write protected.”

Also, these errors can occur when using any command (`bar`, `tar`, or `dump`) that accesses the diskette drive (except for a DOS command), not just when using SNAP.

Performing SNAP backups and restores – If diskette drive A is attached from DOS, you must detach it to use the diskette drive for a SNAP backup or restore. To detach drive A, use the **Device** menu and set “Diskette A” to “Don't Use.” For more details on detaching a drive, see the *Sun386i User's Guide*, page 155.

Backing up DOS files – You enter the DOS FORMAT command in a DOS window, not a Commands window as stated on page 46 of *Sun386i SNAP Administration*.

SNAP Backup catalog – The backup catalog is located in the ~/ .backup directory. (This information is omitted from the discussion on logging backups, starting on page 51 of *Sun386i SNAP Administration*.)

Restoring files to be owned by another user – The option to restore files and have them be owned by another user through the property sheet in SNAP's Restore category does not work. No error is reported when this is not successful. Instead, you should restore the files through SNAP and then use the chown command from a Commands window to change the ownership of those files. For details on the chown command, see page 24 of *Sun386i SNAP Administration*.

Restoring files to their original disk – When restoring files, you must use SNAP on the system that originally contained the files. For example, when restoring a user's home directory files, use SNAP Restore on the home directory server for that user. If you attempt to restore files across exported files systems, the files may not be restored or may not belong to the original owner.

Restoring files with the setuid and setgid bits set – If the real user ID of SNAP is not root when files are restored, files with the setuid and setgid bits set in their umask will not have those bits set when they are restored. When restoring files with the setuid or setgid bits set or when restoring all system files, invoke SNAP from root or superuser. SNAP Restore will then restore the files with these bits set.

Using the diskette drive – You should not schedule two or more backups or restores for the same time. The bar, tar, and dump commands do not open the diskette drive for exclusive access. This means that more than one of these commands can access the diskette drive at the same time, resulting in corrupted output. SNAP Backup and Restore use the bar command.

Printers, Terminals, and Modems

The following are software and documentation notes pertaining to Chapter 3 of *Sun386i SNAP Administration*.

Printer name – When using SNAP to add or modify a printer, you can change the printer's name if it is *not* lp. (This is documented incorrectly on pages 68 and 70 of *Sun386i SNAP Administration*.) The printer with the name lp is the default printer for the system or the network.

Printer type – When using SNAP to add a printer, the default printer type is always Text-only, regardless of the port selected. This is documented incorrectly on page 68 of *Sun386i SNAP Administration*.

Powering down a parallel printer – Some parallel printers cause the Sun386i system to "hang" if they are turned off during printing. If you experience this problem, you should power cycle your system. Be sure to see the note about power cycling in the section of this bulletin called "Before Setting Up Your System."

Changing terminal settings - If you modify certain characteristics of a terminal from SNAP (such as speed, terminal type, or enable/disable) while someone is logged in on that terminal, that person will be logged out automatically and all work in progress will be aborted as soon as the changes are saved. Consequently, you should notify any user logged in on such a terminal before modifying the terminal characteristics.

Hayes 2400 modem - You cannot use SNAP to add a Hayes 2400 modem to the Sun386i system if you want to dial in on the modem. However, you can still use SNAP to install this modem if you only want to dial out on it. To install the Hayes 2400 modem so that you can dial out and dial in on it, use the following instructions. These instructions assume that you are connecting the modem to the serial port on the system unit (ttya).

1. Connect the modem to the system and turn it on. You need a straight through cable from the ttya port to the modem.
2. Log in on the system and become superuser.
3. Enter the following command:
SUPERUSER) **ls -l /dev/ttya**
The following text (or similar) should appear:
crw--w--w- 1 root 12,0 sep 17 18:27 /dev/ttya
4. Enter the following commands:
SUPERUSER) **cd /dev**
SUPERUSER) **mknod cua0 c 12 128**
SUPERUSER) **chmod 666 cua0**
SUPERUSER) **chown uucp cua0**
SUPERUSER) **mv ttya ttym0**
5. Modify the /etc/remote file and add a fake entry so that you can talk directly to the Hayes 2400 modem. The entry should look like this:
fakeit:\
:dv=/dev/cua0:br#2400:
6. Turn the modem off, then on.
7. Enter the following commands *exactly* as shown:
SUPERUSER) **tip fakeit**
SUPERUSER) **AT&F&D2VQE0L0S0=1&C1&S1B1M1&W**

The above command makes the following settings:

AT	Modem attention
&F	Load factory stored configuration from ROM
&D2	DTR control
V	Numeric result codes
Q	Modem returns result codes
E0	No echo
L0	Low speaker volume
S0=1	Answer mode
&C1&S1	Detect presence of DATA CARRIER
B1	Select bell-212A in 1200 baud mode

- M1 Speaker on until carrier detect
 &W Write current configuration into EEPROM; the modem saves this setting and restores it every time you power up.
8. Exit tip by entering ~. and then power off and on the modem.
 9. To enable dial-ins on the modem line (tty0), modify the /etc/ttytab file by adding the following line:


```
tty0  "/usr/etc/getty D2400"  dialup  on
```
 10. Still as superuser, enter the following command that instructs the system to start looking for a login on tty0:


```
SUPERUSER} kill -1 1
```
 11. You can now remove the "fake" (fakeit) entry in the /etc/remote file.

Expansion Unit

The following are software and documentation notes pertaining to Chapter 4 of *Sun386i SNAP Administration*.

Expansion unit disk - *Sun386i SNAP Administration* does not cover how to create swap space on the disk in the expansion unit, if this is the second disk on the system. To create swap space on this disk, you must repartition the disk. See *Sun386i Advanced Administration*, Chapter 7, for details on how to do this.

If your system has two disks, one in the system unit and one in the expansion unit, you should boot off the system unit disk. See *Read This First* for more specific information.

Setting Up the Expansion Unit Disk

Use of the expansion unit disk - Note that once the disk in the expansion unit is set up for home directories, SNAP will place all new home directories for this system on the expansion unit disk. This is also true for root, swap, and usr directories for diskless clients. SNAP will place all new diskless client directories that this system supports on the expansion unit disk.

Using the newfs command - When setting up a second disk for the Sun386i system in the expansion unit (sd0), if you enter the following command as specified on page 96 (step 6) of *Sun386i SNAP Administration*, all software is removed from this disk:

```
SUPERUSER} newfs /dev/rsd0c
```

If, for some reason, your system unit disk is non-operational and your system is already booting off the disk in the expansion unit, entering this command will make your system inoperable. Before entering this command you should verify that the system disk and expansion unit disk are functioning.

Before performing step 6, do the following two steps:

- 5a. Check that the *system unit* disk is connected and functional by entering the following command:

```
system:1} /usr/etc/dkinfo sd2
```

The system disk is operational and you can continue to step 5b, if you get a message like this:

```
sd2:CCS-compatible SCSI controller at addr fb000000,unit #16
1544 cylinders 9 heads 46 sectors/track
a: 10764 sectors (26 cyls)
  starting cylinder 0
b: 31878 sectors (77 cyls)
  starting cylinder 135
c: 639216 sectors (1544 cyls)
  starting cylinder 0
g: 45126 sectors (109 cyls)
  starting cylinder 26
h: 551448 sectors (1332 cyls)
  starting cylinder 212
```

The disk in the system unit is not operational if you get a message like this:

```
a: No such device or address
b: No such device or address
c: No such device or address
d: No such device or address
e: No such device or address
f: No such device or address
g: No such device or address
h: No such device or address
sd2: no such disk
```

Make sure that all the cables are securely connected and try the command again. If you cannot get the system disk to respond, contact your support organization.

- 5b. Check that the *expansion unit* disk is connected and functional by entering the following command:

```
system:2} /usr/etc/dkinfo sd0
```

The expansion unit disk is operational and you can complete the installation instructions on pages 96-97 (steps 6 through 10), if you get a message like this:

```
sd0:CCS-compatible SCSI controller at addr fb000000,unit #16
1544 cylinders 9 heads 46 sectors/track
a: 10764 sectors (26 cyls)
  starting cylinder 0
b: 31878 sectors (77 cyls)
  starting cylinder 135
c: 639216 sectors (1544 cyls)
  starting cylinder 0
g: 45126 sectors (109 cyls)
  starting cylinder 26
h: 551448 sectors (1332 cyls)
  starting cylinder 212
```

The disk in the expansion unit is not operational if you get a message like this:

```
a: No such device or address
b: No such device or address
c: No such device or address
d: No such device or address
e: No such device or address
f: No such device or address
g: No such device or address
h: No such device or address
sd0: no such disk
```

Make sure that the cable from the system unit to the expansion unit is securely connected and that the expansion unit is turned on. Try the command again. If you cannot get the expansion unit disk to respond, contact your support organization.

Specifying Use of the Expansion Unit Disk

Chapter 4 of *Sun386i SNAP Administration*, pages 96-97, step 10, explains how to specify the use of a second disk. A step is missing from these procedures. You must create the directory that the symbolic link points to. See the examples below.

For new home directories (/files1/home):

```
SUPERUSER) rm /etc/where/home
SUPERUSER) mkdir /files1/home
SUPERUSER) ln -s /files1/home /etc/where/home
```

For root directories of diskless clients (/files1/root):

```
SUPERUSER) rm /etc/where/root
SUPERUSER) mkdir /files1/root
SUPERUSER) ln -s /files1/root /etc/where/root
```

For swap directories of diskless clients (/files1/swap):

```
SUPERUSER) rm /etc/where/swap
SUPERUSER) mkdir /files1/swap
SUPERUSER) ln -s /files1/swap /etc/where/swap
```

For /usr directories of diskless clients (/files1/exec):

```
SUPERUSER) rm /etc/where/exec
SUPERUSER) mkdir /files1/exec
SUPERUSER) ln -s /files1/exec /etc/where/exec
```

Also, you cannot use the instructions included in Chapter 4 of *Sun386i SNAP Administration* to set up the second disk for applications. See *Sun386i Advanced Administration*, Chapter 6, for details on installing application software.

Users and Groups

The following are software and documentation notes pertaining to Chapter 5 of *Sun386i SNAP Administration*.

SNAP administration of user accounts - If a user account was added according to the instructions in *Sun386i Advanced Administration*, you can perform other SNAP tasks on the user account. (This qualification was omitted from the note on page 100 of *Sun386i SNAP Administration*.)

Standard UNIX user and group accounts - The standard UNIX user and group accounts are now displayed in SNAP. You can view these accounts, but you cannot modify or remove them. Before one of these accounts is displayed, you will see a message stating there is a missing entry in the auto.home map; ignore this message. None of the standard UNIX groups can be assigned as a user's primary group using SNAP; however, these groups can be assigned as secondary groups.

The standard UNIX user accounts are: nobody, root, sync, sys, sysdiag, and uucp. The standard UNIX group accounts are: audit, bin, daemon, ingres, kmem, news, nogroup, other, staff, tty, and wheel.

Creating User and Group Accounts

Creating user and group accounts – When adding a new user or group account with SNAP, there is a pause between clicking on **Save** and the appearance of the confirmer pop-up. This is because SNAP creates the remote home directory and mounts all the exported file systems from the server containing the default files before it asks for confirmation. This pause can be anywhere from 20 seconds to several minutes, depending on the number of exported file systems on that server and the network load.

User account creation fails – If when creating a user account with SNAP or through New User Accounts, the user account is not created and you see a message stating only "Could not prepare changes to Yellow Pages," (New User Accounts places this message in the /var/adm/messages file), you might be able to correct the problem by rebuilding the Yellow Pages database. To do this, become superuser on the master server, enter the following commands, and then exit from superuser.

```
SUPERUSER) cd /var/yp
SUPERUSER) rm *.time
SUPERUSER) make
```

Recovering after a system failure when creating user and group accounts – If any system that is involved in the creation of a user or group account through New User Accounts or SNAP fails during this process, extraneous files may be left on the systems. Examine the systems concerned to remove these files after such failures. See *Sun386i Advanced Administration*, Chapter 3, for more details on the files involved in the user accounts.

If this failure occurred when creating a *user account* and the account cannot be displayed in SNAP, try to create it again using the same user name as the first time. If, when you do this, SNAP states that it cannot create the home directory for this account, the home directory may have been created and exported during the first, aborted attempt at creating this user account. In this case, verify that the home directory exists.

To verify that the home directory for this user already exists:

1. Log in to the home directory server for this account.
2. Enter the following command:

```
system:1) cd /export/home/groupname/username
```

If the system does *not* display an error message stating "No such file or directory," the home directory does exist for this user.

If the home directory does exist, you must manually delete these files. To do so:

1. While still logged in to the home directory server for this account, become superuser:

```
system:2) su
```
2. Unexport the directory by entering the following command:

```
SUPERUSER) exportfs -u /export/home/groupname/username
```

This command might display an error message like:

```
exportfs: /export/home/groupname/username: Invalid argument
```

If you get this message, ignore it and continue with this procedure.
3. Edit the /etc/exports file and delete the following line:

```
/export/home/groupname/username -access=domain
```

4. Remove the symbolic link to this directory with the following command:
SUPERUSER) **rm /export/home/groupname/username**
5. Remove the directory and any files it may contain with the following command:
SUPERUSER) **rm -rf /files/home/groupname/username**
6. Exit superuser.
SUPERUSER) **exit**

If the system failed during the creation of a *group account*, rather than a user account, and the account cannot be displayed in SNAP, the procedure is exactly the same except that you should replace *username* with *groupname* in the series of commands. For example, the first command shown above would be as follows for a group account:

```
system:1) cd /export/home/groupname/groupname
```

If the failure occurred on the master server, in the latter stages of the process—after you confirm that you want to add the user or group—SNAP will still be unable to add the user or group after doing the above steps. SNAP will display a message stating it is unable to add the user or group due to “internal error.” If this happens, perform the following additional steps:

1. Log in on the master server and become superuser.
2. Edit the `/etc/yppasswd` file, removing the line that references the user or group account you were creating. If you were creating a user account, note the user's ID for use in step 4 below. (The user ID is the number in the second field of the entry.)
3. Edit the `/etc/ypgroup` file, removing all references to the user or group account you were creating.
4. If you were creating a user account, edit the `/etc/publickey` file and remove the entry that corresponds to the user ID you noted in step 2.
5. Edit the `/etc/ypaliases` file, removing all references to the user or group account you were creating.
6. Edit the `/etc/auto.home` file, removing all references to the user or group account you were creating.
7. Enter the following command:
SUPERUSER) **cd /var/yp;make**
8. Quit SNAP and restart it. You should now be able to create the user or group account.

Default files for new user accounts – The default files for new user accounts are copied from the `~groupname/defaults` directory. (This information was omitted from page 116 of *Sun386i SNAP Administration*.)

Passwords – Passwords can contain spaces. (This is stated incorrectly on pages 104 and 108 of *Sun386i SNAP Administration*.)

User names – A user name must begin with a letter. Also, if you let SNAP automatically create a user name (based on the user's first initial, last name) and the name is already taken, SNAP does not create a user name. Instead, SNAP displays a message stating the name is already in use and to enter another one. If this happens,

just enter a user name that you think will be unique. (This information was omitted from page 102 of *Sun386i SNAP Administration*.)

Home directory server – SNAP displays all the systems on the network as available to be home directory servers, regardless of whether the system actually can handle a home directory. For example, diskless systems will be displayed in the list of choices. If you select a system that cannot be a home directory server, SNAP does not set up the user account and gives you the message, "Could not set up the home directory." (This information was omitted from page 103 of *Sun386i SNAP Administration*.)

Adding groups – If, after adding a group through SNAP, you select this group, its secondary groups are not displayed. However, the secondary groups are saved in the database. To have the group account display correctly, leave the Groups category and then re-enter it. Select the group you added and this time its secondary groups will be displayed.

Modifying and Removing User and Group Accounts

Modifying user accounts – You should not use SNAP to change a user account while the user is logged in. This is especially important when making changes to the account that cause the user's home directory to be moved (changing the primary group or the home directory server). If a user tries to log into an account while the home directory for that account is being moved, the move may fail or the user may be unable to access the home directory, producing the message "no current directory" or "stale NFS handle".

Before modifying a user account, you can check to see if a user is logged in by entering the following command (replacing *username* with the actual user name) if you have the Networking Plus cluster loaded on your system:

```
system:2) rusers | egrep username
```

This command may take several minutes depending on how many user accounts there are on your network. If the user is logged in, you will get the following response (where *systemname* is the name of the system the user is logged into and *username* is the person's user name):

```
systemname username
```

If the user is not logged in, no message is displayed and the system prompt is returned.

Modifying user accounts when mail is delivered to spool directories – By default, the Sun386i system is set up so that mail is delivered to users' home directories. If the mail delivery policy for the network has been changed so that users' mail is delivered to spool directories and you modify a user account through SNAP, that user's mail will then be delivered to their home directory server. To have the user's mail delivered to its original location:

1. Log in on the master server (Yellow Pages master server) and become superuser.
2. Edit the `/etc/ypaliases` files and change the entry for that user so that the system name reflects the correct location. The entry is in the following format:

```
username:username@systemname
```
3. Still as superuser, enter the following command to remake the YP maps:

```
SUPERUSER} cd /var/yp;make
```

Concurrent modification of user and group accounts - If someone is using SNAP on one system to modify a user account, you can use SNAP on another system to select that same user account. However, if you attempt to modify the account and click on the **Save** button, SNAP does not allow the modification and displays messages like these:

```
The user cannot be added or modified
Can't set up a home directory
A remote procedure call to the host oak failed
The directory /export/home/users/mtravis/.lock.ez could not
be locked
```

This situation will continue to occur even after the original modifications to the account are completed. You must leave the Users category and then re-enter it to be able to modify this user account.

This situation also will occur when more than one person uses SNAP to try to modify the same group account, at the same time.

Changing a user's primary group - When SNAP is used to change the primary group of a user account, the `auto.home` Yellow Pages map is not updated correctly. The symptom of this is when the user logs into that account, the following message is displayed:

```
No directory! Logging in with home=/
```

To change a user's primary group, follow these steps:

1. Record the `auto.home` entry for the user account you are going to modify. To find out the entry, type the following command:

```
system:3) ypcat -k auto.home | egrep username
```
2. Record the `auto.home` entries for the group you are going to make the user's primary group. To find out the entries, type the following command:

```
system:4) ypcat -k auto.home | egrep groupname
```
3. Use SNAP to modify the user's primary group.
4. Log in to the master server and become superuser.
5. Restore the primary group entries in the `/etc/auto.home` file to what you recorded in step 2.
6. Modify the user's entry in the `/etc/auto.home` file to be in the following format, where `server` is the name of the home directory server:

```
username server:/export/home/groupname/username
```
7. Still as superuser, enter the following command:

```
SUPERUSER) cd /var/yp;make
```

Modifying group accounts - You should not modify a group account when someone else is adding a user to that group, either through New User Login or SNAP.

System failure when modifying or removing user and group accounts - If any system that is involved in the modification or removal of a user or group account fails during this process, extraneous files may be left on the systems. Examine the systems concerned to remove these files after such failures. See *Sun386i Advanced Administration*, Chapter 3, for more details on the files involved in the user accounts.

Removing user accounts – Removing a user account is slightly different than as documented on pages 113 through 115 of *Sun386i SNAP Administration*. Step 7 should be the second step (step 2) in the procedure and you should search for the user's files based on his or her existing user name, not the name nobody. Also, once the user account is removed, the ownership of the user's remaining files is indicated by a user id (not the user name), and these files will belong to any new user who gets this user id. If you do not want to remove these files, you could change their ownership, using the `chown` command, before you remove the account. For details on the `chown` command, see page 24 of *Sun386i SNAP Administration*.

Network Configurations

The following are software and documentation notes pertaining to Chapter 6 of *Sun386i SNAP Administration*.

Diskless system installation – To install diskless clients, a boot server must have a 327-Mbyte disk drive and at least 8 Mbytes of memory. For performance reasons, it is recommended that you install a maximum of two diskless clients per boot server, even if your system has an additional disk drive in an expansion unit. You must have at least 40 Mbytes of free disk space left on the boot server after installing diskless clients. A server with 91 Mbytes of disk space *cannot* support any diskless clients. (This is documented incorrectly on page 134 of *Sun386i SNAP Administration*.)

Setting Up a Network

The following are software and documentation notes pertaining to Chapter 7 of *Sun386i SNAP Administration*.

Legal domain name – When setting up a new network you need to provide a legal domain name for the network. If you enter an illegal domain name, an error message directs you to *Sun386i SNAP Administration* for details on a legal domain name. *Sun386i SNAP Administration* does not define a legal domain name. If your network is going to be connected to another network, obtain a legal domain name from the Network Information Center (see page 139 of *Sun386i SNAP Administration*, for more information). If your network is not going to be connected to another network, use the default domain name (noname) provided.

Setting up systems with expansion units – When you add a system with an expansion unit to the network, you should turn on the expansion unit *first*, and then turn on the system unit.

Configuring a slave server – If you configure a slave server using the directions in the *Sun386i SNAP Administration* book (pages 146–147 and 175), the server will be a slave server but will not show up as one in SNAP. Also, you will not be able to set this server to accept diskless clients in SNAP.

To fix this, you must log in to the master server, become superuser, and change the following files when you're sure nobody is using SNAP or installing systems:

```
/etc/bootservers  copy an existing entry, change the system name on the first
                  line to match the name of the slave server, and make sure
                  the third field reads 0; for example:
                  oak  3  0  16000  8192  40000  0

/etc/systems      change the role from network_client to read
                  slave_bootserver
```

After changing these two files, issue the following command:

```
SUPERUSER) cd /var/yp;make
```

Upgrading a standalone Sun386i to be the master server – To reconfigure a standalone system to a master server, you have two choices. You can automatically upgrade the system to the master server using the default domain name (noname) and the default network address (192.9.200.1). Or, if you cannot use these defaults (for example, if you plan to connect this network to another one), you can unconfigure the system and then set it up as the master server, specifying the domain name and network address. (If you do upgrade the system using the defaults, you can change the domain name and network address using the directions in *Sun386i Advanced Administration*.)

To automatically upgrade a standalone system to the master server using the default network settings, power down the system, connect it to the Ethernet, turn it back on, and then follow the instructions displayed on the screen.

To select the domain name and network number for the network, follow the instructions under “Standalone System Installation” on pages 165-166 of *Sun386i SNAP Administration*, including unconfiguring the system. *Be sure to back up all data files before using unconfigure*. In step 3, add the system to the network as the master server. See pages 140-145 of *Sun386i SNAP Administration* for details on setting up a master server. This change impacts two procedures—“Setting Up a Network of New Sun386i Systems” (starting on page 140), and “Converting Standalone Sun386i Systems into a Network” (starting on page 152). Both these procedures do *not* include the fact that a standalone system must be unconfigured before it can be set up as the master server.

Network Administration Basics

The following are software and documentation notes pertaining to Chapter 8 of *Sun386i SNAP Administration*.

Connecting systems to a network – You can install systems more quickly and use fewer resources if you connect them one at a time to the network. Although you can install multiple diskful systems simultaneously, the process will take longer per system and will make it more difficult for the server to do anything else. However, you *cannot* install multiple diskless systems simultaneously. Connect diskless systems to the network one at a time.

SNAP administration of systems – If a system was added to the network according to the instructions in *Sun386i Advanced Administration*, you can perform other SNAP tasks on the system. (This qualification was omitted from the note on page 158 of *Sun386i SNAP Administration*.)

Installing diskless Sun386i workstations on other networks – You can now install a diskless Sun386i on a non-Sun386i network. Sun386i SunOS 4.0.1 includes a server kit that allows a Sun-3 or a Sun-4, running SunOS 4.0 and Yellow Pages, to support a diskless Sun386i system. See the section on the server kit in the *Administrator's & Developer's Notes for Sun386i SunOS 4.0.1* for details on how to install the server kit and subsequently diskless Sun386i systems.

Automatic System Installation

If Automatic System Installation does not succeed on the first try, it will not succeed on subsequent attempts. If this happens, correct the problem that made installation fail and reboot the boot server. The most likely cause for Automatic System Installation to fail is the occurrence of a file system error while you are configuring a diskless client. Check the boot server for error reports in the file `/var/adm/messages` coming from the `rpc.pnpd` daemon.

Manual System Installation

The procedure for using SNAP to add a system to the network (pages 160-164 of *Sun386i SNAP Administration*) is incorrect.

Step 2 should be replaced with the following two steps:

- 2a. Plug the system into a power outlet. Do *not* connect the system to the Ethernet.
- 2b. Turn on the expansion unit, if there is one, and then the system unit.

Do not perform step 4 after step 3; perform step 4 at the very end of the procedure, after this additional step:

12. Connect the system to the Ethernet.
13. Perform step 4—Answer system question.

System name – When adding a system, SNAP does not generate a system name. (This is documented incorrectly on page 163 of *Sun386i SNAP Administration*.) You must enter a system name and SNAP will check for its uniqueness on the network. Also, the system name must begin with a lowercase letter and cannot contain uppercase letters. In addition, if this system will be communicating with UUCP, its name should be six characters or less. You *cannot* use SNAP to change the name of any system once it has been installed. (This is documented incorrectly on page 181 of *Sun386i SNAP Administration*.) See the note later in this section for instructions on changing a system name.

Ethernet address – When adding any system with SNAP, you must enter the Ethernet address, even if the system is not a Sun386i workstation. (This is documented incorrectly on page 163 of *Sun386i SNAP Administration*.)

System number – When adding a system with SNAP, you can enter a system number. However, if you leave this field blank, when you click on **Save** SNAP will enter a system number that is unique on the network. (This is not fully documented on page 164 of *Sun386i SNAP Administration*.)

Network role – When adding a system through SNAP, make sure the network role is correct. This field always defaults to `network client`. If you are adding a diskless system, be sure to set this field to `diskless client`. Also, you cannot use SNAP to change the network role of a system after it has been set up on the network. (This is not fully documented on page 164 of *Sun386i SNAP Administration*.)

Reusing a system number – If a system is removed within one hour after being added, its IP address, and thus its system number, cannot be reused until the one hour time period has expired. Attempts to reuse the system number within that hour results in SNAP responding that the system number is already in use by another system.

System Installation Into Other Networks

The procedure on how to install the first Sun386i system onto a network not using Yellow Pages is incorrect. Step 5 on page 167 of *Sun386i SNAP Administration* should be performed after step 2.

Changing System Information

SNAP does not reboot systems – When changing system information, SNAP does not reboot the system, as stated under step 1 on page 172 of *Sun386i SNAP Administration*. However, you can only change the system's location, Ethernet address, and maximum number of clients using SNAP, and none of these changes require that the system be rebooted.

Changing a system name – Names of systems that are already installed on the network cannot be changed using SNAP. The following manual procedures must be followed instead:

Changing the name of the master server – To change the name of the *master server*, follow these steps:

1. Shut down all diskless clients supported by the master server.
2. If the master server supports diskful clients, change the server's name in each diskful client's `/etc/hosts` file and shut down the diskful clients.
3. Log in to the master server and become superuser.
4. Change any occurrences of the system name in the following files:

<code>/etc/auto.home</code>	<code>/etc/ext_ports</code>	<code>/etc/systems</code>
<code>/etc/auto.vol</code>	<code>/etc/hosts</code>	<code>/etc/ypaliases</code>
<code>/etc/bootparams</code>	<code>/etc/net.conf</code>	<code>/etc/ypprintcap</code>
<code>/etc/bootservers</code>	<code>/etc/netgroup</code>	<code>/etc/ypservers</code>
<code>/etc/ethers</code>	<code>/etc/publickey</code>	
5. Set its new name by entering the following command:


```
SUPERUSER) /bin/hostname newsystemname
```
6. Remake YP by entering the following commands:


```
SUPERUSER) cd /var/yp
SUPERUSER) rm -f *.time
SUPERUSER) make
```
7. If the system supports diskless clients, change all occurrences of the system name in the following files, replacing *disklessclientname* with the name of each diskless client:


```
/export/root/disklessclientname/etc/fstab
```
8. Shut down and reboot the master server.
9. On each slave server on the network, log in, become superuser, and enter the following command:


```
SUPERUSER) rm -rf /var/yp/'domainname'
```

 Then shut down the slave server.
10. After all slave servers have been shut down, reboot them one at a time.
11. Reboot all diskless and diskful clients supported by the master server.

Changing the name of a slave server – To change the name of a *slave server*, follow these steps:

1. Shut down all diskless clients supported by the slave server.

2. If the slave server supports diskful clients, change the server's name in each diskful client's `/etc/fstab` file and shut down the diskful clients.
3. Log in to the master server and become superuser.
4. Change any occurrences of the system name in the following files:

<code>/etc/auto.home</code>	<code>/etc/ext_ports</code>	<code>/etc/systems</code>
<code>/etc/auto.vol</code>	<code>/etc/hosts</code>	<code>/etc/ypaliases</code>
<code>/etc/bootparams</code>	<code>/etc/netgroup</code>	<code>/etc/ypprintcap</code>
<code>/etc/bootservers</code>	<code>/etc/publickey</code>	<code>/etc/ypservers</code>
<code>/etc/ethers</code>		
5. Remake YP by entering the following command:
SUPERUSER} cd /var/yp;make
6. Stop being superuser on the master server by entering the `exit` command and then log out.
7. Log in to the slave server and become superuser.
8. Change the system name in the following file:
`/etc/net.conf`
9. If the system supports diskless clients, change all occurrences of the system name in the following files, replacing *disklessclientname* with the name of each diskless client:
`/export/root/disklessclientname/etc/fstab`
10. Shut down and reboot the server.
11. Reboot all diskless and diskful clients supported by the slave server.

Changing the name of a network client – To change the name of a *network client*, follow these steps:

1. Log in to the master server and become superuser.
2. Change any occurrences of the system name in the following files:

<code>/etc/auto.home</code>	<code>/etc/hosts</code>	<code>/etc/systems</code>
<code>/etc/auto.vol</code>	<code>/etc/netgroup</code>	<code>/etc/ypaliases</code>
<code>/etc/ethers</code>	<code>/etc/publickey</code>	<code>/etc/ypprintcap</code>
<code>/etc/ext_ports</code>		
3. Remake YP by entering the following command:
SUPERUSER} cd /var/yp;make
4. Stop being superuser on the master server by entering the `exit` command and then log out.
5. Shut down and reboot the network client.

Changing the name of a diskless or diskful client – To change the name of a *diskless* or *diskful client*, follow these steps:

1. Log in to the master server and become superuser.
2. Change any occurrences of the system name in the following files:

<code>/etc/auto.home</code>	<code>/etc/ext_ports</code>	<code>/etc/systems</code>
<code>/etc/auto.vol</code>	<code>/etc/hosts</code>	<code>/etc/ypaliases</code>
<code>/etc/bootparams</code>	<code>/etc/netgroup</code>	<code>/etc/ypprintcap</code>
<code>/etc/ethers</code>	<code>/etc/publickey</code>	

3. Remake YP by entering the following command:
SUPERUSER} `cd /var/yp;make`
4. Stop being superuser on the master server by entering the `exit` command and then log out.
5. Log in to this client's bootserver and become superuser.
6. Change all occurrences of the system name in the file `/etc/exports`. Then enter the following command:
SUPERUSER} `exportfs -a`
7. If you are changing the name of a diskless client, enter the following commands, replacing `oldsystemname` with the original name of the system and `newsystemname` with the new system name:

```
rm /export/root/oldsystemname
ln -s /files/root/newsystemname /export/root/newsystemname
rm /export/swap/oldsystemname
ln -s /files/swap/newsystemname /export/swap/newsystemname
mv /files/root/oldsystemname /files/root/newsystemname
mv /files/swap/oldsystemname /files/swap/newsystemname
```
8. Shut down and reboot the diskless or diskful client.

Concurrent modification of system information - If someone is using SNAP on one Sun386i workstation to modify the information about a system on the network, you can use SNAP on another workstation to select that same system. However, if you attempt to modify the system information and click on the **Save** button, SNAP does not allow the modification and displays messages like these:

```
The system cannot be added or modified
The program cannot prepare changes to this system's entries in
the Yellow Pages database.
```

This situation will continue to occur even after the original modifications are completed. You must leave the Systems category and then re-enter it to be able to modify the information on this system.

Removing Systems from the Network

SNAP does not fully remove a system from the database - SNAP does not completely remove a system from the Yellow Pages databases or from the network. After removing a system with SNAP, perform the following additional procedure:

1. Log in to the master server and become superuser.
2. Remove all entries for the users and groups that were on the system. View the `/etc/auto.home` map to see which accounts had their home directories there, then delete their entries from the following files:

```
/etc/auto.home
/etc/ypaliases
/etc/ypgroup
/etc/yppasswd
```
3. Remove any record of a printer attached to that system from the file `/etc/ypprintcap`. If this printer is listed as the default printer (printer named "lp"), assign a different printer as the default.

4. Remove any occurrences of the system name from the following files:
 - /etc/auto.vol
 - /etc/netgroup
 - /etc/ypservers
5. Remake YP by entering the following command:


```
SUPERUSER} cd /var/yp;make
```
6. Stop being superuser by entering the `exit` command.

Removing systems that support diskless clients (bootservers) – If you are removing a system that supports diskless clients, you must first move all these clients to another system on the network. However, you should not use SNAP to do this by removing and then reinstalling the diskless clients. (This is documented incorrectly on page 178 of *Sun386i SNAP Administration*.) See the next note for instructions on how to remove diskless clients.

Removing diskless clients – If a boot server is not working due to hardware failure and you want to reconfigure the diskless client to use some other boot server, you can manually remove it. You should not use SNAP to remove it from the boot server.

To manually remove a diskless system from the Yellow Pages, though not from the disk on the boot server, follow these steps:

1. Log in on the master server and become superuser.
2. Edit the following files, removing all lines referencing the diskless client:
 - /etc/bootparams
 - /etc/ethers
 - /etc/hosts
 - /etc/publickey
 - /etc/systems
3. Enter the following command:


```
SUPERUSER} cd /var/yp;make
```

Now you can install the diskless client on a different boot server using Automatic System Installation or SNAP.

Network Installation Problems

System will not boot – If you have changed the system or network configuration and a network client will not boot, you can use the following procedure. However, you should be aware that this procedure removes all user accounts, home directories, and user files on the system. Essentially, this procedure resets the system software to the state it was in when you first received it.

1. Halt the system by holding down the **[Stop]** key and pressing the **[a]** key.
2. At the `>` prompt, enter the following command:


```
> b -bs
```
3. You will get a few messages, then a `#` prompt. At the prompt, enter the command:


```
# fsck -y
```

If you get the following message after entering the `fsck -y` command:

```
FILE SYSTEM WAS MODIFIED
```

- repeat steps 1-3 until you no longer get this message; otherwise go on to step 4.
4. Enter the following commands after the # prompt, exactly as shown:


```
# mount -o rw,remount /
# >/etc/mtab
# mount -f /
# mount /usr
# stty dec
# mount -at 4.2
# mount -at lo
# unconfigure
```
 5. Confirm that you want to delete all the configuration data on the disk.
 6. At the > prompt, enter:


```
> k2
```
 7. The system reboots and you can go through the installation again.

Network cable not connected on a boot server - If the Ethernet cable is not connected to a boot server (the master server or a slave server), the server detects this and displays a warning stating that other systems will not be able to use its services. Also, the server records the fact that the network is not connected and disables many network services. If the Ethernet cable is connected later, those network services will continue to be unavailable. If you get this warning message, connect the system to the network and then reboot it. You can test that a system is connected to the network by using the ping command to contact another system:

```
system:1) /usr/etc/ping mangrove
```

If this command does *not* produce a message in the System Messages window such as the following, the system is correctly attached to the network:

```
ie0: check cabling
```

Domain Policies

You cannot use SNAP to view or set the New User Accounts and Automatic System Installation domain policies as stated on pages 24-25 and 182-185 of *Sun386i SNAP Administration*.

To find out if your standalone system or network has New User Accounts or Automatic System Installation enabled or disabled, view the `/etc/policies` file on the system or the master server.

```
system:2) more /etc/policies
```

```
#      #( # ) policies      1.6 Sun Microsystems Inc.
#      Last modified 9/18/88
#
# This file controls network-wide policy information.
#
# Legal values for the policies follow; the default is the first
# one listed.
#
#      pnp                unrestricted or restricted
#      newlogin           unrestricted or restricted
#      ip_address_allocation  drarp_only, rarp_and_drarp, or none
#      mail_delivery      home_directory or spool_area
#
pnp                unrestricted
newlogin           unrestricted
ip_address_allocation  drarp_only
mail_delivery      home_directory
```

If `newlogin` is set to `unrestricted` in this file, New User Accounts is enabled; if it is set to `restricted`, New User Accounts is disabled. If `pnp` is set to `unrestricted` in this file, Automatic System Installation is enabled; if it is set to `restricted`, Automatic System Installation is disabled.

To disable New User Accounts or Automatic System Installation:

1. Log in to the system or the master server.

If you are disabling New User Accounts on a standalone system, log in to that system. If you are disabling New User Accounts or Automatic System Installation on a network, log in to the master server.

2. Become superuser.

```
system:3} su
```

3. Edit the `/etc/policies` file.

To disable New User Accounts, change the following line:

```
newlogin unrestricted
```

```
to
```

```
newlogin restricted
```

To disable Automatic System Installation, change the following line:

```
pnp unrestricted
```

```
to
```

```
pnp restricted
```

4. Remake the YP maps by entering the following command:

```
SUPERUSER} cd /var/yp;make
```

5. Exit superuser by entering the following command:

```
SUPERUSER} exit
```

To re-enable New User Accounts or Automatic System Installation, follow the above steps, reversing the instructions in step 3.

File System

The following are software and documentation notes pertaining to Appendix A of *Sun386i SNAP Administration*.

File system structure – The file system structure, as documented in Appendix A, is incorrect. For an explanation of the file system, see *Sun386i Advanced Administration*, Chapter 5, and the notes on the file system contained in the *Administrator's & Developer's Notes for Sun386i SunOS 4.0.1*.

SNAP Files

The following are software and documentation notes pertaining to Appendix B of *Sun386i SNAP Administration*.

The following list shows the files that are used or modified when you use SNAP to perform administrative tasks. (This information is documented incorrectly on page 204 of *Sun386i SNAP Administration*.)

Category	Files Used or Modified
Backup	files in <code>/tmp</code> all the files in <code>/home/username/.backup</code> <code>/var/spool/backup</code> <code>/var/spool/cron/crontabs/root</code>

Restore	files in /tmp all the files in /home/username/.backup /var/spool/backup
Printers	/etc/ext_ports /etc/ttytab /etc/ypprintcap
Terminals	/etc/ext_ports /etc/ttytab
Modems	/etc/ext_ports /etc/remote /etc/ttytab
Users	/etc/auto.home /etc/publickey /etc/ypaliases /etc/ypgroup /etc/yppasswd
Groups	/etc/auto.home /etc/ypaliases /etc/ypgroup /etc/yppasswd
Systems	/etc/bootparams /etc/bootservers /etc/ethers /etc/hosts /etc/netmasks /etc/networks /etc/publickey /etc/systems

Configuring Diskful Clients

The following are software and documentation notes pertaining to Appendix C of *Sun386i SNAP Administration*.

The directions in Appendix C of *Sun386i SNAP Administration* for creating a diskful client are incomplete. The server must explicitly export file systems to the client, which must then NFS mount them. To do this, include these additional steps:

After step 1, page 206, perform these three steps:

- 1a. Log in on the server you selected for the diskful client and become superuser.
- 1b. Edit the /etc/exports file, adding the following entries:

```
/export/exec/sun386.sunos4.0.1 -access=clientname
/export/cluster/sun386.sunos4.0.1 -access=clientname
/export/local/sun386 -access=clientname
```

If this server supports more than one diskless client, you can include the additional client names in the entries, each one separated by a colon. For example,

```
/export/local/sun386 -access=clientname1:clientname2
```

- 1c. Enter the following command:
SUPERUSER) **exportfs -a**

On page 207, replace the instructions in step 7 with these:

7. Open and edit the `/etc/fstab` file.

You can use the Text Editor to edit this file. See the *Sun386i User's Guide* for details on how to use the Text Editor.

Find the following line in the `/etc/fstab` file:

```
/dev/rootg /usr 4.2 ro 1 2
```

Assuming that you are placing the extra disk space in `/files1`, change this line to the following. The items changed are shown in bold.

```
/dev/rootg /files1 4.2 rw 1 2
```

Now, insert the following lines before it, replacing `server` with the actual name of the server:

```
server:/export/exec/sun386.sunos4.0.1 /usr nfs ro 0 0
```

```
server:/export/cluster/sun386.sunos4.0.1 /usr/cluster ro 0 0
```

```
server:/export/local/sun386 /usr/local ro 0 0
```

Save the changes you made to this file.

Sun386i Advanced Skills

The information in these pages provides updates and corrections to topics covered in *Sun386i Advanced Skills*. This book covers advanced features such as using SunOS commands and customizing your system.

General Notes

Switching from another Sun system - If your user account was originally created for a system other than a Sun386i workstation, check to make sure your `.login` file includes the following line:

```
setenv AUTOMOUNT_FIXNAMES true
```

If your account was set up through New User Accounts or SNAP, you probably do have the line. If your `.login` file is missing this line, some software applications will have trouble opening files in automounted directories such as `/net`, `/home`, and `/vol`.

Commands not found - Sometimes when you try to use a command described in the book, you'll see the message:

```
Command not found
```

This message often means that the command you're trying to use is part of an extra set that isn't loaded. Commands in one of these sets, called *aliases*, are actually stored on your system but are disabled by default. These aliases include `slay` and `zap` (Chapter 1), `h` and `ll` (Chapter 4), as well as many of the aliased commands described in Chapter 6. To activate these system aliases, type the following in the Commands window where you want to use one of these commands:

```
system:1} extras
```

To disable the aliases in this window, type `extras` a second time. The command toggles the aliases set on and off.

If a command is still not available after you type `extras`—and you've followed all the appropriate directions in the book—it's possible that you need to load the command onto your system. Follow the instructions for "Loading Commands from Diskette or Tape" on page 38 of the *Sun386i Advanced Skills* manual.

Name stripe information - Throughout *Sun386i Advanced Skills*, you'll see Commands windows name stripes pictured as showing user, system, and directory information. This feature is no longer turned on by default. You can activate the feature, however, by typing the `extras` command (described in the note above) in the Commands window where you want name stripe information to appear.

Incorporating user and directory information in the name stripe incurs system overhead that slows down the operation of your system. You can view the same information inside the Commands window by using these SunOS commands:

```
system:1} whoami      (to check your user name)
system:2} pwd         (to "print working directory")
```

Using the man -k command - You may see the following message when you use the command `man -k` to search for a command (as shown on page 14):

```
/usr/man/whatis: No such file or directory
```


If you see this message, you'll need to do the following to set up a special file of search words:

1. Become superuser using the `su` command. (For information on this command, see *Sun386i SNAP Administration*.)
2. Type the following in a Commands window:

```
system: SUPERUSER:1) /usr/lib/makewhatis
```

The `makewhatis` procedure takes several minutes. Once it's complete you'll be able to use `man -k` to search for command topics as described in the book.

Printing all your mail – If you want to make a printout of all the mail in your mailbox, you can use the `prmail` command, as shown on page 62 of *Sun386i Advanced Skills*. The `prmail` command is not loaded onto your system by default, so you may see the following message when you try to use it:

```
Command not found
```

If you receive this message, you can load the `prmail` command by following the instructions for "Loading Commands from Diskette or Tape" on page 38 of the *Sun386i Advanced Skills* manual.

+inbox folder in Mail – The description of the `+inbox` folder (page 71 of *Sun386i Advanced Skills*) is incorrect. This folder actually holds incoming mail messages. You can read your mail from any Sun386i system on your network by loading the `+inbox` folder.

Groups and `ls -l` – Several examples in Chapter 5 show how to determine group ownership of a file using the command `ls -l`. By default, however, the "group" feature of `ls` is disabled. To see group ownership of a file, use the command:

```
system:1) ls -lg
```

Customizing Your System

Enabling and disabling the login screen and screenblank – For your convenience, the Sun386i provides you with a special login screen where you can type your name and password. Also, in order to prolong the life of your monitor, your Sun386i system turns off the screen display if you haven't used the keyboard or mouse for 30 minutes or more. (To see the screen again, simply move the mouse on the pad or press any key.) These two features are automatically enabled, but you can disable them by following the procedure described below.

Use the `su` command in a Commands window. When you see the superuser prompt, type:

```
system: SUPERUSER:1) change_login
```

The system returns a numbered menu of options.

1. Logintool and Sun Logo screenblank
2. Logintool and video-off screenblank
3. Logintool and no screenblank
4. No Logintool and no screenblank

Option 1 is the default setting, which displays the Sun logo moving randomly around an otherwise blank screen. Option 2 shuts off the video output to your monitor; it requires the least system overhead. Option 3 retains the login screen, but disables screenblank— "logintool" refers to the special login screen that you saw when you first

powered up your system. Option 4 disables both `logintool` and `screenblank`—you cannot use `screenblank` unless `logintool` is enabled. Select the option you prefer.

After exiting `change_login`, you must reboot your system for the change to go into effect.

Note that the `change_login` feature may not be supported, or may be supported in a different form, in the next release of SunOS.

Changing default font on Desktop – The **Default Font** option on the Desktop menu requires a `.defaults` file in your home directory. If your user account was created with New User Accounts (using `Logintool`) or SNAP, you will have a set of default files automatically. Otherwise, you must create a `.defaults` file in order to change your Desktop font. You can create your own file in one of two ways:

- ◆ Copy someone else's `.defaults` file into your home directory. The standard `.defaults` file is located in one of the following directories:
 - `/home/users/defaults`
 - `/files/home/users/users/defaults`
- ◆ Create a `.defaults` file and type as its first line: **SunDefaults_Version 2**. Then save the file in your home directory.

Alias settings – Pages 161–164 of *Sun386i Advanced Skills* show examples of changes you can make to the `.cshrc` file in your home directory. Some of the alias settings shown are stored in the file `/usr/lib/friendly_aliases`. As noted above, you can enable and then disable the settings in a Commands window by using the `extras` command.

You can permanently enable the alias and name stripe features by editing the following line in your `.cshrc` file:

```
alias extras source /usr/lib/friendly_aliases
```

To enable the alias and name stripe features, change the line to:

```
source /usr/lib/friendly_aliases
```

Note that enabling these “friendly aliases” may add several seconds to the start-up time for some windows and applications.

biff and other .login file settings – Most of the settings shown for the `.login` file (pages 165 – 170) are examples, and are not included in the `.login` file. You can add these settings to your `.login` file as desired, but keep in mind that the `biff` command (pages 167 – 170) requires resources to monitor mail. If you're concerned about system response time, you should not activate `biff`.

Changing Desktop color – You can change the color of the background screen in your `.login` file using the `sunview` command's `-color` option in combination with RGB color settings.

You can test colors ahead of time using the Color Editor, and noting the Red-Green-Blue numbers that are displayed (see pages 125–130).

Controlling “autoclose” for Help and Organizer – If you're using the default settings that came with your system, you'll notice that Organizer and the Help Viewer close to icons if they're left idle for ten minutes or more. To change this time interval, alter the “autoclose” time setting (-A) for these applications. For example, the line to start Organizer in the default .sunview file is:

```
organizer -Wp 137 160 -WP 16 160 -wi -wf 0 108 170 -A 10
```

To set Organizer so that it closes after 30 minutes of inactivity, change the minutes value that follows the -A setting:

```
organizer -Wp 137 160 -WP 16 160 -wi -wf 0 108 170 -A 30
```

You can disable the “autoclose” feature by removing the -A option and the minute setting that follows it.

DOS Notes

For a complete list of DOS-related notes, see the “DOS Windows and PC Applications” section of this *Owner's Bulletin*.

Installing PC memory boards – Page 219 of *Sun386i Advanced Skills* incorrectly states that you shouldn't use plug-in AT memory expansion boards. Expanded memory boards, however, do work on the Sun386i workstation, and you may want to install one if your applications make extensive use of expanded memory. See the related note in the section called “DOS Windows and PC Applications” in this document. For instructions on installing boards, see the notes in “Before Setting Up Your System” at the beginning of this document.

Direct Memory Access (DMA) channels – An example on page 241 of *Sun386i Advanced Skills* says:

“...alter the DMA settings on one of the boards so that it uses a different channel (say, DMA channel 2)...”

Channel 2, however, is not a valid DMA setting. Use only channels 0, 1, 3, or 5.

Bus mouse emulation – The table on page 239 of *Sun386i Advanced Skills* states that the I/O address space for the bus mouse is 230 – 237. This is incorrect. The correct range is 230 – 23F.

Enabling the Microsoft Mouse – Page 254 of *Sun386i Advanced Skills* shows an example of how to enable the Microsoft Mouse driver in your C:\CONFIG.SYS file. For the Microsoft Mouse emulation to work, you'll also need to copy the mouse driver to drive C by typing the following command in a DOS window:

```
D:\> COPY R:\ETC\DOS\MSDOS\MOUSE.SYS C:\
```

Defaults Editor Settings

Walking menus – Sun386i applications make extensive use of pull-right (“walking”) menus. Therefore, do not change the walking menus item in the Defaults Editor from its standard setting of enabled.

DOS Windows and PC Applications

Using DOS

Read this section if you plan to use PC applications or you are going to install PC devices (printers, monitors, and so on) for use with DOS Windows. This section covers:

- ◆ **MS-Windows** – How to install the driver to enable you to run this PC environment with access to the full Sun386i screen
- ◆ **PC Applications** – Tips on running PC applications in DOS Windows
- ◆ **DOS Windows** – Special situations you could encounter while using DOS Windows
- ◆ **DOS Devices** – Explanations about devices as well as notes about the limitations of some devices

See the sections in this bulletin called "*Sun386i User's Guide*" and "*Sun386i Advanced Skills*" for additional DOS-related notes. For hints about printing, see the "Printing" section in this bulletin.

MS-Windows

The SunView MS-Windows display driver is a new feature of this software release (Sun386i SunOS 4.0.1). It is a display driver for Microsoft's MS-Windows program that lets you run MS-Windows applications in arbitrarily large windows on your SunView desktop.

Note: The SunView MS-Windows driver is designed for use with 2.0 and later versions of the MS-Windows package. It will not function with MS-Windows versions earlier than 2.0.

To perform this installation, you will need your Microsoft Windows package, including the diskettes and the *Windows User's Guide*. Sun Microsystems does not provide the Microsoft Windows package itself. If you do not already have a copy, you can purchase one from most PC software retailers. The installation typically involves two steps:

1. Running the MS-Windows SETUP utility
2. Setting Up LIM Expanded Memory (Optional)

Installing MS-Windows Software

Before you can run the SETUP utility, you must decide how to load MS-Windows software on your system. If your Windows software comes on 3.5-inch diskettes, you can perform the installation on your Sun386i system using the 3.5-inch diskette drive.

If your MS-Windows software comes on 5.25-inch diskettes, see the note on "5.25-inch DOS diskettes" in the section of this bulletin called "*Sun386i System Setup and Maintenance*." There you will find instructions on how to use 5.25-inch diskettes with the Sun386i workstation.

Note: To install MS-Windows software from another system, you need access to the SunView MS-Windows display driver files. These files are located in the DOS directory R:\USR\DOS\MSDOS (SunOS directory /usr/dos/msdos). If you cannot directly access this directory from the installation system, you must copy the display driver files over to a temporary directory on that system. The files you need are: sunview.drv, sunview.grb, sunview.lgo, and sunmouse.drv.

Running the MS-Windows SETUP Utility

The SETUP utility is a program provided by Microsoft for configuring MS-Windows. Certain configuration options are required to run MS-Windows on the Sun386i. These options are discussed in this section.

1. Log in to your Sun386i system and open a DOS window. See the *Sun386i User's Guide* for information on opening a DOS window.
2. Run the MS-Windows SETUP utility. Follow the instructions in your *Windows User's Guide* for running SETUP.

The SETUP utility provides you with a number of different choices for different installation parameters such as the type of display adapter you're using and what font you want to use. To accept (highlighted) defaults, press the **Return** key. Use the up arrow and down arrow keys to select other choices from the SETUP menus.

Configuration options that apply specifically to your Sun386i system are listed on the next page, along with an explanation of what choice you should make for each option. For configuration options that do not apply specifically to the Sun386i system (the options not listed below), you can either accept the defaults provided by SETUP, or make whatever choices meet your particular needs.

◆ Installation directory

By default, SETUP will install MS-Windows in C:\WINDOWS. Instead of installing it there, you may want to install it in a place that is accessible to other users on your system and other systems on your network (for example, on a network drive). See *Sun386i SNAP Administration* for information on installing third-party software.

Note: Your MS-Windows software license may restrict use of the MS-Windows software within a network.

◆ Machine type

Your Sun386i is IBM AT compatible, so take the default: **IBM AT (or 100% compatible)**

◆ Display adapter

Your display adapter is the Sun386i workstation, which is not one of the default selections. So select **Other**. The SETUP utility will then prompt you for the name of the directory that contains the SunView display driver. Respond by typing the following:

R:\USR\DOS\MSDOS

The SETUP utility will then prompt you for the display driver, listing **Sun Microsystems workstation** as a selection. Take this selection.

◆ Keyboard

Take the default: **United States keyboard**.

◆ Mouse or pointing device

Select **Other**. The SETUP utility will then prompt you for the name of the directory that contains the mouse driver. Respond by typing the following:

R:\USR\DOS\MSDOS

The SETUP utility will then prompt you for the mouse driver, listing **Sun Microsystems mouse** as a selection. Take this selection.

◆ System font

The default **Small System Font** is difficult to read. We recommend any of the medium or large system fonts.

◆ Terminal font

The default **Small Terminal Font** is difficult to read. We recommend any of the medium or large terminal fonts.

◆ Extended Memory

Extended memory uses the Intel 80286 protected mode which is not supported on the Sun386i system. Therefore, when the SETUP utility asks whether you want to use extended memory, select the option **No extended memory**. (However, see the following section regarding use of LIM expanded memory.)

◆ Memset

Memset is a Microsoft program that enables disk caching for MS-Windows. When the SETUP utility allows you the option of running Memset, select **Continue without running Memset**. This feature is not needed on the Sun386i system and in fact may degrade system performance if enabled.

Setting Up LIM Expanded Memory (Optional)

Microsoft Windows software tends to operate most efficiently when the machine on which it's running has more than the standard 640 Kbytes of memory. Sun386i DOS Windows software supports what is called LIM expanded memory. What LIM is and how it operates is not relevant here; what is important is that LIM gives MS-Windows more memory to work with.

If you want to improve the performance of MS-Windows on your Sun386i system, enable LIM expanded memory by following the instructions in *Sun386i Advanced Skills*. Once expanded memory is enabled on your Sun386i, MS-Windows will automatically make use of it—there is no need to reconfigure or reinstall MS-Windows.

Once you complete the SETUP procedure and, optionally, the LIM setup procedure, you are ready to run the MS-Windows package on your Sun386i.

Using MS-Windows

To start running MS-Windows on your system, follow these steps:

1. Open a DOS window on your Sun386i.
2. *Before* you start MS-Windows, resize your DOS window to suit your needs. To resize the window, bring up the frame menu in the DOS window and select **Resize**. Then follow the screen instructions to adjust the size of the window. MS-Windows program will make use of the entire display area within the DOS window.

Note: Although SunView supports resizing of windows, MS-Windows does not. So if you resize the DOS window *after* you start up the MS-Windows program, MS-Windows will *not* adjust its display to the new window size.

3. Start MS-Windows. Follow the instructions in your *Windows User's Guide*.

PC Applications

The following notes deal with problems you may encounter when running specific types of DOS applications under Sun386i DOS Windows.

Note: If DOS Windows does not come up on your Desktop when you try to start it, see the "Locking services on non-Sun386i home directory servers" item under the "Network Administration" section of the *Administrator's & Developer's Notes for Sun386i SunOS 4.0.1*. This problem can occur if your home directory is not on a Sun386i system.

PC application compatibility – The Sun386i DOS Windows environment has been engineered to provide an extremely high level of PC DOS™ and MS-DOS application compatibility. Sun Microsystems has confirmed compatibility with all mainstream DOS applications. Tested programs include word processors, database managers, communication packages, TSR (terminate and stay resident) utilities like Sidekick®, and popular games (like Microsoft Flight Simulator).

Compatibility testing of commonly used PC applications has produced a frequently updated database containing Sun386i DOS compatibility information. For information on PC compatibility, call your Sun sales representative or Sun technical support engineers who have access to this compatibility database.

Key combinations not recognized as unique in DOS – Some PC applications—typically word processors or keyboard macro processors—call for certain key combinations that DOS Windows cannot distinguish from other key combinations. The following keystrokes are functional equivalents in certain DOS applications:

Control-Esc	and	Control-I
Control-Backspace	and	Control-H
Control-Tab	and	Control-L
Control-'	and	Control-6
Control-M	and	Return
Control-/	and	Control--
Control-Linefeed	and	Control-J
Control-Alt	and	Control-F
Control-2	and	Control-Space

If your application calls for a key combination that DOS Windows cannot recognize, consult the manual that came with the application to see if it offers an alternative method, such as selecting the needed function from a menu.

File sharing – DOS 3.1 file sharing is a way for applications to manage the use of files between different users and applications.

Because most PC applications don't use file sharing, this feature is disabled by default. You can turn on file sharing for any DOS Windows extended drive by using the **EXTEND** command in a DOS window:

EXTEND J:\HOME\MTRAVIS	(normal—no locking)
EXTEND J:\HOME\MTRAVIS /SHARE=MANDATORY	(share files, fails if no lock daemon is present)
EXTEND J:\HOME\MTRAVIS /SHARE=BEST-TRY	(share files, succeed if no lock daemon is present)

File sharing causes extra network traffic on every file open or create operation, so you should only enable it on drives where your applications require it. In addition, be careful to avoid SunOS file permission conflicts between different users who may be sharing data files. For general information on the **EXTEND** command, see *Sun386i Advanced Skills* or the *Sun MS-DOS Reference Manual* (but note that these books do not cover the file sharing features of **EXTEND**).

Color applications that start from diskette – Color applications (typically, games) that must be started from a diskette that contains its own DOS system files (a bootable diskette) may display only in black and white, or not at all.

PC color applications require a display mode called CGA (Color/Graphics Adapter). To make sure that your diskette-based application appears in color, take the following steps before starting the application:

1. Open a new DOS window.
2. At the DOS prompt, type **setup**
This starts a program that you can use to temporarily redefine the DOS primary display adapter.
3. Follow the instructions that appear on the screen, giving these answers to the questions that **setup** displays:
 - ◆ **y** to indicate that the date and time are correct
 - ◆ **n** to indicate that the options are incorrect
 - ◆ **y** to indicate that the diskette drive types are correct
 - ◆ **y** to indicate that the fixed disk types are correct
 - ◆ **y** to indicate that the base system memory is correct
 - ◆ **y** to indicate that the expansion memory is correct
 - ◆ **n** to indicate that the prime video adapter is incorrect
 - ◆ **2** to indicate 80-column color graphic (CGA) mode
 - ◆ **y** to indicate the new options are correct

Then you will see the message:

Insert DOS disk and Press <enter>

4. Insert your application diskette into drive A.
5. Press **[Return]** to restart DOS and the application.

You must perform these steps each time you use a color application that must be started (booted) from diskette. For more information on this topic, refer to the on-screen *DOS Windows Handbook* (see Changing DOS Window Display Modes) or Chapter 8 of the *Sun386i User's Guide*.

Sound in PC games – When you run PC applications that make extensive use of sound, you may notice that the sound is not as loud as might be expected on a PC. You can often correct this situation by choosing **Sound** ⇒ **Loud** from the DOS Windows menu (the default sound level is medium).

Mouse cursor on external monitors – If you add an external EGA or VGA monitor to your Sun386i system for use with DOS, you might not be able to see the mouse cursor when running certain applications on that monitor. Applications that request the mouse driver software to update the cursor image will not work on external monitors.

Applications that draw their own mouse cursor do work properly on an external monitor. Here's a list of applications that do and do not draw the cursor correctly on an external monitor with the 4.0.1 mouse driver:

Applications that Work on External Monitors	Applications that Don't Work on External Monitors
Microsoft Flight Simulator	Microsoft Word
Microsoft Excel	Microsoft Codeview
AUTOCAD®	Microsoft Windows
Dr. Halo II	PC Paint
Ventura Publisher	
Harvard Graphics™	

If you were previously running on a 4.0 system, note that with this release of 4.0.1 you can still use the applications listed under the "don't work" heading. Refer to *Installing Sun386i SunOS 4.0.1* for specifics on which files you must add to your system.

DOS Windows

Space on drive C – DOS "expects" drive C to hold up to 20 Mbytes. However, if the physical drive containing your home directory is almost full, there may actually be less than 20 Mbytes available.

The drive C supplied with your Sun386i system is actually a SunOS file stored on your hard disk or elsewhere on the network. Therefore, if the disk that holds your drive C file—your system disk or the disk in your network server—is low on disk space, DOS and PC applications may incorrectly report that there is no space left on drive C. If this happens, use Organizer to delete unnecessary files from your home directory.

As a rule, you should not store anything on drive C except copy-protected applications and certain DOS setup files. Use drive D, H, or R to store programs and files.

System panic – It is possible, though very unlikely, that the system could panic and display a `v86set.int` message if the serial port has characters buffered when DOS exits. If this happens, reboot the system by typing `b` at the `>` prompt. Then log in, open a Commands window, and type:

```
su
/usr/etc/dos.serial.adb
exit
```

The problem should not reoccur after you perform the above steps.

Pasting information into another window – When pasting information from one Desktop window into another, use the `(Copy)` and `(Paste)` keys on the left keypad. If you use menu selections to perform these functions, or to show the contents of a window's clipboard, in your System Messages window you will see this message:

```
Request to current holder failed: RPC: timed out
```

and the screen may freeze for 30 seconds. This problem occurs most often when you are using a menu to paste information from a DOS window into another window.

Inability to start DOS Windows – If a DOS window does not come up on your Desktop when you try to start one, see the “Locking services on non-Sun386i home directory servers” item under the “Network Administration” section of the *Administrator's & Developer's Notes for Sun386i SunOS 4.0.1*.

DOS command piping – If you use DOS pipes (see Chapter 2 in *Sun386i Advanced Skills*), be certain you have SunOS permission to write to the current DOS directory. Otherwise, the DOS window may freeze and become unresponsive to the keyboard and mouse (called “hanging”). For example, piping will work fine in DOS from your home directory, where you have write permission. But DOS piping may not work if your current DOS window is set to another directory for which you don't have SunOS write permission.

This problem affects piping only while within DOS. For example, if you type the following DOS commands in a pipeline from SunOS, it doesn't matter whether or not you have write permission to the current directory:

```
dos -c dir c: | dos -c sort
```

Commands missing from MS-DOS Reference Manual – The descriptions for the DOS FIND and FORMAT commands were omitted from the *MS-DOS Reference Manual* (part of the Sun386i Owner's Supplement documentation set).

The FORMAT command prepares a diskette so that DOS can store information on it. For information on using the FORMAT command, consult the on-line instructions in the “DOS Windows Handbook” in the Help Viewer, or see page 43 of *Sun386i System Setup and Maintenance*. The FIND command locates characters in a file. Here's an example that searches a file called MYFILE.TXT and displays all lines that contain the word budget.

```
FIND "budget" MYFILE.TXT
```

Using the FORMAT command – In certain cases you may want to create a bootable DOS diskette using the command FORMAT /S. The FORMAT command's /S option works only from drive C, so if you use it be sure that C is your current DOS drive.

When possible, type the FORMAT command from a DOS window. If you need to use FORMAT from a SunOS Commands window, use a Shell Tool or disable scrolling in a Command Tool window and type the command in this format:

```
dos -w -c format drive:
```

Do not type the FORMAT command from a Command Tool window that has an active scroll bar—the display from this command causes the window to quit without warning.

DOS international characters – If you edit DOS files in Sun386i Desktop text applications (for example, editdos, the Text Editor, or a Command Tool window), you may notice that certain graphics and accented characters are not displayed. This is most likely to be a problem for users writing in a language other than English. The following characters are affected:

Ç ü é â ä à á ç ê ë è ì î ï Æ Å É æ Æ ô ö ò ú ù ÿ Ö Ü € £ ¥ Pt f

DOS control characters such as Control-C (♥) are also affected. If you need to edit files containing any these characters, use a DOS editor that supports the DOS extended character set. You can also temporarily convert the file to ISO format to edit it using the Text Editor. See pages 184–186 of *Sun386i Advanced Skills* for more information on the DOS and ISO character sets.

DOS Windows quick-start feature – The DOS Windows “quick-start” feature described on page 245 of *Sun386i Advanced Skills* is turned on (enabled) by default. Keep this in mind when you are editing DOS setup files or following other instructions in the *Sun386i Advanced Skills* manual; several sections of the manual (including the notes on page 245) assume that DOS quick-start is turned off by default.

(The quick-start feature ensures that DOS Windows starts faster and skips the sign-on message when opening the window. For a more technical summary of this feature, see pages 248–249 of *Sun386i Advanced Skills*.)

Quick-start disabled after setup file changes – If you edit the files AUTOEXEC.BAT or CONFIG.SYS on drive C, you may notice that DOS goes through a standard boot procedure (described on page 247 of *Sun386i Advanced Skills*) each time you open a new DOS window. This is a built-in feature to ensure that DOS recognizes configuration changes. You can have DOS skip much of this boot procedure by reenabling quick-start:

1. Open a new DOS window and do any necessary tests to make sure that your changes to AUTOEXEC.BAT or CONFIG.SYS were correct.
2. Use the command `dos -s` as described in *Sun386i Advanced Skills* to reenable the quick-start feature.

Changing AUTOEXEC.BAT or CONFIG.SYS – If you have trouble using a newly opened DOS window after you make changes to AUTOEXEC.BAT or CONFIG.SYS on drive C, it's possible that you've deleted a required line (see page 262 of *Sun386i Advanced Skills*) or that you have added an invalid command to one of these files.

To restart DOS so that you can correct the C:AUTOEXEC.BAT or C:CONFIG.SYS file, do the following:

1. From a Command Tool window prompt, type:
`dos -q`
This starts DOS using settings in a special file (.quickpc) rather than those in the current C:AUTOEXEC.BAT and C:CONFIG.SYS files.
2. Correct the AUTOEXEC.BAT or CONFIG.SYS file as necessary using EDITDOS or another DOS editor, and save your changes.
3. Test your corrections by opening a new DOS window from the Desktop menu.

SunOS device names used by DOS – The names used to represent some of the SunOS devices in the setup.pc file (stored in your home PC directory) are shown incorrectly in *Sun386i Advanced Skills*. The correct lines are:

```
A          /etc/dos/defaults/diskette_a
#B         /etc/dos/defaults/diskette_b
COM1      /etc/dos/defaults/com1
#COM2     /etc/dos/defaults/com2
```

Unless you are adding another diskette drive or otherwise customizing DOS, you should not need to change the settings in this file.

Text-only DOS commands and ANSI .SYS – The command `dos -w`, which is used to run text-only commands such as `DIR` and `LINK` in a Command Tool window, doesn't work if you have the following line in your `CONFIG.SYS` file:

```
device=ansi.sys
```

(See page 255 in *Sun386i Advanced Skills* for more on the `CONFIG.SYS` file.)

If this line *is* in your `CONFIG.SYS` file, after you type `dos -w`, you'll see a standard DOS sign-on message, but the DOS prompt will not appear. One solution is to create an alternate `CONFIG.SYS` file containing the `ansi.sys` line, and to use it only for the particular application that requires it. (You can store the alternate `CONFIG.SYS` file in an additional drive C file. See *Sun386i Advanced Skills*, Chapter 9, for more information on creating additional copies of drive C.)

The `dos -w` command on terminals – Terminals connected to the Sun386i serial port do not support `dos -w`, which is the command that starts up DOS without windows.

Starting DOS from SunOS – When using the `dos` command to start a DOS window (either from a Command Tool window or in Organizer's file `.orgrc`) remember to enclose DOS commands in quotes if they contain back slashes (`\`), asterisks (`*`), or other special symbols. See *Sun386i Advanced Skills*, page 251, for examples.

Expanded memory support – DOS Windows now supports version 4.0 of LIM expanded memory. Depending on the available space in the `/tmp` directory on your workstation, you can enable up to 32 Mbytes of expanded memory. (The system reserves 2 Mbytes in `/tmp` for general purposes. DOS can use any additional space on `/tmp` for expanded memory.)

To make some applications start faster, you can disable expanded memory by following the directions on pages 202–205 of *Sun386i Advanced Skills*. Alternatively, you can keep expanded memory enabled but simply reduce the amount to 8 Mbytes. To do so, edit the `pemm.sys` line in your `CONFIG.SYS` file on drive C to read:

```
device=pemm.sys S512
```

(The `S` option specifies the number of 16-Kbyte "pages" to use. So, 512 pages is equal to 8 Mbytes.) For additional information on editing the `CONFIG.SYS` file, see pages 253–256 of *Sun386i Advanced Skills*.

Memory expansion boards can boost performance – If you have applications that make extensive use of LIM expanded memory, you can enhance the memory performance of these applications by installing a PC expanded memory board. This is because DOS Windows can communicate with dedicated memory boards more efficiently than with emulated LIM memory. To install a PC memory card:

1. Install the board according to the generic board installation instructions in *Sun386i Advanced Skills*.
2. Remove the `pemm.sys` driver line from the `CONFIG.SYS` file, if it was installed.
3. Install the special LIM driver that came with the memory expansion board.

DOS Devices

Printer boards for use with DOS – If your PC application has special printing requirements, you may need to install additional printers that are accessible only from DOS Windows. Normally PC printer boards should be assigned to LPT2 only. Printer

boards installed as LPT1 may not function properly. For examples on how to install a printer board, see pages 225–231 of *Sun386i Advanced Skills*; page 228 shows the specific entries required in the `boards.pc` file.

Troubleshooting PC boards – Certain types of PC boards may not function properly from DOS. Specifically, these are boards that:

- ◆ Generate interrupts at too high a rate
- ◆ Generate nonmaskable interrupts (NMIs)
- ◆ Act as “bus masters”
- ◆ Use “block mode” direct memory access

Many boards use only I/O ports and memory to interface with DOS. These boards work fine.

For information on PC board compatibility, call your Sun sales representative or Sun technical support engineers who have access to the Sun386i compatibility database for PC applications.

Interrupts: DOS applications that use a board generating interrupts at too high a rate may appear to “hang” as DOS Windows attempts to process a constant stream of interrupts. In general, boards that buffer information will work well, and boards that expect the rapid turnaround of a single-user, single-tasking PC will not. Also, boards that generate nonmaskable interrupts (normally, diagnostic devices used by engineers) are not supported by either SunOS or DOS systems.

DMA block mode: DOS Windows offers full support for most DMA operations offered on an IBM® PC AT or a compatible computer. However, a special kind of direct memory access, known as DMA block mode, is not supported under DOS.

If you have problems using any board under DOS Windows, check the manual that came with the board to determine whether the board requires a high interrupt rate or DMA block mode support. See *Sun386i Advanced Skills* for more information about using boards with DOS Windows.

Boards requiring reboot – Some PC boards require that you reboot the DOS window before they will work. This is more likely to be true if you are using the DOS “quick-start” feature. See page 242 of *Sun386i Advanced Skills* for more information on rebooting for PC boards.

Preparing the `boards.pc` file for DOS address space – Be careful when editing the `/etc/dos/defaults/boards.pc` file to include information about a memory-mapped board that you have added to the system. Include only the address space required for the board, not the board's total memory, in the `boards.pc` file. For example, an Intel® Rampage™ board with 2 Mbytes of memory only has 64 Kbytes in the DOS address space. The line describing the board would include `mem 64`. Chapter 8 of *Sun386i Advanced Skills* contains more information about memory-mapped boards and the `boards.pc` file.

DOS modem/communications software – When running DOS modem software and other serial communication applications software, do not exceed a 9600-baud data rate. You could lose data at higher rates.

Using the built-in serial port as COM2 – You can set up DOS Windows to access the built-in Sun386i serial port as COM2 instead of COM1. This feature is useful when you're using a software application that requires a COM2 port and you don't want to add another serial port to your system. To enable COM2 in this way, edit the `setup.pc` file in your home PC directory, following these steps:

1. Remove the # symbol from the following line in the file:
`#COM2 /etc/dos/defaults/com2`
2. Then, insert a # symbol at the beginning of this line in the file:
`COM1 /etc/dos/defaults/com1`

For more information on editing the `setup.pc` file, see pages 251–253 of *Sun386i Advanced Skills*.

Additional serial ports – You can add another serial port to your system by installing an AT-compatible serial board, and then activating SunOS software required to operate the board. One- or two-port serial boards installed this way are accessible to both DOS and SunOS systems. Multiport serial boards and their SunOS software drivers are also available from some PC equipment vendors. See the "System Setup and Maintenance" section of this bulletin for installation instructions.

Diskette operations may fail with data errors – Reading from or writing to a diskette may be very slow, or may not complete correctly. This problem occurs primarily on diskless clients or servers of diskless clients, when several users are simultaneously requesting information from the server. For example, the problem may occur when several people use Organizer to copy or move groups of files, or when several people are using an application to edit and update a database. In addition to slow diskette activity, under these circumstances you could also see the following message in a DOS window:

```
Data error reading drive A:  
Abort, Retry, Ignore, Fail?
```

Press **[R]** to retry the operation. If this doesn't work, you'll have to wait until network traffic decreases (when fewer people are requesting less from the server) before you can complete the diskette operation.

Accessing both the 5.25-inch and 3.5-inch drives simultaneously – Don't try to access the 5.25-inch and 3.5-inch drives at the same time (from different DOS windows). If you do, both might appear to work for a short time but then will start to generate error messages in their respective DOS windows. If this happens, just open and close the drive door on the drive generating the message. If both drives are producing error messages, open and close each drive's door. After the error messages stop appearing, you can access either drive individually but do not attempt to simultaneously access both.

The quick-start file and drive B – You might experience problems when using a second diskette drive attached to a DOS window if the `.quickpc` file setting for the drive differs from the setting shown in the DOS window. DOS could incorrectly access the 3.5-inch drive (the green light on the drive will come on) instead of drive B, or it could display one of the following three messages:

◆ Insert diskette for drive B: and strike

any key when ready.

- ◆ Not ready error accessing drive B.
- ◆ Seek error accessing drive B.

If you see any of the above messages or if the green light on the 3.5-inch drive comes on when attempting to use a second diskette drive:

1. Use the DOS Windows menu to attach the device if it's detached, or to detach the device if it's attached.
2. Reboot DOS by selecting the **Reboot DOS Window** menu option.
3. Try to access drive B again.

Using external drives or network cards as D: – You can change the first extended drive letter that DOS uses from D to E, F, or another drive letter. This is useful when you're setting up external disk drives or other devices (such as network cards) that expect to use D or E as their drive letter. For example, DOS Windows drives are normally arranged as follows:

A & B	Diskette drives
C	Emulated hard disk
D–S	Extended (SunOS) drives

But suppose you're installing a hard disk drive that expects to use the drive letters D and E. You'd set the first DOS Windows extended drive to F, so that the drive letters are arranged this way:

A & B	Diskette drives
C	Emulated hard disk
D, E	External hard disk drive
F–S	Extended (SunOS) drives

To change the starting extended drive letter, add the starting drive letter you want to use to the end of the RUNDOS line in your AUTOEXEC.BAT file on drive C. Example:

RUNDOS F:

In addition, you must change each d: in the file to f:. For example,

extend d: h:~ r: becomes extend f: h:~ r:

d: becomes f:

if exist d:autoexec.bat d:autoexec.bat becomes

if exist f:autoexec.bat f:autoexec.bat

For instructions on how to edit the AUTOEXEC.BAT file on drive C, see *Sun386i Advanced Skills*.

Printing

Look through this section for the latest information on printing—new software information, advice, and a few corrections to the Sun386i Owner's Set of manuals.

Your Default Printer

The printer with the name "lp" is the default printer for the system or the network. The first printer you add to a system or network using SNAP is automatically given the name "lp." Following are instructions on how to assign a different default printer for your use.

How to assign a default printer – To select a default printer, first find out from your network administrator, if necessary:

- ◆ Which physical printer in your work place you can or should use
- ◆ The name of the printer you want to use (lp1, lp2, or whatever)

Then use the Text Editor (see Chapter 4 in the *Sun386i User's Guide*) to include the following line in the file called `.cshrc` in your home directory:

```
setenv PRINTER printername
```

Enter the name of the printer you want to be your default in place of *printername*. Be sure to save the `.cshrc` file after you have edited it.

To make your printer assignment applicable to any window you work in on the Desktop, save any current work (remember to check icons for unsaved work), and then log out and in again.

When you get no output using the lpr command – If you use the `lpr` command (as described in Chapter 9 of the *Sun386i User's Guide*) and see the message "yellow pages not running," this is your system's way of telling you it is unable to find out which printer to send the job to. Consult your system administrator and be sure to report the message you got.

Powering down a parallel printer – Some parallel printers cause the Sun386i to "hang" if they are turned off during printing. If you experience this problem, you should power cycle your system. Be sure to see the note about power cycling in the section of this bulletin called "Before Setting Up Your System."

Printer Administration

Printer name – When using SNAP to add or modify a printer, you can change the printer's name if it is not lp. (This is documented incorrectly on pages 68 and 70 of the *Sun386i SNAP Administration* manual.) The printer with the name lp is the default printer for the system or the network.

Printer type – When using SNAP to add a printer, the default printer type is always Text-only, regardless of the port selected. This is documented incorrectly on page 68 of *Sun386i SNAP Administration*.

Setting up a serial printer – When setting up a serial printer, make sure that the parity setting for the Sun386i serial line and the printer match. Consult the printer manual for instructions on setting printer parity. Sun386i parity is set to EVEN.

Printing from a DOS Window

DOS applications using PostScript® output – Some DOS applications that support PostScript printers do not prefix their print files with the %! symbols expected by PostScript printers. Without these symbols, the printer cannot supply proper printouts of PostScript files. To prefix the %! symbols to your printer output, edit your ~/pc/setup.pc file, and change the LPT1 description to:

```
LPT1 (echo \%!\! && cat) | lpr
```

If you want to change the LPT1 default for all new users whose accounts will be set up on your system, log in as root and edit the file called:

```
/etc/dos/defaults/setup.pc
```

so that the LPT1 line reads exactly as it appears in the line cited above.

See *Sun386i Advanced Skills* for more information about the setup.pc file and how to modify it.

Some PostScript applications may generate files that are larger than the printer can handle (the standard limit is approximately 800,000 bytes per page). If you encounter this problem, simplify your page layout, or, if possible, add more memory to your PostScript printer.

Epson™ printer emulation – If you configure a PC application for Epson printing (supported by LPT3 in DOS Windows) and your printer is PostScript-compatible, you may find that bold, overstrike, subscript, and superscript characters are printed incorrectly. If you encounter this problem, configure the application for a PostScript printer, and send your printing to LPT1.

For More Information about Printing

Printing Task or Question	Where to Find Out about It
Sun386i printer compatibility	<i>Sun386i System Setup and Maintenance</i> , page 66
Connecting a printer to your Sun386i	<i>Sun386i System Setup and Maintenance</i> , pages 70–75
Basic printing commands and other general information	<i>Sun386i User's Guide</i> , Chapter 9
Printing mail	<i>Sun386i Advanced Skills</i> , pages 62–63
Printing in DOS Windows	<i>Sun386i User's Guide</i> , pages 153–154 and pages 165–166; <i>Sun386i Advanced Skills</i> , pages 213–219 and pages 252 and 265
Printer administration with SNAP	<i>Sun386i SNAP Administration</i> , pages 66–75
Adding a printer manually (without using SNAP)	<i>Sun386i Advanced Administration</i> (part of the <i>Owner's Supplement</i> of manuals), pages 42–46
Adding a printer to a non-Sun386i system	<i>Administrator's & Developer's Notes for Sun386i SunOS 4.0.1</i>

Index

A

- address space, for DOS Windows 61
- alias settings 48, 50
- Application SunOS
 - restoring 15
 - software 12
 - table of optional clusters 14
- applications. *See also* PC applications
 - on expansion unit disk 32
- AT memory expansion boards 51
- autoclose feature, for Help and Organizer 21, 51
- AUTOEXEC.BAT file 59, 63
- Automatic System Installation
 - disabling 44
 - enabling 44
 - failure 39

B

- backup
 - catalog location 28
 - daily incremental 27
 - diskette drive A restriction 27
 - DOS files 28
 - media restriction 27
 - on write-protected diskettes 13
 - performing 27
 - restrictions 28
 - schedule 27
 - using the diskette drive 28
- bar command 12, 13, 28
- baud rate, for DOS Windows software 61
- board
 - installation tips 9
 - installing PC memory 51
- boards.pc file 61
- boot server
 - network problem 44
 - removing 43
- bus mouse emulation 51

C

- CGA mode 56
- change_login feature 49

clusters

- loading entire set 14
- table of 14
- color monitor, Desktop 20
- COM1 62
- COM2 62
- Command Tool 24
- commands, text-only in DOS Windows 60
- communications packages, installing 15
- CONFIG.SYS file 59, 60

D

- date, changing 27
- default fonts 50
- default printer 64
- Desktop
 - automatic closing 21, 51
 - color 20
 - menu 23
- Desktop Kit 10
- devices
 - AT memory expansion board 51
 - DOS Windows names 59
 - serial printer and parity setting 17
- DIR command 60
- Direct Memory Access (DMA) channels, correction 51
- disk drives, external under DOS Windows 63
- diskette
 - 5.25" supported 4
 - backing up files 13
 - bootable for DOS Windows 58
 - error cases 27
 - formatted wrong 27
 - formatting commands 12
 - formatting for DOS Windows 58
 - high-density and low-density 12
 - low-density, restriction 27
 - problems under DOS Windows 62
 - SunIPC board 13
 - write-protection, restriction 27
- diskette drive
 - 5.25" versus 3.5" 62
 - attaching a 5.25" drive 13
 - bar command 28
 - dump command 28
 - problems accessing under DOS Windows 62

- diskette drive (*continued*)
 - tar command 28
 - using the 3.5" drive 12
- diskful client
 - changing name 41
 - configuring 46
- diskless client
 - changing name 41
 - removing 43
 - support on expansion unit disk 30, 32
- diskless system
 - installation 10, 37
 - on other networks 38
 - server support 4
 - time required to power up 12
- display driver, MS-Windows 52
- domain name 37
- domain policies 3, 44
- DOS
 - 9600 baud serial communication under 4
 - diskettes, making files available to Sun386i 13
 - dos command 60
 - dos -w command, unsupported on terminals 60
 - serial port use 3
- DOS Windows
 - .quickpc file 62
 - address space 61
 - AUTOEXEC.BAT file 59, 63
 - baud rate for modem and communications software 61
 - boards.pc file 61
 - color applications 55
 - COM1 62
 - COM2 62
 - CONFIG.SYS file 59
 - device names 59
 - diskette drive access 62
 - diskette formatting 58
 - diskette problems 62
 - dos -w command 60
 - dos command 60
 - drive C space problems 57
 - external drives as D 63
 - external monitors 56
 - failure to open 11
 - file sharing 4, 55
 - FIND command 58
 - FORMAT command 58
 - inability to start 54
 - international characters 58
 - key combinations not recognized 55

- DOS Windows (*continued*)
 - LIM expanded memory 4, 54, 60
 - network cards as D 63
 - new features 4
 - pasting information 57
 - PC applications compatibility 55
 - PC applications, adjusting volume 56
 - pipng 58
 - quick-start feature 59, 61
 - rebooting after PC board installation 61
 - serial port use 62
 - set up .pc file 59, 62
 - starting from SunOS 60
 - text-only commands 60
 - troubleshooting PC boards 61
- drive C, space problems 57
- Drop panel, moving in Organizer 22
- dump command 28

E

- enhancing system performance 21
- Epson emulation 65
- Escape key, in Text Editor 23
- Ethernet address 39
- expansion unit, powering up 15
- expansion unit disk
 - booting from 15
 - checking operation 31
 - creating swap space 30
 - setting up 30
 - specifying use 32
 - use 30
 - using the newfs command 30
- external drives, under DOS Windows 63
- external monitors 56
- extras command 50

F

- files
 - administration 27
 - backing up. *See* backup
 - file system structure 45
 - group ownership 49
 - loading in Text Editor 23
 - names, restrictions 23
 - Organizer, not displayed in 23
 - restoring. *See* restore
 - sharing, under DOS Windows 55
 - storing 27

FIND command 58
fingerd program 4
FORMAT command 58
formatting diskettes 12

G

group
 ownership of files 49
 primary, changing 36
group account
 concurrent modification 36
 creating, recovering from system failure 33
 creating with SNAP 33, 35
 modifying 36
 modifying, recovering from system failure 36
 removing, recovering from system failure 36

H

h command 48
Hayes 2400 modem, installing 29
Help Viewer
 autoclose feature, change to 21
 autoclose feature, modifying and disabling 51
 "Desktop Handbook" 21
 "Desktop Productivity Tips" 21
Hewlett-Packard LaserJet II printer 4
home directory
 changing 35
 on expansion unit disk 30, 32
 on non-Sun386i systems 3
home directory server 35

I

installation
 diskful client 46
 diskless Sun386i on other networks 38
 diskless system 37
 into other networks 40
 problems 43
 systems on a network 10
 system with expansion unit 37
 upgrading standalone to master server 38
international characters, in DOS Windows 58
Internet 4

K

keyboard, Text Editor and right numeric keypad 12

L

LIM Expanded Memory 4, 54, 60
LINK command 60
ll command 48
loadc command
 Developer's Toolkit 14
 optional clusters 14
lock daemon fix 3, 11
logging in, problem 20
login, security measures 3
login screen, enabling and disabling 49
logintool 3, 49
lpr command 64
LPT1 65

M

mail
 +inbox folder 49
 name stripe 23
 printing with prmail command 49
manual system installation 39
master server
 changing name 40
 determining it's working 25
 finding out its name 25
 upgrading standalone to 4, 38
memory, expanded for DOS Windows (LIM) 60
menus, pull-right or walking 51
Microsoft Windows. *See* MS-Windows
modem
 baud rate for DOS Windows software 61
 compatible with Sun386i 17
 Hayes 2400, installing 29
monitors
 15" monochrome 7
 external 56
 ground screw for color 8
mouse
 bus mouse emulation 51
 pad position on desktop 7
MS-DOS Reference Manual, additions 58
MS-Windows
 driver 4
 installing 14
 resizing 54
 SETUP utility 52

N

- name stripe information 48
- network
 - installation 10
 - network client, changing name 41
 - role 39
 - security 44
- Networks**, in SNAP menu 25
- New User Accounts
 - disabling 44
 - enabling 44
 - improvements 4
 - security 3
- null modem cable and DCD signal 16

O

- Organizer
 - autoclose feature, explanation 21
 - autoclose feature, modifying and disabling 51
 - displaying files, not able to 23
 - dropping files 22
 - facts about 22
 - problem resizing window 23
 - problem with update interval 22
 - root restriction 25
 - two unrelated windows 23
 - update display 22
 - update interval 22

P

- parity setting EVEN for serial devices 17
- passwd root command 26
- password
 - creating 34
 - root, changing 26
- PC applications
 - adjusting volume 56
 - compatibility 24, 55
 - Intel 386 chip 24
 - key combinations unrecognized by DOS
 - Windows 55
 - running color in DOS Windows 55
 - running on external monitor 56
 - special printing requirements 60
 - using LIM memory 60
- PC boards 51, 60, 61

PC-NFS

- making files available from 5.25" diskettes 13
- Programmer's Toolkit 4
- performance, enhancing 21
- pipng, in DOS Windows 58
- Policies**, in SNAP menu 25
- PostScript 65
- power cycling systems
 - how to 9
 - SunOS halted message 15
- primary group, changing 36
- printer
 - adding or modifying with SNAP 64
 - administration 64
 - default printer 64
 - default type in SNAP 64
 - name 28, 64
 - null modem cable and pin 8 16
 - parallel 28, 64
 - parity setting 17, 64
 - powering down 28, 64
 - serial 64
 - type 28
 - Versatec 16
- printing
 - Epson emulation 65
 - incomplete 65
 - no output 64
 - PostScript output 65
- prmail command 49

R

- resizing MS-Windows 54
- restore
 - all files 28
 - Application SunOS 15
 - different owner 28
 - diskette drive A restriction 27
 - files with setuid/setgid bits set 28
 - restrictions 28
 - to original disk 28
 - using the diskette drive 28
- root, disabling login 3
- root password, changing 26

S

- screenblank
 - changes 4, 21
 - enabling and disabling 18, 49

- scroll bar, none in Shell Tool 24
- SCSI terminator 10
- security 3, 4
- sendmail program 4
- serial boards
 - multiport boards 17
 - serial port drivers 17
- serial port
 - baud rate 17
 - driver for AT boards 17
 - use through DOS 3
- server, configuring slave 37
- setting up systems, desktop 10
- SETUP utility, MS-Windows 52
- set up .pc file 59, 62, 65
- Shell Tool 24
- slave server
 - changing name 40
 - configuring 37
- slay command 48
- SNAP
 - adding or modifying printer 64
 - displaying category entries 26
 - error messages 26
 - files modified 45
 - improvements 4
 - invoking 25
 - Networks 25
 - Policies 25
 - root restriction 25
 - tasks 25
- soft-carrier mode 16
- standalone system, upgrading to master server 4, 38
- Sun-3
 - home directories 3
 - server for diskless support 4
- Sun-4
 - home directories 3
 - server for diskless support 4
- Sun386i Developer's Toolkit, PC-NFS Programmer's Toolkit 4
- SunIPC board and 5.25" diskettes 13
- SunLink DNI 15
- SunView MS-Windows display driver 52
- system
 - boot server, removing 43
 - booting problem 43
 - changing information with SNAP 40
 - concurrent modification of information 42
 - diskful client, configuring 46
 - diskless client, removing 43

- system (*continued*)
 - Ethernet address 39
 - hung 64
 - name, changing 40
 - name, creating 39
 - network role 39
 - number, assigning 39
 - number, reusing 39
 - removing using SNAP 42
 - SNAP administration 38
- System Exerciser
 - Continue/Pause control button 19
 - diskette test 19
 - memory requirements 18
 - runs only if screenblank disabled 18
 - starting it with sysex -c 19
- system installation
 - automatic 39
 - connecting to network 38
 - diskful client 46
 - diskless 37
 - diskless Sun386i on other networks 38
 - into other networks 40
 - manual (with SNAP) 39
 - upgrading standalone to master server 38
 - with expansion unit 37
- system panic, steps to avoid 57
- system unit
 - 80-volt power jack gone 12
 - disk, checking operation 30

T

- tar command 28
- terminal
 - changing settings 29
 - dos -w command unsupported 60
 - null modem cable and pin 8 16
- testing the system. *See also* System Exerciser
- tape drive test 19
- Text Editor
 - loading file 23
 - right keypad not handled 12
- text-only commands, in DOS Windows 60
- time, changing 27

U

UNIX

- standard group accounts in SNAP 32
- standard user accounts in SNAP 32
- Update Interval in Organizer 22
- upgrading and restoring onto expansion unit disk 15
- user account
 - concurrent modification 36
 - creating with SNAP 33
 - creating, recovering from system failure 33
 - default files location 34
 - home directory, changing 35
 - home directory server 35
 - modifying with SNAP 35
 - modifying, recovering from system failure 36
 - moving from another Sun system 48
 - password 34
 - primary group, changing 36
 - removing 37
 - removing, recovering from system failure 36
 - SNAP administration 32
 - user name 34
 - with mail delivered to spool directories 35
- user name 34

V

- v86setint message 57
- Versatec printer/plotter 16

W

- walking menus 51
- windows
 - automatic closing 21
 - copy-and-paste between 21
- write-protected diskettes 13

Z

- zap command 48