



READ THIS FIRST
SunOS™ Release 4.1/SunOS Release 4.1 PSR A

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Read This First

READ THIS FIRST SunOS Release 4.1/SunOS Release 4.1 PSR A

1. Introduction

Sun Microsystems Inc., is pleased to provide you SunOS 4.1™/SunOS 4.1 PSR A*. SunOS 4.1 contains significant new software development functionality, industry standards and internationalization.

SunOS 4.1 (including SunOS 4.1 PSR A) is binary compatible with SunOS 4.0.x. Most applications written for 4.0.x will run on SunOS 4.1 without change. Notable exceptions to this are programs that access either the user or process structure in the kernel, or programs that depend on the details from `/dev/kmem`. Such programs must be recompiled.

SunOS 4.1 requires a full installation; and new functionality has been added which simplifies that process. Sun recommends that you carefully read the instructions outlined in this publication, the *SunOS 4.1 Release Manual*, and the installation manual *Installing the SunOS*. If you are installing a SPARCserver 390 or SPARCsystem 4X0, you will also need to refer to the *SunOS 4.1 PSR A Release Manual* for system-specific information.

About This Document

This *READ THIS FIRST* (RTF) contains information that was too late for publication in earlier Sun 4.1 and Sun 4.1 PSR A documents. It includes and updates the contents of the *READ THIS FIRST SunOS Release 4.1* (800-3845-10) issued for the standard SunOS 4.1 release and is a revision of a previous combined SunOS 4.1/4.1 PSR A RTF (800-4703-10). Both of the earlier documents are to be considered obsolete. If you have purchased a release *subsequent* to release 4.1 or 4.1 PSR A, the new release will have its own RTF, which you should look at first.

This RTF contains the following sections:

- Notes on SunOS Release 4.1
- Known Problems with SunOS 4.1
- Notes on SunOS Release 4.1 PSR A
- Known Problems with SunOS 4.1 PSR A
- Known Problems with Unbundled Products
- Corrections to 4.1 Documentation

The *Notes* and *Known Problems* sections under SunOS 4.1 also apply to SunOS 4.1 PSR A. Material covered in the PSR A sections is specific to SunOS 4.1 PSR A.

* PSR stands for "Platform Specific Realization". SunOS Release 4.1 PSR A extends SunOS 4.1 support to Sun SPARCserver™ 390 and SPARCsystem™ 4X0 workstations. SPARCsystem 4X0 refers to 400 series SPARCsystems. SunOS 4.1 PSR A is fully congruent with all aspects of SunOS 4.1.

Where to Go Next

After reading this document, the next publication you should read is the *SunOS 4.1 Release Manual*. It contains “Special Notes” and “Known Problems” chapters for this release which are important to understand before installing or using SunOS 4.1. If you are installing a SPARCserver 390 or SPARCsystem 4X0, you should then read the *SunOS 4.1 PSR A Release Manual*.

For a listing of the other SunOS 4.1 documents, see the *SunOS Release 4.1 Publications Roadmap* and the “Guide to Publications” section of the *SunOS 4.1 Release Manual*.

Getting Help

If you have problems installing or using SunOS 4.1, call Sun Microsystems with the information outlined below. In the United States the call 1-800-USA-4-SUN; outside the U.S., contact your local Sun Answer Center, or your Sun sales representative for assistance.

You Will Need the Following Information:

- Your name and electronic mail address (if any)
- Your company name, address, and phone number
- The model and serial number of your workstation
- The release number of your Sun software (4.1 or 4.1 PSR A). You can display the contents of the “message-of-the-day” file (`/etc/motd`) to check the number as follows:

```
vacation% cat /etc/motd
SunOS Release 4.1_PSR_A (GENERIC) #1: Wed Apr 11 18:24:48 PDT 1990
```

- Any information that may help to diagnose the problem.

Call your sales representative if you have questions about Sun support services or your shipment.

Notes on SunOS Release 4.1

Correction to SunOS 4.1 Release Manual: Required PROM Levels for SunOS 4.1

Information in the SunOS 4.1 Release Manual on the PROM levels required for running SunOS 4.1 is misleading. SunOS 4.1 did not introduce any PROM requirements beyond those of SunOS 4.0 and SunOS 4.0.3. The following information supplants that provided on pages 11-13 of the SunOS 4.1 Release Manual under Section 3.10, “PROM Issues with SunOS 4.1”.

SunOS 4.1 Minimum PROM Levels

In a relatively small number of cases, Sun-3 systems that have older boot PROMs and are **currently running under SunOS 3.X** may not be able to install SunOS 4.1. An unrelated PROM problem, for which there is a workaround, arises with some SPARCsystem 300 and 400 series machines with IPI disks. Both issues are treated below.

Required PROM Levels for Sun-3 Systems Running Under SunOS 3.X

Only if you have one of the Sun-3 systems listed in the table below and are upgrading from SunOS 3.X do you need to be concerned about your PROM level.

Sun-3 Systems Upgrading from SunOS 3.X: Minimum PROM Levels	
System	Minimum PROM Level
3/60	1.6
3/50, 3/75, 3/110, 3/120, 3/140, 3/150, 3/160, 3/180, 3/260, 3/280	1.8

Exceptions to the Table of Minimum PROM Levels

1. Systems with a CG6 or CG8 P4-bus graphics board need a PROM level of 2.9 or higher.
2. Systems with a 7053 VME/SMD disk controller require a PROM level of 2.7 or higher.
3. Systems with a Sysgen tape controller and a QIC-24 Archive tape drive require a PROM level of 2.6 or higher.

The following section tells you how to identify the revision level of the boot PROM on your workstation. Following that, instructions for identifying your system's tape drives and controllers are given.

Finding Your Present PROM Level

To find the present PROM level of your Sun-3 workstation, type the following at the PROM monitor prompt (>):

```
>kb
```

This will display your PROM level ("ROM Rev") on a screen similar to the following:

```
>kb
```

```
-----
Sun Workstation, Model Sun-3/60M.
ROM Rev 2.8.3, 8MB memory installed, Serial #61503.
Ethernet address 08:00:20:06:C7:A0, Host ID 4200080.
-----
```

Note: Sample display; contents may vary, depending on user input and the system used.

Identifying Sun-3 Tape Controllers and Tape Drives

The tape controller on your system can be identified by inserting a cartridge into the tape drive and observing the light on the tape drive. If the light goes on, you have an Emulex controller. If the light does not go on, or there is no light, you have a Sysgen controller.

If you have a door or a thumb lever on the front of the tape drive, you have a QIC-24 Archive tape drive, otherwise you have a Wangtec tape drive.

SPARCserver 390 and SPARCsystem 4X0 with IPI Disks

If you have one of the following:

- SPARCserver 390 with a boot PROM earlier than 3.0.3
- SPARCsystem 4X0 with a boot PROM revision earlier than 3.0

you will need to follow a workaround in order to boot the miniroot from MUNIX. This is described in detail under *Known Problems with SunOS Release 4.1 PSR A*, “Bug in Some Boot PROMs Prevents MUNIX from Booting the Miniroot on IPI Drives (1032123)”.

Installation Manual Caution

The installation procedure for Sun OS 4.1 has been streamlined and improved. These changes make installation considerably easier than in previous releases. Consequently, it is particularly important to use the *Installing the SunOS* manual, which comes with release 4.1 documentation, to install SunOS 4.1. Make sure that the first seven digits of the part number on the installation manual are 800–3803. The last two digits should be a 10 or, for later revisions, a number over 10.

Patch Instructions for SunIPC 1.2 and Sun C++ 2.0 on Pages 103-105 of 4.1 Release Manual Incorrect

Patch instructions for SunIPC 1.2 and Sun C++ on pages 103-105 of the *SunOS 4.1 Release Manual* are incorrect. Corrections are provided at the end of this RTF in the section “Corrections to 4.1/4.1 PSR A Documentation”.

NSE 1.2 Must Not be Installed on SunOS 4.1

Installing NSE 1.2 on a system running SunOS 4.1 will corrupt some system files and may cause a system failure. Use of NSE is not supported on release 4.1. This problem is fixed in NSE release 1.2.1.

vi(1) Now Uses terminfo(5V)

The editor vi(1) now uses terminfo(5V) rather than termcap(5). If you have created your own termcap entries, you may wish to use captinfo(8V) and tic(8V) to create corresponding terminfo entries.

Some Utilities Now Use the SystemV C Library

Certain system utilities, most notably vi(1), now use the SystemV version of the C library. This shared library (/usr/5lib/libc.so.*) is now loaded automatically during system installation. The SystemV optional software category does not have to be selected in order for this library to be loaded.

mt status and mt asf Commands Under SunOS 4.0.3 Not Compatible with SunOS 4.1

The use of the `MTGETSTATUS` ioctl data structure is changed in SunOS 4.1. As a result, the SunOS 4.0.3 (and earlier) binaries for `mt status` and `mt asf` cannot be used with SunOS 4.1.

Information Formerly in *PROM User's Guide* Now in Hardware and PROM Upgrade Documentation

SunOS 4.1/4.1 PSR A PROM information is provided in the platform-specific hardware documentation that accompanies new workstations and in the PROM upgrade documentation that accompanies new PROMs. There is no separate *PROM User's Guide* for SunOS Release 4.1/4.1 PSR A.

Known Problems with SunOS 4.1

SVVS NS/CMD/rfstop Test Panics System (1033184)

The system may panic if you try to run the `fmount(1)` command on an RFS server to forcibly unmount a client filesystem at the same time that the client is unmounting the filesystem.

Using SunView with Graphics Processors May Yield Unexpected Results (1032482, 1033073)

Using the SunView window system with GP, GP+, or GXP (GP2/GG9) may cause erratic behavior of the window system. If you encounter this problem, contact your local Sun Answer Center and reference bug numbers 1032482 (GXP) and 1033073 (GP, GP+).

Using `mkfifo` or `mknod` to Create a Named Pipe on a `tmpfs` Filesystem Causes the System to Panic (1032904)

Using `mkfifo(2)` or `mknod(8)` to create a named pipe on a `tmpfs` filesystem will cause the system to panic with the message:

```
panic: tmpnode_alloc()- unknown file type
```

The workaround for this is to make the named pipe on either an `nfs` or a `ufs` filesystem instead. A patch is available from Customer Support.

Kernels Larger than 1441792 Bytes Will Cause a System Crash on Sun-3 architectures (1034550)

A kernel of 1441792 Bytes or larger will panic a Sun-3 system. The problem will only show up when adding additional software to the GENERIC kernel, making it larger than 1441792 bytes. To find the size of your kernel, type `size /vmunix` on a command line. The size is displayed under "dec."

This problem can be avoided by adding the additional software to a smaller kernel. This is a simple matter of using one of the Sun-supplied alternatives to the GENERIC kernel. The easiest way to get a smaller kernel is to use one of the pre-configured small kernels that Sun supplies. The next easiest, but more desirable way of getting an even smaller kernel is to configure one yourself. Sun provides kernel configuration files to simplify this process as well.

See the *System and Network Administration* manual for a detailed discussion of the small kernels and kernel configuration.

Installing the Miniroot on Desktop SPARCsystems May Fail with Some PROM Revisions (1037550)

Some PROMs on desktop SPARCsystems may cause the miniroot load sequence to fail:

```
> b st()install sd(0,0,1)
Booting from: st(0,0,0)install sd(0,0,1)
Copying tape file st(0,0,3) to disk partition sd(0,0,1)
Copy completed - 6144000 bytes
Boot: sd(0,0,1)vmunix
Not a file system
boot failed
```

Note: Sample display; contents may vary, depending on user input and the system used.

In this event, load and boot the miniroot as shown:

```
> b st()
Booting from: st(0,0,0)
Boot: st(0,0,2)
Size: 10416+1000+113528 bytes
Standalone Copy
From Tape Device: st(0,0,3)
To Disk Device: sd(0,0,1)
Copy completed - 6144000 bytes
Boot: sd(0,0,1)vmunix
```

Note: Sample display; contents may vary, depending on user input and the system used.

SunInstall May Fail on Systems with More Than 16 Disk Drives (1038407)

When systems with more than 16 disk drives are configured, SunInstall may fail after all the installation forms have been completed and start the installation is selected. The failure occurs because a large amount of log-file text is generated that can use up all of the free space in the miniroot filesystem. There are two workarounds.

First workaround: Free up space in the miniroot prior to executing suninstall

Using `rm(1)`, remove the files `/boot.sun4` and `/usr/etc/rcp`. These files are not required for successful completion of the installation and will free up sufficient space to avoid filling the miniroot filesystem.

Second workaround: Only configure drives necessary for installing SunOS 4.1/4.1 PSR A

1. Before booting the miniroot, take all drives offline that will not have portions of SunOS 4.1/4.1 PSR A installed on them. This prevents SunInstall from recognizing the drives.
2. When the installation of SunOS 4.1/4.1 PSR A is complete, bring the drives online prior to booting the new system.
3. Configure the added drives:
 - Make device nodes (see `MAKEDEV(8)`)
 - Label disks (see `format(8S)` and *System & Network Administration*, Chapter 10)

- Create desired filesystems (see `newfs(8)` and `mkfs(8)`)

A Loaded Diskette will Hang or Panic a Desktop SPARCsystem at Boot Time (1032176)

It is important that a diskette *not* be loaded into the floppy drive of a desktop SPARCsystem 1 (as a diskless client) while booting. If a diskette is present, the boot attempt will hang or panic the system. If that happens, remove the diskette and reboot.

Modload(8) Fails When Loading the Floppy Driver on a Desktop SPARCsystem (1032357)

Using `modload(8)` to load the floppy driver on a running system will fail with the messages:

```
Undefined
 _fdintr_statp
 _fdc_hardintr
 _fdintr_opmode
 _fdintr_status
 _fdctlr_reg
 _fdintr_len
 _fdintr_statbuf
 _fdintr_timeout
 _fdintr_addr
```

In order to successfully load the floppy driver, execute the following:

```
august% su
august# cd /usr/sys/sun4c/OBJ
august# ld -r -o fd_load.o fd.o fd_asm.o
august# modload -entry _fdinit fd_load.o
```

CD-ROM May Fail to Mount on the First Try on Desktop SPARCsystems (1034600)

The first mount of a SunCD CD-ROM device sometimes fails the first time it is attempted on a desktop SPARCsystem. The same problem may occur the first time a desktop SPARCsystem is booted with a SunCD. For standalone systems the solution is straightforward; the second mount attempt will work.

The solution is a little more complex when the problem crops up on servers attempting to install clients or software on clients for the first time (using `add_client(8)` or `add_services(8)`). There is a way to avoid this problem and a way to work around it:

- You can avoid this problem by running

```
haggard% mount -rt hsfs /dev/sr0 /usr/etc/install/tar
```

before `SunInstall` is executed in the miniroot, or the first time `add_services` or `add_client` is used for a client.

- The problem can be worked around by ignoring the following message if it is returned in the `SOFTWARE FORM` of `SunInstall` or `add_services`:

```
get_software_info: cannot mount /dev/sr0 on /usr/etc/install/tar
Press <Return> to continue ....
```

Just enter a **return** and answer **y** to the question that follows.

NOTE: The `get_software_info: cannot mount` message may be returned the first time a server attempts to run `add_client` for a client or clients. If that happens, the server must execute `rm_client(8)` on the same client or clients before attempting the second attempt to add them.

st0 Must be Made before xt0 (1034304)

On Systems that have both `st0` and `xt0` tape drives, the device files *must* be made in the following order:

```
MAKEDEV st0
```

then

```
MAKEDEV xt0
```

If these files are made in the reverse order, `MAKEDEV st0` removes the `mt0` file and links it to `st0`. This leaves the user with no connection to `xt0`.

If you have both `st0` and `xt0` tape drives, but use only `st0` in SunInstall, the system will come up with `mt0` linked to `st0` and no way to access `xt0`. You can fix this by doing `MAKEDEV xt0` which changes `mt0` to access the `xt` drive.

Erroneous mbuf map full le0 Message Appears on Desktop SPARCsystems Running SunDiag (1033551)

After booting a desktop SPARCsystem with SunDiag running `le0` on a network, the following error message will appear in the console window:

```
mbuf map full
le0: out of mbufs - packet dropped
```

This message is harmless but annoying. It will stop when SunDiag is no longer running (`le0`) Ethernet.

Erroneous Broken pipe Message from Desktop SPARCsystems during Floppy Installation (1033552)

A number of harmless `Broken pipe` messages will appear while booting SunOS 4.1 on a desktop SPARCsystems from floppy disks. Just ignore them.

CD-ROM Error Messages on Console (1032918)

Messages similar to the one below may appear on the console at various times, most often when you mount the CD-ROM or run demos from it. They can be disregarded.

```
sr0a: read recoverable, block 198000
sense key(0x1): soft error, error code(0x18): soft data error
```

System Appears Inactive for Two or More Minutes While MUNIX Loads (1033244)

When MUNIX is loaded, devices are probed and then the file is read from the release media. This may take two or three minutes, but there is no indication of any activity on the screen, so that it may appear as if the system is inactive and MUNIX is not being loaded.

Large maxusers Parameter May Cause System to Panic (1038406)

If the `maxusers` parameter in the kernel configuration file is set too high the resulting kernel will panic during the system boot sequence with one of the two messages below:

```
panic: insufficient virtual space for segu: nproc too big?
Watchdog Reset!
```

If this occurs, reboot the system using the generic kernel and make a new custom kernel using a smaller `maxusers` value. The `maxusers` limit varies, depending on the system and the way its kernel is configured (for example, the limit on a SPARCserver 490 is close to 286).

eeeprom Command Must be Used with -i Flag (1034017)

The `eeeprom` command must always be used with the `-i` flag when run on a SPARCsystem 300 series or SPARCsystem 400 series machine. Without the flag, the command results in the following error message:

```
eeeprom: software area checksum wrong
```

Full Hostnames are Required in /etc/hosts.equiv and .rhosts

When running NIS in conjunction with DNS, `/etc/hosts.equiv` and `.rhosts` must be fully qualified if the host is not in your NIS map or DNS domain.

NOTE: The term "NIS" has replaced "YP"; see the *System and Network Administration* manual (Part Number 800-3802-10) for details and a complete description of NIS usage.

Support for Sun386i

SunOS 4.1 cannot be run on a Sun386i desktop workstation. Those workstations *can* however, boot as clients of a release 4.1 server using the Sun386i release 4.0.2 Upgrade Server Kit and the instructions below. See your local Sun sales representative for ordering instructions for the Upgrade Server Kit.

NOTE: SunOS 4.1 must be installed *first*, then the Upgrade Server Kit.

The *Installing Sun386i SunOS 4.0.2* manual, which comes with the Upgrade Server Kit, contains an error in the installation instructions.

The problem can be taken care of with a few changes to the `install_update` script as explained below.

Follow the installation procedures described in the *Sun386i SunOS 4.0.2 Installation Guide* (Part Number 814-5033-02) through Step 6 (on page 18). Before executing the shell script described in Step 7, `install_update`, you must first make two changes to that script. On line 1036 of this script change

```

to
    mt -f $device bsf 1
    mt -f $device nbsf 1

```

On line 1039, change

```

to
    stat='$remote "mt -f $device bsf 1 ; echo "$status' 2>>/dev
    stat='$remote "mt -f $device nbsf 1 ; echo "$status' 2>>/dev

```

After those changes have been made, continue with the installation at Step 7 as instructed.

Notes on SunOS Release 4.1 PSR A

Two bugs, fully described under *Known Problems with SunOS Release 4.1 PSR A*, should be given special attention:

- Bug in Some Boot PROMs Prevents MUNIX from Booting the Miniroot on IPI Drives (1032123)
- User Must MAKEDEV st4-st7 before Accessing Tape Drives on Second Host Adapter (1036964)

SCSI Tape Names Change

SunOS release 4.1 and SunOS release 4.0.3 for the SPARCservers 390 and 490 supported only four SCSI tape drives split across two host adapters:

1st Host Adapter	st0	st1
2nd Host Adapter	st2	st3

However, in SunOS 4.1 PSR A, eight SCSI tape drives are now supported across the same two host adapters:

1st Host Adapter	st0	st1	st2	st3
2nd Host Adapter	st4	st5	st6	st7

Note that tape drives have different names depending on which release is installed. A tape drive configured as st2 under SunOS 4.0.3 becomes st4 under SunOS 4.1 PSR A.

Known Problems with SunOS Release 4.1 PSR A

Bug in Some Boot PROMs Prevents MUNIX from Booting the Miniroot on IPI Drives (1032123)

A bug in SPARCserver 390 boot PROMs earlier than 3.0.3 and in SPARCsystem 4X0 boot PROMs earlier than 3.0 prevents MUNIX from booting the miniroot on IPI drives.

MUNIX (Memory Unix) is a reduced version of UNIX that runs entirely in RAM and contains the `format` program for formatting and partitioning disks. *MUNIX* is loaded off the release media primarily so that `format` can be used



on disks that will contain system data.

The *miniroot* is a minimal version of UNIX that is loaded into the swap partition of the system disk in order to run SunInstall.

Prior to SunOS 4.1, if you booted MUNIX to run `format`, you had to boot off the release media a second time in order to copy the miniroot to disk and then run SunInstall. Now, a script automatically copies the miniroot to disk when you quit the `format` program and allows you to boot the miniroot from disk:

```
format> q

Mini-root installation complete.

What would you like to do?
  1 - reboot using the just-installed miniroot
  2 - exit into single user shell
Enter a 1 or 2:
```

If you now enter 1 to boot the miniroot from an IPI disk, the PROM bug prevents booting and generates one of the following messages:

```
checksum xxxxxxx !=yyyyyyyyy trying to boot anyway
Illegal Instruction ....
Error/doing reset
```

There are two workarounds, depending on whether you are installing from tape or CD-ROM. Both begin when the screen shows:

```
Mini-root installation complete.

What would you like to do?
  1 - reboot using the just-installed miniroot
  2 - exit into single user shell
Enter a 1 or 2:
```

Installing from Tape

The following steps will boot the miniroot and allow you to use SunInstall.

1. Halt your system: Press

L1/Stop - **a**

2. Enter the commands in the box:

```
> bst ()
Boot: id(0,0,1)vmunix
```

Your system will boot the miniroot and allow you to use SunInstall.

Installing from CD-ROM

The following steps will boot the miniroot and allow you to use SunInstall.

1. Halt your system: Press

[L1/Stop] - [a]

2. Enter the boot command and respond to screen prompts as shown below:

```
>b sd(0,30,3) -asw
root filesystem type (4.2 nfs ): 4.2
root device (.....): id000b
root on id000b fstype 4.2
Boot: vmunix -asw
.
.
.
root filesystem type (4.2 nfs ): 4.2
[45 second pause]
root device (.....): id000b
swap filesystem type (spec 4.2 nfs): spec
swap device (.....): id000b
Swapping on root device, ok? y
.
.
.
#
```

Note: Sample display; contents may vary, depending on user input and the system used.

Device Files for SCSI Tapes on Second Host Adaptor are Missing (1036964)

/dev/rst4 through /dev/rst7 are missing from the MUNIX, miniroot, and UNIX file systems. Device files for these tape drives must be created before they can be accessed. This must be done manually for MUNIX and UNIX; in the miniroot, SunInstall automatically creates the device files it needs for installation by itself.

Creating Device Files from MUNIX

In order copy the miniroot from a tape drive on the second host adaptor to disk while in MUNIX, you will need to boot MUNIX, exit to a single-user shell, use MAKEDEV to create the necessary device names, and then load the miniroot from MUNIX:

1. Boot MUNIX.

When booting completes, the screen displays:



```

What would you like to do?
 1 - install SunOS mini-root
 2 - exit to single user shell
Enter a 1 or 2:

```

2. Enter 2.
3. Change directories to /dev and create the required device names.

```

# cd /dev
# MAKEDEV st4 st5 st6 st7

```

4. Press **Control-D** to return to the menu in Step 1:

```

What would you like to do?
 1 - install SunOS mini-root
 2 - exit to single user shell
Enter a 1 or 2:

```

5. Enter 1 to load the miniroot.

Creating Device Files in Multi-user Mode under UNIX

After installation, when your system is booted up and running in multi-user mode under UNIX, device files for the missing tape drives on the second host adapter must be created again:

```

# cd /dev
# MAKEDEV st4 st5 st6 st7

```

Spurious Warning Message from IPI Disk Controllers (1023347)

When booting from IPI disks the following message may be displayed:

```
vmunix: idc0: ctlr message: 'Warning: bad EEPROM checksum'
```

The warning is harmless and may be ignored.

PSR A Online Manual Pages May be Overwritten On Servers Supporting Sun-3 or Sun-3x Clients (1032987)

In SunInstall, if you select the software category **Manual** (online manual pages) for two application architectures, the category will be loaded twice. For non-PSR A machines this is not a significant problem. If there is adequate space, SunInstall simply copies the data twice. If there is not enough space, SunInstall sends an error message. In this case, pressing **Return** causes the second set of manual pages to overwrite the first, so that no additional space is required.

A problem can arise for a PSR A SPARCserver 390 or SPARCsystem 4X0. The 4.1/4.1 PSR A CDROM and the 4.1 PSR A tapes have several extensions to the manual that are not on the 4.1 tapes. If a PSR A machine is functioning as a server, the PSR A manual pages will be loaded first. If the Manual software category for a Sun 3 client is selected, it will be loaded second, and overwrite the PSR A manual pages. This can be avoided by selecting Manual only for the PSR A server, and not for clients.

4.1 and 4.1 PSR A Share /usr/include (1033534)

4.1 and 4.1 PSR A clients and servers share the same version of /usr, and thus share the same /usr/include. Several header file changes were made in 4.1 PSR A that are necessary for building a 4.1 PSR A kernel. These changes are not in /usr/include since /usr/include is occupied by the standard 4.1 header files.

For programmers who need to access the PSR A version of the header files, the files are in the kernel configuration area:

```
/export/exec/kvm/sun4.sunos.4.1_PSR_A/sys/*
```

The most significant change made in PSR A was to `sys/mtio.h`, where macros now support 8 tape drives instead of 4. The other header file differences are seen only inside the kernel.

add_client Does Not Set Up Multiple Hostnames for Multiple Ethernets (1017238)

A server with multiple ethernet will have separate hostnames for each of them. The `add_client` utility only knows the hostname for the first ethernet. As a result, diskless client's created on secondary ethernet will only have the hostname for the first ethernet and will not be able to boot. To correct this, you must manually change the hostname of the first ethernet to the hostname of the client's ethernet in the following files on the server:

```
/etc/bootparams
/export/root/client/etc/fstab
```

In addition, SunInstall only enters the hostnames of the first two ethernet on a server in a client's `/export/root/client/etc/hosts` file. You must manually enter the hostnames of any additional ethernet.

If you are using NIS (Network Information Service), you will also need to update the `bootparams` map on the NIS server.

The /boot Program Can only Boot Off First Disk Controller (1023453)

As the result of a bug in the `/boot` program, systems can only boot from the first disk controller. (See also the following bug.)

Boot PROMs 3.0 and Higher Can Only Boot Off IPI Disk Units 0 and 1 (1037179)

A boot PROM bug in PROMs 3.0 and higher limits booting to IPI disk units 0 and 1. In combination with the previous bug, this restricts system to booting from either `id000` or `id001`.

Error Messages During Heavy Disk Activity (1036367)

During heavy disk activity, error messages similar to the one below may appear. They can be disregarded.

```
Apr  9 13:43:46 muishu vmunix: id003h: block 849694 (849694 abs):  
write: Conditional Success. Data Retry Performed.
```

/bin/mt May Erroneously Access st4 (1035039)

/bin/mt accesses /dev/rmt12 by default. In SunOS 4.1, /dev/rmt12 is linked to /dev/nrmt8 (/dev/nrst8), which is tape unit 0 (st0), opened for no rewind on close, at 1600 BPI. This was for backwards compatibility with BSD tape names, and will be removed in the future.

SunOS 4.1 PSR A supports 8 tape drives, and thus the tape drive name space is fully populated. In 4.1 PSR A, /dev/rmt12 is /dev/rst12, which is which is tape unit 4 (st4), opened for rewind on close, at 1600 BPI.

So in 4.1 PSR A, if one does not use a TAPE environment variable or explicitly specify a tape drive with the `-f` argument on the command line, /bin/mt will attempt to access st4. If st4 exists, it will be opened for rewind, which is probably not what was intended. If st4 does not exist, there will be an error message:

```
/dev/rmt12: no tape loaded or drive offline
```

cgsix Frame Buffer Generates Errors with Some PROMs (1030399)

On SPARCserver 390s with PROMs earlier than 3.0.2 and on SPARCsystem 4X0s with PROMs earlier than 3.0, the cgsix frame buffer may generate screen errors or garbage screen when `dmesg` runs on the console. Problems include keyboard buffering (characters not being printed on the screen or recognized until a carriage return is entered), and mouse event states not being reset (for example, if an event state is not reset, once you scroll up on a scrollbar, you cannot scroll down, or do anything else with the mouse).

Known Problems with Unbundled Products

GENERIC_SMALL Kernel Configuration File Must be Modified for Use with SunNet/SunLink Products

If your system is using a kernel defined in the `GENERIC_SMALL` kernel configuration file, you must modify the file before installing any unbundled SunNet/SunLink products. A single line of the file must be edited so that `vmunix_small` is replaced by `vmunix`.

1. Change directories to

```
/usr/kvm/sys/kernel-archconf
```

– replace *kernel-arch* with the kernel architecture of your workstation (for example, sun4c)

2. As root, open the file `GENERIC_SMALL` for editing.
3. Find the line

```
config vmunix_small swap generic
```

4. Change `vmunix_small` to `vmunix`:

```
config vmunix_small vmunix swap generic
```

Patch Required for Moving SunLink Channel Gateway 7.0 from SunOS 4.0 to SunOS 4.1

If you are running SunLink Channel Gateway 7.0 under SunOS 4.0 and wish to install SunOS 4.1, a patch for the Gateway product must be obtained from your local Sun Answer Center.

Patch Required for Running SunNet FDDI/DX 1.0 under SunOS 4.1

A patch is necessary for running SunNet FDDI/DX 1.0 under SunOS 4.1. You can obtain a patch tape from your local Sun Answer Center.

Problem Installing Sun58TE 1.0 Under SunOS 4.1 (1029069)

A bug in the install scripts for Sun58TE 1.0 prevents installation under SunOS 4.1. There are two solutions, depending on whether you were running Sun58TE 1.0 under an earlier release and backed it up with the `dump(8)` command or need to install it from scratch. Once installed, there are no problems running Sun58TE under SunOS 4.1.

System Running Sun58TE 1.0 Under an Earlier Release

If you backed up software from an earlier release with the `dump(8)` command, the `restore(8)` command will copy Sun58TE back to disk under SunOS 4.1, and no installation procedures are necessary.

Installing Sun58TE from Scratch

If you need to install Sun58TE 1.0 on a 4.1 system from scratch, you can use the following work-around:

1. Attempt to install Sun58TE. This will fail, but leave the install scripts in `/usr/tmp/unbundled`
2. Edit `/usr/tmp/unbundled/1.0_Sun58TE`. Change


```
"SOS_COMPAT="4.0"
```

 to


```
"SOS_COMPAT="4.1 4.0"
```
3. Execute `/usr/tmp/unbundled/1.0_Sun58TE`. From this point on the standard installation is carried out.

Support for SPE 1.1 (1034860)

The note on page 106 of the *SunOS 4.1 Release Manual*, regarding Symbolic Programming Environment™ (SPE™) 1.1 is incorrect. SPE 1.1 is supported on SunOS 4.1; no patch is necessary.

However, please note the following two SunOS 4.1-specific SPE problems:

- If SPE 1.1 is built (using the `$SPE_ROOT_DIR/build-spe` script) under SunOS 4.1, it will fail after trying to write the SPE image to a nonexistent directory. That directory will be either

```
$SPE_ROOT_DIRECTORY/sun3-unknown
or
$SPE_ROOT_DIRECTORY/sun4-unknown
```

depending on the application architecture of your system.

There are two ways to avoid this problem. The first solution is to link the nonexistent directory to

```
$SPE_ROOT_DIRECTORY/sun3-4.0
or
$SPE_ROOT_DIRECTORY/sun4-4.0
```

(whichever is appropriate to your system).

Alternatively, you can edit the `$SPE_ROOT_DIRECTORY/os` shell script, changing

```
/SunOS Release 4.0/
to
/SunOS Release 4./
```

- The second SPE problem is caused by stack overflows, which may cause the Lisp process to die. Specifically, overflowing the stack and then, without first unwinding the stack, overflowing it again (recursive stack overflows) will kill your system. Avoiding these stack overflows, especially recursive stack overflows, will prevent this problem.

Sun expects to fix both these problems in the next release of SPE.

The Modula-2 2.1 dbx Core Dumps When Using the `what is` command (1031079)

Use of the `what is` command should be avoided when using the `dbx` with Modula-2. It will cause a core dump.

NeWS 1.1 on Type-4 Keyboards

When NeWS 1.1 was released, Type-4 keyboards did not exist. In order to use NeWS 1.1 with a Type-4 keyboard, the following patch is required. The patch causes NeWS to treat a Type-4 keyboard as a Type-3.

```
$NEWSHOME/lib/NeWS/UI.ps.
```

The patch is as follows (context "diff" file):

```
cd $NEWSHOME/lib/NeWS
*** UI.ps-      Wed Jan 18 11:49:15 1989
--- UI.ps      Tue Mar  7 12:27:00 1989
*****
*** 174,179 ****
--- 174,180 ----
  /KB_VT100      1      def
  /KB_SUN2       2      def
  /KB_SUN3       3      def
+ /KB_SUN4       4      def
  /KB_ASCII     15     def

  /TR_NONE      0      def
*****
*** 699,704 ****
--- 700,708 ----
  (NeWS/sun1_keys.ps) run
  }
  KB_SUN3 {
      (NeWS/sun3_keys.ps) run
  }
+ KB_SUN4 {
+     (NeWS/sun3_keys.ps) run
+ }
  /Default {
```

SunTrac 1.2 Installation Fails on Tape Drives st1 through st7 (1031505)

Installing SunTrac 1.2 from tape drives st1 through st7 fails. This is because the interior procedure `install_unbundled` only has st0 as a tape drive equipment name for 1/4-inch tape and mt0 as its name for 1/2-inch tape.

The following workaround allows installation from tape drives other than st0.

1. Mount the SunTrac 1.2 tape in the tape drive.
2. Extract the `install_unbundled` script from the tape.

For 1/4-inch tape enter:

```
% cd /etc/tmp/unbundled
% mt -f /dev/nrstnumber rew
% mt -f /dev/nrstnumber fsf 1
% tar xvfbp /dev/nrstnumber 126
% mt -f /dev/nrstnumber rew
```

– Replace *number* with the tape device number (1-7)

For ½-inch tape enter:

```
% cd /etc/tmp/unbundled
% mt -f /dev/nrstnumber rew
% mt -f /dev/nrstnumber fsf 1
% tar xvfbp /dev/nrstnumber 20
% mt -f /dev/nrstnumber rew
```

– Replace *number* with the tape device number (1-7)

3. Copy `install_unbundled` to `install_unbundled.save`.
4. Edit `install_unbundled`, changing all occurrences of `st0` to the `st-number` of your tape drive.
5. Install SunTrac 1.2 from the tape drive you designated in `install_unbundled`:

```
% /usr/etc/extract_unbundled
```

Corrections to 4.1 Documentation

Corrections to the *SunOS 4.1 Release Manual*

1. Pages 11-13 give misleading information on required boot PROM revision levels. The correct information is provided at the beginning of this RTF in the section *Notes on SunOS Release 4.1*, under the heading “Correction to SunOS 4.1 Release Manual: Required PROM Levels for SunOS 4.1”.
2. On page 21, the statement:

`sil` (a second SCSI-3 host adapter), does not work on SunOS 4.1

 is not correct. `sil` does work on SunOS 4.1/4.1 PSR A.
3. A caution was inadvertently omitted from the “Extracting Patches from CDs” section which starts on page 101. The text is below, it should be inserted below the table of “patches available on the CD-ROM” on page 102:

NOTE: If you are installing C++ patches on a heterogeneous server with clients of different architectures, you *must* extract the patches for each architecture separately.

4. On page 103, Step 2 of the instructions in the “Patch Installation with `extract_patch(8)`” has two errors. The name of this patch is “IPC.” It is incorrectly given as “ipc.” The default patch directory should be `/usr/tmp/Patch_IPC`. It is incorrectly given as `/usr/tmp/Patch_ipc`.
5. On page 103, Step 3 of the “Patch Installation with `extract_patch(8)`” is incorrect. It should be replaced with the following:

Change directories to where the patch has been placed (`/usr/tmp/Patch_IPC` by default), and run the `install_ipc` installation script. Then execute `1.2_IPC` to install the patch.

6. On page 104, the last paragraph of the “Where is the Sun C++ Patch Installed?” section should read:

The *installation* script is designed to install the patch for a single architecture (Sun-3 or Sun-4). If you are installing the patch on a heterogeneous server with clients of different architectures, you *must* run `extract_patch(8)` for each architecture.

7. The first sentence of page 105 has an incorrect instruction to extract the C++ patch directory. The correct command is:

```
/usr/etc/extract_patch -DEFAULT -pC++_2.0
```

8. On page 105, the first sentence of the “Non-Default Patch Installation” section shows an incomplete instruction to extract the non-default patch. The correct command is:

```
/usr/etc/extract_patch -pC++_2.0
```

9. Pages 148-9 of Appendix D, Section D.9, state that the `ttya-ignore-cd` and `ttyb-ignore-cd` options of the EEPROM can be used to control the carrier-detect line of ports `ttya` and `ttyb`. This is incorrect. Use the `ttysoftcar` or *kernel-flag* methods, as documented in *System & Network Administration*, Section 11.4, “Adding a Modem to Your System”.

Corrections to *Installing the SunOS*

1. On page 17, under Section 1.9, “Pre-Installation Checklist”, replace

Save to tape or diskette the output of each command:*

with

Save to tape or diskette **and print** the output of each command:

Also replace the line

Save to tape or diskette a copy of each of:

with

Save to tape or diskette **and print** a copy of each of:

2. On page 150, add the following paragraphs to the beginning of the section, “Completing the SOFTWARE Form”.

You can install all the SunOS software for a server and its clients during a single execution of SunInstall. This is the preferred method for a heterogeneous server because it allows SunInstall to correctly size the `/export` partition.

The general procedure for selecting server and client software is to first select software for the server’s own architecture, then, instead of exiting the SOFTWARE Form, to redisplay it and select software for a client of a different architecture. You do not exit the SOFTWARE Form until you have redisplayed it and entered software categories for all the client architectures you will be supporting. If you are installing from tape, each time you display the SOFTWARE Form for a different client architecture, you will need to mount the appropriate SunOS release tape for the client.

3. On page 157, under the section, “Completing the CLIENT Form”, the following paragraph should be added below the screen in Step 1.

If you selected software for multiple client architectures on the SunInstall SOFTWARE Form, all the architecture names may not fit on the Client Form "Architecture Type" line. If this is the case, the prompt [MORE] is displayed at the far right of the line. Selecting [MORE] displays the remaining architectures.

4. On page 205, the first and third lines in the fourth gray box show:

```
Boot: st (0, 0, 4) -sw
```

The -sw is incorrect, the commands should appear as

```
Boot: st (0, 0, 4)
```

5. On page 239, the instruction in Step 8 is incorrect. It should read:

Enter 4.2 and respond to the prompts that follow as shown, substituting

Corrections to the *System and Network Administration Manual*

An inadvertent omission requires the following corrections to the *System and Network Administration* manual (Part Number 800-3805-10):

- On pages 257 and 261, the reference: "See the section on @TitleOf(repair.sector)" should read: "See the section on *Repairing a Defective Sector*".
- On page 269, the reference: "See the section on @TitleOf(defect.list)" should read: "See the section on *Creating a Defect List*".
- On page 279, the reference: "See the section on @TitleOf(using.format)" should read: "See the section on *Using format for Basic Maintenance*".

Corrections to the *SunOS Reference Manual*

Additions to ie(4S)

In the 4.1 ie(4S) Manual Page, the CONFIG — SUN-3x SYSTEM section should read:

```
device ie0 at obio ? csr 0x65000000 priority 3
device ie1 at vme24d16 ? csr 0xe88000 priority 3 vector ieintr 0x75
device ie2 at vme24d32 ? csr 0x31ff02 priority 3 vector ieintr 0x76
device ie3 at vme24d32 ? csr 0x35ff02 priority 3 vector ieintr 0x77
```

The configuration lines for the ie2 and ie3 were inadvertently omitted.

Incorrect NIS References

The following Manual Pages incorrectly refer to NIS as "Network Interface Service." These references should be to the "Network *Information* Service."

Section 4

Intro(4), List(4), nit(4P)

Section 8

add_client(8), add_services(8), adduser(8), automount(8), boot(8S), bootparamd(8),
dname(8), etherfind(8C), ifconfig(8C), ipallocald(8C), keyserver(8C), logintool(8),



makedbm(8),
netconfig(8C), newkey(8), npnd(8C), pwck(8V), pwdauthd(8C), rarpd(8C), rpcinfo(8C), send-mail(8), sys-config(8), sys-unconfig(8), tftpd(8C), uid_allocd(8C), unconfigure(8), ypbatchupd(8C), ypinit(8), ypmake(8), yppasswdd(8C), yppoll(8), yppush(8), ypserv(8), ypset(8), ypupdated(8C), ypxfr(8)

Correction to *Sun-4 Assembly Language Reference Manual*

The part number on the *Sun-4 Assembly Language Reference Manual* was printed incorrectly on a small number of copies. The part number should be **800-3806-10**, not *800-3086-10*.

It is important to reference the part number as **800-3806-10** when contacting Sun to ask questions about the manual or order additional copies.