



AUSPEX

NetServer System Software Version 1.9.2M1 Software Release Note

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Important Notice for Upgrade Customers

The upgrade instructions in this release note are for systems that currently run Auspex software version 1.8 or later. If your server is running a software version earlier than 1.8, contact Auspex Technical Support.

Important Notice for ServerGuard™ Customers

The ServerGuard optional product requires a patch to run with Version 1.9.2M1. Contact Auspex Technical Support for information on the availability of this patch.

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WARNING: This equipment has been tested and found compliant with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency and, if not installed and used in accordance with the instruction manual, may cause harmful interference in which case the user will be required to correct the interference at his own expense.

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Protection Against Electrostatic Discharge

To prevent damage to the system due to electrostatic discharge, always wear the antistatic wrist strap provided with your network server when you come in contact with the system.

Publication Change Record

The following table records all revisions to this publication. The first entry is always the publication's initial release. Each entry indicates the date of the release and the number of the system release to which the revision corresponds.

Part Number	Date	Description
850494 Rev B	June 1998	Release 1.9.2M1, first release

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Introduction

This release note describes the procedure for upgrading your NetServer™ software to Version 1.9.2M1, details new software features, lists the bugs fixed from previous releases, and lists known problems in this release.

Documentation Roadmap

The following list shows the documents applicable to software Version 1.9.2M1:

- ▲ *System Manager's Guide* (part number: 850393 Rev. A)
- ▲ Hardware manual for your server model:
 - *NS 7000 Model 150/250 Series Hardware Manual* (part number: 850337 Rev. A)
 - *NS 7000 Model 700 Series Hardware Manual* (part number: 850372 Rev. A)
 - *NS 7000 Model 800 Series Hardware Manual* (part number: 850471-001)
- ▲ *Storage Peripherals Manager's Guide* (part number: 850491-001)
- ▲ *Version 1.9.2M1 Hardware Release Note* (part number: 850495 Rev. B)
- ▲ *Version 1.9.1 Hardware Supplement* (part number: 850497-001)
- ▲ System Software CD-ROM booklet (part number: 850487 Rev. B)
- ▲ Premier Software Series CD-ROM booklet (part number: 850488 Rev. B)
- ▲ This release note (part number: 850494 Rev. B)
- ▲ *System Manager's Quick Reference* (part number: 850394 Rev. A)
- ▲ *Command Reference Guide* (part number: 850403 Rev. A)

The *System Manager's Guide* is also available in online format for users with an X Windows environment. The online documentation package is on the Premier Software Series CD-ROM. Once the package is added to the system, the online information is accessed through Adobe Acrobat™, which is provided with the NetServer system software. For more information on setting up an X display on your system console, refer to Appendix B of the *System Manager's Guide*.

Auspex provides optional software products to improve performance and reliability. Documentation for these products is part of the documentation package provided on the Premier Software Series CD-ROM and can be viewed online or printed to a PostScript printer. Refer to the "Online Documentation" section of this release note for instructions on installing and viewing online documentation.

The following documentation roadmap points you to the specific documents for each topic:

For this information:	Refer to this document:
Unpacking and installing the system hardware, including the console terminal and drives	The hardware manual for your server model
Setting up external storage devices	<i>Storage Peripherals Manager's Guide</i>
Feature content and product overview	This release note and <i>System Manager's Guide</i> , Chapter 1
Hardware features and configurations for Version 1.9.2M1	<i>Hardware Supplement</i> or <i>Version 1.9.2M1 Hardware Release Note</i>
Auspex's enhancements to SunOS 4.1.4	<i>System Manager's Guide</i> , Chapter 1
Upgrading the software to Version 1.9.2M1	This release note
Booting the NetServer from the System Software CD-ROM	System Software CD-ROM booklet or <i>System Manager's Guide</i> , Chapter 3
Viewing optional product documentation from the Premier Software Series CD-ROM	Premier Software Series CD-ROM booklet
Installing optional products from the Premier Software Series CD-ROM	Premier Software Series CD-ROM booklet or documentation for the specific optional product
Configuring NetServer software	<i>System Manager's Guide</i> , Chapter 2
Using the online NetServer information	<i>System Manager's Guide</i> , Chapter 2 and Appendix B
Managing NetServer disks and file systems, virtual partitions, and write acceleration	<i>System Manager's Guide</i> , Chapters 4, 5, and 7, respectively
Recovering from disk failures; backup procedures	<i>System Manager's Guide</i> , Chapters 6 and 8, respectively
Measuring NetServer performance and performing special maintenance	<i>System Manager's Guide</i> , Chapters 9 and 10, respectively
Auspex command syntax and commonly used system administration procedures	<i>System Manager's Quick Reference</i>

Important Issues

The following issues apply to systems installing Version 1.9.2M1 software:

Drives

- ▲ The procedures for adding, removing, and replacing drives are different depending on whether the drive is in an HDDA drawer or in a seven-slot drive rack. Refer to your Hardware Manual for instructions on adding, removing, and replacing drives.
- ▲ Root drives of 3 GB or smaller that will be updated to Version 1.9.2M1 software must be relabeled to accommodate larger partitions.
- ▲ Before updating a 2 GB or smaller root disk from an earlier release to System Software Version 1.9.2M1, remove `/usr/frame` from the disk. The online documentation viewer no longer uses FrameMaker to view documents.
- ▲ Version 1.9.2M1 software requires a root disk of 1 GB or larger in size.
- ▲ If you use a 1-GB or 1.35-GB root disk for Version 1.9.2M1 software, the swap space may be too small to hold all the core dumps after a system crash. This may result in compressing the dump image, which takes considerably more time.

Also, after the system reboots, the dump image transfers from the swap space to `/var/crash`. Customers using a small root disk should mount a `/var/crash` file system on another disk as the root drive `/var` partition may not be large enough to hold the dump transferred from the swap space.

While a 2-GB root disk is strongly recommended, you can still upgrade to Version 1.9.2M1 with a 1-GB or 1.35-GB root disk because the cores from your system may not exceed the capacity of `/var/crash`. The system can reboot as usual even though not all cores are saved.

- ▲ The 1-GB drive, Rev. E or earlier, might go offline during read retry. If this happens during a read access of metadata, the LFS file system can become isolated. If the drive goes offline during the subsequent recovery (`ax_write_cache` flush or `fsck`), then the system could possibly crash with the following panic message:

```
panic ("m16u_ipc_rcv: SENT msg invalid or corrupted")
```



Recommendation: Auspex recommends that you upgrade 1-GB disk drives, Rev. E or earlier, with currently supported drives. Call Auspex Customer Service if you suspect this problem. (Refer to “Getting Help” on page 33 for the appropriate telephone number.) Use the `ax_drives` command to display the revision levels of your drives. As a temporary workaround, do not use the write cache for file systems on these drives.

- ▲ Naming conventions for the Exabyte 8505XL tape drive are the same as for the Exabyte 8505 tape drive. See the “Storage Devices” chapter of the *System Manager’s Guide* for specific information.
- ▲ ATL Products, Inc. changed the name of the ACL 4/52 tape library to ATL 4/52. This product is still referred to as ACL 4/52 in some Auspex manuals.
- ▲ Naming conventions for the tape drive in the DLT4700 mini-library and the tape drives in the ATL 4/52 tape library are the same as for the DLT4000 drive. See the “Storage Devices” chapter of the *System Manager’s Guide* for specific information.

Boards

- ▲ NP boards with two or more ATM or FDDI SBus cards running NFSv2 over TCP must be upgraded to a minimum of 128 MB of RAM.
- ▲ Mixing a 100Base-T Ethernet full-duplex and FDDI interface on the same NP board is not supported in this release. The combination is incorrectly listed as supported in the *Field Service Guide March 1997, NS 7000 Model 150/250 Series Hardware Manual*, and the *NS 7000 Model 700 Series Hardware Manual*.
- ▲ Version 1.9.2M1 software does not support the 100Base-T Ethernet half-duplex network interface. The *NS 7000 Model 800 Series Hardware Manual* incorrectly lists this interface as supported.
- ▲ Version 1.9.2M1 software does not support the following boards:
 - Host Processor (HP) IV, HP V, and HP VI
 - Ethernet Processor (EP)
 - HP V-based FDDI Processor (FDDIP)
 - Auspex Primary Memory (APM)
 - File Processor (FP)
 - Network Processor (NP) I, and NP II
 - Storage Processor (SP) I, SP II, and SP III
 SP III boards can be upgraded to SP III-E boards.

Virtual Partitions

- ▲ When using `ax_label(8)` to set up disk partitioning, the size value of **9999** meant to use all the remaining sectors on a disk for the last partition. With Version 1.9.2M1 software, the size value for all remaining sectors is **all**. See the `ax_label(8)` man page for details. This change does not affect disks already in use.
- ▲ Auspex utilities, such as `ax_mattach` and `ax_mdetach`, operate on `/etc/vpartab`. For these utilities to function properly, all entries to `/etc/vpartab` should parallel the example shown in Figure 5-5 of the *System Manager's Guide*. For example, here are the entries for **vp3**, **vp4**, and **vp5** in Figure 5-5 of the *System Manager's Guide*:

```

/dev/vp3      striped, size=128k      ad6h, ad7h
/dev/vp4      concat                ad8c
/dev/vp5      mirrored              vp3, vp4

```

The defined virtual partition must start with `/dev` (for example, `/dev/vp3`). The member virtual partitions in a mirrored virtual partition do not use `/dev` (for example, **vp3** and **vp4** for `/dev/vp5`).

Optional Software

- ▲ The ServerGuard™ optional product requires a patch to run with Version 1.9.2M1. Contact Auspex Technical Support for information on the availability of this patch.
- ▲ A DriveGuard™ array containing a UFS mounted file system that goes to the failed state can then go to a system panic. Do not create a DriveGuard array that includes a UFS mounted file system. If the array goes to the failed state for any reason, the panic can occur.
- ▲ If you scrub your DriveGuard arrays in a cron job, and you also run an `ax_isolated` cron job, make sure the scrub cron job completes before the `ax_isolated` cron job. If a cron job that scrubs the

DriveGuard array runs at the same time as an **ax_isolated** cron job, the **ax_isolated** hangs, causing all file systems to be isolated.

- ▲ The EtherChannel optional product is supported on Cisco CAT 5000/5500 switches. To use EtherChannel with a Cisco switch, the Cisco switch must have one of the following Cisco supervisory modules: EtherBlades or FastEtherChannel. The module on the switch must have a software revision of 2.3 or greater.
- ▲ **NSconfig** does not support EtherChannel interfaces. Use **ax_etherchannel** to configure EtherChannel interfaces.
- ▲ FastBackup™ can do backups through the HP or through an SP. With ServerGuard, you should run no more than two concurrent FastBackups through the HP and no more than two concurrent FastBackups through any one SP. You can run more than two concurrent FastBackups on a system as long as you observe the limit of two for each board.
- ▲ If you upgrade or replace the HP, you must reorder the Optional Product licenses, which are based on the HP serial number.

Other Issues

- ▲ Some NetServer Power Distribution Units (PDUs) have extra utility outlets. These are in addition to the outlet used for the cable connecting the power supply chassis to the PDU. Plugging devices, such as a console or DLT4000 tape drive rack, into these extra utility outlets may cause excessive leakage current, exceeding recommended levels required by safety agencies. Use appropriate wall outlets instead.
- ▲ Very Large Files (VLFs) do not support NFS locking. You must coordinate access to VLFs at the end-user level.
- ▲ Auspex dump/restore and dd utilities are the only supported means of backing up VLFs. Third-party vendors, such as OpenVision, do not support VLF backups.
- ▲ NFS Version 3 on an Auspex NetServer does not work with UFS file systems. Any UFS file system exported to and mounted by a client must be explicitly mounted on the client with NFS Version 2. Some client operating systems, such as a PC with NT, do not have the option to explicitly mount NFS versions. Such systems appear to mount UFS file systems from the NetServer, but access to the file system fails. See your client machine's documentation for mount options that specify NFS protocols.
- ▲ Sun clients set up for Ethernet communications use auto-negotiation to determine the duplex mode of the other end of the connection. When connected to a NetServer through a switch, a hub, or directly back-to-back, the auto-negotiation feature causes unpredictable results. A Sun client using any such connection must be manually set to the proper duplex mode. See the Sun client documentation for details on setting the duplex mode.
- ▲ The 100Base-T Ethernet full-duplex HME SBus card may not perform well when the interface is set up with auto-negotiation mode. Use the **NSconfig(8)** or **ifconfig(8)** command to manually set the HME parameters of duplex mode and speed.
- ▲ The **reporter.sh(8)** script, when enabled, automatically mails site reports to Auspex Customer Service. The script now calls **nfsstat(8C)** with the **-z** option to reinitialize **nfsstat** statistics. If you do not want the statistics fields to automatically reinitialize, edit the script `/usr/auspex/reporter.sh`. Comment out the **nfsstat** command that uses the **-z** option and uncomment the **nfsstat** command that does not use the **-z** option.

- ▲ Auspex strongly recommends against configuring a NetServer for use as a network router. Run routing through dedicated routers. A NetServer acting as a router may encounter problems that require a complete system reboot for resolution.

New Software Features

This section summarizes the software features added in Version 1.9.2M1 and reviews software features added in previous releases. For information about new hardware supported by this software release, refer to the hardware manuals shipped with your NetServer and to the *Version 1.9.2M1 Hardware Release Note*.

New Features in Version 1.9.2M1

- ▲ Year 2000 compliance: All SunOS Year 2000 patches are included in this release.

New Features in Version 1.9.2

Version 1.9.2 added the following new features:

- ▲ Extended Virtual Partitions: The maximum number of disks in a single virtual partition increases from 8 to 16.
- ▲ Very Large Files (VLFs): The size of an individual file is limited only by file system size for LFS files accessible over NFSv3. Both file and file system sizes may be over 2 GB. Clients accessing VLFs must also have VLF capabilities.
- ▲ EtherChannel: This optional product combines multiple 10Base-T and 100Base-T Ethernet interfaces into a single channel called a fat pipe. All the interfaces in the EtherChannel load balance the traffic among themselves giving the concept of one fat pipe. Refer to the *EtherChannel Manager's Guide* for information on this optional product.
- ▲ Quad 10/100Base-T: The Quad 10/100Base-T SBus card supports up to four 10/100Base-T ports on a single card.
- ▲ NS 7000/800 NetServer: The NS 7000/800 NetServer includes High Density Disk Arrays, which support up to 203 drives in the base cabinet and one expansion cabinet. Refer to the NS 7000/800 Hardware Manual for information on this NetServer model.
- ▲ The **ax_hot_plug** command includes the **replace** option, which allows you to replace a drive with one command. The **replace** option is especially useful when replacing HDDA drives, as you can replace the drive without opening and closing the drive drawer twice.

New Features in Version 1.9.1

Version 1.9.1 software added the following new features:

- ▲ NP (ATM Release 2) includes LAN Emulation (LANE) for Ethernet clients, and allows you to configure three types of network interfaces: FORE IP, Classical IP, and LEC.
- ▲ For DriveGuard, the **ax_raid** command includes a **scrub** option, which proactively detects and automatically repairs bad disk sectors within an array. DriveGuard now automatically runs certain **ax_raid** commands, such as **ax_raid init**, in the background.
- ▲ Support for a 9-GB disk drive in 3.5-inch carrier and a 12X CD-ROM drive.
- ▲ Support for the Quad Ethernet SBus card, which provides four 10Base-T Ethernet interfaces per SBus card. A single NP board can support up to three Quad Ethernet SBus cards. A single NetServer can support up to five NPs with Quad Ethernet SBus cards, for a maximum of 60 10Base-T Ethernet interfaces.

- ▲ The **ax_fsutil** command includes the **throttle** option, which allows system administrators to set the maximum number of FP workers that simultaneously service requests to a particular file system.
- ▲ The **ax_statfp** command includes the **-o** option, which reports or initializes statistics on operations per file system.

New Features from Version 1.9

Version 1.9 software added the following new features:

- ▲ A new Optional Product, DriveGuard (RAID 5 implementation) protects user data in the event of a single device failure. If any single disk in a DriveGuard array fails, the data can be reconstructed using information on the remaining disks in the array. See the Auspex DriveGuard documentation on the Premier Software Series CD for more information.
- ▲ Support for the Write Accelerator III board with 8 MB of usable memory. The board is an option for an SP V board with current PROM/Flash code.
- ▲ Support for SP-attached DLT 4700 mini-library and SP-attached ATL 4/52 Tape Library as backup devices.
- ▲ NFSv3 for improved LAN and WAN performance.
- ▲ **ax_perfmon(8)** has new interactive performance commands that enhance stepping through SBus, virtual partition, NP, and SP screens. See the **ax_perfmon(8)** man page for more information.
- ▲ A new kernel parameter, **netinterfaces**, allows you to set the amount of memory reserved for network interfaces. See step 7 of the “Updating a Target Disk to Version 1.9.2M1” section of this manual for more information.

Upgrading to Software Version 1.9.2M1 from 1.8.x or 1.9.x

If your system is newly purchased from Auspex, skip this section; the latest software is pre-installed at the factory. Follow the instructions in Chapter 2 of the *System Manager's Guide* to configure your new NetServer.

The upgrade procedure provided in this section assumes that you are familiar with common system administration tasks such as installing drives, backing up file systems, booting the server, and partitioning disks.

The following list outlines the steps for upgrading your server. The steps are discussed further in the subsequent sections:

- ▲ Preparing the target drive, which can be the current root drive or a disk drive in any slot.
- ▲ Verifying the space requirements on the target drive.
- ▲ Listing files that need to be preserved in a file.
- ▲ Using **NSupdate** to update a target drive.
- ▲ Installing optional products.
- ▲ Rebooting the system.



Note: Every time you upgrade or add patches to a system, a history of the change appears in the file `/var/adm/patchlog`. The history can give clues to a problem that reappears in a new release when the problem was fixed for your site with an earlier patch.



Note: If you are a system administrator with experience upgrading Auspex NetServers, the “Upgrade Checklist” on page 26 provides a summary of the upgrade procedures.

Equipment Required for the Upgrade

Make sure you have the following drives before you start the upgrade procedure:

- ▲ A disk drive to use as the Version 1.9.2M1 root drive (the target drive). It must be at least 1 GB.



Note: The 9-GB disk drive is not supported as a root drive.

- ▲ A CD-ROM drive installed in any slot.



Note: To upgrade a target drive other than the current root drive to Version 1.9.2M1, the CD-ROM drive can be in any slot. To upgrade the root drive, the CD-ROM must be in slot 1.

- ▲ A tape drive for backing up your current root drive if you want to update the drive in slot 0.

Preparing a Target Drive

This section assumes that you are updating a spare drive in a slot other than 0. The procedure for preparing a target drive can take place when the system is running in multiuser mode. If you do not

have a spare drive and need to update the current root drive, refer to “Preparing the Current Root Drive” on page 12.

Adding a Target Drive

To add a drive, use the **ax_hot_plug** command. The following example adds a drive to slot 2:

```
ax_hot_plug add 2
```

For detailed information on how to add a drive to a NetServer in multiuser mode, refer to Chapter 4 of the *System Manager’s Guide*.

Using ax_label or format to Partition the Target Drive

The labels for root drives of 3 GB and smaller change for Version 1.9.2M1 to accommodate larger partitions. Table 1 gives recommended partition sizes.

NSupdate requires that / (root), /usr, and /var all reside on the root drive. /var/crash can reside on any drive.



Caution: If /usr/openwin is symbolically linked to another drive, and you update Open Windows from the NSupdate form, **NSupdate** also updates Open Windows files on the linked drive.

Use **ax_lslabel** to determine if the target drive is properly labeled. Table 1 defines the supported root drive labels. Please contact your Auspex representative about availability of the drives listed.

Table 1. Recommended root drive partitioning by drive type

Drive type	Partition size in Megabytes*						
	a (/)	b (swap)	g (/usr)	d (/usr/openwin)	e	f (/var)	h
HP 1GB	50	400	160	120	10	200	14
HP 1.35 GB	50	450	160	120	30	450	31
Microp 1.76 GB	50	500	220	120	70	650	72
Microp 1.76 GB Non aligned	50	500	220	120	70	650	70
HP 2.0 GB	50	650	220	120	40	800	29
Microp 2.0 GB	50	650	220	120	80	800	80
HP 2.1 GB	50	650	220	120	90	800	98
Microp 3 GB	100	650	250	150	300	1000	432
All 4 GB	100	600	250	200	1000	1000	944
All 9 GB	200	1200	500	400	2000	2000	2368

* 2048 sectors per megabyte



Recommendation: If you have a 1-GB or 1.35-GB root drive, mount a 500 MB or larger partition from another drive onto /var/crash. Additionally, Auspex recommends that /var/crash (customarily part of /var, and mounted on **ad0f**) be larger than the swap partition to hold core files.

If you need to relabel your target drive, follow this procedure to partition the drive.

To partition the target drive

1. Label the target drive using either **ax_label** or **format**.

ax_label is a command-line utility for quickly labeling the target drive. For example, if your target drive is in slot 2 and it is a Micropolis 3-GB drive, enter the **ax_label** command with the values from Table 1:

```
# ax_label -a100 -b650 -g250 -d150 -e300 -f1000 -h432 ad2
```

The **format** command provides a menu-driven utility for formatting the target drive. Run **format** from the CD-ROM, specifying the target drive. For example, use the following procedure to run **format** for the target drive in slot 2:

- a. Insert the Version 1.9.2M1 System Software CD-ROM. In this example, the CD-ROM drive is in slot 1.
- b. Mount the CD-ROM so that you can access the partition tables used in Version 1.9.2M1:

```
mount -r /dev/ad1b /cdrom
```

- c. Enter the following command to run **format** for the target drive in slot 2.

```
/cdrom/usr/etc/format -x /cdrom/etc/format.dat ad2
```

When prompted by the format menu, select and label the drive type.

2. Run **newfs** on each of the partitions on the target drive. The following example assumes you are running **cs**.

```
# newfs -m 5 /dev/rad2a
# foreach p (g d f)
? newfs -i 8200 -m 5 /dev/rad2$p
? end
```

You may also want to **newfs** partitions **e** and **h**, as your site requires.

The target drive is now properly partitioned. Go to the next section to copy file systems from the root drive to the target drive so that the file systems can be updated.

Copying the Current Root Drive to the Target Drive

After you run **newfs**, copy the data from the root drive to the target drive. Use the following script to clone the root drive to the target drive in slot 2:

```
# foreach p (a g d f)
? ax_clonefs -p /dev/ad0$p /dev/ad2$p
? fsck /dev/ad2$p
? end
```

You may also want to clone partitions **e** and **h**, depending on whether your root drive uses these partitions.

Alternatively, you can use the **ax_sputil(8)** command with the **copy** option to clone the entire root drive to the target drive.

The target drive is now ready to run **NSupdate**. Go to page 13 to verify the space requirements on the target drive.

Preparing the Current Root Drive

This section applies only if you do not have a spare drive and you need to update the drive in slot 0. Before performing the upgrade, shut down the server and back up the drive to tape in single-user mode. You can limit the amount of time spent in single-user mode by first backing up, in multiuser mode, file systems that are mounted as read only. Usually, `/usr` and `/usr/openwin` are mounted as read only. An example of a backup procedure is included as follows:

1. Enter the following command to shut down the server to single-user mode so you can back up an inactive root drive:

```
shutdown -l +5 "to back up root drive"
```

The server shuts down in five minutes and displays the single-user prompt.

2. Enter the **dump** command for each partition (except partition **b**) on the root drive. The following examples show how to back up partitions to a tape in slot 6:

```
dump 0dsbfu 54000 6000 126 /dev/nrast6 /dev/rad0a
dump 0dsbfu 54000 6000 126 /dev/nrast6 /dev/rad0g
dump 0dsbfu 54000 6000 126 /dev/nrast6 /dev/rad0d
dump 0dsbfu 54000 6000 126 /dev/rast6 /dev/rad0f
```

Notice that **n** is omitted in the tape device name for the last partition; this causes the tape to rewind only after the last partition has been backed up.



Caution: NSupdate works with `/` (root), `/usr`, `/var`, and `/usr/openwin` only. You might need to back up other partitions on your current root drive (for example, partitions **e** and **h**). Be sure to use the **dump** command on these partitions with the appropriate partition names before proceeding.

3. At this point, you may need to reformat your root drive. If the root drive is 3 GB or smaller, the drive must be reformatted. Run **ax_lslabel** and refer to Table 1 on page 10 to determine if you need to reformat your root drive.

If your root drive requires reformatting, go to step step 4. If you do not need to reformat your root drive, go to “Verifying Space Requirements on the Target Drive” on page 13, and skip the rest of this procedure.

4. If you need to reformat your root drive, use the **halt** command to halt the system and display the PROM monitor prompt (HP>).
5. Install the Version 1.9.2M1 CD-ROM in slot 1. At the monitor prompt, boot the server from the CD:

```
HP> b ad(0,1,1)
```

6. After the server has booted from the CD-ROM to single-user mode, the following message appears:

```
AUSPEX CD-ROM MAINTENANCE MENU
OPTION:
1) Format/label the root drive
2) NSinstall
3) Maintenance shell
Select an option? [1/2/3]
```

Select **1**, and follow the instructions to relabel your root drive.

7. When the reformatting is completed, the maintenance menu returns to the console screen. Enter Ctrl-C to enter single-user mode.
8. Restore each partition to the root drive from tape.

The following is an example of restoring the **a** partition from a tape in slot 6:

```
newfs /dev/rad0a
mkdir /tmp/a
mount /dev/ad0a /tmp/a
cd /tmp/a
restore xf /dev/nrast6
```

For each subsequent partition, you must use the **mt** command to forward the tape to the appropriate position before executing the **restore** command. For example, after restoring partition **a**, enter the following commands to restore partition **g**:

```
newfs /dev/rad0g
mkdir /tmp/g
mount /dev/ad0g /tmp/g
cd /tmp/g
mt -f /dev/nrast6 fsf 1
restore xf /dev/nrast6
```

Go to “Verifying Space Requirements on the Target Drive” to verify that each partition meets the space requirement. If there is enough space for each partition, the root drive is ready to be updated.

Verifying Space Requirements on the Target Drive

Whether or not the target drive is in slot 0, **NSupdate** automatically verifies that the partitions on the target drive for **/** (root), **/usr**, **/var**, and **/usr/openwin** meet the space requirements for installing Version 1.9.2M1 software. If **NSupdate** informs you that insufficient space exists, you need to move or delete files or use a larger target disk.

Each of the partitions has two space requirements:

- ▲ The total file system space
- ▲ The space remaining

The **df** command shows the amount of disk space used by mounted file systems. The following is an example of the **df** command and its output:

```
df /usr
Filesystem      kbytes    used    avail    capacity  Mounted on
/dev/ad0g       240111   144209   71891     67%      /usr
```

The amount of total space is shown in the **kbytes** field of the **df** output. The amount of space remaining is the difference between **kbytes** and **used**. In the previous example, the total space of **/usr** is 240111 KB; the amount of space remaining in **ad0g** is calculated as follows:

$$240111 \text{ KB} - 144209 \text{ KB} = 95902 \text{ KB}$$

Table 2 on page 14 lists the space requirements for each partition on a Version 1.9.2M1 root drive.

Table 2. Space requirements for Version 1.9.2M1 file systems

File system	Total space (KB)	Remaining space (KB)
root	21,504	4096
/usr	134,000	8192
/usr/openwin	77,000	4096
/var	30,000	500

To check the space for the partitions, mount the file systems on the target drive and use the **df** command on each of the file systems. For example:

```
mkdir /tmp/a /tmp/g /tmp/d /tmp/f
mount /dev/ad2a /tmp/a
mount /dev/ad2g /tmp/g
mount /dev/ad2d /tmp/d
mount /dev/ad2f /tmp/f
df /tmp/a /tmp/g /tmp/d /tmp/f
```

If the remaining space for a partition is not sufficient, move or remove files added by users since the last update or installation. Do not remove files previously installed from the NetServer distribution CD. Such files are reinstalled from the Version 1.9.2M1 System Software CD. If the partition is too small after removing user files, you need a larger partition.

After you verify that each partition has sufficient space, unmount all partitions on the target drive. For example:

```
umount /tmp/a
umount /tmp/g
umount /tmp/d
umount /tmp/f
```

The drive is now ready to be updated.



Note: The target drive is not bootable until you run **NSupdate**, which automatically runs **installboot(8)** and installs the boot sector.

Checking Exported File Systems

Client operating systems may query the rpc daemon about NFS Version 3 support. With the addition of NFS Version 3 in release 1.9, the client receives a **yes** to the query. However, NFS Version 3 on an Auspex NetServer does not work with UFS file systems. Any UFS file system currently exported to and mounted by a client must now be explicitly mounted on the client with NFS Version 2. Some client operating systems, such as a PC with NT, do not have the option to explicitly mount NFS versions. Such systems query for NFS Version 3 then appear to mount UFS file systems from the NetServer, but access to the file system fails.

See your client machine's documentation for mount options that specify NFS protocols. Set up file systems as LFS if they must be mounted by a client unable to specify NFS protocols.

Listing Files that Need to be Preserved

You must list all files to be preserved only if you have files that need to be saved but are not in the default list shown in Table 3.

Because the software installation procedure copies all the required files from the distribution CD to the target disk, some files customized for your site may be overwritten after the installation. By default, **NSupdate** preserves the files listed in Table 3; however, it does not preserve binary files, data files, and symbolic links in the `/` (root), `/usr`, and `/var` directories.

NSupdate allows you to specify a list of files that you can preserve in addition to the files listed in Table 3. You simply create a file listing the site-specific files that you do not want to be overwritten by files extracted from the distribution CD. The procedure for creating the file appears after Table 3.

Table 3. Files that NSupdate preserves by default

<code>/.cshrc</code>	<code>/.login</code>
<code>/.profile</code>	<code>/.rhosts</code>
<code>/auspex/ax_errd.msgs</code>	<code>/dev/MAKEDEV</code>
<code>/dev/MAKEDEV.auspex</code>	<code>/etc/aliases</code>
<code>/etc/aliases.dir</code>	<code>/etc/bootparams</code>
<code>/etc/configuration</code>	<code>/etc/dumpdates</code>
<code>/etc/exports</code>	<code>/etc/fstab</code>
<code>/etc/format.dat</code>	<code>/etc/fstab</code>
<code>/etc/gettytab</code>	<code>/etc/group</code>
<code>/etc/holidays</code>	<code>/etc/hosts</code>
<code>/etc/hosts.equiv</code>	<code>/etc/inetd.conf</code>
<code>/etc/install/EXCLUDELIST</code>	<code>/etc/install/category.repreinstalled</code>
<code>/etc/install/category.standalone</code>	<code>/etc/install/default_client_info</code>
<code>/etc/install/default_sys_info</code>	<code>/etc/install/label_script</code>
<code>/etc/magic</code>	<code>/etc/motd</code>
<code>/etc/mtab</code>	<code>/etc/netmasks</code>
<code>/etc/networks</code>	<code>/etc/passwd</code>
<code>/etc/printcap</code>	<code>/etc/protocols</code>
<code>/etc/publickey</code>	<code>/etc/rc</code>
<code>/etc/rc.auspex</code>	<code>/etc/rc.local</code>
<code>/etc/rc.shutdown</code>	<code>/etc/rc.single</code>
<code>/etc/remote</code>	<code>/etc/rmtab</code>
<code>/etc/rpc</code>	<code>/etc/sendmail.cf</code>
<code>/etc/services</code>	<code>/etc/snmp/snmpd.rc</code>
<code>/etc/svdtab</code>	<code>/etc/syslog.conf</code>
<code>/etc/ttytab</code>	<code>/etc/uucp/Devconfig</code>
<code>/etc/uucp/Devices</code>	<code>/etc/uucp/Dialcodes</code>
<code>/etc/uucp/Dialers</code>	<code>/etc/uucp/Maxuuscheds</code>

Table 3. Files that NSupdate preserves by default (Continued)

/etc/uucp/Maxuuxqts	/etc/uucp/Permissions
/etc/uucp/Poll	/etc/uucp/Sysfiles
/etc/uucp/Systems	/etc/uucp/uudemon.admin
/etc/uucp/uudemon.cleanup	/etc/uucp/uudemon.hour
/etc/uucp/uudemon.poll	/etc/utmp
/etc/vparstate	/etc/vpartab
/etc/xtab	/usr/auspex/ax_admmsg.check
/usr/auspex/callxterm	/usr/auspex/config/cf_ns3000
/usr/auspex/config/cf_ns5000	/usr/auspex/displayman
/usr/auspex/getcores.sh	/usr/auspex/mailmessages.sh
/usr/auspex/osmg	/usr/auspex/reporter.sh
/usr/auspex/screens.std	/usr/etc/NSconfig
/usr/etc/NSinstall	/usr/etc/SetupClient
/usr/etc/SetupExec	/usr/etc/SetupTty
/usr/etc/ax_install/NSconfig.sh	/usr/etc/ax_install/NSinstall.sh
/usr/etc/ax_install/SetupClient.sh	/usr/etc/ax_install/SetupExec.sh
/usr/etc/ax_install/SetupTty.sh	/usr/etc/ax_install/verify_tapevol_arch
/usr/etc/extract_unbundled	/usr/etc/yp/ypinit
/usr/etc/yp/ypxfr_1perday	/usr/etc/yp/ypxfr_1perhour
/usr/etc/yp/ypxfr_2perday	/usr/kvm/arch
/usr/kvm/showrev	/usr/kvm/sys*/conf/AUSPEX1
/usr/kvm/sys*/conf/AX_GENERIC	/usr/kvm/sys*/conf/Makefile.src
/usr/kvm/sys*/conf/files	/usr/kvm/sys/conf.common/AX_RELEASE
/usr/kvm/sys/conf.common/RELEASE	/usr/kvm/sys/conf.common/files.cmn
/usr/kvm/sys/conf.common/newvers.sh	/usr/kvm/sys/conf.common/param.c
/usr/kvm/sys/scsi/targets/st_conf.c	/usr/kvm/sys/sun/symbols.raw
/usr/kvm/sys/sun/symbols.sort	/usr/kvm/sys/sundev/streg.h
/usr/lib/acct/chargefee	/usr/lib/acct/ckpacct
/usr/lib/acct/dodisk	/usr/lib/acct/lastlogin
/usr/lib/acct/monacct	/usr/lib/acct/nulladm
/usr/lib/acct/prctmp	/usr/lib/acct/prdaily
/usr/lib/acct/prtacct	/usr/lib/acct/ptecms.awk
/usr/lib/acct/ptelus.awk	/usr/lib/acct/remove
/usr/lib/acct/runacct	/usr/lib/acct/shutacct
/usr/lib/acct/startup	/usr/lib/acct/turnacct
/usr/lib/sendmail	/usr/lib/sendmail.mx
/usr/lib/sendmail.hf	/usr/lib/sendmail.main.cf

Table 3. Files that NSupdate preserves by default (Continued)

/usr/lib/sendmail.subsidiary.cf	/usr/lib/shlib.etc/README
/usr/openwin/lib/openwin-init	/usr/openwin/lib/openwin-menu
/usr/openwin/lib/openwin-sys	/usr/openwin/lib/xdm/Xresources
/usr/openwin/lib/xdm/Xservers	/usr/openwin/lib/xdm/Xsession
/usr/openwin/lib/xdm/xdm-config	/var/adm/aculog
/var/adm/lastlog	/var/adm/lpd-errs
/var/adm/messages	/var/adm/msgbuf
/var/adm/usracct	/var/adm/wtmp
/var/log/syslog	/var/spool/cron/.proto
/var/spool/cron/at.deny	/var/spool/cron/cron.deny
/var/spool/cron/crontabs/root	/var/spool/cron/queuedefs
/var/spool/uucppublic/.hushlogin	/var/spool/uucppublic/.rhosts
/var/yp/Makefile	/var/yp/updaters

To create a list of files that you want to preserve

1. Use a text editor to create a file that lists all the additional files you want to preserve. In this file, type one file name per line. Each file name must be a full path starting with a slash (/). To include comments in the file, type each comment on a separate line and use the pound sign (#) to precede the comment. Leading blanks and tabs are allowed in this file. The following is an example:

```
/usr/local/mysendmail
#/usr/wrld/pc
/etc/myreboot
```

The example shows that the */usr/local/mysendmail* and */etc/myreboot* files are preserved after the installation.

If you have booted the server from the CD-ROM and you have not mounted any disks in the system, create the file in the */tmp* directory.

2. After you finish editing the file, save it and write down its complete path name. You will need the path name in the next procedure.



Note: The path name can be no longer than 56 characters. Use only letters (upper- or lowercase), numbers from 0 to 9, and the symbols “_”, “-”, “/” or “.” in the path name.

Updating a Target Disk to Version 1.9.2M1

Use the **NSupdate** command to update the target drive. If the target drive is in a slot other than 0, you can run **NSupdate** in multiuser mode. If the target drive is the current root drive, you must first boot the server from the Version 1.9.2M1 System Software CD-ROM.

Remember the following when you use **NSupdate**:



Recommendation: Auspex recommends that */usr* and */usr/openwin* be on separate partitions. */usr* is always mounted as a Unix file system (UFS) and is not exported. */usr/openwin* is usually mounted as a Local File System (LFS) and is exported. For the duration of the upgrade, **NSupdate** mounts */usr/openwin* as UFS.

- ▲ By default, **NSupdate** updates the `/` (root), `/usr`, and `/var` file systems on the target disk. If the partition you want to use for `/usr/openwin` is on the same physical disk as the other partitions, you can choose to update it as well.
- ▲ **NSupdate** can update only partitions that it can mount as UFS. It cannot update either an NFS-mounted partition or a virtual partition. For example, if you have a file system in `/var` that is NFS-mounted or that is a virtual partition residing on another physical disk, the file system is not updated by **NSupdate**.
- ▲ The partition tables used by the **format** command assume that `/usr/openwin` does not reside in the same partition as `/usr`. As a result, the `/usr` partition does not have enough space for `/usr/openwin` files. If you want `/usr/openwin` files to reside in `/usr`, you must repartition the disk with **ax_label** to enlarge the default `/usr` partition. Check Table 1 on page 10 for the amount of space that you need to add.

The **NSupdate** command syntax is as follows:

```
NSupdate [ -cdrom slot# ]
```

The *slot#* is the slot where the CD is inserted. Slot numbering starts from 0. Without an argument, **NSupdate** uses the CD in slot 1.



Note: Be sure that the entire target disk (including the virtual partitions mounted from it) is completely unmounted before you enter the **NSupdate** command.

To run **NSupdate**

1. If you have booted the system from the Version 1.9.2M1 software CD-ROM, enter:

```
# /usr/etc/NSupdate
```



Note: If the CD-ROM Maintenance Menu is displayed, select option 3 (Maintenance shell) before entering the **NSupdate** command.

If you have not booted the system from the Version 1.9.2M1 CD-ROM, mount the **b** partition of the CD-ROM before running **NSupdate**. The following example shows the **mount** and **NSupdate** commands with the CD in slot 1:

```
# mount -r /dev/ad1b /cdrom
# /cdrom/usr/etc/NSupdate
```

2. After entering the **NSupdate** command, the following message appears:

```
*** WARNING ***
Binaries, data files and links, if not in the preserve list or NSupdate
internal list, will be overwritten by those extracted from CD-ROM.
/usr/lib/X11 link will be overwritten.
If the current release is 1.5 or earlier, the cloned disk and its original
root disk must be kept in sync during the entire update process. If changes
were made to the original root disk during the process, they must be
propagated to the cloned disk.
NSupdate from CD-ROM drive in slot 1? ([y]/n)
```

Enter **y**.

3. If the **TERM** variable for your terminal has been set, go to the next step. If not, the system displays a numbered list of terminal types and prompts you to enter your terminal type. Select the number from the menu that corresponds to the terminal type you are using:

- 1) NCD X terminal
- 2) ANSI-compatible terminal (including VT220 and Link MC5)
- 3) Wyse Model 30/50
- 4) Televideo 925
- 5) Sun Shell Tool
- 6) Sun Command Tool
- 7) DEC VT510
- 8) Other

Select a number for your terminal type >>

Select **7** for a DEC VT510 terminal or **2** for a Link terminal.

If you select **8** (Other), you are prompted to enter the terminal type, as shown in the following example. The type you enter must be in `/etc/termcap` and `/usr/share/lib/terminfo`.

```
Enter terminal type (must be in both /etc/termcap and terminfo):
>>
```

4. The **NSupdate** form appears as shown in Figure 1.

Fill in the **NSupdate** form with the values for your environment. Table 4 explains the meaning of each field. Be sure to read the form carefully before executing it; some default values in the form may not apply to you and must be changed. For example, the target disk slot number defaults to 2, which may not be the slot where you inserted your target disk.

Use the Arrow and Tab keys to move the cursor within the form. You can type a value in an input field, which is enclosed with square brackets ([]). Also, you can press the spacebar to display the possible values for a toggle field, which is preceded by an angle bracket (>). For more information on cursor control, refer to the *System Manager's Guide*.



Note: **NSupdate** allows you to update the disk in slot 0 only if the server has been booted from a CD-ROM. You need to explicitly change the target disk slot to 0, as the default is 2.

```

Auspex NetServer                NSupdate Form                Fri Nov  8 17:23
-----
Distribution source              >CDROM
  CD-ROM slot#                  [1___]

Target disk slot#               [2___]      Update to OpenWindows 3.0?  >Yes
Target Host Processor type      >Current

Preserve list file [_____]

Remove the "+" in /etc/hosts.equiv to restrict rsh access to hosts/users? >NO

-----
Use TAB, CR or arrow keys to move among fields, when done hit CTRL-F to execute
?=HELP ^F=EXECUTE ^C=ABORT ^L=REDRAW-SCRN ^R=INITIAL-VAL <sp>=SELECT-VAL

```

Figure 1. NSupdate form

Table 4. The NSupdate form fields

Field	Description	Possible values
Distribution source	Medium from which the Version 1.9.2M1 software is installed.	CDROM or Net . Always use CDROM ; Net is for Auspex internal use only.
CD-ROM slot#	Number of the slot where the Version 1.9.2M1 System Software CD-ROM is inserted.	Default is 1. It can be any number appropriate to your server. (Slot numbering starts from 0.)
Target disk slot#	Number of the slot where the target drive is inserted.	The target drive can be in any slot appropriate to your server. Slot 0 is allowed only if your system is booted from the CD-ROM. Default is 2.
Update to OpenWindows 3.0?	Update from Version 2.0 to 3.0. (OpenWindows as shipped does not include all OpenWindows files. For example, the X11/NeWS server is not included.)	Yes (default) or No.
Target HP type	Type of HP with which the new Version 1.9.2M1 root drive will be used.	Current (the HP currently used on the server), HP VII or HP VIII . Default is Current .
Preserve list file	Name of the file that you create in "Listing Files that Need to be Preserved" on page 15.	(Optional) Absolute path name of the file or the path relative to the current directory.
Remove the "+" in /etc/hosts.equiv to restrict rsh access to hosts/users	Removing the "+" from the /etc/hosts.equiv file gives a more secure system.	No (default) or Yes .



Note: If you choose not to update */usr/openwin*, specify **N** in the "Update to OpenWindows 3.0?" field. Do not comment out the entry for */usr/openwin* in */etc/fstab* on the target drive to avoid updating */usr/openwin*. Otherwise, **NSupdate** assumes that */usr* and */usr/openwin* are in the same partition and generates an error message indicating the physical partition for */usr* has insufficient space.

- Execute the form by typing Ctrl-F. **NSupdate** displays a number of messages describing the operations performed for the update. When the installation finishes, the following message appears:

```
NSupdate session ended on Wed Nov 19 20:22:39 GMT 1997
```

The messages are also saved to */var/log/NSupdate.log* on the target drive and */tmp/NSupdate.log* on the current root drive.



Note: The **NSupdate** command can take longer than an hour to complete.

- NSupdate** displays an instruction for reconciling files after the installation. If the instruction scrolls off the screen, view */var/log/NSupdate.log* on the target drive or */tmp/NSupdate.log* on the current root drive to read the instruction.



Note: You must reconcile the files before rebooting the server.

Follow these steps to compare the files:

- a. Mount the `/` (root), `/usr`, and `/var` file systems on the target disk. For example, if the target disk is in slot 2 and the file systems are mounted on partitions **a**, **g**, and **f**, enter the following:

```
mkdir /tmp/mnt
mount /dev/ad2a /tmp/mnt
mount /dev/ad2g /tmp/mnt/usr
mount /dev/ad2f /tmp/mnt/var
```



Note: The mount points above are in `/tmp` because if you are booting from the CD-ROM, only `/tmp` is writable.

- b. Use **diff** to compare the new and old versions of the files listed in `/var/log/NSupdate.log` on the target drive or `/tmp/NSupdate.log` on the current root drive. Each old file has a file name that includes a timestamp indicating when the file was updated. For example, if the update is performed at 10:30 a.m. on December 9, the old version of `/etc/ttytab` is renamed to `/etc/ttytab.12091030`. Merge any site-specific information from the old file into the new one if necessary.

The following example compares the old configuration file with the new Version 1.9.2M1 configuration file that is on the as yet inactive target disk.

```
# diff /etc/configuration /tmp/mnt/etc/configuration
```

- c. If you previously made changes to your kernel configuration file (`/usr/kvm/sys/aushp/conf/AUSPEX1`), reconcile the changes from the original root drive or backup tape.



Note: `aep` and `afp` drivers are not supported in Version 1.9.2M1.

- d. Review the `/tmp/NSupdate.log` and `/tmp/NSupdate.err` files for a summary of the upgrade activity as well as a list of the files that were removed during the upgrade.

If you are updating to a target disk, any files accidentally removed during the upgrade can be restored from the original root disk or from the CD-ROM.

7. Consider changes to the kernel's two site configurable parameters. The parameters in `/usr/kvm/sys/aushp/conf/AUSPEX1` are `maxusers` and `netinterfaces`. `Maxusers` determines the approximate size of kernel data structures. Read the comments for `maxusers` in `AUSPEX1` for guidance.

The `netinterfaces` value determines how much memory is reserved for the exclusive use of interfaces. Each increment in the `netinterfaces` value adds 56 KB of memory to the amount reserved for interfaces.

A `netinterfaces` value of 0 (zero), which is the default, causes the system to compute its own number for the amount of memory to reserve. The computation takes the number of NP boards in the system, multiplies that by six, and then multiplies that by 56 KB. For example, a system with four NPs would get a `netinterfaces` working value of four times six, or 24. The amount of memory reserved for interfaces would be 56 KB times 24.

In general, the most efficient value for you to insert for `netinterfaces` is the actual number of interfaces in the system. A system with four NPs and three interfaces on each would need a `netinterfaces` value of 12, using only half as much memory as the default computation.

The maximum netinterfaces value recognized by the system is 64 for each NP up to a total system maximum of 256. For example, if you give a netinterfaces value of 100 on a system with one NP, the system reserves memory for a value of only 64.

Local use of interfaces may call for more memory than the guideline given here, in which case you can increase available memory by changing the netinterfaces parameter. Remember that any changes to this parameter are effective only after rebuilding and rebooting the kernel.

This concludes the procedure for running **NSupdate**.

Installing Optional Products

If your NetServer was running optional products before the upgrade, the optional products need to be reinstalled from the Premier Software Series CD for Version 1.9.2M1. A summary of the installation procedure follows. Refer to the documentation provided on the Premier Software Series CD and the specific optional product online manuals for more detailed installation instructions.



Note: If you upgrade or replace the HP, you must reorder the Optional Product licenses, which are based on the HP serial number.

To install the optional products

1. Remove the Version 1.9.2M1 CD-ROM.

```
umount /cdrom
```

2. Insert the Premier Software Series Version 1.9.2M1 CD-ROM. In this example, the CD-ROM drive is in slot 1.

3. Mount the CD-ROM.

```
mount -rt hsfs /dev/acd1 /cdrom
```

4. Mount the target root drive, if it is not already mounted.

```
mkdir /tmp/mnt  
mount /dev/ad2a /tmp/mnt  
mount /dev/ad2g /tmp/mnt/usr  
mount /dev/ad2f /tmp/mnt/var
```

5. Remove the 100Base-T half-duplex optional product, if it is installed on your system. Version 1.9.2M1 does not support this optional product. 100Base-T full-duplex operation is now an integral part of the base system software.

```
pkgrm
```

6. Add the optional product packages to the target drive.

```
pkgadd -R /tmp/mnt -d /cdrom
```

7. Answer **N** to the question “Do you want to create a new instance?” Answer **Y** to the other questions.

8. Unmount the CD-ROM.

```
umount /cdrom
```

9. Display the packages that are installed on the target drive.

```
pkginfo -R /tmp/mnt
```

This completes the procedure for installing optional products.

Upgrading to Version 1.9.2M1

This section describes how to complete the upgrade to software . Before completing the upgrade, you should have already completed the procedures described in the following sections:

- ▲ “Preparing a Target Drive” on page 9, or “Preparing the Current Root Drive” on page 12
- ▲ “Verifying Space Requirements on the Target Drive” on page 13
- ▲ “Checking Exported File Systems” on page 14
- ▲ “Listing Files that Need to be Preserved” on page 15
- ▲ “Updating a Target Disk to Version 1.9.2M1” on page 17
- ▲ “Installing Optional Products” on page 23

To complete the software upgrade

1. Perform this step only if your system contains mirrored file systems and you are updating a target drive in a slot other than 0. If your system does not have mirrored file systems, or you are upgrading your current root drive, go to step 2.

After the file systems are synced, bring the system down to single-user mode and copy the `/etc/vpar_state` file from the root disk to the target disk.

```
shutdown -l +5 "to upgrade to 1.9.2M1"  
umount -a  
mount /dev/ad2a /mnt  
cp /etc/vpar_state /mnt/etc  
umount /mnt  
halt
```

Now continue to step 2b for the procedure on how to boot the system with the new Version 1.9.2M1 root disk.

2. Boot the system with the new Version 1.9.2M1 root disk following these steps:
 - a. Shut down the system using the following command:

```
shutdown -lh +5 "to upgrade to 1.9.2M1"
```
 - b. After the system shuts down and displays the monitor prompt, remove the newly created Version 1.9.2M1 disk from the slot and attach the Version 1.9.2M1 root drive label to it.
 - c. If you upgraded a target drive in a slot other than 0, remove the current root drive from slot 0, replacing it with the new Version 1.9.2M1 root drive. If your root drive is controlled by an SP III-E, remember to check the SCSI ID of the new drive as specified in your NetServer hardware documentation before installing it in the system. You do not have to set SCSI IDs for drives managed by an SP IV or SP V.
 - d. If you are upgrading your server by installing new hardware such as a later version of an HP or NP board, the Auspex authorized personnel installs the hardware now. Remember that only Auspex authorized personnel can remove or install a processor board and PROMs; contact Auspex if your system requires a hardware or PROM upgrade.



Note: If you upgrade or replace the HP, you must reorder the Optional Product licenses, which are based on the HP serial number.

- e. Boot the system to single-user mode by entering **b -s** at the monitor prompt.

- f. If you made or restored local changes to `/usr/kvm/sys/aushp/conf/AUSPEX1`, rebuild your kernel. First, mount `/usr` with read/write privilege.

```
mount -o remount,rw /usr
```

Then follow the instructions in the README file in `/usr/kvm/sys/aushp/conf`.

3. Run **NSconfig** if you changed your configuration. In the **NSconfig** form, make any appropriate changes and then type Ctrl-F to execute the form. (Refer to the *System Manager's Guide* for more information on **NSconfig**.)
4. After the server displays the shell prompt, type **exit** to enter multiuser mode.
5. Open the `/var/log/NSupdate.log` file, and go to the last instruction in the file. Follow the instructions in `/NSupdate.log` to remove the listed files. The following example shows a list of files to remove:

```
./vmunix.XXX  
./boot.XXX  
./etc/fstab.XXX  
./etc/configuration.XXX
```



Note: The old kernel, `/vmunix.xxx`, and the old boot block, `/boot.xxx` were kept in the file system for failure recovery. After **NSupdate** is complete, these files can be safely removed.

6. Use **ax_config** to edit the `/usr/adm/config.report` file to reflect any changes you may have made, and email a copy of the **ax_config -d** output to your local Auspex service representative.

The **NSupdate** upgrade procedure is now complete.

Upgrade Checklist

This section provides a checklist for upgrading to software Version 1.9.2M1 using a spare (target) drive in slot 2. This checklist is intended for system administrators who have experience upgrading Auspex NetServers. The checklist summarizes upgrade information in previous sections. For more detailed upgrade information, and for information on upgrading the current root drive, refer to “Upgrading to Software Version 1.9.2M1 from 1.8.x or 1.9.x” starting on page 9.

To upgrade a target drive

1. Add target drive.

```
ax_hot_plug add 2
```
2. Check drive label.

```
ax_lslabel ad2
```
3. Partition target drive, if necessary. **newfs** each partition on target drive.

```
ax_label ...
newfs -m 5 /dev/rad2a
foreach p (g d f)
? newfs -i 8200 -m 5 /dev/rad2$p
? end
```
4. Copy data from root drive to target drive.

```
foreach p (a g d f)
? ax_clonefs -p /dev/ad0$p /dev/ad2$p
? fsck /dev/ad2$p
? end
```
5. Verify space on target drive.

```
mkdir /tmp/a /tmp/g /tmp/d /tmp/f
mount /dev/ad2a /tmp/a
mount /dev/ad2g /tmp/g
mount /dev/ad2d /tmp/d
mount /dev/ad2f /tmp/f
df /tmp/a /tmp/g /tmp/d /tmp/f
```
6. Unmount all partitions on target drive.

```
umount ...
```
7. Check exported UFS file systems.
8. Create and save a file that contains a list of files to preserve.
9. Run NSupdate to update the target drive.

```
mount -r /dev/ad1b /cdrom
/cdrom/usr/etc/NSupdate
```
10. Reconcile files.

```
mkdir /tmp/mnt
```

```
mount /dev/ad2a /tmp/mnt
mount /dev/ad2g /tmp/mnt/usr
mount /dev/ad2f /tmp/mnt/var
diff . . .
```

- 11. Review the */tmp/NSupdate.log* and */tmp/NSupdate.err* files.
- 12. Consider changes to **maxusers** and **netinterfaces**.
- 13. Install the OPF packages; remove 100Base-T half-duplex package if necessary..

```
umount /cdrom
mount -rt hfs /dev/acd1 /cdrom
mkdir /tmp/mnt
mount /dev/ad2a /tmp/mnt
mount /dev/ad2g /tmp/mnt/usr
mount /dev/ad2f /tmp/mnt/var
pkgadd -R /tmp/mnt -d /cdrom
umount /cdrom
pkginfo -R /tmp/mnt
```

To upgrade to Version 1.9.2M1

- 1. Shut down the system.

If you have mirrored file systems:

```
shutdown -l +5 "to upgrade to 1.9.2M1"
umount -a
mount /dev/ad2a /mnt
cp /etc/vpar_state /mnt/etc
umount /mnt
halt
```

If you do not have mirrored file systems:

```
shutdown -lh +5 "to upgrade to 1.9.2M1"
```

- 2. Install Version 1.9.2M1 root drive in slot 0, replacing current root drive, if necessary.
- 3. Install new hardware, if necessary.
- 4. Boot the system to single-user mode. Rebuild kernel, if necessary. At the HP prompt, enter:

```
HP> b -s
```

- 5. Run **NSconfig** if you changed your configuration.

```
NSconfig
```

- 6. Enter multiuser mode.

```
exit
```

- 7. Remove files listed in *NSupdate.log*.

- 8. Edit */usr/adm/config.report* file.

```
ax_config
```

Online Documentation

Auspex offers online documentation to users who have an X display that runs either the X Window System protocol (MIT X.11, Release 5 or later) or Sun OpenWindows 3.0 or later. The online documentation provides hypertext links embedded in the text, which allow you to move easily from topic to topic within the manual. Hypertext links are blue.

This section covers the following topics:

- ▲ Installing online documentation
- ▲ Starting the online documentation
- ▲ Overview of online documentation
- ▲ Printing a document

Installing Online Documentation

All of the online documentation is on the Premier Software Series CD-ROM in a package named AXdocs. The package includes the system manuals and Optional Product manuals. Use the **pkgadd(1M)** command to install the online documents.



Note: The **pkgadd** process sets `userid` to “install” (or `root` if there is no `install` `userid`) before adding a package. If your system has an `install` `userid` that does not have super user permissions, then the **pkgadd** may fail. Either give the `install` `userid` super user permissions, or remove the `install` `userid`.

Before adding the package, you must find enough space for the package in a directory. The **pkgadd** command calculates and displays the amount of space required. In the following procedure, the size given is 27,000 kilobytes, but the actual size for your installation may be larger. Find a directory of at least 27,000 kilobytes, then use the **pkgadd** command to get the actual size needed. You may need to do a second pass with **pkgadd** if you need to find a larger target directory.

1. Mount the Premier Software Series CD-ROM; for example:

```
# mount -rt hsfs /dev/acd1 /cdrom
```

This command mounts the CD in drive slot 1 on `/cdrom`.

2. Mount `/usr` with read/write privilege:

```
# mount -o remount,rw /usr
```

3. Add the documentation package to the server by entering the following command:

```
# pkgadd -d /cdrom
```

The system returns:

```
The following packages are available:
```

```
1  AXEC1          EtherChannel
   (HP-VII,HP-VIII) 1.9.2M1
2  AXatm2         ATM 2
   (HP-VII,HP-VIII) 1.9.2M1
3  AXbackup       FastBackup
   (HP-VII,HP-VIII) 1.9.2M1
4  AXdguard       DataGuard
   (HP-VII,HP-VIII) 1.9.2M1
```

```
5  AXdocs      Auspex System Documentation
                    (HP-VII,HP-VIII) 1.9.2M1
6  AXdrvgrd   DriveGuard
                    (HP-VII,HP-VIII) 1.9.2M1
7  AXftp      NP Resident FTP
                    (HP-VII,HP-VIII) 1.9.2M1
```

Select package(s) you wish to process (or 'all' to process all packages). (default: all) [?,??,q]:

4. Enter the number **4** for the Version 1.9.2M1 document package.

```
Processing package instance <AXdocs> from </cdrom>
```

```
Auspex System Documentation
(HP-VII,HP-VIII) 1.9.2M1
```

5. The following prompt requires a path to the directory that you choose as the destination for the document package, not a path to the source on the CD. Enter a question mark to get more information.

```
Enter path to package base directory [?,q] ?
```

Installation of this package requires that a UNIX directory be available for installation of appropriate software. This directory may be part of any mounted filesystem, or may itself be a mount point.

In general, it is unwise to select a base directory which already contains other files and/or directories.

6. Now enter the path name to the destination directory for the package.

```
Enter path to package base directory [?,q] /docs
Using </docs> as the package base directory.
```

```
AXdocs requires the following disk space: 27000 kbytes
```

```
## Processing package information.
## Processing system information.
## Verifying disk space requirements.
## Checking for conflicts with packages already installed.
## Checking for setuid/setgid programs.
```

This package contains scripts which will be executed with super-user permission during the process of installing this package.

```
Do you want to continue with the installation of this package [y,n,?]
```

7. Answer **y** if you wish to continue. Answer **n** if you want to find another destination directory for the package.

```
Installing Auspex System Documentation as <AXdocs>
```

```
## Installing part 1 of 1.
/docs/FSG/17_FRU.PDF
/docs/FSG/181_FRU.PDF
.
.
.
```

(A long listing of files is deleted in this example, but appear during your installation.)

```
[ verifying class <none> ]
## Executing postinstall script.
ln -s /docs /usr/auspex/docslink
```

Installation of <AXdocs> was successful.

The following packages are available:

```
1  AXEC1          EtherChannel
    (HP-VII,HP-VIII) 1.9.2M1
2  AXatm2        ATM 2
    (HP-VII,HP-VIII) 1.9.2M1
3  AXbackup      FastBackup
    (HP-VII,HP-VIII) 1.9.2M1
4  AXdguard      DataGuard
    (HP-VII,HP-VIII) 1.9.2M1
5  AXdocs        Auspex System Documentation
    (HP-VII,HP-VIII) 1.9.2M1
6  AXdrvgrd      DriveGuard
    (HP-VII,HP-VIII) 1.9.2M1
7  AXftp         NP Resident FTP
    (HP-VII,HP-VIII) 1.9.2M1
```

Select package(s) you wish to process (or 'all' to process all packages). (default: all) [?,??,q]:

8. Enter **q** to quit the **pkgadd** routine. Note that the **pkgadd** command copies the session into two log files as shown in the following display.

```
pkgadd session finished on Tue Jan 13 15:28:50 PST 1998
```

A log of this session of **pkgadd** is at `/tmp/pkgadd.log` on the current root disk, and at `/var/log/pkgadd.log` on the target disk.

Starting the Online Documentation

To open the online document from an X display on the network, use the following procedure. In the procedure, the machine `everest` has the local X display screen, and the server `dohost1` holds the **ax_docs(8)** utility and files.

1. Verify that your path contains the path entry `/usr/auspex`.
2. Add the server `dohost1` to your `xhost` list.

```
everest% xhost +dohost1
```

3. Use **rlogin(1C)** or **tip(1C)** to login to `dohost1`.

```
everest% rlogin dohost1
dohost1%
```

4. From `dohost1`, set the display environment for the shell type. For example, for the C shell, enter the following command to send the display back to `everest`:

```
dohost1% setenv DISPLAY everest:0
```

For the Bourne shell, or Bourne-compatible shell, follow this example:

```
dochost1% DISPLAY=everest:0; export DISPLAY
```

5. Enter the following on dochost1 to start the online documentation utility:

```
dochost1% ax_docs
```

This script invokes the documentation Main Menu.

Overview

Auspex NetServers support online documentation through the licensing of Acrobat software from Adobe Corporation. The online documentation contains system software and optional software information. The software information is in the online version of the *System Manager's Guide*.

Figure 2 shows the Main menu. Click on a menu choice to see documentation.

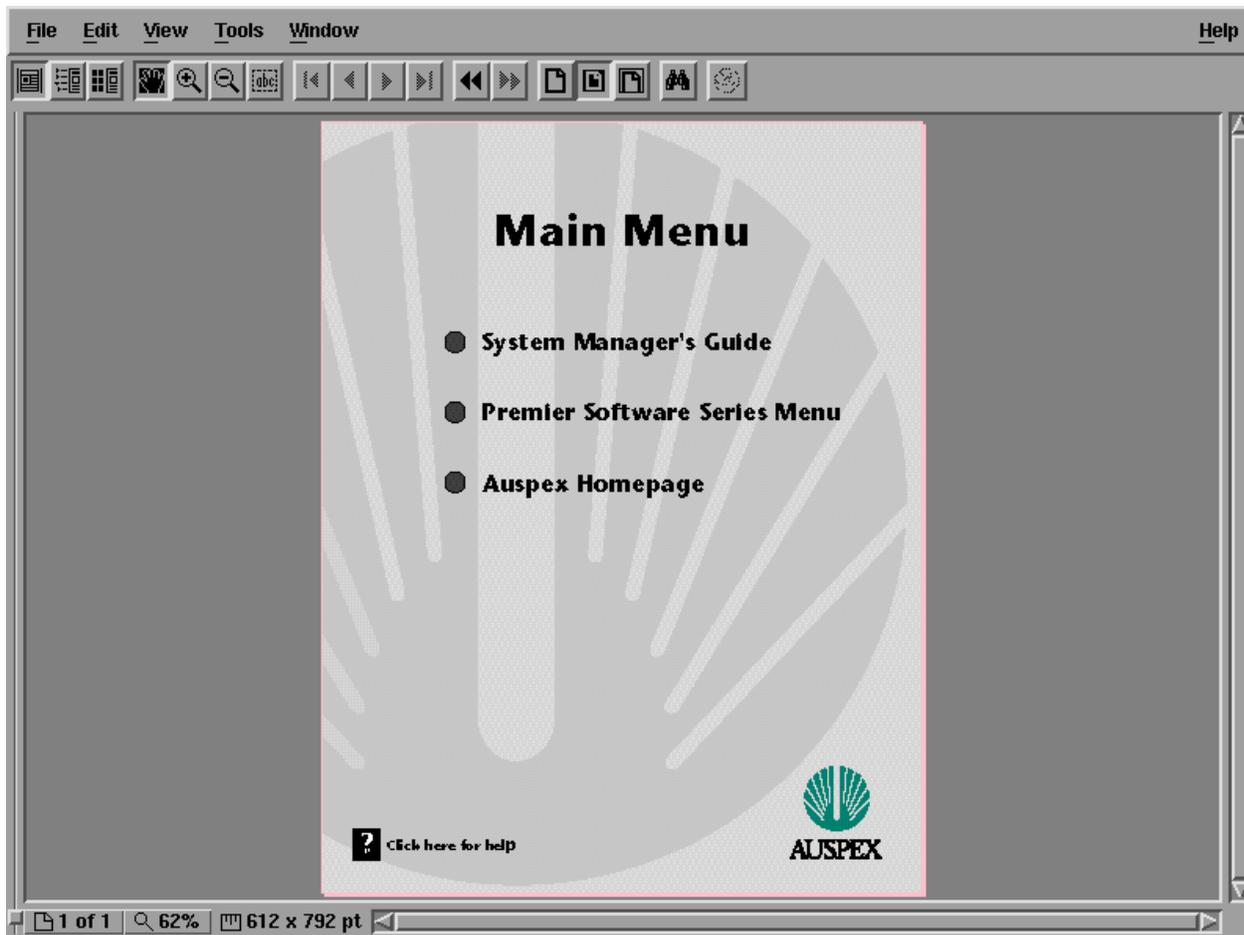


Figure 2. Main Menu window (main menu for Auspex's online documentation)

The entries on the Main Menu are:

- ▲ System Manager's Guide. This entry brings up a window with the *System Manager's Guide*.
- ▲ Premier Software Series Menu. This entry brings up another menu with choices for all of the optional products offered with this release. Clicking on one of the optional product choices brings up a window with the document for that product.

- ▲ **Auspex Homepage.** This entry connects to the Auspex home page over the World Wide Web, provided you have an internet browser running on your system.
- ▲ **Help button.** The help button, a large question mark, explains how to use the Acrobat Reader window menus and icons

Using the *System Manager's Guide* as an example, note that when the window containing that document appears, a side-bar of table of contents entries appears in the window. The entries are called bookmarks. A bookmark with more levels of table of content entries can be expanded to other levels by clicking on the arrow for that entry. Clicking on the entry itself takes you to that part of the document. Figure 3 shows a portion of the *System Manager's Guide* window with the bookmarks on the left. The Main Menu choice takes you back to the documentation Main Menu.

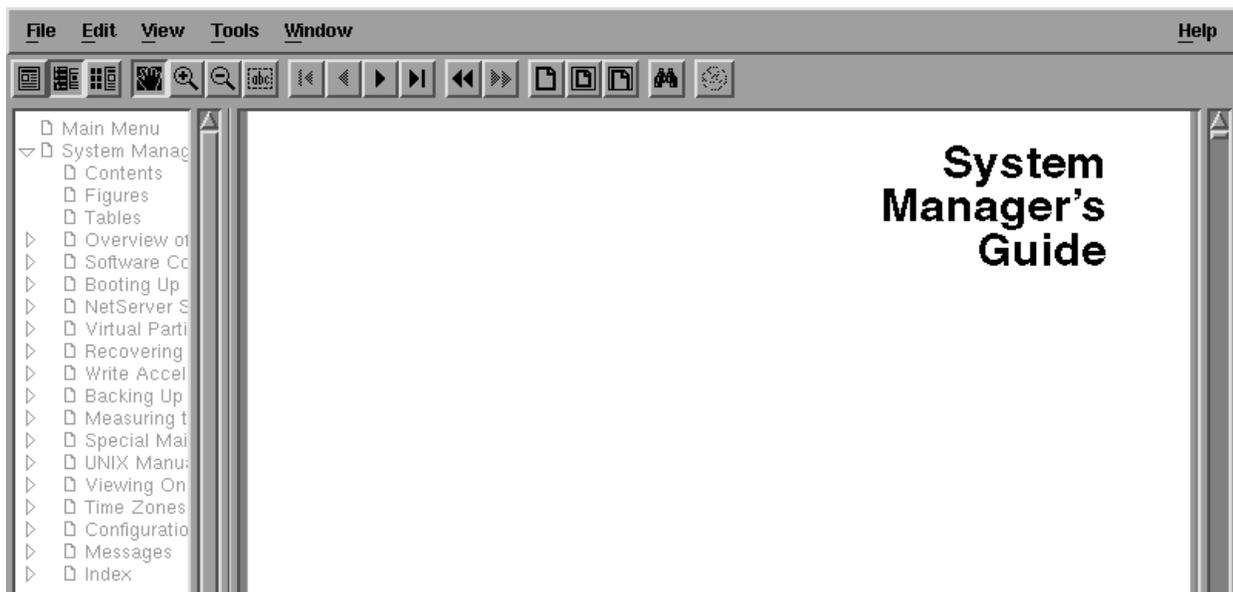


Figure 3. Bookmarks

Printing a Document

For your convenience, you can print individual pages or the entire contents of the online manual. Bring down the File menu from the top of any of the windows, and choose the print option. The Premier Software Series CD also has a directory named *psdocs* that holds PostScript files for each document. You can print the documents directly from *psdocs*. To print documents in A4 format, use the files with the ".psA4" suffix.

Getting Help

Customer support and online help are described in this section.

Email Support

Customer service and help through electronic mail are available to North American and International customers at the following address:

support@auspex.com

North America Telephone Support

To reach Auspex customer service for North America at any time, dial 1-800-328-7739.

International Telephone Support

Customers within the countries and territory listed as follows can reach Auspex customer service at any time by dialing the appropriate telephone number.

Country or territory	Telephone number	Country or territory	Telephone number
Australia	1-800-121-194	Luxembourg	0800-2721
Austria	0-660-7912	Malaysia	800-4509
Belgium	0800-1-0180	Netherlands	06-0222158
Denmark	80-01-03-60	Norway	800-1-1294
France	0800-91-21-32 (0800-26-38-22)*	Philippines	1-800-116-0005
Germany	0130-81-8306	Poland	00-800-441-1220
Hong Kong	800-4803	Spain	900-95-4445
Ireland	1800 55 3343	Sweden	020-797326
Israel	177 440 9285	Switzerland	0800-55-1339
Italy	1678-73541	Taiwan	0080-14-9580
Japan	0044-22-12-2414	United Kingdom	0800-28-7739
Korea	0038-13-0374		

* France has two toll-free numbers. The number in () is directed to the Paris office during the working day.

International customers who purchase Auspex products from an authorized distributor or reseller should contact that distributor or reseller for support

To comment on the content of this online help facility, send email to Auspex Technical Publications:

techpubs@auspex.com

World Wide Web

For more information about Auspex Systems, Inc. and its products, use the following resource location on the World Wide Web:

<http://www.auspex.com>

Documentation Changes

This section updates Version 1.9.2 user documentation.

EtherChannel Manager's Guide

Chapter 2 should include instructions for obtaining a software license for this product. To obtain a license, follow the instructions in the Premier Software Series CD-ROM booklet, and use a product number of 6138.

In Chapter 2, a number of examples show output from the **ifconfig** command. The output gives an IP address of 172.15.22.0. To be accurate, the example IP address should be 172.15.22.100.

NP (ATM Release 2) Manager's Guide

Maximum Transmission Unit (MTU) and offnet MTU tuning is not supported for ATM LANE interfaces.

In Chapter 1, in the section “NP (ATM Release 2) Limitations,” remove the table entry for MTU size for LANE interfaces.

In Chapter 3, in the section “Configuring LEC Interfaces,” remove the lines referencing MTU from the examples.

FastBackup Manager's Guide

On page 1-4 add the following limitation:

- ▲ FastBackup allows at most two simultaneous backup or restore operations per SP.

System Manager's Guide

On page 10-13, the section “Displaying and Flushing ARP Tables Used by a Network Processor Board” describes how to display the current entries in the ARP table using the **-d** option of the **ax_arp** command. The correct option for displaying ARP table entries is **-a**. The **-d** option deletes the tables.

Bugs Fixed

The following list describes the bugs fixed in Auspex software Version 1.9.2M1.

ax_config	Problem: Low-level disk format degrades ax_config performance. (6541)
ax_sputil	Problem: Multiple invocations of ax_sputil hang in m16u_alloc_shared . (9751)
Ethernet connections	Problem: Sun clients set up for Ethernet communications use auto-negotiation to determine the duplex mode of the other end of the connection. When connected to a NetServer through a switch, a hub, or directly back-to-back, the auto-negotiation feature causes unpredictable results. (12900)
File system isolation	Problem: File system is isolated but not flushed. (10652)
Client locks	Problem: Client lockd restarts may hang processes on other clients. (12555)
/etc/mtab	Problem: If the root file system is full, mount may fail to update <i>/etc/mtab</i> , which results in unexpected behavior of commands that depend on the contents of <i>/etc/mtab</i> to be correct. (2242)
Log messages	Problem: Improper routing of log messages. (9765)
umount	Problem: umount failed after “ls -laR” under LFS. (3530)

Medium

100Base-T

Problem: HME with external transceiver reports link down after reboot. (13419)

After a reboot of either end, autonegotiation over an MII-attached device on HME may fail, causing the interface to report the link down on both ends.

Workaround:

1. Bring the HME interfaces down on both ends.
2. Set the speed of the HME interface manually, for example:

```
ifconfig ahme0 Speed100 fullduplex
```
3. Unplug the transceivers on both ends and leave unplugged for at least 10 seconds.
4. Replug transceivers and bring interfaces back up.

For Solaris:

```
# ndd /dev/hme
name to get/set ? adv_autoneg_cap
value ? 0
name to get/set ? adv_xxxx_cap
    where xxxx is one of 10hdx, 10fdx, 100hdx, or 100fdx
value ? 1
(set the rest to 0)
```

ax_config, ax_sputil

Problem: **ax_config** or **ax_sputil** may hang while probing a failing disk. (9831)
Both **ax_config** and **ax_sputil** use IOCTL commands to probe devices attached to an SP. If a disk has a failure during the probe process, the utility can hang waiting for a response from the SP. The SP itself is not hung and continues to execute commands for devices other than the failing device.

Workaround: The problem is caused by failure of the disk's controller. Check the disk for up-to-date firmware. If the firmware is current, replace the disk.

ax_drstat

Problem: "Magic Number Wrong" is a non-fatal message. (13063)

The "Magic Number Wrong" message appears when **ax_drstat(8)** does not find the Auspex information it expects. A brand new drive or a drive just low-level formatted does not have the information.

Workaround: Run **ax_drives(8)** on the drive to add the needed information.

DataGuard

Problem: DataGuard prevents system dump if HP panics during full reboot. (9958)

DataGuard should take a full system dump if the HP panics during a reboot, but the dump does not happen.

Workaround: None at this time.

fsck

Problem: **fsck** cannot fix /(root) after console <break> & PROM **hpboot**. (6488)

On a system with DataGuard installed, a console <BREAK> followed by the PROM **hpboot** command (NFS still active) results in an irreparable root

partition that can neither be fscked manually nor recovered with the **hpreboot** command. Use **reboot** to force a complete system reboot.

Workaround: Instead of using **hpboot**, use **hpboot -d**, which forces a crash dump and file system sync for the root partition.

lockd

Problem: The NetServer should inform NFS client when a lock is granted. (2829)

Some clients attempted to lock files on a NetServer that are already locked by another process. When the other process released the lock, the client was not sent a message indicating that the lock was granted. The client can wait forever for such a message.

Workaround: None. Auspex is investigating the problem.

Mirrored partitions

Problem: Mirrored partitions can be out of sync after a clean reboot. (6148)

After a clean reboot (**shutdown**, then **boot**), a mirrored partition may be out of sync with its twin.

Workaround: Isolate the file system, and **fsck** each half. If different, identify the bad half, then use **ax_mdetach** to detach that partition from the mirror. Then **ax_mattach** it back. This workaround should result in a synced pair.

System hang

Problem: The NetServer hangs during a **fastboot** if the root file system is full. (2692)

Workaround: Press the Break key to escape the boot procedure. When the PROM monitor prompt (HP>) appears, enter **g 0** to continue.

Minor

ATM (LANE)

Problem: Automounter over LANE fails when LES/BUS pair is heavily loaded. (14396)

If you do not access home directory files often, the client does not recognize the home directory unless you ping the NetServer. It appears that the first packet of the mount attempt is being dropped somewhere after it reaches the BUS and before it reaches the Auspex LEC.

Workaround: None. Auspex is investigating the problem.

ax_config

Problem: **ax_config** is very slow when the system is busy. (5848)

ax_config runs very slowly when the system is very busy. This occurs especially when disk drives are under high loads.

Workaround: In many cases, examining */var/adm/config.report* provides the same information that is obtained from running **ax_config**. To update */var/adm/config.report*, run **ax_config -w** at times of low system load. The **-w** command writes changes to */var/adm/config.report*, which can be consulted later for the system configuration.

ax_ftadmin

Problem: The **ax_ftadmin shutdown** command does not kill all ServerGuard processes. (13305)

The **ax_ftadmin shutdown** command does not terminate the **ax_ftmond** process.

Workaround: Kill **ax_ftmond** from a shell.

- ax_mdetach/mattach** **Problem:** **ax_mdetach** and **ax_mattach** may cause */etc/vpartab* to fill up with comments. (8634)
ax_mdetach and **ax_mattach** note the change they perform by appending a comment to */etc/vpartab*. However, the */etc/vpartab* file can grow forever because **ax_mattach** edits the file to return the virtual partition state to normal but does not erase old comments from **ax_mdetach**.
Workaround: The system administrator needs to periodically monitor the size of */etc/vpartab* when mirrors are frequently attached or detached and remove expired comments from the file to keep its size manageable.
- Boot** **Problem:** On HP V-based servers, pressing the Break key while booting to multi-user mode can cause the HP to panic. (6873)
Workaround: Type “reset” at the PROM monitor prompt (>), and enter the **boot** command again.
- hpreboot** **Problem:** An **hpreboot** on a system with isolated file systems returns confusing messages. (6175)
Workaround: None. Auspex is investigating the problem.
- Kernel** **Problem:** Kernel configuration parameters from **in_proto.c** don't get forwarded to and acted on by the NPs. (2036)
These parameters include **ip_fowarding**, **ip_subnetslocal**, **ip_sendredirects**, **ip_dirbroadcast**.
Workaround: None. Auspex is investigating the problem.
- Localread** **Problem:** Localread for network does not work correctly if the last octet of a network address is not a “*”. (13845)
If the last octet of a network address in the “Localread configuration form” is specified as “a.b.c.0”, Localread for that network does not work.
Workaround: Use “*” in the last octet when specifying network addresses, for example, “a.b.c.*”.
- lockd** **Problem:** **lockd** is printing an invalid error message. (2505)
Sometimes **rpc.lockd** sees errors from trying to clear locks on files. This may generate an error message:

```
fcntl(F_RSETLK): Invalid argument.
```


This indicates that the **fcntl()** has failed with **EINVAL**.
Workaround: None. Auspex is investigating the problem.
- Mirrored file system** **Problem:** Disk replacement in a mirrored file system is much too complicated. (6372)
Workaround: None. Auspex is investigating the problem.
- Router** **Problem:** Using the Auspex NetServer as a router may cause ARP request flood. (14275)
If the Auspex NetServer is used as a router, and any of the clients have an old NFS mount point for which the NFS server does not exist on the network, the Auspex NetServer may generate multiple ARP requests, causing network flooding.
Workaround: Unmount the offending NFS mount point from a client to stop the ARP requests.

rpc.rquotad	<p>Problem: <code>rpc.rquotad</code> is now started from <code>rc.local</code>. (14349)</p> <p><code>rpc.rquotad</code> is now started from <code>rc.local</code> to ensure that <code>rquotad</code> gets bound to the same port on both servers. Previously this was started by <code>inetd</code> by allocating a port dynamically.</p> <p>Workaround: Comment out <code>rquotad</code> in the <code>inetd.conf</code> file.</p>
SetupExec	<p>Problem: Space requirements for SunOS client executables not documented. (4865)</p> <p>The SetupExec section of the <i>System Manager's Guide</i> does not include the space requirements for client software. The <code>/export</code> file system is installed by default on a partition that allows enough space for about two executables.</p> <p>Workaround: Each architecture-dependent executable uses a variable amount of disk space depending on the release. If you need room for more executables, move <code>/export</code> to a larger partition.</p>
shutdown/halt	<p>Problem: Confusing semantics of shutdown, halt, and reboot. (6449)</p> <p>An inconsistency appears in shutdown as compared to halt (and reboot). halt (and reboot) allow:</p> <ul style="list-style-type: none"> -n Avoid running <code>rc.shutdown</code> and doing any syncing of LFS file systems. -s Do not explicitly call <code>sync()</code>, so if an NFS server from which the machine mounted a file system cannot be reached, halt does not hang (but still do the implicit syncing of file systems on a reboot). <p>shutdown allows -n.</p> <p>Actually, halt implements -n by not calling the function <code>rc.shutdown()</code> and not calling <code>sync()</code>. Also, on an hphalt (or hpreboot) we do not call <code>rc.shutdown()</code>. halt then passes the <code>RB_NOSYNC</code> flag to the <code>SYS_reboot</code> syscall.</p> <p>Further, halt implements -s by just not calling <code>sync()</code>. Again, on an hphalt -s (or hpreboot -s), we do not call <code>rc.shutdown</code> so hphalt -s is the same as hphalt -n.</p> <p>Now here is the problem. shutdown implements -n by calling either "halt -n" or "reboot -n". This is not what is usually desired, because you want "shutdown" to invoke "rc.shutdown". This turns off NFS services. Moreover, hpsshutdown never invokes <code>rc.shutdown</code>, so NFS service is not turned off.</p> <p>Workaround: Understand the semantics of each of shutdown, hpsshutdown, halt, hphalt, reboot, and hpreboot. Do not use shutdown -n if you expect to go into single-user mode with NFS services turned off, because it really does not turn off NFS services.</p>
tar	<p>Problem: <code>tar(cpio)</code> gives wrong message on reading non-<code>tar(cpio)</code> format data from a tape. (11367)</p> <p>Workaround: Do not use <code>tar</code> (or <code>cpio</code>) on a tape with non-<code>tar</code> (or <code>cpio</code>) format data.</p>
WarmStart	<p>Problem: WarmStart fails with ServerGuard. (13262)</p> <p>The WarmStart/ColdStart feature may fail on systems running ServerGuard. If you run the UNIX command <code>reboot -- -c</code>, which causes all the NP boards to run the full board diagnostics on the next reboot, some of the NPs will not run the diagnostics as requested. During the reboot, the error message "Skipping IOPn" displays on the console. The message appears for each NP that sends ServerGuard heartbeats. This problem does not cause boot failures. The only</p>

effect is that some NP boards do not run the full diagnostics as requested by the -c switch (remember that many tests on the NP are skipped by default to shorten boot time).

Workaround: None. Auspex is investigating the problem. An HP PROM change may be required to fix this problem.

SunOS or UNIX Problems

This section lists problems that Auspex Version 1.9.2M1 shares with SunOS or other implementations of UNIX.

ARP	<p>Problem: Changing Ethernet addresses confuses system ARP tables when using DECnet. (1789)</p> <p>Workaround: Delete the entry for the Ethernet address manually from the ARP tables. DECnet changes the Ethernet address on clients after the server has an Internet to Ethernet translation (ARP translation). This causes the server to be unable to respond to the client. The ARP entry is not deleted because it is continually referenced.</p>
Domain sockets /etc/ethers	<p>Problem: UNIX domain sockets kill SunOS kernel. (1797)</p> <p>Problem: Applications that read <i>/etc/ethers</i> stop reading when they encounter a blank line. Definitions following blank lines are ignored. SetupClient does not check for blank lines (1095).</p> <p>Workaround: If you have diskless clients that do not boot, check for blank lines in <i>/etc/ethers</i>.</p>
exportfs	<p>Problem: For clients with multiple IP addresses but only one Domain Name Service (DNS) entry, exportfs only loads the first IP address returned by DNS. (2023)</p> <p>Workaround: None. If you use exportfs to give root or read or write access to some file system for a specific client, set up the client with a single IP address in DNS.</p>
mailtool	<p>Problem: Solaris 2.5.1 clients with NFSv3 fail to get locks on mailtool. (12988)</p> <p>Workaround: On the Solaris client, mount <i>/var/mail</i> explicitly for NFSv2 over UDP:</p> <p>Usr1% mount -t nfs -o proto=udp,vers=2 auspex:/var/spool/mail /var/mail</p>
mount	<p>Problem: mount complains that a file system is busy when mounting or unmounting a specific file system. (1519)</p> <p>Workaround: This occurs when file systems are mounted in the incorrect order. To resolve the problem, edit the order of entries in <i>/fstab</i> so that top-level directories are listed first in <i>/etc/fstab</i>; that is, <i>/exports</i> should appear before <i>/exports/root</i>.</p>

Notice of VCCI Compliance

This is a Class A product based on the standard of the Voluntary Control Council for Interference by Information Technology Equipment (VCCI). If this equipment is used in a domestic environment, radio disturbance may arise. When such trouble occurs, the user may be required to take corrective actions.