Replacing the Air Filter

To maintain adequate airflow, regularly inspect and, if necessary, clean or replace the air filter. A Phillips No. 1 screwdriver is required for this task.

▼ To Replace the Air Filter

1. **Remove the upper (fan) front cover of the Netra t 1400/1405 system by turning the two quarter-turn screws anti-clockwise through 90˚, lift off the cover and remove it from the immediate vicinity of the system.**
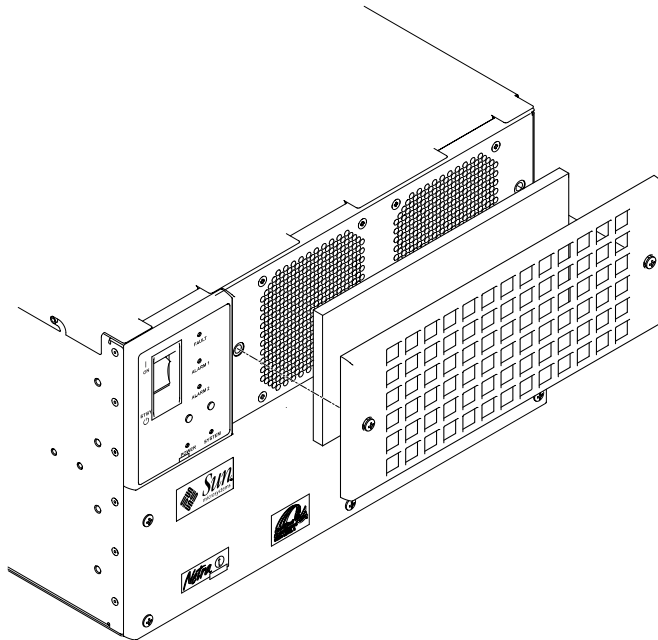

FIGURE 6-1 Replacing the Air Filter

2. **Remove the existing air filter and replace it with the new filter (part number X7075A). Ensure that the edges of the filter are tucked under the filter retainers.**

3. **Replace the upper front cover of the system and secure it in place by turning the two catches quarter-turn screws clockwise through 90˚.**

PART II   User Guide

LEDs and Controls

This chapter describes the LEDs and the procedure for powering the system on and off.

LEDs

The LEDs on the front of the Netra t 1400/1405 indicate the current status of the system.

Note – The System, Alarm and Fault LEDs can also be forced on or off by a LOM command (*see the Netra t 1400/1405 Installation and User Guide*).
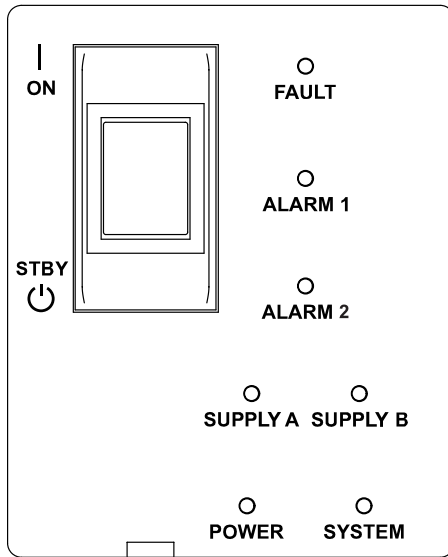
Netra t 1400

FIGURE 7-1   Netra t 1400 System LEDs

TABLE 7-1   Netra t 1400 System LED Functions

|		
POWER	Green	Illuminated at all times when the system is on
SUPPLY A	Green	Illuminated whenever DC input A is present on all fitted PSUs
SUPPLY B	Green	Illuminated whenever DC input B is present on all fitted PSUs
SYSTEM	Green	Off (or reset) during power up procedures Illuminated whenever UNIX is running and the alarms driver is installed This LED is reset by a hardware watchdog timeout, or whenever the user-defined Alarm 3 is asserted.
ALARM 1	Amber	Illuminated whenever the user-defined Alarm 1 is asserted
ALARM 2	Amber	Illuminated whenever the user-defined Alarm 2 is asserted
FAULT	Amber	Flashes when a fan or PSU has failed Illuminated continuously when the ASR watchdog has timed out or when it is manually switched on

Netra t 1405
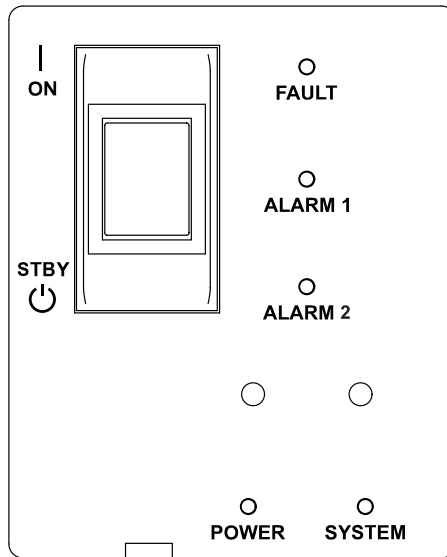
FIGURE 7-2   Netra t 1405 System LEDs

TABLE 7-2   Netra t 1405 System LED Functions

POWER	Green	Illuminated at all times when the system is on
SYSTEM	Green	Off (or reset) during power up procedures Illuminated whenever UNIX is running and the alarms driver is installed This LED is reset by a hardware watchdog timeout, or whenever the user-defined Alarm 3 is asserted.
ALARM 1	Amber	Illuminated whenever the user-defined Alarm 1 is asserted
ALARM 2	Amber	Illuminated whenever the user-defined Alarm 2 is asserted
FAULT	Amber	Flashes when a fan or PSU has failed Illuminated continuously when the ASR watchdog has timed out or when it is manually switched on

System ON/STBY Switch

The system switch of the Netra t 1400/1405 is a rocker, momentary switch which functions as a standby device only, controlling logic circuits which enable power module output.

▼ To Power On the System

1400

1405

1. **Prior to powering on, inspect the supply conductors for correct polarity and mechanical security.**

2. **Activate the external circuit breaker(s), or plug it into the mains supply.**

3. **Set the front panel ON/STBY system switch to the ON | position and hold it until the system starts to power up.**
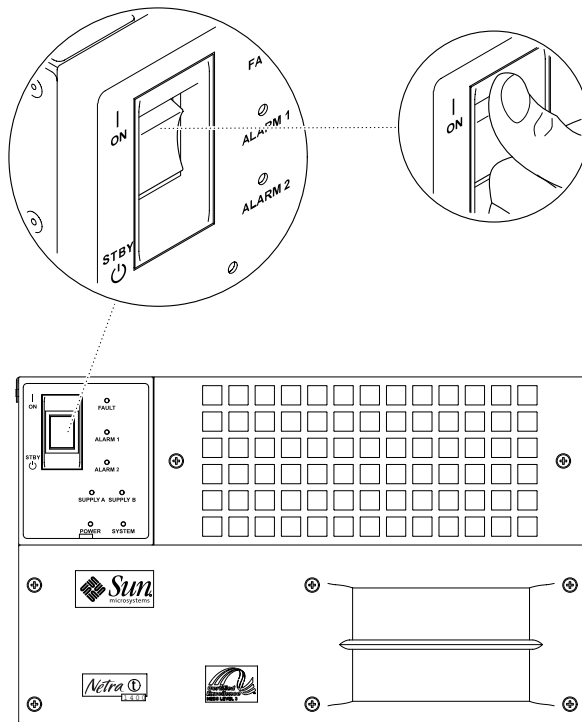

FIGURE 7-3   System Power-On (Front Panel)

▼ To Power Off the System

Caution – Prior to turning off system power, exit from the operating system. Failure to do so may result in data loss.

1. **Where necessary, notify the users that the system is going down.**

2. **Back up system files and data.**

3. **Halt the operating system.**

4. **Continue with step a. or b., as appropriate.**

   a. **Set the ON/STBY switch at the front of the system cabinet to the STBY ⏻ position and release it immediately to initiate a clean shut down followed by a power off.**

   b. **Set the ON/STBY switch at the front of the system cabinet to the STBY ⏻ position and hold it for five seconds to shut the system down immediately.**

5. **Verify that the System LED is off.**

6. **Disconnect the AC or DC power connector(s) from the rear of the system, or open the external circuit breaker(s).**

7. **Verify that the Power LED is off.**

Caution – Regardless of the position of the ON/STBY switch, where an AC power cord remains connected to the system, potentially dangerous voltages are always present within the power supply.
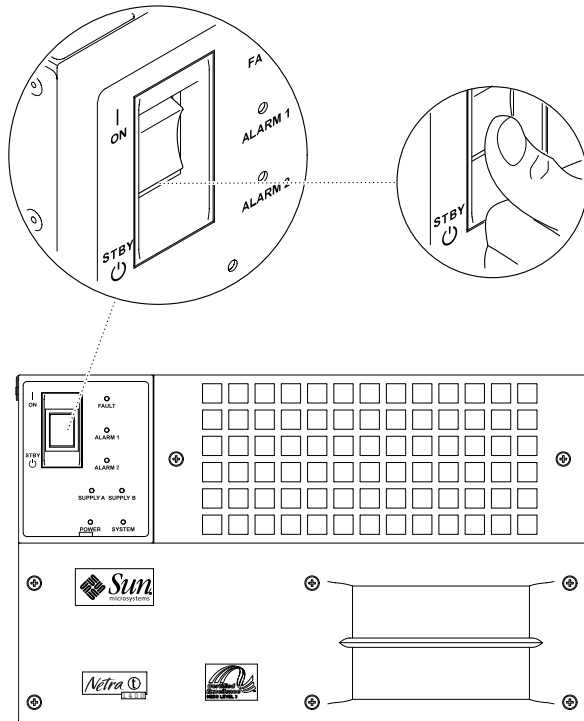
FIGURE 7-4 System Power-Off (Front Panel)

Caution –

1400	Regardless of the position of the ON/STBY switch, when a DC power cord remains connected to the system, DC voltage is always present within the power supply.
1405	Regardless of the position of the ON/STBY switch, when an AC power cord remains connected to the system, hazardous voltage is always present within the power supply.

System Start-up and Operation

The Netra t 1400/1405 is shipped ready for a jumpstart installation.

If the system is registered with the local install server, it will automatically boot from the network and install Solaris to the local hard disk when you power on for the first time.

If the system is not registered with the local install server, insert a Solaris install CD in the CD-ROM drive and type

```
boot cdrom
```

at the ok prompt. The system will then boot from the CD-ROM and install Solaris on the local hard disk.

Open Boot PROM

This chapter describes where changes have been made to the Open Boot PROM (OBP).

NVRAM Configuration Parameters

TABLE 9-1 lists the NVRAM configuration parameters supported by a Netra t 1400/1405 system.

TABLE 9-1 NVRAM Configuration Parameters

Parameter	Typical Default	Description
auto-boot	true	If true, boot automatically after power on or reset.
boot-device	disk	Device from which to boot.
boot-file	empty string	File to boot (an empty string lets secondary booter choose the default).
diag-device	net	Diagnostic boot source device.
diag-file	empty string	File from which to boot in diagnostic mode.
diag-switch	false	If true, run in diagnostic mode.
fcode-debug?	false	If true, include name fields for plug-in device FCodes.
hardware-revision	no default	System version information.
input-device	ttya	Power-on device (usually keyboard, ttya or ttyb).

TABLE 9-1   NVRAM Configuration Parameters *(Continued)*

Parameter	Typical Default	Description
keyboard-click?	false	If true, enable keyboard click.
last-hardware-update	no default	System update information.
local-mac-address?	false	If true, network drivers use their own MAC address, not the system's.
mfg-switch?	false	If true, repeat system self-tests until interrupted with a Break command.
nvramrc	empty	Contents of NVRAMRC.
oem-banner	empty string	Custom OEM banner (enabled by oem-banner? true).
oem-banner?	false	If true, use custom OEM banner.
oem-logo	no default	Byte array custom OEM logo (enabled by oem-logo? true).
oem logo?	false	If true, use custom OEM logo (else, use Sun logo).
output device	ttya	Power-on output device (usually screen, ttya, or ttyb).
security-#badlogins	no default	Number of incorrect security password attempts.
security-mode	none	Firmware security level (options: none, command, or full).
security-password	no default	Firmware security password (never displayed). *Do not set this directly.*
selftest-#megs	1	Megabytes of RAM to test. Ignored if diag-switch? is true.
testarea	0	One-byte scratch field, available for read/write test.
ttya-mode	9600,8,n,1,-	TTYA (baud rate, #bits, parity, #stop, handshake).
ttyb-mode	9600,8,n,1,-	TTYB (baud rate, #bits, parity, #stop, handshake).
ttya-ignore-cd	true	If true, operating system ignores carrier-detect on TTYA.
ttyb-ignore-cd	true	If true, operating system ignores carrier-detect on TTYB.

TABLE 9-1 NVRAM Configuration Parameters *(Continued)*

Parameter	Typical Default	Description
ttya-rts-dtr-off	false	If true, operating system does not assert TTYB and RTS and DTR.
ttyb-rts-dtr-off	false	If true, operating system does not assert TTYB and RTS and DTR.
use-nvramrc?	false	If true, execute commands in NVRAMRC during system start-up.

Emergency Procedures

Use the Break command from a terminal to perform the abort function.

Running Diagnostics

The following information, as documented in the *Solaris OpenBoot Command Reference* manual, is Sun machine-specific and therefore applies to a Netra t 1400/1405 system.

- Running Diagnostics
- Testing the SCSI Bus
- Testing Memory
- Testing the Ethernet Controller
- Testing the Clock
- Monitoring the Network
- Preserving Data After a System Crash
- SCSI Problems—probe SCSI
- System boots from the wrong device
- System will not boot from Ethernet

New Devices in the OBP Device Tree

The following device has been added to the OBP device tree:

- `/pci@1f,4000/ebus@1/SUNW,lom@14,200000`

  This is the LOMlite device. It has an FCode PROM, which allows it to identify itself to the system during probing. The FCode PROM defines the name of the device and the `reg` property, which describes the address space used.

Using LOMlite

LOMlite is supplied on a card as part of the system and provides *lights out management* or remote management of the system over a serial connection. While the system is running, LOMlite also provides event reporting via the Solaris operating environment.

LOMlite Functionality

The alarms card implementing the LOMlite functionality can report errorconditions in a number of ways:

- The fault LED on the front panel will flash if any fan or PSU fails.
- On the Netra t 1400, the current state of the supply A and supply B is indicated by LEDs on the front panel.
- Any fan failure or change of PSU state is reported on the LOMlite console and is entered into the LOMlite's event log. The first fatal error is preserved as a possible root cause of subsequent failures.

  The event log may be displayed using either the LOMlite console `show` command, or the Solaris utility `lominfo events` utility. Once a fault has been cleared, the event log can be cleared using the Solaris `lomctl clearevents` utility.
- As events are entered into the LOMlite's event log, they are also recorded by the Solaris daemon, `lomlited`, in the system log files, according to the configuration of `syslogd`. Typically, such messages are reported to the console.
- The LOMlite console `environment` commands can be used to show the current state of the fans and PSUs in the system.
- The Solaris `lominfo` utility can be used to display the current state of the fans and PSUs in the system.

Diagnosing PSU Faults

If a PSU suffers an internal failure (that is, its output fails while input power is still applied), the Fault LED will flash and the event will be recorded as described above.

For example, the message

```
LOM event: PSU 2 Output failed
```

may be displayed on the LOMlite console and

```
Sep 7 11:44:20 hostname lomlited: LOMlite PSU 1 Output failed
```

may be displayed on the Solaris console. Note that an event will be issued if the Fault LED is not already on, indicating that the LED has been set to flash. If a PSU output failure occurs, the PSU should be replaced.

If the PSU suffers an external failure (that is, one or more of its inputs fail), the Fault LED will not flash as the fault is external to the system but the fault will still be reported as, for example:

```
LOM event: PSU 2 InA failed
```

In the Netra t 1400 system, the LED corresponding to the failed supply (A or B) will go off.

Once the fault has been corrected, you can clear the event log using the Solaris `lomctl clearevents` command. This will automatically extinguish the Fault LED if it is lit. You can also turn off the Fault LED using either the LOMlite console command `faultoff`, or the Solaris utility `lomctl faultoff`.

To display the current status of the PSUs, use the LOMlite console `environment` command or the Solaris utility `lominfo psu`.

Diagnosing Fan Faults

If the speed of a monitored fan drops below a pre-defined limit, the Fault LED will flash and the event will be reported as described above. For example, the message

```
LOM event: Fan 3 failed
```

may be displayed on the LOMlite console, and

```
Sep 7 11:44:20 hostname lomlited: LOMlite: Fan 3 failed
```

may be displayed on the Solaris console. Note that an event will be issued if the Fault LED is not already on, indicating that the LED has been set to flash. If a fan failure occurs, the fan should be replaced.

Once a fan has been reported to have failed, any subsequent recovery and repeated failure will not be reported; that is, only one event is generated for the failure of each fan. This is to prevent the event log being rapidly filled should the fan speed fall very close to the failure threshold.

Once the fault has been corrected, you can clear the event log using the Solaris `lomctl clearevents` command. This will automatically extinguish the Fault LED if it is lit and re-enable checking of all fans. To re-enable checking of all fans and extinguish the Fault LED without clearing the event log, use the LOMlite console `check` command or Solaris utility `lomctl check`.

To display the current status of the fans, use the LOMlite console environment command or the Solaris utility `lominfo fan`. These display both the current fan speeds, expressed as a percentage of expected maximum, and the state `OK` or `FAULT`. Note that reported speeds slightly in excess of 100% should not be considered to be a problem.

Power

The LOMlite device is powered by auxiliary power. It functions even when the rest of the system is powered down.

Serial Connection

You access LOMlite by a terminal connected to the serial port as follows:

Connector:	LOM
Rate:	9600 baud
Parity:	No
Stop bits:	1
Data bits:	8

Controlling LOMlite

The following commands can be sent to LOMlite when it is connected:

TABLE 10-1 LOMlite Commands

Command	Use
alarmoff *n*	Set alarm *n* off. *n* can be 1, 2 or 3
alarmon *n*	Set alarm *n* on. *n* can be 1, 2 or 3
check	Reset monitoring to report all failures
console	Not applicable to the Netra t 1400/1405
environment	Display the status of the fans, power supply, alarms and fault LED
faulton	Set the Fault light to on
faultoff	Set the Fault light to off
help	Display the list of LOMlite commands
poweron	Power the system on
poweroff	Power the system off
reset	Reset the system
show model	Show the system model
show hostname	Show the system name (equivalent to uname -n)
show eventlog	Show the event log
show	Show all the information available with the show command
version	Show the version number of the LOMlite device

Commands can be abbreviated to a minimum of two unique characters.

Configuring LOMlite

LOMlite has as an associated configuration file, `lom.conf`, in which you can set the following parameters:

TABLE 10-2   LOMlite Configuration File Parameters

Field	Format	Use
`wdog_enabled`	Boolean	Enable the LOMlite system watchdog when driver loads.
`wdog_reset`	Boolean	Reset the system after a watchdog timeout.
`wdog_alarm3`	Boolean	Turn fault LED on after a watchdog timeout.
`wdog_timeout`	Integer	Set the timeout for the LOMlite system watchdog. Value is in seconds.
`serial_events`	Boolean	Report LOMlite events over the serial connection.
`disable_wdog_on_break`	Boolean	Not applicable to the Netra t 1400/1405
`disable_wdog_on_panic`	Boolean	Try to disable the LOMlite watchdog after a system panic. In some cases, this can fail and the watchdog can time out anyway.

Each field must be on a separate line, and be followed by an equals sign (=) and a value, without spaces. In Boolean fields, 1 means true and 0 means false.

Fault LED

LOMlite drives the amber fault LED on the system. The amber fault LED flashes when a fan or PSU has failed. The LED is lit continuously when the watchdog has timed out, or when the LED has been turned on manually for verification with the LOMlite command `faulton`.

System Watchdog

LOMlite includes a watchdog timer, which by default controls the system alarm.

The watchdog process, `tsdog`, is enabled at boot time by an rc script, `/etc/init.d/tsaldog`. You can edit this script to configure the watchdog timeout, the reset intervals, and wether ASR is enabled. See the `tsdog`(1M) man page for details.

Alternatively, you can disable the script, edit the driver configuration file `lom.conf` to enable the watchdog, and use your own process to reset the watchdog to monitor the functioning of an application. See the `lom`(7d) man page for details of the interface that you use to set up this process.

If the watchdog expires, by default the system alarm and the fault LED are switched on.

System Monitoring

When the system is booted, a LOMlite monitoring daemon is started by the rc script, `/etc/init.d/lomlited`. This daemon reports any state change for the fans, power supply, alarms or fault LED, including restoration of service. All events are reported to `syslogd` with an identifier string `lomlited`. They are then handled according to the `syslogd` configuration.

You can use the LOMlite utilities to perform more advanced configuration and monitoring if necessary. For details, see the man pages for `lomctl`(1M), `lominfo`(1M), `lomprog`(1M), `tsdog`(1M), `tsctl`(1M), `tsstate`(1M) and `tsunlock`(1M).

System Shut-down

The shutdown or init command is executed by the super user to change the operational state of the machine. By default, it brings the system to a state where only the console has access to the operating system.

The shutdown command sends a warning message and a final message before it begins shutdown activities. Refer to shutdown(1M) and init(1M) for further information.

You can also use the following commands:

TABLE 11-1 Commands for Shutting Down the System

Command	Effect
shutdown -i0 or **init 0**	Halt the operating system and enter the Open Boot PROM (OBP).
shutdown -i5 or **init 5**	Halt the operating system and power the system down.
shutdown -i6	Return to interactive mode and immediately reboot from the default kernel/unix (the reboot command has the same effect).
init s or **init S**	Halt the operating system and enter maintenance mode.

After shutting down the system, move the ON/STBY switch at the front of the system cabinet to the STBY ⏻ position and immediately release it.

To start the system again and begin the automatic booting sequence, you must set the ON/STBY switch to the ON | position and immediately release it.

If you have an emergency requiring an immediate system power down, switch off the system with the ON/STBY switch by holding it in the STBY ⏻ position for five seconds.

This does not shut down the operating system cleanly, and is likely to corrupt your file system.

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