

PART **IV** Appendixes

Physical and Environmental Specifications

In the following sections, this appendix gives the physical dimensions of the Netra X1 server and describes the conditions in which the server is capable of operating:

- “Physical Specifications” on page 126
- “Environmental Specifications” on page 126
- “Operating Power Statistics” on page 127
- “Calculating Power Consumption” on page 128
- “Calculating Heat Dissipation” on page 128

Physical Specifications

Dimension	U.S.	Metric
Height	1.72 in.	43.6 mm
Width	17.55 in.	445 mm
Depth	13.21 in.	335 mm
Weight	6 kg (with two hard disk drives and four memory modules installed)	

Environmental Specifications

You can operate and store the system safely in the conditions detailed below.

Specifications	Operating	Storage
Ambient temperature	5°C to 40°C 14°F to 104°F	-40°C to 70°C -8°F to 158°F
Temperature variation	30°C/hr maximum 86°F/hr maximum	30°C/hr maximum 86°F/hr maximum
Relative humidity	5% to 85% (noncondensing)	10% to 95% (noncondensing)
Altitude	-300m to +3000m	-300m to +12000m

Acoustic Noise Generated

The system generates less than 60 dBA at a distance of 23.67 inches (600 mm) and a height of 59.17 inches (1500 mm) while operating in an ambient temperature of 77°F (25°C).

Environmental Compliance Information

- Electromagnetic compatibility
 - Immunity: The server conforms to EN55024.
 - Emissions: The server conforms to EN55022 Class A and FCC Class A.
- Safety
 - The system conforms to UL 1950 (3rd edition), EN60950

Operating Power Statistics

TABLE A-1 Operating Power Statistics

Maximum operating current	1.3A @ 100 VAC
Typical operating current	See “Calculating Power Consumption” on page 128
Maximum in-rush current (cold start)*	40A peak at 115V 25°C
Maximum in-rush current (warm start, or upon a restart 20 to 200 msec after power has been removed*)	100A peak at 115V 25°C
Operating input voltage range	90 to 264 Vrms
Voltage frequency range	47 to 63 Hz
Power factor	0.9 to 0.99
Maximum volt-ampere rating	130 VA
BTU/hr	400 MHz processor: 135 (min), 154 (max). 500 MHz processor: 148 (min), 280 (max).

* The in-rush current decays to the normal operating current in less than 200 msec.



Caution – The power supply continues to regulate all outputs for at least 17 ms after AC power is removed.

Note – Logic ground and chassis ground are connected internally.

Note – Power from the standby output is available whenever input power is connected.

Calculating Power Consumption

A Netra X1 server containing two disk drives has an estimated current requirement of approximately 1 amp.

TABLE A-2 shows the estimated power consumed by the individual components in a fully powered system. However, when you are calculating the power requirements for your system, you must allow for 63 percent PSU efficiency. To perform this calculation, add the figures for each component installed in the system, then divide the result by 0.63.

TABLE A-2 Estimated Power Consumption of Netra X1 Server Components

Component	400 MHz	500 MHz
Base system	15.0W	20.0W
Memory (per DIMM)	4.59W (256 Mbytes, burst mode)	4.59W (256 Mbytes, burst mode)
Hard disk drive	6.0W (20 Gbyte/5400 rpm, idle)	6.5W (40 Gbyte/7200 rpm, idle)

Note – To calculate the total power requirement for several servers installed in a single rack or cabinet, add the individual power requirement figure for each server installed.

Calculating Heat Dissipation

To calculate the heat generated by a server so that you can estimate the heat your cooling system must dissipate, convert the figure for the system's power requirement from watts to BTU/hr. A general formula for doing this is to multiply the figure for the power requirement by 3.415.

Configuring the Driver for LOMlite2

This appendix describes the parameters that you can use to configure the LOMlite2 driver, and contains the following sections:

- “The LOMlite2 Device Driver and Script Files” on page 130
- “Configuring the LOMlite2 Device Driver” on page 131

The LOMlite2 Device Driver and Script Files

The LOMlite2 driver software included in the Solaris 8 (10/00) operating environment is as follows:

- `/platform/sun4u/kernel/drv/lom` (the lom driver [32-bit])
- `/platform/sun4u/kernel/drv/sparcv9/lom` (the lom driver [64-bit])
- `/platform/sun4u/kernel/drv/lom.conf` (the driver configuration file)

The driver is started by the following three scripts in the Solaris 8 (10/00) environment:

- `/etc/init.d/lom`
- `/etc/rc2.d/S25lom`
- `/etc/rc0.d/K80lom`

This appendix describes the driver parameters you can set in the `lom.conf` configuration file. Some of these parameters are configurable by means of the LOMlite2-specific Solaris commands described in Chapter 6.

Configuring the LOMlite2 Device Driver

The full list of parameters you can set in this file is given in TABLE B-1.

TABLE B-1 LOM Configuration File Parameters

Field	Format	Default	Effect
<code>wdog_reset=</code>	Boolean 0=FALSE 1=TRUE	0	Causes LOMlite2 to reset the server after a watchdog timeout. Setting this to 1 is equivalent to using the <code>lom -R on</code> command described in Chapter 6.
<code>wdog_alarm3=</code>	Boolean 0=FALSE 1=TRUE	0	Turns on software alarm 3 when the LOMlite2 watchdog times out. Setting this to 1 is equivalent to using the <code>lom -A on, 3</code> command described in Chapter 6.
<code>serial_events=</code>	0=OFF 1=ON 2=ON WHEN DRIVER NOT LOADED	2	Causes LOMlite2 to report events over the serial connection. Setting this parameter to 0 means that no events will be reported over the serial connection. Setting it to 1 means that events will be reported over the serial connection as well as to <code>syslogd</code> ; this is equivalent to <code>lom -E on</code> . If you have dedicated the Serial A/LOM port to LOMlite2, you need to set this parameter to 1. It ensures that you receive all event reports at the terminal you have connected to Serial A/LOM. Finally, setting the parameter to 2 means that events will be reported over the serial connection but only when the driver is not running (when it is running they will be reported to <code>syslogd</code> , although Fatal and Warning messages will still go to Serial A/LOM).

TABLE B-1 LOM Configuration File Parameters (*Continued*)

Field	Format	Default	Effect
disable_wdog_on_break=	Boolean 0=FALSE 1=TRUE	1	Causes LOMlite2 to disable its watchdog if it detects a break signal on the Serial A/LOM port.
disable_wdog_on_panic=	Boolean 0=FALSE 1=TRUE	1	Causes LOMlite2 to try to disable its watchdog after a system "panic".
faulty_voltage_shutdown=	Boolean 0=FALSE 1=TRUE	1	Causes LOMlite2 to attempt first to shut down the system and, if that fails, to power off the system in the event of a problem with the supply rails.
enclosure_warning_temp=	°C	67	Specifies the temperature at which LOMlite2 generates an overtemperature event.
over_temperature_shutdown=	Boolean 0=FALSE 1=TRUE	1	Causes LOMlite2 to attempt to shut down the system, or to power it off, if the enclosure temperature exceeds the level specified for the enclosure_shutdown_temp parameter.
enclosure_shutdown_temp=	°C	72	Specifies the enclosure temperature above which LOMlite2 attempts to shut the system down or, if this fails, to power the system off. (LOMlite2 will attempt to do either of these if over_temperature_shutdown is set to 1.)
serial_security=	Boolean 0=FALSE 1=TRUE	1	Enables and disables the user security facilities even if user security has been configured. You can use this parameter to set up users again if your users have forgotten their passwords. Cannot be turned on if no users are configured in the LOM.

TABLE B-1 LOM Configuration File Parameters (*Continued*)

Field	Format	Default	Effect
<code>serial_timeout=</code>	Multiples of 4 secs	0	Specifies the period after which LOMlite2 gives control of the Serial A/LOM port back to the console when it has finished sending a report (or when the user has issued a LOMlite2 shell command, if you have enabled the <code>serial_return=</code> option). By default, there is no delay at all.
<code>serial_return=</code>	Boolean 0=FALSE 1=TRUE	0	Causes LOMlite2 to return the user to the console from the <code>lom></code> prompt after each LOMlite2 shell command. You can use this option in conjunction with the <code>serial_timeout=</code> option.
<code>reporting_level=</code>	Number between 0 and 4	3	Indicates the severity level down to which you want to see LOMlite2 event reports. 0 means no reports. 1 means fatal event reports only. 2 means fatal and warning event reports. 3 means fatal, warning and information event reports. 4 means fatal, warning, information and user event reports. (User event reports concern the user security facility; you will not see any unless you have enabled the security facility and set up users.) If power is removed then the setting is lost and not reinstated until the next Solaris boot.

Each parameter must be on a separate line and must be followed by an equals sign (=) and a value, without spaces. Where the format is Boolean, 1 means true and 0 means false.

dmfe - Davicom Fast Ethernet Driver for Davicom DM9102A

This appendix describes the dmfe driver and gives more information about its configuration and Application Programming Interface. The appendix contains the following section:

- “dmfe - Davicom Fast Ethernet Driver” on page 136.

dmfe - Davicom Fast Ethernet Driver

The dmfe device provides 100Base-TX networking interfaces using the Davicom DM9102A chip, which incorporates its own internal transceiver.

The dmfe Ethernet driver is a multithreaded, loadable, clonable, GLD-based STREAMS driver. It supports multiple controllers installed within the system. The dmfe driver functions are listed below.

- Controller initialization.
- Frame transmit and receive.
- Promiscuous and multicast support.
- Error recovery and reporting.

The 100Base-TX standard specifies an auto-negotiation protocol to automatically select the mode and speed of operation. The internal transceiver is capable of performing auto-negotiation with the remote-end of the link (link partner) and receives the capabilities of the remote end. It selects the highest common denominator mode of operation based on the priorities. It also supports a forced-mode of operation, under which the driver selects the mode of operation.

Application Programming Interface

The cloning character special device, `/dev/dmfe`, is used to access all Davicom DM9102A devices installed in the system.

The dmfe driver depends on `/kernel/misc/gld`, a loadable kernel module that provides the dmfe driver with the DLPI and STREAMS functionality required of a LAN driver. See `gld(7D)` for more details on the primitives supported by the driver.

Use an explicit `DL_ATTACH_REQ` message to associate the opened stream with a particular device (ppa). The ppa ID is interpreted as an unsigned integer data type and indicates the corresponding device instance (unit) number. The driver returns an error (`DL_ERROR_ACK`) if the ppa field value does not correspond to a valid device instance number for this system. The device is initialized on first attach and de-initialized (stopped) at last detach.

The values returned by the driver in the `DL_INFO_ACK` primitive in response to `DL_INFO_REQ` are shown below.

- The maximum SDU is 1500 (`ETHERMTU`, defined in `<sys/ethernet.h>`).
- The minimum SDU is 0.
- The DLSAP address length is 8.
- The MAC type is `DL_ETHER`.

- The sap length value is -2, meaning the physical address component is followed immediately by a 2-byte sap component within the DLSAP address.
- The broadcast address value is the Ethernet/IEEE broadcast address (FF:FF:FF:FF:FF:FF).

Once in the DL_ATTACHED state, send a DL_BIND_REQ to associate a particular Service Access Point (SAP) with the stream.

Configuration

By default, the dmfe driver performs auto-negotiation to select the speed and mode of the link, which can be any of the following, as described in the 100Base-TX standard:

- 100 Mbps, full-duplex
- 100 Mbps, half-duplex
- 10 Mbps, full-duplex
- 10 Mbps, half-duplex

The auto-negotiation protocol automatically selects:

- Speed (100 Mbps or 10 Mbps)
- Operation mode (full-duplex or half-duplex)

The auto-negotiation protocol automatically selects the highest-throughput settings supported by both link partners.

However, if you need to set either the speed or duplex setting manually (for example, if the dmfe device is connected to a hub that does not support auto-negotiation), you can change the entries in the dmfe driver configuration file:

```
/platform/SUNW,UltraAX-i2/kernel/drv/dmfe.conf
```

- Speed
Set to 10 or 100 to force the dmfe device to operate at the specified speed.
- Full-duplex
Set to 0 to disable full-duplex, set to 1 to force full-duplex operation.

Ensure you set *both* parameters to match the requirements of the external device.

Note – By specifying either the speed or full-duplex setting yourself, you disable auto-negotiation. Therefore, if you set only one of the two parameters, the other will not be determined automatically by the driver.

Index

A

acoustic noise, 126
alarms, setting, 61, 75
altitude, 126
anti-static wrist strap, 88
automatic server restart, ?? to 74

B

back panel LEDs, 82
BTU rating, 127

C

cables, 11
Cisco L2511 Terminal Server, connecting, 21
console connection
 ASCII terminal, 20
 setting up, 16
 Sun workstation, 20
 terminal server, 21
cooling (heat dissipation), 128
cross-over (null modem) cable, 18, 19
current
 in-rush, 127
 operating, 127

D

DB9 adapter, 19
diagnostics, 108
 OBDiag, 109

POST, 108

 SunVTS, 110

DIMM failure, 115

domain name, 32

dumb terminal, serial connection, 19

E

electro-magnetic compatibility, 127

Ethernet

 connection, 32

 ports, 2

event log, viewing, 49

F

fans

 checking the status, 65

 location, 91

fault LED, 60, 82

 turning on, 62

flooring, 8

Frequently Asked Questions, 116

front panel LEDs, 82

H

hard disk drive, 2

 installing and removing, 93

 location, 91

 part number, 4

 power and data cables, 95

- heat dissipation, 128
- host name, 33
 - displaying, 62

I

- IDE controller failure, 114
- input voltage range, 127
- in-rush current, 127
- installation
 - mounting brackets, 8
 - quickstart, 5
 - rack mounting, 7
- internal circuit breakers, 65

L

- LEDs
 - back panel, 83
 - Ethernet port indicators, 83
 - fault indicator, 82
 - front panel, 82
 - power indicator, 82
- Lights Out Management (LOM)
 - commands, 61
 - displaying the host name, 62
 - displaying the version number of the LOM device, 62
 - monitoring the system, 64 to 71
 - online documentation, 64
 - parameters, 131
 - power supply unit, 64
 - powering up the system, 62
 - returning control of serial connection to console, 62
 - sample Event Log, 71
 - setting the alarms, 61, 75
 - setting up named users, 52 to 56
 - stopping event reporting, 131
 - turning the fault LED on, 62
 - updating component status, 61
 - viewing the LOM's Event Log, 49
- locating system components, 85
- log, viewing, 49
- LOMlite2 device
 - configuration variables, 56
 - removing driver protection, 77

- separating from the console on Serial A, 59
- sharing Serial A between the console and the LOMlite2 device, 60
- upgrading firmware, 78
- version number, 62

LOMlite2 interface

- backwards compatibility, 78
- escape sequence, 76

M

- memory
 - installing and removing, 92
 - location, 91
 - part number, 4
- monitoring the system, *See* Lights-Out Management (LOM)

N

- Name Server, 32
- Netmask, 33
- network install server
 - creating, 98
- null modem cable, 18, 19

O

- On/Standby switch, 36
- OpenBoot diagnostics, 109
- operating current, 127
- optional components, 4
- overview, 2

P

- physical specifications, 126
- pinout
 - serial port, 17, 21
- POST diagnostics, 108
- power
 - consumption, 128
 - factor, 127
 - requirements, 127, 128
 - switch, 36, 43
 - warnings, 13

- power LED, 82
- power supply
 - monitoring PSU and fans, 48
- power supply unit, 64
 - location, 91
- powering on, 36
- problems
 - booting (OBP initialization aborts), 114
 - displaying the lom> prompt or the Solaris prompt, 113
 - getting to the LOM prompt, 113
 - receiving text at the console on Serial A/LOM, 113
 - setting up a console connection, 112
 - turning serial event reporting on and off, 113

Q

- quickstart, 5

R

- rackmounting, 8
- remote reset, 45
- removal
 - hard disk drives, 93
 - memory, 92
 - system top cover, 94
- replacing the server, 86
- resetting remotely, 45

S

- safety, 127
- SCC (system configuration card), 86
- security, 8
 - LOMlite2 named user accounts, 52 to 56
- Serial A/LOM port
 - data subject to interruption by LOMlite2, 76
- serial A/LOM port, 31, 32, 33
 - dedicating to the LOMlite2 device, 59
 - stopping event reporting to, 76
 - stopping event reports being sent to, 57
- serial connection, 17, 32, 33
 - returning control to console, 62
- serial port, 2

- connection settings, 17
 - DB-25 adapter, 18
 - DB9 adapter, 19
 - differences, 16
 - pinout, 17, 21
- shipkit, contents, 3
- Solaris 8 operating environment
 - preinstalled software, 3
 - re-installing, 98
- specifications, 2
- standby power, 128
- stopping event reporting, 76
- SunVTS, 110
- supply rail voltages, 65
- system board, location of, 91
- system configuration card (SCC)
 - swapping between servers, 86

T

- temperature
 - checking the system's temperature, 66
- terminal server, 21
- thermal issues, 8
- tip session, 18
- top cover
 - removing, 89
 - replacing, 90

V

- voltage
 - frequency range, 127
 - input range, 127
- volt-ampere rating, 127

W

- watchdog timeouts, 131
- wrist strap, 88

