Netra™ X1 Server Product Notes

Please
Recycle

Adobe PostScript™

Introduction

These Product Notes provide information that became available after the *Netra X1 Server User's Guide* went to print.

The document contains the following sections:

Preinstalled Software

The Netra X1 server is preinstalled with the Solaris 8 operating environment. To see which version is installed on your server, type:

```
# cat /etc/release

Solaris 8 10/00 s28s_u2wos_11b SPARC
Copyright 2000 Sun Microsystems, Inc.  All Rights Reserved.
Assembled 31 August 2000
```

The first line states the major version of Solaris (in this case Solaris 8) and the date of the update release (in this case 10/00). The above system is therefore installed with Solaris 8 Update 2.

Known Issues

The following sections cover some known issues with the Netra X1 server.

64 Bit Support

When installing a system, ensure that the selected install option supports the 64 bit kernel.

Note – The install option that takes up the least disk space, labelled "Core System Support", supports 32 bit operation only and is not compatible with the Netra X1 server.

WebStart Install Not Supported

Installing a server over the network by using the WebStart tool, as documented in the Solaris 8 *Advanced Installation Guide,* 806-0957-10 (page 217, step 16), is not supported on the Netra X1 server.

Sending Break During Boot Process Can Result In Failure To See Disk On Reset

If a break is sent to the system console while the system is booting, there is a small chance of a subsequent failure to detect the boot disk. The prom may report:

```
Boot device: disk  File and args:
Bad checksum in disk label
Can't open disk label package
Evaluating: boot

Can't open boot device
```

To recover, power the system off for 1 minute and then power it back on.

No Auto Power-On When Power is Removed and Restored Within 10 Seconds

If you disconnect the server from its power source while it is powered on, and then reconnect it within 10 seconds of the disconnection, the server automatically attempts to power on. However, it does not reinitialize successfully and hangs after giving the following console output:

```
LOMlite starting up.

CPU type: H8/3437S, mode 3
Ram-test: 2048 bytes OK
Initialising i2c bus: OK
Searching for EEPROMs: 50(cfg)
I2c eeprom @50: OK
i2c bus speed code 01... OK
Probing for lm80s: none
Probing for lm75s: 48
Initialising lm75 @48: OK
System functions: PSUs fans breakers rails gpio temps host CLI ebus
clock
Unexpected reset

LOMlite console
lom>
LOM event: +0h0m0s LOM FAULT: unexpected reset
lom>
LOM event: +0h0m0s host power on
```

If your system hangs when you have disconnected power and then restored it within 10 seconds of the disconnection, do either of the following:

- Type a carriage return, and then type the LOM escape sequence (a hash character, followed by a dot: #.). Then, at the LOM prompt, type poweroff. Finally, at the next LOM prompt, type poweron. The system will power on.
- Hold the rocker switch in the OFF position until the console reports the time-stamped host power off LOM event, then put the rocker switch into the ON position. The system will then power on.

If you have the NVRAM diag-switch? parameter set to true (by default, it is set to false and the console output is as shown above), the system will provide additional, Open Boot PROM output during the boot process. In this case, if you restore power within 10 seconds of removing it, the system hangs after reporting the following message:

```
Probing/pci@1f,0 Device a usb
```

To restore power, use either of the two methods described above.

Note – Any interruption and subsequent restoration of mains power within 10 seconds could cause this fault to occur.

LOM `power_on_delay` Variable Does Not Function Correctly

Assigning a value to the `power_on_delay` variable can cause the server to fail to power up from the `lom` prompt. Assigning a value that is a multiple of both 16 and 20 will result in the server not powering up at all.

---

dmfe - Davicom Fast Ethernet Driver for Davicom DM9102A

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 include

■ 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 is dependent 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.

Changing the dmfe link settings using ndd

Specify /dev/dmfe0 or /dev/dmfe1 when using ndd instead of setting the instance. The link_speed value returns 10 or 100 indicating 10 or 100Mbit operation:

```
# ndd /dev/dmfe0 \?
?                          (read only)
link_status                (read only)
link_speed                 (read only)
link_mode                  (read only)
adv_autoneg_cap            (read and write)
adv_100fdx_cap             (read and write)
adv_100hdx_cap             (read and write)
adv_10fdx_cap              (read and write)
adv_10hdx_cap              (read and write)
```

To force a specific link setting:

1. **Set three of the four variables to 0:**

```
# ndd -set /dev/dmfe1 adv_10hdx_cap 0
# ndd -set /dev/dmfe1 adv_10fdx_cap 0
# ndd -set /dev/dmfe1 adv_100hdx_cap 0
```

2. **Set the variable you want to force to 1:**

```
# ndd -set /dev/dmfe1 adv_100fdx_cap 1
```

3. **Set** `adv_autoneg_cap` **to 0:**

```
# ndd -set /dev/dmfe[01] adv_autoneg_cap 0
```

This command causes the driver to disable auto-negotiation and re-evaluate the settings of the other four variables to determine which transfer speed and mode is required. To re-enable autonegotiation, set `adv_autoneg_cap` to 1; the other variables are not checked when autonegotiation is in effect.

To change the selected mode when not using autonegotiation:

1. **Select the required mode by setting the first four variables.**

2. **Set** `adv_autoneg_cap` **to 0.**

Setting `adv_autoneg_cap` causes the other values to be re-evaluated.

Note – Use the configuration file `dmfe.conf` to make permanent changes to the dmfe link settings. Refer to the dmfe(7d) man page for more information.

The parameters supported by each driver may change in subsequent releases. Like programs that read `/dev/kmem`, user programs or shell scripts that execute `ndd` should be prepared for parameter names to change. The `ioctl()` command that `ndd` uses to communicate with drivers could change in future releases, so avoid having user programs depend upon it. The meanings of many `ndd` parameters can vary, according to how the dmfe driver is implemented.

Only *total autonegotiation* or *no autonegotiation* (link settings completely determined by software parameters) is supported by dmfe. It does not support *restricted autonegotiation* (where the software parameters select multiple options and autonegotiation determines which of these options to use).

Safety and Compliance Information

- There is an alteration to the *Netra X1 Safety and Compliance Guide* to correct the maximum ambient operating temperature figure.
- Some information contained in the guide relates to equipment operating from a DC power source only, and this information can be disregarded in relation to the Netra X1 server.

The following sections contain more details.

Ambient Operating Temperatures

The first caution in the 'Placement of a Sun Product' section refers to a maximum ambient operating temperature of 55 degrees Celsius. This temperature should be 40 degrees Celsius (104 degrees Fahrenheit), as shown in the correct text below.

> **Caution** – If the system is installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may exceed the room ambient. Ensure that rack environment ambient temperature does not exceed 40 degrees Celsius (104 degrees Fahrenheit).

The following Caution is incorrect in relation to the Netra X1 server and should be disregarded:

> **Caution** – Netra X1 units are designed to work with DC power. Units designed to work with DC power are shipped with a connector to be used with a customer supplied 48V power cord for the customer to connect to the DC power source. Always connect DC powered units to a DC power source only.

DC Source Site Requirements

The Netra X1 is an AC-only product. Disregard the paragraphs in the *Netra X1 Safety and Compliance Guide* which refer to DC source site requirements.

Changes to the User's Guide

There are some corrections to the Operating Power Statistics table on page 8 of the *Netra X1 Server User's Guide*. The changes are to the BTU rating, the maximum operating current and the maximum volt-ampere rating. The correct figures are given in the table below.

Operating Power Statistics

TABLE 0-1   Operating Power Statistics

Maximum operating current	1.3A @ 100 VAC
Typical operating current	See "Calculating Power Consumption" on page 9 of the *Netra X1 Server User's Guide.*
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 msecs 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 0.995
Maximum volt-ampere rating	130 VA
BTU rating	153.54 BTU[**]

[*] The in-rush current decays to the normal operating current in less than 200 msecs.

[**] This BTU assumes a system fully loaded with hardware option modules (see "Calculating Heat Dissipation" on page 9 of the *Netra X1 Server User's Guide.*

Restarting the LOM Watchdog Monitor

In the 'Enabling the LOMlite2 Watchdog Process From Your Own Script or Command' section on page 65 of the *Netra X1 Server User's Guide*, the `piocntl` command is referred to. This is incorrect. The correct command to use is `priocntl`.

The correct default `priocntl` command is

```
priocntl -e -c RT lom -W on,40000,10000
```

Making Serial Connections to the Server

In the *Netra X1 Server User's Guide*, the "Contents of the Ship Kit" section on page 3 refers to part number 530-2961-01 for the serial cables. The correct part number is 530-2093-01. The "Connecting the Cables to the Server" section on page 16 should contain the following information:

Note – The Netra X1 server is supplied with shielded serial cables. Use only these cables when making serial connections to the server.

Precautions for Using the System Configuration Card

The Netra X1 Server contains a memory card (located on the back panel) called the system configuration card. This card contains the system's MAC address, serial number, and other configuration settings. It is designed to be removable so that, if you ever need to replace an entire server, you can transfer the host ID and configuration data onto the new server. This makes the replacement of the server transparent to your network.

Caution – Never remove the system configuration card when the server is booting or running Solaris. Power the server off or down to standby mode before removing or inserting the system configuration card.

⚠ **Caution –** Do not handle the system configuration card unless you need to transfer it to another system. If you need to handle it for this reason, avoid contact with the gold terminals on the underside of the card.

For information about transferring the system configuration card from one server to another, refer to the *Netra X1 Server User's Guide* (part number: 806-5980-10).

Re-installing the Solaris 8 Operating Environment

Note – The earliest version of the Solaris 8 operating environment supported on the Netra X1 server is Solaris 8 (10/00).

The Netra X1 server comes pre-installed with:

- The Solaris 8 operating environment (64 bit).
- Lights Out Management (LOM) packages.
- The Netra X1 dmfe Fast Ethernet driver.

Because the Netra X1 server does not contain a CD-ROM drive, if you need to re-install the Solaris 8 operating environment, you must do so from a network install server which does have a CD-ROM drive.

Further information about installing the Solaris 8 operating environment from a network install server is available in the *Solaris 8 Advanced Installation Guide* (806-0957-10), which is supplied with the Solaris 8 operating environment CDs. It can also be downloaded from `http://docs.sun.com`.

Before you create a network install server, there are some software updates, specific to the Netra X1 server, which you must install onto the system you will use as a network install server. The following section tells you how to do this.

▼ To Download the Netra X1 Mandatory Software for the Network Install Server

1. **On the system you are going to use as the network install server, make a directory called** `/var/tmp/netra-x1` **by typing:**

```
# mkdir -m 755 /var/tmp/netra-x1
```

2. **Go to** `http://www.sun.com/netra` **and, in the 'Downloads' section, click on 'Netra X1 Software Drivers'.**

   (If you have not used the download service before, you will be invited to register before proceeding.)

3. **Log into the download service.**

4. **Click "Download Netra X1 Driver Software" and save the packages to the directory** `/var/tmp/netra-x1.`

   The file you download is called `mis.netra-x1.259-3836-03.zip`. This file contains the following Netra X1 specific software:

   - Netra X1 dmfe Fast Ethernet driver.
   - Lights Out Management (LOM) packages.
   - The patches listed in the table below.

   (This is the correct version number at the time of writing. Because this file is likely to be updated, the final two digits in the name of the file you download may be higher than -03. This indicates that you are downloading the most recent version of the software updates for the Netra X1 Server.)

5. **At the Solaris prompt on the system you are going to use as the network install server, unzip the files you have downloaded. To do this, type:**

```
# cd /var/tmp/netra-x1
# unzip mis.netra-x1.259-3836-03.zip
```

Note – The software updates you have downloaded include all the mandatory patches for Solaris and the Netra X1 server: you do not need to download these patches separately. However, you can download and find information about the latest software patches for both the Netra X1 server and the Solaris operating environment at `http://sunsolve.sun.com`.

Patch Number	Patch Title
110383-01 or later	SunOS 5.8: libnvpair patch
108528-07 or later	SunOS 5.8: kernel update patch
108664-06 or later	SunOS 5.8: Support for Network Service
109793-07 or later	SunOS 5.8: su driver patch
108974-09 or later	SunOS 5.8: dada, uata, dad, sd and scsi patch
110208-09 or later	Netra Lights Out Management 2.0 patch
110693-01 or later	Netra X1 dmfe ethernet driver, Link light
111092-02 or later	Netra X1 time of day driver

Creating a Network Install Server

To install the Solaris software over the network, you must create an install server. This section describes how to set up an install server on the same subnet as the system you are about to install, by copying the Solaris 8 CD images to the server's hard disk drive.

The following procedure refers to Chapter 9 ("Preparing to Install Solaris Software Over the Network) on page 209 of the *Solaris 8 Advanced Installation Guide* (806-0957-10). This document is supplied with the Solaris 8 software CDs. The beginning of the chapter provides background information.

▼ To Create an Install Server

1. **On the system that is going to be the install server, log in and become superuser.**

   This system must include a CD-ROM drive and be part of the site's network and name service. The system must also be in the NIS or NIS+ name service. If your site does not use the NIS or NIS+ name service, you must distribute information about this system by following your site's policies.

> **Note –** This procedure assumes that the system is running Volume Manager. If you are not using Volume Manager to manage diskettes and CDs, refer to the *System Administration Guide, Volume 1* for detailed information about managing removable media without Volume Manager.

2. **Insert the CD labelled Solaris 8 Software 1 of 2 SPARC Platform Edition into the system's CD-ROM drive.**

3. **If necessary, mount the CD.**

   Volume Manager automatically mounts the CD.

4. **Change to the** `Tools` **directory on the mounted CD. Type:**

   ```
   # cd /cdrom/cdrom0/s0/Solaris_8/Tools
   ```

5. **Copy the CD in the CD-ROM drive to the install server's hard disk by using the** `setup_install_server` **command:**

   ```
   # ./setup_install_server install_dir_path
   ```

   where *install_dir_path* specifies the directory where the CD image is to be copied. The directory must be empty.

   > **Note –** The `setup_install_server` command indicates whether or not there is enough disk space available for the Solaris 8 software CD images. To determine available disk space, use the `df -kl` command.

6. **Eject the Solaris 8 Software 1 of 2 CD:**

   ```
   # cd /
   # eject
   ```

7. **Insert the CD labelled Solaris 8 Software 2 of 2 SPARC Platform Edition into the system's CD-ROM drive.**

8. **If necessary, mount the CD.**

   Volume Manager automatically mounts the CD.

9. **Change to the** `Tools` **directory on the mounted CD:**

```
# cd /cdrom/cdrom0/Solaris_8/Tools
```

10. **Copy the CD in the CD-ROM drive to the install server's hard disk by using the** `add_to_install_server` **command:**

```
# ./add_to_install_server install_dir_path
```

where *install_dir_path* specifies the directory where the CD image is to be copied.

11. **Eject the Solaris 8 Software 2 of 2 CD.**

```
# cd /
# eject
```

12. **Insert the CD labelled Solaris 8 Languages SPARC Platform Edition.**

13. **If necessary, mount the CD.**

Volume Manager automatically mounts the CD.

14. **Change to the** `Tools` **directory on the mounted CD:**

```
# cd /cdrom/cdrom0/Tools
```

15. **Copy the CD in the CD-ROM drive to the install server's hard disk by using the** `add_to_install_server` **command:**

```
# ./add_to_install_server install_dir_path
```

where *install_dir_path* specifies the directory where the CD image is to be copied.

16. **Eject the Solaris 8 Languages SPARC Platform Edition CD.**

```
# cd /
# eject
```

17. **Change to the directory in which you placed** `mis.netra-x1.259-3836-03.zip` **by typing:**

```
# cd /var/tmp/netra-x1
```

18. **Add the patches and packages automatically to the network install server image by typing:**

```
# ./modify_install_server -d install_dir_path
```

where *install_dir_path* is the path to the install image on your install server.

Setting Up Systems to Be Installed Over the Network With `add_install_client`

- If the details of the system you are installing are held in a name service such as NIS or NIS+, see "To Set Up a System That is In a Name Service" on page 19.
- If the details of the system you are installing are *not* held in a name service such as NIS or NIS+, see "To Set Up a System That is Not In a Name Service" on page 20.

▼ To Set Up a System That is In a Name Service

1. **Become superuser on the install server.**

2. **Ensure that the following information about the system to be installed has been added to the name service:**
   - Host name.
   - IP address
   - Ethernet address

3. **Change to the** `Tools` **directory within the install image:**

```
# cd install_dir_path/Solaris_8/Tools
```

4. **Use the** `add_install_client` **command to set up a system to be installed over the network:**

```
# ./add_install_client host_name platform_group
```

Where *host_name* is the name of the machine to be installed and where *platform_group* is `sun4u`.

▼ To Set Up a System That is Not In a Name Service

1. **Become superuser on the install server.**

2. **Use the obp** `banner` **command to find out the system's Ethernet address of the system you want to install. On that system type:**

```
ok banner
Sun Netra X1 (UltraSPARC-IIe 400MHz), No Keyboard
OpenBoot 4.0, 512 MB memory installed, Serial #16634592.
Ethernet address 8:0:20:fd:d2:e0, Host ID: 80fdd2e0.
```

3. **Change to the** `Tools` **directory within the install image:**

```
# cd install_dir_path/Solaris_8/Tools
```

4. **Obtain the IP adress allocated to the machine you are about to install from your system administrator.**

5. **Use the** `add_install_client` **command to set up a system to be installed over the network:**

```
# ./add_install_client -i IP_address -e Ethernet_address host_name
platform_group
```

Where *IP_address* is provided by your system administrator, *Ethernet_address is* from step 2, *host_name* is the name of the machine to be installed, and *platform_group* is `sun4u`.

For example:

```
# ./add_install_client -i 123.123.123.42 -e 08:00:20:fd:d2:e0
myhost sun4u

Adding IP address for myhost to /etc/hosts
Adding Ethernet number for myhost to /etc/ethers
making /tftpboot
enabling tftp in /etc/inetd.conf
updating /etc/bootparams
copying inetboot to /tftpboot

#
```

▼ To Install the New Image From the Network Install Server

When you have finished setting up the install server, you are ready to install the new image on to the client (in this case, the Netra X1 Server).

- **If you are performing a custom jumpstart installation (as described in Chapter 6, 7 and 10 of the** *Solaris 8 Advanced Installation Guide***) then, at the Netra X1 Server you are installing the new image onto, type:**

```
ok boot net - install
```

- **If you are performing an interactive installation (as described in Chapter 5 of the** *Solaris 8 Advanced Installation Guide***) then, at the Netra X1 Server you are installing the new image onto, type:**

```
ok boot net
```