

**Netra Server X3-2
(formerly Sun Netra X4270 M3 Server)**

Security Guide



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Netra Server X3-2 Security Guide

This document provides general security guidelines to help you protect the Oracle Netra Server X3-2 (formerly Sun Netra X4270 M3 Server), its network interfaces, and the network switches to which it is connected.

The following sections are in this chapter:

- [“System Overview” on page 1](#)
- [“Security Principles” on page 2](#)
- [“Using Server Configuration and Management Tools” on page 3](#)
- [“Planning a Secure Environment” on page 5](#)
- [“Maintaining a Secure Environment” on page 7](#)

System Overview

The Netra Server X3-2 is an enterprise-class, NEBS compliant, 2U server that has two processors, and supports sixteen DDR3 DIMMs (eight per processor), six PCIe Gen3 slots, and either eight, or six SAS/SATA storage drives. The six drive model also provides DVD.

The server includes an on-board Oracle Integrated Lights Out Manager (Oracle ILOM) service processor (SP). A server setup tool called Oracle System Assistant is also embedded on a preinstalled USB drive as part of your server configuration.

Security Principles

There are four basic security principles: access, authentication, authorization, and accounting.

■ Access

Access refers to physical access to hardware, or physical or virtual access to software.

- Use physical and software controls to protect your hardware and data from intrusion.
- Refer to the documentation that came with your software to enable any security features available for the software.
- Install servers and related equipment in a locked, restricted access room.
- If equipment is installed in a rack with a locking door, keep the door locked except when you have to service components in the rack.
- Restrict access to connectors or ports, which can provide more powerful access than SSH connections. Devices such as system controllers, power distribution units, and network switches provide connectors and ports.
- Restrict access to hot-plug or hot-swap devices in particular because they can be easily removed.
- Store spare field-replaceable units and customer-replaceable units in a locked cabinet. Restrict access to the locked cabinet to authorized personnel.

■ Authentication

Authentication refers to ensuring that users of hardware or software are who they say they are.

- Set up authentication features such as a password system in your platform operating systems to ensure that users are who they say they are.
- Ensure that your personnel use employee badges properly to enter the computer room.
- For user accounts, use access control lists where appropriate. Set time-outs for extended sessions, and set privilege levels for users.

■ Authorization

Authorization refers to restrictions placed on personnel to work with hardware or software.

- Allow personnel to work only with hardware and software that they are trained and qualified to use.
- Set up a system of read, write, and execute permissions to control user access to commands, disk space, devices, and applications.

■ Accounting

Accounting refers to software and hardware features used to monitor login activity and maintenance of hardware inventories.

- Use system logs to monitor user logins. Monitor system administrator and service accounts in particular because those accounts can access powerful commands.
- Keep a record of the serial numbers of all your hardware. Use component serial numbers to track system assets. Oracle part numbers are electronically recorded on cards, modules, and motherboards.
- To detect and track components, provide a security mark on all significant items of computer hardware such as FRUs. Use special ultraviolet pens or embossed labels.

Using Server Configuration and Management Tools

Follow these security guidelines when using software and firmware tools to configure and manage your server.

Oracle System Assistant Security

Oracle System Assistant is a preinstalled tool that helps you to locally or remotely configure and update server hardware, and to install supported operating systems. For information about how to use Oracle System Assistant, refer to the server *Administration Guide* at:

http://docs.oracle.com/cd/E27124_01

The following information will help you to understand security issues related to Oracle System Assistant.

■ Oracle System Assistant contains a bootable root environment.

Oracle System Assistant is an application that runs on a preinstalled, internal USB flash drive. It is built on top of a bootable Linux root environment. Oracle System Assistant also provides the ability to access its underlying root shell. Users who have physical access to the system, or who have Remote KVMs (keyboard, video, mouse, and storage) access to the system through Oracle ILOM, will be able to access Oracle System Assistant and the root shell.

A root environment can be used to change system configuration and policies, as well as to access data on other disks. It is recommended that physical access to the server be protected and that the administrator and console privileges for Oracle ILOM users be assigned sparingly.

- **Oracle System Assistant mounts a USB storage device that is accessible to the operating system.**

In addition to being a bootable environment, Oracle System Assistant is also mounted as a USB storage device (flash drive) that is accessible to the host operating system after installation. This is useful when accessing tools and drivers for maintenance and reconfiguration. The Oracle System Assistant USB storage device is both readable and writable and could potentially be exploited by viruses.

It is recommended that the same methods for protecting disks be applied to the Oracle System Assistant storage device, including regular virus scans and integrity checking.

- **Oracle System Assistant can be disabled.**

Oracle System Assistant is a useful tool in helping to set up the server, update and configure firmware, and install the host operating system. However, if the security implications described above are unacceptable, or if the tool is not needed, Oracle System Assistant can be disabled. Disabling Oracle System Assistant means that the USB storage device will no longer be accessible to the host operating system. In addition, it will not be possible to boot Oracle System Assistant.

You can disable Oracle System Assistant from either the tool itself or from BIOS. Once disabled, Oracle System Assistant can only be re-enabled from the BIOS Setup Utility. It is recommended that BIOS Setup be password-protected so that only authorized users can re-enable Oracle System Assistant. For information about how to disable and re-enable Oracle System Assistant, refer to the server *Administration Guide*.

Oracle ILOM Security

You can actively secure, manage, and monitor system components using Oracle Integrated Lights Out Manager (Oracle ILOM) management firmware, which is preinstalled on the server, other Oracle x86-based servers, and on some Oracle SPARC-based servers.

Use a dedicated network for the service processor to separate it from the general network. Limit the use of the `root` superuser account. Instead, assign Oracle ILOM accounts such as `ilom-operator` and `ilom-admin` whenever possible. Change all default passwords when installing a new system. Most types of equipment use default passwords, such as `changeme`, that are widely known and would allow unauthorized access to the equipment.

Refer to Oracle ILOM documentation to understand more about setting up passwords, managing users, and applying security-related features, including Secure Shell (SSH), Secure Socket Layer (SSL), and RADIUS authentication. For security guidelines that are specific to Oracle ILOM, refer to the *Oracle Integrated Lights Out Manager (ILOM) 3.1 Security Guide*, which is part of the Oracle ILOM 3.1 documentation library. You can find the Oracle ILOM 3.1 documentation at:

http://docs.oracle.com/cd/E24707_01

Oracle Hardware Management Pack Security

Oracle Hardware Management Pack is available for your server, and for many other x86-based servers and some SPARC servers. Oracle Hardware Management Pack features two components: an SNMP monitoring agent and a family of cross-operating system command-line interface tools (CLI Tools) for managing your server.

With the Hardware Management Agent SNMP Plugins, you can use SNMP to monitor Oracle servers and server modules in your data center with the advantage of not having to connect to two management points, the host and Oracle ILOM. This functionality enables you to use a single IP address (the host's IP address) to monitor multiple servers and server modules. The SNMP Plugins run on the host operating system of Oracle servers.

You can use the Oracle Server CLI Tools to configure Oracle servers. The CLI Tools work with Oracle Solaris, Oracle Linux, Oracle VM, other variants of Linux, and Microsoft Windows operating systems.

Refer to the Oracle Hardware Management Pack documentation for more information about these features. For security guidelines that are specific to Oracle Hardware Management Pack, refer to the *Oracle Hardware Management Pack (HMP) Security Guide*, which is part of the Oracle Hardware Management Pack documentation library. You can find the Oracle Hardware Management Pack documentation at:

http://docs.oracle.com/cd/E20451_01

Planning a Secure Environment

Use the following information when installing and configuring the server and related equipment.

Oracle Operating System Guidelines

Refer to Oracle operating system (OS) documents for information on:

- How to use security features when configuring your systems
- How to operate securely when you add applications and users to a system
- How to protect network-based applications

Security Guide documents for supported Oracle operating systems are part of the documentation library for the operating system. To find the Security Guide document for an Oracle operating system, go to the Oracle operating system documentation library:

- **Oracle Solaris** - http://docs.oracle.com/cd/E23824_01
- **Oracle Linux** - <http://linux.oracle.com/documentation/>
- **Oracle VM** - <http://www.oracle.com/technetwork/documentation/vm-096300.html>

Network Ports and Switches

Different switches offer different levels of port security features. Refer to the switch documentation to learn how to do the following.

- Use authentication, authorization, and accounting features for local and remote access to the switch.
- Change every password on network switches that might have multiple user accounts and passwords by default.
- Manage switches out-of-band (separated from data traffic). If out-of-band management is not feasible, then dedicate a separate virtual local area network (VLAN) number for in-band management.
- Use the port mirroring capability of the network switch for intrusion detection system (IDS) access.
- Maintain a switch configuration file off-line and limit access only to authorized administrators. The configuration file should contain descriptive comments for each setting.
- Implement port security to limit access based upon MAC addresses. Disable auto-trunking on all ports.
- Use these port security features if they are available on your switch:
 - **MAC Locking** involves associating a Media Access Control (MAC) address of one or more connected devices to a physical port on a switch. If you lock a switch port to a particular MAC address, superusers cannot create backdoors into your network with rogue access points.
 - **MAC Lockout** disables a specified MAC address from connecting to a switch.

- **MAC Learning** uses the knowledge about each switch port's direct connections so that the network switch can set security based on current connections.

VLAN Security

If you set up a virtual local area network (VLAN), remember that VLANs share bandwidth on a network and require additional security measures.

- Define VLANs to separate sensitive clusters of systems from the rest of the network. This decreases the likelihood that users will gain access to information on these clients and servers.
- Assign a unique native VLAN number to trunk ports.
- Limit the VLANs that can be transported over a trunk to only those that are strictly required.
- Disable VLAN Trunking Protocol (VTP), if possible. Otherwise, set the following for VTP: management domain, password, and pruning. Then set VTP into transparent mode.

Infiniband Security

Keep Infiniband hosts secure. An Infiniband fabric is only as secure as its least secure Infiniband host.

- Note that partitioning does not protect an Infiniband fabric. Partitioning only offers Infiniband traffic isolation between virtual machines on a host.
- Use static VLAN configuration, when possible.
- Disable unused switch ports and assign them an unused VLAN number.

Maintaining a Secure Environment

After the initial installation and configuration, use Oracle hardware and software security features to continue controlling hardware and tracking system assets.

Hardware Power Control

You can use software to turn power on and off to some Oracle systems. The power distribution units (PDUs) for some system cabinets can be enabled and disabled remotely. Authorization for these commands is typically set up during system configuration and is usually limited to system administrators and service personnel. Refer to your system or cabinet documentation for further information.

Asset Tracking

Use serial numbers to track inventory. Oracle embeds serial numbers in firmware on option cards and system motherboards. You can read these serial numbers through local area network connections.

You can also use wireless radio frequency identification (RFID) readers to further simplify asset tracking. An Oracle white paper, *How to Track Your Oracle Sun System Assets by Using RFID*, is available at:

<http://www.oracle.com/technetwork/articles/systems-hardware-architecture/o11-001-rfid-oracle-214567.pdf>

Updates for Software and Firmware

Keep your software and firmware versions current on your server equipment.

- Check regularly for updates.
- Always install the latest released version of the software or firmware.
- Install any necessary security patches for your software.
- Remember that devices such as network switches also contain firmware and might require patches and firmware updates.

Network Access

Follow these guidelines to secure local and remote access to your systems.

- Limit remote configuration to specific IP addresses using SSH instead of Telnet. Telnet passes user names and passwords in clear text, potentially allowing everyone on the LAN segment to see login credentials. Set a strong password for SSH.

- Use version 3 of Simple Network Management Protocol (SNMP) to provide secure transmissions. Earlier versions of SNMP are not secure and transmit authentication data in unencrypted text.
- Change the default SNMP community string to a strong community string if SNMP is necessary. Some products have PUBLIC set as the default SNMP community string. Attackers can query a community to draw a very complete network map and possibly modify management information base (MIB) values.
- Always log out after using the system controller if it uses a browser interface.
- Disable unnecessary network services, such as Transmission Control Protocol (TCP) or Hypertext Transfer Protocol (HTTP). Enable necessary network services and configure these services securely.

Data Protection

Follow these guidelines to maximize data security.

- Back up important data using devices such as external hard drives, pen drives, or memory sticks. Store the backed up data in a second, off-site, secure location.
- Use data encryption software to keep confidential information on hard drives secure.
- When disposing of an old hard drive, physically destroy the drive or completely erase all the data on the drive. Information can still be recovered from a drive after files are deleted or the drive has been reformatted. Deleting the files or reformatting the drive removes only the address tables on the drive. Use disk wiping software to completely erase all data on a drive.

Log Maintenance

Inspect and maintain your log files on a regular schedule. Use these methods to secure log files.

- Enable logging and send system logs to a dedicated secure log host.
- Configure logging to include accurate time information, using Network Time Protocol (NTP) and timestamps.
- Review logs for possible incidents and archive them in accordance with a security policy.
- Periodically archive log files when they exceed a reasonable size, and then reset the logs. You can use the archived files for reference or statistical analysis.

