Infoblox Installation Guide for Infoblox IB-4010 Platforms

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Introduction

This guide provides an overview of the Infoblox-4010 Rev-1 and Infoblox-4010 Rev-2 network service appliances and explains how to install and configure them. For information about which NIOS versions the Infoblox-4010 Rev-1 and Rev-2 support, refer to the Read Me First documents and release notes.

Product Overview

The Infoblox-4010 Rev-1 and Rev-2 are high performance network appliances that provide reliable, scalable, and secure core network services, including DNS (Domain Name System), DHCP (Dynamic Host Configuration Protocol), IPAM (IP Address Management), IF-MAP, and more. The integrated Infoblox approach combines the simplicity of appliances with the power of advanced distributed database technology to control and automate network services, while achieving availability, manageability, visibility, and control unmatched by conventional solutions based on legacy technologies. You configure and manage Infoblox-4010 Rev-1 and Rev-2 through an easy-to-use Infoblox GUI that works seamlessly in Windows, Linux, and Mac environments using standard web browsers.

Both Infoblox-4010 Rev-1 and Rev-2 appliances support the same NIOS features. They are different in physical appearances and CPU speeds. You can identify the Infoblox-4010 version by looking at its physical appearance and the serial number in which Rev-1 starts with a 40 prefix and Rev-2 with a 4835 prefix.

Infoblox-4010 Rev-1 and Rev-2 appliances comprise hot-swappable power supplies, fan modules, hard disk drives and network interfaces. They are Class A and Class B (with limits) digital appliances per FCC regulations. The Infoblox-4010 Rev-2 appliance is NEBS Level 3 compliant. For the appliance to be NEBS Level 3 compliant, ensure that you do not install the optional front cover that ships with the Rev-2 appliance. For information about the front cover, see Infoblox-4010 Rev-2.

Note: Infoblox-4010 Rev-1 hardware and FRUs (field replaceable units), such as power supplies and fan units, are not compatible with Infoblox-4010 Rev-2 hardware and FRUs, and vice versa. Ensure that you use the correct FRUs for your Infoblox-4010 version. For information about FRUs, see Field Replaceable Units.

Infoblox-4010 Rev-1

The Infoblox-4010 Rev-1 is a 2-U platform that is installed in a seismic equipment rack using mounting rails and materials that ship with each appliance. For information about rack mounting, see Installing the Infoblox-4010/Network Insight ND-4000. The front panel comes with a removable front cover.

Figure 1 Infoblox-4010 Rev-1, Front View

Infoblox-4010 Rev-1 Front Panel

After you remove the front panel cover, front panel components include the hard disk drives and indicator lights. Front panel components are illustrated in Figure 2.

Figure 2 Infoblox-4010 Rev-1 with Front Panel Cover Removed
The front panel components are described in Table 1.

Table 1 Front Panel Components for Infoblox-4010 Rev-1

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>UID LED and Button</td>
<td>The unit identification button and LED.</td>
</tr>
<tr>
<td></td>
<td><strong>Note</strong>: Pressing the UID button illuminates the blue UID LEDs on the front and rear panels. In a rack environment, the UID feature enables easier location of a server when moving between the front and rear of the rack.</td>
</tr>
<tr>
<td></td>
<td>Blue = UID is activated</td>
</tr>
<tr>
<td></td>
<td>Dark = UID is deactivated</td>
</tr>
<tr>
<td>System Health LED</td>
<td>This LED identifies the overall health of the system.</td>
</tr>
<tr>
<td></td>
<td>Green = Normal</td>
</tr>
<tr>
<td></td>
<td>Amber = System is degraded</td>
</tr>
<tr>
<td></td>
<td>Red = System is in critical condition</td>
</tr>
<tr>
<td>Power On/ Standby Button and</td>
<td>This LED indicates whether the power is on.</td>
</tr>
<tr>
<td>Power LED</td>
<td>Green = System is on</td>
</tr>
<tr>
<td></td>
<td>Amber = System is in standby mode</td>
</tr>
<tr>
<td></td>
<td>Dark = System has no power supply</td>
</tr>
<tr>
<td>Disk Drives</td>
<td>Four (4) hot-swappable hard disk drives configured in a RAID (Redundant Array of Independent Disks) 10 array.</td>
</tr>
<tr>
<td>Drive LEDs</td>
<td>Each disk drive has two LEDs that indicate the connection and activity status of the disk drive. The upper LED is the Fault/UID LED and the lower one is the Online/Activity LED. For information about drive LED combinations, see Table 2.</td>
</tr>
<tr>
<td>USB Ports</td>
<td>Reserved for future use.</td>
</tr>
</tbody>
</table>

Infoblox-4010 Rev-1 Disk Drive Front Panel LEDs

The disk drives are located on the appliance front panel. To the right of each drive, two LEDs display connection and activity status. Table 2 lists the disk drive LED combinations and the states they represent.

Table 2 Disk Drive LED Combinations
<table>
<thead>
<tr>
<th>Online/Activity LED (Green)</th>
<th>Fault/UID LED (Amber/Blue)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>On, off, or blinking</td>
<td>Alternating amber and blue</td>
<td>The drive has failed, or it has received a predictive failure alert; it also has been selected by a management application.</td>
</tr>
<tr>
<td>On, off, or blinking</td>
<td>Steadily blue</td>
<td>The drive is operating normally.</td>
</tr>
<tr>
<td>Blinking irregularly</td>
<td>Amber, blinking regularly (1 Hz)</td>
<td>The drive has received a predictive failure alert. Replace the drive as soon as possible.</td>
</tr>
<tr>
<td>Blinking irregularly</td>
<td>Off</td>
<td>The drive is active and operating normally.</td>
</tr>
<tr>
<td>Off</td>
<td>Steadily amber</td>
<td>A critical fault condition has been identified for this drive, and the controller has placed it offline. Replace the drive as soon as possible.</td>
</tr>
<tr>
<td>Off</td>
<td>Amber, blinking regularly (1 Hz)</td>
<td>The drive has received a predictive failure alert. Replace the drive as soon as possible.</td>
</tr>
<tr>
<td>Off</td>
<td>Off</td>
<td>The drive is offline, a spare, or not configured as part of an array.</td>
</tr>
</tbody>
</table>

**Infoblox-4010 Rev-1 Rear Panel**

The Infoblox-4010 Rev-1 offers a choice of dual AC power supplies, or dual DC power supplies with or without NEBS-3 compliance. In all cases, power supplies are hot swappable; any single power supply can be replaced without disrupting the operations of the appliance. The Infoblox-4010 Rev-1 provides four (4) RJ-45 Gigabit Ethernet interfaces that operate as Infoblox MGMT port, LAN1 port, High Availability (HA) port and LAN2 port in the Infoblox system. It also provides an option for four (4) SFP ports. With the SFP ports installed, the RJ-45 ports on the rear of the Infoblox-4010 chassis will be deactivated. The four port assignments are from left to right and reflect standard Infoblox port assignments as shown in Figure 3 and listed in Table 3.

*Figure 3 Infoblox-4010 Rev-1, Rear View with RJ-45 Gigabit Ethernet Ports*

**Infoblox-4010 Rev-1 Optical Interfaces**

*Note:* The Finisar SFP transceiver Model #FTL8519P2BCL is qualified for use with this product.
Infoblox-4010 SFP Gigabit Ethernet specifications are the following:

- 4x 1000Base-LX Fiber Gigabit Ethernet with 1000Base-LX SFP transceiver
- Small Form Factor Pluggable (SFP) cage for SFP LC connectors
- 2PortLink synchronization
- LED indicators for link/Activity Mode status

<table>
<thead>
<tr>
<th>IEEE Standard/Network topology: with 1000Base-LX SFP</th>
<th>Fiber Gigabit Ethernet, 1000Base-LX (1310nM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cables and Operating Distance</td>
<td>Multimode fiber: 550m at 50 um; 550m at 62.5 um</td>
</tr>
<tr>
<td>Optical Output Power</td>
<td>Minimum: -3 dBm</td>
</tr>
<tr>
<td>Optical Receive Sensitivity</td>
<td>Maximum: -20 dBm</td>
</tr>
</tbody>
</table>

See Figure 4 for optical port assignments in the Infoblox-4010 system. Port assignments are Infoblox-specific and are also described in Table 3 below.

Figure 4 Infoblox-4010 Rev-1, Rear View with SFP 1GbE Interfaces

SFP LAN1, LAN2, HA and MGMT ports operate as described in Table 3. With the SFP ports installed, the RJ-45 ports on the rear of the Infoblox-4010 chassis will be deactivated.

Table 3 Rear Panel Components

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>iLO/IPMI Port</td>
<td>Dedicated Ethernet port used for LOM (integrated Lights Out Management) with specific releases of NIOS. Ensure that the IPMI port is properly connected to the network before you configure LOM through the Infoblox GUI for remote management. Only a properly grounded USB-to-Serial dongle is allowed to connect to the serial console port. If the dongle is connected to a laptop, this laptop must be grounded properly as well. Failure to do so may result in damage to the serial console port of the Infoblox appliance. Infoblox is not responsible for such damage.</td>
</tr>
<tr>
<td>Console Port</td>
<td>A male DB-9 serial port for a console connection to change basic configuration settings and view basic system functions through the CLI (command line interface).</td>
</tr>
<tr>
<td>MGMT Port</td>
<td>An RJ-45 or SFP Gigabit Ethernet port used for appliance management or for DNS service. You can enable the MGMT port and define its use through the Infoblox GUI.</td>
</tr>
<tr>
<td>LAN1 Port</td>
<td>An RJ-45 or SFP Gigabit Ethernet port that connects a NIOS appliance to the network. You must use the LAN1 port to set up the appliance initially. It handles all traffic if you do not enable the MGMT and LAN2 ports. The passive node in an HA pair uses this port to synchronize the database with the active node.</td>
</tr>
</tbody>
</table>
HA Port | An RJ-45 or SFP Gigabit Ethernet port through which the active node in an HA (high availability) pair connects to the network using a VIP (virtual IP) address. HA pair nodes also use their HA ports for VRRP (Virtual Router Redundancy Protocol) advertisements.

LAN2 Port | An RJ-45 or SFP Gigabit Ethernet port that connects a NIOS appliance to the network. The LAN2G port is not enabled by default. You can enable the LAN2 port and define its use through the Infoblox GUI after initial setup.

Console Port | A male DB-9 serial port for a console connection to change basic configuration settings and view basic system functions through the CLI (command line interface). Use the serial cable and connection adapters that ship with the appliance to make a console connection to this port.

Only a properly grounded USB-to-Serial dongle is allowed to connect to the serial console port. If the dongle is connected to a laptop, this laptop must be grounded properly as well. Failure to do so may result in damage to the serial console port of the Infoblox appliance. Infoblox is not responsible for such damage.

USB Ports | Reserved for future use.

Power Supplies | Each of the two redundant power supplies has a power outlet for connecting the appliance to a standard DC (Direct Current) or AC power source.

Power Supply LEDs | Green = Normal
Off = System is off or power supply has failed.

UID LED | Turns on blue to indicate device that is currently being interacted with in the rack. Turned on by pressing the UID button on the front panel. See Table 1.

---

**Connector Pin Assignments**

*Note:* All RJ-45 Ethernet interfaces are disabled in the Infoblox-4010.

As noted, the Infoblox-4010 Rev-1 appliance has the following types of ports on its rear panel:

- Male DB-9 console port
- Four (4) RJ-45 10Base-T/100Base-T/1000Base-T auto-sensing fast Ethernet ports
- Four (4) SFP Gigabit Ethernet interfaces (optional)

The DB-9 and RJ-45 Ethernet connector pin assignments are described in Figure 5. DB-9 pin assignments follow the EIA232 standard. RJ-45 Ethernet pin assignments follow IEEE 802.3 specifications. All Infoblox Ethernet ports are auto-sensing and automatically adjust to standard straight-through and cross-over Ethernet cables.

*Figure 5 Pin Assignments and RJ-45 Port Labeling*
Infoblox-4010 Rev-1 System, Environmental, and Power Specifications

System specifications describe the physical characteristics of each appliance. Environmental specifications describe the temperature and moisture limits it can withstand. Power specifications describe the electrical range within which the appliance circuitry can operate.

System Specifications

- **Form Factor**: 2-U rack-mountable appliance
- **Dimensions**: 3.38" H x 17.54" W x 26.01" D (8.59 cm H x 44.54 cm W x 66.07 cm D)
- **Weight**: Approximately 60 pounds (27.2 kg)
- **Ethernet Ports**: MGMT, HA, LAN1, LAN2 – auto-sensing 10Base-T/100Base-T/1000Base-T
- **Serial Port**: DB-9 (9600/8n1, Xon/Xoff)
- **USB Ports**: Two USB 2.0/1.1 compliant

Environmental Specifications

- Operating Temperature: 50 to 95 degrees F (10 to 35 degrees C)
- Storage Temperature: -22 to 140 degrees F (-30 to 60 degrees C)
- Operating relative Humidity: 10% to 90% (non-condensing)
- Average Heat Dissipation: 1400 BTU (British Thermal Units)/hour

Electrical Power Specifications

- DC Power Supply: 48v 1200W GRND TERM, RING, VIN 12-10 AWG #10
Infoblox-4010 Rev-2

The Infoblox-4010 Rev-2 is a 2-U platform that is installed in a seismic equipment rack using mounting rails and materials that ship with each appliance. For information about rack mounting, see Installing the Infoblox-4010/Network Insight ND-4000.

The Infoblox-4010 Rev-2 front panel comes with an optional front cover that you can install when you first set up the appliance. Refer to the installation instructions that ship with each system for information about how to install the front cover.

Note: If you want your Infoblox-4010 Rev-2 appliance to be NEBS Level 3 compliant, do not install the front cover.

Infoblox-4010 Rev-2 Front Panel

After you remove the front panel cover, front panel components include the hard disk drives and indicator lights. Figure 7 illustrates front panel components.

Table 4 describes front panel components for the Infoblox-4010 Rev-2 system.

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
</tr>
</thead>
</table>

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UID LED and Button
The unit identification button and LED.
In a rack environment, the UID feature enables easier location of a server when moving between the front and rear of the rack.
Blue = UID is activated
Dark = UID is deactivated

System Health LED
This LED identifies the overall health of the system.
Green = Normal
Amber = System is degraded
Red = System is in critical condition

Power On/Standby Button and Power LED
This LED indicates whether the power is on. Green = System is on
Amber = System is in standby mode
Dark = System has no power supply

Disk Drives
Four (4) hot-swappable hard disk drives configured in a RAID (Redundant Array of Independent Disks) 10 array.

Drive LEDs
Each disk drive has one Fault/UID LED (green/amber) that indicates the connection of the disk drive, and a circular Online/Activity LED (green) that goes around the Fault/UID LED to indicate read/write activity status of the disk drive.

VGA Port
This port is not supported. Use the console port or LAN1 port for initial setup.

Infoblox-4010 Rev-2 Ethernet Port LEDs
View the Activity and Link LEDs to see link activity and connection speeds on Ethernet ports. Figure 8 describes the status conveyed by Ethernet port LEDs through their color and illumination (steady glow or blinking).

Figure 8 Ethernet Port LEDs (inc. SFP+ interfaces where noted)

<table>
<thead>
<tr>
<th>Label</th>
<th>Color</th>
<th>Port Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Activity</td>
<td>Blinking Green</td>
<td>Link is Up and Active (SFP+ only)</td>
</tr>
<tr>
<td>Steady Yellow</td>
<td>Link is up but inactive</td>
<td></td>
</tr>
<tr>
<td>Blinking Yellow</td>
<td>Link is up and active</td>
<td></td>
</tr>
<tr>
<td>Dark</td>
<td></td>
<td>Link is down</td>
</tr>
<tr>
<td>Link</td>
<td>Steady Blue</td>
<td>10000 Mbps (SFP+ only)</td>
</tr>
<tr>
<td></td>
<td>Steady Amber</td>
<td>1000 Mbps</td>
</tr>
<tr>
<td></td>
<td>Steady Green</td>
<td>100 Mbps</td>
</tr>
<tr>
<td></td>
<td>Dark</td>
<td>10 Mbps</td>
</tr>
</tbody>
</table>

Infoblox-4010 Rev-2 Disk Drive Front Panel LEDs
Disk drives are located on the appliance front panel. To the right of each drive, two LEDs display connection and activity status. Table 5 lists the disk drive LED combinations and the states they represent.

Table 5 Disk Drive LED Combinations
<table>
<thead>
<tr>
<th>Online/Activity LED (Green)</th>
<th>Fault/UID LED (Amber/Blue)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Off or circulating green</td>
<td>Steady green</td>
<td>The drive is operating normally.</td>
</tr>
<tr>
<td>Off or circulating green</td>
<td>Steady amber</td>
<td>The drive has failed, or it has received a predictive failure alert.</td>
</tr>
</tbody>
</table>

**Infoblox-4010 Rev-2 Rear Panel**

The Infoblox-4010 Rev-2 appliance offers a choice of dual AC power supplies, or dual DC power supplies with or without NEBS-3 compliance. In all cases, power supplies are hot swappable; any single power supply can be replaced without disrupting the operations of the appliance. The Infoblox-4010 Rev-2 provides four (4) RJ-45 Gigabit Ethernet interfaces that operate as the MGMT port, LAN1 port, High Availability (HA) port and LAN2 port in the Infoblox system. The four port assignments are from left to right and reflect standard Infoblox port assignments as shown in Figure 9 and listed in Table 6. Optional system configuration with SFP+ ports is illustrated in Figure 10.

See the following section, *Infoblox-4010 Rev-2 Optical Interfaces* for more details on optical interface configuration.
Infoblox offers a version of the Infoblox-4010 that provides four 1-Gigabit Ethernet (1GbE) interfaces that accept SFP transceiver modules, for 1GbE optical connectivity. Another offered version of the Infoblox-4010 supports four 10-Gigabit Ethernet (10GbE) interfaces that accept SFP+ transceiver modules, for 10GbE optical or copper connectivity.

In select configurations, Infoblox 1GbE SFP or 10GbE SFP+ ports replace the functionality in the original system MGMT, LAN1, HA and LAN2 ports, thereby disabling the original system MGMT, LAN1, HA and LAN2 ports.

10GbE interfaces accept Infoblox-provided SFP+ 10GbE Short Range and Long Range transceivers, Cisco SFP+ Direct Attach 10GSFP+Cu, or HP HPJ9283B SFP+ Direct Attach 10GSFP+Cu transceivers.

You may mix media types in the set of ports (e.g., two copper interfaces and two fiber interfaces).

SFP and SFP+ transceivers may be used in a mixed configuration in the offered 4-Port 10GbE configuration. One possible use case involves installing 10GbE SR SFP+ transceivers in the LAN1 and LAN2 ports for the Infoblox-4010 appliance, and installing 1GbE SFP copper transceivers in the MGMT and HA interfaces.

See the section IB-4000/ND-4000 Series Replaceable Units, for specific information on part numbers, availability, and device compatibility.

*Table 6* provides more-specific information on each interface on the rear panel of the Infoblox-4010 Rev-2.

### Table 6 Rear Panel Components for Infoblox-4010 Rev-2

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MGMT Port</td>
<td>A port for use with appliance management or DNS service. You can enable the MGMT port and define its use through the Infoblox GUI.</td>
</tr>
<tr>
<td>LAN1 Port</td>
<td>A port that connects a NIOS appliance to the network. You must use the LAN1 port to set up the appliance initially. It handles all traffic if you do not enable the MGMT and LAN2 ports.</td>
</tr>
<tr>
<td>HA Port</td>
<td>A port through which the active node in an HA (high availability) pair connects to the network using a VIP (virtual IP) address. HA pair nodes also use their HA ports for VRRP (Virtual Router Redundancy Protocol) advertisements.</td>
</tr>
<tr>
<td>LAN2 Port</td>
<td>A port that connects a NIOS appliance to the network. The LAN2 port is not enabled by default. You can enable the LAN2 port and define its use through the Infoblox GUI after the initial setup.</td>
</tr>
<tr>
<td>Console Port</td>
<td>A male DB-9 serial port for a console connection to change basic configuration settings and view basic system functions through the CLI (command line interface). Only a properly grounded USB-to-Serial dongle is allowed to connect to the serial console port. If the dongle is connected to a laptop, this laptop must be grounded properly as well. Failure to do so may result in damage to the serial console port of the Infoblox appliance. Infoblox is not responsible for such damage. For DB-9 pin assignments, see Figure 5.</td>
</tr>
<tr>
<td>iLO/IPMI Port</td>
<td>Dedicated Ethernet port used for LOM (integrated Lights Out Management) with specific releases of NIOS. Ensure that the IPMI port is properly connected to the network before you configure LOM through the Infoblox GUI for remote management.</td>
</tr>
<tr>
<td>VGA Port</td>
<td>This port is not supported. Use the console port or LAN1 port for initial setup. USB Ports Reserved for future use.</td>
</tr>
<tr>
<td>Power Supplies</td>
<td>Each of the two redundant power supplies has a power outlet for connecting the appliance to a standard DC (Direct Current) or AC power source.</td>
</tr>
</tbody>
</table>
| Power Supply LEDs | Green = Normal  
|                 | Off = System is off or power supply has failed.                                                                                                    |
| UID LED        | Turns on blue to indicate device that is currently being interacted with in the rack. Turned on by pressing the UID button on the front panel. See Table 1. |

**Note:** All Infoblox Ethernet ports are auto-sensing and automatically adjust to standard straight-through and cross-over Ethernet cables.

### Infoblox-4010 Rev-2 Disk Drive Front Panel LEDs

Disk drives are located on the appliance front panel. To the right of each drive, two LEDs display connection and activity status. *Table 7* lists the disk drive LED combinations and the states they represent.

#### Table 7 Disk Drive LED Combinations

<table>
<thead>
<tr>
<th>Online/Activity LED (Green)</th>
<th>Fault/UID LED (Amber/Blue)</th>
<th>Description</th>
</tr>
</thead>
</table>

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Network Insight ND-4000 Product Overview

The Network Insight ND-4000 is a high performance network appliance that provides an extended device and network discovery feature set, using SNMP and other protocols to discover, query, and catalogue network devices such as enterprise Ethernet switches, routers, firewalls and other security devices. VoIP softswitches, load balancers, end host devices and more. For more information about Discovery features and licensing, refer to the Infoblox NIOS Administrator Guide for your product.

Key features of the Network Insight ND-4000 appliance include the following:

- Three (3) active 1GbE Ethernet interfaces: two (2) active interfaces to support Device Discovery features, and one interface (MGMT) designated for device management. (The HA port is inactive and reserved for future use.)
- Management through the Infoblox Grid.
- Lights Out Management support.
- Replaceable hard disk drives in a RAID-10 array.
- Hot-swappable AC or DC power supplies in a redundant 1+1 configuration.
- Alternative system configurations for the support of copper or fiber SFP/SFP+ 1GbE and 10GbE interfaces, with support for mixed copper/fiber configurations.

The Network Insight ND-4000 appliance is a Class A digital appliance per FCC regulations, and is RoHS and WEEE compliant.

Network Insight ND-4000 Hardware Components

The Network Insight ND-4000 is a 2-U device discovery platform that you can mount in a standard equipment rack. For information, see Installing the Infoblox-4010/Network Insight ND-4000.

Network Insight ND-4000 Front Panel

Front panel components are the same as for the Infoblox-4010 Rev-2 platform. It includes the LCD (liquid crystal display) panel and navigation buttons, communication ports, and LEDs, as shown in Figure 6. For Network Insight ND-4000 port configuration, see Table 8.

For explanations of the Ethernet port LEDs, and console and Ethernet port connector pin assignments, see Infoblox-4010 Rev-2 Ethernet Port LE Ds and Connector Pin Assignments.

Network Insight ND-4000 Rear Panel

The Network Insight ND-4000 appliance offers a choice of dual AC power supplies, or dual DC power supplies with or without NEBS-3 compliance. In all cases, power supplies are hot swappable; any single power supply can be replaced without disrupting the operations of the appliance.

The Network Insight ND-4000 provides three (3) RJ-45 Gigabit Ethernet interfaces that operate as the MGMT port, LAN1 port and LAN2 port in the Infoblox system. (The HA port is inactive and cannot be used for networking applications.) The three port assignments are from left to right and reflect standard Infoblox port assignments as shown in Figure 9 and listed in Table 6. Figure 12 illustrates the optional ND-4000 system configuration with SFP ports.

Figure 11 Network Insight ND-4000, Rear View with RJ-45 Gigabit Ethernet Ports
Infoblox offers a version of the Network Insight ND-4000 that provides three 1-Gigabit Ethernet (1GbE) interfaces that accept SFP transceiver modules, for 1GbE optical connectivity. Another offered version of the Network Insight ND-4000 supports three 10-Gigabit Ethernet (10GbE) interfaces that accept SFP+ transceiver modules, for 10GbE optical or copper connectivity.

In all cases, Network Insight appliances use the LAN1 and LAN2 ports for connectivity to networks for device discovery, and the MGMT port is reserved for appliance management.

In select configurations, Infoblox 1GbE SFP or 10GbE SFP+ ports replace the functionality in the original system MGMT, LAN1, HA and LAN2 ports, thereby disabling the original system MGMT, LAN1, HA and LAN2 ports.

10GbE interfaces accept Infoblox-provided SFP+ 10GbE Short Range and Long Range transceivers, Cisco SFP+ Direct Attach 10GSFP+Cu, or HP HPJ9283B SFP+ Direct Attach 10GSFP+Cu transceivers.

You may mix media types in the set of ports (e.g., two copper interfaces and two fiber interfaces).

SFP and SFP+ transceivers also may be used in a mixed configuration in the offered 3-Port 10GbE configuration. One possible use case involves installing 10GbE SR SFP+ transceivers in the LAN1 and LAN2 ports for the Infoblox-4010 appliance, and installing 1GbE SFP copper transceivers in the MGMT interface.
See the section **IB-4000/ND-4000 Series Replaceable Units**, for specific information on part numbers, availability, and device compatibility. Table 8 provides more-specific information on each interface on the rear panel of the Network Insight ND-4000.

**Table 8 Rear Panel Components for the Network Insight ND-4000**

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>MGMT Port</td>
<td>A port for use with appliance management or DNS service. You can enable the MGMT port and define its use through the Infoblox GUI.</td>
</tr>
<tr>
<td>LAN1 Port</td>
<td>A port that connects a NIOS appliance to the network. You must use the LAN1 port to set up the appliance initially. It handles all traffic if you do not enable the MGMT and LAN2 ports.</td>
</tr>
<tr>
<td>HA Port</td>
<td>Inactive for Network Insight ND-4000 appliances.</td>
</tr>
<tr>
<td>LAN2 Port</td>
<td>A port that connects a NIOS appliance to the network. The LAN2 port is not enabled by default. You can enable the LAN2 port and define its use through the Infoblox GUI after the initial setup.</td>
</tr>
<tr>
<td>Console Port</td>
<td>A male DB-9 serial port for a console connection to change basic configuration settings and view basic system functions through the CLI (command line interface). Only a properly grounded USB-to-Serial dongle is allowed to connect to the serial console port. If the dongle is connected to a laptop, this laptop must be grounded properly as well. Failure to do so may result in damage to the serial console port of the Infoblox appliance. Infoblox is not responsible for such damage. For DB-9 pin assignments, see Figure 5.</td>
</tr>
<tr>
<td>iLO/IPMI Port</td>
<td>Dedicated Ethernet port used for LOM (integrated Lights Out Management) with specific releases of NIOS. Ensure that the IPMI port is properly connected to the network before you configure LOM through the Infoblox GUI for remote management.</td>
</tr>
<tr>
<td>VGA Port</td>
<td>This port is not supported. Use the console port or LAN1 port for initial setup.</td>
</tr>
<tr>
<td>USB Ports</td>
<td>Reserved for future use.</td>
</tr>
<tr>
<td>Power Supplies</td>
<td>Each of the two redundant power supplies has a power outlet for connecting the appliance to a standard DC (Direct Current) or AC power source.</td>
</tr>
<tr>
<td>Power Supply LEDs</td>
<td>Green = Normal&lt;br&gt;Off = System is off or power supply has failed.</td>
</tr>
<tr>
<td>UID LED</td>
<td>Turns on blue to indicate device that is currently being interacted with in the rack. Turned on by pressing the UID button on the front panel. See Table 1.</td>
</tr>
</tbody>
</table>

**Note:** All Infoblox Ethernet ports are auto-sensing and automatically adjust to standard straight-through and cross-over Ethernet cables.

**Infoblox-4010 Rev-2/Network Insight ND-4000 System, Environmental, and Power Specifications**

System specifications describe the physical characteristics of each appliance. Environmental specifications describe the temperature and moisture limits it can withstand. Power specifications describe the electrical range within which the appliance circuitry can operate.

**System Specifications**

- **Form Factor:** 2-U rack-mountable appliance
- **Dimensions:** 3.44” H x 17.54” W x 27.5” D (8.75 cm H x 44.55 cm W x 69.85 cm D)
- **Weight:** Approximately 61.00 pounds (27.66 kg)
- **Ethernet Ports:** MGMT, HA, LAN1, LAN2 – auto-sensing 10Base-T/100Base-TX/100Base-TX

**Environmental Specifications**

- Operating Temperature: 50 to 95 degrees F (10 to 35 degrees C)
- Storage Temperature: -22 to 140 degrees F (-30 to 60 degrees C)
- Operating relative Humidity: 10% to 90% (non-condensing)

**Electrical Power Specifications**

- DC Power Supply: 48v 750W GRND TERM, RING, VIN 12-10 AWG #10
• Nominal Input Voltage: 48
• Nominal Input Current: 28
• Maximum Rated Input Wattage Rating (Watts): 1350 Maximum
• Maximum Rated Volt-Amp: 1350
• Heat Output (BTU/hour): 4610 Maximum
• AC Power Supply: 100 to 120V AC, 200 to 240 V AC 750W
• Rated Input Frequency: 50 Hz to 60 Hz
• Rated Input Current: 10A at 100V AC, 4.9A at 200V AC
• Rated Input Power: 930W at 100V AC input, 1348W at 240V AC input
• Heat Output (BTU/hour): 3530 at 100V AC input; 4600 at 200V
• Maximum Peak Power: 800 W at 100V AC input; 900 W at 120V AC input; 750 W at 200V to 240V AC input

Installing the Infoblox-4010/Network Insight ND-4000

Note: The Infoblox system must be installed in a four-post seismic rack.

Infoblox appliances ship with mounting rails, side rails, and an accessory kit that contains mounting hardware. To mount the appliance to a seismic rack, you also need the following:

• M5 rack screws that fit the seismic rack
• Round-hole M5 cage nuts for use with the seismic rack
• A screwdriver

Rack Mounting Safety Requirements

The following space and airflow requirements are required for Infoblox-4010 and Network Insight ND-4000 system operation:

• Minimum clearance of 63.5 cm (25 in) in front of the rack
• Minimum clearance of 76.2cm (30 in) in the rear of the rack
• Minimum clearance of 121.9 cm (48 in) from the back of the rack to the back of another rack or row of racks

The Infoblox appliance draws air in through the front of the chassis and expels air through the rear. Adequate ventilation is required to allow ambient room air to enter the system chassis and to be expelled from the rear of the chassis.

To mount the appliance to a seismic rack, do the following:

1. Unscrew the snap-in screws from the mounting rails and discard.
2. Install the round-hole M5 cage nuts in the appropriate rack hole positions where you want to install the appliance. Ensure that you install two cage nuts on the front and two on the back of each rail, as shown in Figure 13. Note that the square-hole cage nuts that ship with the accessory kit do not fit in the seismic rack.

Figure 13 Installing the Round-Hole M5 Cage Nuts

3. Line up a mounting rail with the cage nuts, and attach the mounting rail to the rack with the M5 screws, ensuring that the front end of each mounting rail connects to the front of the rack.

Note: Ensure that both rail assemblies are correctly level!

4. Repeat steps 1 to 3 for the other mounting rail.
5. Slide out the side rails from each mounting rail and press the flange that holds each side rail in place. Then pull out each of the side rails from the assembly.

Make sure to keep track of the front end of each rail.

6. Align each side rail to the appliance and snap them in place, as shown in *Figure 14*.

![Figure 14 Side Rail Placement](image)

7. With one person on each side, lift the appliance and position it in front of the rack.

8. Align the side rails on each side of the appliance with the mounting rails on the seismic rack.

9. Slide the appliance onto the mounting rails and into the rack. As you slide it into place, the catch mechanisms will click, indicating that you can safely withdraw the system from the rack without accidentally pulling it free.

10. Snap the Infoblox-4010 appliance into place, and fasten it to the rack using the retainer screws provided in the accessory kit. (For further information, refer to the instructions shipped with the accessory kit.)

11. Pull down the retention levers on both sides of the appliance, and insert the retainer screws on both sides, as shown in *Figure 15*.

![Figure 15 Pulling Down the Retention Levers on Front Panel for Retainer Screw Installation (Infoblox-4010 Rev-1)](image)

![Figure 16 Retention Levers on Front Panel for Retainer Screw Installation (Infoblox-4010 Rev-2/Network Insight ND-4000)](image)
Ground Lug Installation (for DC Power Supply only)

To meet grounding and bonding requirements for NEBS compliance, you must install a ground lug on the rear of the chassis. A ground lug nut is located on the chassis rear of the Rev-1 appliance, as labeled in Figure 3 and on the DC power supply as labeled in Figure 25 of this Guide. The ground lug, with two star washers, is provided in the accessory kit bundled with the Infoblox appliance. The star washers are used with the ground lug to ensure a snug fit. To install the ground lug, do the following:

1. Remove the ground lug nut from the rear of the chassis.
2. Place one star washer on the lug nut screw, which is part of the chassis.
3. Place the ground lug on the lug nut screw, followed by the second star washer.
4. Replace the lug nut screw. Ensure that it is snug.
5. Plug a (properly grounded) ground cable into the ground lug.

Powering On the Appliance

The Infoblox-4010 and Network Insight ND-4000 ship with two (2) hot-swappable redundant AC power supply modules or two DC power supply modules. Infoblox recommends using the power cables shipped with the appliance to connect each power supply to separate power circuits. In the event of a power failure on one circuit, the appliance can then operate on the other.

To power the appliance:

- For each power supply, connect a power cable between the power connector on the back of the appliance and a properly grounded and rated power circuit that meets the provisions of the current edition of the National Electrical Code, or other wiring rules that apply to your location. Make sure that the outlet is near the appliance and is easily accessible.

Cabling the Appliance to a Network

Use one or more Category 5/6 Ethernet cables to connect the Infoblox-4010 appliance to the network.

1. Connect an Ethernet cable from the LAN1 port on the Infoblox-4010 to the network switch or router, as indicated in Figure 17.
2. To connect the Infoblox-4010 appliance for HA (high availability, available only when you have two

Infoblox-4010 appliances for redundant operation), connect the HA ports on both appliances to a switch on your network. The VIP (Virtual IP), LAN1, and HA port addresses must be on the same subnet and must be unique for that subnet.

Note: By default, an Infoblox appliance automatically negotiates the optimal connection speed and transmission type (full or half duplex) on the physical links between its LAN1, LAN2, HA, and MGMT ports and the Ethernet ports on a connecting switch. If the two appliances fail to auto-negotiate the optimal settings, see the Infoblox NIOS Administrator Guide for steps to resolve the problem.

The Network Insight ND-4000 appliance does not support HA (high availability).

3. (Infoblox-4010 only) To ensure that VRRP (Virtual Router Redundancy Protocol) works properly, configure the following settings at the port level for all the connecting switch ports (LAN1, LAN2 and HA where applicable):

- Spanning Tree Protocol: Disable. For vendor specific information, search for “HA” in the Infoblox Knowledge Base system at http
Trunking: Disable
EtherChannel: Disable
IGMP Snooping: Disable
Port Channeling: Disable
Speed and Duplex settings: Match these settings on both the Infoblox appliance and switch
Disable other dynamic and proprietary protocols that might interrupt the forwarding of packets

4. Use the Infoblox GUI to access the Infoblox appliance from a management system. Through the Infoblox GUI, you can set up and administer the appliance. For management system requirements and access instructions, see Accessing the Appliance.

Accessing the Appliance

The management system is a computer from which you configure and monitor the Infoblox appliance. You can remotely access the appliance from the management system across an Ethernet network, or directly through a serial cable. After completing the steps in Cabling the Appliance to a Network, start an HTTPS connection to the appliance and access the Infoblox GUI using one of the supported browsers. Alternatively, start an SSHv2 connection and access the CLI through an SSHv2 client. You can also access the CLI by connecting a serial cable directly from the console port of a management system to the console port on the appliance, and then using a terminal emulation program. The management system must meet the following requirements to operate an Infoblox appliance.

Table 9 Software and Hardware Requirements for the Management System

<table>
<thead>
<tr>
<th>Management System Software Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infoblox GUI Access</td>
</tr>
<tr>
<td>Microsoft Windows® 8®: Microsoft Internet Explorer® 10.x*; Mozilla Firefox 21.x, 16.x, and 10.x; Google Chrome 27.x, 22.x, and 16.x</td>
</tr>
<tr>
<td>Microsoft Windows® 7®: Microsoft Internet Explorer® 6.x and 9.x, Mozilla Firefox 7.x, 8.x and 16.x or Google Chrome 10.x, 16.x and 22.x</td>
</tr>
<tr>
<td>Microsoft Windows XP® (SP2+): Microsoft Internet Explorer® 7.x and 8.x, Mozilla Firefox 3.6.x, 7.x, 10.x and 16.x, or Google Chrome 10.x, 16.x and 22.x</td>
</tr>
<tr>
<td>Red Hat® Enterprise Linux® 6.x: Mozilla Firefox 7.x, 10.x and 16.x or Google Chrome 10.x, 16.x and 22.x</td>
</tr>
<tr>
<td>Red Hat® Enterprise Linux® 5.x: Mozilla Firefox 7.x, 10.x and 16.x or Google Chrome 10.x, 16.x and 22.x</td>
</tr>
<tr>
<td>Apple Mac OS® X 10.7.x: Safari 5.x, Mozilla Firefox 7.x, 10.x and 16.x or Google Chrome 10.x, 16.x and 22.x</td>
</tr>
<tr>
<td>Apple Mac OS® X 10.6.x: Safari 5.x, Mozilla Firefox 7.x, 10.x and 16.x or Google Chrome 10.x, 16.x and 22.x</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Management System Hardware Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum System:</td>
</tr>
<tr>
<td>500 MHz CPU with 256 MB RAM available to the Infoblox GUI, and 256 Kbps connectivity to an Infoblox appliance</td>
</tr>
<tr>
<td>Recommended System:</td>
</tr>
<tr>
<td>1 GHz (or higher) CPU with 512 MB RAM available for the Infoblox GUI, and network connectivity to an Infoblox appliance</td>
</tr>
<tr>
<td>Monitor Resolution: Minimum: 1024 x 768 Recommended: 1280 x 800 or better</td>
</tr>
</tbody>
</table>

Connecting to the Appliance

Configuration of the Infoblox-4010 appliance, through the Infoblox GUI, requires a network connection. Use the LAN1 port to connect to the appliance. For all Infoblox-4010 systems, the default network settings of the LAN1 port are 192.168.1.2/24 with a gateway at 192.168.1.1 (the HA, MGMT, and LAN2 ports do not have default network settings). To change these settings to suit your network, use the console port.

Console Port

The Infoblox appliance has a male DB-9 console port on the rear panel. You can log in to the appliance through this port and specify initial network settings using the Infoblox CLI.

Note: Only a properly grounded USB-to-Serial dongle is allowed to connect to the serial console port. If the dongle is connected to a laptop, this
laptop must be grounded properly as well. Failure to do so may result in damage to the serial console port of the Infoblox appliance. Infoblox is not responsible for such damage.

1. Connect a console cable from the console port of the management system to the console port of the Infoblox appliance.
2. Using a serial terminal emulation program such as Hilgraeve Hyperterminal® (provided with Windows® operating systems), launch a session. The connection settings are:
   - Bits per second: 9600
   - Stop bits: 1
   - Data bits: 8
   - Flow control: Xon/Xoff
   - Parity: None
3. Log in using the default user name and password admin and infoblox. User names and passwords are case-sensitive.
4. To change the network settings from the default, enter the set network command. Then enter information as prompted to change the IP address, netmask, and gateway for the LAN1 port.

   ```
   Infoblox > set network
   NOTICE: All HA configuration is performed from the GUI. This interface is used only to
   configure a standalone node or to join a grid.
   Enter IP address: [LAN1 port] IP address
   Enter netmask: [Default: 255.255.255.0]: netmask
   Enter gateway address [Default: n.n.n.1]: gateway IP address
   Become grid member? (y or n): n
   ```

   After you confirm your network settings, the appliance automatically restarts.

### Auto Provisioning NIOS Appliances

In addition to using the Grid Setup Wizard or access the Join Grid dialog box to join appliances to a Grid, you can set up a NIOS appliance using the auto provision feature, which allows a DHCP server to automatically assign an IP address to the appliance. You can then join the auto-provisioned appliance to a Grid.

Auto-provisioning is enabled by default for physical appliances, but it is not supported for vNIOS appliances. When you connect the appliance to the network, a lease request is automatically sent to the DHCP server. The DHCP server fingerprints the client as "Infoblox Appliance", as the DHCP client provides the unique option sequence (1,28,2,3,15,6,12) and vendor ID (INFOBLOX). The DHCP server assigns a DHCP lease and a dynamic IP address to the appliance. If the DHCP lease request fails, the default IP address is assigned to the appliance. The DHCP client tries to send the lease request for a duration of one minute when the appliance is either in the factory default state or in the auto-configured default IP address state after a reboot. If you do not use auto-provisioning to set up the appliance, then you can wait one minute before connecting the appliance to the network. Otherwise, the DHCP server will assign a dynamic IP address to the appliance. Note that if you have already set the IP address for the appliance through the Infoblox CLI, GUI, or API, then auto-provisioning is disabled for the appliance and the lease address is not requested. When auto-provisioning is enabled for an appliance, the DNS, DHCP, FTP, TFTP, HTTP, NTP, bloxTools, Captive Portal, Reporting services, as well as backup and restore are disabled for the member until a static IP address is set for the appliance. You can join a single appliance or HA pair to the Grid. After the appliance joins the Grid, the static IP address is set for the appliance.

Complete the following to set up an appliance using auto-provisioning and to join the auto-provisioned appliance to the Grid Master:

1. Connect the appliance to a network by using an Ethernet cable. For information about cabling the appliance to a network, refer to Cabling the Appliance to a Network.
2. Connect the appliance to a power source and turn on the power. For information about powering the appliance, refer to Powering On the Appliance.
   
   A lease request is automatically sent to the DHCP server, and it assigns a DHCP lease and a dynamic IP address to the appliance. The DHCP client tries to send the lease request for a duration of one minute and if the request fails, the default IP address (192.168.1.2) is assigned to the appliance.
3. Join the appliance to the Grid Master. For information about joining an appliance to the Grid Master, refer to the NIOS Administrator Guide.

A static IP address is set and auto-provisioning is automatically disabled for the appliance after it joins the Grid. If the Grid member fails to join the Grid, then the remote console is enabled for the appliance and you can join the appliance to the Grid through the remote console.

You can login to the remote console using the user name, admin and the Grid shared secret as the password.

**Note:** When auto-provisioning is disabled for an appliance and the network address is not preserved, auto-provisioning will be re-enabled and a DHCP lease request is sent to the DHCP server if you reset the appliance using the CLI command reset all or reset the database using the CLI command reset database. However, if the static IP address for an appliance is set and network settings are preserved, auto-provisioning will be re-enabled for the appliance but the lease address will not be requested if you reset the database using the CLI command reset database.
Specifying Appliance Settings

After the initial HTTPS connection to the Infoblox appliance, you see the Setup Wizard, which guides you through the basic deployment of the appliance on the network.

You can deploy appliances individually or in an HA (high availability) pair, for hardware redundancy. A single appliance or an HA pair without a Grid license runs independently from a grid. A grid is a group of two or more Infoblox appliances that share sections of a common, distributed, built-in database and which you configure and monitor through a single, secure point of access — the grid master. To set up a grid, you must configure a single or HA grid master and at least one grid member, which can also be a single appliance or an HA pair.

The following instructions guide you through the wizard and include worksheets where you can note your appliance and network settings. After you complete the wizard, you can set additional operational parameters and configure the appliance to provide services, such as DNS. For detailed instructions on configuring the appliance, refer to the NIOS Administrator Guide.

1. Open an Internet browser window and enter https://<IP address or hostname of the NIOS appliance>.
2. Accept the certificate when prompted.
   A certificate warning appears during the login process. This is normal because the NIOS appliance generates a self-signed certificate when it first starts, and your browser does not have a trusted CA certificate or a cached NIOS appliance server certificate (saved from an earlier connection) to authenticate the NIOS appliance certificate. Also, the hostname in the default certificate is www.infoblox.com, which is unlikely to match the hostname of your NIOS appliance. Consequently, messages appear warning that the certificate is not from a trusted certifying authority and that the hostname on the certificate is either invalid or does not match the name of the site that sent the certificate. Either accept the certificate just for this session or save it to the certificate store of your browser.
   To eliminate the certificate warning, generate a new self-signed certificate or import a third-party certificate with a common name that matches the FQDN (fully-qualified domain name) of the appliance. This is a very simple process. For information about certificates, refer to the NIOS Administrator Guide.
3. Log in using the default user name and password admin and infoblox.

Note: User names and passwords are case-sensitive.

4. Read the Infoblox End-User License Agreement and click I Accept to proceed.
5. The Setup Wizard opens, and you can enter basic network and deployment settings.

   Determine how you want to deploy the appliance, and then use the following worksheets to note the network settings that you want to enter on the wizard screens. If you are configuring an HA pair, you must configure each node individually.

Use the following worksheet when configuring a single independent appliance, or a single grid master or grid member:

<table>
<thead>
<tr>
<th>Settings</th>
<th>Enter your information here</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grid Name</td>
<td></td>
</tr>
<tr>
<td>Shared Secret Host Name</td>
<td></td>
</tr>
<tr>
<td>Grid Master's IP Address</td>
<td></td>
</tr>
<tr>
<td>LAN1 Port IP Address and Netmask</td>
<td></td>
</tr>
<tr>
<td>Gateway IP Address</td>
<td></td>
</tr>
<tr>
<td>**Port Settings</td>
<td></td>
</tr>
<tr>
<td>**Admin Password</td>
<td></td>
</tr>
<tr>
<td>**Local Date, Time, and Time Zone or NTP Server IP Address</td>
<td></td>
</tr>
</tbody>
</table>

*For grid master and member

**For an independent appliance or grid master

Use the following worksheet when configuring an independent HA pair or an HA grid master:

<table>
<thead>
<tr>
<th>Settings</th>
<th>Enter your information here</th>
</tr>
</thead>
<tbody>
<tr>
<td>**Port Settings</td>
<td></td>
</tr>
<tr>
<td>**Admin Password</td>
<td></td>
</tr>
<tr>
<td>**Local Date, Time, and Time Zone or NTP Server IP Address</td>
<td></td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th>Grid Name</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>*Shared Secret</td>
<td></td>
</tr>
<tr>
<td>Host Name</td>
<td></td>
</tr>
<tr>
<td>Virtual Router ID</td>
<td></td>
</tr>
<tr>
<td>VIP (Virtual IP) Address and Netmask</td>
<td></td>
</tr>
<tr>
<td>Node 1: HA Port IP Address</td>
<td></td>
</tr>
<tr>
<td>Node 2: HA Port IP Address</td>
<td></td>
</tr>
<tr>
<td>Node 1: LAN1 IP Address</td>
<td></td>
</tr>
<tr>
<td>Node 2: LAN1 IP Address</td>
<td></td>
</tr>
<tr>
<td>Gateway IP Address</td>
<td></td>
</tr>
<tr>
<td>Admin Password</td>
<td></td>
</tr>
<tr>
<td>Local Date, Time and Time Zone</td>
<td></td>
</tr>
<tr>
<td>or</td>
<td></td>
</tr>
<tr>
<td>NTP Server IP Address</td>
<td></td>
</tr>
</tbody>
</table>

*For grid master and member

On the last screen of the wizard, click **Finish**. The Infoblox GUI application restarts. If you configured an HA pair, use the VIP address when you make an HTTPS connection to the HA pair.

---

**Infoblox GUI**

You can view data and configuration settings and make configuration changes through the Infoblox GUI. When an Infoblox appliance functions as an independent appliance, you launch System Manager to access the Infoblox GUI. When the appliance is in a grid, you log in to the grid master and launch Grid Manager.

*Figure 18 Infoblox GUI Overview*
Infoblox CLI

The Infoblox CLI allows you to configure and monitor the appliance using a small set of Infoblox commands. There are some tasks, such as resetting the appliance, that you can only do through the CLI. You can access the Infoblox CLI through a direct console connection from your management system to the Infoblox appliance. (For more information, see Console Port.) You can also enable remote console access — that is, SSHv2 (Secure Shell version 2) access — through the Infoblox GUI or CLI, and then access the CLI from a remote location using an SSHv2 client. (For more information, refer to the NIOS Administrator Guide.)

Using CLI Help

You can display a list of available CLI commands by typing help at the command prompt.

```
Infoblox > help
```

Command Summary

```
?                  Display help
delete             Delete files
dig                Perform a DNS lookup and print the results
exit               Exit command interpreter
```
help Display help
ping Send ICMP ECHO
quit Exit command interpreter
reboot Reboot device
reset Reset system settings
set Set current system settings
show Show current system settings
shutdown Shutdown device
traceroute Route path diagnostic
ddns_add Send DDNS update to add a record
ddns_delete Send DDNS update to delete a record
rotate Rotate files

For more detailed help about a given command, type 'help <command>'

For an in-depth explanation of a CLI command and its syntax, type help command after the command prompt.

For example:

Infoblox > help rotate

Synopsis:

rotate log [ syslog | debug | audit | ifmapserver ]

  rotate file groupname filename [ filename2, filename3, ...]

Description:

Rotates the specified log file, up to 10 previous.

logfiles will be preserved

The two main groups of Infoblox CLI commands are set and show. To see the complete list of the set commands, enter help set after the command prompt. Likewise, to see a complete list of the show commands, enter help show. For information about the CLI commands, refer to the Infoblox CLI Guide.

Field Replaceable Units

The Infoblox-4010 Rev-1 and Rev-2 appliances, and the Network Insight ND-4000 appliance provide for several replaceable units in the system:

- Hard disk drives in the RAID-10 (Redundant Array of Independent Disks) array
- AC power supplies
- DC power supplies (where applicable)
- System cooling fans

All replaceable units must be replaced with parts of the same specifications as described in this section. For parts and replacements, contact your Infoblox field representative or Infoblox Technical Support.

Note: Infoblox-4010 Rev-1 hardware and FRUs (field replaceable units), such as power supplies and fan units, are not compatible with Infoblox-4010 Rev-2 hardware and FRUs, and vice versa. Ensure that you use the correct FRUs for your Infoblox-4010 version. For information about FRU part numbers, see Table 10 and Table 11. Network Insight ND-4000 appliances are compatible with Infoblox-4010 Rev-2 hardware and FRUs and use the same FRU part numbers.

Managing the Disk Subsystem

The Infoblox-4010 and Network Insight ND-4000 use a RAID-10 array to provide the optimum mix of high database performance and redundant data storage with recovery features in the event of disk failures. The disk array is completely self managed. No maintenance or special procedures are required to service the disk subsystem.
RAID-10 uses a total of four disk drives to create a RAID 0 array from two RAID 1 arrays, as shown in Figure 19. It uses mirroring and striping to form a stripe of mirrored subsets. This means that the array combines — or stripes — four disk drives, creating a single logical volume (RAID 0). RAID-10 combines the performance of RAID 0 and the high fault tolerance of RAID 1. Striping disk drives improves database write performance over a single disk drive for large databases. The disks are also mirrored (RAID 1), so that each disk in the logical volume is fully redundant.

Figure 19 RAID-10 Array Configuration

Evaluating the Status of the Disk Subsystem

You can monitor the disk subsystem by using the CLI command `show hardware_status`. To see a detailed status report, log in to the Infoblox GUI and from the Grid tab, select the Grid Manager tab -> Members tab -> member, and then click the Detailed Status icon. (For more information, refer to the Infoblox NIOS Administrator Guide.) The color of the RAID icon indicates the RAID array status on the Infoblox-4010 and Network Insight ND-4000.

<table>
<thead>
<tr>
<th>Color</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green</td>
<td>The RAID array is in an optimal state.</td>
</tr>
<tr>
<td>Yellow</td>
<td>A new disk was inserted and the RAID array is rebuilding.</td>
</tr>
<tr>
<td>Red</td>
<td>The RAID array is degraded. At least one disk is not functioning properly. The GUI lists the disks that are online. Replace only the disks that are offline.</td>
</tr>
</tbody>
</table>

The Infoblox GUI also displays detailed status of the RAID array. In the event of a disk failure, you must replace the failed disk with one that is qualified and shipped from Infoblox and has the same disk type as the rest of the disks in the array.

The appliance displays information about mismatched disks in the Description column in the Detailed Status panel. The Infoblox-4010 and Network Insight ND-4000 appliances use only the IB-Type 3 disk type. All disk drives in the array must have the same disk type for the array to function properly.

When you have a mismatched disk in the array, you must promptly replace the disk with a replacement disk from Infoblox to avoid operational issues.

Note: For replacement IB-Type 3 disk assembly part numbers, see Table and Table 11.

Disk Array Guidelines

Infoblox designs the disk array to be completely self managed. No maintenance procedures are required for a normally functioning disk array. Mishandling the disk array may cause an unrecoverable error and result in a failed appliance. Infoblox highly recommends that you observe the following guidelines:

- Remove only one disk at a time. Do not remove two or more disks from the appliance at the same time. Removing two or more disks at the same time may result in an appliance failure and require an RMA of the appliance. This rule applies to both powered and powered-down appliances.
- If you inadvertently remove the wrong disk drive, do not then immediately remove the disk drive that you originally intended to remove. Verify the status of the array and replace the disk drive that you initially removed before removing another drive.
- If the status of the array is degraded, remove the failed or failing disk drive only. Do not remove an optimally functioning drive.
- If your acceptance procedure requires a test of the RAID hot-swap feature, remove only one disk drive at a time. You can remove a second disk only after you replace the first disk and the array completes its rebuilding process.
- Do not remove a disk drive while the array is rebuilding. This may result in an appliance failure. Verify the status of the array before removing a disk drive.
- You can hot-swap a drive while the appliance remains in production.
- Some conditions may require powering down the appliance to replace a failed unit. This normally happens if the RAID controller detects an error that could damage the array. If you insert a replacement drive into a live array and the controller doesn't recognize the drive,
power down the appliance.

- All disks in the RAID array must have the same disk type for the array to function properly.
- In the unlikely event that two disk drives fail simultaneously and the appliance is still operational, remove and replace the failed disk drives one at a time.
- Rebuild time can vary. The rebuild process takes approximately two hours on an idle appliance. On very busy appliances (over 90% utilization), the disk rebuild process can take as long as 40 hours. On a Grid Master serving a very large Grid, expect the rebuild process to take at least 24 hours.
- Replace a failed or mismatched disk only with a replacement disk shipped from Infoblox. When you request a replacement disk, report the disk type displayed in the Detailed Status panel of the Infoblox GUI or the Infoblox part number on the disk.

Hard Disk Replacement

Use the following procedure to remove a spinning disk:

1. Unlatch and pull the disk about two cm (one inch) to disengage contact, as indicated in Figure 20 or Figure 21.

   *Figure 20 Pull disk latch to remove hard drive for Infoblox-4010 Rev-1*

   *Figure 21 Pull disk latch to remove hard drive for Infoblox-4010 Rev-2/Network Insight ND-4000*

2. Wait about 30 seconds for the disk to completely stop spinning.

3. Remove the disk, extract it from its carrier and handle it with care. Do not drop the disk or ship it loosely in a carton.

4. Securely mount the replacement disk in the drive carrier and replace the carrier in the system.
Changing AC Power Supplies

Note: Before changing power supplies, make sure that they are securely cabled. An apparently failed power supply may simply be improperly connected to its power source.

The Infoblox-4010 and Network Insight ND-4000 appliances ship with two redundant, auto-switching AC power supplies or optional DC power supplies, in a 1+1 configuration. The power supplies are “hot-swappable”, so you can remove or replace one power supply without interrupting appliance operation and network services. When a power supply fails for any reason, NIOS displays a power supply alarm. The Infoblox NIOS Dashboard will also display an error under Grid Status. The appliance also sends an email notification and an SNMP trap.

When the appliance contains two functioning power supplies, they share the power load. If one power supply fails, the other assumes the full load automatically and the appliance sends the system alarm to NIOS. Although the appliance can run with only one power supply, Infoblox recommends installing both power supplies that are shipped with the appliance. This configuration minimizes the chance of system failure due to failure of an individual power supply.

Each power supply weighs about three pounds (1.36 kg). The faceplate of the power supply contains a power LED and a power switch. Each AC power supply provides a dedicated male power outlet. Figure 22 and Figure 23 illustrate the process of replacing an AC power supply for the Infoblox-4010 Rev-1 and Rev-2 appliances, respectively.

To replace an Infoblox-4010/Network Insight ND-4000 AC power supply, do the following:

1. Turn off the power supply.
2. Disconnect the AC power cable from the power outlet.
3. Gently push back the red catch-release lever, grip the power supply handle, and pull the power supply unit out of the chassis.
4. Place the replacement power supply into the bay and push it forward until it is fully seated in the chassis. The catch-release lever will gently click into place.
5. Reconnect the power cable.
6. Turn on the power supply. If it is fully seated, powered on, and operating properly, the LED glows steady green.

Figure 22 Removing an Infoblox-4010 Rev-1 AC Power Supply

![Figure 22 Removing an Infoblox-4010 Rev-1 AC Power Supply](image)

Figure 23 Removing an Infoblox-4010 Rev-2/Network Insight ND-4000 AC Power Supply

![Figure 23 Removing an Infoblox-4010 Rev-2/Network Insight ND-4000 AC Power Supply](image)
Changing DC Power Supplies

In their DC power configuration, the Infoblox-4010 and Network Insight ND-4000 ship with two redundant, auto-switching DC power supplies. The power supplies are “hot-swappable”, so you can remove or replace one power supply without interrupting appliance operation and network services.

To replace an Infoblox-4010/Network Insight ND-4000 DC power supply, do the following:

1. Disconnect the DC power cable from the power outlet on the external transformer.
2. Disconnect the power cable from the power supply.
3. Gently push back the red catch-release lever, grip the power supply handle, and pull the power supply unit out of the chassis.
4. Place the replacement power supply into the bay and push it forward until it is fully seated in the chassis. The red catch-release lever will gently click into place.
5. Reconnect the power cable. If the power supply is fully seated and operating properly, the LED glows steady green.

*Figure 24 Removing an Infoblox-4010 Rev-1 DC Power Supply*

*Figure 25 Removing an Infoblox-4010 Rev-2/Network Insight ND-4000 DC Power Supply*
Internal System Fan Replacement

System fans are field-replaceable units. Should a CPU fan assembly fail, an alarm will be raised by the system. No tools are necessary for fan replacement in either Rev-1 or Rev-2 Infoblox-4010 or Network Insight ND-4000 appliances.

Note: The IB-4010 appliance reports all system fans, numbered 1 through 6, as individual units, and each fan may be individually replaced as needed. Each fan is numerically labeled inside the chassis.

System fans are hot-swappable; they can be replaced while the system is on. Infoblox recommends that the system be switched off before replacing a fan unit. To replace a processor fan assembly, do the following:

1. Perform a full system shutdown.
2. Unplug all power cables from the system.
3. Extend or remove the Infoblox appliance from the rack.
4. Remove the star screwdriver from the back of the system, and then unscrew the latch (on the top rear of the unit) and gently pull latch to remove the top panel, as shown in Figure 26 and Figure 27.

Figure 26 Gently pull latch to remove top panel for Infoblox-4010 Rev-1
5. Slide the top panel off and visually inspect the fans to determine which unit has stopped spinning and must be replaced.

6. Figure 28 shows a six-fan-module configuration on the Rev-1 appliance, and Figure 29 shows a four-fan-module configuration on a Rev-2 appliance. The system fans can be removed from their installation base and replaced. A pair of small handles reside on the top of each fan module, which you grasp with fingertips when pulling the unit out of the system. Pay attention to unit alignment and placement before removing from the system.
7. Place the new fan in the system. Note that the fans can be installed correctly in only one direction, as shown in Figure 30 and Figure 31.

*Figure 30 Fan blades point towards rear of chassis for Infoblox-4010 Rev-1*
8. Replace the top lid of the system and replace it in the rack before restoring power.

**IB-4000/ND-4000 Series Replaceable Units**

*Table 10* lists field replaceable units for the Infoblox 4000 Series Rev-1 appliances. Contact your Infoblox field representative or Infoblox Technical Support for more information.

*Table 10 Field-Replaceable Unit Part Numbers for IB-4010 Rev-1 (only)*

<table>
<thead>
<tr>
<th>Field-Replaceable Unit</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infoblox IB-Type 3 Disk Assembly (Rev-1)</td>
<td>IB-4000-DISK-HDD300</td>
</tr>
<tr>
<td>Infoblox IB-4010 Series AC PSU (Rev-1)</td>
<td>IB-4000-PSU-AC</td>
</tr>
<tr>
<td>Infoblox IB-4010 Series DC PSU (Rev-1)</td>
<td>IB-4000-PSU-DC</td>
</tr>
</tbody>
</table>
Table 11 lists field replaceable units for the Infoblox 4000 Series Rev-2 appliances, including the Network Insight ND-4000 and the Trinzic Reporting 4000. It specifies compatibility of the units and their part numbers. Contact your Infoblox field representative or Infoblox Technical Support for more information.

Note: IB-4010 = Infoblox 4010 appliance, ND-4000 = Network Insight ND-4000 appliance, TR-4000 = Trinzic Reporting 4000.

<table>
<thead>
<tr>
<th>Field-Replaceable Unit</th>
<th>Part Number</th>
<th>Type</th>
<th>IB-4010</th>
<th>ND-4000</th>
<th>TR-4000*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infoblox 4000 Series AC PSU</td>
<td>IB-4000-R2-PSU-AC</td>
<td>FRU only</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Infoblox 4000 Series DC PSU</td>
<td>IB-4000-R2-PSU-DC</td>
<td>FRU only</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Infoblox IB-Type 3 Disk Assembly (Rev-2)</td>
<td>IB-4000-R2-DISK-HDD300</td>
<td>FRU only</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Infoblox IB-4000 Series fan set (Rev-2)</td>
<td>IB-4000-R2-FAN</td>
<td>FRU only</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
</tbody>
</table>

*TR-4000 is the Trinzic Reporting 4000 appliance. For information about the appliance and its specifications, refer to the Infoblox Installation Guide for the Trinzic Reporting 4000 Appliance.

IB-4000/ND-4000 Series SFP/SFP+ Transceivers

Infoblox offers SFP/SFP+ transceivers of various types for 1GbE and 10GbE networking applications. Table 12 lists the Ethernet SFP transceivers that are compatible with Infoblox Ethernet SFP/SFP+ interfaces and basic guidelines for compatibility.

Table 12 Transceivers for 1GbE SFP and 10GbE SFP+ Support

<table>
<thead>
<tr>
<th>Field-Replaceable Unit</th>
<th>Part Number</th>
<th>Type</th>
<th>IB-4010</th>
<th>ND-4000</th>
<th>TR-4000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infoblox SFP+ Long Range 10GbE LR fiber Transceiver</td>
<td>IB-SFPPLUS-LR</td>
<td>FRU only</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Infoblox SFP+ Short Range 10GbE SR fiber Transceiver</td>
<td>IB-SFPPLUS-SR</td>
<td>FRU only</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Infoblox SFP 1GbE SX Fiber</td>
<td>IB-SFP-SX</td>
<td>FRU only</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Infoblox SFP 1GbE Copper Interface Transceiver</td>
<td>IB-SFP-CO</td>
<td>FRU only</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Finisar SFP 1GbE LR Fiber Single-Mode Transceiver</td>
<td>Finisar FTLF1318P3BTL</td>
<td>Not sold by Infoblox Contact your distributor for availability</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Cisco SFP+ 10GbE Copper Direct Attach (10GSFP+Cu) Cable</td>
<td>Cisco SFP-H10GB-CU5M</td>
<td>Not sold by Infoblox Contact your distributor for availability</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>HP SFP+ 10GbE Copper Direct Attach (10GSFP+Cu) Cable</td>
<td>HPJ9283B</td>
<td>Not sold by Infoblox Contact your distributor for availability</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
</tbody>
</table>