



Infoblox Installation Guide 4000 Series Appliances

Infoblox IB-4010 and Infoblox IB-4020

Advanced Appliance PT-4000

Network Insight ND-4000

Trinzic Reporting TR-4000

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About the Infoblox 4000 Series Appliances

This Guide provides an overview of the Infoblox 4000 Series network service appliances, including the Infoblox IB-4010, IB-4020, the Infoblox Advanced Appliance PT-4000, the Network Insight ND-4000, and the Trinzic Reporting TR-4000. It describes the unique features for each appliance model, the hardware elements, as well as installation and deployment information common to all models in the Infoblox 4000 Series. Consult the respective sections below for descriptions of the features for your specific appliance:

- [IB-4010 Product Overview](#)
- [IB-4020 Product Overview](#)
- [Infoblox Advanced Appliance PT-4000 Product Overview](#)
- [Network Insight ND-4000 Product Overview](#)
- [Trinzic Reporting TR-4000 Product Overview](#)

You configure and manage Infoblox 4000 Series appliances through the easy-to-use Infoblox GUI, Grid Manager, that works seamlessly in Windows, Linux, and Mac environments using standard web browsers. For more information about the Grid Manager, refer to the *Infoblox NIOS Administrator Guide*.

All Infoblox 4000 Series network appliances are Class A and Class B (with limits) digital appliances per FCC regulations, NEBS (Network Equipment Building Systems) and NEBS-3 compliant, RoHS compliant, and WEEE compliant.

Note: For electrical, environmental and system specifications for each Infoblox 4000 Series appliance model, see [Infoblox 4000 Series Appliance Specifications](#).

IB-4010 Product Overview

The IB-4010 appliance is a high performance network appliance that provides core network services, including DNS (Domain Name System), DHCP (Dynamic Host Configuration Protocol), IPAM (IP Address Management), and NTP (Network Time Protocol). The IB-4010 may operate as a Grid member or as a Grid Master, and operate in either capacity with a second IB-4010 appliance in high availability (HA) mode. You configure and manage the IB-4010 appliance through the Grid Manager.

Note: The IB-4010 appliance is currently sold in a Rev-2 hardware platform. Infoblox supports a previous platform version, Rev-1, only with field-replaceable units (FRUs) and warranty replacements. Current Rev-2 platform FRUs, such as power supplies and fan units, also are not compatible with IB-4010 Rev-1 hardware and FRUs, and vice versa. Ensure that you use the correct FRUs for your IB-4010 appliance. For information about FRUs, see [Field Replaceable Units](#).

Key features of the IB-4010 include the following:

- Support for Grid management and all administrative features for Infoblox IPAM, DNS, DDNS, and DHCP
- High availability support
- LOM (Lights Out Management) support
- Field replaceable hard disk drives
- Hot-swappable AC power supplies
- Field replaceable fan modules
- Optional DC power supplies
- Alternative system configurations for the support of copper or fiber SFP/SFP+ 1GbE/10GbE interfaces

IB-4020 Product Overview

The IB-4020 appliance is a highly-optimized network appliance designed to operate as a Grid Master or Grid Master Candidate. It is not recommended for configuration as a Grid member. You can deploy the IB-4020 as the Grid Master in a large Grid to manage up to 500 Grid members and to handle complex Grid replications that involve a sizable number of data objects. You can also operate the IB-4020 in an high availability (HA) mode.

Key features of the IB-4020 include the following:

- Support for Grid management and all administrative features for Infoblox IPAM, DNS, DDNS, and DHCP
- Support for large Grids; up to 500 Grid members per Grid
- High availability support
- LOM (Lights Out Management) support
- Field replaceable hard disk drives
- Hot-swappable AC power supplies
- Field replaceable fan modules
- Optional DC power supplies
- Alternative system configurations for the support of copper or fiber SFP/SFP+ 1GbE/10GbE interfaces

Infoblox Advanced Appliance PT-4000 Product Overview

The Advanced Appliance PT-4000 is a high performance Infoblox network appliance that supports the Infoblox ADP (Advanced DNS Protection) solution. With valid licenses installed, the PT-4000 appliance provides a hardware-accelerated solution to DNS threats targeting DNS caching and authoritative applications. You configure and manage the Advanced Appliance PT-4000 through the Infoblox Grid Manager. For more information about Advanced Appliance features and licensing, refer to the *Infoblox NIOS Administrator Guide*.

Key features of the Advanced Appliance PT-4000 include the following:

- Four (4) active SFP 1GbE Ethernet interfaces: two (2) active 10GbE interfaces (LAN1 and LAN2) to support Advanced DNS Protection features, one interface (HA) to support high availability mode, and one interface (MGMT) designated for device management.
- High availability support
- Supports management through the Infoblox Grid
- LOM (Lights Out Management) support
- Replaceable hard disk drives
- Hot-swappable AC or DC power supplies in a redundant 1+1 configuration
- Alternative system configurations for the support of copper or fiber SFP 1GbE interfaces, with support for mixed copper/fiber deployments.

Infoblox Advanced Appliance PT-4000-10GE

The Advanced Appliance PT-4000-10GE is an optional configuration that provides Infoblox ADP (Advanced DNS Protection) capabilities at 10GbE line speed. With valid licenses installed, the PT-4000-10GE appliance provides a hardware-accelerated solution to DNS threats targeting DNS caching and authoritative applications, using 10 Gigabit Ethernet. Associated features include the following.

- Four (4) active SFP+ 10GbE Ethernet interfaces: two (2) active interfaces to support Advanced DNS Protection features, one interface (HA) to support high availability mode, and one interface (MGMT) designated for device management. (See [Infoblox PT-4000-10GE 10-Gigabit Ethernet Connectivity](#) for details.)
- High availability support
- Supports management through the Infoblox Grid
- LOM (Lights Out Management) support
- Replaceable hard disk drives
- Hot-swappable AC or DC power supplies in a redundant 1+1 configuration
- Alternative system configurations for the support of copper or fiber SFP+ 10GbE interfaces, with support for mixed copper/fiber deployments and mixed 1GbE and 10GbE deployment, based on installed transceivers.

Network Insight ND-4000 Product Overview

The Network Insight ND-4000 is a high performance network appliance that supports device discovery and network discovery features, using SNMP and other protocols to discover, query, manage and catalogue network devices such as enterprise Ethernet switches, routers, firewalls and other security devices, VoIP softswitches, load balancers, end host devices and more. You configure and manage the Network Insight ND-4000 as a NIOS Grid member through the Infoblox Grid Manager. For more information about discovery features and licensing, refer to the *Infoblox NIOS Administrator Guide*. Associated features include:

- 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.)
- Management through the Infoblox Grid
- LOM (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 1GbE and 10GbE interfaces, with support for mixed copper/fiber deployments.

Note: The Network Insight ND-4000 does not support HA operation and acts only as a Grid member.

Trinzic Reporting TR-4000 Product Overview

The Trinzic Reporting TR-4000 is a high performance network appliance that collects data from Infoblox Grid members, stores the data in the reporting database, and generates reports that provide statistical information about IPAM, DNS, DHCP, and system activities and performance. You configure and manage the Trinzic Reporting TR-4000 as a NIOS Grid member and view reports through the Infoblox Grid Manager. For more information about Reporting features and licensing, refer to the *Infoblox NIOS Administrator Guide*. Associated features include:

- Three (3) active 1GbE Ethernet interfaces: two (2) active interfaces to support event reporting features across the network, and one interface (MGMT) designated for device management. (The HA port is inactive.)

- Management through the Infoblox Grid
- LOM (Lights Out Management) support
- Replaceable hard disk drives in a RAID-6 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 1GbE and 10GbE interfaces, with support for mixed copper/fiber deployments.

Note: The Trinzic Reporting TR-4000 does not support HA operation and acts only as a Grid member.

Infoblox 4000 Series Hardware Components

The Infoblox 4000 Series are 2-U appliances that you can efficiently mount in a standard equipment rack. For information about rack mounting, see [Infoblox 4000 Series Rack Installation](#) . The front panel comes with a removable cover.

Note: If you wish to run the Infoblox 4000 Series in a NEBS-3 configuration, remove the front panel of the appliance as shown in [Figure 2](#) (for DC only).

Figure 1 Infoblox 4000 Series Front View



Appliance Front Panel

Removing the front panel cover reveals front panel components, including the hard disk drives and indicator lights, illustrated in [Figure 2](#) and described in [Table 1](#). For explanations of Ethernet port LEDs, and console and Ethernet port connector pin assignments, see [Ethernet Port LEDs](#) and [Interface Connector Pin Assignments](#).

Figure 2 Infoblox 4000 Series with Front Panel Cover Removed

[Table 1](#) describes front panel components for the Infoblox 4000 Series appliance.

Table 1 Front Panel Components for Infoblox 4000 Series

Component	Description
UID LED and Button	The unit identification button and LED. The UID feature enables easier location of a server when moving from 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 (all systems use hot-swappable hard disks)	The Infoblox-4010 uses four (4) hard disk drives configured in a RAID (Redundant Array of Independent Disks) 10 array. The Advanced Appliance PT-4000 uses four (4) hard disk drives in a RAID 10 array. The Trinzic Reporting TR-4000 appliance uses four (4) hard disk drives in a RAID 6 array. The Network Insight ND-4000 uses eight (8) hard disk drives in a RAID-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	The VGA port is not supported. Use the console port or LAN1 port for initial setup.

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 2](#) lists the disk drive LED combinations and the states they represent.

Table 2 Disk Drive LED Combinations

Online/Activity LED (Green)	Fault/UID LED (Amber/Blue)	Description
Off or circulating green	Steady green	The drive is operating normally.
Off or circulating green	Steady amber	The drive has failed, or it has received a predictive failure alert.

Ethernet Port LEDs

View the Activity and Link LEDs to see link activity and connection speeds on Ethernet ports. [Figure 3](#) describes the status conveyed by Ethernet port LEDs through their color and illumination (steady glow or blinking).

Figure 3 Ethernet Port LEDs

SFP/SFP+ Interface Support

The Infoblox 4000 Series appliances support optional interface configurations to accept SFP transceiver modules, for 1GbE optical and copper connectivity.

To support connectivity to 10 Gigabit (10GbE) networking infrastructure, Infoblox also offers versions of the Infoblox IB-4010, Network Insight ND-4000, Advanced Appliance PT-4000 and Trinzic Reporting TR-4000 that provide 10-Gigabit Ethernet (10GbE) interfaces accepting SFP+ transceiver modules. An example showing optical port configuration appears in [Figure 7](#).

Note: The IB-4010, IB-4020, and Advanced Appliance PT-4000 support four (4) active interfaces in the optional 1GbE SFP and 10GbE SFP+ configurations. Other appliances in the Infoblox 4000 Series, specifically the ND-4000 and TR-4000, support three active interfaces in the optional 1GbE SFP or 10GbE SFP+ configurations. The port designated HA is inactive for these models. Order of ports from left to right is otherwise the same.

For details on Advanced Appliance PT-4000-10GE support, see [Infoblox PT-4000-10GE 10-Gigabit Ethernet Connectivity](#).

In optional configurations for the Infoblox 4000 Series, the 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 an Infoblox-4010 appliance, and installing 1GbE SFP copper transceivers in the MGMT and HA interfaces.

Note: For ND-4000 and TR-4000 appliance models configured with 1GbE SFP or 10GbE SFP+ interfaces, the HA port is reserved for future use and otherwise unused. Order of ports from left to right is otherwise identical.

See the section [Infoblox 4000 Series Field Replaceable Units](#), for specific information on part numbers, availability, and device compatibility.

Infoblox PT-4000-10GE 10-Gigabit Ethernet Connectivity

Note: Guidelines described in this section apply only to the PT-4000-10GE Advanced Appliance with its 10GbE configuration.

When you install the PT-4000-10GE Advanced Appliance, some installation guidelines must be followed:

- *Install all transceivers into the ports for your appliance before turning the system on for the first time.*
- The LAN1 and HA ports must be set to the same line speed. In the expected 10-Gigabit deployment, LAN1 will be set to run to 10GbE line speed. If you are running HA with a second appliance, the HA interface must be set to the same line speed as the LAN1 port by using the same transceiver type. This requirement applies to both RJ-45 and optical interfaces.
- The MGMT, LAN1 and LAN2 interface line speeds may be set independently.
- The 10-Gigabit Ethernet option also supports mixed mode configurations, in which RJ-45 and optical transceivers may be used in the same appliance.

[Figure 4](#) summarizes the requirements and port order for the PT-4000-10GE Advanced Appliance.

Figure 4 PT-4000 Appliance 10GbE Port Setting Requirements

Interface Connector Pin Assignments

An Infoblox 4000 Series appliance provides four types of ports on its rear panel:

- USB port (reserved for future use)
- Male DB-9 console port
- RJ-45 100Base-T/1000Base-T auto-sensing gigabit Ethernet ports
- Active 10/100/1000 iLO/IPMI port

[Figure 5](#) describes DB-9 and RJ-45 connector pin assignments.

Figure 5 DB-9 Console Port and RJ-45 Port Pinouts

DB-9 pin assignments follow the EIA232 standard. To make a serial connection from your management system to the console port, you can use an RJ-45 rollover cable and two female RJ-45-to-female DB-9 adapters, or a female DB-9-to-female DB-9 null modem cable. The RJ-45 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.

SFP/SFP+ Ports

The Infoblox 4000 series appliances ship with three or with four (4) SFP or SFP+ transceivers, depending on the appliance model and the ordered configuration. Depending on the options you have selected, Infoblox 4000 series appliances support the following Infoblox-sold transceivers shown in [Table 3](#) (other supported third-party transceivers are listed in [Transceivers for 1GbE SFP and 10GbE SFP+ Support](#)).

Table 3 SPF/SFP+ Interface Modules Specifications

SFP/SFP+ Interface	Specifications
RoHS 6 Compliant 1000 BASE-T Copper SFP Transceiver Infoblox part number: IB-SFP-CO	<ul style="list-style-type: none">• Up to 1.25Gb/s bi-directional data links• Hot-pluggable SFP footprint• Extended case temperature range (0°C to +85°C)• Fully metallic enclosure for low EMI• Low power dissipation (1.05 W typical)• Compact RJ-45 connector assembly• RoHS 6 compliant and Lead Free• Access to physical layer IC via 2-wire serial bus• 1000 BASE-T operation in host systems with SGMII interface

<p>RoHS 6 Compliant 2Gb/s 850nm SFP Transceiver</p> <p>Infoblox part number: IB-SFP-SX</p>	<ul style="list-style-type: none"> • Up to 2.125 Gb/s bi-directional data links • Hot-pluggable DFP footprint • Commercial operating temperature range: 0°C to 70°C • 850nm Oxide VCSEL laser transmitter • Duplex LC connect • RoHS 6 Compliant and Lead-Free • Up to 500m on 50/125m MMF, 300m on 62.5/125m MMF • Metal enclosure, for lower EMI • Single 3.3V power supply • Low power dissipation
<p>Infoblox SFP+ Long Range 10GbE LR fiber Transceiver</p> <p>Infoblox part number: IB-SFPPLUS-LR</p>	<ul style="list-style-type: none"> • Hot-pluggable SFP+ footprint • Supports 9.95 to 10.5Gb/s bit rates • Power dissipation < 1W • RoHS-6 compliant (lead-free) • Commercial temperature range -5°C to 70°C • Single 3.3V power supply • Maximum link length of 10km • Uncooled 1310nm DFB laser • Receiver limiting electrical interface • Duplex LC connector
<p>Infoblox SFP+ Short Range 10GbE SR fiber Transceiver</p> <p>Infoblox part number: IB-SFPPLUS-SR</p>	<ul style="list-style-type: none"> • Hot-pluggable SFP+ footprint • Supports 9.95 to 10.5 Gb/s bit rates • Power dissipation < 1W • RoHS-6 compliant (lead-free) • Commercial temperature range 0°C to 70°C • Single 3.3V power supply • Maximum link length of 300m on 2000 MHz-km MMF • Uncooled 850nm VCSEL laser • Receiver limiting electrical interface • Duplex LC connector

Infoblox 4000 Series Appliance Rear Panel

The Infoblox 4000 Series appliances offer 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 4000 Series 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 4](#) and listed in [Table 4](#). [Figure 7](#) illustrates the optional system configuration with optical interfaces.

Figure 6 Infoblox 4000 Series Rear View with RJ-45 Gigabit Ethernet Ports

For information on installing an earth ground connector to the chassis for DC-based 4000-Series systems, see [Ground Lug Installation \(DC Systems Only\)](#) of this guide.

Figure 7 Infoblox 4000 Series, Rear View with Four SFP+ Interfaces

[Figure 8](#) shows the rear view of the Infoblox PT-4000-10GE appliance.

Figure 8 Infoblox PT-4000-10GE appliance, Rear View with Four SFP/SFP+ Interfaces

See the preceding section, [SFP/SFP+ Interface Support](#), for details on optical interface configuration. Also see [Infoblox PT-4000-10GE 10-Gigabit Ethernet Connectivity](#) for details on transceiver usage in the PT-4000-10GE appliance.

For a complete summary of 1GbE and 10GbE support on all Infoblox 4000 Series appliances, see [Table 5](#).

[Table 4](#) provides more-specific information for each interface on the Infoblox 4000 Series rear panel.

Table 4 Infoblox 4000 Series Rear Panel Components

Component	Description
MGMT Port	A 1000-Mbps gigabit Ethernet port for appliance management, or for appliance services on the network. You enable the MGMT port and define its use through the Grid Manager after the initial setup. You must manage the Advanced Appliance PT-4000/PT-4000-10GE through the MGMT port.

LAN1 Port	LAN1 connects the NIOS appliance to the network. You use the LAN1 port for initial appliance setup. It handles all traffic if you do not enable the MGMT and LAN2 ports.
HA Port (<i>inactive and reserved for future use in the ND-4000 and TR-4000</i>)	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 use their HA ports for VRRP (Virtual Router Redundancy Protocol) advertisements. <i>HA is supported in the Infoblox-4010 and PT-4000 appliances.</i> ND-4000 and TR-4000 Reporting: HA Port inactive and reserved for future use.
LAN2 Port	LAN2 connects a NIOS appliance to the network. LAN2 is disabled by default. You enable the LAN2 port and define its use through the Grid Manager after the 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). If your system lacks a DB-9 serial port, use a properly grounded USB-to-Serial dongle for connection to the serial console port. If the dongle is connected to a laptop, the laptop also must be properly grounded. Failure to do so may cause 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 .
iLO/IPMI Port	Dedicated Ethernet port used for LOM (integrated Lights Out Management) with specific releases of NIOS. Ensure that the iLO/IPMI port is properly connected to its dedicated IPMI network before you configure LOM through the Grid Manager for remote management. The IPMI/LOM port supports up to Gigabit Ethernet speeds. Follow best practices for IPMI usage in the network by not allowing the LOM port to connect to the general-use data center network.
VGA Port	This port is not supported. Use the console port or LAN1 port for initial setup.
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 .

Table 5 SFP/SFP+ Appliance Support Summary

Infoblox 4000 Series Model	SFP/SFP+ Support	# of active SFP/ SFP+ ports	10 GbE Support?	Accelerated 10 GbE Support?	HA?
IB-4000	Y ¹	4	Y ¹	N	Y
ND-4000	Y ¹	3	Y ¹	N	N
TR-4000	Y ¹	3	Y ¹	N	N
PT-4000	Y	4	N	N	Y
PT-4000-10GE	Y	4	Y	Y ²	Y

¹ – Optional 1GbE or 10GbE line card.

² – PT-4000-10GE uses 10GbE hardware acceleration for DNS security threats targeting DNS caching and authoritative applications.

System, Environmental, and Power Specifications

System specifications describe the physical characteristics of the 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, Infoblox 4000 Series Appliances

- **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 1000Base-TX

Environmental Specifications

- Operating Temperature: 41 F – 104 F (5 – 40C)
- Storage Temperature: -22 to 140 degrees F (-30 to 60 degrees C)
- Operating Relative Humidity: 10% to 90% (non-condensing)

Electrical Power Specifications

Caution: Infoblox recommends provisioning power according to the AC or DC rated input current and maximum peak power values listed in the specifications below.

- AC Power Supply: 100 to 240VAC 750W (Maximum)
 - Rated Input Frequency: 50 Hz to 60 Hz
 - Rated Input Current: 8.9A at 100V AC, 4.3A at 200VAC
 - Rated Input Power: 857W at 100VAC, 824W at 200VAC
 - Maximum Heat Output (BTU/hour): 2925 BTU at 100VAC, 2812 BTU at 200VAC
 - Maximum Peak Power: 750 W at 100V to 240V AC input
- DC Power Supply: 48v 750W GRND TERM, RING, VIN 12-10 AWG #10
 - Rated Input Voltage: 48VDC
 - Rated Input Current: 9.6A
 - Nominal Input Current: 17A
 - Maximum Inrush Current: 24A peak
 - Maximum Inrush Current Duration: 15ms
 - Maximum Power Draw: 820W at 48V DC input
 - Maximum Heat Output (BTU/hour): 2796 BTU
 - Maximum Peak Power: 750 W at 48V DC input

DC Power Cable Color Codes

DC power cables ship with a label describing each lead. The label is located near the pigtail leads. [Table 6](#) lists -48V DC power specifications.
Table 6 -48V DC Power Connector

Cable Pin	Cable Color	Description
1	Black	Positive Return
2	Red	Negative Input Voltage
3	Green/Yellow	Safety Ground

Installing the Infoblox 4000 Series Appliance

Refer to the following sections to rack mount appliances in the Infoblox 4000 Series, connect them to a power source, and cable them to a network. Before proceeding, review the *Infoblox Safety Guide* and follow the necessary precautions.

Note: Ensure that you install the appliance in an environment that allows open air to the front and back of the appliance. Do not obstruct the appliance or block air flow going from the front to the back of the appliance.

Infoblox 4000 Series appliances are installed in a four-post seismic rack.

Infoblox 4000 Series appliances ship with an adjustable sliding four-post rack-mounting accessory kit that contains mounting hardware. To mount the appliance to a four-post seismic rack, you also need the following:

- M5 rack screws that fit the seismic rack (bundled with the accessory kit)
- Round-hole M5 cage nuts for use with the seismic rack (bundled with the accessory kit)
- A Phillips-head #2 screwdriver

SFP/SFP+ Transceiver Installation and Removal Guidelines

After receiving a shipped Infoblox 4000 Series appliance with SFP or SFP+ support, Infoblox recommends installing the transceivers into your appliance before turning power on to the system for the first time. Pay heed to the interface configuration required for your appliance deployment when inserting your SFP/SFP+ transceivers.

Should circumstances require you to ship an appliance to Infoblox for repair or replacement, *remove all SFP or SFP+ transceivers from your appliance before shipping it back to Infoblox*. Keep your transceivers in your facility until the appliance is replaced or repaired and subsequently returned to you.

Infoblox 4000 Series Rack Installation

Infoblox 4000 Series appliances require the following space and airflow for 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 rack rear 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 requires ambient room air to freely 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.
3. Line up a mounting rail with the cage nuts, and attach the mounting rail to the rack with the M5 screws (included in the adjustable rail kit), ensuring that the front end of each mounting rail connects to the front of the rack.

Note: Ensure that both rack rail assemblies are correctly level.

Figure 9 Installing the Round-Hole M5 Cage Screws

4. Repeat steps 1 to 3 for the other mounting rail.
5. Open the rail mounting instruction sheet bundled with the adjustable sliding four-post rack rail accessory kit, and follow its illustrated instructions to attach the slider rail to the Infoblox 4000 Series appliance.
6. With one person on each side, lift the appliance and position it in front of the rack.
7. Align the side rails on each side of the appliance with the mounting rails on the seismic rack.
8. 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.
9. Snap the Infoblox 4000 Series 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.)
10. Pull down the retention levers on both sides of the appliance, and insert the retainer screws on both sides, as shown in [Figure 10](#).

Figure 10 Retention Levers on Front Panel for Retainer Screw Installation

Ground Lug Installation (DC Systems Only)

To meet grounding and bonding requirements for NEBS compliance, install a ground lug on the rear of the chassis. You install a ground lug on the chassis rear as labeled in [Figure 6](#) of this Guide, and install a ground lug to each DC power supply using the screws illustrated in [Figure 16](#) of this Guide. A ground lug, with two star washers and a ground lug screw, is provided in the accessory kit bundled with DC-equipped Infoblox 4000 Series appliances. 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.

Figure 11 Ground Lug Installation Sequence

Grounding Note on DC Power Supply Connections

DC-equipped Infoblox 4000 Series provide 2.5 meter DC power cords with three 10AWG wiring connections, labeled 48V/GND/RTN. DC power operation requires properly grounded DC connections. Each power supply provides a standard grounding nut, labeled with a standard "Ground" symbol on the power supply. Ensure that your DC connections are properly grounded before connecting power.

Powering On the Infoblox 4000 Series Appliance

The Infoblox 4000 Series appliances ship with two (2) hot-swappable redundant AC power supply modules or two hot-swappable redundant 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.

DC Power Supply Guidelines (for Optional DC Configurations)

Note: The information in this section is for advisory purposes only. No color coding standards exist for DC power cables. The color coding used by the external DC power source at your site determines the color coding for the leads on the power cables that attach to the terminal studs on each DC power supply. Ensure that DC power connections maintain the correct polarity. The cables of your DC power source also may be labeled with (+) and (-) to indicate polarity.

Most DC power supply deployments use -48V input. [Table 7](#) lists -48V pinouts for DC connections between power transformers and Infoblox DC power supplies.

Table 7 -48V Wiring

Pin/Wire	Color	Designation
1	Black	RTN (Positive Return)
2	Red	-48v (Negative Input Voltage)
3	Green/Yellow	GND (Safety Ground)

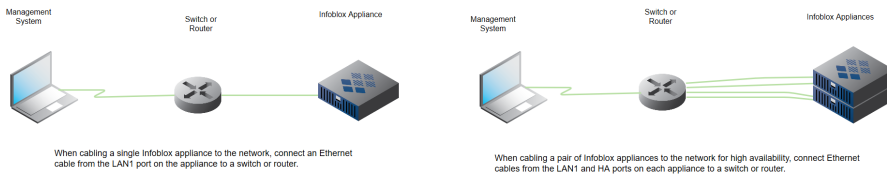
The DC power supplies for your Infoblox appliance label the terminal studs as -48V and RETURN, respectively. Always connect ground connections before connecting power leads.

Cabling the Appliance to a Network

Use one or more Category 5/6 Ethernet cables to connect the Infoblox 4000 Series appliance to the network.

1. Connect an Ethernet cable from the LAN1 port on the Infoblox 4000 Series to the network switch or router, as indicated in [Figure 12](#).
2. (Supported with IB-4010 and PT-4000 appliances) To connect the Infoblox 4000 Series appliance for HA (high availability), 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 be unique for that subnet.

Figure 12 Cabling a Single Appliance and an HA Pair to a Network



Appliance–Network Connectivity

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 or load balancer.

Occasionally, the appliances may fail to auto-negotiate that speed and type, and instead connect at lower speeds of either 100 or 10 Mbps using potentially mismatched full- and half-duplex transmissions. If this occurs, begin by determining whether there is a firmware upgrade available for the switch. If so, apply the firmware upgrade to the switch and test the connection. If that does not resolve the issue, manually set the ports on the Infoblox appliance and on the switch to make 1000-Mbps full-duplex connections. See the section [Modifying Ethernet Port Settings](#) in the *Infoblox NIOS Administrator Guide* for the steps to resolve the problem.

(Applies to Infoblox IB-4010 and PT-4000/PT-4000-10GE) 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 <https://support.infoblox.com/>
- 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.

Use the Grid Manager from a management system to access, set up and administer the Infoblox appliance. For management system requirements and access instructions, see [Accessing the Infoblox 4000 Series Appliance](#).

SFP/SFP+ Installation and Removal Guidelines

After receiving a shipped Infoblox 4000 Series appliance with SFP or SFP+ support, install the transceivers into your appliance before turning power on to the system for the first time.

Should circumstances require you to ship an appliance to Infoblox for repair or replacement, *remove all SFP or SFP+ transceivers from your appliance before shipping it back to Infoblox*. Keep your transceivers in your facility until the appliance is replaced or repaired and subsequently returned to you.

Accessing the Infoblox 4000 Series 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](#), you can open an HTTPS connection to the appliance and access the Infoblox Grid Manager using a supported Web browser. You must install and enable Javascript for the Grid Manager to function properly.

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. Infoblox recommends that the management system meet the following requirements to operate an Infoblox appliance.

Table 8 Software and Hardware Requirements for the Management System

Management System Software Requirements	Management System Hardware Requirements
---	---

Infoblox GUI Access

- Microsoft Windows® 8.1 and 8.0: Microsoft Internet Explorer® 11.x*, 10.x*, Mozilla Firefox 37.x, 32.x, 31.x, 25.x, 21.x, 16.x, and 10.x, Google Chrome 41, 40, 37.x, 36.x, 30.x, 27.x, 22.x, and 16.x
- Microsoft Windows 7®: Microsoft Internet Explorer® 11.x*, 10.x*, 9.x, and 8.x, Mozilla Firefox 32.x, 31.x, 25.x, 21.x, 16.x, and 10.x, Google Chrome 37.x, 36.x, 30.x, 27.x, 22.x, and 16.x
- Microsoft Windows XP® (SP2+): Microsoft Internet Explorer 7.x and 8.x, Mozilla Firefox 32.x, 31.x, 25.x, 21.x, 16.x, and 10.x, Google Chrome 37.x, 36.x, 30.x, 27.x, 22.x, and 16.x
- Red Hat® Enterprise Linux® 7.x: Mozilla Firefox 32.x, 31.x, 25.x, 21.x, 16.x, and 10.x, Google Chrome 37.x, 36.x, 30.x, 27.x, 22.x, and 16.x
- Red Hat® Enterprise Linux® 6.x: Mozilla Firefox 32.x, 31.x, 25.x, 21.x, 16.x, and 10.x, Google Chrome 37.x, 36.x, 30.x, 27.x, 22.x, and 16.x
- Red Hat® Enterprise Linux® 5.x: Mozilla Firefox 32.x, 31.x, 25.x, 21.x, 16.x, and 10.x, Google Chrome 37.x, 36.x, 30.x, 27.x, 22.x, and 16.x
- Apple Mac OS® X 10.11.x: Safari 9.x, 8.x and 7.x, Mozilla Firefox 32.x, 31.x, 25.x, 21.x, 16.x, and 10.x, Google Chrome 37.x, 36.x, 30.x, 27.x, 22.x, and 16.x
- Apple Mac OS® X 10.10.x: Safari 8.x and 7.x, Mozilla Firefox 32.x, 31.x, 25.x, 21.x, 16.x, and 10.x, Google Chrome 37.x, 36.x, 30.x, 27.x, 22.x, and 16.x
- Apple Mac OS® X 10.9.x: Safari 7.x, Mozilla Firefox 32.x, 31.x, 25.x, 21.x, 16.x, and 10.x, Google Chrome 37.x, 36.x, 30.x, 27.x, 22.x, and 16.x
- Apple Mac OS® X 10.8.x: Safari 6.x, Mozilla Firefox 32.x, 31.x, 25.x, 21.x, 16.x, and 10.x, Google Chrome 37.x, 36.x, 30.x, 27.x, 22.x, and 16.x
- Apple Mac OS® X 10.7.x: Safari 5.x, Mozilla Firefox 32.x, 31.x, 25.x, 21.x, 16.x, and 10.x, Google Chrome 37.x, 36.x, 30.x, 27.x, 22.x, and 16.x
- Apple Mac OS® X 10.6.x: Safari 5.x, Mozilla Firefox 32.x, 31.x, 25.x, 21.x, 16.x, and 10.x, Google Chrome 37.x, 36.x, 30.x, 27.x, 22.x, and 16.x

- Minimum System:
500 MHz CPU with 256 MB RAM available to the Infoblox GUI, and 256 Kbps connectivity to an Infoblox appliance
- Recommended System:
2GHz (or higher) CPU with 1 GB RAM available for the Infoblox GUI, and network connectivity to an Infoblox appliance
- Monitor Resolution: Minimum: 1280 x 768
Recommended: 1280 x 1024 or better
- CLI Access
Secure Socket Shell (SSH) client that supports SSHv2
Terminal emulation program, such as Minicom or Hilgraeve Hyperterminal®

* Grid Manager fully supports Microsoft Internet Explorer® 11.x and 10.x when you enable compatibility view in the browser. Features in the **Reporting** tab may not function properly if you disable compatibility view. In the browser, go to **Tools -> Compatibility View** to enable the feature.

Connecting to the Appliance

Note: The MGMT port must be used for device management in the Advanced Appliance PT-4000. On the PT-4000 appliance, configure the MGMT port through the 9-pin console port. LAN1 and LAN2 ports are used only for service delivery.

Configuration of the Infoblox 4000 Series appliance, through the Grid Manager, requires a network connection. Use the LAN1 port to connect to the appliance. For all Infoblox 4000 Series 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 NIOS CLI.

Note: For serial port connections, use only a properly grounded USB-to-Serial dongle. If the dongle is connected to a laptop, the laptop also must be properly grounded. 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 Grid Manager. 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 accessing the Join Grid dialog box to join appliances to a Grid, you can set up an Infoblox 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.

Note: The Infoblox 4000 Series appliances support auto-provisioning, and enable it by default. vNIOS appliances do not support auto-configuration.

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 (1,28,2,2,3,3,15,6,12) 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 NIOS CLI, Grid Manager, 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 Infoblox 4000 Series Appliance](#).
The appliance automatically sends a lease request to the DHCP server, which 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, the Setup Wizard guides you through the basic deployment of the appliance on the network.

You can deploy an appliance 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 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 and DHCP. For detailed instructions on configuring network services on 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 appliance generates a self-signed certificate when it first starts, and your browser does not have a trusted CA certificate or a cached appliance server certificate (saved from an earlier connection) to authenticate the appliance certificate. Also, the hostname in the default certificate is www.infoblox.com, which is unlikely to match the hostname of your appliance. 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.

Note: 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. The process is straightforward. 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. The Setup Wizard opens for defining basic network and deployment settings.

Determine how you want to deploy the appliance, and 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 individually configure each node.

Settings	Enter your information here
Grid Name	
Shared Secret Host Name	
Grid Master's IP Address	
LAN1 Port IP Address and Netmask	
Gateway IP Address	
*Port Settings	
**Admin Password	
**Local Date, Time, and Time Zone	
- or -	
NTP Server IP Address	

* 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:

Settings	Enter your information here
Grid Name	
*Shared Secret	
Host Name	
Virtual Router ID	
VIP (Virtual IP) Address and Netmask	
Node 1: HA Port IP Address	
Node 2: HA Port IP Address	
Node 1: LAN1 IP Address	
Node 2: LAN1 IP Address	
Gateway IP Address	

Admin Password	
Local Date, Time and Time Zone	
- or -	
NTP Server IP Address	

* For Grid master and member

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

Infoblox NIOS CLI

The NIOS CLI allows you to configure and monitor the appliance using a small set of Infoblox commands. Some tasks, such as resetting the appliance, can be done only through the CLI. You can access the NIOS 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 SSHv2 (Secure Shell version 2) access through the Infoblox Grid Manager or CLI, and then access the CLI from a remote location using an SSHv2 client. (For more information, refer to the *Infoblox NIOS Administrator Guide*.)

Using CLI Help

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

```
Infoblox > help
```

For in-depth explanation of CLI command 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 NIOS 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*.

Infoblox 4000 Series Field Replaceable Units

The Infoblox 4000 Series appliances 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
- SFP/SFP+ Transceivers

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.

Managing the Infoblox 4000 Series Disk Subsystem

Infoblox 4000 Series appliances 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 13](#). 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 13 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 Grid Manager 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 4000 Series.

Table 9 RAID Array LED States

Color	Meaning
Green	The RAID array is in an optimal state.
Yellow	A new disk was inserted and the RAID array is rebuilding.
Red	The RAID array is degraded. At least one disk is not functioning properly. The Grid Manager lists the disks that are online. Replace only the disks that are offline.

The Grid Manager 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 4000 Series appliances use only the **IB-Type 3** disk type. For the array to function properly, all disk drives in the array must have the same disk type.

When you have a mismatched disk in the array, 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 10](#).

Infoblox 4000 Series Hard Disk Replacement

Caution: Never remove a correctly functioning drive in a live system. If a disk drive fails, remove the failed disk only. NEVER remove two or more disks at once. Removing more than one disk at a time can cause a complete failure of the appliance and require an RMA (Return Material Authorization). All replacement drives must complete the rebuilding process before you can remove another drive. You can log in to the Grid Manager and check the status of the disk drives.

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 14](#).

Figure 14 Pull disk latch to remove hard drive for Infoblox 4000 Series



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.

Infoblox 4000 Series 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 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 Grid Manager or the Infoblox part number on the disk.

Notes on Disk Replacement

NIOS saves and restores IP settings and basic network configurations, such as the gateway address, netmask, Grid secret and Grid name, when you replace a failed disk drive. The replaceable hard disk contains only user data.

Should the hard disk drive in an appliance stop working for any reason, and the appliance is part of an HA pair, it will come offline and its HA partner system will come online. If the hard disk has an issue and is replaced, the NIOS within the downed system detects the new hard disk and initializes it for NIOS usage.

If the appliance is running in an Infoblox Grid, the system then communicates with the current Grid Master, downloads any remaining configuration, and then automatically rejoins the Grid. In most cases, recovery within an HA pair and in the Grid takes only a few minutes after the hard disk is replaced.

If the appliance runs in stand-alone mode without failover, a backup of the user data must be restored or the system configured from scratch. Infoblox recommends regular backups of standalone appliance data. For more information, refer to [Backing Up and Restoring Configuration Files](#) topic in the *Infoblox NIOS Administrator Guide* for your 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.

Infoblox 4000 Series 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", allowing removal or replacement of one power supply without interrupting appliance operation and network services.

Redundant power supplies share the power load. If one power supply fails, the other automatically assumes the full load and the appliance sends a system alarm. The Infoblox NIOS Dashboard also displays an error under Grid Status. The appliance also sends an email notification and an SNMP trap. This configuration minimizes the chance of system failure due to failure of an individual power supply.

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 Infoblox 4000 Series 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 15](#) illustrates the process of replacing an AC power supply for the Infoblox 4000 Series.

Figure 15 Removing an Infoblox 4000 Series AC Power Supply

To replace an Infoblox 4000 Series 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.

Changing DC Power Supplies

In DC power configurations, the Infoblox 4000 Series appliances ship with two redundant, hot-swappable, auto-switching DC power supplies. To replace an Infoblox 4000 Series 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. Disconnect the ground cable lugs from the power supply.
4. Gently push back the red catch-release lever, grip the power supply handle, and pull the power supply unit out of the chassis.
5. 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.
6. Reconnect the power cable. If the power supply is fully seated and operating properly, the LED glows steady green.

Figure 16 Removing an Infoblox 4000 Series DC Power Supply

Notes on Changing AC Power to DC Power

Infoblox offers the ability to change an AC-equipped Infoblox 4000 Series appliance to use DC power supply units (PSUs) by ordering field-replaceable unit DC PSUs (listed in [Table 10](#)). Should you choose to swap out an appliance's AC power supplies to use DC power supplies, follow these key points:

- You cannot convert an AC-equipped Infoblox 4000 Series appliance to NEBS compliance by swapping out AC power supplies for DC power supplies. You are simply changing the power factor of the appliance.
- Ensure that you have proper ground connections that connect to the ground lug screws on each DC PSU. These lug screws will be marked with a standard electrical ground symbol on each DC PSU, as labeled in [Figure 16](#).
- Your Infoblox 4000 Series appliance provides a ground lug, with two star washers and a ground lug screw, in the accessory kit bundled with your appliance. (This accessory is not used for AC power.) Ensure that this ground lug is properly installed with a grounding cable to chassis ground. For information, see [Ground Lug Installation \(DC Systems Only\)](#).

Important – Retain your original AC power supplies for possible future RMAs

- When you remove the AC power supplies for new DC power supplies, *ensure that you keep the original AC power supplies in a safe place for use in RMA situations.*
- For appliance RMAs, you must replace the DC power supplies in the appliance with its original AC power supplies *before* RMA shipment back to Infoblox.
- Keep your DC power supplies in your facility until you receive your replacement appliance.

Internal System Fan Replacement

System fans are field-replaceable units. Should a CPU fan assembly fail, an alarm will be raised by the system. Infoblox 4000 Series appliances require no tools for fan replacement.

Note: The Infoblox 4000 Series 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 fan assembly, do the following:

1. Perform a full system shutdown.
 2. Unplug all power cables from the system.
-

Note: Steps #1 and #2 are optional.

3. Extend or remove the Infoblox appliance from the rack.

4. Using the bundled star screwdriver, unscrew the latch (on the top rear of the unit) and gently pull latch to remove the top panel, as shown in [Figure 17](#).

Figure 17 Gently pull latch to remove top panel for Infoblox 4000 Series appliances

5. Slide the top panel off and visually inspect the fans to determine which unit has stopped spinning and must be replaced.

6. [Figure 18](#) shows a four-fan-module configuration. 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.

Figure 18 System fan removal; pull gently on top of the failed fan unit. Each unit is numbered.

7. Place the new fan in the system. The fans can be correctly installed in only one direction, as shown in [Figure 19](#).

Figure 19 Fan blades point towards rear of chassis for Infoblox 4000 Series

8. Replace the top lid of the system and replace it in the rack before restoring power.

Infoblox 4000 Series Replaceable Unit Part Numbers

[Table 10](#) lists field replaceable units for the Infoblox 4000 Series appliances, including the Network Insight ND-4000, the Advanced Appliance PT-4000 and the Trinzic Reporting 4000. It specifies unit compatibility and part numbers. Contact your Infoblox field representative or Infoblox Technical Support for more information.

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

Table 10 Infoblox 4000 Series Field-Replaceable Units

Field-Replaceable Unit	Part Number	Type	IB-4010	ND-4000	PT-4000	TR-4000
Infoblox 4000 Series AC PSU (Rev-2)	IB-4000-R2-PSU-AC	FRU only	Y	Y	Y	Y
Infoblox 4000 Series DC PSU (Rev-2)	IB-4000-R2-PSU-DC	FRU only	Y	Y	Y	Y
Infoblox IB-Type 3 Disk Assembly (Rev-2)	IB-4000-R2-DISK-HDD300	FRU only	Y	Y	Y	Y
Infoblox IB-4000 Series fan set (Rev-2)	IB-4000-R2-FAN	FRU only	Y	Y	Y	Y
Infoblox IB-4000 Series 14AWG AC Power Cord	IB-POWER-CORD-4K	Contact Infoblox Support	Y	Y	Y	Y

Infoblox 4000 Series SFP/SFP+ Transceivers

Infoblox offers SFP/SFP+ transceivers of various types for 1GbE and 10GbE networking applications. [Table 11](#) lists the Ethernet SFP transceivers that are compatible with Infoblox Ethernet SFP/SFP+ interfaces and basic guidelines for compatibility.

Table 11 Transceivers for 1GbE SFP and 10GbE SFP+ Support

Field-Replaceable Unit	Part Number	Type	IB-4010	ND-4000	PT-4000	TR-4000
Infoblox SFP+ Long Range 10GbE LR fiber Transceiver	IB-SFPPLUS-LR	FRU only	Y	Y	Y	Y
Infoblox SFP+ Short Range 10GbE SR fiber Transceiver	IB-SFPPLUS-SR	FRU only	Y	Y	Y	Y
Infoblox SFP 1GbE SX Fiber	IB-SFP-SX	FRU only	Y	Y	Y	Y
Infoblox SFP 1GbE Copper Interface Transceiver	IB-SFP-CO	FRU only	Y	Y	Y	Y

Finisar SFP 1GbE LR Fiber Single-Mode Transceiver	Finisar FTLF1318P3BTL	Not sold by Infoblox. Contact your distributor for availability	Y	Y	Y	Y
Cisco SFP+ 10GbE Copper Direct Attach (10GSFP+Cu) Cable	Cisco SFP-H10GB-CU5M	Not sold by Infoblox. Contact your distributor for availability	Y	Y	Y	Y
HP SFP+ 10GbE Copper Direct Attach (10GSFP+Cu) Cable	HPJ9283B	Not sold by Infoblox. Contact your distributor for availability	Y	Y	Y	Y

Infoblox 4000 Series International AC Power Cords

Infoblox offers replacement AC power cords for international markets as listed in [Table 12](#). For availability, contact your Infoblox sales representative.

Table 12 Infoblox 4000 Series International AC Power Cords

Infoblox Part Number	International Item Description
IB-POWER-CORD-4K-AUS	Power Cord, Infoblox 4000 series, Australia
IB-POWER-CORD-4K-BR	Power Cord, Infoblox 4000 series, Brazil
IB-POWER-CORD-4K-CL	Power Cord, Infoblox 4000 series, Chile / Italy
IB-POWER-CORD-4K-CN	Power Cord, Infoblox 4000 series, China
IB-POWER-CORD-4K-EU	Power Cord, Infoblox 4000 series, Europe
IB-POWER-CORD-4K-INDIA	Power Cord, Infoblox 4000 series, India
IB-POWER-CORD-4K-JP	Power Cord, Infoblox 4000 series, Japan
IB-POWER-CORD-4K-TW	Power Cord, Infoblox 4000 series, Taiwan
IB-POWER-CORD-4K-UK	Power Cord, Infoblox 4000 series, United Kingdom
IB-POWER-CORD-4K-US-OPT	Power Cord, Infoblox 4000 series, US (optional)