Infoblox Installation Guide 1405 Series Appliances

Trinzic TE-1405, TE-1415, and TE-1425

Advanced Appliance PT-1405

Network Insight ND-1405

Trinzic Reporting TR-1405
Introduction to the Infoblox 1405 Series

This guide provides an overview of the Infoblox 1405 Series appliances, and explains how to install and configure the system. The Infoblox 1405 series (TE-1415, TE-1415, TE-1425, PT-1405, ND-1405, TR-1405) are the lowest priced models to support advanced features including security analytics and the security appliances. This guide describes the unique features for each appliance model, and the hardware elements, installation and deployment information common to all models in the Infoblox 1405 Series. Consult the respective sections below for brief descriptions of the unique features for your specific appliance:

- Trinzic TE-1405, TE-1415, and TE-1425 Product Overview
- Infoblox Advanced Appliance PT-1405 Product Overview
- Network Insight ND-1405 Product Overview
- Trinzic Reporting TR-1405 Product Overview

You can configure and manage Infoblox 1405 Series appliances through the Infoblox Grid Manager, a GUI 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 1405 Series network appliances are Class A digital appliances per FCC regulations, and are RoHS and WEEE compliant.

**Note:** For electrical, environmental and system specifications for each Infoblox 1405 Series appliance model, see System, Environmental, and Power Specifications.
Trinzic TE-1405, TE-1415, and TE-1425 Product Overview

The Trinzic TE-1405, TE-1415, and TE-1425 are high performance network appliances that provide core network services, including DNS (Domain Name System), DHCP (Dynamic Host Configuration Protocol), IPAM (IP Address Management), and NTP (Network Time Protocol). The TE-1405, TE-1415, and TE-1425 appliances may operate as a Grid member or as a Grid Master, and can operate with a second appliance of the same model in high availability (HA) mode. You configure and manage these appliances through the Infoblox Grid Manager.

Key features of the TE-1405, TE-1415, and TE-1425 include the following:

- Support for Grid management and all administrative features for Infoblox IPAM, DNS, DDNS, DHCP, DNS Firewall, Advanced DNS Protection, and Threat Insight.
- High availability support.
- LOM (Lights Out Management) support.
- Replaceable hard disk drives.
- Hot-swappable AC power supplies.
- Additional AC power supply for a redundant 1+1 configuration.
- Optional DC power supplies.
- Optional 10GbE or 1GbE SFP+/SFP system configurations for fiber or copper support.

**Note:** You can make the Trinzic TE-1425 and TE-V1425 appliances compliant with CC (Common Criteria) and FIPS (Federal Information Processing Standard) 140-2 security standards. For more information, see [CC and FIPS for Trinzic TE-1425 and TE-V1425](#).
Infoblox Advanced Appliance PT-1405 Product Overview

The Advanced Appliance PT-1405 is a high performance Infoblox network appliance that supports the Infoblox ADP (Advanced DNS Protection) solution. With valid licenses installed, the PT-1405 appliance provides a hardware-accelerated solution to DNS security threats targeting DNS caching and authoritative applications. You configure and manage the PT-1405 appliance 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-1405 include the following:

- Four (4) active 1GbE 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.
- Optional 10GbE or 1GbE SFP+/SFP system configurations for fiber or copper support.
- Supports management through the Infoblox Grid.
- High availability support.
- LOM (Lights Out Management) support.
- Replaceable hard disk drives.
- Hot-swappable AC or DC power supplies in a redundant 1+1 configuration.

Note: The Advanced Appliance PT-1405 acts only as a Grid member.
Network Insight ND-1405 Product Overview

The Network Insight ND-1405 is a high performance network appliance that provides powerful 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, and end host devices. You configure and manage ND-1405 appliances through the Grid Manager. For more information about the discovery features and licensing, refer to the *Infoblox NIOS Administrator Guide*.

Key features of the Network Insight ND-1405 appliance include the following:

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

*Note*: The Network Insight ND-1405 does not support HA operation and acts only as a Grid member.
Trinzic Reporting TR-1405 Product Overview

The Trinzic Reporting TR-1405 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 TR-1405 and view reports through the Grid Manager. For more information about Reporting features and licensing, refer to the Infoblox NIOS Administrator Guide.

Key features of the TR-1405 appliance include the following:

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

**Note:** The Trinzic Reporting TR-1405 does not support HA operation and acts only as a Grid member.
**Infoblox 1405 Series Hardware Components**

The Infoblox 1405 Series platforms are 1-U appliances that you can efficiently mount in a standard equipment rack. For rack mounting information, see *Rack Mounting Procedures*.

### Appliance Front Panel

The front panel components include the LCD (liquid crystal display) panel and navigation buttons, communication ports, and LEDs, as shown in Figure 1 and described in Table 1. For explanations of Ethernet port LEDs, and console and Ethernet port connector pin assignments, see *Ethernet Port LEDs and DB-9 Console Port and RJ-45 Port Pinouts*.

**Figure 1 Infoblox 1405 Series, Front View**

The front panel components are described in Table 1.

**Table 1 Front Panel Components**

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hard Disk Drive(s)</td>
<td>The Trinzic TE-1405, TE-1415, TE-1425 appliances, and Advanced Appliance PT-1405 each provide one (1) Infoblox hard disk storage device. The Trinzic Reporting TR-1405 appliance, and Network Insight ND-1405 appliance provides two (2) hard disks in a RAID 1 array. Each disk drive has LEDs on the far left side of each drive carrier, that indicate the connection and activity status on the disk drive. The top LED flickers to blue when the disk drive is operational and performing read-write operations. The lower LED is dark (inactive) during all operations. Both drive LEDs are dark when the disk drive is not connected. You must use the Grid Manager UI or the NIOS CLI to verify disk operation. For more information, see <em>Evaluating the Status of the Disk Subsystem</em>.</td>
</tr>
<tr>
<td>On/Off Switch</td>
<td>A power switch to turn the power supply of the appliance on and off. The switch is hidden. Use a small blunt object, such as a paper clip, to gently push the switch.</td>
</tr>
<tr>
<td>Power LED</td>
<td>An LED that glows blue when there is power to the appliance. When it is dark, the appliance is not receiving power, even if the power cable is plugged in. When it glows red, there is an error. Ensure that you power on the appliance through the On/Off switch using a small blunt object, such as a paper clip.</td>
</tr>
<tr>
<td>IPMI Port</td>
<td>Dedicated Ethernet port used for LOM (Lights Out Management) with specific releases of NIOS. The IPMI/LOM Port supports 10/100/1000 Mbps operations. Ensure that the IPMI port is properly connected to the network before you configure LOM through Grid Manager for remote management. The IPMI port auto-negotiates up to Fast Ethernet 1000BASE-TX speeds; ensure that the switch port to which the IPMI port connects will auto-negotiate to 1000 Mbps operation.</td>
</tr>
<tr>
<td>USB Port</td>
<td>Reserved for future use.</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). 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 <em>Figure 4</em>.</td>
</tr>
<tr>
<td>MGMT Port</td>
<td>A 10/100/1000-Mbps gigabit Ethernet port that you can use for appliance management or DNS service. You can enable the MGMT port and define its use through the Grid Manager after the initial setup. <em>The Advanced Appliance PT-1405 must be managed through its MGMT port.</em></td>
</tr>
<tr>
<td>Port Type</td>
<td>Description</td>
</tr>
<tr>
<td>-----------</td>
<td>-------------</td>
</tr>
<tr>
<td>HA Port</td>
<td>A 10/100/1000-Mbps 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. ND-1405 and TR-1405 Reporting: The HA Port is inactive and reserved for future use.</td>
</tr>
<tr>
<td>LAN1 Port</td>
<td>A 10/100/1000-Mbps gigabit Ethernet port that connects the 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>
<tr>
<td>LAN2 Port</td>
<td>A 10/100/1000-Mbps gigabit Ethernet port that connects the appliance to the network. The LAN2 port is disabled by default. You can enable the LAN2 port and define its use through the Grid Manager after the initial setup.</td>
</tr>
<tr>
<td>UID Button</td>
<td>The unit identification button. When you press the UID button, the UID LED on the front and rear panel glows blue. In a rack environment, the UID feature enables easier location of a server when moving between the front and rear of the rack. You can also identify the appliance through the Grid Manager and CLI commands.</td>
</tr>
</tbody>
</table>

**CC and FIPS for Trinzic TE-1425 and TE-V1425**

The Trinzic TE-1425 and TE-V1425 appliances can be made compliant with CC and FIPS 140-2 security standards. Both CC and FIPS give assurance that the product satisfies a set of internationally recognized security measures. CC is a set of rules and specifications to evaluate the security of Information Technology (IT) products. FIPS is a U.S government computer security standard that is designed to validate product modules that use cryptography. This is necessary to maintain the integrity and confidentiality of the end-user information that is stored, processed, and transferred by the product module. To ensure that your appliance is CC and FIPS compliant, make sure that your hardware and software settings match the evaluated configuration that was certified for both CC and FIPS. For information about how to configure CC and FIPS, refer to the Infoblox NIOS Administrator Guide.

Infoblox provides tamper evident FIPS labels that you must affix on the HDD cover, all PSU canisters, over the IPMI port of the appliance to make it FIPS compliant. You must install the FIPS tamper evident labels correctly onto the device for compliance with FIPS. This label is valid for Trinzic TE-1425 appliances only.

Clean the chassis before affixing tamper evident FIPS labels. Apply these labels as shown in the figures below:

**FIPS label**

![FIPS label](image)

*Install a sticker on the drive bay cover as shown in the picture*

![FIPS label](image)

*Install a sticker on both of the back corners of the top cover as shown in this picture*
Install a sticker for each power supply module as shown in this picture.

Install a sticker covering the IPMI port as shown in this picture.

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

**Figure 2 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></td>
<td>Steady Yellow</td>
<td>Link is up but inactive</td>
</tr>
<tr>
<td></td>
<td>Blinking Yellow</td>
<td>Link is up and active</td>
</tr>
<tr>
<td></td>
<td>Dark</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>

**SFP/SFP+ Interface Support**

All models in the Infoblox 1405 Series support optional interface configurations to accept SFP transceiver modules, for 1GbE optical connectivity. To support connectivity to 10 Gigabit networking infrastructure, Infoblox also offers versions of the TE-1415, TE-1425, Network Insight ND-1405 and Trinzic Reporting TR-1405 that provide 10-Gigabit Ethernet (10GbE) interfaces accepting SFP+ transceiver modules for 10GbE RJ-45 copper or optical network connectivity. Figure 3 shows an Infoblox 1405 Series appliance with optical interfaces. Table 2 summarizes SFP and SFP+ support for appliance models in the Infoblox 1405 Series.

The TE-1415 and TE-1425 appliances support four active 10GbE interfaces in the optional 1GbE SFP and 10GbE SFP+ configurations. Other appliances in the Infoblox 1405 Series, comprising the ND-1405 and TR-1405, support three active interfaces in the optional 1GbE SFP and 10GbE SFP+ configurations. The port designated HA is inactive for these appliances. Order of ports from left to right is otherwise identical. The Infoblox PT-1405 operates only with 1GbE SFP interfaces, and supports HA.

**Note**

You cannot add SFP/SFP+ support after you have purchased an appliance model that does not have the SFP/SFP+ interfaces pre-installed. Contact your Infoblox representatives if you are interested in purchasing appliances that support SFP/SFP+ interfaces.

**Figure 3 Infoblox 1405 Series, Front View with Four SFP/SFP+ Interfaces**
In optional configurations for select Infoblox 1405 Series appliances, 1GbE SFP and 10GbE SFP+ ports replace the functionality in the original built-in MGMT, LAN1, HA and LAN2 ports, thereby disabling the built-in ports as indicated in Figure 3. 10GbE support accepts 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 use SFP and SFP+ transceivers in a mixed configuration in 4-Port 10GbE appliances. An example use case involves installing 10GbE SR SFP+ transceivers in the LAN1 and LAN2 ports for the TE-1405, TE-1415, or TE-1425 appliance, and installing 1GbE SFP copper transceivers in the MGMT and HA interfaces.

Table 2 SFP/SFP+ Appliance Support Summary

<table>
<thead>
<tr>
<th>Infoblox 1405 Series Model</th>
<th>SFP/SFP+ Support</th>
<th># of active SFP/SFP+ ports</th>
<th>10 GbE Support?</th>
<th>Accelerated 10 GbE Support?</th>
<th>HA?</th>
</tr>
</thead>
<tbody>
<tr>
<td>TE-1405, 1415, 1425</td>
<td>Y</td>
<td>4</td>
<td>Y</td>
<td>N</td>
<td>Y</td>
</tr>
<tr>
<td>ND-1405</td>
<td>Y</td>
<td>3</td>
<td>Y</td>
<td>N</td>
<td>N</td>
</tr>
<tr>
<td>TR-1405</td>
<td>Y</td>
<td>3</td>
<td>Y</td>
<td>N</td>
<td>N</td>
</tr>
<tr>
<td>PT-1405</td>
<td>SFP only</td>
<td>4</td>
<td>N</td>
<td>N^2</td>
<td>Y</td>
</tr>
</tbody>
</table>

1 – Optional 1 GbE or 10 GbE line card.
2 – Uses 1-GbE hardware acceleration for DNS security threats targeting DNS caching and authoritative applications

All models in the Infoblox 1405 series support the following part numbers:
- IB-SFPPLUS-LR
- IB-SFPPLUS-SR
- IB-SFP-SX
- IB-SFP-CO
- Finisar FTLF1318P3BTL
- Cisco SFP-H100G-CU5M
- HPJ9283B

Interface Connector Pin Assignments

An Infoblox appliance has three types of ports on its front panel:
- USB port (reserved for future use)
- Male DB-9 console port
- Four (4) RJ-45 10Base-T/100Base-T/1000Base-T auto-sensing gigabit Ethernet ports

*Figure 4* describes DB-9 and RJ-45 connector pin assignments. The 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.

*Figure 4 DB-9 Console Port and RJ-45 Port Pinouts*
TE-1405, TE-1415, TE-1425, PT-1405, and ND-1405 Appliance Rear Panel

Infoblox 1405 Series rear panel components include the power connectors, hard disk drive, fans, and the UID LED, as shown in Figure 5.

Figure 5 Infoblox 1405 Series, Rear View

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fans</td>
<td>A fan system (up to six fans depending on the models) to help maintain optimum operating temperature. Do not obstruct.</td>
</tr>
<tr>
<td>Feature</td>
<td>Description</td>
</tr>
<tr>
<td>--------------</td>
<td>----------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| UID LED      | Blue = UID is activated through pressing the UID button on the appliance  
               Blinking Blue = UID is activated through the Grid Manager or CLI command  
               Dark = UID is deactivated  
               When UID is activated, the LCD on the front panel blinks at the same time. |
| Power Supply | The 1405 Series appliances have two power supplies that provide redundancy. Each power supply has a power outlet for connecting the appliance to a standard AC or DC (Direct Current) power source. |
| Grounding Post | For DC installations, you securely connect a grounding wire to the chassis and to earth ground, which typically is the equipment rack on which you install the appliance. The mounting nut is placed on the grounding post for convenience. Remove the mounting nut, place the grounding wire connector onto the grounding post and replace the mounting nut. Ensure that it is snug. |
| Power LED    | The power indicator is blue if the power supply has power and is dark if it does not have power.                                            |
| Air Vent     | An air vent that allows warm air to flow out of the appliance. Do not obstruct.                                                             |
System, Environmental, and Power Specifications

System specifications describe the physical characteristics of the Infoblox 1405 Series appliances. Environmental specifications describe Infoblox 1405 Series temperature and moisture limits. Power specifications describe the electrical range within which the appliance circuitry can operate. Note that the Infoblox 1405 appliance models use the CR2032 battery.

Caution: Infoblox recommends provisioning power according to the AC or DC power specifications listed in the specifications below.

System Specifications

- **Form Factor**: 1-U rack-mountable appliance
- **Dimensions**: 44mm H x 441 mm W x 547mm D
- **Weight**: Approximately 20 lbs (9.07 kg)
- **Ethernet Ports**: MGMT, HA, LAN1, LAN2 – auto-sensing 10Base-T/100Base-T/1000Base-T
- **Serial Port**: DB-9 (9600/8n1, Xon/Xoff)
- **USB Port**: USB 3.0
- **Safety**: FCC, CE, TUV, CB, VCCI, C-Tick, KCC, CCC, NOM, BIS, EAC

Environmental Specifications

- **Operating Temperature**: 41 to 95 degrees F (5 to 35 degrees C)
- **Storage Temperature**: - 40 to 122 degrees F (-40 to 50 degrees C)
- **Operating Relative Humidity**: 5% to 95% (non-condensing)
- **Airflow CFM (Cubic Feet/Minute)**: 81 CFM
- **Airflow Direction**: Front-to-Back
- **Environmental Certification**: WEEE and RoHS

Power Specifications

- **AC Power Supply**: 100 to 240VAC 600W (Maximum)
  - **Rated Input Frequency**: 50 to 60 Hz
  - **Rated Input Current**: 7.5A at 100VAC, 3.5A at 240VAC
  - **Inrush Current**: <25 A max at 240VAC
  - **Maximum Heat Output (BTU/hour)**: 2355 Maximum
  - **Power Factor**: 0.98 at 100VAC/60Hz, 0.94 at 230VAC / 50Hz
- **DC Power Supply**: -48V 600W GRND TERM, RING, VIN 12-10 AWG #10
  - **Rated Input Voltage**: -48VDC
  - **Rated Input Current**: 18A max @ -44VDC, 10A max @ -65VDC
  - **Maximum Inrush Current**: <20A
  - **Maximum Heat Output (BTU/hour)**: 2355 Maximum

Power Consumption

**AC:**

- TE-1405-AC-Base: 246w
- PT-1405-AC-LE: 277w
- TE-1405-AC-1G Silicom: 274w
- TE-1405-AC-10G Silicom: 280w
- ND-1405-AC Base: 273w
- ND-1405-AC 1G Silicom: 284w
- ND-1405-AC 10G Silicom: 304w
- TR-1405-AC Base: 273w
- TR-1405 1G-AC Silicom: 284w
- TR-1405 10G-AC Silicom: 304w

**DC:**

- TE-1405-DC Base: 197w
- PT-1405-DC with Trillian LE: 222w
- TE-1405-DC with 1G Silicom: 209w
- TE-1405-DC with 10G Silicom: 224w
- ND-1405-DC Base: 232w
- ND-1405-DC 1G Silicom: 237w
- ND-1405-DC 10G Silicom: 257w
DC Power Cable Color Codes

DC power cables ship with a label describing each lead. Each label is located near the pigtail leads. Table 4 lists -48V DC power specifications. Note that no color coding standards exist for DC power connections. 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.

Table 4 -48V DC Power Connector

<table>
<thead>
<tr>
<th>Cable Pin</th>
<th>Cable Color</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Black</td>
<td>Positive Return</td>
</tr>
<tr>
<td>2</td>
<td>Red</td>
<td>Negative Input Voltage</td>
</tr>
<tr>
<td>3</td>
<td>Green/Yellow</td>
<td>Safety Ground</td>
</tr>
</tbody>
</table>

Fan FRU (Field-Replaceable Unit) SKU (Stock Keeping Unit)

The Infoblox 1405 Series appliances ship with inbuilt fans that can be replaced. The following table lists the fans supported on an Infoblox 1405 series appliance:

<table>
<thead>
<tr>
<th>SKU</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>T-PSU600-AC</td>
<td>FRU, Trinzic 1405, 2205, and 4005 Series AC Power Supply Unit, 600W</td>
</tr>
<tr>
<td>T-PSU600-DC</td>
<td>FRU, Trinzic 1405, 2205, and 4005 Series DC Power Supply Unit, 600W</td>
</tr>
</tbody>
</table>
Installing the Infoblox 1405 Series Appliance

Refer to the sections below to rack mount appliances in the Infoblox 1405 Series appliance, 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.
Rack Mounting Procedures

The Infoblox 1405 Series appliances mount into a standard 19" (48 cm) equipment rack. The appliances ship with accessory kits that contain the following: a pair of rack slide brackets and chassis slide rails, a pair of rack ears, eight (8) 10-32 screws, and eight (8) 8-32 screws. To mount the appliances to an equipment rack, you also need a #2 screwdriver with a cross-headed tip. Infoblox also offers an adjustable rail four-post rack mounting kits that you can order separately. There are three ways to rack mount Infoblox 1405 Series appliances:

- Two-post rack mount, as described in Two-Post Rack Mount.
- Four-post rack mount, as described in Four-Post Rack Mounting.
- Adjustable rail four-post rack mount, as described in Adjustable Rail Four-Post Rack Mounting.

Rack Mounting Safety Requirements

The following space and airflow requirements are required for Infoblox 1405 Series system operation:

- Minimum clearance of 63.5 cm (25 in) in front of the rack
- Minimum clearance of 76.2 cm (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.

Two-Post Rack Mount

To mount the appliance to an equipment rack and secure it at the rear rack posts:

1. Align the mounting holes on the rack ears with the rear-most mounting holes on each side of the chassis.
2. Attach each rack ear on each side of the chassis with two (2) 8-32 screws, as shown in Figure 6 (left-side rack ear shown). For two-post rack mounting, the ears are placed to fix the center of the appliance at the point where the rack ears fasten to the two-post rack, preventing strain on the chassis and maintaining a center of gravity.

3. With one person on each side, lift the appliance and position it in the equipment rack.
4. Attach each rack ear to the equipment rack with two (2) 10-32 screws on each side.

Four-Post Rack Mounting

**Caution**. The 600mm chassis rack rails kit provided with the Infoblox 1405 Series appliance provides only a limited range of travel. It does not extend across the entire depth of the equipment rack. Exercise caution when withdrawing the appliance from its position in the equipment rack.

For a four-post rack mount, you combine the bundled pair of rack ears with a pair of chassis rack rails providing up to 600mm depth in a four-post rack. The chassis rack rail assembly is bundled with the appliance at time of purchase. This kit also is provided as a field-replaceable unit; see Replaceable Unit and SFP Part Numbers in this Guide for information.

1. Align the mounting holes on the rack ears with the front-most mounting holes on each side of the chassis.
2. Attach a rack ear to each side of the chassis with two (2) 8-32 screws, as shown in Figure 7.
3. Slide the inner chassis slide rails out of the rack slide brackets, as shown in Figure 8.

4. Align the mounting holes on the chassis slide rails with the rear-most mounting holes on each side of the chassis. Ensure that you place the chassis slide rails in the correct orientation. Otherwise, the mounting holes do not align correctly.

5. Attach the chassis slide rails to each side of the chassis with two (2) 8-32 screws, as shown in Figure 7.

6. Select a desired location and secure the rack slide brackets to the rear posts of the equipment rack with two (2) 10-32 screws on each side of the rack.

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

8. Align the chassis slide rails on the appliance with the rack slide brackets on the posts of the equipment rack.

9. Slide the appliance into the rack slide brackets.

10. Secure the rack ears to the rack with two (2) 10-32 screws on each side of the rack.

### Adjustable Rail Four-Post Rack Mounting

Infoblox provides an adjustable four-post rail kit with 600mm to 900mm depth adjustment, designed to allow one person to perform physical installation of the rail kit and the appliance. This kit is provided as a field-replaceable unit; for information, see the section Replaceable Unit and SFP Part Numbers in this Guide.

The adjustable rail kit is designed for tight vertical spaces on the interior of a four-post rack, allowing for appliance installation in restricted rack spaces, including 1U of available rack space.

The adjustable rail kit includes the following items for installation:

- Eight (8) Flat-head beveled 8/32" screws that attach rail pieces to the appliance chassis
- Eight (8) Phillips-head 10/32" screws for affixing the rack rails to the four-post rack

The technician must provide four attachable cage nuts for adapting the square mounting holes on the rear posts of the four-post rack to accept the 10/32" screws.

To install the adjustable rail kit, do the following:

1. Install the cage nuts in the rear rack posts in the desired location, as indicated in Figure 9.
2. Fasten the catch tab of the rack rail on the front of the rack space designated for the appliance. Each rack rail (2) in the adjustable rail kit provides a metal catch tab on the front end of the rack rail. This catch tab fastens to a square mounting hole as shown in Figure 10.

1. Extend the rack rail assembly backwards, align the mounting holes on the chassis slide rails with the required cage nuts, and fasten the back end of the rack rail to the two cage nuts on the rear post of the designated space. As noted, the rack rail assembly has an extension range from the minimum of 600mm to a maximum of 900mm.
2. Perform Steps 2 and 3 for the second rack rail assembly.
3. Attach the chassis slide rails to each side of the chassis with four (4) flathead 8-32 screws, as shown in Figure 11.

6. Lift the appliance and position it in front of the equipment rack.
7. Align the chassis slide rails on the appliance with the rack slide brackets on the posts of the equipment rack.
8. Slide the appliance into the rack slide brackets.
9. Secure the rack ears to the rack with four (4) 10-32 screws on each side of the rack.
Powering the Appliance

The TE-1415, TE-1425, PT-1405 and ND-1405 appliances ship with one (1) AC power supply module or one DC power supply module. You can order an additional power supply to set up a redundant hot-swappable 1+1 configuration. In the 1+1 configuration, Infoblox recommends using the power cables that ship with the appliances to connect each power supply to separate power circuits. In the event of a power failure on one circuit, the appliances can then operate on the other circuit.

The Trinzic Reporting TR-1405 appliance provides a default 1+1 redundant power supply configuration.

Note: If your appliance comes with one power supply and an empty module, the single power supply must reside in the PSU #1 slot.

To power the appliance:

- 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 accessible.
Cabling the Appliance to a Network

Use one or more Category 5/6 Ethernet cables to connect the Infoblox 1405 Series appliance to the network.

1. Connect an Ethernet cable from the LAN1 port on the appliance to your network switch or router.
2. (For TE-1415 and TE-1425 appliances only) If you want to connect your appliance for HA (high availability), connect the LAN1 and HA ports on both appliances to a switch or router 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.

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. 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 or Guide for the steps to resolve the problem.

1. (Applies to Infoblox PT-1405, Trinzic TE-1415 and TE-1425 appliances) To ensure that VRRP (Virtual Router Redundancy Protocol) works properly, configure the following settings at the port level for all the connecting switch ports (HA, LAN1, and LAN2):
   - 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 1405 Series Appliance.
Accessing the Infoblox 1405 Series Appliance

The management system is the computer from which you configure and monitor the Infoblox appliance. You can access the appliance from the management system remotely across an Ethernet network or through a serial console cable. After completing the steps in Cabling the Appliance to a Network, you can make 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. Grid Manager supports only SSL version 3 and TLS version 1 connections. Infoblox recommends using the latest release of the supported versions of Internet Explorer, Mozilla Firefox or Google Chrome for best performance.

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 5 Hardware Requirements for the Management System

<table>
<thead>
<tr>
<th>Management System Hardware Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Recommended System:</td>
</tr>
<tr>
<td>2 GHz (or higher) CPU with at least 1 GB of RAM available for the Infoblox GUI, and network connectivity to an Infoblox appliance</td>
</tr>
<tr>
<td>• Monitor Resolution:</td>
</tr>
<tr>
<td>Minimum: 1280 x 768</td>
</tr>
<tr>
<td>Recommended: 1280 x 1024 or better</td>
</tr>
<tr>
<td>• CLI Access</td>
</tr>
<tr>
<td>Secure Socket Shell (SSH) client that supports SSHv2</td>
</tr>
<tr>
<td>Terminal emulation program, such as minicom or Hilgraeve Hyperterminal®</td>
</tr>
</tbody>
</table>

### Table 6 Management System Software Requirements

<table>
<thead>
<tr>
<th>OS</th>
<th>Browser</th>
</tr>
</thead>
<tbody>
<tr>
<td>Microsoft Windows 10®</td>
<td>Microsoft Internet Explorer® 11.x*, 10.x* Mozilla Firefox 39.x, 37.x, 32.x, 31.x, 25.x, 21.x, 16.x, and 10.x Google Chrome 43, 42, 41, 40, 37.x, 36.x, 30.x, 27.x, 22.x, and 16.x</td>
</tr>
<tr>
<td>Microsoft Windows 8.1 and 8.0®</td>
<td>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</td>
</tr>
<tr>
<td>Microsoft Windows 7®</td>
<td>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</td>
</tr>
<tr>
<td>Microsoft Windows XP® (SP2+)</td>
<td>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</td>
</tr>
<tr>
<td>Red Hat® Enterprise Linux® 7.x</td>
<td>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</td>
</tr>
<tr>
<td>Red Hat® Enterprise Linux® 6.x</td>
<td>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</td>
</tr>
<tr>
<td>Red Hat® Enterprise Linux® 5.x</td>
<td>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</td>
</tr>
<tr>
<td>Apple® Mac OS X 10.11.x</td>
<td>Safari 8.x, 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</td>
</tr>
<tr>
<td>Apple® Mac OS X 10.10.x</td>
<td>Safari 8.x, 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</td>
</tr>
<tr>
<td>Apple® Mac OS X 10.9.x</td>
<td>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</td>
</tr>
<tr>
<td>Apple® Mac OS X 10.8.x</td>
<td>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</td>
</tr>
<tr>
<td>Apple® Mac OS X 10.7.x</td>
<td>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</td>
</tr>
</tbody>
</table>

*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-1407. On the PT-1407 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 1405 Series appliance, through the Grid Manager, requires a network connection. Use the LAN1 port to connect to the appliance. For all Infoblox 1405 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.

LCD

The Infoblox appliance has an LCD and navigation buttons on its front panel. At startup, the Infoblox logo appears in the LCD on the front panel of the appliance. Then the LCD scrolls repeatedly through a series of display screens.

1. To change the network settings from the default, press one of the navigation buttons. The LCD immediately goes into input mode.
2. Use the navigation buttons to enter the IP address, netmask, and gateway for the LAN1 port.

You can disable LCD input functionality. To disable the LCD, refer to the Infoblox NIOS Administrator Guide.

Console Port

The Infoblox appliance has a male DB-9 console port on the front 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 1405 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 the 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 sent to the DHCP server if you reset the appliance using the CLI command reset all auto_provision or reset the database using the CLI command reset database auto_provision. 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 auto_provision.
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 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 and DHCP. For detailed instructions on configuring the appliance, refer to the Infoblox NIOS Administrator Guide.

1. Open an Internet browser window and enter https://<IP address or hostname of your 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. 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 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.

<table>
<thead>
<tr>
<th>Settings</th>
<th>Enter your information here</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grid Name Shared</td>
<td></td>
</tr>
<tr>
<td>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 member

**For an independent appliance

Use the following worksheet when configuring an independent HA pair:

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

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 NIOS 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 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.

For example:

```
Infoblox > help

? 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
```

To view 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 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.