

Infoblox Installation Guide

For the Infoblox-250 Appliance

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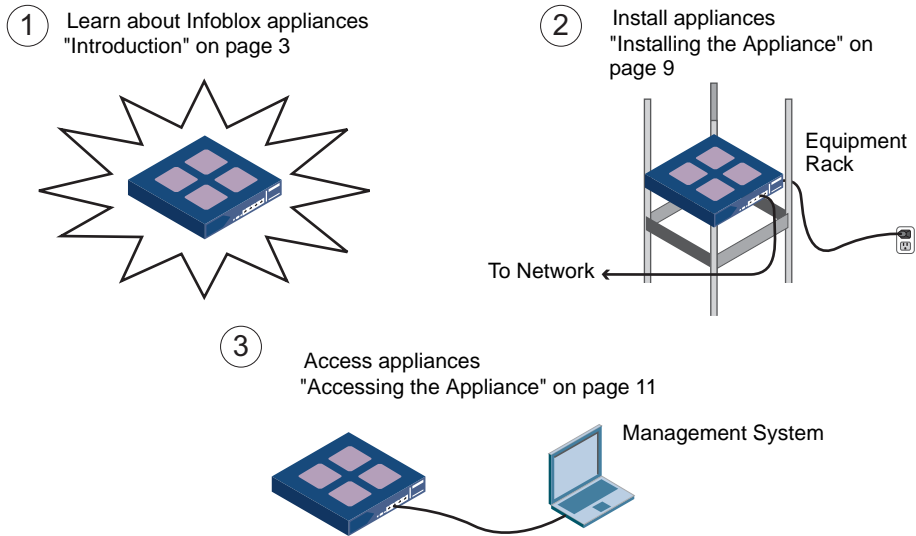
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Introduction

This guide provides an overview of the Infoblox-250 network services appliance running Infoblox NIOS version 4.1r2 and later, and explains how to install and configure it.

Figure 1 Tasks in This Guide



PRODUCT OVERVIEW

The Infoblox-250 appliance provides a cost-effective solution for branch offices, small and medium-sized businesses or retail operations that need an integrated, secure, and easy-to-manage DNS (Domain Name System), DHCP (Dynamic Host Configuration Protocol) and 802.1x RADIUS Network Authentication services. In addition to DNS, DHCP and RADIUS services, these devices also include TFTP (Trivial File Transfer Protocol), HTTP file transfer and NTP (Network Time Protocol) network services.

The Infoblox-250 supports all services of the larger Infoblox appliances (Infoblox-550, -1050, -1550, -1552 and -2000) except configuration as a grid master or grid master candidate.

You can configure and manage the Infoblox-250 appliance through an easy-to-use GUI that works seamlessly in both Windows and Linux environments using standard web browsers.

The Infoblox-250 appliance is WEEE compliant and RoHS compliant and its hardware meets the mechanical requirements for FIPS 140-2 compliance.

INFOBLOX-250 APPLIANCE

The Infoblox-250 appliance is a 1-U platform that you can easily mount in a standard equipment rack using the mounting brackets and bolts shipped with each device. The front panel components include communication ports and indicator lights. The back panel components include the power connector and switch, fan and air vent, and the model and serial number label.

Front Panel

The Infoblox-250 has the following ports (10/100/1000)—two LAN ports, one HA port, one management port, one console port, and one USB port. It does not have an LCD or keypad.

Figure 2 Infoblox-250 Front Panel

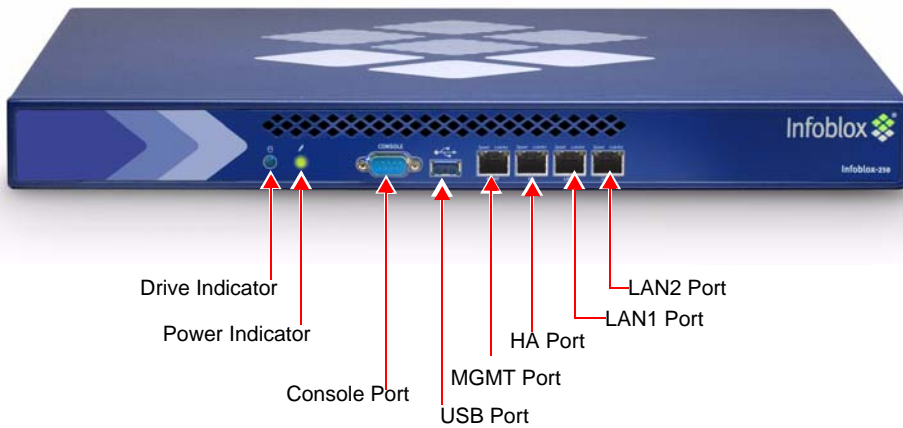


Table 1 Front Panel Components

Component	Description
USB Port	Reserved for future use.
Console Port	A male DB-9 serial port for a console connection to change basic configuration settings and view basic system functions through the CLI (command line interface). Use the serial cable and connection adapters that ship with the device to make a console connection to this port.
Drive Indicator	An LED that flashes green to indicate when the hard drive processes data.
Power Indicator	An LED that glows green to indicate when there is power to the device.
MGMT Port	The Infoblox-250 has a 10/100/1000-Mbps fast Ethernet port that you can use for device management or DNS service. You can enable the MGMT port and define its use through the GUI.
HA Port	A 10/100/1000-Mbps fast 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.
LAN Port	The LAN1 port on the Infoblox-250 is a 10/100/1000-Mbps fast Ethernet port that connects a single device to the network. If the MGMT port is not in use, a single Infoblox-250 uses the LAN1 port for management traffic. The passive node in an HA pair uses this port to synchronize the database with the active node.
LAN2 Port	Reserved for future use.

Ethernet Port LEDs

To see the link activity and connection speed of an Ethernet port, you can look at its Link/Act and Speed LEDs. The Speed LED is on the top-left of the port, and the Link/Act LED is on the top-right. These LEDs are labeled on the Infoblox-250. [Table 2](#) shows the port status that corresponds to the various LED colors and illumination (steady glow or blinking).

Table 2 LEDs

Infoblox-250

Label	Color	Port Status
Link/Act	Yellow	Link is up but inactive
	Blinking Yellow	Link is up and active
	Dark	Link is down

Label	Color	Port Status
Speed	Steady Amber	1000 Mbps
	Steady Green	100 Mbps
	Dark	10 Mbps

Connector Pin Assignments

The Infoblox-250 appliance has four types of ports on the front panel:

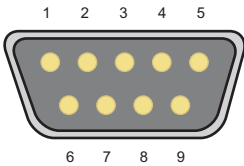
- USB port (reserved for future use)
- Male DB-9 console port
- RJ-45 10Base-T/100Base-T/1000Base-T Ethernet ports

Figure 3 shows the 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 the RJ-45 rollover cable and two female RJ-45-to-female DB-9 adapters that ship with the device, 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.

10Base-T Ethernet and 100Base-T fast Ethernet use the same two pairs of wires. The twisted pair of wires connecting to pins 1 and 2 transmit data, and the twisted pair connecting to pins 3 and 6 receive data. For 1000Base-T connections, all four twisted-pair wires are used for bidirectional traffic.

Figure 3 Connector Pin Assignments

Male DB-9 Console Port

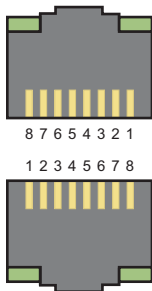


(Looking into the console port on an Infoblox device)

DB-9 Connector Pin Assignments

Pin	Signal	Direction
1	(not used)	
2	Receive	Input
3	Transmit	Output
4	DTE Ready	Output
5	Ground	—
6	DCE Ready	Input
7	RTS (Request to Send)	Output
8	CTS (Clear to Send)	Input
9	(not used)	

RJ-45 Ethernet Ports



(Looking into RJ-45 Ethernet ports on an Infoblox device)

RJ-45 Connector Pin Assignments

Pin	10Base-T 100Base-T Signal	1000Base-T Signal	T568A Straight-Through Wire Color	T568B Straight-Through Wire Color
1	Transmit +	BI_DA+	White/Green	White/Orange
2	Transmit -	BI_DA-	Green	Orange
3	Receive +	BI_DB+	White/Orange	White/Green
4	(not used)	BI_DC+	Blue	Blue
5	(not used)	BI_DC-	White/Blue	White/Blue
6	Receive -	BI_DB-	Orange	Green
7	(not used)	BI_DD+	White/Brown	White/Brown
8	(not used)	BI_DD-	Brown	Brown

Legend: BI_D = bidirectional; A, B, C, D = wire pairings

Rear Panel

Figure 4 shows the Infoblox-250 appliance rear panel components.

Figure 4 Infoblox-250, Rear Panel



Table 3 Rear Panel Components

Component	Description
Model and Serial Number	The model and serial number of the device.
Air Vent	An air vent that allows warm air to flow out of the device. Do not obstruct.
Fan	A fan to help maintain optimum operating temperature. Do not obstruct.
Power Outlet	A three-prong power outlet for connecting the device to a standard AC power source.
On/Off Switch	A power switch to turn the device on and off.

SYSTEM, ENVIRONMENTAL, AND POWER SPECIFICATIONS

Understanding the full range of specifications for the Infoblox-250 appliance is critical for maintaining and protecting the hardware from misuse. There are three types of specifications. System specifications describe the physical characteristics of the device. Environmental specifications describe the temperature and moisture limits the device can withstand. Power specifications describe the electrical range within which the device circuitry can operate.

System Specifications

- **Form Factor:** 1-U rack-mountable device
- **Dimensions:** 1.75” H x 17.25” W x 15” D (4.45 cm H x 43.82 cm W x 38.1 cm)
- **Weight:** Approximately 11 pounds
- **Ethernet Port:** Infoblox-250: MGMT, HA, LAN1, LAN2 – auto-sensing, auto-duplex 10/100/1000Base-T
- **Serial Port:** DB-9 (9600/8n1, Xon/Xoff)

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)
- Relative Humidity: 5% to 95%, relative humidity (non-condensing)

Electrical Power Specifications

- Input Voltage: 100 – 240 VAC switchable, 47 – 63 HZ, 3A
- Output Power: 250 watts
- Power plug and cable specifications by region:

Region	Plug Type	Cable Type	Maximum Power Rating	Maximum Temperature Rating
North America	NEMA5-15P 3-prong male plug	VCTF 3C 18 AWG	7A, 125 V	75° C
Japan	NEMA5-15P 3-prong male plug	VCFI 3G	12A, 125 V	60° C
Europe	CEE7 standard VII 2-prong male plug	H05VV-F	6A, 250 V	70° C
United Kingdom	LP-60L 3-prong male plug with fuse	H05VV-F	10A, 250 V	70° C

Installing the Appliance

Follow these instructions to rack mount the appliance, connect it to a power source, and cable it to a network. Review the Safety Guide and follow the necessary precautions before you start.

RACK MOUNTING

The appliance mounts into a standard 19" (48 cms) equipment rack. In addition to the screws and brackets that ship with the product, you also need a screwdriver with a cross-headed tip.

Attach the brackets to the appliance, and mount it to an equipment rack.

1. Remove the four screws that ship attached to the left and right sides of the appliance—two screws per side.
2. Remove the pair of brackets from the accessory kit that ships with the appliance.
3. Position one bracket so that the two holes in the bracket align with two of the holes on one side of the appliance.

Note: There are five evenly spaced holes on each side of the appliance. You can secure the brackets to any two adjacent holes so that you can mount the appliance more or less deeply in the rack.

4. Secure the bracket to the appliance with two of the screws that you removed previously.
5. Secure the second bracket in the same position on the other side of the appliance.
6. Using the screws from the accessory kit, attach the brackets to the equipment rack.

POWERING THE APPLIANCE

Use the power cable that ships with the Infoblox appliance to connect it to a power source.

1. Make sure the power switch on the appliance is turned off.
2. 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 the outlet is near the appliance and is easily accessible.
3. Turn on the power switch.

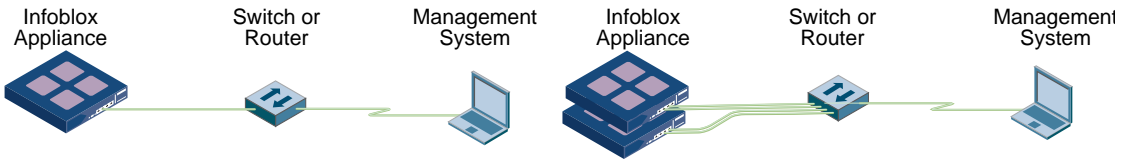
CABLING THE APPLIANCE TO A NETWORK

To connect the appliance to the network:

1. Connect an Ethernet cable from the LAN1 port on the Infoblox appliance to your network switch or router.
2. If you want to connect your appliance for HA (high availability), connect the HA ports on both appliances to the same switch or router used in step 1. The VIP (Virtual IP), LAN (or LAN1), and HA port addresses must be on the same subnet and must be unique for the subnet.

Note: The LAN2 port is reserved for future use.

Figure 5 *Cabling a Single Appliance and an HA Pair to a Network*



When cabling a single Infoblox appliance to the network, connect an Ethernet cable from the LAN1 port on the appliance to a switch or router.

When cabling a pair of Infoblox-250 appliances to the network for high availability, connect Ethernet cables from the LAN1 and HA ports on each appliance to a switch or router.

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

3. HA pair: To ensure that VRRP (Virtual Router Redundancy Protocol) works properly, configure the following settings on the connecting switch:
 - Portfast: enable
 - Trunking: disable
 - Port list: disable
 - Port channeling: disable
4. Use the Infoblox GUI to access the Infoblox appliance from a management system. Through the GUI, you can set up and administer the appliance. For management system requirements and access instructions, see [Accessing the Appliance](#) on page 11.

Accessing the 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 directly through a serial cable.

After completing the steps in [Cabling the Appliance to a Network](#) on page 10, you can make an HTTPS connection to the appliance and access the Infoblox GUI through JWS (Java Web Start) or make an SSHv2 connection and access the CLI through an SSHv2 client. You can also access the CLI by connecting a serial cable directly from the console port of a management system to the console port on the appliance, and then using a terminal emulation program.

The management system must meet the following requirements to operate an Infoblox appliance.

Table 4 Software and Hardware Requirements for the Management System

Management System Software Requirements	Management System Hardware Requirements
<p>GUI ACCESS</p> <ul style="list-style-type: none">• Microsoft Internet Explorer® 6.0 or higher on Microsoft Windows® 2000, Microsoft Windows XP®• or• Mozilla 1.7 or higher on Linux• Fedora, Red Hat• and• Sun® Java Runtime Environment (JRE) versions 1.5.0_06 through 1.5_xx• JWS application, which is automatically installed with JRE 1.5.0_06 through 1.5_xx <p>CLI ACCESS</p> <ul style="list-style-type: none">• Secure Socket Shell (SSH) client that supports SSHv2• Terminal emulation program, such as minicom or Hilgraeve Hyperterminal®.	<ul style="list-style-type: none">• Minimum System: 500 MHz CPU with 256 MB RAM available to the product GUI, and 56 Kbps connectivity to an Infoblox appliance• Recommended System: 1 GHz (or higher) CPU with 512 MB RAM available for the product GUI, and network connectivity to an Infoblox appliance• Monitor Resolution: 1024 x 768 (minimum)

CONNECTING TO THE APPLIANCE

Before you can configure the Infoblox appliance through the GUI, you must be able to make a network connection to it. The default network settings of the LAN1 port are 192.168.1.2/24 with a gateway at 192.168.1.1 (the HA and MGMT ports do not have default network settings). Use the console port to change these settings to suit your network.

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 Infoblox CLI.

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

Note: In the following commands, the variable *ip_addr1* is the IP address of the LAN1 port and *ip_addr2* is the IP address of the gateway for the subnet on which you set the *ip_addr1* address.

```
Infoblox > set network
```

```
NOTICE: All HA configuration is performed from the GUI. This interface is used only to  
configure a standalone node or to join a grid.
```

```
Enter IP address: ip_addr1
```

```
Enter netmask: [Default: 255.255.255.0]: netmask
```

```
Enter gateway address [Default: n.n.n.1]: ip_addr2
```

```
Become grid member? (y or n): n
```

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

SPECIFYING APPLIANCE SETTINGS

When you make the initial HTTPS connection to the Infoblox appliance, you see the Appliance Startup Wizard, which guides you through the basic deployment of the appliance on your network.

You can deploy a appliance individually or in an HA (high availability) pair for hardware redundancy. A single appliance or an HA pair without a Keystone 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. You can configure and monitor the grid 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.

Note: The Infoblox-250 appliance cannot be a master for a grid.

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, DHCP, and RADIUS. For detailed instructions on configuring the appliance, refer to the *Infoblox Administrator Guide*.

1. Open a browser window and make an HTTPS connection to the IP address of the LAN1 port.
2. Accept the certificate when prompted.

Several certificate warnings appear during the login process. This is normal because the preloaded certificate is self-signed (so, it is not in the trusted certificate stores in your browser, Java application, and Java Web Start application) and has the hostname `www.infoblox.com`, which does not match the destination IP address you entered in step 1. To stop the warning messages from occurring each time you log in to the GUI, you can 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, see the *Infoblox Administrator Guide*.

3. Click **Launch Grid Manager** or **Launch Device Manager**.
If the browser prompts you for an application to use, see [Infoblox GUI](#) on page 15.
4. Log in using the default user name `admin` and password `infoblox`.

Note: User names and passwords are case-sensitive.

The Infoblox Appliance Startup Wizard opens with a splash screen that provides basic information about the wizard, and then displays license agreement information. Beginning on the third screen, you enter basic network and deployment settings.

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

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

Settings	Enter your information here
IP address and netmask of the LAN1 port	
Gateway IP Address	
Host Name	
Local date, time, and time zone or NTP server IP Address	
Grid Master's IP address	
Grid Name	
Shared secret (For grid master and member)	

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

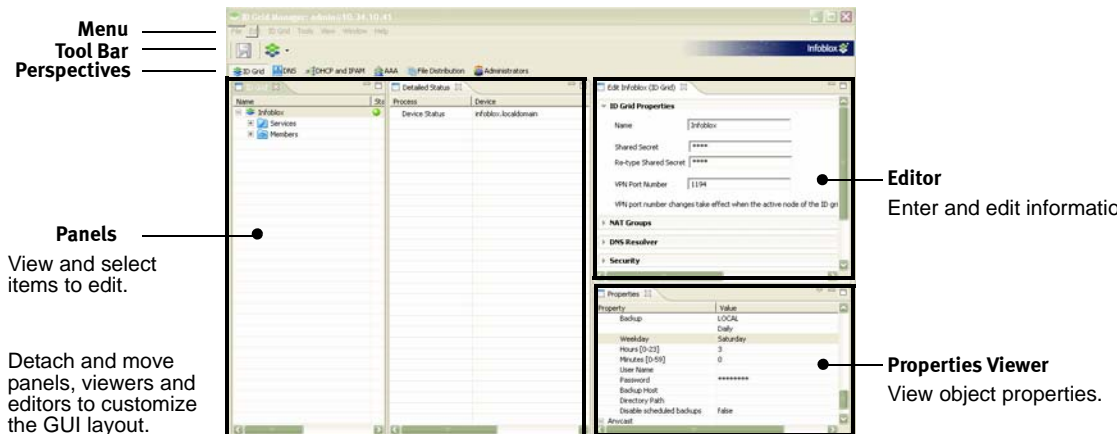
Settings	Enter your information here
VIP (Virtual IP) address and netmask	
Gateway IP Address	
Host Name	
Node 1: LAN/LAN1 IP address	
Node 1: HA Port IP address	
Node 2: LAN/LAN1 IP address	
Node 2: HA Port IP address	
Virtual Router ID	
Grid Name	
Shared secret	
Local date, time and time zone or NTP Server IP address	

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

INFOBLOX GUI

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

Figure 6 Infoblox GUI Overview



When you make an HTTPS connection to the appliance and access the Infoblox GUI through JWS, the Java installation typically associates JNLP file types with the JWS application automatically, although not in all UNIX environments. If the browser does not automatically associate a JNLP file with the JWS application, when you click **Launch Grid Manager** or **Launch Device Manager**, you receive a prompt. Internet Explorer running on a Windows system and Mozilla running on a Linux system provide different prompts:

Internet Explorer prompts you to save the JNLP file. Click **Cancel**, and make the file association as follows:

1. Click **Start** -> **Control Panel** -> **Folder Options** -> **File Types** -> **New**.
2. In the File Extension field, type **JNLP**, and then click **Advanced**.
3. From the Associated File Type drop-down list, choose **JNLP File**, and then click **OK**.
4. To close the *Folder Options* dialog box, click **Close**.
5. You can now continue logging in to the appliance.

Mozilla prompts you to save the JNLP file or choose an application to open it.

1. Select the **Open with** button, and then choose **Other** from the drop-down list.
2. Navigate to the Java directory—typically in a standard system directory like `/usr/java/` on Linux systems.
3. Open the `jre1.5.0_06` (or later) subdirectory, and select the JWS application, which is usually named *javaws*. Although the exact path and directory names can differ, it might be in a directory named *javaws* or *bin*.

INFOBLOX CLI

The Infoblox CLI allows you to configure and monitor the appliance using a small set of Infoblox commands. There are some tasks (such as resetting the appliance) you can only do through the CLI. You can access the Infoblox CLI through a direct console connection from your management system to the Infoblox appliance. For more information, see [Console Port](#) on page 12. You can also enable remote console access—SSHv2 (Secure Shell version 2) access—through the GUI or CLI, and then access the CLI from a remote location using an SSHv2 client. For more information, refer to the *Infoblox Administrator Guide*.

Using CLI Help

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

```
> help
dig          perform a DNS lookup and print the results
exit        exit command interpreter
dig          perform a DNS lookup and print the results
quit        exit command interpreter
help        display help
?           display help
delete      delete files
show        show current system settings
set         set current system settings
reboot      reboot appliance
shutdown    shutdown appliance
reset       reset system settings
rotate      rotate files
ping        send ICMP ECHO
traceroute  route path diagnostic
```

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

```
> help ping
Synopsis:
ping [ hostname | ip_address ] [ opt ]
    --[ opt ] is any of
        numerical          (avoid DNS lookups)
        from <src_addr>    (use src_addr as source address)

Description:
    Send 5 sequential ICMP ECHO requests to a remote host and display the results.
```

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