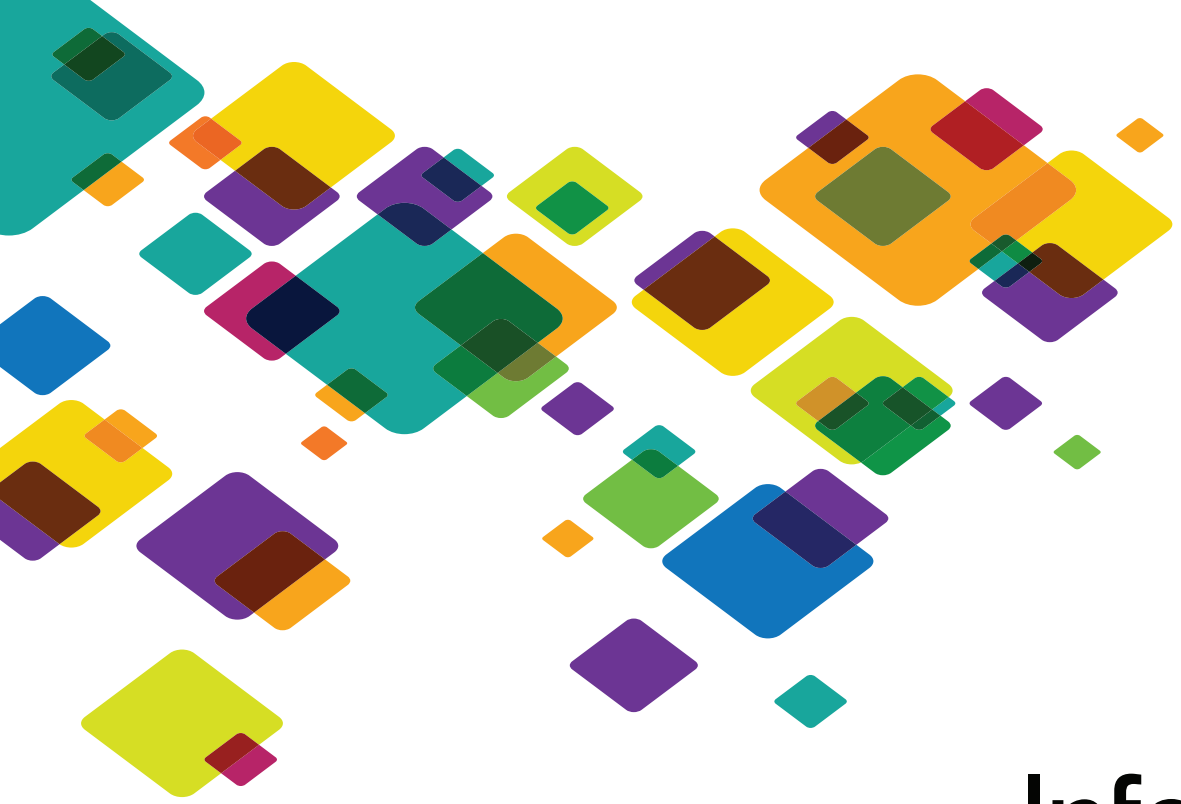

Infoblox
CONTROL YOUR NETWORK

Infoblox Installation Guide

vNIOS™ Software for Cisco

Copyright Statements

For Open Source Copyright information, see *Appendix C, Open Source Copyright and License Statements* in the *Infoblox NIOS Administrator Guide*.

Trademark Statements

Company Information

http://www.infoblox.com/contact/

Product Information

Document Number: 400-0190-000 Rev. G

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Warranty Information

Your purchase includes a 90-day software warranty and a one year limited warranty on the Infoblox appliance, plus an Infoblox Warranty Support Plan and Technical Support. For more information about Infoblox Warranty information, refer to the Infoblox Web site, or contact Infoblox Technical Support.

Contents

Preface

This guide describes how to install Infoblox vNIOS software on the Cisco service modules, Application eXtension Platform (AXP) and Services-Ready Engine (SRE), in Integrated Services Routers (ISRs). It also describes how to add these vNIOS appliances as members of an Infoblox Grid.

The preface describes the content and organization of this guide, how to find additional product information, and how to contact Infoblox Technical Support. It comprises the following sections:

Document Overview

This guide introduces the features of Infoblox Grids and Infoblox vNIOS software for Cisco. It describes how to install Infoblox vNIOS software on a Cisco AXP and SRE service modules, and how to configure it as a virtual Grid member.

This document does not describe the features of Cisco AXP or SRE service modules and ISRs. For information about the Cisco modules and products, refer to the Cisco documentation. For complete information about administering Infoblox NIOS software, refer to the *Infoblox NIOS Administrator Guide*.

For the latest Infoblox documentation, visit the Infoblox Support web site at https://support.infoblox.com.

Documentation Organization

This guide covers the following topics:

Chapter	Content
Chapter 1, Introduction, on page 9	Provides general information about Infoblox vNIOS software and Infoblox Grids.
Chapter 2, Installing vNIOS Software on Cisco AXPs and SREs, on page 13	Describes how to add a virtual Grid member to a Grid and install vNIOS software on Cisco AXP and SRE service modules.

Conventions

This guide follows the Infoblox documentation style conventions, as listed in the following table.

Style	Usage
bold	Indicates anything that you input by clicking, choosing, selecting, typing or by pressing on the keyboard.
`input`	Signifies command line entries that you type.
variable	Signifies variables typed into the GUI that you need to modify specifically for your configuration, such as command line variables, file names, and keyboard characters.

Navigation

Infoblox technical documentation uses an arrow "->" to represent navigation through the GUI. For example, to access member information, the description is as follows:

From the **Grid** tab, select the **Grid Manager** tab -> **Members** tab.

Related Documentation

Other NIOS appliance documentation:

- *Infoblox Administrator Guide*
- *Infoblox CLI Guide*
- *Infoblox API Documentation*
- *Infoblox User Guide for the Infoblox-1050, 1550, and 1552 Appliances*
- *Infoblox Installation Guide for the Infoblox-550, -1050, -1550, and -1552 Appliances*
- *Infoblox Installation Guide for the Infoblox-550-A, -1050-A, -1550-A, and -1552-A Appliances*
- *Infoblox Installation Guide for the Infoblox-250 Appliance*
- *Infoblox Installation Guide for the Infoblox-250-A Appliance*
- *Infoblox Installation Guide for the Infoblox-2000 Appliance*
- *Infoblox Installation Guide for the Infoblox-2000-A Appliance*
- *Infoblox Installation Guide for the Infoblox-1852-A Appliance*
- *Infoblox Installation Guide for the vNIOS on VMware Appliances*
- *Infoblox Installation Guide for the vNIOS on Riverbed Appliances*
- *Infoblox Safety Guide*

To provide feedback on any of the Infoblox technical documents, please e-mail *techpubs@infoblox.com.*

Customer Care

This section addresses user accounts, software upgrades, licenses and warranties, and technical support.

User Accounts

The Infoblox appliance ships with a default user name and password. Change the default `admin` account password immediately after the system is installed to safeguard its use. Make sure that the NIOS appliance has at least one administrator account with superuser privileges at all times, and keep a record of your account information in a safe place. If you lose the `admin` account password, and did not already create another superuser account, the system will need to be reset to factory defaults, causing you to lose all existing data on the NIOS appliance. You can create new administrator accounts, with or without superuser privileges.

Software Upgrades

Software upgrades are available according to the Terms of Sale for your system. Infoblox notifies you when an upgrade is available. Register immediately with Infoblox Technical Support at http://www.infoblox.com/support/customer/evaluation-and-registration to maximize your Technical Support.

Technical Support

Infoblox Technical Support provides assistance via the Web, e-mail, and telephone. The Infoblox Support web site at https://support.infoblox.com provides access to product documentation and release notes, but requires the user ID and password you receive when you register your product online at: http://www.infoblox.com/support/customer/evaluation-and-registration.

Chapter 1 Introduction

This chapter provides general information about the Infoblox NIOS software and Infoblox Grids. It includes the following topics:

About Infoblox vNIOS Software

Infoblox vNIOS for Cisco is a software package designed to be deployed on the Cisco ISR (Integrated Service Router) running the AXP (Application eXtension Platform) or SRE (Services-Ready Engine) service modules. It enables customers to deploy large, robust, manageable and cost effective Infoblox Grids. The Infoblox NIOS provides core network services and a framework for integrating all the components of the modular Infoblox solution. Infoblox NIOS software provides integrated, secure, and easy-to-manage DNS (Domain Name System), DHCP (Dynamic Host Configuration Protocol) and IPAM (IP address management) services. In addition to DNS, DHCP and IPAM, the NIOS software also provides TFTP, HTTP, NTP and FTP file transfer services.

Infoblox vNIOS software for Cisco provides most of the features supported by the NIOS software, with some limitations. (See *Appendix A, "Known Limitations",* on page 25.)

You can configure Cisco vNIOS appliances as single virtual Grid members in an Infoblox Grid. For information about Infoblox Grids, see *About Infoblox Grids* on page 10.

About Infoblox Grids

An Infoblox Grid is a group of two or more NIOS 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. A Grid consists of a master and at least one member. A Grid member can be a single appliance or an HA pair.

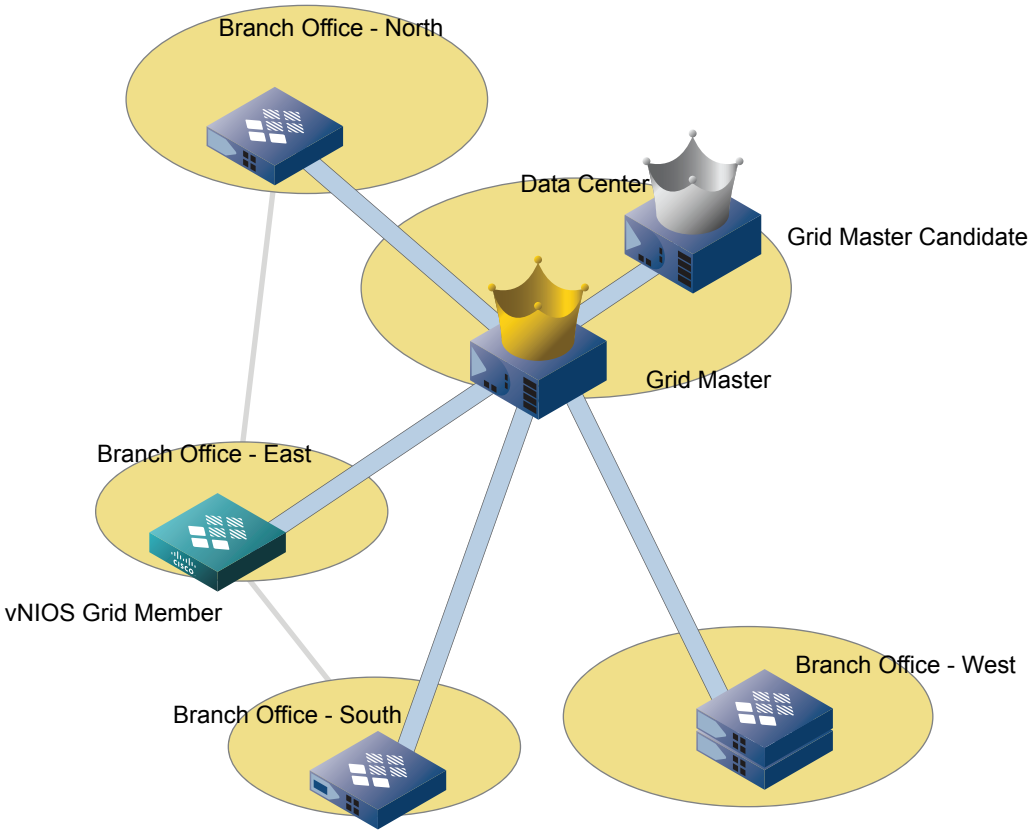
You can install Infoblox vNIOS software on a Cisco AXP service module in an ISR and configure it as a single virtual Grid member. The vNIOS appliance on Cisco does not support configuration as an HA pair, a Grid master, or a Grid master candidate.

If you are using a Cisco SRE service module in an ISR, you can install the Infoblox vNIOS software on the service module and configure it as a single virtual Grid member. vNIOS appliances on Cisco supports the following features:

- Configuration as an HA pair, a Grid Master, or a Grid Master candidate
- Anycast addressing
- The bloxTools Environment
- OSPF
- Static routes
- IPv6
- LAN2 port

The following figure illustrates a Grid with a vNIOS appliance on Cisco. In the illustration, the Grid master and the Grid master candidate are Infoblox HA pairs in the data center. The vNIOS appliance on Cisco is in a branch office, and the other Grid members are Infoblox appliances.

Figure 1.1 Infoblox Grid with a Virtual Grid Member



Setting Up a Grid

To create a Grid, you must first create a Grid master and then add members. To set up a Grid with vNIOS appliances as Grid members:

1. Configure the Grid master. You can configure either a single Infoblox appliance as a single Grid master or two appliances as an HA Grid master. You cannot configure a vNIOS on Cisco appliance as the Grid master. For information about how to set up a Grid, refer to the *Infoblox NIOS Administrator Guide*.
2. Provision Grid members on the Grid master. Define Grid member settings on the Grid master before you join the members to the Grid. For information, see *Adding the vNIOS Appliance to the Grid* on page 15.
3. Join members to the Grid. For information, see *Configuring and Joining the vNIOS Grid Member* on page 18.

Chapter 2 Installing vNIOS Software on Cisco AXPs and SREs

This chapter explains how to configure an AXP or an SRE service module and install the vNIOS software package, and how to add the vNIOS appliance to a Grid. It includes the following topics:

Supported Platforms

For AXPs:

The Infoblox vNIOS software package for Cisco can run on the following NME (Network Module Enhanced) AXP service modules installed in the 2800 and 3800 series ISRs (or using a hardware adapter, in the 2900 and 3900 series ISRs): NME-302, NME-502, and NME-522.

It can also run on the SRE-700 and SRE-900 service modules installed in the 2900 and 3900 series ISRs. The service module must have AXP OS 1.5.2 or later installed.

For SREs:

The Infoblox vNIOS software package for Cisco can run on the Cisco SRE Service Module, which must be installed either on the Cisco 2900 series or Cisco 3900 series ISRs.

The Cisco SRE-V software can also run on the SRE-700 and SRE-900 service modules installed in the 2900 and 3900 series ISRs. The service module must have SRE-V version 1.0.1 with OS 15.1(3)T or later installed.

Requirements

The following are required for installing the vNIOS software package on a Cisco AXP or an SRE service module:

- Download the vNIOS software package from the Infoblox Technical Support site. There is a vNIOS software package for NME modules and another one for SRE modules.

  The vNIOS software package is a compressed file (tar.gz) that contains the header (.pkg) and payload (.prt1) files. Decompress the compressed package file, and make sure that the header and payload files are in the same directory.

  Note: There are separate vNIOS software packages for Cisco AXP and Cisco SRE service modules.

- An FTP server that hosts the vNIOS software package. The following information is required:
  - FTP server IP address
  - FTP server user ID
  - FTP server password
  - Software package name
- A terminal emulation program, such as minicom or Hilgraeve Hyperterminal® is required for performing the initial CLI configuration on the virtual appliance.

Configuring vNIOS Appliances as Grid Members

You must set up a Grid before you configure a vNIOS appliance as a Grid member. For information about how to set up a Grid, see *Setting Up a Grid* on page 11.

To configure a vNIOS appliance as a Grid member:

1. Add the vNIOS appliance to the Grid, as described in *Adding the vNIOS Appliance to the Grid*.
2. Upload the vNIOS for Cisco software package to an FTP server. Note that FTP and FTPS are the only supported protocols for software installation on the AXP and SRE service modules.
3. Configure the AXP or the SRE service module and install the vNIOS for Cisco software package, as described in *Configuring the AXP Service Module and Installing the vNIOS Software* on page 16 and *Configuring the SRE Service Module and Installing the vNIOS Software* on page 20.
4. Configure and join the vNIOS member to the Grid, as described in *Configuring and Joining the vNIOS Grid Member* on page 18.

Adding the vNIOS Appliance to the Grid

Define the network settings of the vNIOS appliance on the Grid master.

1. Log in to the Grid master.
2. From the **Grid** tab, select the **Grid Manager** tab -> **Members** tab.
3. Expand the Toolbar and click **Add** -> **Add Grid Member**.
4. In the *Add Grid Member* wizard, enter the following and click **Next**:
   - **Member Type:** Specify the appliance type of the Grid member. Select **vNIOS**.
   - **Host Name:** Type the FQDN (fully qualified domain name) of the vNIOS appliance that you are adding to the Grid.
   - **Time Zone:** If the Grid member is in a different time zone from the Grid, click **Override** and select a time zone.
   - **Comment:** Optionally, enter additional information about the appliance, such as its location.
5. Enter the following information about the vNIOS appliance and click **Next**:
   - **Standalone Member:** Select this option.
   - **Address:** Type the interface IP address of the Cisco AXP or the SRE service module.
   - **Subnet Mask:** Choose the netmask for the subnet to which the Cisco AXP or the SRE service module connects.
   - **Gateway:** Type the IP address of the LAN interface of the Cisco ISR. The LAN interface serves as the default gateway of the AXP or the SRE service module interface.
6. Optionally, define extensible attributes. For information about extensible attributes, refer to the *NIOS Administrator Guide*.
7. Click **Save & Close** to add the vNIOS appliance to the Grid and close the wizard.

Note: For information about the NIOS CLI commands, refer to the *Infoblox CLI Guide*. For information on Grids and NIOS features, refer to the *Infoblox Administrator Guide*.

Configuring the AXP Service Module and Installing the vNIOS Software

These instructions assume that you have configured the ISR router on your network, and you are able to connect to the ISR router from your management station. (For information on configuring the ISR router, refer to the Cisco documentation.)

This section describes how to configure the Cisco AXP service module to host the vNIOS software package, including how to install the software package. The AXP service module has an internal and external interface. The vNIOS software package uses the internal interface only.

Infoblox recommends that you back up your existing configuration before proceeding.

Complete the following tasks on the ISR router:

1. Connect to the ISR router. Ensure that the AXP service module can receive broadcast packets, including DHCP requests. On a router that is connected directly to the network, use the `ip helper-address address` command to configure the router to forward broadcast packets to the AXP service module.

   In the following example, the router is a Cisco 3845 ISR, the gigabit Ethernet interface IP address is 10.34.28.2 with a /24 netmask, and the AXP service module IP address is 10.34.28.12.

   ```
   Router#configure terminal
   Enter configuration commands, one per line.  End with CNTL/Z.
   Router(config)#interface gigabitEthernet0/0
   Router(config)#ip address 10.34.28.10 255.255.255.0
   Router(config-if)#ip helper-address 10.34.28.12
   Router(config-if)#no shutdown
   Router(config)#exit
   ```

   Note: If the router is not directly connected to the network, configure the switch to which it is connected to forward the broadcast packets to the AXP service module.

2. Configure the Cisco AXP service module that hosts the vNIOS software package. When you configure the AXP service module, you must do the following:
   - Bind the AXP service module to an interface.
   - Set the IP address of the internal interface of the AXP service module.
   - Configure the gateway IP address. The gateway address is the IP address of the LAN interface of the ISR.

   In the following example, the LAN interface IP address is 10.34.28.2 and the AXP service module IP address is 10.34.28.12.

   ```
   Router(config)#interface integrated-service-engine1/0
   Router(config-if)#ip unnumbered gigabitEthernet0/0
   Router(config-if)#service-module ip address 10.34.28.12 255.255.255.0
   Router(config-if)#service-module ip default-gateway 10.34.28.2
   Router(config-if)#no keepalive
   Router(config-if)#exit
   ```

3. Add a host route /32 for the integrated service engine.

   In the following example, the AXP service module IP address is 10.34.28.12.

   ```
   Router(config)#ip route 10.34.28.12 255.255.255.255 integrated-service-engine1/0
   Router(config)#end
   Router#write
   ```

4. Connect to the AXP service module.

   In the following example, you are connecting to the AXP service module located in slot 1.

```
Router#service-module integrated-service-engine1/0 session
```

The first time you connect to the service module, the prompt changes to "se" plus the IP address of the service module, as follows:

```
se-10.34.28.12>
```

5. At the AXP service module prompt, do the following:
   - Specify the host name for the AXP service module in FQDN format. This is the host name of the Grid member.
   - Cisco vNIOS appliances do not automatically synchronize their time with the Grid master. Infoblox recommends that you configure the AXP service module to synchronize its time with the same NTP server as the Grid master. Alternatively, if the Grid master is configured as an NTP server, you can configure the AXP service module to use the Grid master as its NTP server.

   In the following example, the IP address of the NTP server is 10.34.75.11 and the host name of the Grid member is "cisco-member.infoblox.com".

```
se-10.34.28.12(config)>ntp server 10.34.75.11 prefer
se-10.34.28.12(config)>hostname cisco-member.infoblox.com
cisco-member.infoblox.com(config)>end
cisco-member.infoblox.com>copy running-config startup-config
```

   As shown in the preceding example, after you change the host name, the prompt of the AXP service module displays the host name.

6. Check the software packages installed on the AXP service module. Ensure that AXP OS 1.5.2 is installed before you install the vNIOS software package.

   The following example shows how to check the software packages installed on an AXP service module.

```
cisco-member.infoblox.com>show software packages

Installed Packages:
   - Installer (Installer application) (1.5.2.0)
   - vserialapi (Remote Serial Device support) (1.5.2)
   - axpsystemapi (AXP standard services(AXP SysInfo, SysOp, CLI API)) (1.5.2)
   - eventapi (IOS Event API) (1.5.2)
   - Bootloader (Primary) (Service Engine Bootloader) (2.1.16)
   - AXP (Virtual Server Development System) (1.5.2)
   - Infrastructure (Service Engine Infrastructure) (2.5.6.0)
   - Global (Global manifest) (1.5.2)
   - ios_mosipc (Cisco Multi-OS IPC support) (1.52.OMNI_TAHOE_20091104_PLUS_@_DT_REL)
   - iosapi (IOS CLI API) (1.5.2)
   - cli_plugin (CLI Plugin bundle to allow custom CLI plugin) (1.5.2)
   - axpos (AXP Reference OS) (1.5.2)
   - GPL Infrastructure (Service Engine GPL Infrastructure) (2.3.6.0)
   - Guest OS Environment (AXP Guest OS Environment) (Legacy)) (1.5.2)
   - Bootloader (Secondary) (Service Engine Bootloader) (2.1.16.0)
   - Core (Service Engine OS Core) (2.5.6.0)
   - ios_eemclient (IOS EEM Client Library) (EEM_AXP_T_BASE_1_20091204)
   - timezone (Time Zone Definitions) (1.0.2009g.1)
   - ios_snap (Structured Network API Support)(1.5.2.SNAP_REL_20091209)
Installed Plug-ins:
   - infoblox (Infoblox Virtual NIOS) (1.5.2)
   - app_dev (Application Debugging Add-on Package) (1.5.2)
```

7. Install the vNIOS software package that you downloaded from the Infoblox Technical Support site. Ensure that you downloaded the appropriate vNIOS software package for your AXP service module. There is a vNIOS software package for NME modules and another one for SRE modules.

The vNIOS software package for Cisco is a compressed file (tar.gz) that contains the header (.pkg) and payload (.prt1) files. If you have not done so, decompress the compressed package file. Make sure that the header and payload files are in the same directory. Specify the header file name when you enter the **`software install`** command; the payload file is automatically installed.

You must have information about the FTP server that hosts the vNIOS software package, including the user name and password. You must include the IP address and complete path to the location of the software.

In the following example, the vNIOS software package is on the FTP server, 10.34.0.141.

```
cisco-member.infoblox.com>configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
cisco-member.infoblox.com(config)>software download server url
ftp://10.34.0.141/public username anonymous password foo@bar
cisco-member.infoblox.com(config)>end
cisco-member.infoblox.com>copy running-config startup-config
cisco-member.infoblox.com>software install add nios-4.3r2-cisco.pkg nme-1.5.2.pkg
```

The installation process takes about five minutes. After the installation is complete, the appliance displays the following message:

```
infoblox started successfully
```

Configuring and Joining the vNIOS Grid Member

After you successfully install the vNIOS software on the AXP service module, connect to the vNIOS CLI and specify initial configuration settings.

1. Connect to the AXP service module and type the following commands to start the vNIOS CLI:

   ```
   cisco-member.infoblox.com>app-service infoblox
   cisco-member.infoblox.com(exec-infoblox)>connect console
   ```

   Note that if the vNIOS software does not completely boot up when you connect to the CLI, it displays the Emergency prompt: `Emergency >`. If this occurs, type **`exit`** at the prompt, and then wait a few minutes before reconnecting to the vNIOS CLI.

2. When the Infoblox NIOS login prompt displays, login with the default user name and password, as follows:

   ```
   login: admin
   password: infoblox
   ```

   The Infoblox prompt displays: `Infoblox >`

3. You must have valid licenses before you can configure the vNIOS appliance. To obtain permanent licenses, first use the `show version` command to obtain the serial number of the vNIOS appliance, and then visit the Infoblox Support web site at http://support.infoblox.com. Log in with the user ID and password you receive when you register your product online at: http://www.infoblox.com/support/product_registration.cfm.

   If the vNIOS appliance does not have the Infoblox licenses required to run NIOS services and to join a Grid, you can use the `set temp_license` command to generate and install temporary licenses. The appliance lists the available licenses, and you select those you need.

   ```
   Infoblox > set temp_license
      1. DNSone (DNS, DHCP)
      2. DNSone with Grid (DNS, DHCP, Grid)
      3. Network Services for Voice (DHCP, Grid)
      4. Add DNS Server license
      5. Add DHCP Server license
      6. Add Grid license
      7. Add IF-MAP service license
      8. Add Microsoft management license
      9. Add vNIOS license
   Select license (1-9) or q to quit:
   ```

For the vNIOS appliance, select **2** and **9**.

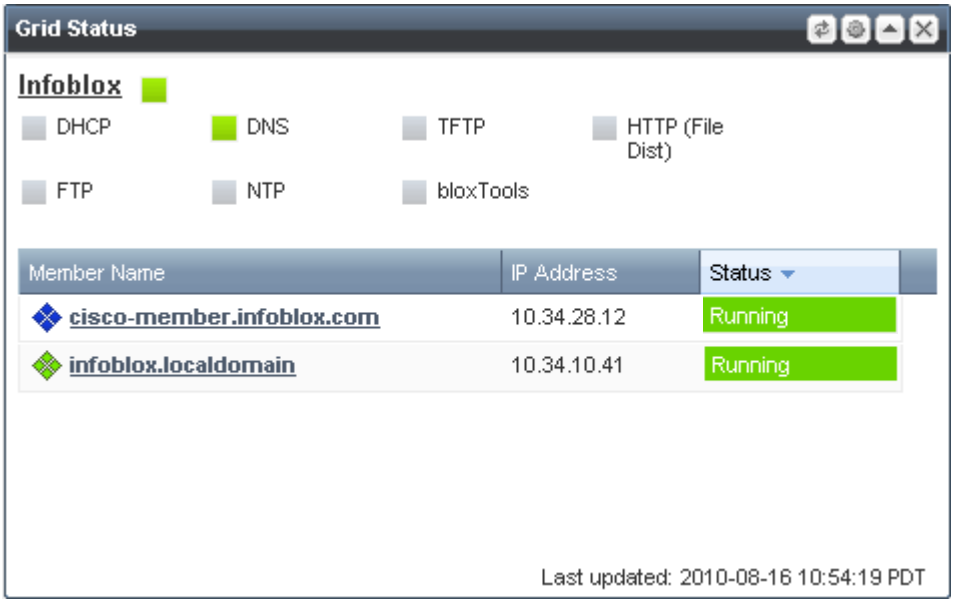
Note: You must have both the Grid and vNIOS licenses for the vNIOS appliance to join a Grid.

4. Use the `set membership` command to add the vNIOS appliance to the Grid, as follows:

```
Infoblox > set membership
Join status: No previous attempt to join a Grid.
Enter New Grid Master VIP: 10.34.10.41
Enter Grid Name [Default Infoblox]: infoblox
Enter Grid Shared Secret: secret
  Join Grid as member with attributes:
     Grid Master VIP:     10.34.75.2
     Grid Name:           infoblox
     Grid Shared Secret:  test
WARNING: Joining a Grid will replace all the data on this node!
        Is this correct? (y or n): y
        Are you sure? (y or n): y
NOTE: This node will not become an active member of the ID Grid
until it has been configured on the Grid master.
Good Bye
cisco-member.infoblox.com>exit
Router#exit
```

5. You can then connect to the Grid master and verify that the Cisco virtual member has successfully joined the Grid by viewing the *Grid Status* widget on the Dashboard, as shown in *Figure 2.1*.

Figure 2.1 Cisco Virtual Member in Grid



Configuring the SRE Service Module and Installing the vNIOS Software

These instructions assume that you have configured the ISR router on your network, and you are able to connect to the ISR router from your management station. For information about configuring the ISR router, refer to the Cisco documentation.

This section describes how to configure the Cisco SRE service module to host the vNIOS software package, including how to install the software package. The Cisco SRE service module uses the following interfaces to communicate with the host router: Console Manager interface, MGF (Multi-Gigabit Fabric) interface, and External Service Module interface. For information about interfaces, refer to the Cisco documentation.

Infoblox recommends that you back up your existing configuration before proceeding.

Complete the following tasks on the ISR router:

1. Connect to the ISR router. You must install the Cisco SRE service module on the router. Ensure that the Cisco router is running the appropriate Cisco IOS version and recognizes the Cisco SRE service module. Configure the internal interfaces between the Cisco SRE service module and the host router. This will allow you to access the service module to install and configure the Cisco SRE-V application. You must download and install the sre-v-k9-r.SPA.smv.2.0.1.pkg from the Cisco website. For information, refer to the Cisco documentation.

   In the following example, the router is a Cisco 3845 ISR, the gigabit Ethernet interface IP address is 10.34.28.2 with a /24 netmask, and the IP address of the SRE service module is 10.34.28.10.

```
Enter installation commands as mentioned below:
Router#enable
service-module sm 1/0 install url ftp://server.com/dir/sre-v-k9-r.SPA.smv.2.0.1.pkg
service-module sm 1/0 status
exit
Enter the following configuration commands, one per line. End with CNTL/Z.
Router(config)#configure terminal

Configure SM1/0 of the Console Manager:
Router(config)#interface SM1/0
Router(config-if)#interface unnumbered gigabitEthernet0/0
Router(config-if)#no service-module ip default-gateway
Router(config-if)#no service-module ip address
Router(config-if)#ip address 10.34.28.10 255.255.255.0
Router(config-if)#service-module ip address 10.34.72.18 255.255.255.192
Router(config-if)#service-module ip default-gateway 10.35.1.161
Router(config)#write
Router(config-if)#no shutdown
Router(config)#exit

Application: SRE-V Running on SMV:
Router(config-if)# service-module ip default-gateway 10.34.72.16
Router(config-if)# service-module mgf ip address 10.34.72.68 255.255.255.192
Router(config-if)# service-module mgf ip default-gateway 10.34.72.66
Router(config-if)# no keepalive
Router(config-if)# hold-queue 60 out
Router(config)#exit
```

```
Configure SM1/1 of the Console Manager:
Router(config-if)# interface SM1/1
Router(config)#exit

Router(config)#ip route 10.34.72.18 255.255.255.255 SM1/0
Router(config)#ip route 10.34.72.68 255.255.255.255 Vlan1
Router(config)#ip route 10.34.72.70 255.255.255.255 Vlan1
Router(config)#exit

Internal switch interface connected to Service Module
Router(config-if)# switchport mode trunk
Router(config-if)# no keepalive
Router(config-if)# hold-queue 60 out
Router(config)#exit

Configure VLAN1:
Router(config-if)# interface Vlan1
Router(config-if)# ip unnumbered GigabitEthernet0/1
Router(config-if)# ip default-gateway 10.36.0.1
Router(config-if)# ip forward-protocol nd
Router(config-if)# ip http server
Router(config-if)# ip http access-class 23
Router(config-if)# ip http authentication local
Router(config-if)# ip http secure-server
Router(config-if)# ip http timeout-policy idle 60 life 86400 requests 10000
Router(config-if)# ip route 0.0.0.0 0.0.0.0 10.36.0.1
Router(config)#exit
```

Note: If the router is not directly connected to the network, configure the switch to which it is connected to forward the broadcast packets to the SRE service module.

2. Download vSphere Client from https://hypervisor-ip-address, and then click Run. The VMware vSphere Client is installed on your system. You can click the VMware vSphere Client icon to open the login window.
3. To manage a single VMware vSphere Hypervisor™, enter the IP address or hostname of the VMware vSphere Hypervisor™ and the username and password, and then click **Login**. The vSphere Client GUI opens.

Note: If you are a first-time user of the VMware vSphere Hypervisor™, use **esx-admin** for the user name and **change_it** for the password. Infoblox highly recommends that you change the default password after the initial reboot.

4. Check the software packages installed on the SRE service module. Ensure that SRE-V OS 15.1(3) T is installed before you install the vNIOS software package.

   The following example shows how to check the software packages installed on an SRE service module.

   ```
   cisco-member.infoblox.com>show software packages
   ```

```
Installed Packages:

   - Installer (Installer application) (1.5.2.0)
   - vserialapi (Remote Serial Device support) (1.5.2)
   - eventapi (IOS Event API) (1.5.2)
   - Bootloader (Primary) (Service Engine Bootloader) (2.1.16)
   - SRE-V (Services-Ready Engine - Virtualization)

   - Infrastructure (Service Engine Infrastructure) (2.5.6.0)
   - Global (Global manifest) (1.5.2)
   - ios_mosipc (Cisco Multi-OS IPC support) (1.52.OMNI_TAHOE_20091104_PLUS_@_DT_REL)
   - iosapi (IOS CLI API) (1.5.2)
   - cli_plugin (CLI Plugin bundle to allow custom CLI plugin) (1.5.2)
   - GPL Infrastructure (Service Engine GPL Infrastructure) (2.3.6.0)
   - Bootloader (Secondary) (Service Engine Bootloader) (2.1.16.0)
   - Core (Service Engine OS Core) (2.5.6.0)
   - timezone (Time Zone Definitions) (1.0.2009g.1)
   - ios_snap (Structured Network API Support)(1.5.2.SNAP_REL_20091209)
Installed Plug-ins:

   - infoblox (Infoblox Virtual NIOS) (1.5.2)
   - app_dev (Application Debugging Add-on Package) (1.5.2)
   Install the vNIOS software package that you downloaded from the Infoblox Technical
   Support site. Ensure that you downloaded the appropriate vNIOS software package for
   your SRE service module. There is a vNIOS software package for SRE modules.
```

5. The installation process takes about five minutes. After the installation is complete, the appliance displays the following message:

   ```
   infoblox started successfully
   ```

Defining Network Settings on the vNIOS Appliance

After you successfully install the vNIOS software on the SRE service module, connect to the vNIOS CLI and specify initial configuration settings.

1. From the vSphere Client, select the vNIOS instance.
2. Click **Inventory -› Virtual Machine -› Open Console**.
3. Click anywhere in the console screen to activate the console. (To recapture the cursor at any time, press CTRL+ALT.)
4. When the Infoblox NIOS login prompt displays, login with the default user name and password, as follows:

   ```
   login: admin
   password: infoblox
   ```

   The Infoblox prompt displays: `Infoblox >`
5. You must have valid licenses before you can configure the vNIOS appliance. To obtain permanent licenses, first use the `show version` command to obtain the serial number of the vNIOS appliance, and then visit the Infoblox Support web site at http://support.infoblox.com. Log in with the user ID and password you receive when you register your product online at: http://www.infoblox.com/support/product_registration.cfm.

   If the vNIOS appliance does not have the Infoblox licenses required to run NIOS services and to join a Grid, you can use the `set temp_license` command to generate and install temporary licenses. The appliance lists the available licenses, and you select those you need.

   ```
   Infoblox > set temp_license
      1. DNSone (DNS, DHCP)
      2. DNSone with Grid (DNS, DHCP, Grid)
      3. Network Services for Voice (DHCP, Grid)
      4. Add DNS Server license
      5. Add DHCP Server license
      6. Add Grid license
   ```

```
   7. Add IF-MAP service license
   8. Add Microsoft management license
   9. Add vNIOS license
Select license (1-9) or q to quit:
```

For the vNIOS appliance, select **2** and **9.**

Note: You must have both the Grid and vNIOS licenses for the vNIOS appliance to join a Grid.

6. Use the CLI command `set network` to configure the network settings.:

```
Infoblox > set network

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

Enter IP address: 10.36.0.200

Enter netmask: [Default: 255.255.255.0]: 255.255.255.0

Enter gateway address [Default: 10.1.1.1]: 10.36.0.1

Become grid member? (y or n): y

Ensure that the initial IP address settings are reachable from your management system.
After you confirm the network settings, the Infoblox application in the VM
automatically restarts.

You configure the vNIOS appliance in the next procedure.
```

After you configure the vNIOS appliance, you can check its status on the Dashboard and in the **Grid** tab -› **Members** tab in Grid Manager as shown in *Figure 2.1*.

Appendix A Known Limitations

vNIOS appliances on Cisco support most of the features of the Infoblox NIOS software, with the following limitations:

- vNIOS appliances on Cisco can function as independent appliances and as Grid members. They do not support configuration as an HA (high availability) pair, a Grid master, or a Grid master candidate.
- The Cisco AXP service module has an internal and external interface. The vNIOS software package uses the internal interface only. You cannot configure the speed and transmission type (full or half duplex) of the network interface.
- You can use the traffic capture tool of the vNIOS software package to capture traffic only on the LAN port of the vNIOS appliance.
- vNIOS appliances on Cisco provide SSH access on port 2222, instead of port 22.
- vNIOS appliances on Cisco do not support monitoring the following: CPU temperature, fan speed, and system temperature.
- vNIOS appliances on Cisco do not automatically synchronize their time with the Grid master. You must configure the Cisco AXP or SRE service module to synchronize its time with the same NTP server as the Grid master. Alternatively, if the Grid master is configured as an NTP server, you can configure the Cisco AXP or SRE service module to use the Grid master as its NTP server.
- vNIOS appliances on Cisco do not support the following features:
  - IP address configuration through the vNIOS console and the GUI
  - Anycast addressing
  - Configuration as a DHCP lease history logging member
  - Configuration as a RADIUS accounting server
  - Dedicated MGMT port
  - Static routes
  - IPAM WinConnect
  - VitalQIP
  - IPv6
  - The bloxTools Environment