Installing and Using the vNIOS Trial

The vNIOS Trial is a software package designed for efficient evaluation of the Infoblox vNIOS appliance platform. Providing the complete suite of DNS, DHCP and IPAM functionality offered through standard Infoblox NIOS appliances and commercial vNIOS software, the vNIOS Trial offers a convenient way to evaluate the complete Infoblox system, including the following functionality:

- Provision highly reliable and resilient DHCP and DNS services
- Monitor IP network vital signs through a comprehensive, real-time dashboard
- Use Network Discovery to visually map and assist with tracking and troubleshooting IP address assignments
- View closed-loop automation that dynamically synchronizes moves, adds and changes between DHCP, DNS and other IPAM functions
- Manage Microsoft DHCP and DNS services hosted on Microsoft servers
- Demonstrate the Infoblox network management system, which uses a distributed database and multiple appliances in an enterprise network, supporting high availability (HA) redundant master pairs and member pairs
- Supervise migrations to IPv6 with capabilities such as dual stack IPv4/ IPv6 IP address management, visual IP mapping, and support for DNS AAAA records for IPv6 DNS resolution.

vNIOS Trial software runs on the VMware® ESX/ESXi™ server platform.

This document describes how to install and deploy vNIOS Trial appliances and configure them as evaluation Infoblox appliances, and as evaluation High Availability (HA) grid masters. This document also describes how to upgrade vNIOS trial appliances to a fully licensed version.

This document covers the following topics:

About vNIOS Trial Software

The Infoblox NIOS provides core 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, and FTP file transfer services.

Infoblox vNIOS software for VMware provides most of the features supported by the NIOS software, with some limitations. (For more information, see *Known Limitations* on page 8.) The vNIOS trial software enables customers to evaluate the possible deployment of virtual machines running the NIOS platform software.

The vNIOS Trial software provides a pre-installed time-limited 60-day license to operate the software.

vNIOS trial appliances are installed on VMware virtual machines running ESX or ESXi servers 4.0 and later. *Table 1.1* lists the vNIOS trial appliance model and its specifications:

Table 1.1 vNIOS Appliance Model

Equivalent vNIOS Appliance Type	# of CPU Cores	Memory Allocation (GB)	Virtual CPU Core Frequency	Hard Disk (GB)
VM-25	1	2	2 GHz	120

Requirements

The Infoblox vNIOS software package runs on a virtual machine snapshot image installed on VMware® ESX® or ESXi® 4.x servers. The following items are required for installing the vNIOS software package on a VMware ESX or ESXi server:

- The vNIOS software package, that you download from the Infoblox Web site. The vNIOS software package consists of three files:
  - A virtual disk file (.vmdk) that stores the contents of the hard disk drive for the vNIOS appliance.
  - An OVF (Open Virtualization Format) template file (.ovf) for the supported vNIOS appliance models. An OVF template is a VMware virtual machine the contains the software that will be run on the VM; in this case it is the vNIOS Trial software.
  - A manifest file (.mf) associated with the vNIOS virtual machine image.

    All three files (.mf, .vmdk and .ovf files) must be in the same directory. You may deploy the vNIOS trial software package from a remote web server or a local file system accessible from a management system.
- A minimum of 125 GB of available disk space on the VMware ESX server datastore.
- A management system that has a VMware vSphere Client installed. To manage one or more vNIOS Trial hosts, the vSphere Client must be connected to the vCenter ESX Server system.
- A network with at least one available IP address. The vNIOS trial requires a statically assigned IP address and does not use the DHCP protocol.
- A mechanism for backing up data generated from usage of the vNIOS Trial software.
- A strong understanding of where the vNIOS Trial instance will operate in the data center environment. Once a vNIOS Trial instance is fully licensed, it cannot be moved from its location. (For more information, see the section *Upgrading vNIOS Trials to a Fully Licensed Version* on page 7.)

SETTING UP A VNIOS TRIAL APPLIANCE

Note: A demonstration data set is provided with the vNIOS Trial software, which can be loaded into the trial appliance during configuration.

Before setting up a vNIOS trial, you must install the virtual appliance on the VMware platform. The instructions in this section assume an active VMware ESX/ESXi 4.x server on the network, and the ability to connect to the server from your management station. (For information on configuring the VMware server, refer to the VMware documentation.) Infoblox recommends that you back up your existing configuration before proceeding.

To deploy a vNIOS trial appliance on a VMware server, log in to the vSphere Client, connect to the ESX or ESXi server, and then complete the following:

- Install the vNIOS trial software package on the ESX/ESXi server. For information, see *Installing the vNIOS Trial Appliance*.
- Configure the NIC (Virtual Network Adapter) of the vNIOS trial appliance. For information, see *Powering on the vNIOS Trial Appliance* on page 4.
- Power on the vNIOS trial appliance. For information, see *Powering on the vNIOS Trial Appliance* on page 4.

Installing the vNIOS Trial Appliance

1. Download the vNIOS Trial software package from the Infoblox Technical Support web site.

Note: Make sure to keep the downloaded .OVF and .VMDK files in a safe place!

2. From the vSphere Client, click **File** -› **Deploy OVF Template** to start the *Deploy OVF Template* wizard, as shown in *Figure 1.1*.

Figure 1.1 Deploy OVF Template Wizard (page may appear differently based on the software release)

Enter the file URL or the directory path here
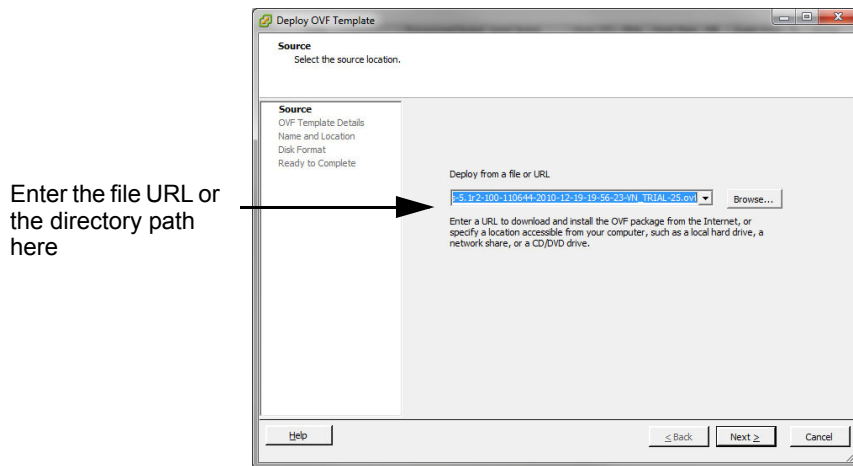
3. Depending on the download location of the vNIOS software package, click **Browse** to locate the .ovf file from the local file system, or enter a URL path to load the file from a remote web server. Click **Next**.
4. Verify the OVF template file details and click **Next**.
5. Specify a name for the vNIOS instance and click **Next**.
6. Click **Next** to keep the Network Mapping defaults.
7. Verify the information in the summary screen and click **Finish**. A vSphere dialog box presents messages while the deployment is being carried out. You can press **Cancel** at any time.

   Both the .vmdk and .ovf files are installed. A *Completed Successfully* message appears after installation is complete.

8. Click **Close** to close the dialog box.

9. To verify installation of the new virtual machine, click the **Virtual Machines** tab in the vSphere client.

Powering on the vNIOS Trial Appliance

1. In VMware vSphere, select the vNIOS instance.

2. Click **Inventory** -› **Virtual Machine** -› **Power** -› **Power On**.

Defining Network Settings on the vNIOS Trial Appliance

Note: In many cases, it may be preferable to perform only basic IP configuration using the `set network` command, as shown below, and use the Grid Manager (Trial Version) software to perform the primary network configuration tasks.

After you successfully install the vNIOS software package on the VMware server and power on the vNIOS appliance, you connect to the vNIOS CLI and specify the initial network 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 login prompt appears, log in with the default user name and password.

   ```
   login: admin
   password: infoblox
   ```
   The Infoblox prompt appears:

   ```
   Infoblox >
   ```

5. 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 Trial appliance in the next procedure.

Finishing Setup of the vNIOS Trial Appliance

The primary configuration for a vNIOS Trial appliance is to act as a standalone appliance. You can load a demonstration data set to evaluate the complete functionality of the vNIOS system.

1. On your management system, open a new browser window, and connect to https://*ip_addr*, where *ip_addr* is the address of the LAN1 port on node 1 (the IP address you just defined through the **set network** command).

2. Log in using the default user name **admin** and password **infoblox**. Both strings are case-sensitive.

3. Review the End-User License Agreement and click **I Accept**. The Infoblox Grid Manager software starts up, displaying the Grid Setup wizard.

4. In the Grid Setup wizard, select **Configure a Grid Master** (this is the default for creating your new vNIOS instance) and click **Next.**

5. Complete the following to specify the grid properties, and then click **Next:**
   — **Grid Name:** Enter a text string, such as `TestLabWest`. The default grid name is **Infoblox**.
   — **Shared Secret:** Enter a text string that the appliance will use as a shared secret. The default shared secret is **test**.
   — **Show Password:** Select this to display the password. Clear the check box to conceal the password.
   — **Hostname:** Enter a valid domain name for the appliance, or retain the **infoblox.localdomain** hostname as the default.
   — **Is the Grid Master an HA pair?:** Select **No.**

6. Complete the following to configure the network settings, and then click **Next:**
   — **IP Address:** Displays the IP address of the LAN port for the Grid Master.
   — **Subnet Mask:** Displays the subnet mask of the LAN port.
   — **Gateway:** Displays the IP address of the gateway of the subnet on which the LAN port is set.
   — **Port Settings:** The default is **Automatic.** You cannot change port settings for vNIOS appliances.

7. Optionally, enter a new password and click **Next.** The password must be a single alphanumeric string (no spaces) that is at least four characters long.

8. Optionally, set a new admin password for the VM, then click **Next.**

9. Select the time zone of the grid master and indicate whether the grid master synchronizes its time with an NTP (Network Time Protocol) server, and then click **Next.**
   — If you choose to enable NTP, click the Add icon and enter the IP address of an NTP server. You can enter IP addresses for multiple NTP servers.
   — If you choose to disable NTP, set the date and time for the appliance.

10. In the Data Configuration page, select one of the following options:

Note: Infoblox recommends loading the demonstration data set to help evaluate how the vNIOS system works, and to gain insight into the various functions for DHCP, DNS and IPAM.

   — **Add No Data:** finish configuring the vNIOS instance without loading any test data.
   — **Load Demo Data Set:** Load the demonstration data set included in the vNIOS Trial software package.
   — **Launch Wizard to Setup.** Allows you to select the method by which data configuration will be carried out: by **Microsoft Server Management** and/or by **Network Discovery.** Both choices can be activated. If no choice is made, network discovery is the default.

Figure 1.2 Defining the Data Configuration
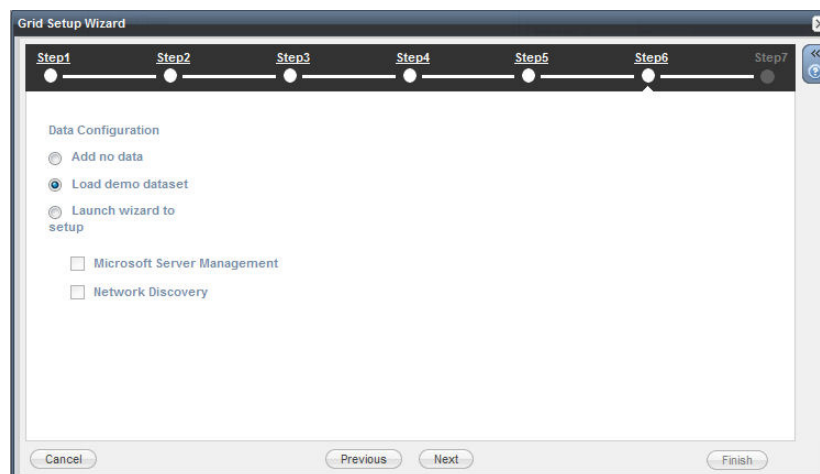
When the data configuration is complete, click **Next.**

11. The final screen displays the settings from the previous panels of the wizard, and states that changed settings require the appliance to restart. Verify that the information is correct and click **Finish**. The application restarts.

Note: The *Grid Setup* wizard provides options such as retaining the default password and manually entering the time and date. Changing the password and using an NTP server improves security and accuracy (respectively), and Infoblox recommends changing these settings accordingly. Record and retain this information in a safe place. If you forget the shared secret, contact Infoblox Technical Support for help. When you add an appliance to the grid, you must configure it with the same grid name, shared secret, and VPN port number that you configure on the grid master.

You are now ready to begin using the vNIOS Trial appliance. The vNIOS software also provides online Help for all technical aspects of the appliance.

VERIFYING AND MONITORING

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

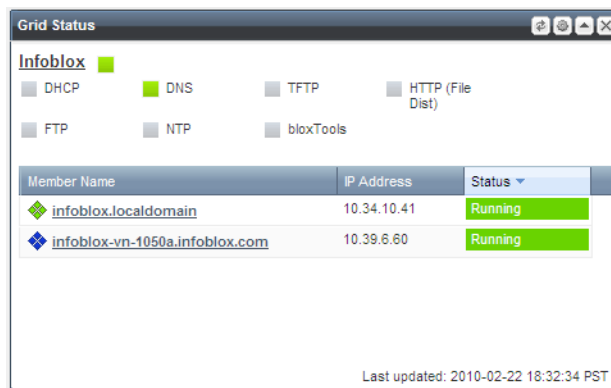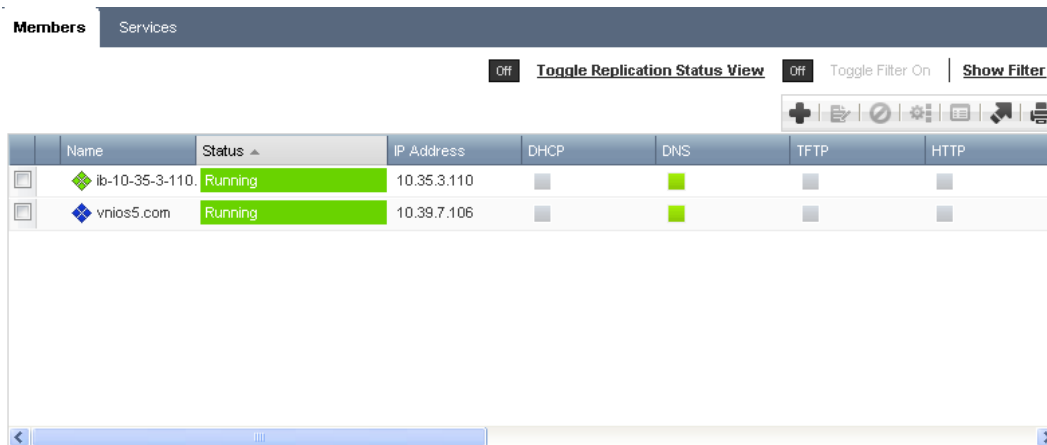*Figure 1.3 vNIOS Appliance Status on the Dashboard*

Figure 1.4 vNIOS Appliance Status in the Members Tab

Upgrading vNIOS Trials to a Fully Licensed Version

Note: The steps described in this section apply to active vNIOS Trial instances that are within the 60-day trial period. If the trial is expired, this information does not apply.

Note: When you obtain a license to run the vNIOS Trial as a full product, check with your Infoblox sales representative to make sure you are getting the correct appliance model.

You can upgrade a vNIOS appliance by obtaining the appropriate licenses from Infoblox. You can also upgrade from the default capacity vNIOS appliance model to a higher capacity model by obtaining a different vNIOS appliance license. *Table 1.2* lists the vNIOS appliance models and their specifications:

Table 1.2 vNIOS Appliance Models

vNIOS Appliance	# of CPU Cores	Memory (GB)	Virtual CPU Frequency	Hard Disk (GB)
VM-5	1	2	700 MHz	120
VM-25	1	2	2.0 GHz	120
VM-35	2	8	5.5 GHz	120
VM-55	4	12	12 GHz	120

Note: Infoblox recommends making a complete data backup of your vNIOS Trial instance before the 60-day trial period expires, or before upgrading the trial instance to a fully licensed version. Should you choose to install the trial instance on another system that might be in a more preferable network location before purchasing the license, you can reload the data saved from the previous trial. An active vNIOS Trial instance cannot be moved from one server to another. Before you set the vNIOS Trial instance to be fully licensed, make sure the instance is in the correct location in the network.

VMware vNIOS is running in trial mode. There are 30 days left in the trial period. Click Request License to upgrade to the fully licensed version. Close

To upgrade a vNIOS appliance, start by clicking **Request License** at the top of the vNIOS browser screen. (You can also choose **Request License** on the vNIOS login screen.) This sends a message to Infoblox Sales that you are interested in purchasing a full license to use the vNIOS software. After you purchase the license, a Contract Notification email will be sent to you containing the license information you need to complete the activation.

After you have received the Contract Notification email with the required license key from Infoblox Sales, do the following:

1. In the vNIOS Trial instance, choose the **Grid -> Licenses** tab. The Hardware ID column of the License page shows the 32-digit/128-bit serial numbers for each NIOS/vNIOS device or instance. Make sure to write the value down accurately for the vNIOS Trial instance.
2. Go to the Infoblox Support Center on the World Wide Web, at:

   `http://www.infoblox.com/en/support/support-center-login.html`
3. Log in using your previously defined Support user name and password.
4. In the left pane menu of the Support Center, select **License Key**. The Infoblox Licensing page appears.

5. Click the link under **vNIOS on VMware.** The Virtual Appliance License Key page appears:

Figure 1.5 Entering the license information

6. Enter the Registration Number provided to you in the Contract Notification email you received.

7. Enter the Appliance Serial Number provided for the vNIOS Trial software. (This value can be found by entering **show version** in the vNIOS CLI console. It is a 32-digit hexadecimal value.)

8. Under "Select How to Return Keys," choose **Send to File**.

9. Click **Generate Key.** An encrypted license file is generated by the system. You will be prompted to save this file to your management station.

10. If necessary, log in to the vNIOS Trial.

11. Choose **Grid** ·› **Licenses** ·› **Apply Permanent License(s)**. You will be prompted by the following:

    The upgrade to the fully licensed version will restart the system. Do you want to continue?

12. Click **Yes**. The Upload File dialog appears.

13. Enter the file name for the encrypted license key file that you obtained in Step 11, or choose **Select File**. Locate the file on your system, and click **Open**. Then, click **Upload**. After the vNIOS appliance uploads the license file and installs it, the vNIOS instance will restart.

Re-open the vNIOS appliance and verify it is running as a fully licensed program. When the system starts, warnings that the software is running in trial mode will not display and the software will operate as a fully licensed product.

KNOWN LIMITATIONS

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

- When you configure an HA pair, both nodes in the HA pair must be the same type. You cannot configure a physical NIOS appliance and a vNIOS instance in an HA pair.
- vNIOS appliances do not support the following features:
    — Configuration of port settings for MGMT, LAN, LAN2, and HA ports
- Changing the vNIOS appliance settings through the VMware vSphere or vCenter console may violate the terms of the vNIOS licensing and support models. The vNIOS appliance may not join the grid or function properly.

ADVANCED TOPIC: CONFIGURING VNIOS TRIAL APPLIANCES AS GRID MASTERS

Note: Trial-licensed vNIOS Trial instances cannot join or act as masters in grids that include Infoblox appliances or licensed vNIOS appliances.

Note: This section describes how to set up a demonstration high availability (HA) grid master. You do not need to run this configuration in order to use the vNIOS Trial software.

An Infoblox grid is a group of two or more Infoblox NIOS appliances that share sections of a common, distributed, built-in database, that 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. You can configure vNIOS appliances as single or HA (high availability) grid masters, grid master candidates, and grid members. A grid can include Infoblox appliances and vNIOS appliances. A vNIOS appliance is a non-Infoblox hardware platform running the vNIOS software package. You can configure Infoblox appliances and vNIOS appliances for VMware as grid masters, grid master candidates, and grid members. vNIOS Trial appliances support all of these configurations.

To configure a vNIOS trial HA grid master, you must deploy two vNIOS trial appliances and define the basic network settings for each. The procedure is very similar to joining two physical Infoblox appliances as an HA pair.

To configure a vNIOS appliance as a grid master, do the following:

1. Deploy the vNIOS trial appliance(s). For information, see *Setting up a vNIOS Trial Appliance* on page 3. The same vNIOS Trial package can be used to deploy multiple virtual machines for trial configurations.

2. Specify initial settings on each vNIOS appliance. For information, see *Defining Network Settings on the vNIOS Trial Appliance*.

3. Configure the vNIOS appliance as a grid master. You can configure a standalone grid master or an HA grid master pair. The following procedures, *Configuring an HA Grid Master*, and *Setting up Node 2 in the HA Grid Master Pair*, describe how to set up a trial HA grid master pair, and also illustrate the principles for creating an HA member pair.

Configuring an HA Grid Master

Note: Some advance planning is necessary to set up an effective test network. You can install and set up as many virtual machine instances as desired using the same OVF and VMDK files. An HA Grid Master employs two separate instances. If configuring two vNIOS for VMware instances as an HA pair, both instances of the pair must be licensed.

You can configure vNIOS appliances as grid masters and HA grid master pairs using the *Grid Setup* Wizard. If you are configuring a vNIOS HA grid master, you must complete the configuration for each virtual node in the HA pair as described in this section. Two nodes, each installed using the vNIOS Trial OVF template, are configured using this procedure.

Note: If you are setting up your grid master or HA grid master, and your virtual host is already running Grid Manager, select **Grid ‑› Grid Manager ‑› Grid Properties ‑› Grid Setup Wizard** to restart the Wizard.

To configure the HA grid master using the *Grid Setup* wizard, do the following:

1. Carry out the steps in the procedure *Defining Network Settings on the vNIOS Trial Appliance* on page 4.

2. On the management system, open a new browser window, and connect to https://*ip_addr*, where *ip_addr* is the IP address you originally configured for the first appliance.

3. Log in using the default user name **admin** and password **infoblox**.

4. Review the End-User License Agreement and click **I Accept**.

5. Open the *Grid Setup* wizard, select **Configure a Grid Master** and click **Next**.

6. Complete the following to specify the grid properties, and then click **Next**:

   — **Grid Name:** Enter a text string, such as `TestLabWest`. The default grid name is **Infoblox**.

   — **Shared Secret:** Enter a secret password string, such as `L0ck37`, that the grid master and appliances joining the grid use as a shared secret when establishing a VPN tunnel. The default shared secret is **test**.

   — **Show Password:** Select this to display the password. Clear the check box to conceal the password.

   — **Hostname:** Enter a valid domain name for the appliance. You can use the name that you entered for the vNIOS appliance when you deployed it.

   — **Is the Grid Master an HA pair?:** Select **Yes**. This ensures the trial vNIOS instance will operate as the 'active' node in the HA pair. (Choosing **No** determines that the vNIOS instance operates as a standalone grid master.)

7. Complete the following to specify the network properties and click **Next**:

Note: All IP address assignments for both vNIOS instances are defined in the Grid Master, the first node you configure. When you set up the second instance later, that second node automatically picks up its IP configuration (except for the Node 2 LAN value, which also must be configured directly on Node 2) from the Grid Master.

   — **Virtual Router ID:** Enter the VRID (virtual router ID). This must be a unique VRID number—from 1 to 255—for this subnet.

   — **Required Ports and Addresses:** Enter information about the following virtual interfaces:

      — VIP: the values for this virtual interface are auto-filled. This value is shared between both vNIOS instances for the HA pair, and cannot be used for any other interface. The VIP address also functions as the management port for the vNIOS trial instance. Keep the default settings for this interface;

      — Node 1 HA: Click in the **Address** column for this table row and enter an IP address.

      — Node 1 LAN: This is the LAN address for the HA Master. Click in the **Address** column for this table row and enter an IP address.

      — Node 2 HA (used for HA pairs only): Click in the **Address** column for this table row and enter an IP address.

      — Node 2 LAN (used for HA pairs only): This is the LAN IP address for the second node in the HA pair - the node that functions as the passive failover for the HA. Click in the **Address** column for this table row and enter an IP address.

Note: The Node 2 LAN IP address is the IP address that is assigned to the LAN port for the second vNIOS instance. Make sure this IP address is directly configured on the LAN IP on the second vNIOS instance; the two vNIOS virtual machines will then sync automatically. This principle applies for any Infoblox device operating as part of an HA pair. If the wrong IP address is configured on the second appliance in the HA pair, it will not sync up with the master appliance.

   — The VIP address and the IP addresses for all the ports must be in the same subnet. The gateway IP address and subnet mask are autofilled for each interface in the list. All fields are required. Note that you cannot change the port settings.

8. Optionally, enter a new password and click **Next**. The password must be a single hexadecimal string (no spaces) Make sure to keep a record of this information.

9. Select the time zone of the grid master and indicate whether the grid master synchronizes its time with an NTP (Network Time Protocol) server, and then click **Next**.

   — If you choose to enable NTP, click the Add icon and enter the IP address of an NTP server. You can enter IP addresses for multiple NTP servers.

   — If you choose to disable NTP, set the date and time for the appliance.

10. In the Data Configuration page, select one of the following options:

Note: Infoblox recommends using the demonstration data set to help evaluate how the vNIOS system works, and to gain insight into the various functions for DHCP, DNS and IPAM.

— **Add No Data**: finish configuring the vNIOS instance without loading any test data.

— **Load Demo Data Set**: Load the demonstration data set included in the vNIOS Trial software package.

— **Launch Wizard to Setup**. Allows you to select the method by which data configuration will be carried out: by **Microsoft Server Management** and/or by **Network Discovery**. Both choices can be activated. If no choice is made, network discovery is the default.

When the data configuration is complete, click **Next**.

11. The last screen displays the settings you specified in the previous panels of the wizard. Verify that the information is correct and click **Finish**. The vNIOS Trial appliance restarts after you click **Finish**.

The last screen of the setup wizard states that the changed settings require the appliance to restart. When you click **Finish,** the appliance restarts.

Setting up Node 2 in the HA Grid Master Pair

To configure the HA Master Node 2 using command line, do the following:

1. Open a console window for the newly installed vNIOS Trial instance.

2. 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: 10.36.0.205
```

Note: The IP address defined here is the **Node 2 LAN IP** address that was previously defined in the HA Grid Master.

```
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
Enter Grid Master VIP: 10.36.0.200
```

Note: The Grid Master VIP address defined here is the value that is shared between the two nodes forming the HA pair. This principle applies both to a Grid Master HA pair and to an HA Member pair.

```
Enter Grid Name: test_lab_west
Enter Grid Shared Secret: ****
```

The console window for the node that is attempting to join the grid for the HA Master should display a pair of messages as follows:

```
Contacting the grid master at 10.36.0.200....
Synchronizing database with the grid master....
```

The new Node 2 must also be configured on the Grid Master before it can become part of the active HA pair.

To configure the HA Master Node 2 using the *Grid Setup* wizard. do the following:

1. On your management system, open a new browser window, and connect to https://*ip_addr*, where *ip_addr* is the address of the LAN port on node 2.

2. Log in using the default user name and password **admin** and **infoblox**.

3. Review the End-User License Agreement and click **I Accept**.

4. In the *Grid Setup* wizard, select **Join Existing Grid** and click **Next**.

5. Complete the following to specify the grid properties and click **Next**
    — **Grid Name:** Enter the grid name you configured for the Master node 1.
    — **Grid Master's IP Address:** Enter the VIP you configured for the Master node 1.
    — **Shared Secret:** Enter the shared secret you previously configured for the Master node 1.
6. Verify the IP address settings of the member joining the master (it must be the **Node 2 LAN IP** address previously defined on the master) and click **Next**.
7. The last screen displays the settings you specified in the previous panels of the wizard. Verify that the information is correct and click **Finish**.

As a method of verifying successful communication, open the console window for the node that is attempting to join the grid for the HA Master. You should see a pair of messages as follows:

```
Contacting the grid master at 10.36.0.200....
Synchronizing database with the grid master....
```

Basic configuration of the Grid Master HA Pair is complete. If the two nodes cannot join (it should not take more than a few seconds), check the IP values for Node 1 LAN and Node 1 HA (the Grid Master) and for Node 2 LAN and Node 2 HA (the node attempting to join the Grid Master to form the HA Pair). Ensure that the network IP address of the second node is set to the same value as Node 2 LAN on the Grid Master.

In the Grid Manager, you can select **Grid -› Grid Manager -› Members** to check the list of Members in the grid. The Master Node 1 forms the primary listing, and the second node's high availability (HA) interface and LAN interface are listed below it.

Figure 1.6 HA Grid Master example
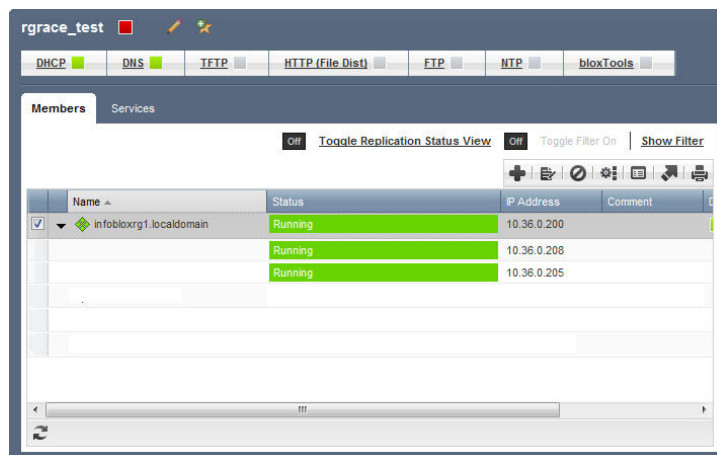
For more information on grid master and HA pair configurations and many other NIOS topics, refer to the *Infoblox Administrator Guide*.