

QUICK START GUIDE

vNIOs Quick Start Guide for Amazon Web Services (AWS)

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Introduction

Infoblox vNIOS is available as an Amazon AMI to provide enterprise-grade DNS and IPAM services across your AWS VPCs. Instead of manually provisioning IP addresses and DNS name spaces for network devices and interfaces, you can deploy an Infoblox vNIOS for AWS instance as one of the following:

- A standalone NIOS appliance to provide DNS services in your Amazon VPC.
- A virtual cloud member tied to an on-premises (non-Cloud) NIOS Grid.
- A Grid Master synchronizing with other AWS-hosted vNIOS Grid members in your Amazon VPC, and across VPCs or Availability Zones in different Amazon Regions.

Key Features of Infoblox vNIOS for AWS

Grid

Run an entire Grid in or in conjunction with the AWS public cloud using secure connectivity and synchronization throughout the Grid. Support large scale deployments spanning multiple Amazon VPCs.

Elastic Scalability

Use Elastic Scaling for flexible management of NIOS appliance licensing features across the entire Grid, including Cloud Management Platform (CMP) integration. Elastic Scaling enables automatic deployment of Infoblox vNIOS for AWS instances in your Amazon VPC.

— Elastic Scaling allows you to use your pre-existing NIOS or vNIOS feature licenses for activation of NIOS features on newly launched Infoblox vNIOS for AWS EC2 instances.

vDiscovery

Infoblox vDiscovery tasks enable NIOS to get and store detailed information from your AWS public cloud, including all VPCs, networks and VMs operating within the tenant. DNS records for all discovered IP addresses can also be created automatically.

API Proxy

Through a Grid Master or a Cloud Platform (CP) appliance, Infoblox can parse Cloud API requests and forward these requests to the Amazon cloud. This provides administrators a single and/or local point of access for API access to the Amazon cloud in which you can read, write and modify cloud network data, including IP addresses

Prerequisites

The following are prerequisites for the Infoblox vNIOS AWS solution:

- A valid AWS Management Console (<https://console.aws.amazon.com/>) login
- If joining an Infoblox AMI from the AWS cloud, an administrator account with superuser access in the Grid that the Infoblox vNIOS appliance will join

Deploying Infoblox vNIOS for Amazon Web Services

The deployment of the Infoblox AWS AMI is extremely flexible. This includes:

- Running the server as a standalone system, with or without the Grid license
- Joining the server to an existing Grid where the Grid Master is a physical appliance
- Joining the server to an existing Grid where the Grid Master is another Infoblox AWS AMI
- Joining the server to an existing Grid where the Grid Master is a vNIOS appliance running in a different cloud platform (including VMware and OpenStack)

This flexibility means that the Infoblox AWS AMI can be deployed any number of ways to meet your requirements. Common use cases are to deploy this to provide additional redundancy to existing services, provide access to DNS services within isolated VPC's, or to provide services across multiple regions and thereby giving better performance.

Launching the Infoblox AMI

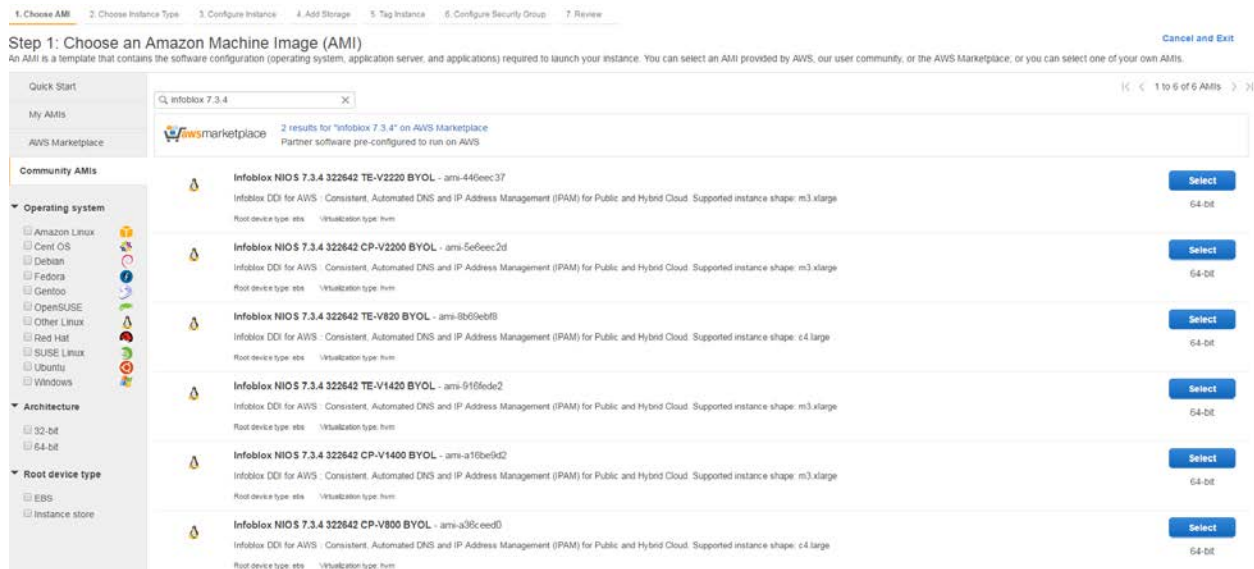
This section describes the steps for launching an Infoblox AMI through either the Amazon Community AMIs, or through the AWS Marketplace.

Amazon Community AMI

Use the following steps to launch an Infoblox AMI:

1. Navigate to the **Instances** panel in your AWS Management Console
2. Click on the **Launch Instance** button and toggle to the **Community AMIs** tab
3. In the search box, type the string “**Infoblox**”, along with the version number that you will be using.

Example: **Infoblox 7.3.4**



4. Set the instance type to the recommended size and click **Next: Configure Instance Details**

5. Set the appropriate Network, Subnet and other settings as required
6. Under the **Network Interfaces** section, click on the **Add Device** button to add a second network interface for the instance (vNIOS appliances require at least two interfaces in order to be able to start)
7. Configure the network interfaces as required, or leave them at the default settings if appropriate
8. Click **Next: Add Storage**
9. Set the storage as required (SSD is recommended). Click **Next: Tag Instance**
10. Type a name for the instance (Note: this should be only the hostname, NOT in FQDN format)
11. Click **Next: Configure Security Group**
12. The **Configure Security Group** page allows you to create a new security group or select an existing one. When creating a new security group, commonly required ports are set for you automatically.

The ports required can vary depending on your requirements. For a server that will be operating in a Grid and providing DNS services, the following ports should be allowed:

| Port | Description |
|------|--|
| 22 | Secure Shell, required to log into your vNIOS after deployment to enable temp licenses |
| 53 | DNS, This is required for DNS to function in AWS |
| 443 | HTTPS, for access to the web GUI of vNIOS |
| 1194 | For vNIOS grid traffic |
| 2114 | For vNIOS grid traffic |
| 8787 | For vNIOS API Proxy functionality |

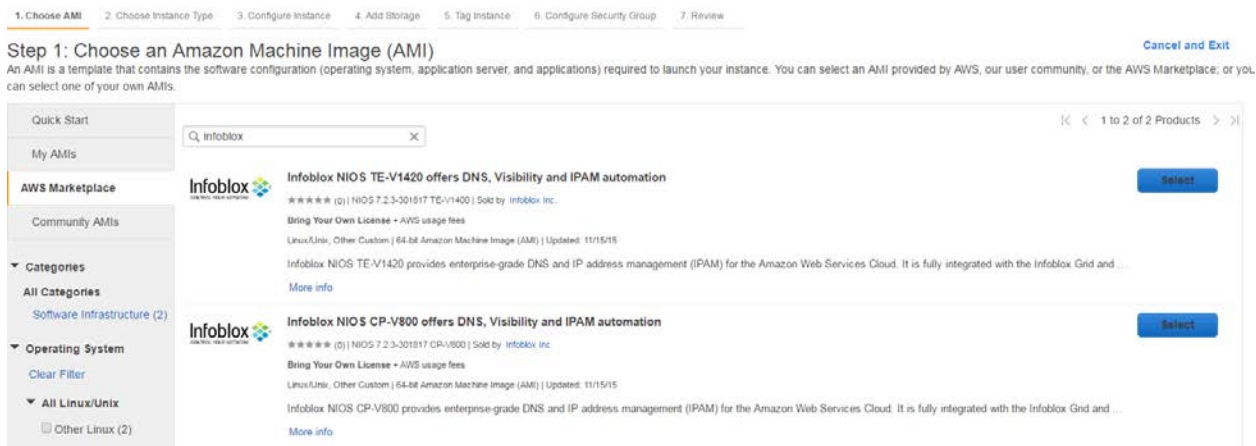
Note: Additional Ethernet port usage information can be found in the NIOS Administrators Guide

13. Click **Review and Launch**
14. Review the instance details to verify that everything is configured correctly. Click on the **Launch** button to assign a key pair and start the instance

AWS Marketplace

1. Navigate to the **Instances** panel in your AWS Management Console
2. Click on the **Launch Instance** button and toggle to the **Community AMIs** tab
3. In the search box, type the string "**Infoblox**"

- Click on the **Select** button for the model appliance you want to launch



- Review the description page and then click **Continue**
- Review the instance type (which will be pre-set) and click **Next: Configure Instance Details**
- Configure the instance details as required, including choosing the network and subnet the instance should use
- Click on the **Add Device** button under **Network Interfaces** and set the IP's for the network interfaces if required
- Click **Next: Add Storage**
- Set the storage as required (using a volume type of at least General Purpose SSD (GP2)). Click **Next: Tag Instance**
- Assign a name for the instance (Note: this should be only the hostname, NOT in FQDN format)
- Click **Next: Configure Security Group**
- The **Configure Security Group** page allows you to create a new security group or to create a new one. The ports required can vary depending on your requirements. For a server that will be operating in a Grid and providing DNS services, you will require at least the following ports to be allowed:

| Port | Description |
|------|--|
| 22 | Secure Shell, required to log into your vNIOS after deployment to enable temp licenses |
| 53 | DNS, This is required for DNS to function in AWS |
| 443 | HTTPS, for access to the web GUI of vNIOS |
| 1194 | For vNIOS grid traffic |
| 2114 | For vNIOS grid traffic |
| 8787 | For vNIOS API Proxy functionality |

- Click **Review and Launch**
- Review the instance details to verify that everything is configured correctly. Click **Launch** to assign a key pair and start the instance.

Initial Configuration

Upon successful startup of the Infoblox AMI, the LAN1 interface should be reachable. Before the server can be used, you will need to install licenses on the server. To install temporary licenses:

1. Connect to the server with an SSH client, using either its LAN1 interface or its public IP address
2. Log in with the default credentials (**admin/infoblox**)
3. Using the command **set temp_license**, apply the license keys that you require. This should include:
 - **vNIOS** (enables the vNIOS appliance to complete its startup process)
 - **Grid** (required in order to create or join a Grid)
 - **DNS** (required in order to be able to start the DNS service)

Note: Depending on the license installed, the server may restart, closing the SSH session. You will need to reconnect to the server once it finishes restarting.

4. Once the required license keys have been installed and the server has finished restarting, you can connect to it using your web browser. This will be an https connection. Example:

<https://192.168.1.10>

Joining an Infoblox AMI to a Grid

Overview

After the server has been successfully launched and licensed, you may want to join it to an existing Grid. To join a Grid, you will need to take note of the following details from the Grid that you will be joining this server to:

- Grid Master (V)IP
- Grid name
- Shared Secret
- That the requires ports and routes are open and properly configured between the Infoblox AMI and the target Grid
- That it is running a supported version (NIOS version 7.2 or newer)

To complete the join process, you can use the **Join Grid** wizard found in the NIOS Grid Manager GUI, or by using the command **set membership** in you SSH session.

Network Connectivity Requirements

When joining an Infoblox AMI to a Grid, it will use the following ports when connecting to the Grid Master:

- UDP port 2214
- UDP port 1194 (by default)

Other ports may be required for other services. Details for these can be found in the NIOS Administrators Guide. There must also be a valid route and/or VPN tunnel between the AMI and the Grid.

Different NIOS versions between Grid and Infoblox AMI

When the server initially connects to the Grid, it performs a software compatibility check. If it finds that there is a mismatch between the version of NIOS that it is running and the version from the Grid Master, the NIOS software will be pushed to the Infoblox AMI.

Once the Infoblox AMI has finished downloading the NIOS software, it will load this software and reboot. After this process completes, it will resume joining the Grid. This is an automated process and requires no user intervention to complete.

Integrating Infoblox AMI with External Grid

In cases where you are unable to upgrade an existing Grid or wish to keep the Infoblox AMI separate (external), the server can be deployed as a standalone appliance or in its own Grid. In order for the Infoblox AMI to be able to work with an external Grid for DNS services, you can do the following:

1. From your existing Grid, export the zones that you wish to enable on the Infoblox AMI in Infoblox CSV Import format
2. Modify the CSV file, updating the column "**external_secondaries**" to include the name and IP address for the Infoblox AMI
3. Import the CSV file back to your Grid, setting the option to override existing values. Example:
header-
authzone,fqdn*,zone_format*,comment,grid primaries,grid_secondaries,external_secondaries
authzone,corp100.com,FORWARD,USA,infobloxgm.infoblox.local,gmc-
vpc2.infoblox.local,infoblox-ami.infoblox.local/10.20.30.40
4. Using the same CSV file, modify the "grid primaries" column and removing any values that may be present. In the "grid_secondaries" column, enter in the hostname for the Infoblox AMI. In the "external primaries" column, enter in the IP address for the server in your Grid which is assigned as the primary name server for these zones. Example:
header-authzone,fqdn*,zone_format*,external primaries,grid_secondaries
authzone,bogus.zone,FORWARD,gridmaster.infoblox.local/192.168.1.10,infobloxgm.infoblox.local
|
5. Import this new CSV file to your Infoblox AMI, selecting the option to Add new rows
6. Start the DNS service on the Infoblox AMI and restart services in your grid to apply these changes

Note: Details regarding the CSV Import process can be found in the NIOS Administrators Guide. The formatting and syntax requirements for the CSV files can be found in the CSV Import Reference Guide.

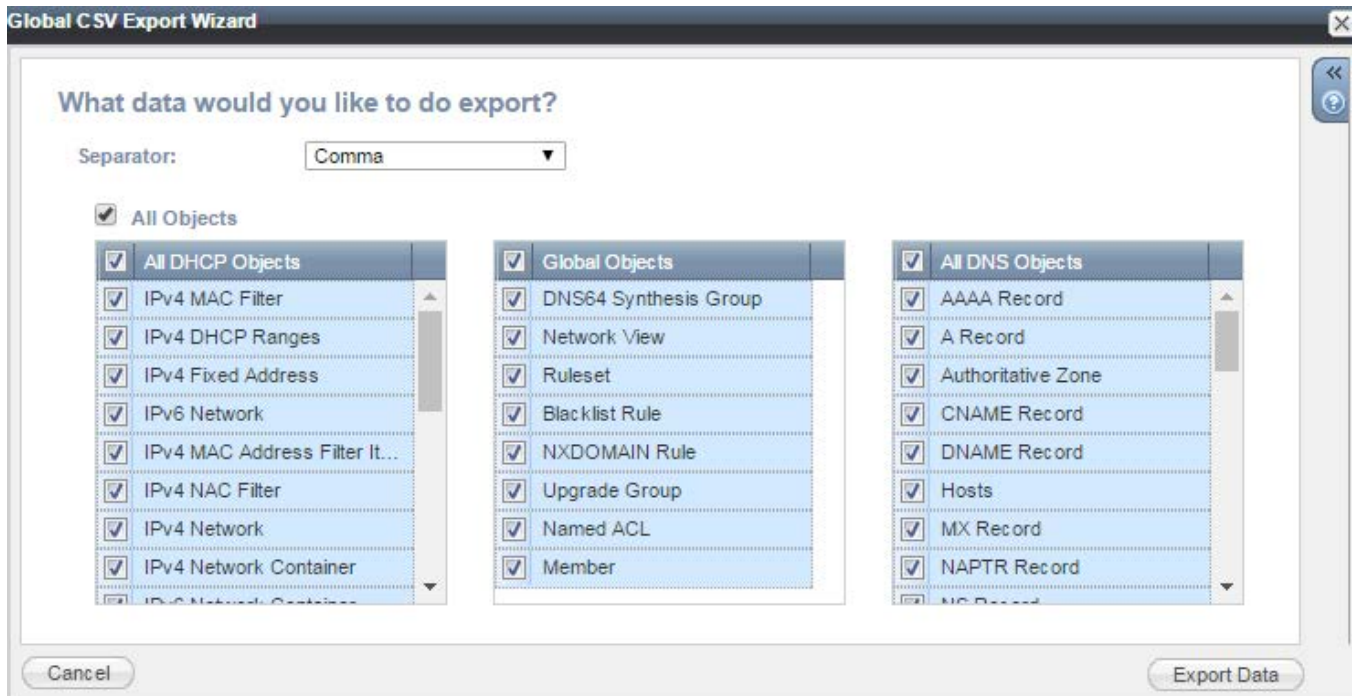
Merging Infoblox AMI to a separate Grid

If you wish to migrate the data from the Infoblox AMI to a separate Grid (such as at the conclusion of any testing that you may be performing), there may be different ways you can complete this, including with the CSV Import feature or a simple zone import. If you are only migrating a small number of zones, you can do this by adding the zones manually in your Grid and then use the **Import Zone** feature.

Export Data from Infoblox AMI

When migrating a large number of zones, this can be most easily accomplished using the global CSV export feature. To do this:

1. On the Infoblox AMI, under the **Data Management** tab, click on the **CSV Job Manager** button
2. Toggle to the **CSV Export** tab
3. Click on the **New** button at the top right hand corner of the CSV Job Manager window
4. Select the type of objects that you would like to export from your Infoblox AMI (such as **All DNS Objects**)

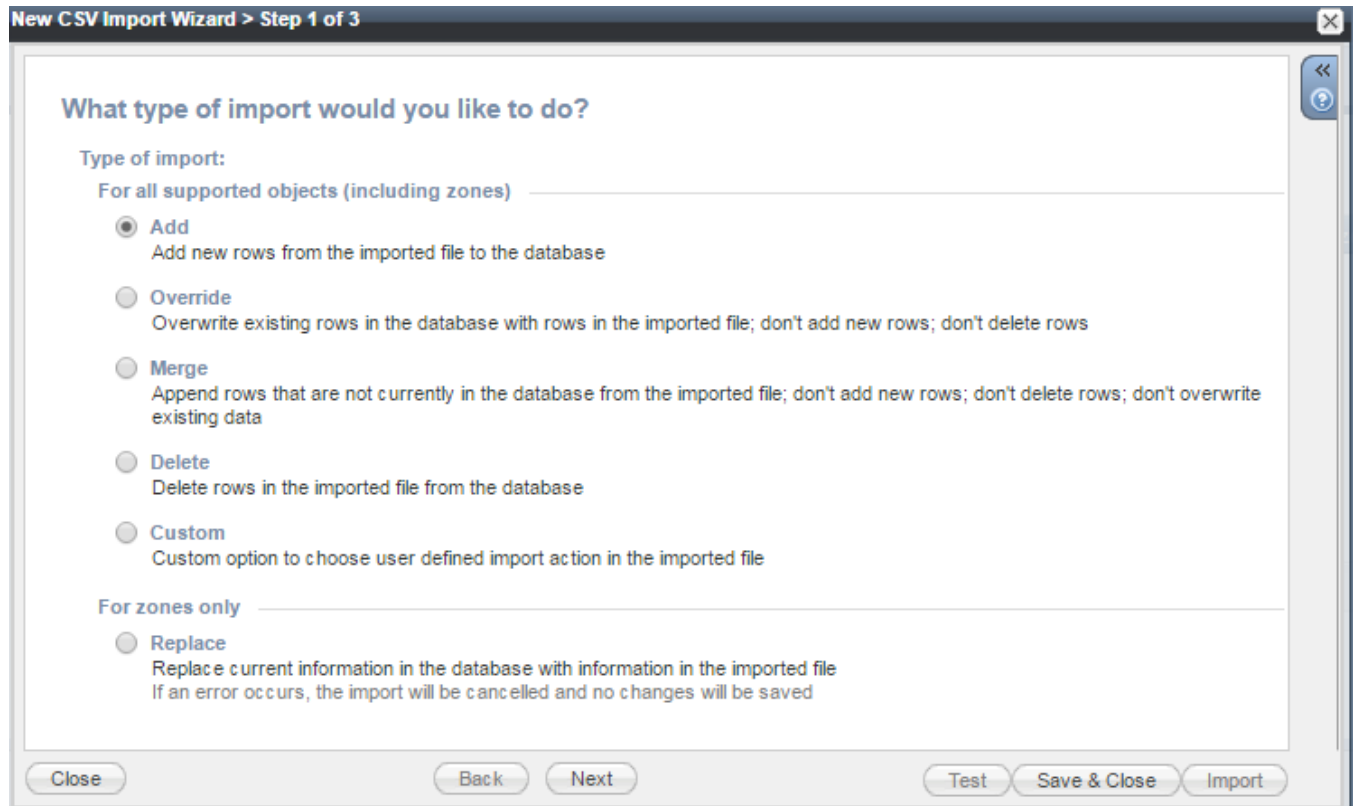


5. Click **Export Data**

Import Data to Grid

After the data has been exported from the Infoblox AMI, this can be updated as required and imported to your Grid. To complete the Import:

1. In the Grid Manager GUI for your Grid, navigate to the **Data Management** tab and click on the **CSV Import** button in the toolbar.
2. Set *type of import* to **Add**. Click **Next**



3. Browse to the CSV file you saved from your Infoblox AMI, toggle the **On error** option to **Skip to the next row and continue**. Click **Next**
4. Click on the Import button and follow the prompts to start the CSV import

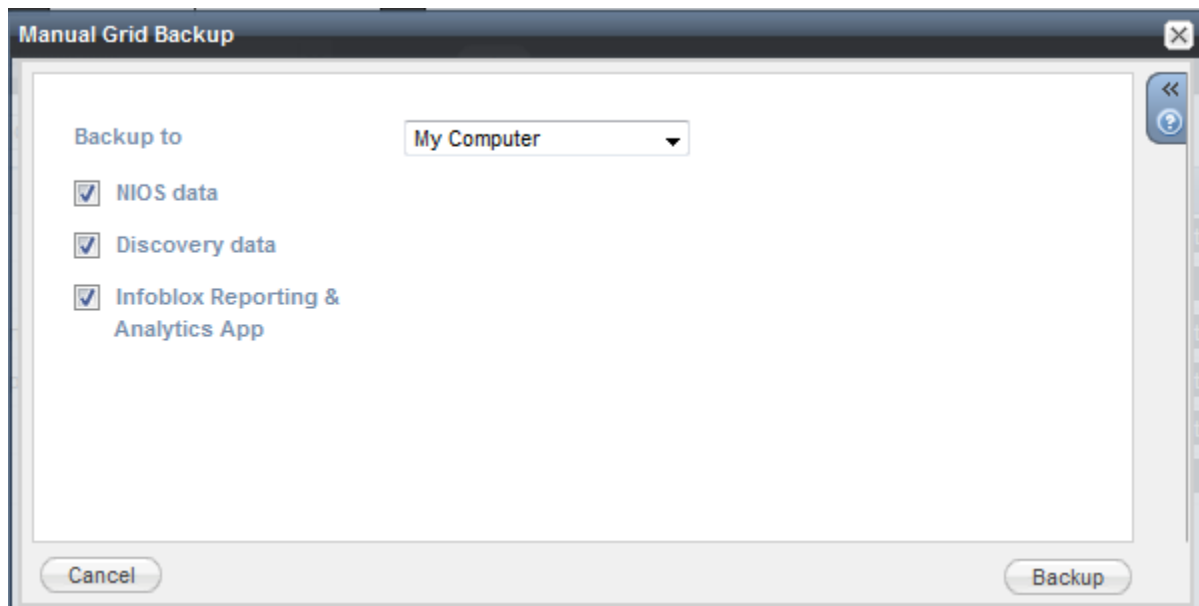
Joining Infoblox AMI to a Grid

Once the data has migrated to the Grid, the Infoblox AMI can then be joined to the Grid. To complete this process, you will:

- Save a database backup (allowing you to restore this database to the Infoblox AMI or other system if desired)
- Verify network connectivity between Infoblox AMI and target Grid
- Reset the system to its default settings
- Add it as a Grid member to the Grid it will be joining
- Join it to the target Grid

Save a database backup from the Infoblox AMI

1. From the Grid tab, select the **Grid Manager** tab, and then click **Backup -> Manual Backup** from the Toolbar.
2. In the **Backup** wizard, select the destination of the backup file from the Backup to drop-down list:
My Computer: Back up system files to a local directory on your computer. This is the default.
3. If the Grid has a discovery member, the Grid Manager displays the **NIOS data** and **Discovery data** check boxes. You can select the **NIOS data** check box to back up NIOS configuration data for the Grid. Select the **Discovery data** check box to back up discovery data for the Grid.
4. If the Grid has a reporting member, Grid Manager displays the **Infoblox Splunk App** check box. You can select the **Infoblox Splunk App** check box, to back up Splunk application reporting data.



5. Click **Backup**.

Reset the Infoblox AMI to its default settings

1. Connect to the command line interface (CLI) for the Infoblox AMI (using an SSH client)
2. Once logged in, execute the command **reset database**, entering **Y** if prompted to preserve network settings

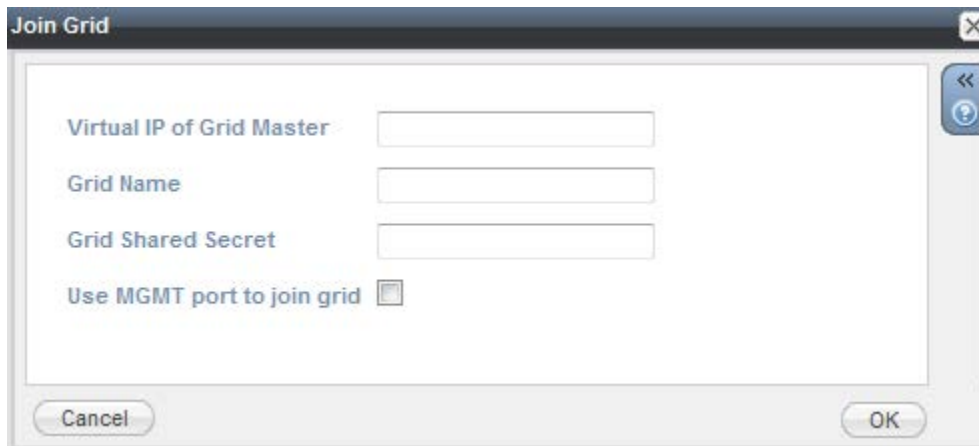
Note: This command will erase all data on the server, only saving the network settings and licenses, and is unrecoverable.

Add Infoblox AMI as a Grid member

1. In the Grid Manager GUI for the target Grid, navigate to the **Grid -> Grid Manager -> Members** tab
2. Expand the Toolbar and click **Add -> Add Grid Member**.
3. Set **Member Type** dropdown menu to **Virtual NIOS** and enter in a Host Name. Click **Next**
4. Configure the network settings to match that which is configured on the Infoblox AMI. Use the CLI command "show network" on the Infoblox AMI to verify its network settings. Click **Next**
5. Set any Extensible Attributes (EA's) that may be required. Click **Save & Close**

Join the Infoblox AMI to the target Grid using a web browser

1. Connect to the Infoblox AMI using your web browser
2. From the Grid tab, select the **Grid Manager -> Members** tab.
3. Expand the Toolbar and click **Join Grid**.
4. In the *Join Grid* dialogue box, enter the following:
 - Virtual IP of Grid Master: Type the VIP address of the HA Grid Master or the LAN1 address of the single Grid Master for the Grid to which you want to add the appliance. Entries may be an IPv4 or IPv6 address.
 - Grid Name: Type the name of the Grid.
 - Grid Shared Secret: Type the shared secret of the Grid. — Use MGMT port to join Grid: If you have already enabled the MGMT port (see [Grid Communications](#) on page 273), this option becomes available. Select it to connect to the Grid through the MGMT port.



The image shows a 'Join Grid' dialog box with the following fields and options:

- Virtual IP of Grid Master:
- Grid Name:
- Grid Shared Secret:
- Use MGMT port to join grid:

Buttons: Cancel, OK

5. Click **OK** to begin the join operation.

Join the Infoblox AMI to the target Grid using the CLI

1. Connect to the Infoblox AMI using an SSH client
2. Enter the command **set membership**
3. Enter the following when prompted:
 - Virtual IP of Grid Master: Type the VIP address of the HA Grid Master or the LAN1 address of the single Grid Master for the Grid to which you want to add the appliance. Entries may be an IPv4 or IPv6 address.
 - Grid Name: Type the name of the Grid.
 - Grid Shared Secret: Type the shared secret of the Grid. — Use MGMT port to join Grid: If you have already enabled the MGMT port (see [Grid Communications](#) on page 273), this option becomes available. Select it to connect to the Grid through the MGMT port.

```

Infoblox > set membership
Join status: Unable to sync release.
Enter New Grid Master VIP [Default 10.60.27.233]:
Enter Grid Name [Default Infoblox]:
Enter Grid Shared Secret: test
Join grid as member with attributes:
Grid Master VIP: 10.60.27.233
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

```

4. Verify that the information is correct and enter y when prompted in order to complete the join attempt

Confirm that the Infoblox AMI successfully joined the Grid

To confirm that the appliance has successfully joined the Grid:

1. Log in to the Grid Manager GUI for the Grid
2. Navigate to the **Grid -> Grid Manager -> Members** tab.
3. This panel lists the Grid members. Check the icon in the Status column of the newly added member. (green = the appliance has joined the Grid and is functioning properly; yellow = the appliance is in the process of joining the Grid; red = the appliance has not joined the Grid).

The screenshot shows the Infoblox Grid Manager GUI. The top navigation bar includes 'Dashboards', 'Data Management', 'Cloud', 'Smart Folders', 'Reporting', 'Grid', and 'Administration'. Below this, the 'Grid Manager' section has sub-tabs for 'Upgrade', 'Licenses', 'HSM Group', 'Microsoft Servers', and 'Amazon'. The main content area is titled 'Infoblox' and features a row of service icons: DHCP, DNS, TFTP, HTTP (File Dist), FTP, NTP, bloxTools, Captive Portal, and Reporting. The 'Members' tab is selected, showing a 'Quick Filter' set to 'None', a 'Filter On' toggle set to 'Off', and a 'Replication Status View' toggle set to 'Off'. Below the filter controls, there is a 'Group Results' section with a 'Group By' dropdown set to 'Choose one'. A 'Go to' search box is also present. The main table lists grid members with columns for Name, HA, and Status. All members are shown with a green status bar, indicating they are 'Running'.

| Name | HA | Status |
|-------------------------|----|---------|
| awsdemogm.localdomain | No | Running |
| awsdemogmc.localdomain | No | Running |
| awsmember_a.localdomain | No | Running |
| awsmember_b.localdomain | No | Running |
| awsdemorpt.localdomain | No | Running |

4. You can also verify this with the CLI command **set status** run on the Infoblox AMI

```
Infoblox > show status
Grid Status: ID Grid Member
HA Status:      Not Configured
Hostname:      awsdemogmc.localdomain
Master Candidate: true
Grid Master IP: 10.60.27.200
Infoblox >
```