# SonicWall® NS$_v$ Series on ESXi

## Getting Started Guide

SONICWALL®

# Contents

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# Introducing NS$_v$ Series

This *SonicWall® NSv Series on ESXi Getting Started Guide* describes how to install SonicWall NS*v* on VMware ESXi and provides basic configuration information.

The SonicWall® Network Security Virtual Series (SonicWall® NS*v* Series) is SonicWall's virtualized next-generation firewall appliance that provides Deep Packet Inspection (DPI) security and segmentation in virtual environments. With some platform specific differences, SonicOS running on the NS*v* Series ESXi offers the same feature functionality and security features of a physical appliance, with comparable performance. SonicOS Virtual is a fully featured 64-bit SonicOS powered by SonicCore.

**Topics:**



# Feature Support Information

The SonicWall NS*v* Series for VMware ESXi has nearly all the features and functionality of a SonicWall NS*a* hardware appliance running SonicOS 6.5.4 firmware.

SonicWall GMS 8.7 and higher versions are supported for management of SonicWall NS*v* Series virtual appliances running 6.5.4.v. GMS 8.4 can manage NSv Series running 6.5.0.v.

For information about supported features, refer to the *SonicOS 6.5 NSv* administration documentation. This and other documents for the SonicWall NS*v* Series are available when you select **NS*v*** Series ESXi as the **Product** at: https://www.sonicwall.com/support/technical-documentation. The Key Feature Support of NSv for ESXi table lists the key SonicOS features and whether they are supported or unsupported on deployments of the NSv for ESXi.

**Feature Support List**

| Component | Feature | Status |
|---|---|---|
| Network Interfaces | Override MAC Address | Not supported |
| Network Interfaces | DHCPv6 Prefix Delegation (PD) | Not supported |

## Feature Support List

| Component | Feature | Status |
|---|---|---|
| Network Interfaces | IPv6 Management | ***Supported*** |
| Network Interfaces | 6rd | Not supported |
| Network | Portshield Groups | Not supported |
| Network Interfaces | L2 Bridge Mode | Not supported |
| Network Interfaces | Native Bridge | Not supported |
| Network Interfaces | Wire Mode v4 | ***Supported*** |
| Network Interfaces | Wire Mode v6 | ***Supported*** |
| Network Interfaces | PPPoE | Not supported |
| Network Interfaces | PPTP | Not supported |
| Network Interfaces | L2TP | Not supported |
| Network Interfaces | Tap Mode | Not supported |
| Network Interfaces | Link Aggregation | Not supported |
| Network Interfaces | Port Redundancy | Not supported |
| Network Interfaces | IP Unnumbered | Not supported |
| Network Interfaces | VLAN Translation | ***Supported*** |
| Network Interfaces | Users IPv6 | ***Supported*** |
| Network Interfaces | DHCP Servers | ***Supported*** |
| Network Interfaces | VLAN Interfaces | ***Supported*** |
| Network Interfaces | Jumbo Frames | ***Supported*** |
| Network Interface | SDWAN | ***Supported*** |
| Firewall Settings | Zero Touch | ***Supported*** |
| Firewall Settings | QoS Mapping | ***Supported*** |
| Firewall Settings | Multicast | ***Supported*** |
| High Availability | Active/Passive | ***Supported*** |
| High Availability | Active-Active DPI | Not supported |
| High Availability | Stateful Sync | ***Supported***<br>• Virtual MAC not supported.<br>• Dynamic ARP entries not supported. |
| Switching | | Not supported |
| 3G/4G Modem | | Not supported |
| Wireless | | Not supported |
| SonicPoints | | Not supported |
| SSL VPN | SSL VPN for IPv6 | ***Supported*** |
| Virtual Assist | | Not supported |
| WAN Acceleration | | Not supported |
| VoIP | H.323 | ***Supported*** |
| VoIP | SIP | ***Supported*** |

# Node Counts Per Platform

The supported node count varies by NS*v* platform. This is the maximum number of nodes/users that can connect to the NS*v* at any one time, and is displayed on the **System Status** page in the **MONITOR** view. The Maximum Node Counts Per Platform table shows this information.

**Maximum Node Counts Per Platform**

| Platform | Maximum Node Count |
|---|---|
| NS*v* 10 | 10 |
| NS*v* 25 | 25 |
| NS*v* 50 | 50 |
| NS*v* 100 | 100 |
| NS*v* 200 and higher | Unlimited |

Node counts are calculated by SonicOS as follows:

- Each unique IP address is counted.
- Only flow to the WAN side is counted.
- GVC and SSL VPN connections terminated to the WAN side are counted.
- Internal zone to zone is not counted.
- Guest users are not counted.

A log event is generated when the node count exceeds the limit.

# Installation File / Supported Platforms

| Release Version | Supported Hypervisor Versions |
|---|---|
| SonicOS 6.5 for NS*v* Series ESXi | ESXi 5.5 or higher [1] |

1. ESXi 6.5 or higher is recommended for production environments. The ESXi vswitch configuration should have the **MAC address changes** option enabled.

# Hardware Compatibility

SonicWall NS*v* Series is supported on ESXi running on relatively modern chipsets, Intel Penryn and above (2008). If the chipset is too old, the installation will halt with the message, “This system does not support SSE4_1.” For more information, see https://kb.vmware.com/s/article/1005764.

# Product Matrix and Requirements

The following tables show the hardware resource requirements for the SonicWall NS*v* Series virtual appliances.

### NS*v* Series Resource Requirements

| Product Models | NS*v* 10 | NS*v* 25 | NS*v* 50 | NS*v* 100 |
|---|---|---|---|---|
| Maximum Cores[1] | 2 | 2 | 2 | 2 |
| Minimum Total Cores | 2 | 2 | 2 | 2 |
| Management Cores | 1 | 1 | 1 | 1 |
| Maximum Data Plane Cores | 1 | 1 | 1 | 1 |
| Minimum Data Plane Cores | 1 | 1 | 1 | 1 |
| Network Interfaces | 8 | 8 | 8 | 8 |
| Supported IP/Nodes | 10 | 25 | 50 | 100 |
| Minimum Memory Required[2] | 4G | 4G | 4G | 4G |
| Minimum Hard Disk/Storage | 60GB | 60GB | 60GB | 60GB |

1. If the actual number of cores allocated exceeds the number of cores defined in the above table, extra cores will be used as CPs. Multiple CP support is introduced in 6.5.4.v.
2. Memory requirements are higher with Jumbo Frames enabled. See the Memory Requirements on NS*v* ***with Jumbo Frames Enabled vs Disabled*** table.

| Product Models | NS*v* 200 | NS*v* 300 | NS*v* 400 | NS*v* 800 | NS*v* 1600 |
|---|---|---|---|---|---|
| Maximum Cores[1] | 2 | 3 | 4 | 8 | 16 |
| Minimum Total Cores | 2 | 2 | 2 | 2 | 2 |
| Management Cores | 1 | 1 | 1 | 1 | 1 |
| Maximum Data Plane Cores | 1 | 2 | 3 | 7 | 15 |
| Minimum Data Plane Cores | 1 | 1 | 1 | 1 | 1 |
| Network Interfaces | 8 | 8 | 8 | 8 | 8 |
| Supported IP/Nodes | Unlimited | Unlimited | Unlimited | Unlimited | Unlimited |
| Minimum Memory Required[2] | 6G | 8G | 8G | 10G | 12G |
| Minimum Hard Disk/Storage | 60G | 60G | 60G | 60G | 60G |

1. If the actual number of cores allocated exceeds the number of cores defined in the above table, extra cores will be used as CPs. Multiple CP support is introduced in 6.5.4.v.
2. Memory requirements are higher with Jumbo Frames enabled. See the Memory Requirements on NS*v* ***with Jumbo Frames Enabled vs Disabled*** table.

On NS*v* ESXi deployments with Jumbo Frame support enabled, the Minimum Memory requirements are higher. This increases TCP performance. See the Memory Requirements on NS*v* ***with Jumbo Frames Enabled vs Disabled*** table below.

### Memory Requirements on NS*v* with Jumbo Frames Enabled vs Disabled

| NS*v* Model | Minimum Memory – Jumbo Frames Enabled | Minimum Memory – Jumbo Frames Disabled |
|---|---|---|
| NS*v* 10 / 25 / 50 / 100 | 6G | 4G |
| NS*v* 200 | 6G | 4G |
| NS*v* 300 | 8G | 6G |

**Memory Requirements on NS*v* with Jumbo Frames Enabled vs Disabled**

| NS*v* Model | Minimum Memory – Jumbo Frames Enabled | Minimum Memory – Jumbo Frames Disabled |
|---|---|---|
| NS*v* 400 | 10G | 8G |
| NS*v* 800 | 14G | 10G |
| NS*v* 1600 | 18G | 12G |

# Backup and Recovery Information

In certain situations, it might be necessary to contact SonicWall Technical Support, use SafeMode, or de-register the NS*v* appliance:

- If the splash screen remains displayed, this can indicate that the disk is corrupted. Please contact SonicWall Technical Support for assistance.
- If the disk is not recoverable, then the NS*v* appliance needs to be deregistered with MySonicWall. See Deregistering Your NSv on page 30 for information.
- If SonicOS does not boot up, you can go into SafeMode and download the log files, upload a new SonicOS image, or take other actions. For information about SafeMode, see Using SafeMode on the NSv on page 50.
- If SonicOS fails three times during the boot process, it will boot into SafeMode. Verify that the minimum required memory is available and allocated based on the NS*v* model. If it still cannot boot up, download the logs while in SafeMode and contact SonicWall Technical Support for assistance.

# Best Practices and Recommendations

- Configuration settings import is ***not*** supported from SonicWall physical appliances to NS*v* Series ESXi.
- SonicWall NS*v* Series supports the **vmxnet3** VMware Network Adapter Type. Exactly 8 virtual network interfaces (vNICs) are supported on each NS*v* platform. Adding and removing interfaces is supported, but the total must stay within the range of 2 to 8.
- To configure Virtual Interfaces in NS*v* on ESXi, map the NS*v* parent interface for the virtual interface to a port group with the VLAN ID 4095 (Trunk Port). ESXi treats a port group with VLAN 4095 as a Trunk Port.
- SonicWall recommends that you do ***not*** use the ESXi snapshot functionality. For more information, see https://kb.vmware.com/s/article/1025279.

# High Availability Configurations

NSv virtual firewalls deployed on ESXi can be configured as high availability Active/Standby pairs to eliminate a single point of failure and provide higher reliability. Two identical NS*v* instances are configured so that when the primary fails, the secondary takes over to maintain communications between the Internet and the protected network. These redundant NS*v* instances may share the same license when registered on MySonicWall as associated products. For details, refer to SonicOS 6.5.4 NS*v* Updates.

Additional licensing allows configuration of an Active/Standby pair to handle a Stateful failover in which the Standby NSv takes over without having to initialize network connections and VPNs. However, dynamic ARP entries and common virtual MACs are not currently supported. For more details, see the High Availability section in SonicOS NS*v* 6.5.4 System Setup.

# Exporting and Importing Firewall Configurations

Moving configuration settings from SonicWall physical appliances to the NSv Series is not supported. However, configuration settings may be moved from one NSv to another. See the SonicOS 6.5 NSv Series Updates administration book and the SonicOS 6.5.4 NSv Series Upgrade Guide on the Technical Publications portal for more information about exporting and importing configuration settings.

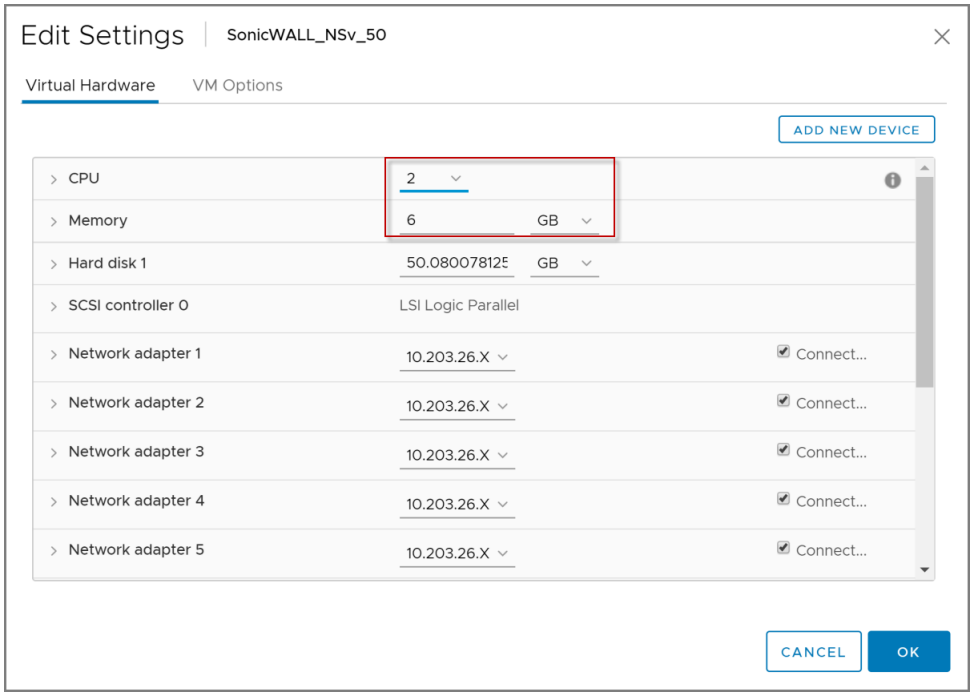
Go to https://www.sonicwall.com/support/technical-documentation/ and select “NSv Series” as the product.

# Upgrading to a Higher Capacity NS$_v$ Model

It is possible to move up to a higher capacity NSv model, but not down to a lower capacity model. For instructions refer to the SonicOS 6.5.4 NSv Series Upgrade Guide on the Technical Publications portal. Go to https://www.sonicwall.com/support/technical-documentation/ and select “NSv Series” as the product.

For details on the number of process and memory to allocate to the VM to upgrade, refer to Product Matrix and Requirements on page 7.

To update the VM for processors and memory allocations, power-down the VM then right click on the VM and select "Edit Settings". The processor and memory settings then appear:



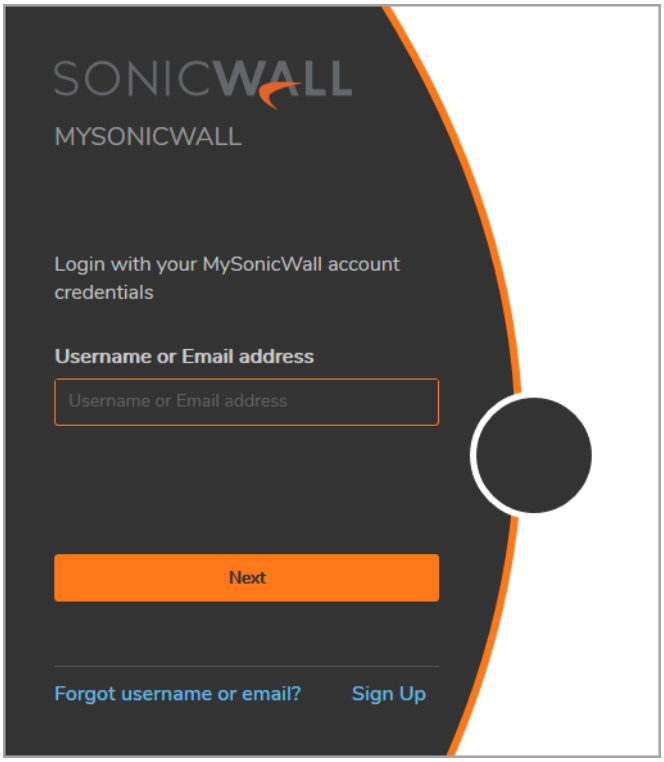
# Creating a MySonicWall Account

A MySonicWall account is required to obtain the OVA file for initial installation of the NS*v* Series ESXi virtual firewall, for product registration to enable full functionality of SonicOS features, and for access to licensed security services. For a High Availability configuration, MySonicWall provides a way to associate a secondary NS*v* that can share security service licenses with your primary appliance.

**NOTE:** MySonicWall registration information is not sold or shared with any other company.

***To create a MySonicWall account:***

1. In your web browser, navigate to https://www.mysonicwall.com.
2. In the login screen, click the **Sign Up** link.




3. Complete the account information, including email and password.
4. Enable two-factor authentication if desired.
5. If you enabled two-factor authentication, select one of the following authentication methods:
   - **Email (one-time passcode)** where an email with a one-time passcode is sent each time you log into your MySonicWall account.
   - **Microsoft/Google Authentication App** where you use a Microsoft or Google authenticator application to scan the code provided. If you are unable to scan the code, you can click on a link for a secret code. Once the code is scanned, you need only click a button.
6. Click on **Continue** to go to the **COMPANY** page.
7. Complete the company information and click **Continue**.
8. On the **YOUR INFO** page, select whether you want to receive security renewal emails.
9. Identify whether you are interested in beta testing of new products.

10 Click **Continue** to go to the **EXTRAS** page.

11 Select whether you want to add additional contacts to be notified for contract renewals.

12 If you opted for additional contacts, input the information and click **Add Contact**.

13 Click **Finish**.

14 Check your email for a verification code and enter it in the **Verification Code** field. If you did not receive a code, contact Customer Support by clicking on the link.

15 Click **Done**. You are returned to the login window so you can login into MySonicWall with your new account.

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# Installing NS$_v$ Series on ESXi

**Topics:**



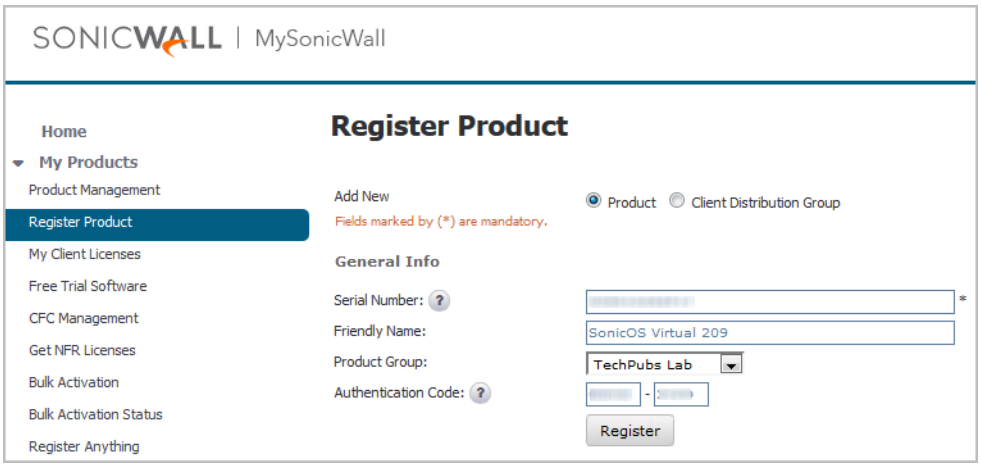
## Obtaining the OVA from MySonicWall

Refer to the purchase confirmation email for information about downloading the OVA files.

If you do not have a MySonicWall account, see Creating a MySonicWall Account on page 10 for information about creating one.

***To perform initial registration and obtain the OVA file for deployment:***

1. In a browser, log into your MySonicWall account.
2. Navigate to **My Products > Register Product**.
3. Fill in the **Serial Number**, **Friendly Name**, **Product Group**, and **Authentication Code** fields, and then click **Register**.




4. The **Registration Code** is displayed. Make a note of it.

   You are now given access to the OVA file for your NSv model.

5. Download the OVA file and save it to your management computer.

You are now ready to deploy the OVA on your ESXi server. See Installing the NSv Appliance on page 13 for information.

After your NSv installation is complete, boot up SonicOS and log in. See Managing SonicOS on the NSv Series on page 33 for information.

Once you have connected and have internet access from the NSv, you must register your NSv Series instance using the **Registration Code** to complete the registration process. See Registering the NSv Appliance from SonicOS on page 25.

If your NSv is deployed in a closed network, see Registering an NSv Manually in a Closed Network on page 29.

# Installing the NS$_v$ Appliance

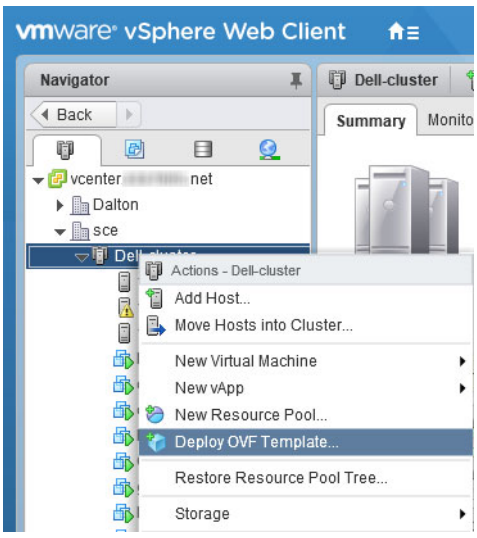
SonicWall NSv Series is installed by deploying an OVA file to your ESXi server. Each OVA file contains the software components needed. Deploy the OVA file by using the vSphere or vCenter client, which are available with ESXi.

**NOTE:** The elements of VMware must already be in place and the administrator must be familiar with the basics of deploying a virtual appliance on the ESXi server.

**TIP:** Step 14 has some important information about selecting your networks. Even if you don't need all these step-by-step instructions, be sure to follow the instructions in Step 14 to avoid connectivity issues after the deployment.

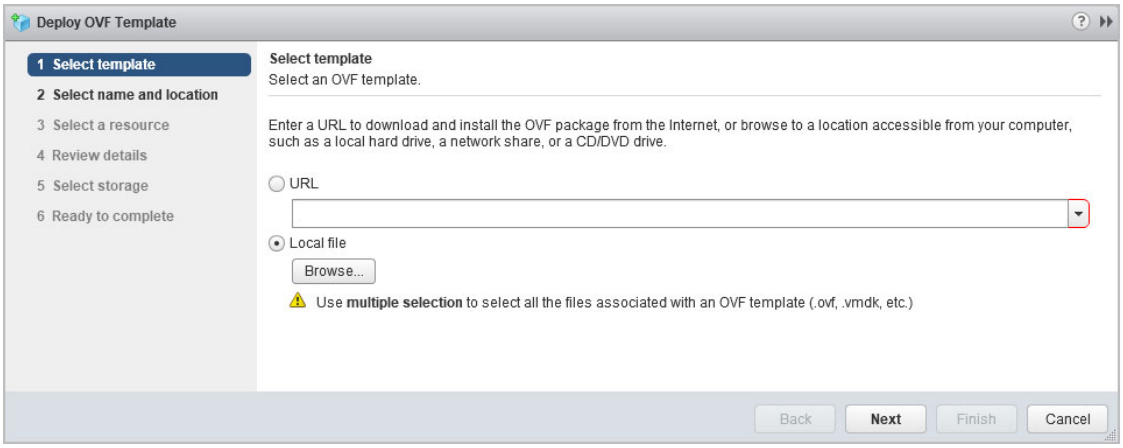
***To perform a fresh install of NSv Series on ESXi:***

1. Download the NSv Series OVA file from MySonicWall to a computer with vSphere / vCenter access.
2. Access vSphere or vCenter and log on to your ESXi server.
3. Navigate to the location where you want to install the virtual machine, and select the folder.
4. To begin the import process, click **Actions** and select **Deploy OVF Template**.



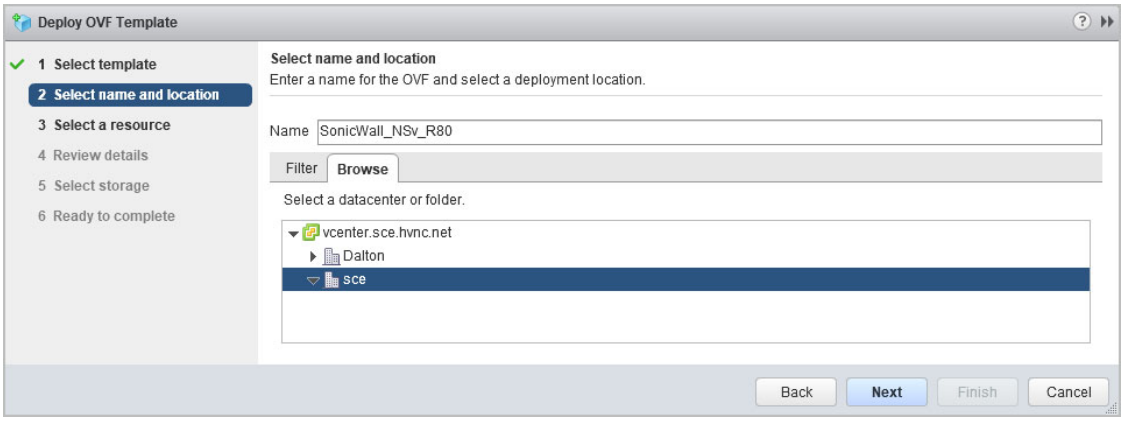
5 In the **Select template** screen, select **Local file**:

- **Local file** – Click **Browse** and navigate to the NS*v* Series OVA file that you previously downloaded.



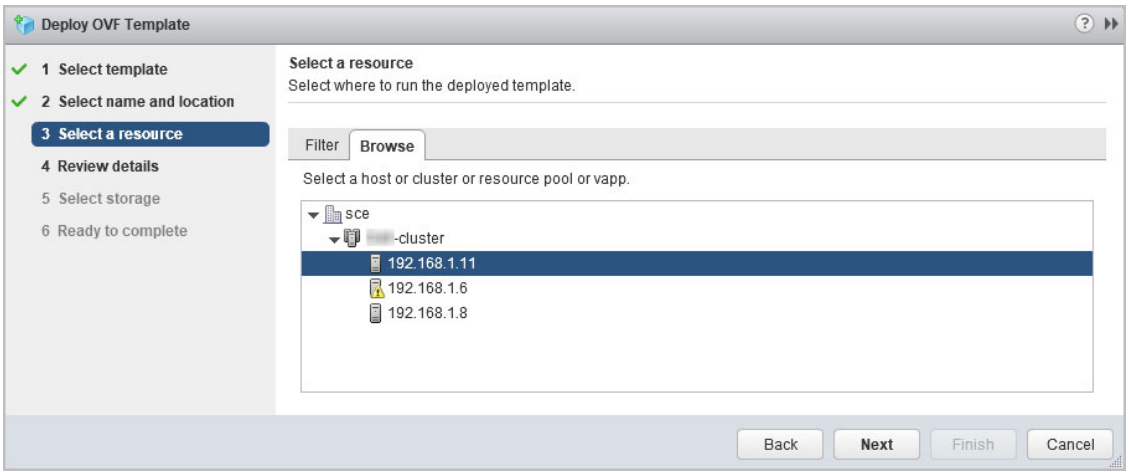

6 Click **Next**.

7 In the **Select name and location** screen, type a descriptive name for the NS*v* appliance into the **Name** field, and then select the location for it from the ESXi folder structure.

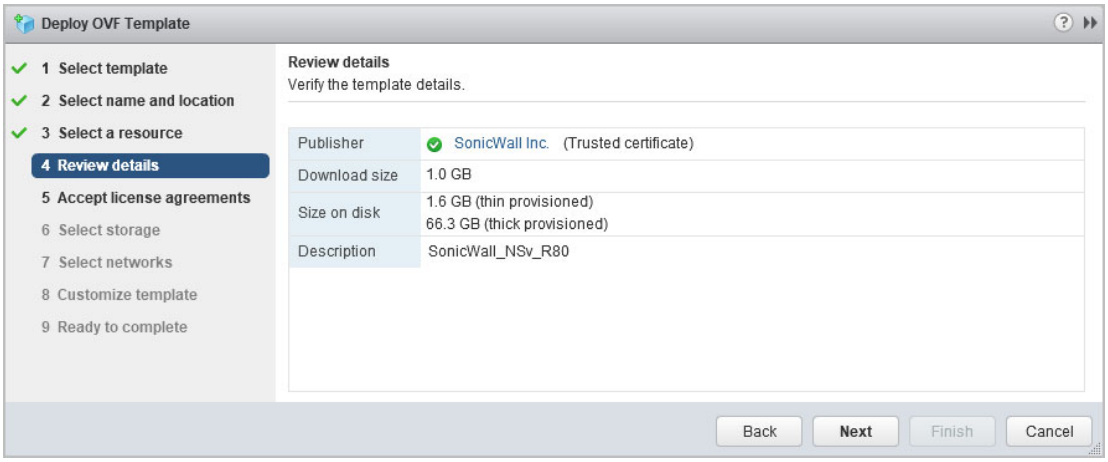



8 Click **Next**.

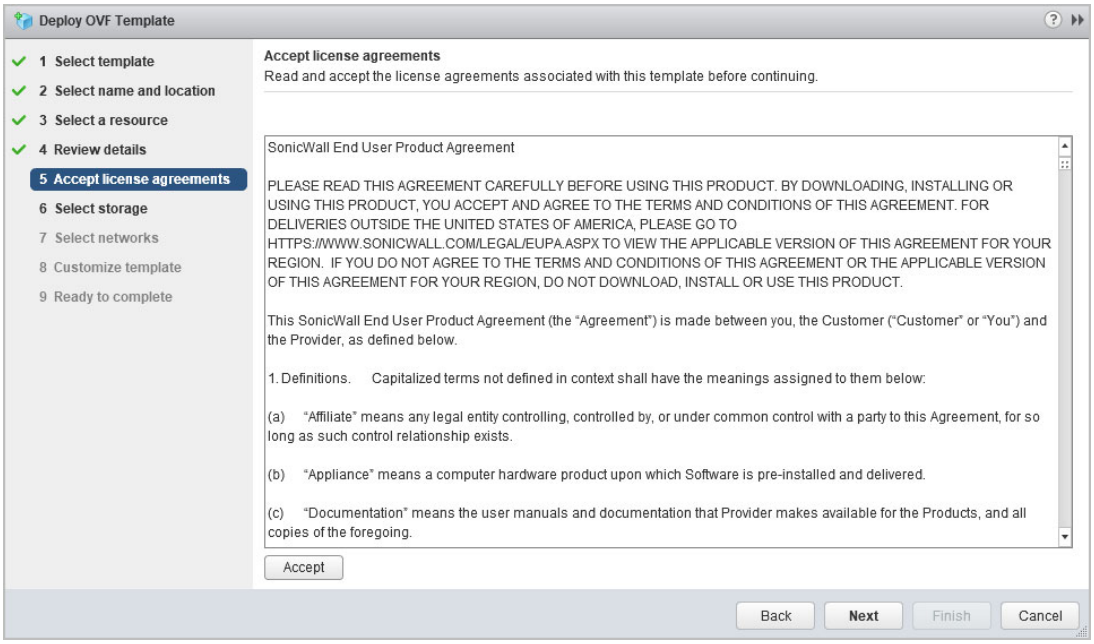
9 In the **Select a resource** screen, click **Next** to accept the default resource for the selected folder, or select a different resource and then click **Next**. Wait while the resource is validated. This is the resource pool where you want to deploy the template.



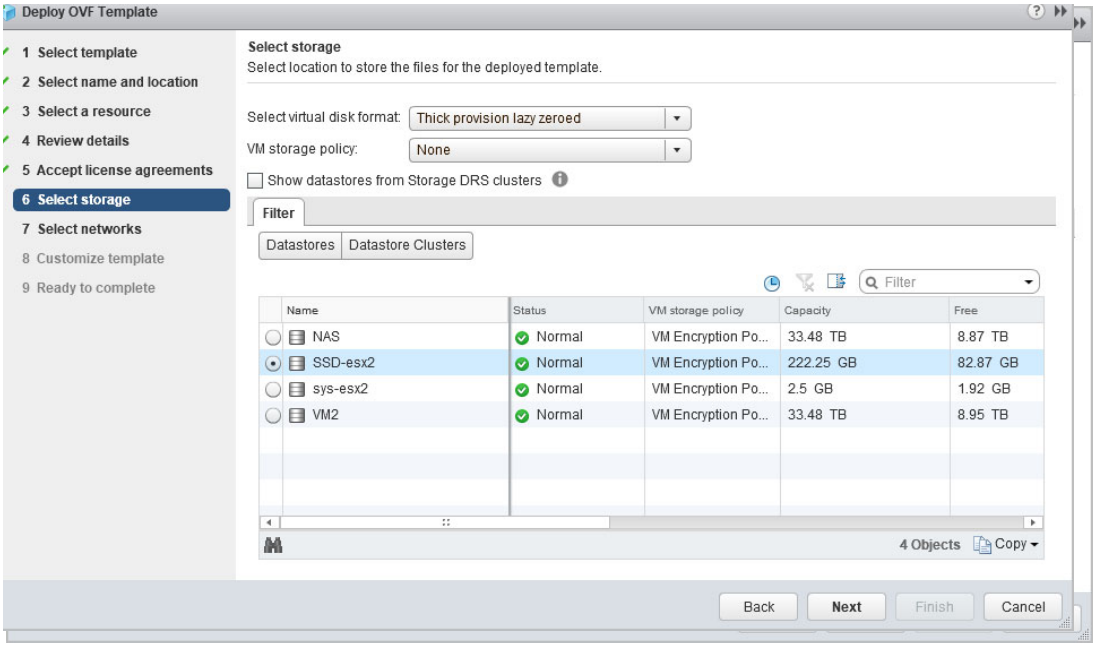
10 In the **Review details** screen, verify the template details and then click **Next**.




11 In the **Accept license agreements** screen, read the agreement, click **Accept** and then click **Next**.



12 In the **Select storage** screen, first select a datastore from the table. This is the location where you want to store the virtual machine files.




13 Leave the default settings for the datastore provisioning and click **Next**. The default is **Thick Provision Lazy Zeroed**.

14 In the **Select networks** screen, ***first sort the list of interfaces*** by clicking the **Source Network** column heading. Then select the vswitch networks that are mapped to the NS*v* appliance interfaces. The source networks are the NS*v* appliance interfaces (X0, X1, X2, X3, X4, X5, X6, X7), and the destination networks are the vswitch ports of your existing vswitch network configuration. If your vswitch networks are not fully configured, you can further adjust the interface/vswitch port pairs after the import.

**NOTE:** The ESXi vswitch configuration should have the option for **MAC address changes** enabled for the vswitch ports connected to the NS*v*.

For advanced configurations (DVS), consult the ESXi documentation on vswitch configuration.

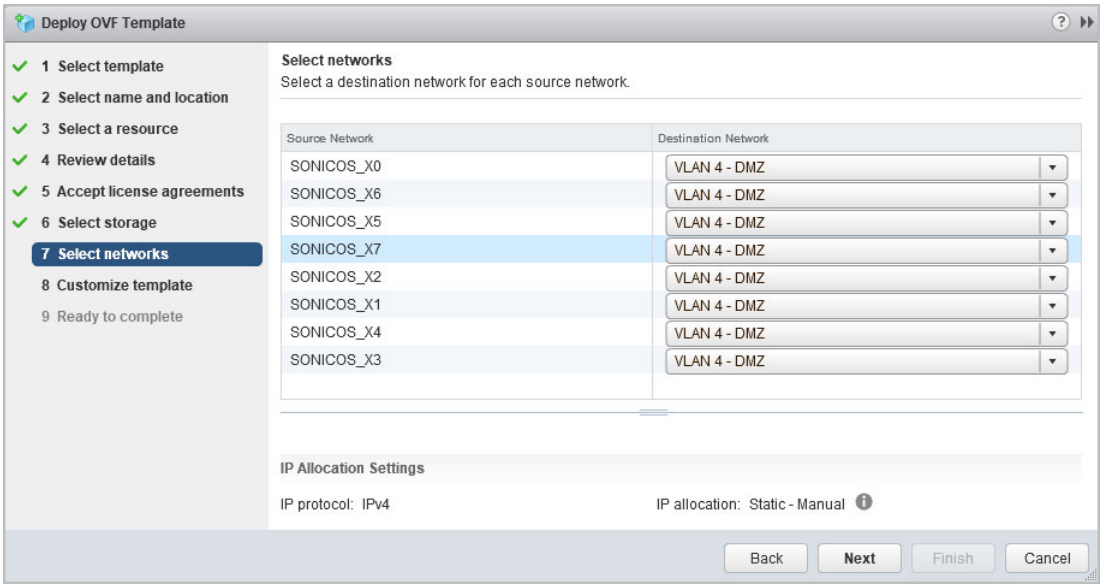
Typically, the NS*v* Series is deployed between your internal network and a network with internet access, and therefore you map the source **X0** to your LAN network (vswitch port), and map the source **X1** to the WAN network (vswitch port) with connectivity to the internet.

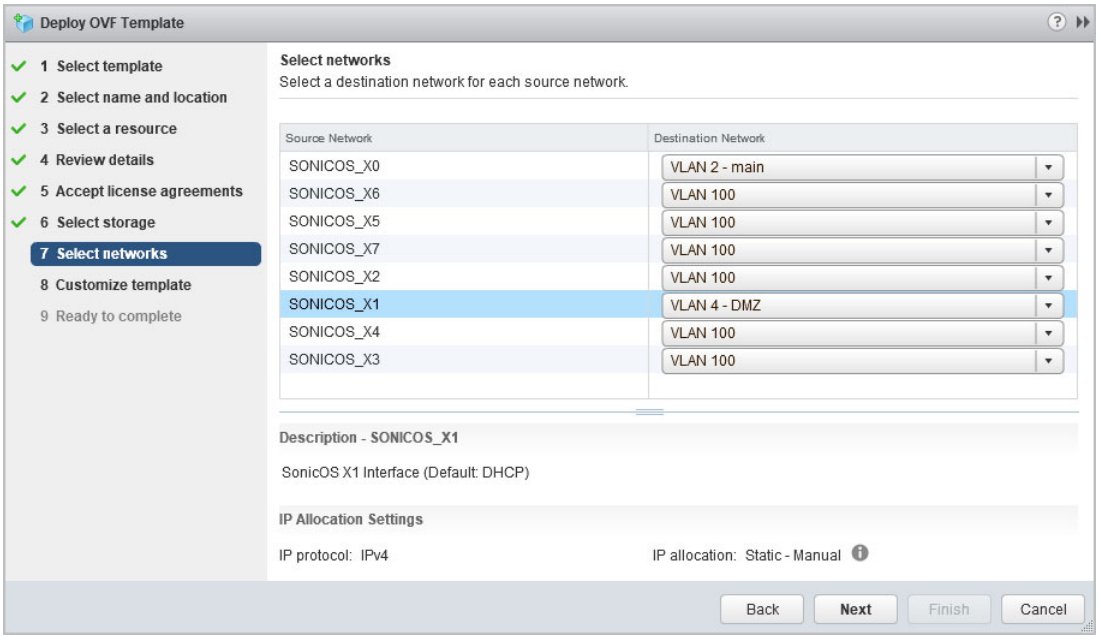
**IMPORTANT:** **SONICOS_X1** (the default WAN Interface) is set to ***DHCP*** by default, with ***HTTPS management*** enabled for the NS*v* Series, as this configuration eases deployments in virtual/cloud environments.

**NOTE:** System defaults for the X0 and X1 interfaces are:

- X0 – Default LAN – 192.168.168.168
- X1 – Default WAN – DHCP addressing, with HTTPS and Ping management enabled

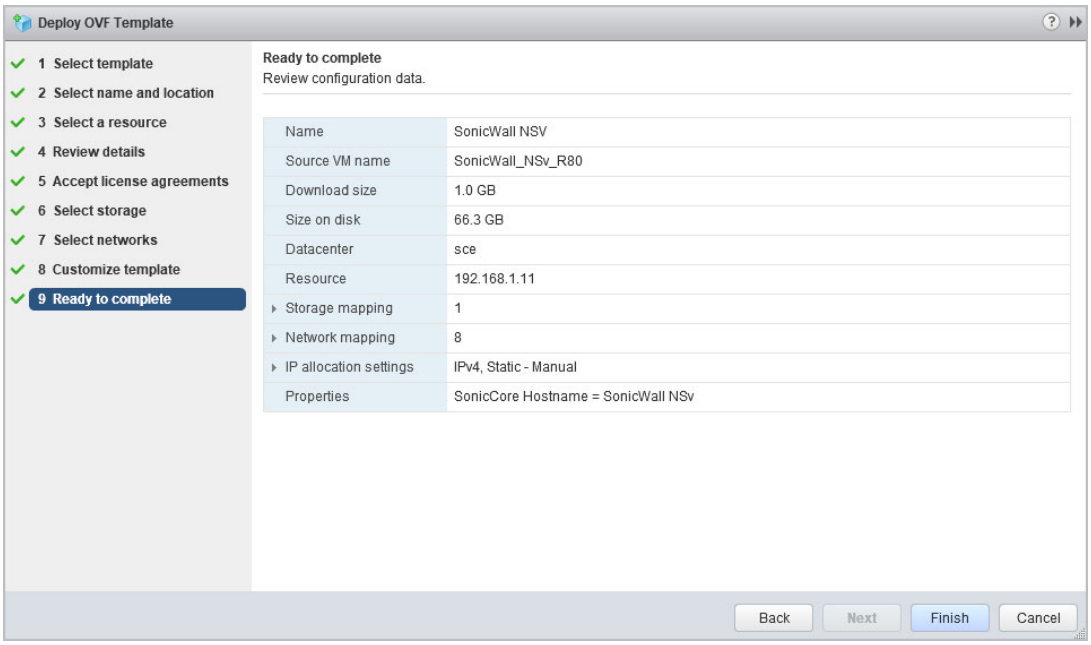
**NOTE:** Configuration settings import from physical firewalls to the NS*v* Series is not supported.




15 Click **Next**.

16 In the **Ready to complete** screen, review the settings and click **Finish** to create the NS*v* appliance. To change a setting, click **Back** to navigate back through the screens to make a change.




The name of the new NS*v* appliance appears in the left pane of the vSphere or vCenter window when complete.

The next step is to power on your NS*v* virtual firewall in the vSphere or vCenter interface. See Viewing and Editing Virtual Machine Settings on page 19 for information about powering on your NS*v* and related topics.

Once your NS*v* virtual firewall is powered on, the next step is to register it on MySonicWall. See Registering the NSv Appliance from SonicOS on page 25 for information about registering your NS*v*.

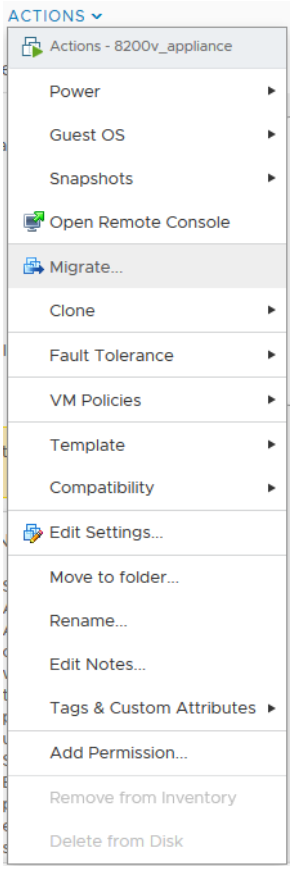
Other related topics are:

- Registering an NSv Manually in a Closed Network on page 29
- Managing SonicOS on the NSv Series on page 33
- Using System Diagnostics in SonicOS on page 36
- Using the Virtual Console on page 38

# Viewing and Editing Virtual Machine Settings

When logged into vSphere or vCenter, you can view and edit some basic information for your NS*v* Series instance.

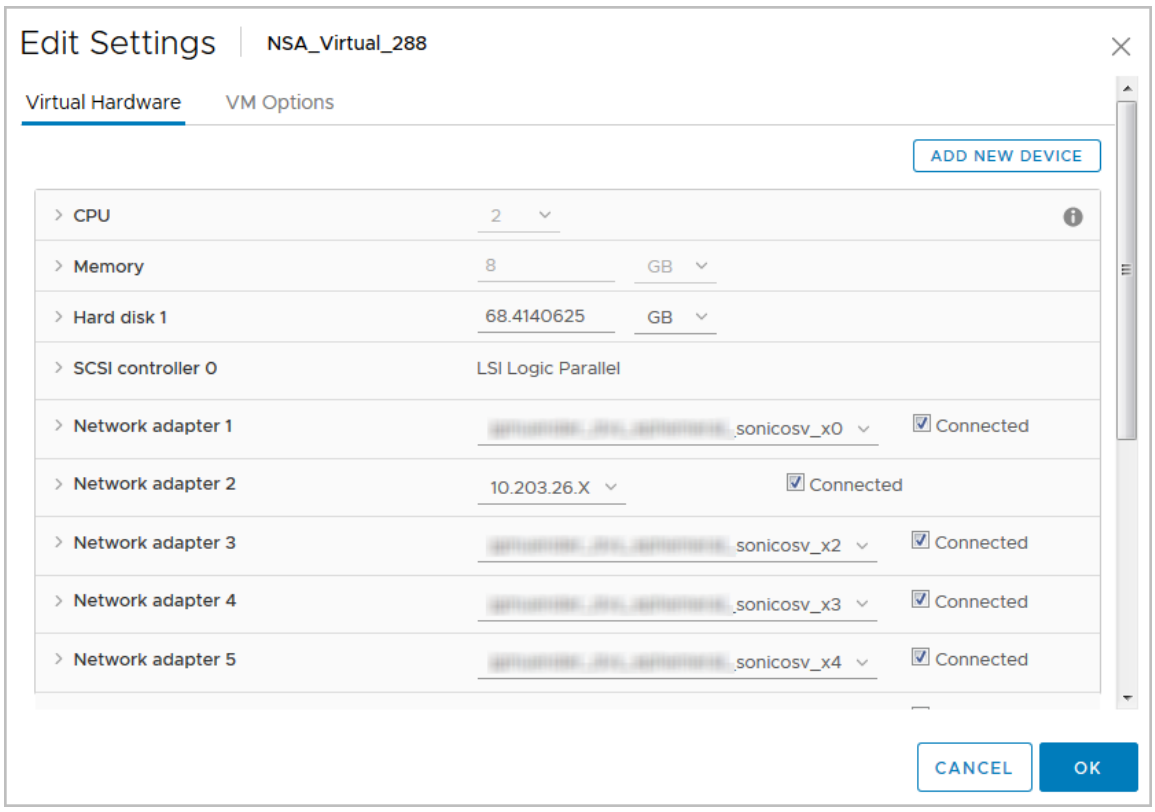
With your NS*v* Series instance selected in the left pane, click **ACTIONS** to view the options.




Select **Power** to choose from **Power On**, **Power Off**, **Shut Down Guest OS**, **Restart Guest OS**, and other options.

Select **Open Remote Console** to launch the same *ESXi Remote Console* that you get with the **Launch Remote Console** link on the **Summary** screen.

Select **Edit Settings** to open the Edit Settings dialog where you can access settings for the number of CPUs, Memory size, Hard disk size, Network adapters, and other items in the ESXi configuration for this NS*v* Series instance.




The ESXi Network adapters are mapped to the NS*v* Series interfaces as follows:

### Network Adapters to NS*v* Series Interfaces Mapping

| Network Adapter # | NS*v* Series Interface | Default IP | Default Zone |
|---|---|---|---|
| Network adapter 1 | x0 | 192.168.168.168 | LAN |
| Network adapter 2 | x1 | DHCP | WAN |
| Network adapter 3 | x2 | N/A | LAN |
| Network adapter 4 | x3 | N/A | LAN |
| Network adapter 5 | x4 | N/A | LAN |
| Network adapter 6 | x5 | N/A | LAN |
| Network adapter 7 | x6 | N/A | LAN |
| Network adapter 8 | x7 | N/A | LAN |

# Troubleshooting Installation Configuration

If the NSv fails to come up, follow the instruction in Using the NSv Management Console on page 42 to go to the NSv Management Console window or the SonicOS CLI window. Check the boot messages:

**NOTE:** The error messages shown below indicate that the virtual firewall cannot boot.

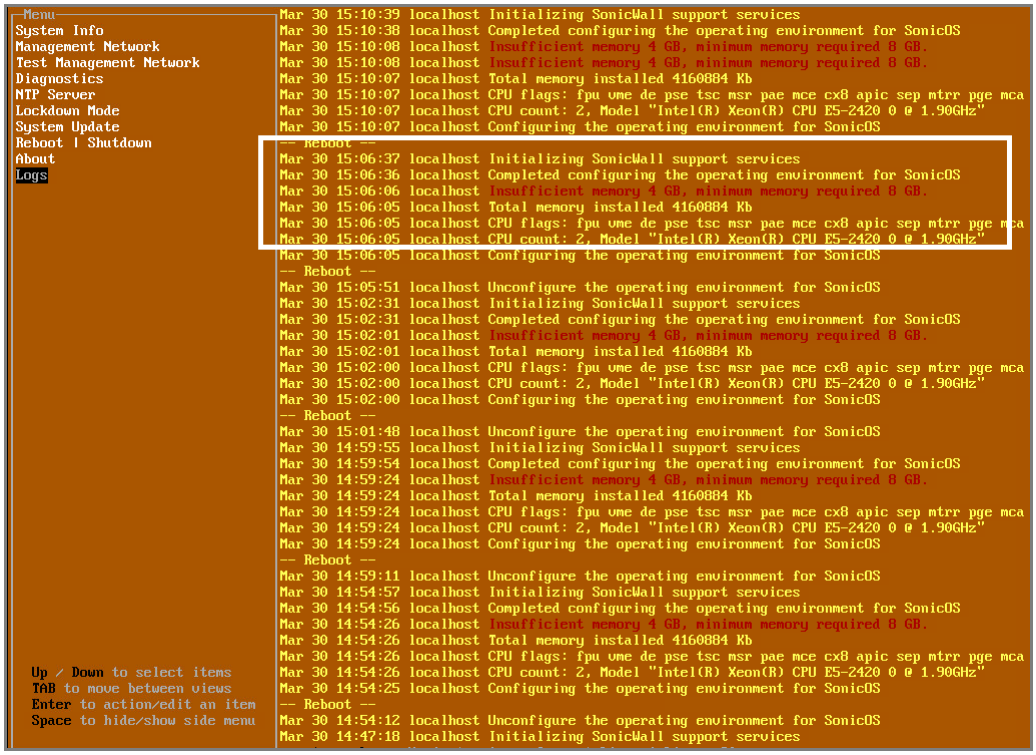
## Insufficient Memory Assignment

The following messages will appear if the virtual machine has insufficient memory. This may occur when doing an NSv installation or a NSv product upgrade.

SonicOS boot message:

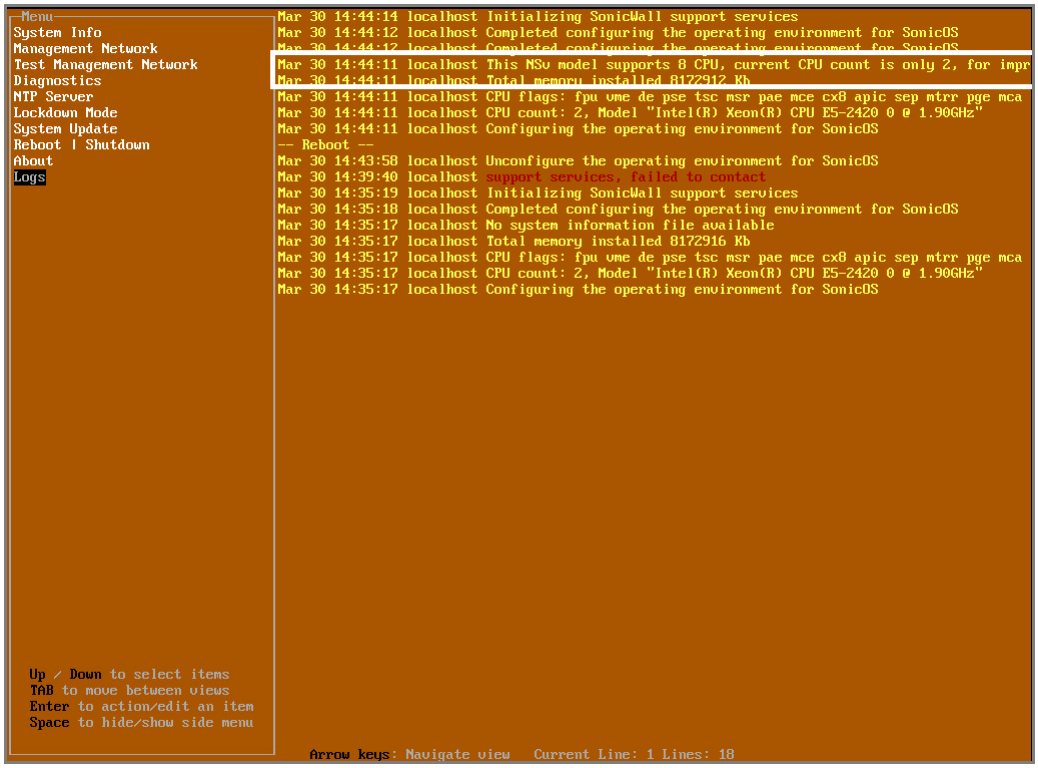
```
Insufficient memory 4 GB, minimum memory required 10 GB for NSv model: "NSv 800 Beta"
Power off the Network Security virtual appliance and assign 10 GB to this virtual appliance.
```

This message can also appear in the Management Console logs as shown in the two following screen shots.




**NOTE:** For details on navigating the NSv Management Console to troubleshoot the installation, see Using the NSv Management Console on page 42.

Memory may be insufficient without a insufficient memory log entry:

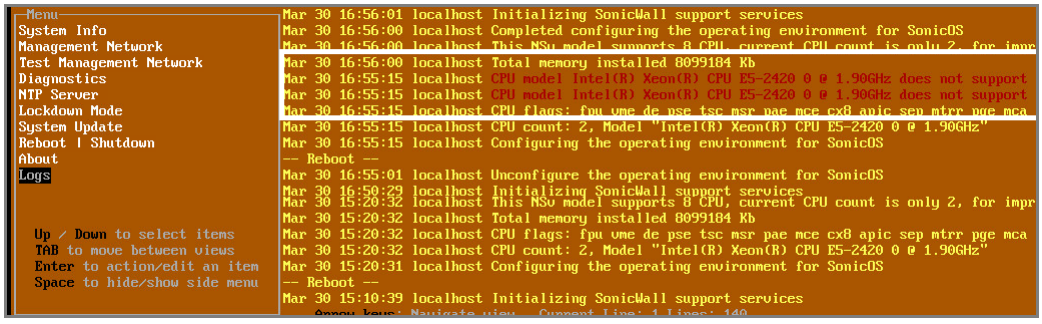



# Incompatible CPU

If the CPU does not support AES instructions the following message will appear:

```
CPU Model Intel(R) Xeon(R) CPU E5-2420 0 @ 1.90GHz is not supported by SonicWall Network
Security Virtual
CPU Model Intel(R) Xeon(R) CPU E5-2420 0 @ 1.90GHz does not support the Advanced Encryption
Standard(AES) instructions
Refer to Getting Started Guide and install the SonicWall Network Virtual on a supported
platform
```

The message can also be seen in the logs provided by the management console:




If the CPU does not support SSE 4.1 or 4.2 instructions the following message will appear:

```
CPU Model Intel(R) Xeon(R) CPU E5-2420 0 @ 1.90GHz is not supported by SonicWall Network
Security Virtual
CPU Model Intel(R) Xeon(R) CPU E5-2420 0 @ 1.90GHz does support SSE 4.1 or 4.2 instructions

Refer to Getting Started Guide and install the SonicWall Network Virtual on a supported
platform
```

# Incorrect CPU Configuration

All cores must be on the same socket. Customer needs to change the CPU configuration in settings.

```
The SonicWall Network Security requires all virtual CPU to reside on a single socket.
Power down the virtual machine and adjust the CPU configuration such that all CPU reside on the
same socket
```

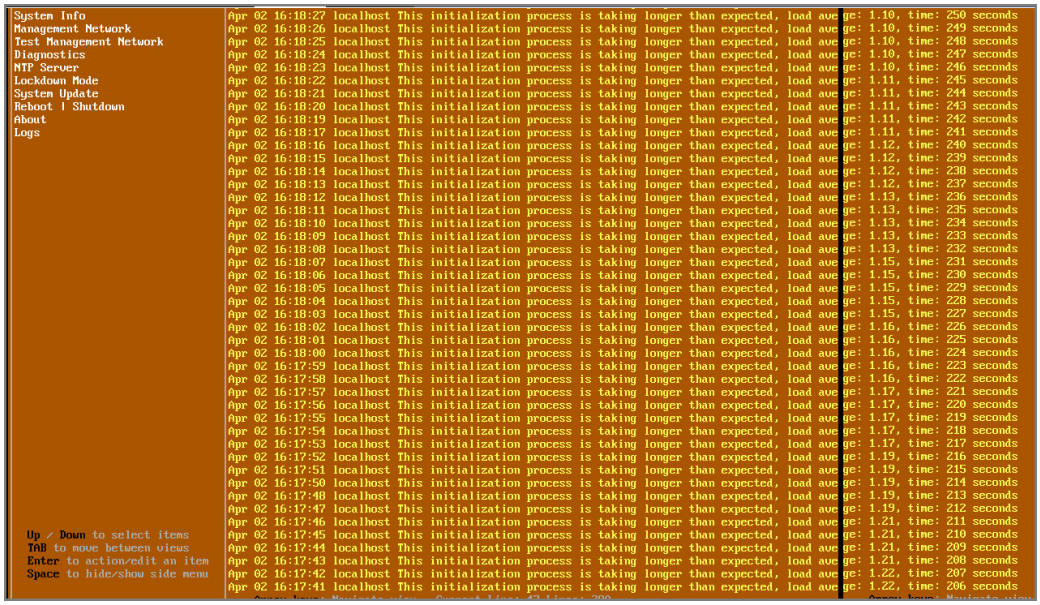
**NOTE:** The above error may occur when EVC masks the CPU capability. https://communities.vmware.com/thread/536227 resolution is to disabled EVC.

# Insufficient Resources at Time of Configuration

If the ESXi infrastructure where the NSv is being installed has poor performance the following message may appear at time of installation:

```
*******************************************************************
Initializing services: IMPORTANT, DO NOT POWEROFF OR REBOOT
                       --  Warning --
This initialization is taking longer than expected.
Please ensure sufficient compute resources are available to the SonicWall Network Security
Virtual.
*******************************************************************
```

If the above message occurs during initialization, more information is available in the logs:




# Incorrect Network Adapter Configuration

If the user adds a non-VMXNET3 driver the following error will appear on boot.

```
The SonicWall Network Security Virtual network adapters have been modified
         NSv configuration supports 8 VMXNET ethernet adapters
         Currently 1 non VMXNET3 ethernet adapters are configured
Power down the virtual machine and remove the 1 non VMXNET3 network adapters
```

# Incorrect Number of Network Adapters

The NSv supports exactly 8 VMXNET3 Network adapters. If the customer adds or removes a VMXNET3 Network adapter the below error message will appear.

```
        The SonicWall Network Security Virtual network adapters have been modified
                NSv requires 8 ethernet adapters, currently 7 are configured
Power down the virtual machine and configure the additional 1 VMXNEt network adapters
```

# Insufficient Memory When Jumbo Frames Enabled

The below error message appears on boot when Jumbo frames have been enabled and there is insufficient memory. Resolution is to power off the VM and increase the memory.

```
Insufficient memory 5 GB. The minimum memory required is 10 GB for NSv model: "NSv 400" with
the jumbo frame feature enabled
Power off the Network Security virtual applicane and assign 10 GB of memory to this virtual
appliance
```

3

# Licensing and Registering Your NS$_v$

**Topics:**



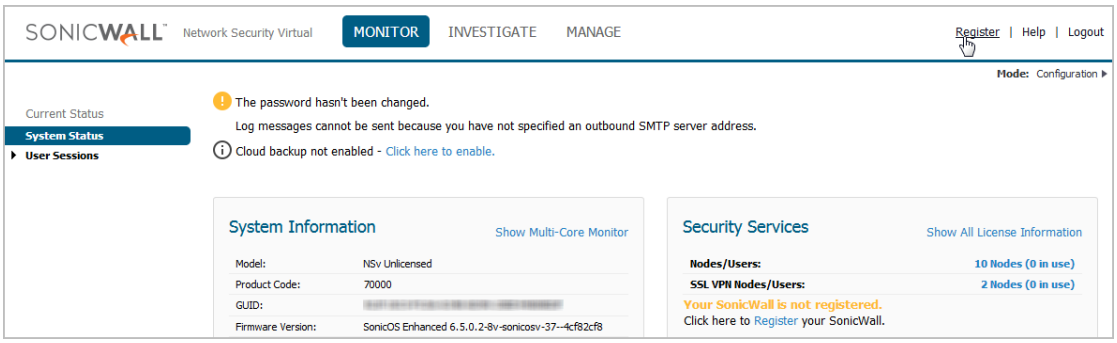
## Registering the NS$_v$ Appliance from SonicOS

Once you have installed and configured network settings for your NS*v* Series appliance, you can log into SonicOS management and register it in your MySonicWall account. Registration of your SonicWall NS*v* Series follows the same process as for SonicWall hardware-based appliances.

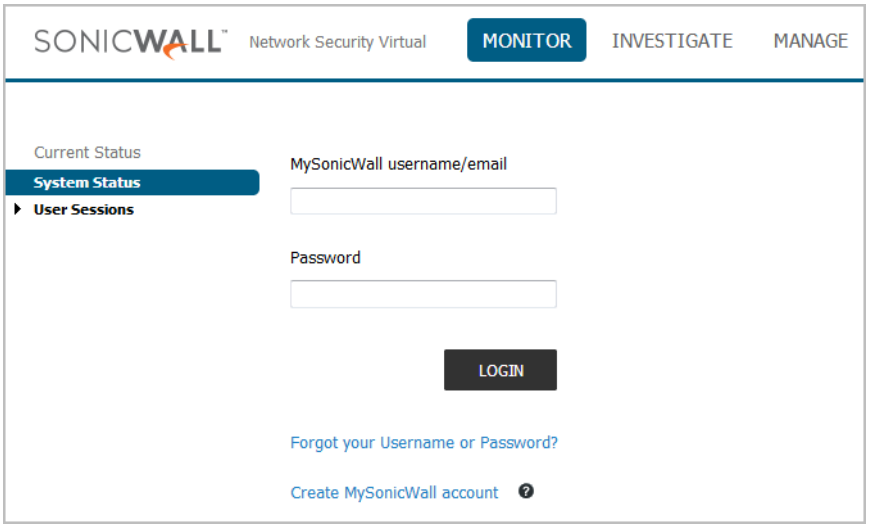
**NOTE:** System functionality is extremely limited if registration is not completed. See Using SonicOS on an Unregistered NS*v* on page 33 for more information.

***To register your NSv appliance:***

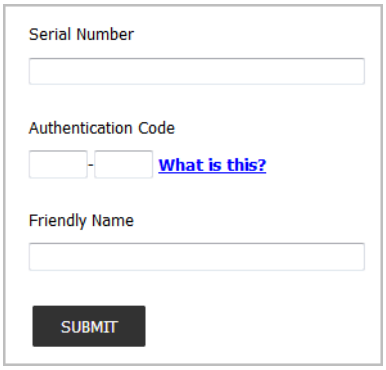
1. Point your browser to your NS*v* Series WAN or LAN IP address and log in as the administrator (default *admin / password*).
2. Click the **Register** link in the top banner or on the **MONITOR | System > Status** page.



3 Enter your MySonicWall credentials and click **LOGIN** to log into MySonicWall.




4 In the **Serial Number** and **Authentication Code** fields, enter the corresponding values you received after purchasing your NS*v* Series virtual firewall.




5 Type a descriptive name for the NS*v* into the **Friendly Name** field.

6 Click **SUBMIT**.

7 The licensing server acquires the necessary information from the NS*v* Series appliance and your MySonicWall account.

8 Acknowledge the registration completion notification by clicking **CONTINUE**.

SonicOS automatically restarts and then displays the login page.

9 Log into SonicOS.

On the **MANAGE** view under **Updates**, the **Licenses** page now shows your NS*v* appliance as **Licensed**.

10 In the **Licenses** page, you can activate security service free trials, enable available services, and click to purchase other services you want.

# Registering with Zero-Touch Deployment

The SonicWall NS*v* Series for ESXi is Zero-Touch enabled. Zero-Touch makes it easy to register your unit and add it to SonicWall Capture Security Center or SonicWall GMS On-Premises for management and reporting.

**Topics:**



# Deploying from CSC Management

## 1) Register:

- Point your browser to https://cloud.sonicwall.com and log into your MySonicWall account or create an account.
- In **Capture Security Center**, click the **mySonicWall** tile to launch the **MySonicWall Dashboard**.
- Click the **Add Product** button to launch the **QUICK REGISTER** dialog and then type in the serial number of your SonicWall NS*v*. Click **Confirm**.

  You should receive the NS*v* serial number and authentication code with your purchase confirmation email.
- In the **REGISTER A PRODUCT** dialog, fill in the **Friendly name** and **Authentication code**, and select the **Tenant Name**. By default, all products are placed under ***SonicWall Products Tenant***.
- Click **Register**.

## 2) Enable Zero-Touch and CSC Management and Reporting:

- MySonicWall recognizes your appliance model and displays the **Zero Touch** option. Enable **Zero Touch** and then click **Register** again. A success message is displayed to indicate Zero-Touch readiness.
- In MySonicWall, navigate to **Product Management > My Products**, select the appliance, and click the **Try** button to enable the license for **CSC Management and Reporting** (if not enabled already). A success message displays.

## 3) Connect and Power On the VM:

**NOTE:** The NS*v* must be able to obtain an IP address via DHCP from the WAN connection. You may use as static IP address. For details on using the NSv Management Console to setup a static IP address, see Management Network on page 45.

**CSC Management** automatically acquires the unit (it can take up to 30 minutes for initial acquisition). Once the unit is acquired, you can begin management.

To view the status of your NS*v* instance:

- In MySonicWall, pull down the curtain for **Capture Security Center**.
- Using the same Tenant as you selected during registration, click the **Management** tile.
- Click the appliance serial number or friendly name under **DEVICE MANAGER** to display its status.

# Getting the Latest Firmware for the NSv

1 In **Capture Security Center,** click the **mySonicWall** tile.

2 Navigate to **Resources & Support > My Downloads** and select your product firmware from the **Product Type** drop-down menu.

3 Click the link for the firmware you want and save the file to a location on your computer.

4 Pull down the curtain for **Capture Security Center**.

5 Using the same Tenant as you selected during registration, click the **Management** tile.

6 In **DEVICE MANAGER**, click on the NS*v* instance in the left pane.

7 In the center pane, go to the **Register/Upgrades > Firmware Upgrade** page.

8 Click the **Choose File** button to select the firmware you just downloaded, then click **Upgrade from Local File**.

# Deploying from GMS On-Premises

**PREREQUISITE:** GMS 8.7 or higher is required. Be sure that your GMS system is Zero-Touch enabled. Refer to the knowledge base article at:
https://www.sonicwall.com/support/knowledge-base/?sol_id=190205183052590

## 1) Register:

- Log into your MySonicWall account or create an account at www.mysonicwall.com.
- Click the **Add Product** button to launch the **QUICK REGISTER** dialog and then type in the serial number of your SonicWall appliance. Click **Confirm**.

  You can find the serial number and authentication code on the shipping box or appliance label.
- In the **REGISTER A PRODUCT** dialog, fill in the **Friendly name** and **Authentication code**, and select the **Tenant Name**. By default, all products are placed under ***SonicWall Products Tenant***.
- Click **Register**.

## 2) Enable Zero-Touch:

- MySonicWall recognizes your NS*v* model and displays the **Zero Touch** option. Enable **Zero Touch**.
- Select the desired GMS Public IP from the **GMS Server Public IP/FQDN** drop-down list. The **ZeroTouch Agent Public IP/FQDN** field is populated with the associated IP address.

  **IMPORTANT:** Verify that both of these IP addresses are the same as those you configured during the prerequisite process.
- Click **Register**.

## 3) Connect and Power On VM:

**NOTE:** The NSv must be able to obtain an IP address via DHCP from the WAN connection. If you need to use a static IP address, refer to the details on using the NSv Management Console, see Management Network on page 45.

**GMS** automatically acquires the unit (it can take up to 30 minutes for initial acquisition). Once the unit is acquired, you can begin management.

To view the status of your NSv instance:

- Log into GMS and navigate to the **FIREWALL** view.
- Click on the appliance in the left pane to display the status.

## Getting the Latest Firmware for the NS$_v$

1 In a web browser, navigate to www.mysonicwall.com.

2 Navigate to **Resources & Support > My Downloads** and select your product firmware from the **Product Type** drop-down menu.

3 Click the link for the firmware you want and save the file to a location on your computer.

4 In GMS, navigate to the **FIREWALL** view and click on the NS*v* instance in the left pane.

5 In the center pane, go to the **Manage > Register/Upgrades > Firmware Upgrade** page.

6 Click the **Choose File** button to select the firmware you just downloaded, then click **Upgrade from Local File**.

# Registering an NSv Manually in a Closed Network

**NOTE:** This registration method uses Manual Upgrade and is **not** recommended for normal product registration on products that have internet access. See Registering the NSv Appliance from SonicOS on page 25 for the recommended registration method on products with internet access.

In a closed network, your NS*v* does not have internet access and cannot communicate directly with the SonicWall licensing server. To complete the registration process, you need to obtain information from MySonicWall and then log into SonicOS on your NS*v* and enter that information.

**NOTE:** System functionality is extremely limited if registration is not completed. See Using SonicOS on an Unregistered NS*v* on page 33 for more information.

***To register an NSv virtual firewall in a closed network environment:***

1 Log into your NS*v* appliance and navigate to the **MONITOR | System Status** page.

2 Make a note of the **GUID**, or leave the page open in your browser. The **GUID** is displayed in the **System Information** section.

**NOTE:** If the **GUID** is already updated on MySonicWall, it is necessary to de-register and restart the NS*v*. See Deregistering Your NSv on page 30. If your NS*v* cannot connect with MySonicWall, contact Technical Support to de-register the **GUID** from MySonicWall.

3 In another browser tab or window, log into your MySonicWall account.

4 Navigate to **My Products** and click on the entry for your NS*v* appliance.

5 Click on the **+** next to **GUID**. Enter the **GUID** into the dialog box and click **Update**.

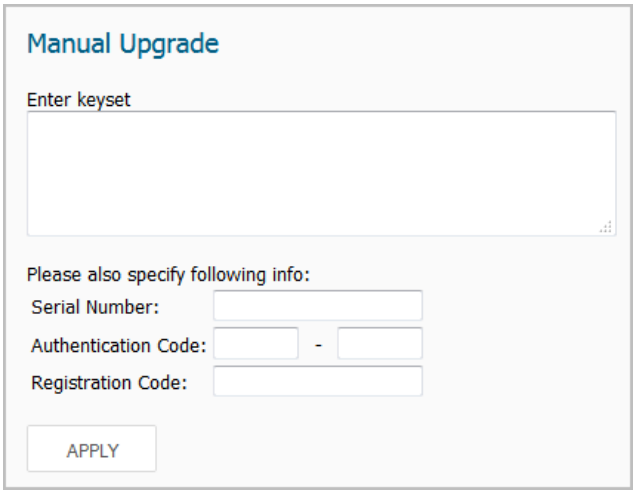
6 To get the **License Keyset**, first click the key icon. The **License Keyset** is displayed. This is a binary representation of all the service licenses activated on your NS*v*.

7 Select the **License Keyset** and copy it to your clipboard.

8 Log into your NS*v* appliance or return to that browser window if still logged in.

9 Navigate to the **MANAGE | Licenses** page in SonicOS.

10 Under **Manual Upgrade**, paste the **License Keyset** into the **Enter keyset** field.




11 In the **Serial Number** and **Authentication Code** fields, enter the corresponding values you received after purchasing your NSv Series virtual firewall.

12 In the **Registration Code** field, enter the registration code you received when you did the initial registration in MySonicWall to obtain the OVA file. See Obtaining the OVA from MySonicWall on page 12 for more information.

13 Click **APPLY** to register the NSv and activate the licensed services.

14 Click **ACCEPT**.

Your NSv virtual firewall is now registered.

# Deregistering Your NSv

You can deregister your NSv directly from the SonicOS management interface. Deregistration puts the virtual appliance into the unregistered state and deletes the binding between it and its serial number in MySonicWall. Then you can use the serial number to register the same or another NSv instance. Only one NSv instance is allowed per serial number.

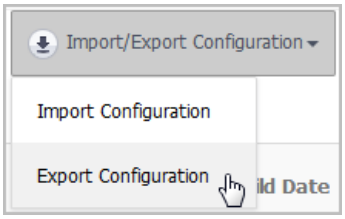
**NOTE:** Only an NSv which was registered online can be deregistered. If the NSv was registered using the offline method, deregistration is not supported. Contact Technical Support for assistance.

***To deregister an NSv:***

1 Log into the SonicOS management interface on your NSv virtual appliance.

2 Navigate to the **Updates | Setting** page in the **MANAGE** view.

3 Select **Export Configuration** from the **Import/Export Configuration** drop-down list to export your current configuration settings before deregistering your NSv.

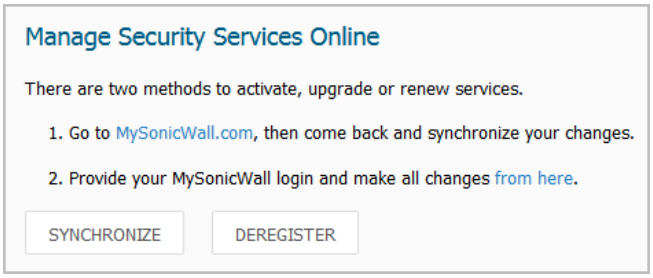



This makes it possible to import the settings to another NSv instance.

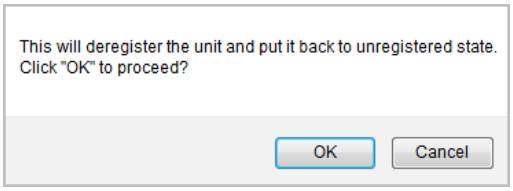
**CAUTION: Be sure to export your configuration settings before deregistering your NSv. You cannot recover them after deregistration.**

4 Navigate to the **Updates | Licenses** page in the **MANAGE** view.

5 Under **Manage Security Services Online**, click the **DEREGISTER** button.




6 Click **OK** in the confirmation dialog.




If deregistration is successful, the virtual appliance will return to the unregistered state. You can see the **Register** link in the top banner of SonicOS and the message “Your SonicWall is not registered” on the **MONITOR | System > Status** page.

If deregistration fails, an error message is displayed in the status bar at the bottom of the SonicOS management interface.

# Converting a Free Trial License to Full License

A SonicWall NSv instance installed as a 30-day free trial can easily be converted to a full production licensed NSv instance.

***To convert your free trial to a production version:***

1 Purchase a SonicWall NSv license from a distributor. You will receive a fulfillment email with the new serial number and authentication code.

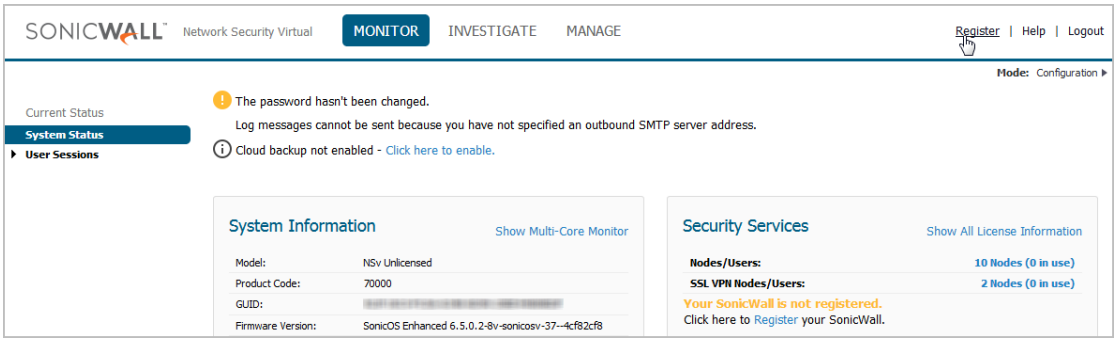
2 Log into SonicOS on your free trial instance.

3 Navigate to the **Updates | Licenses** page in the **MANAGE** view.

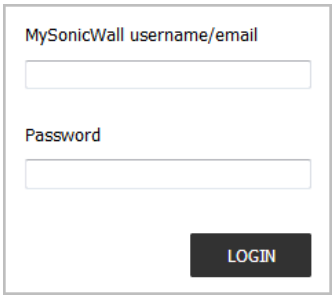
4 Under **Manage Security Services Online**, click the **DEREGISTER** button.

5 Click **OK** in the confirmation dialog. The virtual firewall returns to the unregistered state.

6 Click the **Register** link in the top banner or on the **MONITOR | System > Status** page.




7 Enter your MySonicWall credentials and then click **LOGIN**.




8 Enter the **Serial Number** and **Authentication Code** you received after purchasing your NS*v* Series instance.

9 Click **SUBMIT**.

10 The licensing server acquires the necessary information from the NS*v* Series appliance and your MySonicWall account. If asked, you can specify a **Friendly Name** or **Product Group** for the NS*v* Series appliance.

11 Acknowledge the registration completion notification by clicking the **OK** button.

SonicOS automatically restarts and then displays the login page.

12 Log into SonicOS.

In the **MONITOR** view, the **System > Status** page now shows your licensed security services, and the **Register** link is no longer displayed.

13 In the **MANAGE** view on the **Updates | Licenses** page, you can activate security service free trials, enable available services, and click to purchase other services you want.

4

# SonicOS Management

**Topics:**



## Managing SonicOS on the NSv Series

The X1 interface is the default WAN Interface and is set to use DHCP addressing by default, with HTTPS management enabled. To ease testing, you can utilize a DHCP server on the X1 connected network. If DHCP is not available, use the console to access the CLI and configure a static IP address.

The X0 interface is the default LAN interface, and also has HTTPS management enabled. Its IP address is set to 192.168.168.168 by default. You can map this interface to your own network during initial deployment of the OVF template. After deployment, you can reconfigure the IP address to an address in your network.

To change the configuration of either X1 or X0, refer to Using the ESXi Remote Console to Configure the WAN or LAN Interfaces on page 38.

***To log into SonicOS for management of the NSv:***

1. Point your browser to either the LAN or WAN IP address. The login screen is displayed.

   When the X1 WAN interface is using DHCP addressing, DNS is also enabled. You can generally access the WAN address from any machine in your network.

   If you have an existing network on 192.168.168.0/24 in your environment, you can access the default IP address of the X0 LAN interface of your NS*v* Series from a computer on that network for SonicOS management. The NS*v* Series X0 IP address is 192.168.168.168 by default.

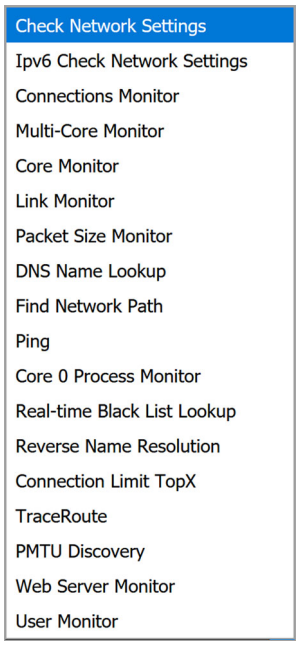
2. Enter the administrator credentials (default *admin / password*) and press **Enter**.

   The SonicOS management interface is displayed. You can navigate and update the configuration just as you would with any SonicWall network security appliance.

## Using SonicOS on an Unregistered NSv

The SonicOS management interface provides fewer features on an unregistered NS*v* Series appliance than on a registered NS*v*. The Available SonicOS Pages on Unregistered NS*v* table provides a summary of the available features on an unregistered NS*v*.

### Available SonicOS Pages on Unregistered NSv

| Top Level View | Page Group | Page Within Group | Description |
|---|---|---|---|
| **MONITOR** | System Status | n/a | System information, Node license, Alerts, Network interface settings |
| | User Sessions | SSL-VPN Sessions | User sessions connected via SSL VPN |
| | | Active Users | Active user session information; Logout button for users |
| | | Active Guest Users | Active guest user session information; Logout button for guest users |
| | | User Monitor | Graph of logged in users over time for client logins and web based logins |
| **INVESTIGATE** | Event Logs | n/a | Log event table, dynamically updated, filterable, searchable, one-click details |
| | Connection Logs | n/a | Connection log, source/destinations, protocols, bytes transferred, filterable, searchable, flush option |
| | SD-WAN Connection Logs | n/a | Connection log, source/destinations, protocols, bytes transferred |
| | Appflow Logs | n/a | Requires App Visualization license, which requires registration |
| | System Diagnostics | n/a | TSR access and Diagnostic tools:<br>  <br>See Using System Diagnostics in SonicOS on page 36 for information. |
| **MANAGE** | Licenses | n/a | Node license information, MySonicWall access, Manual Upgrade |
| | Firmware & Backups | n/a | Firmware versions, Local Backup, Settings import/export, Settings options to send to SonicWall Support |

### Available SonicOS Pages on Unregistered NSv

| Top Level View | Page Group | Page Within Group | Description |
|---|---|---|---|
| | Restart | n/a | Restarts the virtual firewall after confirmation |
| | Appliance | Base Settings | Firewall name, Admin username and password, Login security, Multiple administrator, Web/SSH/GMS management, Client certificate checks, and Language settings |
| | | SNMP | Enable SNMP |
| | | Certificates | View and Import certificates, Generate certificate signing requests, SCEP for issuing certificates to endpoint devices |
| | | System Time | Time and time zone, NTP server settings |
| | | System Schedules | Schedule settings |
| | Network | Interfaces | Interface settings, Traffic statistics |
| | | Failover & Load Balancing | Enable load balancing, LB Group configuration, Statistics |
| | | Zones | Zone settings |
| | | VLAN Translation | VLAN Translation configuration |
| | | DNS | IPv4 DNS settings |
| | | DNS Proxy | Enable DNS Proxy, DNS proxy and cache settings |
| | | Routing | Route policies, OSPF, RIP |
| | | ARP | Static ARP entries, ARP settings and cache |
| | | Neighbor Discovery | Static NDP entries, NDP settings and cache |
| | | MAC-IP Anti-spoof | Interface anti-spoof settings, cache, detected list |
| | | DHCP Server | Enable DHCPv4 Server, Configure lease scopes, View current leases |
| | | IP Helper | Enable IP Helper, Configure relay protocols and policies, Refresh DHCP relay leases |
| | | Web Proxy | Proxy forwarding, User proxy servers |
| | | Dynamic DNS | DDNS Profile settings |
| | | SD-WAN module | |
| | | AWS configuration | |
| | Log Settings | Base Setup | Logging and alert levels, per-category settings |
| | | SYSLOG | Syslog settings, servers |
| | | Automation | Email settings for sending logs and alerts, Solera Capture Stack |

**Available SonicOS Pages on Unregistered NSv**

| Top Level View | Page Group | Page Within Group | Description |
|---|---|---|---|
| | | Name Resolution | DNS and NetBios methods |
| | | Analyzer | Requires Analyzer license, which requires registration |
| | Legal | n/a | End User Product Agreement |
| | API | | |

# Using System Diagnostics in SonicOS

The **Tools | System Diagnostics** page on the **INVESTIGATE** view provides several diagnostic tools that help troubleshoot various kinds of network problems and process monitors, to help you resolve many of the common issues you might face. Each tool is different from the others so the display changes with the tool. However, some of the data management functions are common among the tools.

Nearly all the tools have these buttons at the bottom of the window:

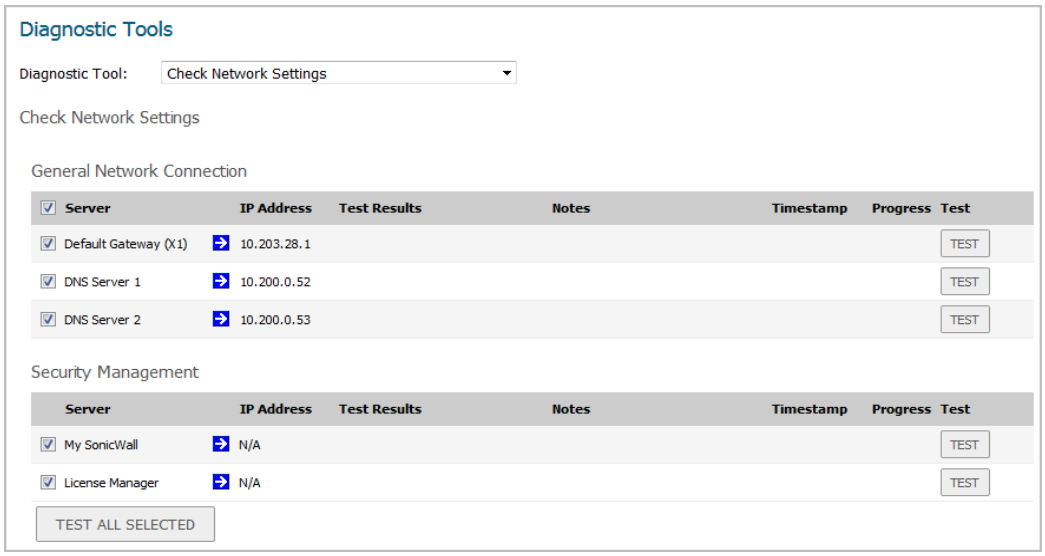

| Button | Function |
|---|---|
| **ACCEPT** | Saves any changes you made to the diagnostic support report or diagnostic tool. |
| **CANCEL** | Cancels any changes you initially made to the diagnostic support report or diagnostic tool. |
| **REFRESH** | Refreshes the data being displayed in the **Diagnostic Tools** section. |

Some tools have management functions to help you manage lists of data. These operate much like the options on the other logs and reports.

- Search
- Filter
- Toggling between views (IPv4 vs. IPv6, for example)
- Refresh
- Export
- Clear

Select the tool you want from the **Diagnostic Tool** drop-down menu in the **Tools | System Diagnostics** page. The Check Network Settings tool is described below. See the *SonicOS for Network Security Virtual 6.5 Investigate* administration documentation for complete information about the available diagnostic tools.

# Check Network Settings




**Check Network Settings** is a diagnostic tool that automatically checks the network connectivity and service availability of several pre-defined functional areas of the NS*v* Series, returns the results, and attempts to describe the causes if any exceptions are detected. This tool helps you locate the problem area when users encounter a network problem.

Specifically, **Check Network Settings** automatically tests the following functions:

- Default Gateway settings
- DNS settings
- MySonicWall server connectivity
- License Manager server connectivity
- Content Filter server connectivity

The return data consists of two parts:

- **Test Results** – Provides a summary of the test outcome
- **Notes** – Provides details to help determine the cause if any problems exist

The Check Network Settings tool is dependent on the **Network Monitor** feature available on the **Tools | Network Probes** on the **INVESTIGATE** view. Whenever the **Check Network Settings** tool is being executed (except during the Content Filter test), a corresponding Network Monitor Policy appears on the **Tools | Network Probes** page, with a special diagnostic tool policy name in the form:

`diagTestPolicyAuto_<IP_address/Domain_name>_0`

**NOTE:** Log messages show the up/down status of some of these special network objects. These objects, however, live for only three seconds and then are deleted automatically.

To use the **Check Network Settings** tool, first select it in the **Diagnostic Tools** drop-down list and then click the **Test** button in the row for the item that you want to test. The results are displayed in the same row. A green check mark signifies a successful test, and a red X indicates that there is a problem.

To test multiple items at the same time, select the **Server** checkbox at the top of the table to select all items or select the checkbox for each desired item and then click **TEST ALL SELECTED**.

If probes fail, you can click the blue arrow to the left of the I**P Address** field of the failed item to jump to the configuration page to investigate the root cause.

5

# Using the Virtual Console

**Topics:**



## Using the ESXi Remote Console to Configure the WAN or LAN Interfaces

You can use the ESXi remote console to set the IP address and network settings of the NS*v* Series interfaces, to change between static and DHCP addressing, and to enable SonicOS management on your NS*v* Series instance.

For example, depending on your network environment, you might need to configure a static IP address on your NS*v* Series X1 WAN interface. If you do so, you need to configure HTTPS management to allow remote management over the WAN.

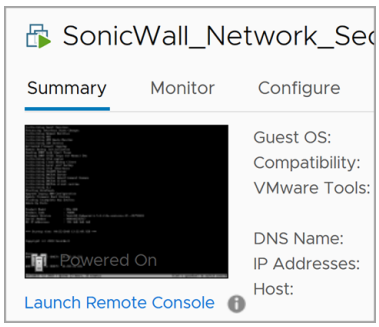
The NS*v* Series X0 IP address is 192.168.168.168 by default. If your LAN network uses a different IP address range, then you may want to configure your NS*v* Series X0 IP address with an address in your existing LAN network. This will allow you to manage SonicOS from a computer on your LAN.

The *ESXi Remote Console* allows you to log into the NS*v* Series console and use the command line interface (CLI) to configure these network settings.

**NOTE:** To type within the console window, click your mouse inside the window. To regain control of your mouse, press **Ctrl+Alt**.

***To use the console to enable SonicOS management:***

1. Log into vSphere or vCenter and select your NS*v* Series instance in the left pane.
2. Do one of the following to open the ESXi remote console:
   - Click on the image of the console to access the console in browser window.



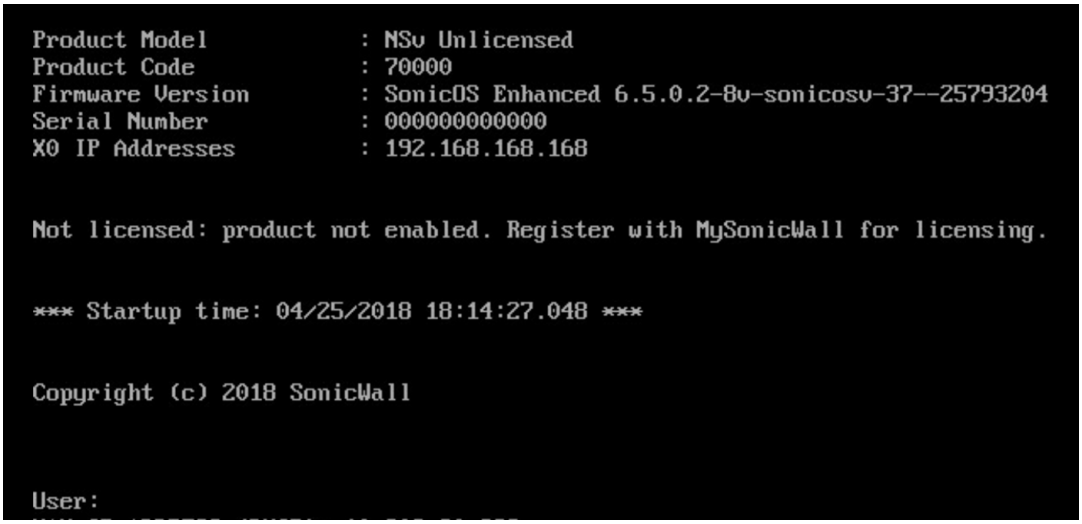

   - Click **Launch Remote Console**.

- Click **Actions > Open Remote Console**.

3 Click inside the console window.

> **NOTE:** Press **Ctrl+Alt** to regain control of your mouse, or with the browser access method simply move your mouse away from the console area.

4 Log in using the administrator credentials.




5 To use a static IP address for the WAN, type the following sequence of commands to enable a static IP and management access on the X1 WAN interface. The command prompt will change as you enter or exit different command levels. This command sequence shown below uses example IP address settings in the 10.203.26.0 network, which should be replaced with the correct settings for your environment.

```
configure t
interface x1
ip-assignment WAN static
ip 10.203.26.228 netmask 255.255.255.0
gateway 10.203.26.1
exit
management https
management ping
management ssh
exit
commit
```

After entering `commit`, the console displays `Applying changes` and other status information, then displays the `config` prompt. Type `exit` to return to the `admin` command level and prompt.

```
admin@000000000000> configure t
config(000000000000)# interface x1
(edit-interface[X1])# ip-assignment WAN static
(edit-WAN-static[X1])# ip 10.203.26.228 netmask 255.255.255.0
(edit-WAN-static[X1])# gateway 10.203.26.1
(edit-WAN-static[X1])# exit
(edit-interface[X1])# management https
(edit-interface[X1])# management ping
(edit-interface[X1])# management ssh
(edit-interface[X1])# exit
config(000000000000)# commit
% Applying changes...
% Status returned processing command:
    commit
% Changes made.
config(000000000000)#
```

6 To return to DHCP for the WAN address, type the following sequence of commands to enable DHCP and management access on the X1 WAN interface. The command prompt will change as you enter or exit different command levels.

```
configure t
interface x1
ip-assignment WAN dhcp
exit
management https
management ping
management ssh
exit
commit
```

After entering `commit`, the console displays `Applying changes` and other status information, then displays the `config` prompt. After a few seconds, the assigned DHCP address is displayed. You can access the SonicOS web management interface at that address.

```
admin@000000000000> configure t
config(000000000000)# interface x1
(edit-interface[X1])# ip-assignment WAN dhcp
(edit-WAN-dhcp[X1])# exit
(edit-interface[X1])# management https
(edit-interface[X1])# management ping
(edit-interface[X1])# management ssh
(edit-interface[X1])# exit
config(000000000000)# commit
% Applying changes...
% Status returned processing command:
    commit
% Changes made.
config(000000000000)#
WAN IP ADDRESS (DHCP): 10.203.26.229
```

7 You can use the `show status` command at the `admin` prompt to view the assigned IP address for the X1 (WAN) interface and other information.

```
admin@000000000000> show status

==================
System Information:
==================

Model:                          NSv Unlicensed
Product Code:                   70000
Serial Number:
Authentication Code:
GUID:
Firmware Version:               SonicOS Enhanced 6.5.0.2-8v-sonicosv-37--25793204
Safemode Version:               6.5.0.0
ROM Version:                    5.0.0.0
CPUs:                           3.35% - 2 x 2599 MHz Intel(R) Xeon(R) CPU E5-2690 v3 @ 2.60GHz
Total Memory:                   6 GB RAM
System Time:                    04/26/2018 12:41:46
Up Time:                        0 Days 18:30:02
Connections:                    Peak: 77 Current: 0 Max: 512
Connection Usage:               0.000%
Last Modified By:               admin CLI 04/26/2018 12:37:45

==================
Security Services:
==================

Nodes/Users:                    10 Nodes(0 in use)
SSL VPN Nodes/Users:            2 Nodes(0 in use)
Virtual Assist Nodes/Users:     1 Nodes(0 in use)
Registration Status:            Your SonicWall is not registered

==================
Network Interfaces:
==================

Name            IP Address       Link Status
X0(LAN)         192.168.168.168  10 Gbps Full Duplex
X1(WAN)         10.203.26.229    10 Gbps Full Duplex
X2(Unassigned)  0.0.0.0          10 Gbps Full Duplex
X3(Unassigned)  0.0.0.0          10 Gbps Full Duplex
X4(Unassigned)  0.0.0.0          10 Gbps Full Duplex
X5(Unassigned)  0.0.0.0          10 Gbps Full Duplex
X6(Unassigned)  0.0.0.0          10 Gbps Full Duplex
X7(Unassigned)  0.0.0.0          10 Gbps Full Duplex
admin@000000000000>
```

8 To change the X0 LAN static IP address, use the following commands:

**NOTE:** SonicOS HTTPS management is enabled by default on the X0 interface.

For a static IP address in an example 10.10.10.0/24 LAN network, enter:

```
configure t
interface x0
ip 10.10.10.100 netmask 255.255.255.0
exit
exit
commit
```

9 When IP address configuration and management settings are complete, type `restart` to reboot NS*v* Series with the new settings.

**NOTE:** Press **Ctrl+Alt** to regain control of your mouse.

After configuring an IP address and enabling management, you can log into SonicOS on your NS*v* Series instance from a browser, or ping the virtual appliance from a command window or other application.

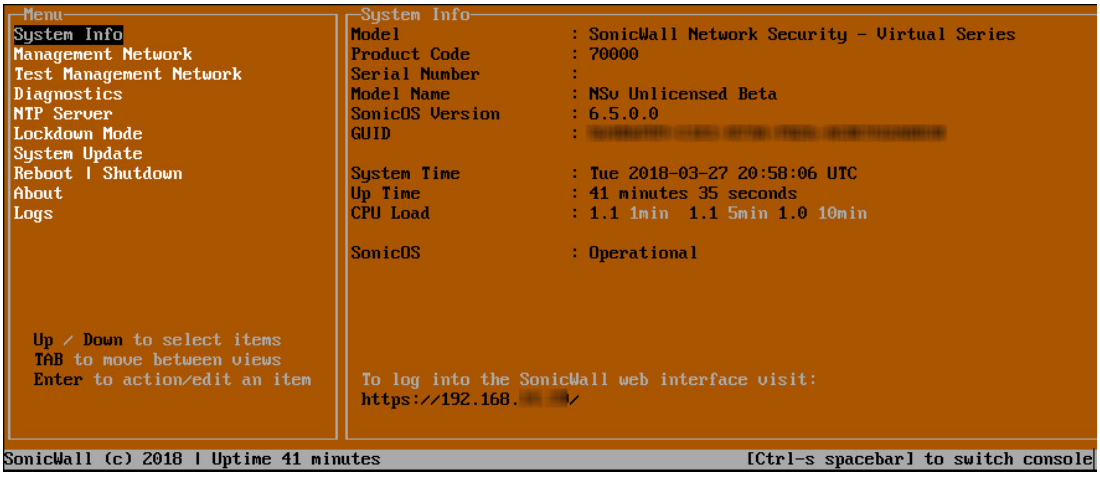
# Using the NS*v* Management Console

The NS*v* management console provides options for viewing and changing system and network settings, running diagnostics, rebooting SonicOS, and other functions. The NS*v* management console can be accessed after you log into the ESXi remote console.

### *To access and navigate the management console:*

1 Log into the ESXi remote console by selecting your NS*v* in the vSphere or vCenter interface and clicking **Actions > Open Remote Console**, then clicking inside the console window. Use your initial login credential (admin / password) to get to the SonicOS prompt.

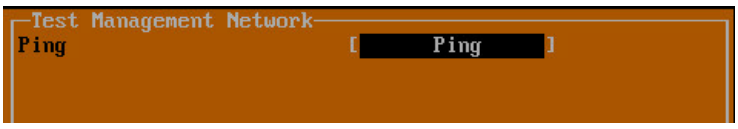
2 Press **Ctrl+s** and then press the **spacebar** to toggle between the ESXi remote console and the NS*v* management console. That is, press the **Ctrl** key and '**s**' key together, then release and press the **spacebar**.




3 The main menu is displayed in the side menu (left pane). Use the up/down arrow keys to move the focus between menu items. As the focus shifts, the right pane displays the options and information for that menu item. The currently selected item is highlighted in black.

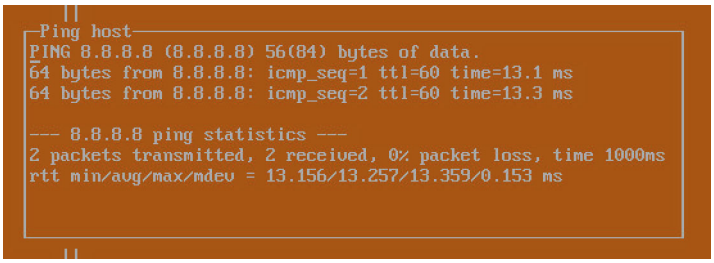
4 Press the **Tab** key to move the focus from side menu to the main view (right pane), or vice versa.

5 In the main view, use the up/down arrow keys to move the focus between options. Items shown inside square brackets denote actionable items.




6 To select an option for editing or to choose the associated action, use the up/down arrow keys to move the focus to the editable/actionable items and press the **Enter** key.

An edit/selection dialog is displayed in the middle of the main view below the option list. Some dialogs have selectable actions and some are only for information:



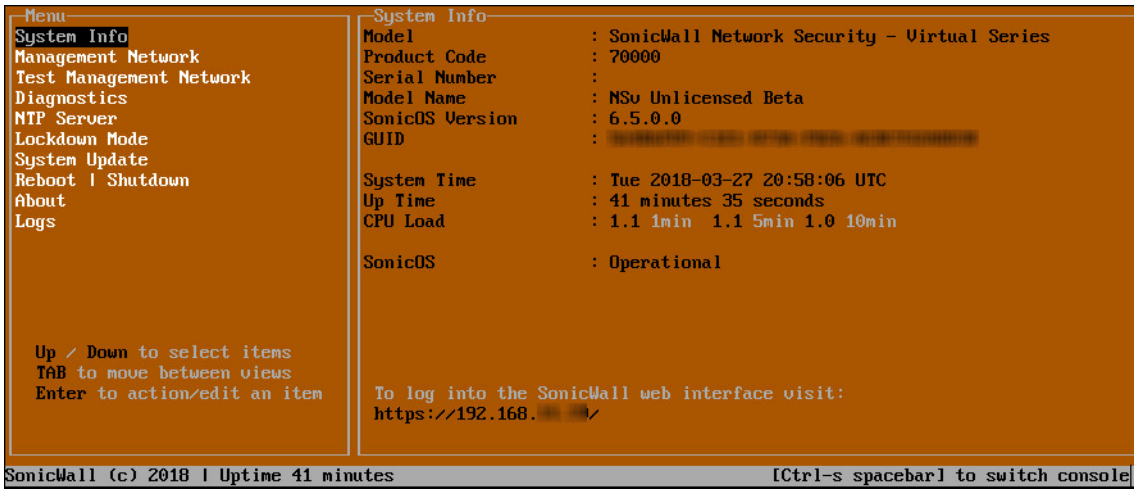

Some dialogs are for input:


7 Use the arrow keys as needed to move between selections in the dialog. To change a value, press **Backspace** to erase each character, then type in the new value. When ready, press **Enter** to commit the change or perform the selected action. You can dismiss the dialog by pressing **Esc**.

The NS*v* management menu choices are described in the following sections:

- System Info on page 44
- Management Network on page 45
- Test Management Network on page 45
- Diagnostics on page 47
- NTP Server on page 48
- Lockdown Mode on page 48
- Reboot | Shutdown on page 49
- About on page 49
- Logs on page 50

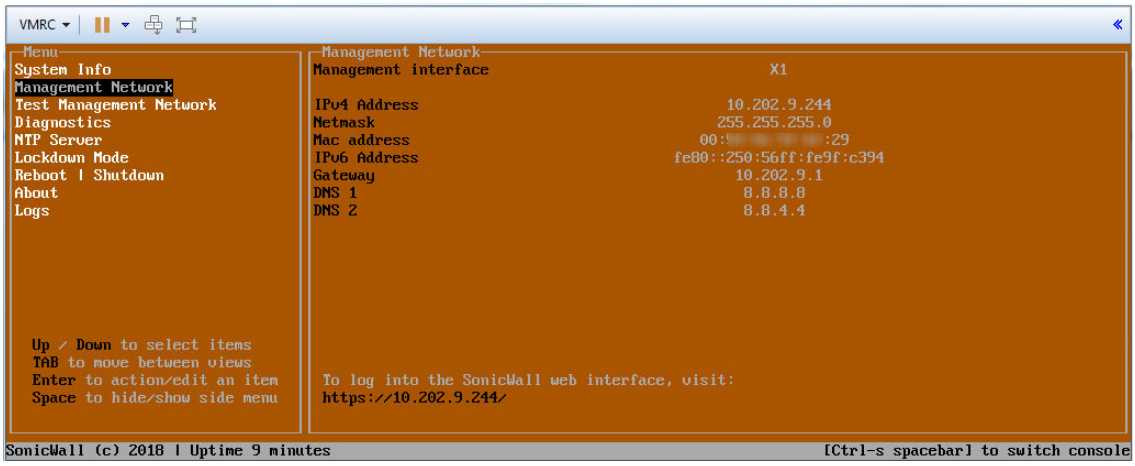
# System Info




Some of the information in the **System Info** screen is dynamic. The following information is displayed:

- **Model** – This is the model of the NS*v* appliance.
- **Product code** – This is the product code of the NS*v* appliance.
- **Serial Number** – The serial number for the appliance; this is a number unique to every NS*v* instance deployed. This number can be used to identify the NS*v* appliance on MySonicWall.
- **Model Name** – This is the model name of the NS*v* appliance.
- **SonicOS Version** – This is the currently running SonicOS version of the NS*v* appliance.
- **GUID** – Every NS*v* instance has a GUID which is displayed here.
- **System Time** – This is the current system time on the NS*v* appliance.
- **Up Time** – This is the total time that the NS*v* appliance has been running.
- **Average Load** – This shows the average CPU load for the last 1 minute, 5 minutes and 10 minutes. You can change the **Average load** time durations to view the CPU load over longer or shorter time periods.
- **SonicOS** – This presents the current state of the SonicOS service on the NS*v*. ***Operational*** is displayed here when the SonicOS service is running normally, ***Not Operational*** when there is a problem with the service and ***Operational (debug)*** if the service is currently running in debug mode.

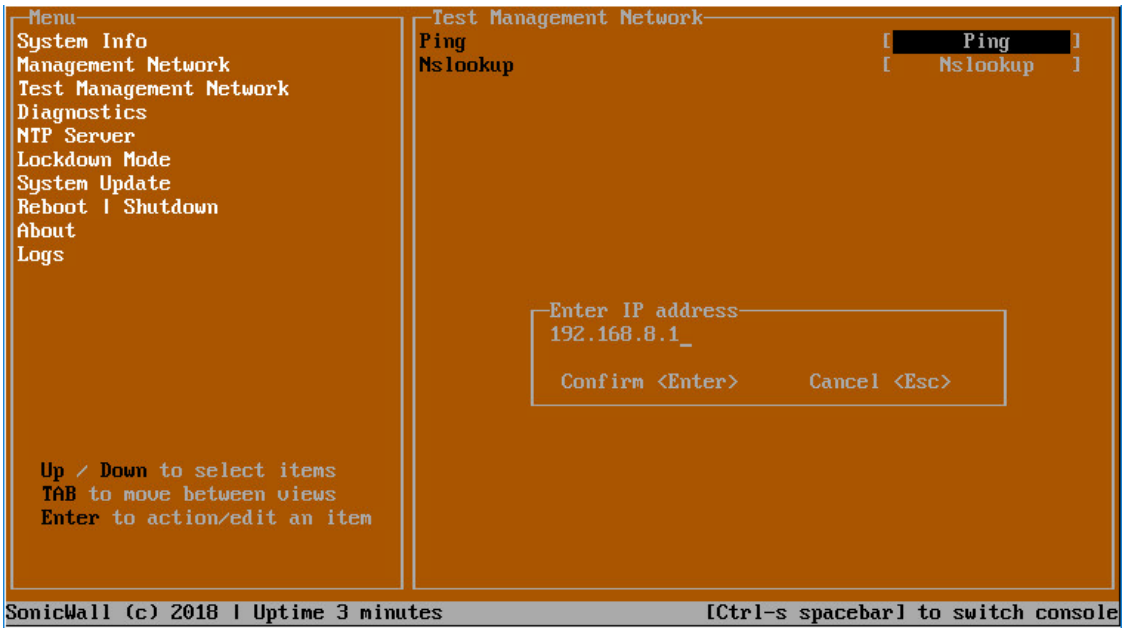
# Management Network




In the **Management Network** screen, the network settings displayed in the white text are read-only except when the management console is in SafeMode. In SafeMode, you can configure these settings.

- **Management Interface** – This is the current interface serving as the management interface. This defaults to X1.
- **IPv4 Address** – This is the IPv4 address currently assigned to the management interface.
- **Netmask** – This is the netmask currently assigned to the management interface.
- **Mac Address** – This is the MAC address of the management interface.
- **IPv6 address** – This is the IPv6 address currently assigned to the management interface.
- **Gateway** – This is the default gateway currently in use by the NS*v* appliance.
- **DNS** – This is a list of the DNS servers currently being used by the NS*v* appliance.

# Test Management Network



The **Test Management Network** screen provides the **Ping** and **Nslookup** tools to test connectivity between the management interface and the local network. **Ping** is used to test whether hosts in the network are reachable. **Nslookup** is available for sending DNS queries from the NSv appliance.

### *To use Ping:*

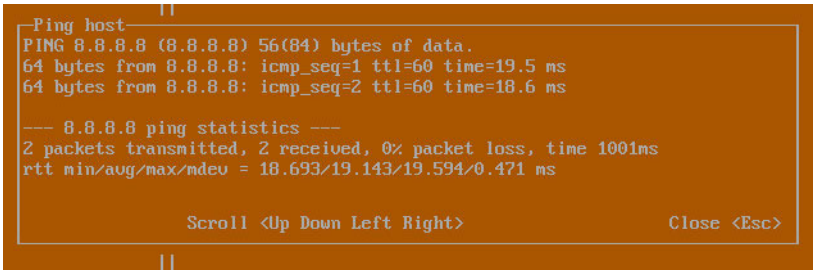
1 Select **Test Management Network** in the Menu and press **Tab** to move the focus into the **Test Management Network** screen.

2 Select **Ping** to highlight it and then press **Enter** to display the **Enter IP address** dialog.

3 Navigate into the dialog, press **Backspace** to clear the current value, and then type in the IP address that you want to ping.

4 Press **Enter**.

The ping output is displayed in the **Ping host** dialog.

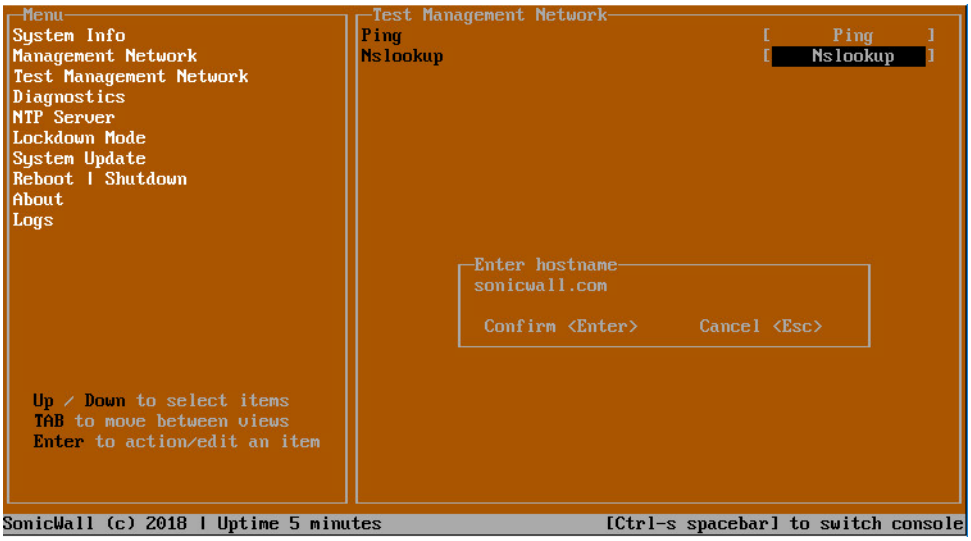



5 Press the **Esc** key to close the dialog.

### *To use Nslookup:*

1 Select **Test Management Network** in the Menu and press **Tab** to move the focus into the **Test Management Network** screen.

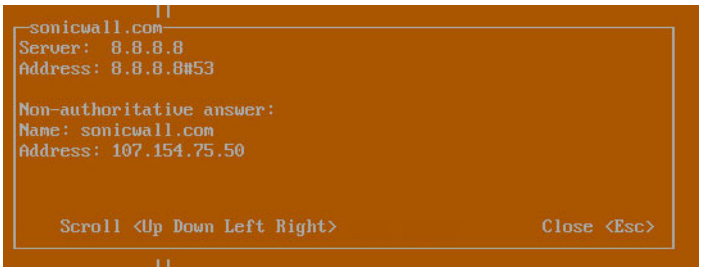
2 Select **Nslookup** to highlight it and press **Enter** to display the **Enter hostname** dialog.




3 Navigate into the dialog, press **Backspace** to clear the current value, and then type in the hostname that you want to look up with a DNS query.

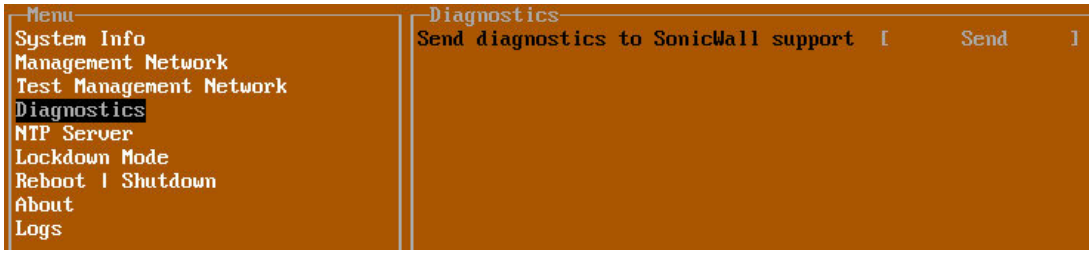
4 Press **Enter**.

The Nslookup query results are displayed in an information dialog. You can scroll up and down within the dialog by using the up/down arrow keys.




5 Press the **Esc** key to close the dialog.

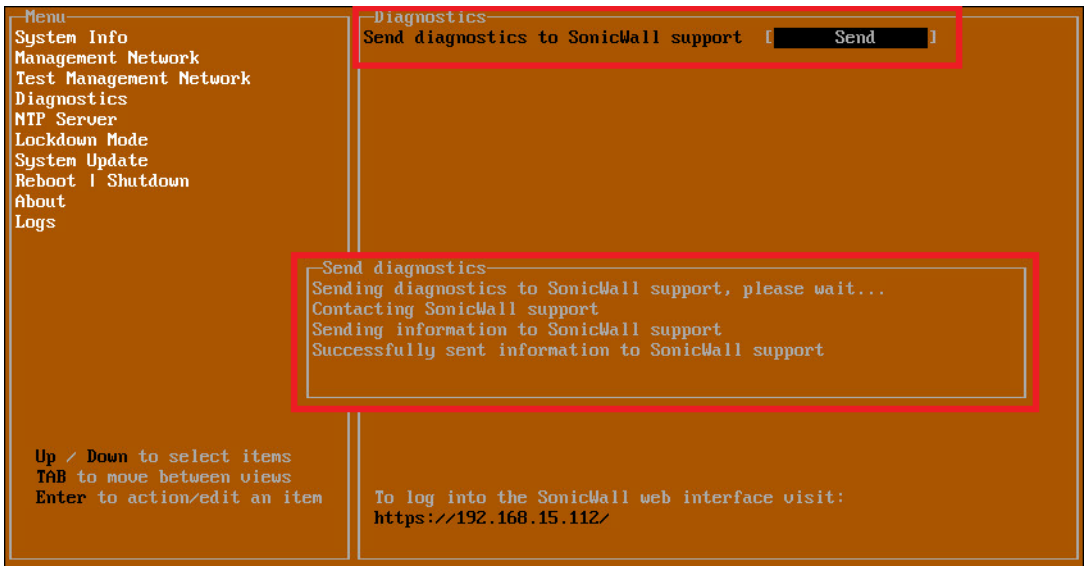
# Diagnostics




In the **Diagnostics** screen, you can send diagnostics to SonicWall Technical Support. This has the same functionality as clicking **SEND DIAGNOSTIC REPORTS TO SUPPORT** in the **INVESTIGATE | Tools | System Diagnostics** page of the SonicOS web management interface.

**NOTE:** Your NSv appliance must have internet access to send the diagnostics report to SonicWall Support.

To send the diagnostics report, select **Send** in the main view to highlight it, then press **Enter**. A dialog box showing the diagnostics send output is displayed. The last message indicates success or failure.




Press the **Esc** key to close the dialog.

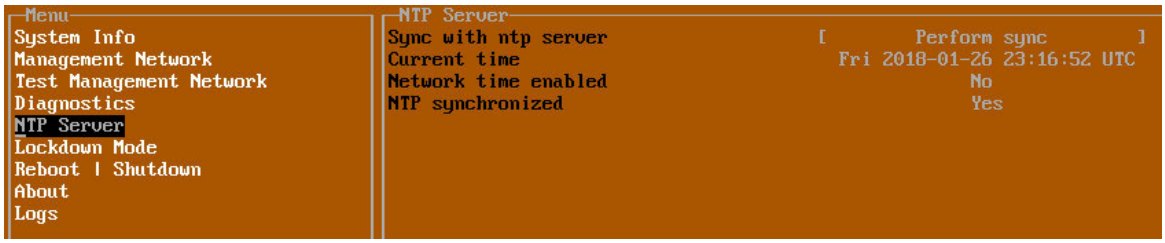
Any errors during the Send process are displayed in the **Send diagnostics** dialog box.

Common reasons for the report failing to send include:

- Misconfigured/missing default gateway
- Misconfigured/missing DNS servers
- Inline proxy

**NOTE:** The Send Diagnostics tool does not currently work through HTTP proxies.

# NTP Server




In the **NTP Server** screen, you can synchronize with an NTP server. For complete NTP Server configuration options, log into the SonicOS management interface and navigate to the **MANAGE | Appliance > System Time** page.

The **NTP Server** screen displays the following information:

- **Sync with NTP server** – This button forces the NS*v* appliance's NTP client to perform a sync with the configured NTP server(s).
- **Current time** – The current time on the NS*v* appliance.
- **Network time enabled** – A Yes/No value determining whether the NTP client is currently configured to keep in sync with an NTP server.
- **NTP synchronized** – A Yes/No value determining if the NS*v* appliance is currently synchronized with the configured NTP server(s).

# Lockdown Mode


In the **Lockdown Mode** screen, you can enable ***Strict Lockdown*** mode. When enabled, the management console is effectively disabled. A dialog box that cannot be closed is permanently displayed on the management console. This prevents any person from accessing the management console.

To enable Strict Lockdown mode, select **Enable** and then press **Enter**.

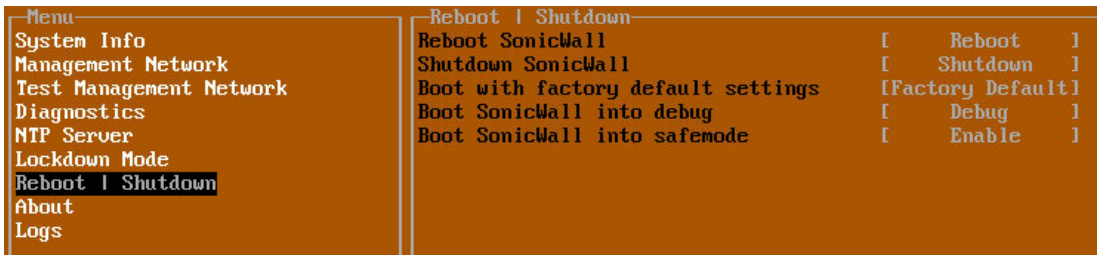
**CAUTION: Be careful about enabling Strict Lockdown mode. Strict Lockdown mode cannot be disabled.**

## Temporary Lockdown Mode

A temporary lockdown mode can be enabled and disabled in SonicOS on the **MANAGE | Appliance > Base Settings** page. You can enable lockdown mode by clearing the **Enable management console** checkbox under the **Advanced Management** section, and can disable lockdown mode by selecting the checkbox. Click **ACCEPT** after each change.

The management console will automatically be enabled/disabled a few seconds after it has been enabled/disabled in the SonicOS web interface page.

# Reboot | Shutdown




The **Reboot | Shutdown** screen provides functions for rebooting the NS*v* appliance, enabling debug mode, and enabling SafeMode. To perform an action, position the focus and then press **Enter** to select the desired action. Select **Yes** in the confirmation dialog, then press **Enter** again.

The actions available on the **Reboot | Shutdown** screen are:

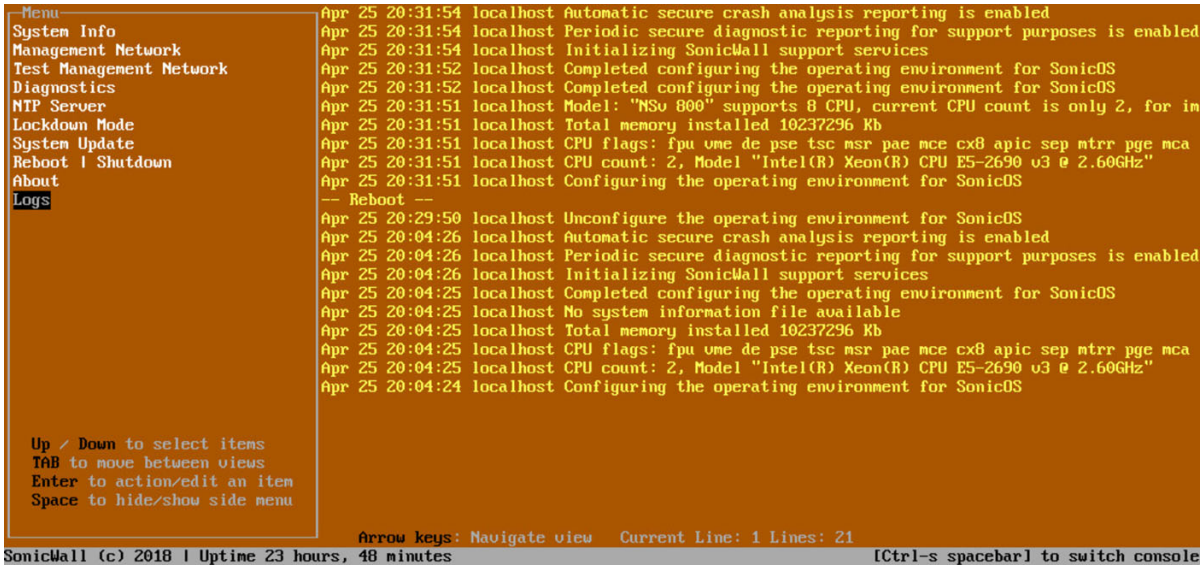
- **Reboot SonicWall** – Restarts the NS*v* Series virtual appliance with current configuration settings.
- **Shutdown SonicWall** – Powers off the NS*v* Series virtual appliance.
- **Boot with factory default settings** – Restarts the NS*v* Series virtual appliance using factory default settings. All configuration settings will be erased.
- **Boot SonicWall into debug** – Restarts the NS*v* Series virtual appliance into debug mode. Normally this operation is performed under the guidance of SonicWall Technical Support.
- **Boot SonicWall into safemode** – Puts the NS*v* Series virtual appliance into SafeMode. For more information, see Using SafeMode on the NSv on page 50.

# About


The **About** screen provides information about the software version and build.

# Logs

The **Logs** screen displays log events for the NS*v* appliance.




# Using SafeMode on the NS*v*

The NS*v* appliance will enter SafeMode if SonicOS restarts three times unexpectedly within 200 seconds. When the NS*v* appliance is in SafeMode, the appliance starts with a very limited set of services and features enabled. This is useful when trying to troubleshoot issues. The NS*v* appliance can also be configured to boot into SafeMode by using the **Reboot | Shutdown** screen.

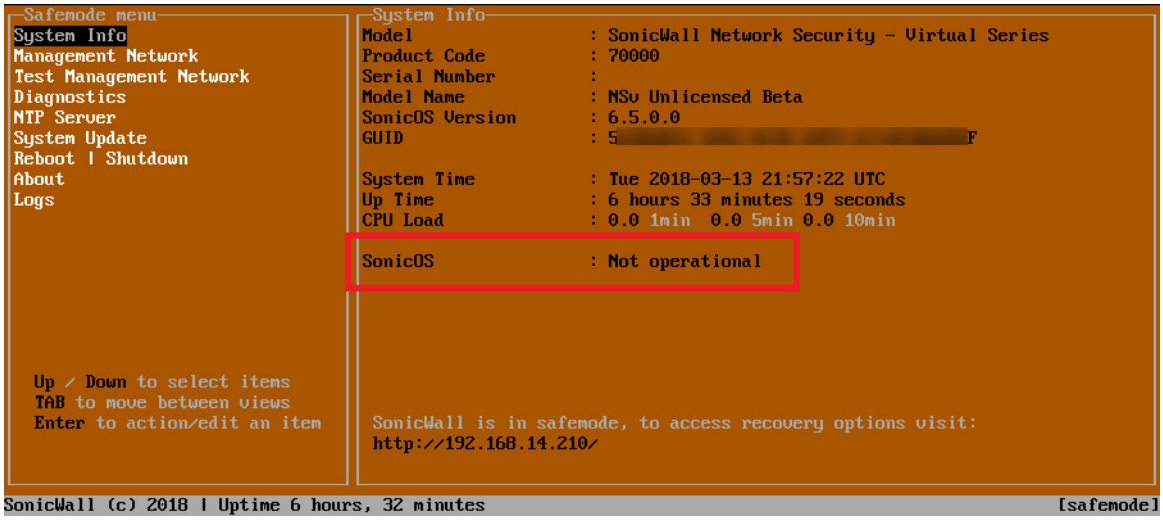
In SafeMode, some of the features the management console provides are different in the following ways:

- Configurable interfaces
- Configurable default gateway
- Configurable DNS servers

**NOTE:** Changes made to interfaces in SafeMode are ***not*** persistent between reboots.

When the NS*v* is in SafeMode, the SonicOS service is one of the services that is not enabled and is shown as *Not operational* on the SafeMode **System Info** screen.

The SafeMode Management Console always starts with the **System Info** screen.




**NOTE:** To exit SafeMode, disable it on the **Reboot | Shutdown** screen or deploy a new firmware image. See Disabling SafeMode on page 52 and Installing a New SonicOS Version in SafeMode on page 56 for more information.

**Topics:**



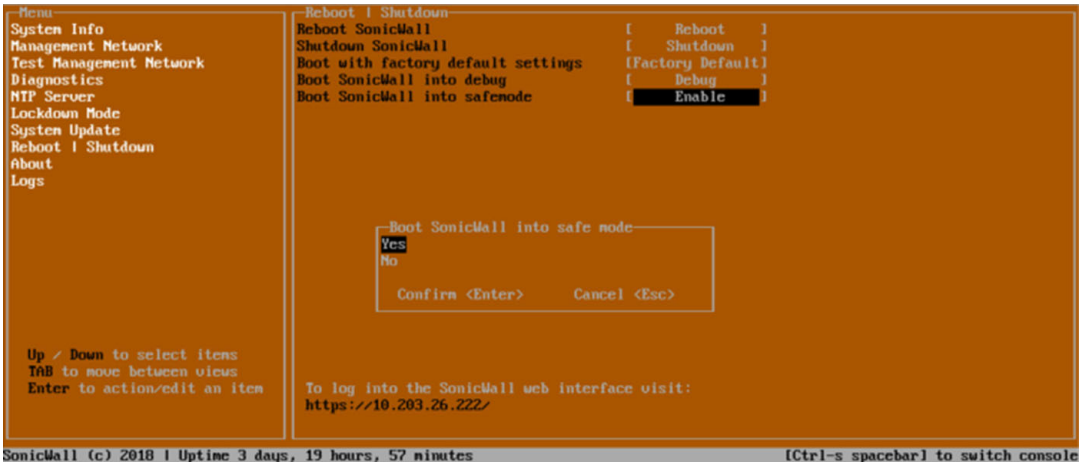
# Enabling SafeMode

SafeMode can be enabled from the management console.

***To enable SafeMode:***

1. Access the NSv management console as described in Using the NSv Management Console on page 42.
2. In the console, select the **Reboot | Shutdown** option and then press **Enter**.

3 Navigate down to the **Boot SonicWall into safemode** option to highlight **Enable**, and then press **Enter**.




4 Select **Yes** in the confirmation dialog.

5 Press **Enter**.

The NS*v* immediately reboots and comes back up in SafeMode.

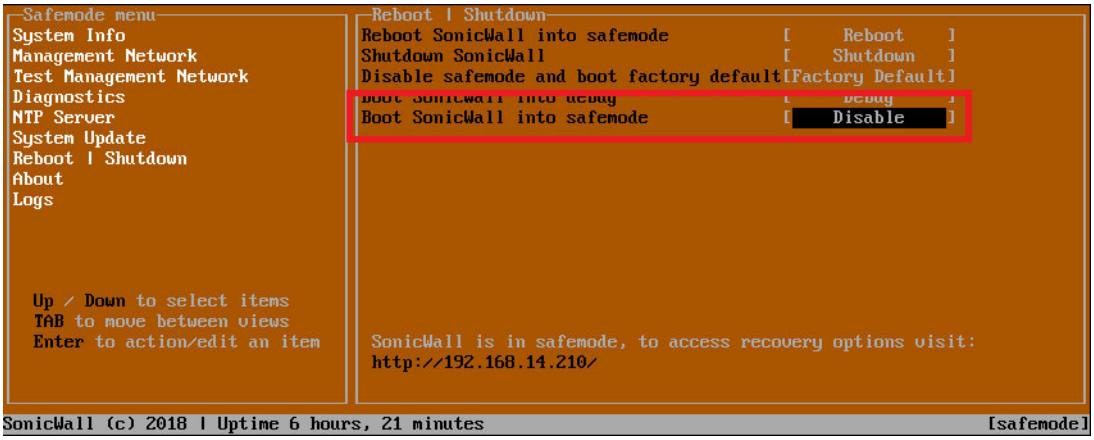
**NOTE:** In SafeMode, the web interface is served from an HTTP server. The HTTPS server is not started in SafeMode.

# Disabling SafeMode

***To disable SafeMode:***

1 In the SafeMode menu in the NS*v* management console, select the **Reboot | Shutdown** option and press **Enter**.

2 In the **Reboot | Shutdown** screen, navigate down to the **Boot SonicWall into safemode** option to highlight **Disable**, and then press **Enter**.




3 Select **Yes** in the confirmation dialog.

4 Press **Enter**.

The NS*v* immediately reboots and boots up in normal mode.

# Configuring the Management Network in SafeMode

When the Management Console is in SafeMode, the **Management Network** screen provides features to configure the NSv appliance interfaces:

- **Management Interface** – This is the currently selected interface. This defaults to X1. Use this to select any of the NSv appliance interfaces.
- **IPv4 Address** – The current IPv4 address currently assigned to the Management Interface.
- **Netmask** – The current Netmask assigned to the Management Interface.
- **Mac Address** – The MAC address of the Management Interface.
- **IPv6 Address** – The currently assigned IPv6 address of the Management Interface.
- **Gateway** – The current Default Gateway currently in use by the NSv appliance.
- **DNS** – A list of the current DNS servers currently being used by the NSv appliance.

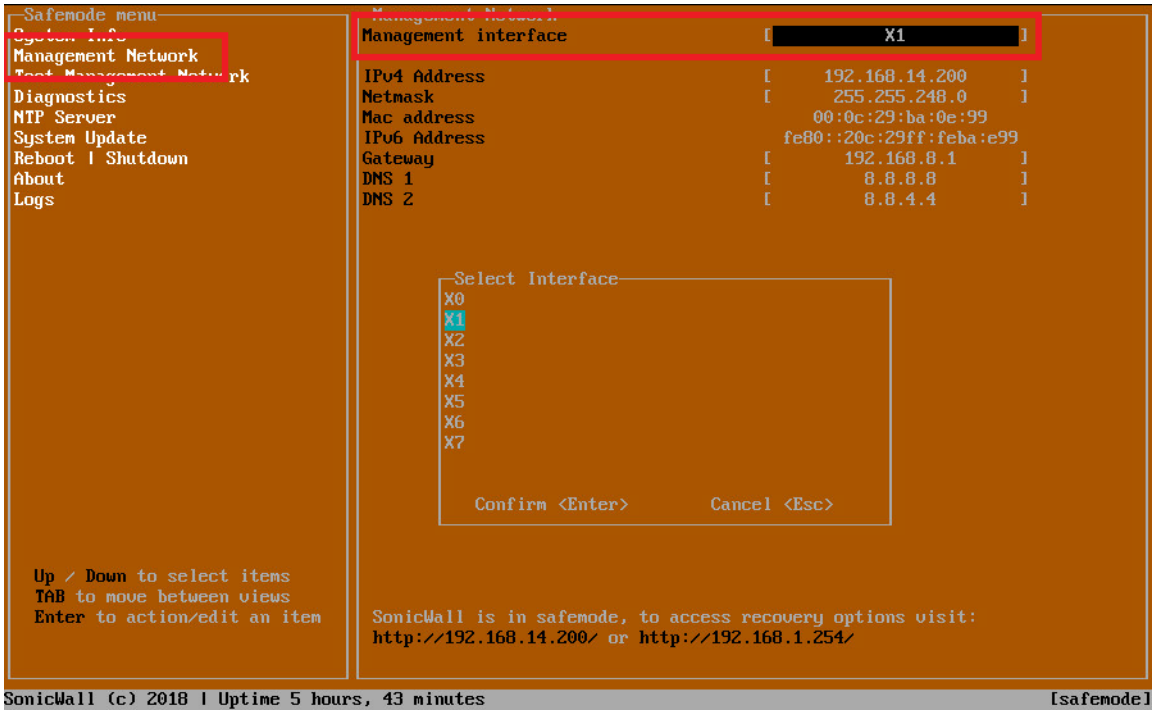
**NOTE:** Changes made to interfaces in SafeMode are ***not*** persistent between reboots.

**Topics:**



## Configuring Interface Settings

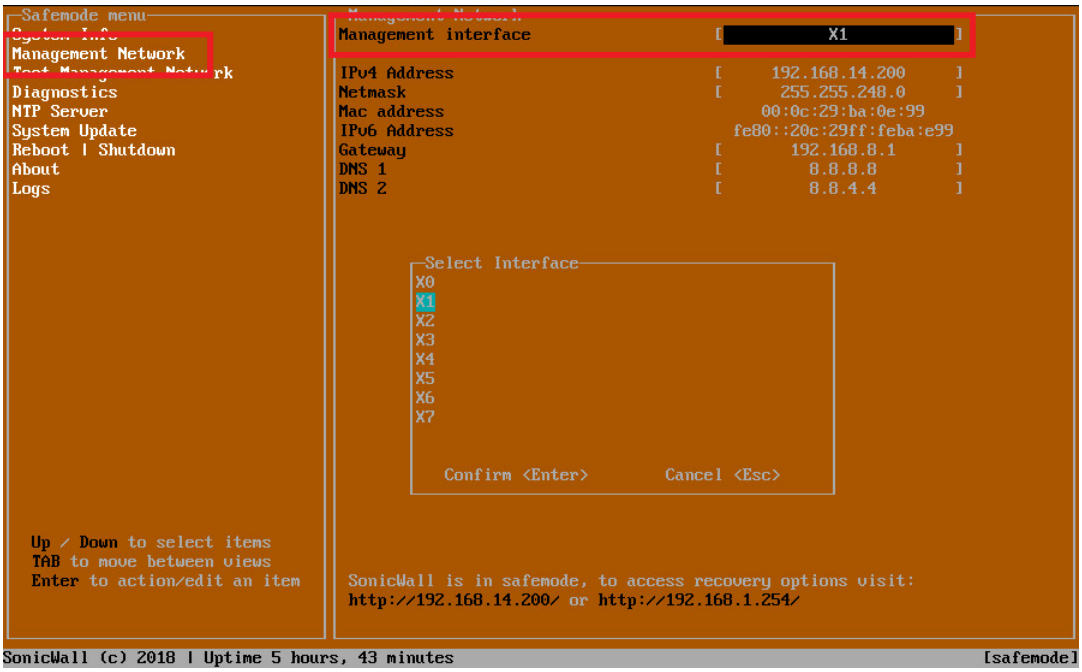
In SafeMode, the **Management Network** screen includes editable and actionable items which are read-only when the management console is in normal mode.



### *To edit an interface:*

1 In the SafeMode **Management Network** screen, select the **Management interface** option and then press **Enter**.

The **Select Interface** list appears, displaying all of the interfaces available on the NS*v*.




2 Select the interface you wish to edit and press **Enter**.

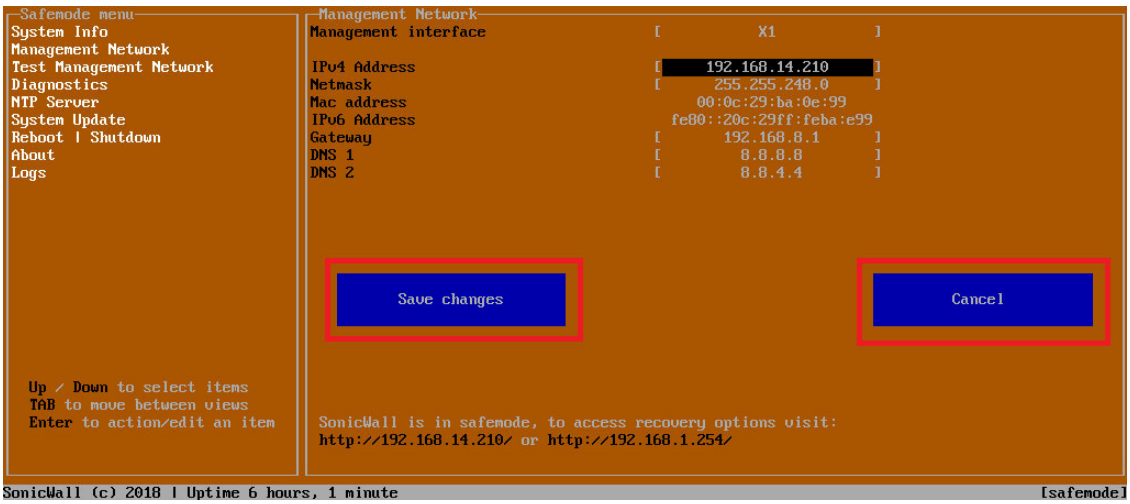
The IPv4 and IPv6 addresses, Netmask, MAC address, Gateway, and DNS settings are displayed on the screen above the interface selection dialog.

3 To edit the IPv4 address, select **IPv4 Address** on the screen and press **Enter**.

The on-screen dialog displays the current IP address.

4 Navigate into the dialog and make the desired changes, then press **Enter** to close the dialog or press **Esc** to cancel and close the dialog.

5 Two new buttons appear on the screen after you make changes to an interface setting: **Save changes** and **Cancel**. You can use the **Tab** key to navigate to these buttons.



**NOTE:** You cannot navigate to the left navigation pane until you either save changes or cancel using these buttons.

Do one of the following:

- To make changes to other settings for this interface, navigate to the desired setting, press **Enter**, make the changes in the dialog, then press **Enter** to close the dialog for that setting. Repeat for other settings, as needed.
- If finished making changes to the settings for this interface, press **Tab** to navigate to the **Save changes** button and then press **Enter** to save your changes.
- Press **Tab** to navigate to the **Cancel** button and then press **Enter** to cancel all changes to the settings for this interface.

# Disabling an Interface

You can disable an interface while in SafeMode.

### *To disable an interface:*

1 In the SafeMode **Management Network** screen, select the **Management interface** option.

2 Press **Enter**.

The **Select Interface** list appears, displaying all of the interfaces available on the NS*v*.

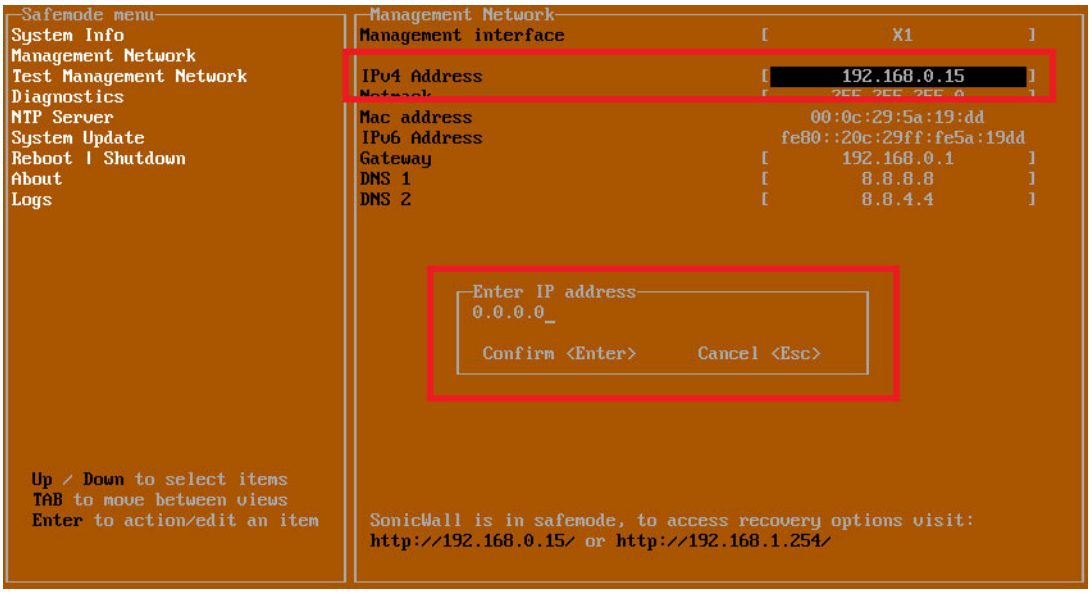
3 Select the interface you wish to edit and press **Enter**.

The IPv4 and IPv6 addresses, Netmask, MAC address, Gateway, and DNS settings are displayed on the screen above the interface selection dialog.

4 Select **IPv4 Address** and press **Enter**.

The on-screen dialog displays the current IP address.

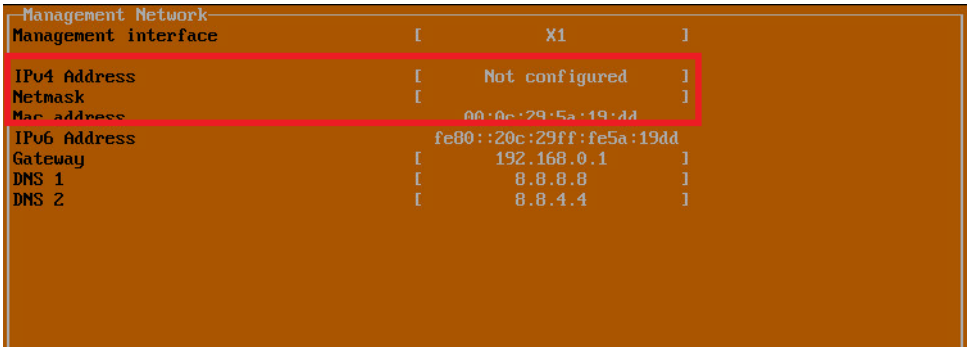
5 Navigate into the dialog and change the IP address to **0.0.0.0**, then press **Enter**.




The **Save changes** button is displayed.

6 Press **Tab** to navigate to the **Save changes** button and then press **Enter**.

The interface is disabled.




# Installing a New SonicOS Version in SafeMode

SWI files are used to upgrade SonicOS. You can download the latest SWI image file from MySonicWall.

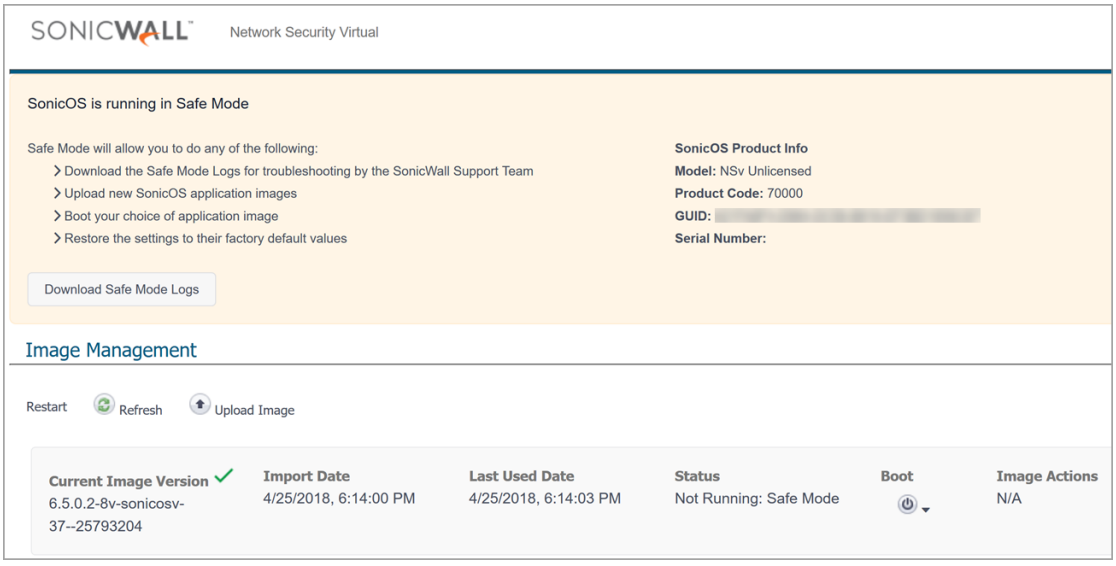
In SafeMode, you can upload a new SonicOS SWI image and apply it to the NSv appliance. The SafeMode web management interface is used to perform an upgrade, rather than SafeMode in the NSv management console. When viewing the NSv management console in SafeMode, the URL for the SafeMode web interface is displayed at the bottom of the screen.

**NOTE:** In SafeMode, the web management interface is only available via **http** (not **https**).

### *To install a new SonicOS from SafeMode:*

1 With the NSv in SafeMode, view the NSv management console. At the bottom of the screen, the URL for the SafeMode web management interface is displayed.

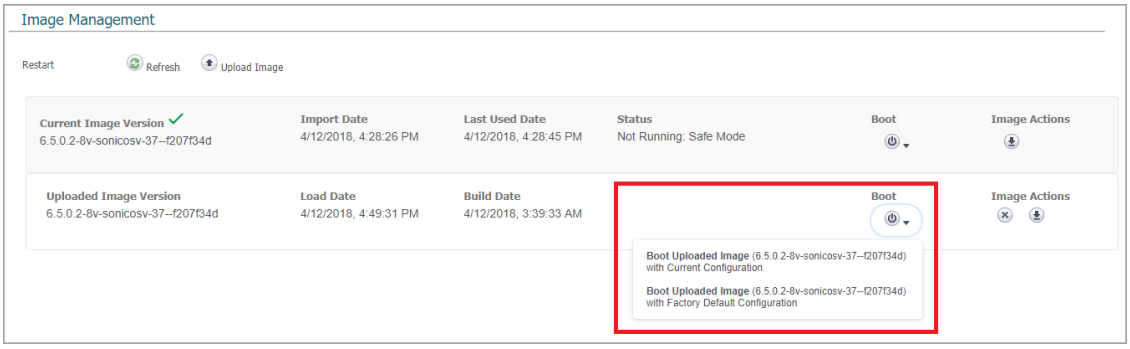
2 In a browser, navigate to the URL provided at the bottom of the Management Console screen. The SafeMode web management interface displays.




3 Click the **Upload Image** button to select an SWI file and then click **Upload** to upload the image to the appliance. A progress bar provides feedback on the file upload progress. Once the upload completes, the image is available in the **Image Management** list in the SafeMode web interface.

4 In the row with the uploaded image file, click the **Boot** button and select one of the following:

- **Boot Uploaded Image with Current Configuration**
- **Boot Uploaded Image with Factory Default Configuration**




The NSv appliance reboots with the new image.

# Downloading Logs in SafeMode

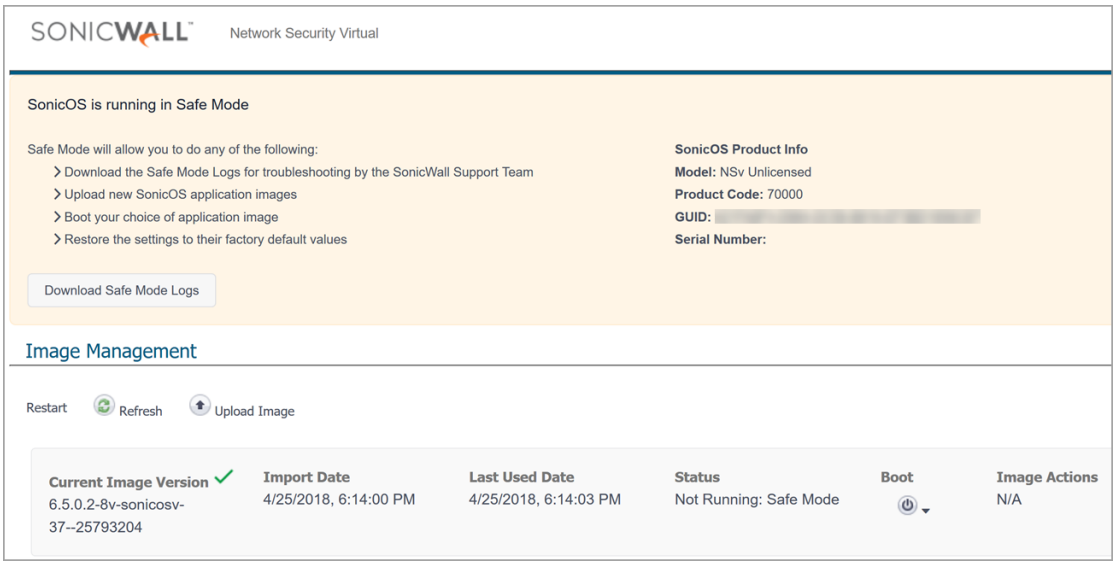
When the NSv appliance is in SafeMode, extra logging information is kept that can be downloaded. The logs are available from the SafeMode web management interface, which can be accessed via the URL provided at the bottom of the Management Console screen.

**NOTE:** In SafeMode, the web management interface is only available via **http** (not **https**).

### *To download logs from SafeMode:*

1 With the NSv in SafeMode, view the NSv management console. At the bottom of the screen, the URL for the SafeMode page in the web UI is displayed.

2 In a browser, navigate to the URL provided at the bottom of the Management Console screen. The SafeMode web management interface displays.




3 Click the **Download Safe Mode Logs** button. A compressed file is downloaded which contains a number of files, including a ***console_logs*** file that contains detailed logging information.

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# SonicWall Support

Technical support is available to customers who have purchased SonicWall products with a valid maintenance contract and to customers who have trial versions.

The Support Portal provides self-help tools you can use to solve problems quickly and independently, 24 hours a day, 365 days a year. To access the Support Portal, go to https://www.sonicwall.com/support.

The Support Portal enables you to:

- View knowledge base articles and technical documentation
- View video tutorials
- Access MySonicWall
- Learn about SonicWall professional services
- Review SonicWall Support services and warranty information
- Register for training and certification
- Request technical support or customer service

To contact SonicWall Support, visit https://www.sonicwall.com/support/contact-support.

# About This Document

## Legend

**WARNING: A WARNING icon indicates a potential for property damage, personal injury, or death.**

**CAUTION: A CAUTION icon indicates potential damage to hardware or loss of data if instructions are not followed.**

**IMPORTANT, NOTE, TIP, MOBILE, or VIDEO:** An information icon indicates supporting information.

*NSv VMware Getting Started Guide*
Updated - October 2019
Software Version - 6.5.4
232-004955-00 Rev C