# SonicOSX 7 Multi-Instance Administration Guide for the NSsp Series



## Contents

Multi-Instance (MI) Support	. 3
Enabling Multi-Instances	. 3
Multi-Instances	6
Adding an Instance	6
Add Instance Dialog Box	7
Editing an Instance	. 8
Uploading Instance Firmware	. 8
Licenses for Multiple Instances	. 9
Multiple Instances	9
Instance Registration	.10
Instance license update	10
Deactivating an Instance	.10
SonicWall Support	11
About This Document	12

2

# Multi-Instance (MI) Support

#### **Topics:**

- Enabling Multi-Instances
- Multi-Instances
- Licenses for Multiple Instances
- Deactivating an Instance

This feature allows a security appliance to launch multiple instances of SonicOSX, each serving as an independent firewall. The Root Instance (RI) configures and launches each instance. Once the tenant instances are SonicOSX up and running, their X0...X7 interfaces allow access for detailed firewall configuration.

Navigate to **Device > Multi-Instance** to find configuration and monitoring screens.

SONICWALL	INSsp 15700 Inter Monitor Device	🔀 NETWORK 🛛 👩 OBJECT	r <b>≬</b> ≘ POLICY								
	2cb8ed4ccac0 / Device / Settings / Licenses										
FIREWALL											
Settings	🔍 + 🛛 View: Licensed and Unlicensed 👻 Tenant: SonicWall Products 🛛 Friendly Name: SonicWall NSsp 15700 North America 🔛 MySonicWall 🥸 Synchronize 📑 Manual License										
Licenses     Administration	▼ SERVICES	STATUS	EXPIRY DATE	ACTIONS							
- Time	Service Bundles (0 licensed)										
<ul> <li>Certificates</li> <li>SNMP</li> </ul>	Essential Protection Service Suite	Unlicensed		🤄 Activate							
<ul> <li>Firmware and Settings</li> </ul>	Advanced Protection Service Suite	Unlicensed		🤣 Activate	Start Trial						
- Restart	Management & Analytics Services (0 licensed)										
Multi-Instance	NSM Essential	Unlicensed		Activate	Start Trial						
— Settings	<ul> <li>NEM Advanced</li> </ul>	Unlicenced		A stivate	Ctart Trial						
- Instances	P NoM Advanced	Onlicensed		Activate	Start Inal						
Instance Licenses	<ul> <li>Gateway Services (4 licensed)</li> </ul>										
	Gateway Anti-malware/Intrusion Prevention/App Control	Licensed	06 Feb 2021	🤄 Renew	Start Trial						
High Availability	Content Filtering Service	Licensed	06 Feb 2021	🚱 Renew	Start Trial						
🝳 Users	Stateful High Availability	Licensed									
AppFlow	Capture Advanced Threat Protection	Licensed	06 Feb 2021	🤣 Renew	Start Trial						
🆀 Log	Endpoint & Remote Access Services (3 licensed)										
Diagnostics	Capture Client Basic	Unlicensed		≣ Manage Lic	ense Sharing						
	NSsp Multi-Tenancy	Licensed Count: 10		🤣 Upgrade							

Each tenant's X0, X1, X2... X7 interfaces will be mapped to a VLAN on the front panel port (X0 to X25) by the RI. Each tenant can be configured with up to 8 ports. Each tenant port can be mapped to a front panel port and tagged with a VLAN ID.

## **Enabling Multi-Instances**

This feature is enabled on the GUI in the Settings screen and the number of logical blades allocated to supporting tenant instances needs to be set. Once configured, the NS<sub>Sp</sub> chassis will reboot and come up with Multi-Instances enabled.

3

This feature is enabled from the Settings screen. To enable Multi-instances, we first reserve logical blades and front panel ports that will be used for supporting tenant instances.

To select the number of logical blades, click and select up to two. Click Accept to save changes. This step requires the chassis to reboot for changes to take effect.

The next step is to reserve front panel ports for tenant instances. These ports are the ones available for tenant configuration.

To select ports, click on ports that are orange. Selected ports turn green. The legend on the right provides details on the colors and the state of ports.

Click on Accept to save changes. This step does not require a reboot. Front panel port reservations can be modified anytime once multiple instances are enabled.

Ports reserved for the tenant instances are green, and ports available to tenant instances, but not reserved are orange. To reserve an orange port for tenant instances, simply click on it to turn it green.

Once Multi-Instances are enabled and logical blades are selected and ports are reserved, the reserved ports for Multi-Instances are exclusive, not available for the rest of the sub-system.

Any time Multi-Instances is disabled and the chassis is rebooted, all the Multi-Instance port(s) will be unreserved and will be available to the rest of the system while all instances or tenant(s) configured in the system will be lost.



Currently, a maximum of two logical blades may be configured to support tenant instances. With four logical blades in the system, two logical blades are used by the multi-bladed firewall while the other two can be used for tenant instances. However, the configuration is flexible, we could have three logical blades running in multi-bladed firewall mode with one logical blade configured to launch tenants.



The above screen shot shows the MI enabled settings in the **Device > Multi-Instances > Settings** screen. In this case, 4 logical blades are available and 1 is allocated to tenant instances, while 3 support multi-bladed firewall operation.

Once Multi-Instance operation is enabled on the GUI and the configuration is saved, the firewall will prompt for reboot before the settings can be applied. Once the reboot firewall confirmation button is clicked, the firewall comes up with one or two logical blades enabled for launching tenant instances. On the left hand Nav, the **Tenants** screen will be enabled only when MT is enabled. In order to change the number of logical blades selected to launch MI instances, the firewall has to go through the reboot processes. This means the currently running tenant-support blades will also be rebooted.

In order to revert back, with all the logical blades to work as one big multi-bladed firewall, the MI enabled settings have to be disabled and the firewall will have to go through reboot process again.

#### To reserve front panel ports for virtual firewall instances:

- 1. Identify available ports by looking for orange colored ports on the GUI.
- 2. Click on the port to turn it green.
- 3. Click on Accept.

#### To allocate CPUs to instances:

- 1. Navigate to **Device | Multi-Instance > Settings** and locate the controls under **Setup Multi-Instance**.
- 2. Move the Enable switch to the right to turn on Multi-Instancre capability.
- 3. Determine the number of CPUs available to support instances.
- 4. Click on Accept and then reboot the system.

## Multi-Instances

Once you have MI (Multi-Instances) enabled in the RI (Root Instance), then we can configure and launch the multiple instances. Each tenant instance is an independent virtual firewall with its own routing table, policy configuration, licenses and security services. Each tenant needs to be registered with the License Manager in order to enable the necessary licenses for Deep Packet Inspection (DPI). Each tenant can be configured with the required number of cores based on the use case. Currently, we support up to 8 Data Path (DP) cores max for each virtual firewall and 1 (Control Path) CP core per virtual firewall. Each tenant virtual firewall can be accessed through its DHCP-enabled X1 WAN interface. Tenant UI can be accessed via X0 as well, if tenant's X0 mapping is setup with accessible static IP, gateway and subnet and accessible to the RI front panel port, and VLAN mapping are properly set.

The following screen shot shows the Mult-Instance screen with two tenant instances in operation.

SONICWALL	NSsp 15700      HOME     NSsp 15700     Lowie / Multi-Tena	MONITOR	ice 🧏 network 🎒 object	I I POLICY				Config	🔹 👶 Q AD
FIREWALLS	TENANT			TENANT LICENSES		RESOURCE ALLOCATION			
Status     Licanses     Administration     Time     Certificates     SNMP     Firmware and Settings     Time	2 O Running Pending	O Failed	O O Stopped Inactive	2 In uso	8 Free	CPU ID: 1 CPU ID: Free: 0 Free: In use: 9 In use: Reserved: 9 Reserved: Root Firewall	2 CPU ID: 0 Free: 9 In use: 9 Reserved: Tenant Fin	3 CPU ID: 4 6 Free: 6 3 In use: 3 9 Reserved: 9 rewalls	Configured: 6
- Restart	Q. Search All Firmwe	re Versions	MAME	etati ie	MOT CODES 11711 NO	DB COBSE LITH		+ Add (Q Reload	Display Options
<ul> <li>Multi-Tenancy</li> <li>Settings</li> </ul>		This Firewall	tenant11	Running	3%	1%	7.0.0.0-68v-42-163- 2a5a8a05	03:19:42	=
— Tenants — Firmware	2 Associative Outfit	This Firewall	ao-omnicron	Running	. 3%	196	7.0.0.0-68v-42-163- 2a5a8a05	01:05:56	≡
Tenant Licenses     High Availability									
Q Users									

The Root Tenant (RI) serves as the console through which all the tenant instances are deployed. RT allows the user to add tenant instances, start the service, stop the service and delete the tenant. Each instance added through the Add Instance Dialog will be stored in the RI. This allows the user to add as many instances as possible, however there will be a limit on the number of instances that can be launched due to CPU core availability.

## Adding an Instance

In order to add an instance, please click on the **Instance** tab on the left hand nav. On the Instance's page click on the add button and a dialog box will pop up.

There is a limit on the number of tenant instances that can be launched due to CPU core availability and total Instance Licenses available in the system.

Before this step is done, first Upload the Instance Firmware from the **Multi-Instance > Firmware** page. A typical Multi-Instance setup work flow would be:

- 1. Enable Multi-Instances, reserve Logical Blades, reserve port(s) and reboot chassis
- 2. Register the box, if not registered, to obtain instance instances
- 3. Verify that Tenant Instance(s) is available on the Multi-Instance >Instance Licenses page.
- 4. Upload tenant firmware from the Multi-Instance > Firmware page.
- 5. Add tenant(s), or start/stop/reboot/edit/deactivate/delete tenant(s).

6

## Add Instance Dialog Box

SONICWALL	🗲 NSsp 15700 🙆 Home 🎢 monitor 📮 device 🧏 network 🎒 object /g policy						
FIDEWALL	2cb8ed4ccac0 / Device /	Multi-Instance / Instances			Configuratio		
Settings	INSTANCE				Cores		
Settings     Settings     Settings     Settings     Settings     Settings     Settings     Settings     Instances     Instance.leanses     High Availability     Settings     AppFlow     Setting     Diagnostics	Running	O O O O O Add Instance GENERAL SETTINGS INTERFACE MAPPing GENERAL SETTING INTERFACE MAPPING GENERAL SETING INTERFACE MAPPING GEN	INSTANCE LICENSES 0 10 3 4 NTERFACE SETTINGS enter organization name enter instance name Select Firmware Version	CPUID: 1 CPUID: 2 CPUID Free: 0 Free: 9 Inuse: 9 Inuse: Reserved: 9 Reserved: 9 Reserved: SUMMARY	CPU Dr CPU Dr CA Configure 0 9 Prec 9 10 use 0 Instance Firewalls + Add () Reload () VIRSION UP TWE		
		Data Processing Cores	Select 💌				
		Instance Host	This Firewall				
		(Primary and Secondary Instance)					
			Next Cancel				

In the add dialog, all the fields have to be populated.

- Organization Name identifies operating enterprise, a name which is a string.
- Tenant Name field requires a name which is a string.
- ACI Version. This is a drop down list and the user has to pick one of the ACI versions that needs to be running on the instance. In order to upload an ACI, please follow the instructions mentioned under Uploading Tenant SWI.
- **Management Cores** At this point, only 2 Control Plane cores can only be dedicated to a particular tenant. Select the number from the right hand pull-down.
- Data Processing Cores, Allows the user to select the number of DP Cores. Please limit this allocation to 8 for this release. Ideal max would be 4.
- **High Availability Tenant** Sets up redundant tenant instance: Primary (active) and Secondary (standby). At this point, only HA pairs within a single NS<sub>SD</sub> are supported.

When you are complete, click on **Next**, the dialog will move to the interface mapping stage:

Setup interfaces for the tenant instance by mapping each X0, X1, X2...X7 to a physical interface from the drop down list. The drop down shows only those front panel ports that were reserved for tenants. For each interface, provide a unique VLAN. In setting VLAN IDs:

- VLAN should be in the range 65 .. 4094
- For a given instance, VLAN configured on X0 .. X7 should be unique, two or more instances of Xn can't have same VLAN.

Each instance can be configured with a default X0 IP address.

Once configuring is complete, click on Next.

In order to launch the instance, click on the **Start** button on the Actions drop-down menu. The instance can be stopped with **Stop** button and restarted using the **Reboot** button.

## Editing an Instance

To change the configuration of an instance, click on the Action icon at the far right of the tenant instance row in the Instance page. When the menu appears choose **Stop**. Wait until the status of the tenant changes to "Stopped". This could take up to 5 minutes. Click again on the Action icon and click **Edit**.



## Uploading Instance Firmware

The firmware for launching the instances has to be pre-loaded using the RT. On the **DEVICE | Multi-Instance > Firmware** page upload the SWI file as shown.



Once uploaded, the firmware appears as a choice in the Add/Edit Instance dialog.

(i) **NOTE:** The instance firmware is not the same Root Firewall firmware. These instance firmware is exclusive to tenant(s) only.

#### To Upgrade Instance Firmware:

The steps for upgrading firmware for an instance are:

- 1. Download the firmware as described above.
- 2. Stop the instance.
- 3. Use the edit process to select new firmware.
- 4. Restart the instant.

## Licenses for Multiple Instances

#### Topics

- Instance Registration
- Instance license update

## **Multiple Instances**

Instance licenses are required for spawning instances. The NS<sub>Sp</sub> Multi-Instance licenses will be fetched onto the system once the device is registered with the license manager. The licenses are then managed by the Root Tenant for spawning instances. The root tenant takes care of assigning an available instance to a tenant once it is started.

The licenses are assigned to an instance and marked as in use only when the tenant is started. The license assigned to a tenant will remain in use until an instance is deleted. Stopping an instance does not release its license.

Once all instances are consumed, a request to start a new instance would fail owing to insufficient licenses.

The Instances page will display the list of instance licenses and their status (used/available) and also the name of the instance (for licenses in use).

SONIC <b>WALL</b>	← NSsp 15700	쉛 MONITOR 📜 DEVICE 🔀	NETWORK 🚺 OBJECT 🥖	OLICY			🔩 😌 🖓 🖈		
FIREWALLS	2 2cb8ed4ccs0 / Device / Multi-Tenancy / Tenant Ucenses Configuration 0								
📙 Settings	Q, Search All Used	Q, SearchAll Used & Available Licenses 👻							
— Status	# SERIAL KEY	AUTHENTICATION CODE	REGISTRATION CODE	TENANT TYPE	ORGANIZATION	STATUS	TENANT NAME		
<ul> <li>Licenses</li> <li>Administration</li> </ul>	1 0040103BB58F	ZB8AKTPE	J3FLYSZV	Firewall	HR	Used	tenant11		
— Time	2 0040103BB59F	XNZEGHBS	JSHJ5X2R	Firewall	Associative Outfit	Used	ao-omnicron		
Certificates	3 0040103BB5AF	YVVXUZEB	7JHMUDHH	Firewall		Available			
SNMP     Firmware and Settings	4 0040103BB58F	F32NBGYJ	9TSTY2F2	Firewall		Available			
— Storage	5 0040103BB5CF	6JBBX2H9	K2GWXGUV	Firewall		Available			
— Restart	6 0040103BB5DF	FYWZ4C34	5YSUZT8N	Firewall		Available			
Multi-Tenancy	7 0040103BB5EF	6JBZMS3F	X47EDA95	Firewall		Available			
— Settings	8 0040103BB5FF	E95N6SW6	AX5VT7XF	Firewall		Available			
— Tenants	9 0040103BB60F	QMFX3Y26	NJ59WLNL	Firewall		Available			
- Firmware	10 0040103BB61F	FT2U834P	KXEM9PQE	Firewall		Available			
- Tenant Licenses	•								
High Availability									

## **Instance Registration**

The instance, once spawned, automatically registers itself with the license manager upon boot-up. In order for this to work fine, the VLAN for the tenant's X1 (WAN interface) should be configured properly so that it has access to WAN/internet to reach the license manager over the network. That is, the X1 interface of the tenant instance must be linked to a front panel port that has access to WAN/internet.

For further information on setting up a WAN internet connection for tenants. see "Network Configuration".

## Instance license update

If a customer has purchased additional tenant instances, the licenses can be updated or upgraded by reregistering the device with license manager. The NS<sub>*sp*</sub> Multi-Instance licenses are always designed to be bundle of previous + new tenant license. Once licenses are updated, the SonicOSX Root tenant identifies the newer set of licenses and updates the licenses shown as available on the **Instance** page.

## Deactivating an Instance

Stopping an instance and removing it from the **Instance** page strips off the instance with all its resources (instance license, physical and logical resource) and renders itself into Inactive status.

2

## SonicWall Support

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

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 and participate in the Community forum discussions at https://community.sonicwall.com/technology-and-support.
- View video tutorials
- Access https://mysonicwall.com
- 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

- (i) NOTE: A NOTE icon indicates supporting information.
- () | IMPORTANT: An IMPORTANT icon indicates supporting information.
- (i) **TIP:** A TIP icon indicates helpful information.
- CAUTION: A CAUTION icon indicates potential damage to hardware or loss of data if instructions are not followed.
- WARNING: A WARNING icon indicates a potential for property damage, personal injury, or death.

SonicOSX Multi-Instance Administration Guide for the NSsp Series Updated - August 2020 Software Version - 7 232-005401-30 Rev A

Copyright © 2020 SonicWall Inc. All rights reserved.

The information in this document is provided in connection with SonicWall and/or its affiliates' products. No license, express or implied, by estoppel or otherwise, to any intellectual property right is granted by this document or in connection with the sale of products. EXCEPT AS SET FORTH IN THE TERMS AND CONDITIONS AS SPECIFIED IN THE LICENSE AGREEMENT FOR THIS PRODUCT, SONICWALL AND/OR ITS AFFILIATES ASSUME NO LIABILITY WHATSOEVER AND DISCLAIMS ANY EXPRESS, IMPLIED OR STATUTORY WARRANTY RELATING TO ITS PRODUCTS INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR NON-INFRINGEMENT. IN NO EVENT SHALL SONICWALL AND/OR ITS AFFILIATES BE LIABLE FOR ANY DIRECT, INDIRECT, CONSEQUENTIAL, PUNITIVE, SPECIAL OR INCIDENTAL DAMAGES (INCLUDING, WITHOUT LIMITATION, DAMAGES FOR LOSS OF PROFITS, BUSINESS INTERRUPTION OR LOSS OF INFORMATION) ARISING OUT OF THE USE OR INABILITY TO USE THIS DOCUMENT, EVEN IF SONICWALL AND/OR ITS AFFILIATES HAVE BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. SonicWall and/or its affiliates make no representations or warranties with respect to the accuracy or completeness of the contents of this document and reserves the right to make changes to specifications and product descriptions at any time without notice. and/or its affiliates do not make any commitment to update the information contained in this document.

For more information, visit https://www.sonicwall.com/legal.

## End User Product Agreement

To view the SonicWall End User Product Agreement, go to: https://www.sonicwall.com/en-us/legal/license-agreements.

### **Open Source Code**

SonicWall Inc. is able to provide a machine-readable copy of open source code with restrictive licenses such as GPL, LGPL, AGPL when applicable per license requirements. To obtain a complete machine-readable copy, send your written requests, along with certified check or money order in the amount of USD 25.00 payable to "SonicWall Inc.", to:

General Public License Source Code Request Attn: Jennifer Anderson 1033 McCarthy Blvd Milpitas, CA 95035