Chapter 11 Pre-task 2, Palo Alto and Fortinet Firewall Installation on GNS3

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About this document:

Welcome to the software installation guide for the Apress book, "***Introduction to Ansible Network Automation: The Practical Primer***" This guide has been created by the authors as supplementary material to the book, but it is not part of the actual book itself. ***The content has been borrowed from the prequel book, "Introduction to Python Network Automation: The First Journey" written by Brendan Choi in 2021***. Its purpose is to provide clear and concise instructions to assist readers in installing the necessary software required to follow the examples and exercises.

By following the steps outlined in this guide, you will be able to set up the required software for Ansible/Python network automation and begin exploring the concepts while engaging in the practical exercises covered in the book. Please note that this guide is not intended to serve as a comprehensive resource on network automation or Ansible, but rather as a focused guide designed to help you get started quickly and easily.

If you encounter any questions or issues during the installation process, please do not hesitate to reach out to the authors or refer to the resources listed in the guide. We hope this guide proves helpful in your journey toward mastering Ansible/Python network automation.

Required files for installation:

Description	File name	File Size
Palo Alto Firewall:	Pan-vm-fw.gns3a PA-VM-KVM-10.1.0.qcow2	8KB 3.4GB
Fortinet Firewall:	Fortigate.gns3a empty30G.qcow2 FGT_VM64_KVM-v7.2.4.F-build1396-FORTINET.out.kvm.qcow2	22KB 192.5KB 90.8MB
Internet connection:	Yes	n/a

Warning! The software used in this guide may include a combination of open-source and proprietary software. Readers can search for most of the open-source software on the internet. However, the authors are unable to legally provide the proprietary software. Please ensure that you acquire the proprietary software through authorized channels.

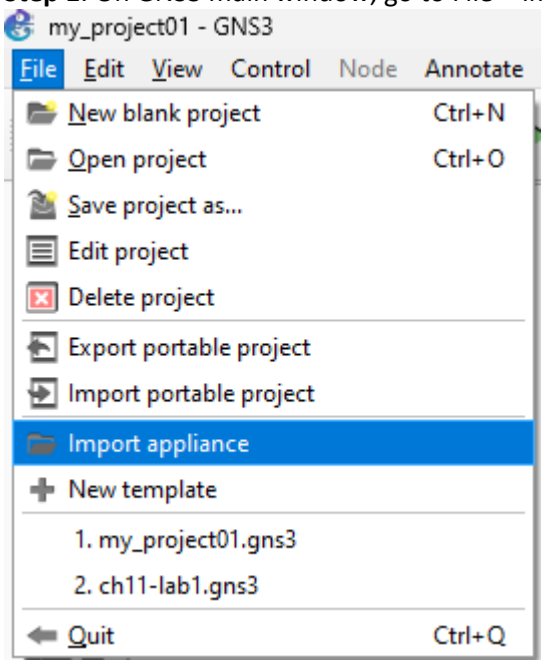
Contents

In this installation guide, you will install two types of virtual Firewalls, first, Palo Alto's PA-VM and second Fortinet's FortiGate. The installation of these devices on GNS3 is no different from installing Cisco or Juniper devices.

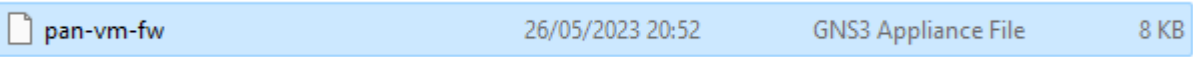
Palo Alto PA-VM installation on GNS3

First, let's install Palo Alto's PA-VM with an IP address of 192.168.127.30/24. We will only do the installation here. Then, we will continue with the initial configuration and validation in the book.

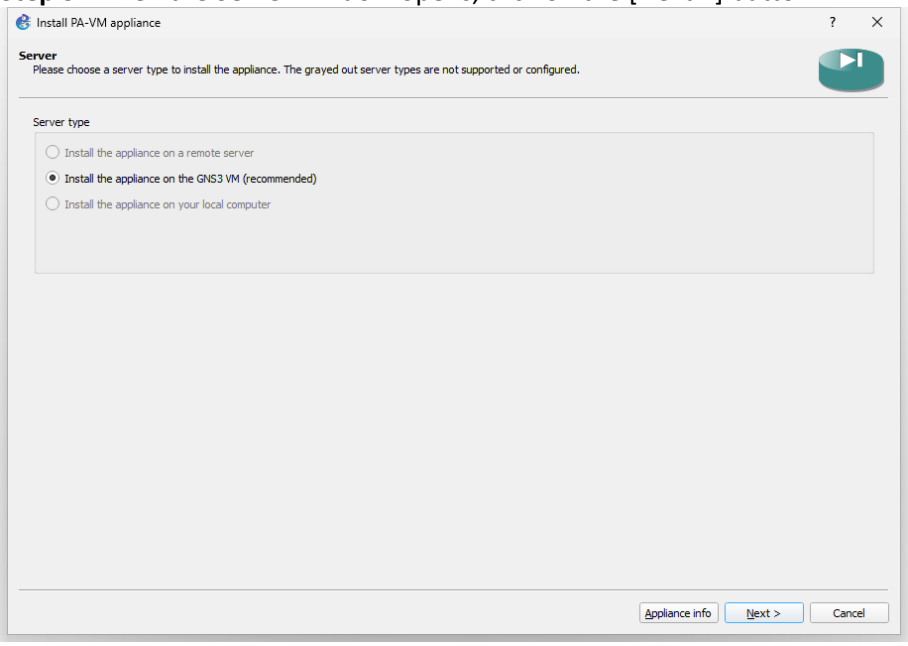
Step 1: On GNS3 main window, go to File > Import appliance.



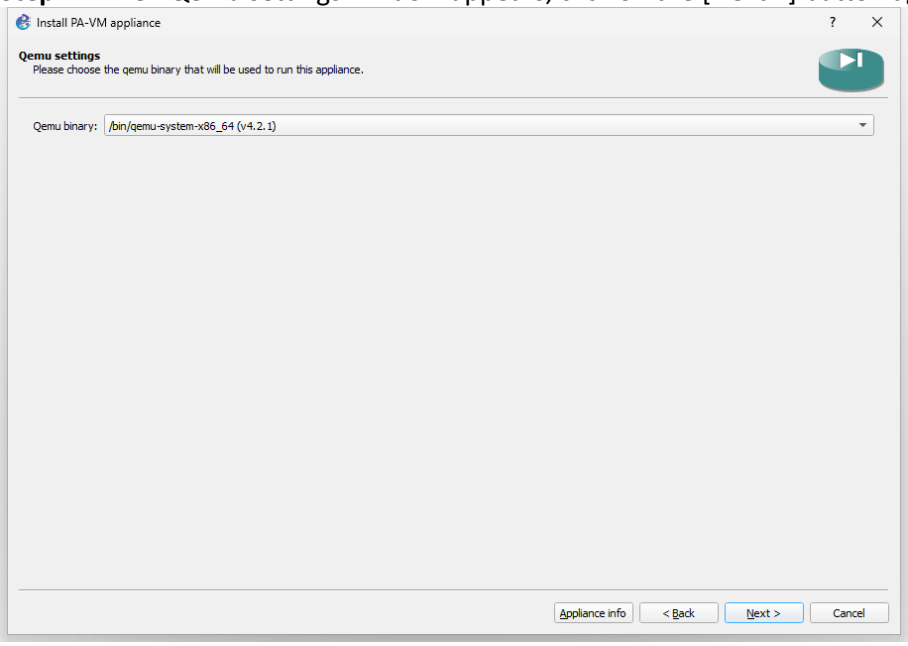
Step 2: Navigate to your Downloads folder and locate the file named 'pand-vm-fw.gns3a'. Select the file to open in the GNS3 Import appliance.



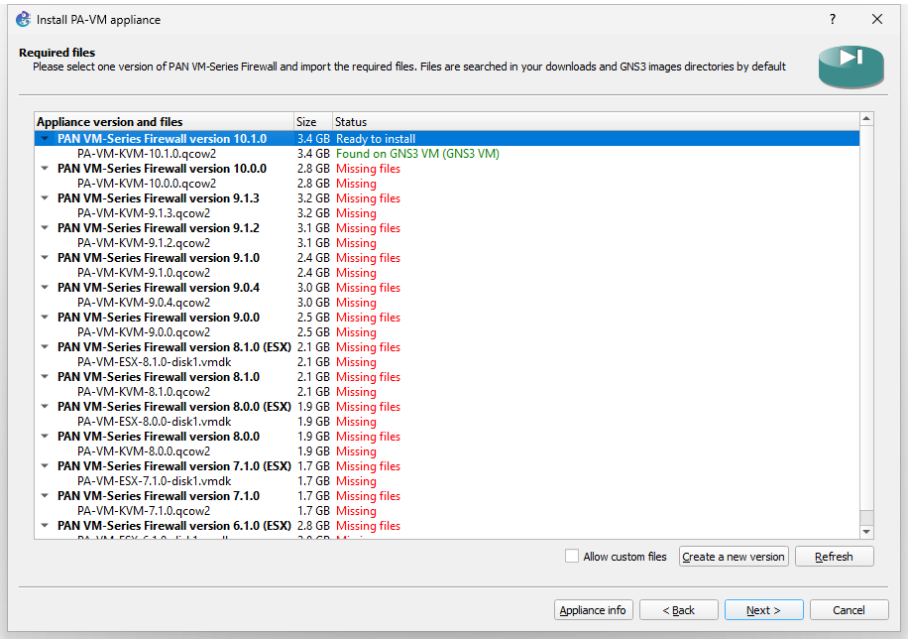
Step 3: When the Server window opens, click on the [Next >] button.



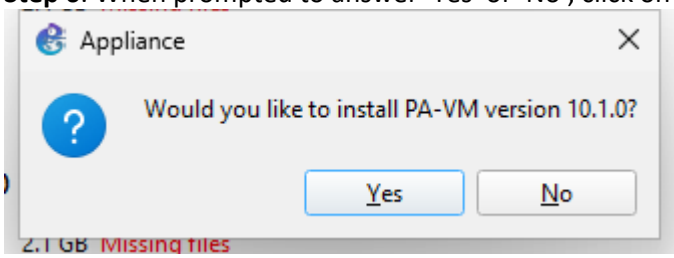
Step 4: When Qemu settings window appears, click on the [Next >] button again.



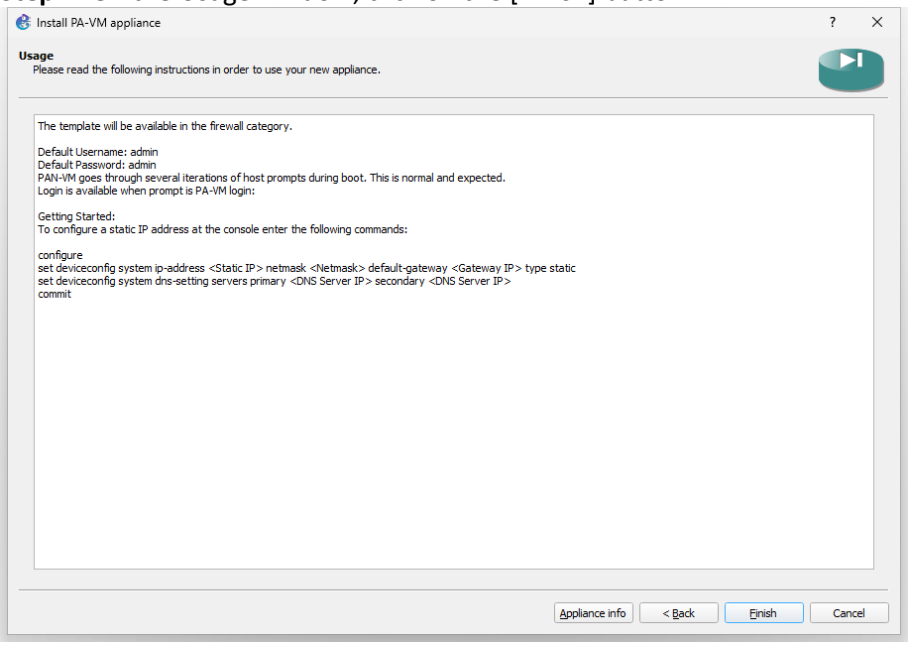
Step 5: If you have placed the correct PA-VM image under the Downloads folder, it will automatically detect your PA-VM image. The PA-VM image used in this example is PA-VM-KVM-10.1.0.qcow2. Highlight the populated version of PA-VM and click on the [Next >] button.



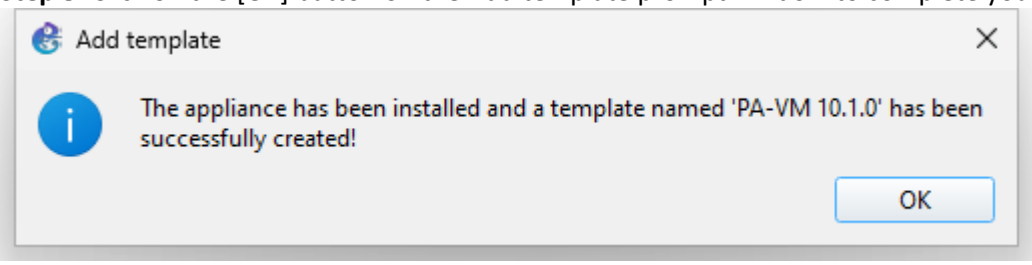
Step 6: When prompted to answer 'Yes' or 'No', click on the [Yes] button.



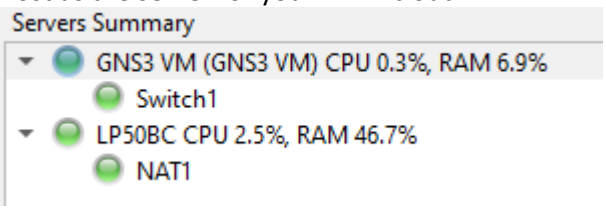
Step 7: On the Usage window, click on the [Finish] button.

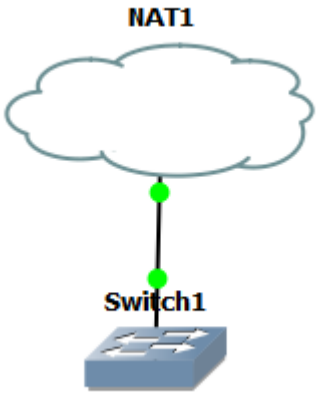


Step 8: Click on the [OK] button on the Add template prompt window to complete your installation.

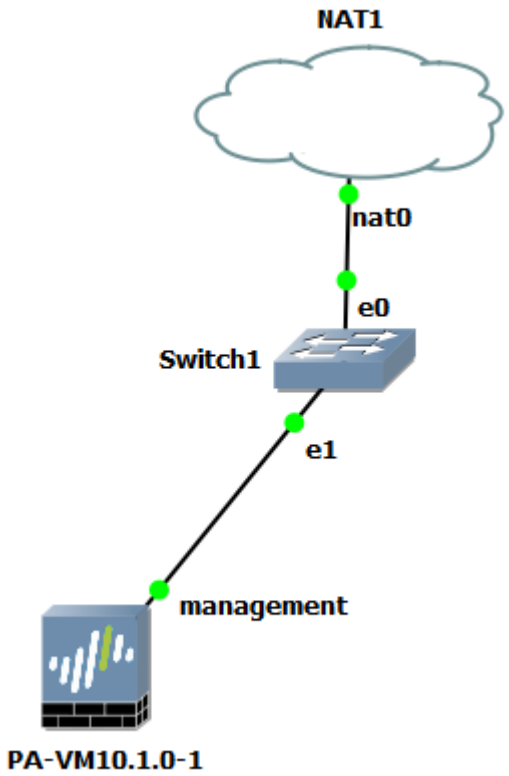


Step 9: Drag and drop a NAT cloud and a GNS3's dummy Switch to the Topology Canvas. When you drop these items, make sure you select the GNS3 VM as the server for your Switch1 and your PC host as the server for your NAT1 cloud.

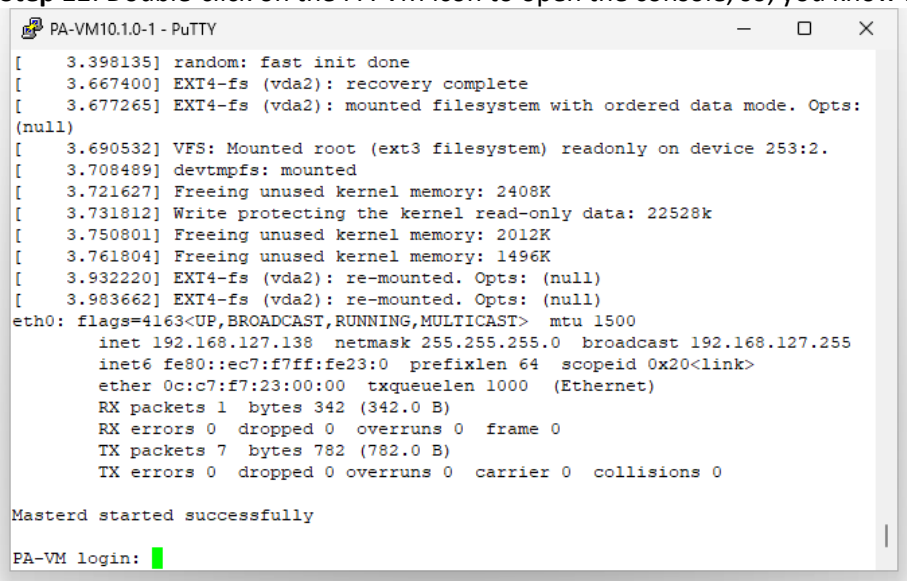




Step 10: Now go to All Devices and locate the PA-VM 10.1.0 icon and drag-n-drop to the canvas and connect the PA-VM's management interface to the Switch 1's Ethernet 1. Place the mouse cursor on the PA-VM, use the right-click, and then select the power on button.



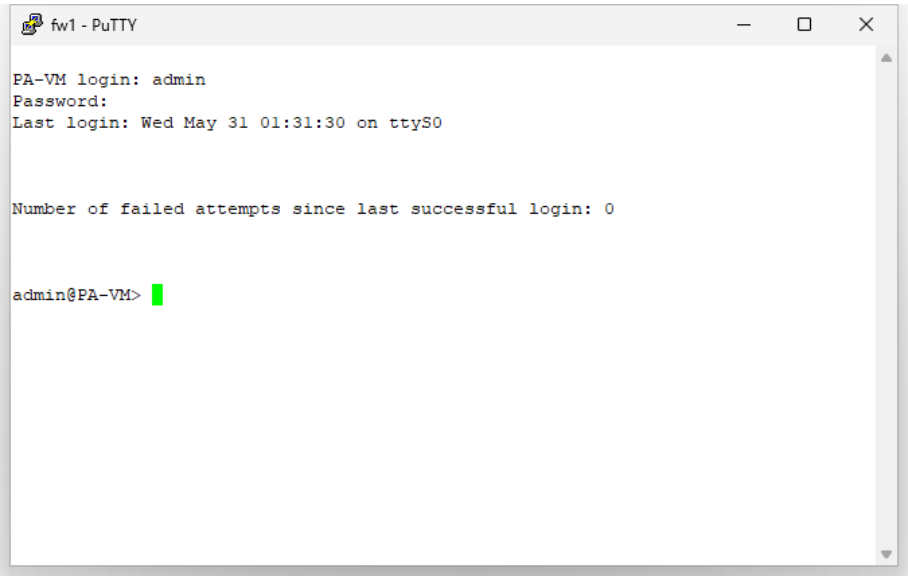
Step 11: Double-click on the PA-VM icon to open the console, so, you know it is booting up properly.



Step 12: Starting with PAN-OS 9.0.4, administrators must change **the default administrator password (admin/admin)** on the first admin account login on your device. Please go ahead and change this password and make sure you save the password for future reference and use. You have to get to the "PA-VM login:" prompt to log in and change the password.

```
[…omitted for brevity]
Masterd started successfully

vm login: admin
'cfg.general.need-acknowledgement-to-login': NO_MATCHES
Password: admin
Login incorrect

PA-HDF login: admin
Password: admin
Login incorrect

PA-VM login: admin
Password: admin
Last login: Wed May 31 01:53:18 on ttyS0
Enter old password : admin
Enter new password : ************
Confirm password   : ************
Password changed
```

Refer to this link for a password update on the first login:
https://knowledgebase.paloaltonetworks.com/KCSArticleDetail?id=kA10g000000CloQCAS



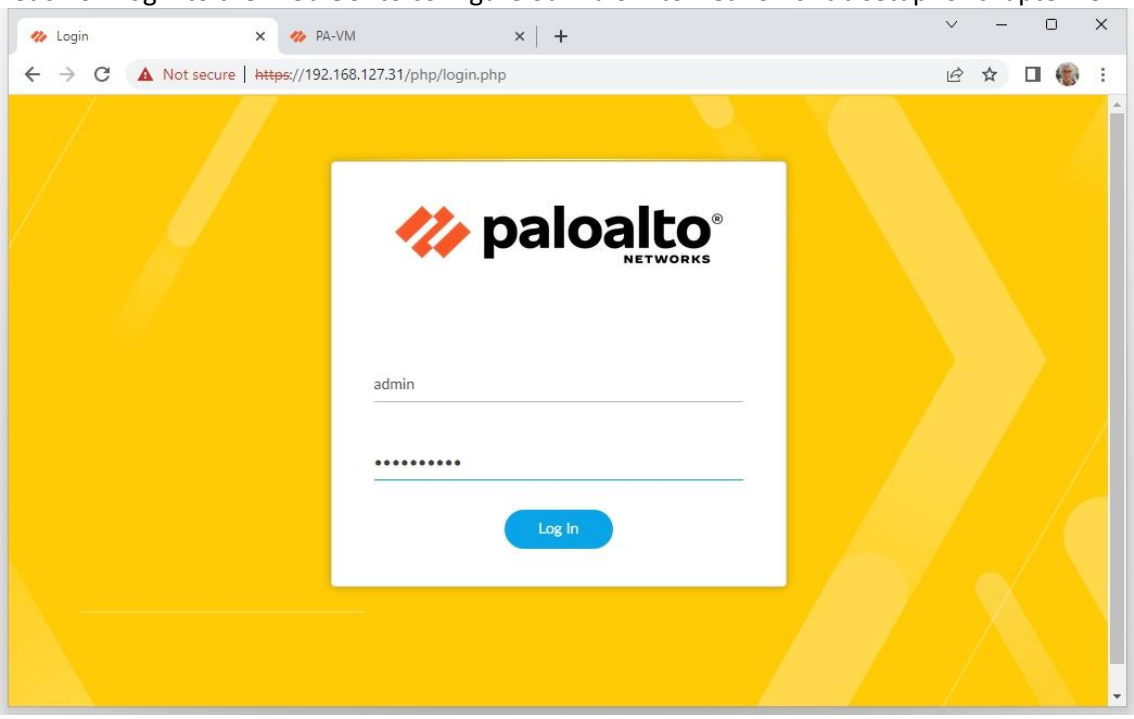
Step 13: We can now configure the management interface on our Palo Alto Network Firewalls. It is set to DHCP by default. Once we have configured the management IP, we should be able to log in via ssh and web GUI.

```
admin@PA-VM > configure
Entering configuration mode
[edit]
admin@ PA-VM # set deviceconfig system type static

[edit]
admin@ PA-VM # set deviceconfig system ip-address 192.168.127.31 netmask 255.255.255.0
default-gateway 192.168.127.2 dns-setting servers primary 192.168.127.2 secondary 8.8.8.8

[edit]
admin@ PA-VM # commit

Commit job 3 is in progress. Use Ctrl+C to return to command prompt
.................55%70%98%............100%
Configuration committed successfully
```

Refer to this link for configuring the management interface IP of the firewall:
https://knowledgebase.paloaltonetworks.com/KCSArticleDetail?id=kA10g000000ClN7CAK

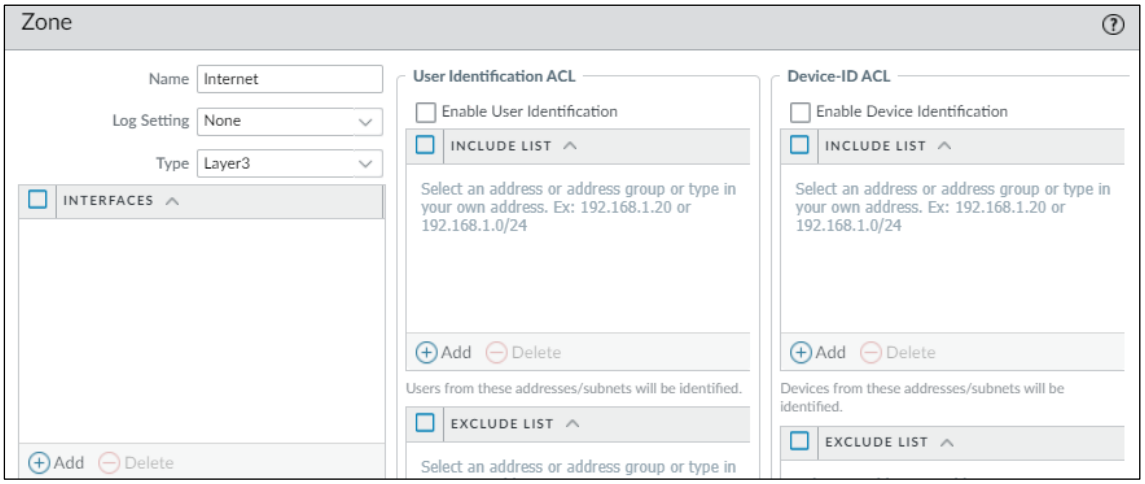
NOTE: The succeeding steps will include configurations only related to our example in chapter 19 to build and establish a site-to-site VPN IPSec tunnel between two Palo Alto Networks Firewall. You can optionally complete these steps once you reach the chapter.

Let's now login to the Web GUI to configure our Palo Alto Networks Lab setup for chapter 19.

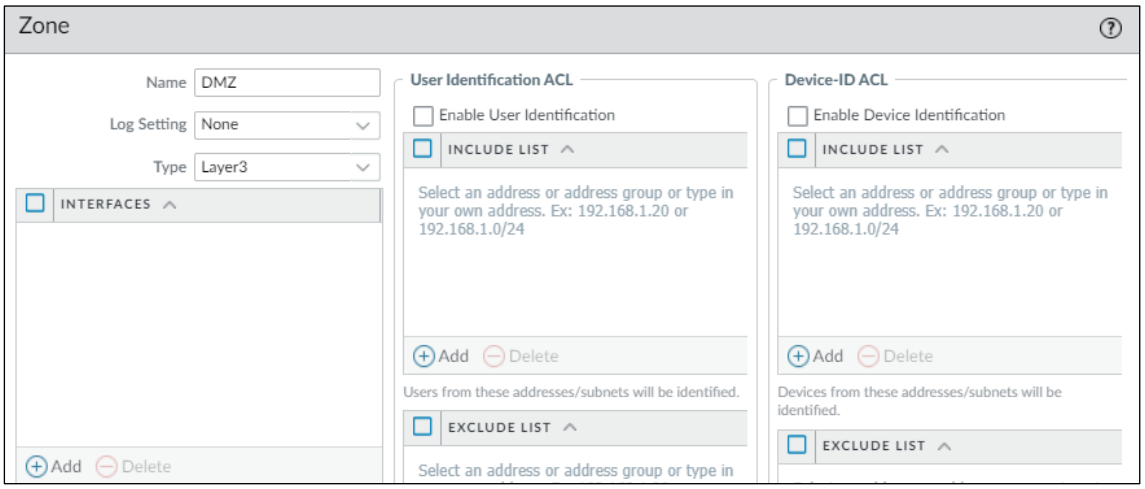


Step14: Configure the Layer 3 Zones with names "**Internet**" and "**DMZ**". Go to **Network > Zones > Add**. Add the name and the type. We will attach these zones to their respective interfaces.

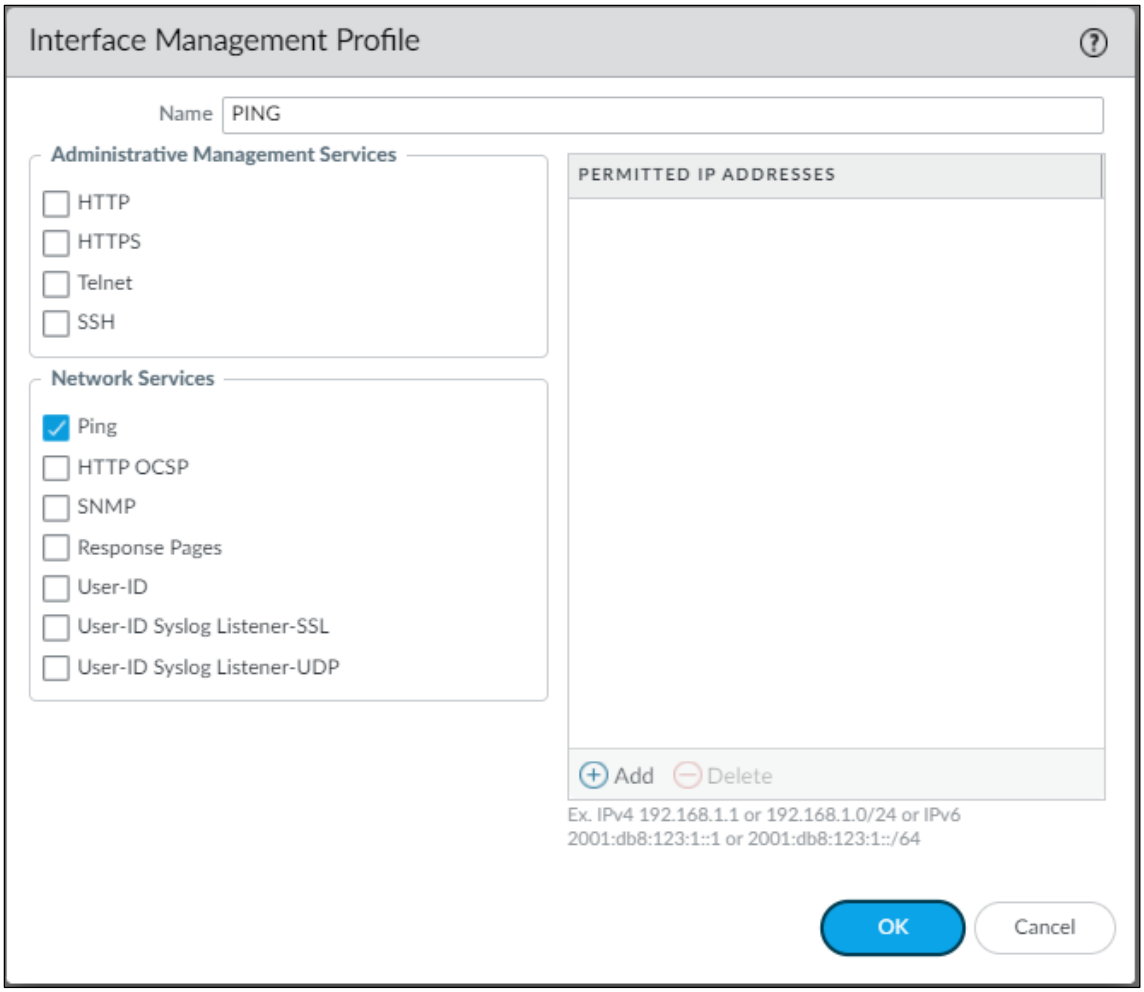
Internet Zone:



DMZ Zone:

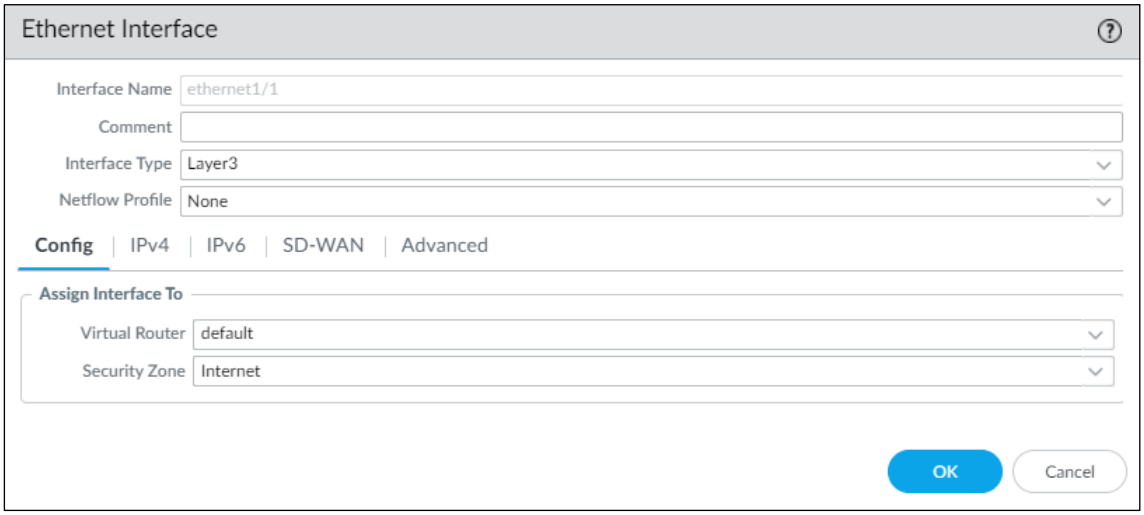


Step15: Configure the Interface Management Profile. Go to Network > Network Profiles > Interface Mgmt. We will only enable ping and we will attach it to the interfaces where we will test reachability to.

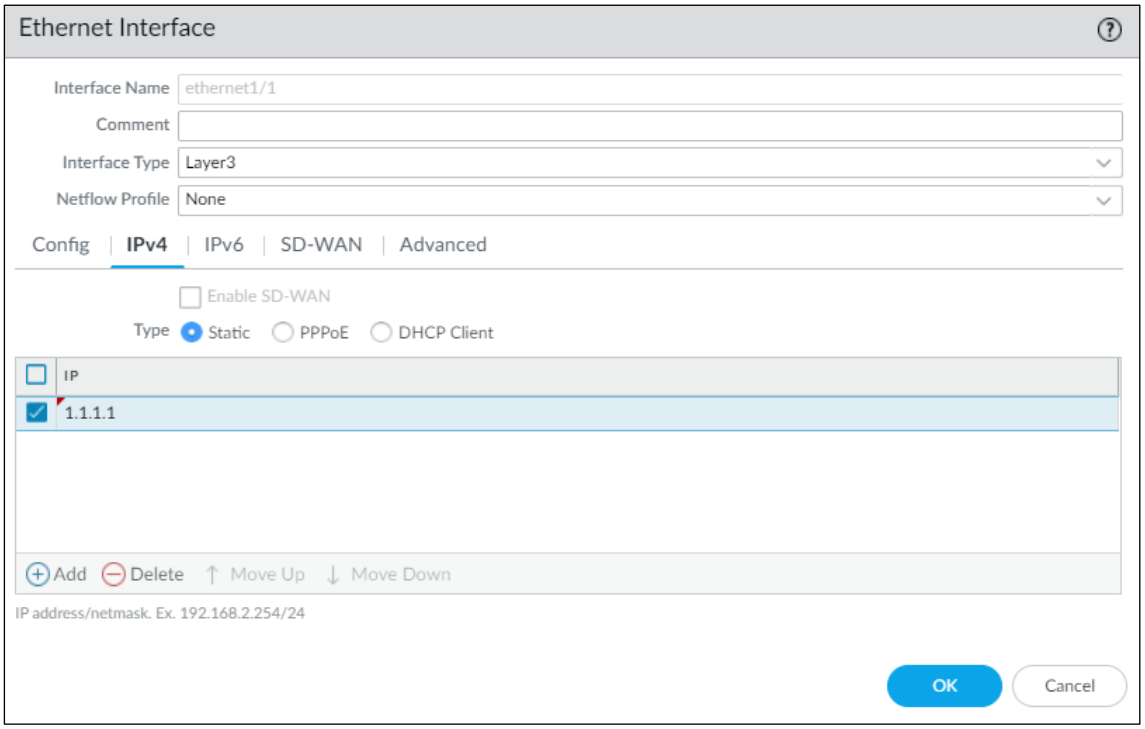


Step16: Configure the "Internet" interface. Go to Network > Interface > Ethernet > ethernet1/1. Set the interface type to Layer3, Virtual Router to default, Security Zone to Internet. Configure the IP as 1.1.1.1 which is for the first Palo Alto Firewall. Set the management profile to PING.

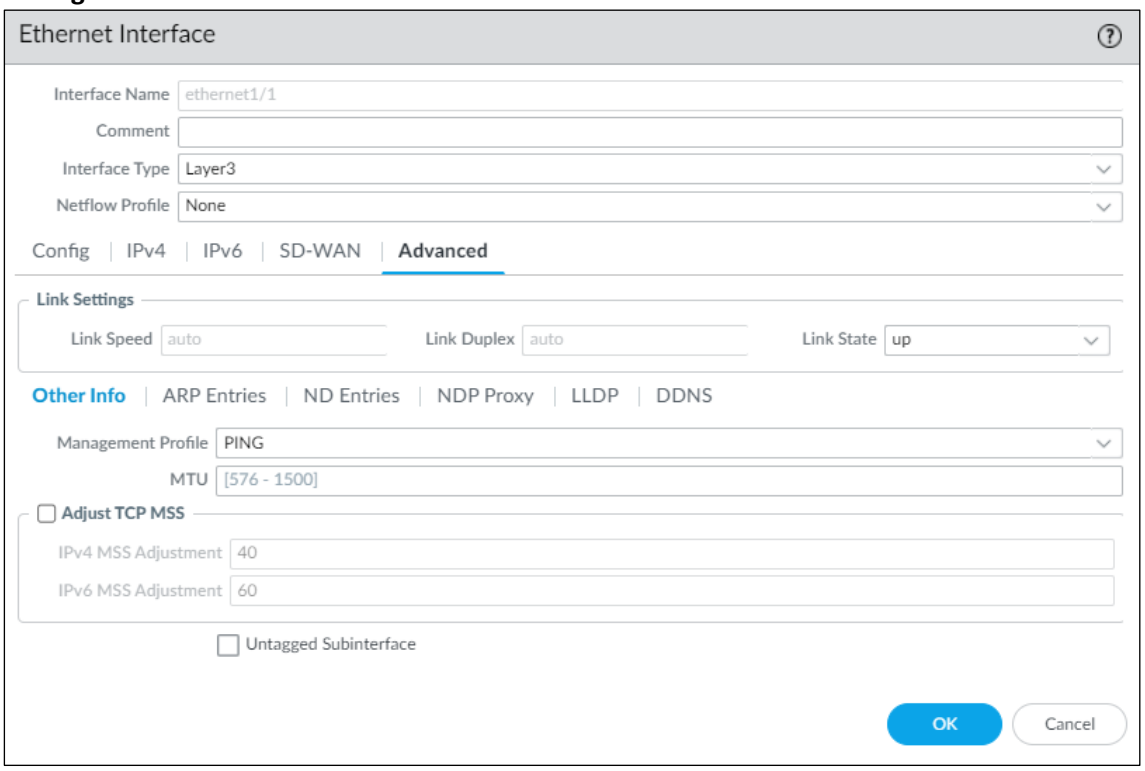
Internet Interface:



Interface IP:

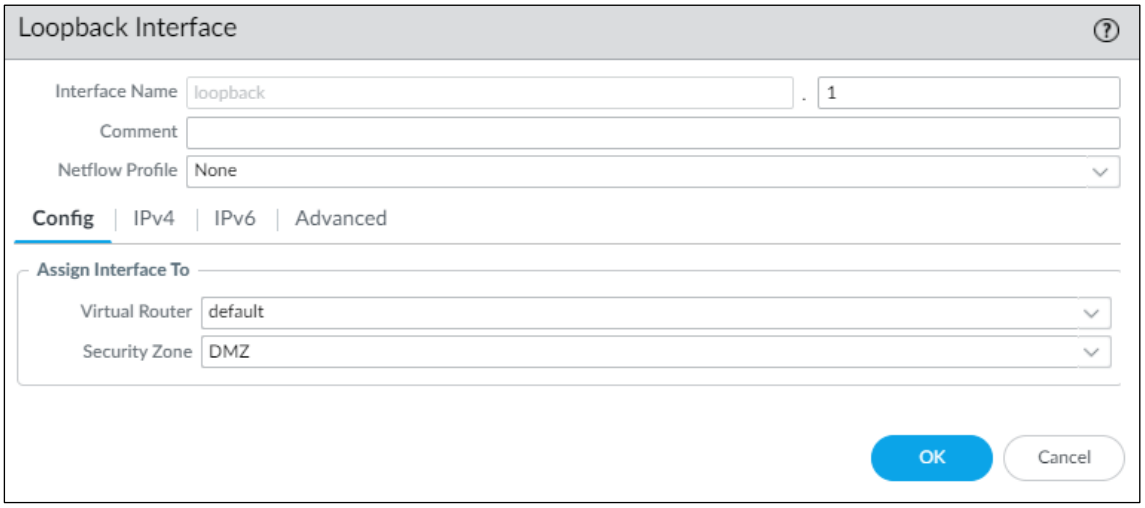


Management Profile:

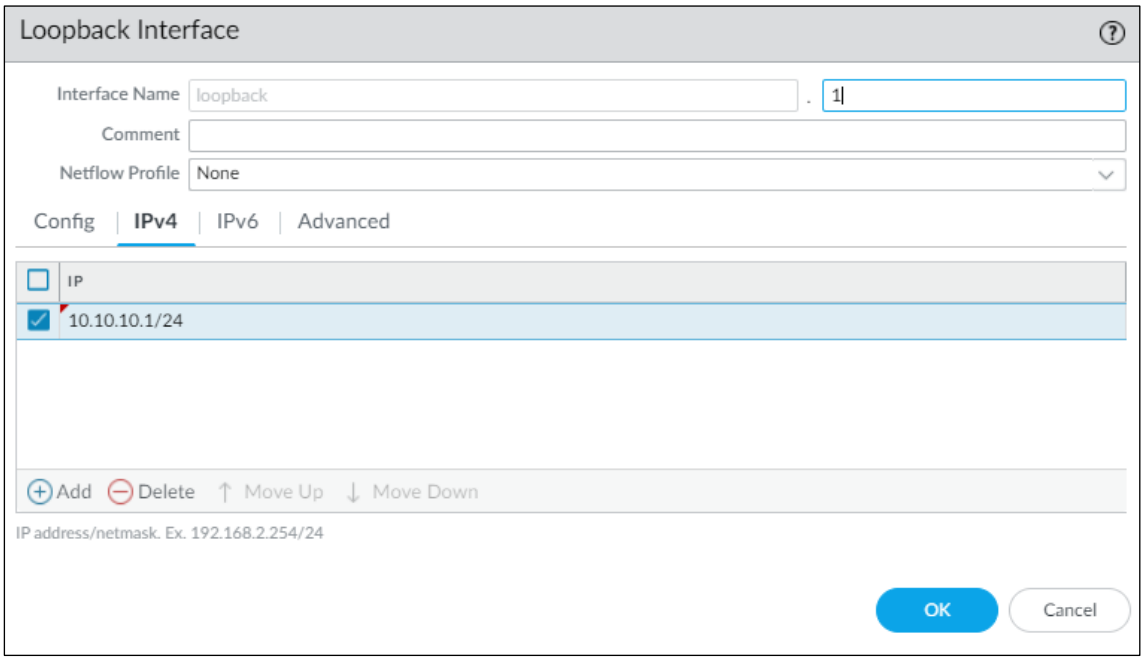


Step16: Configure the "**DMZ**" interface. Go to **Network > Interface >Loopback> Add**. Add Interface Name loopback.1 , set Virtual Router to default, Security Zone to DMZ. Configure the IP as 10.10.10.1/24 which is for the first Palo Alto Firewall. Set the management profile to PING.

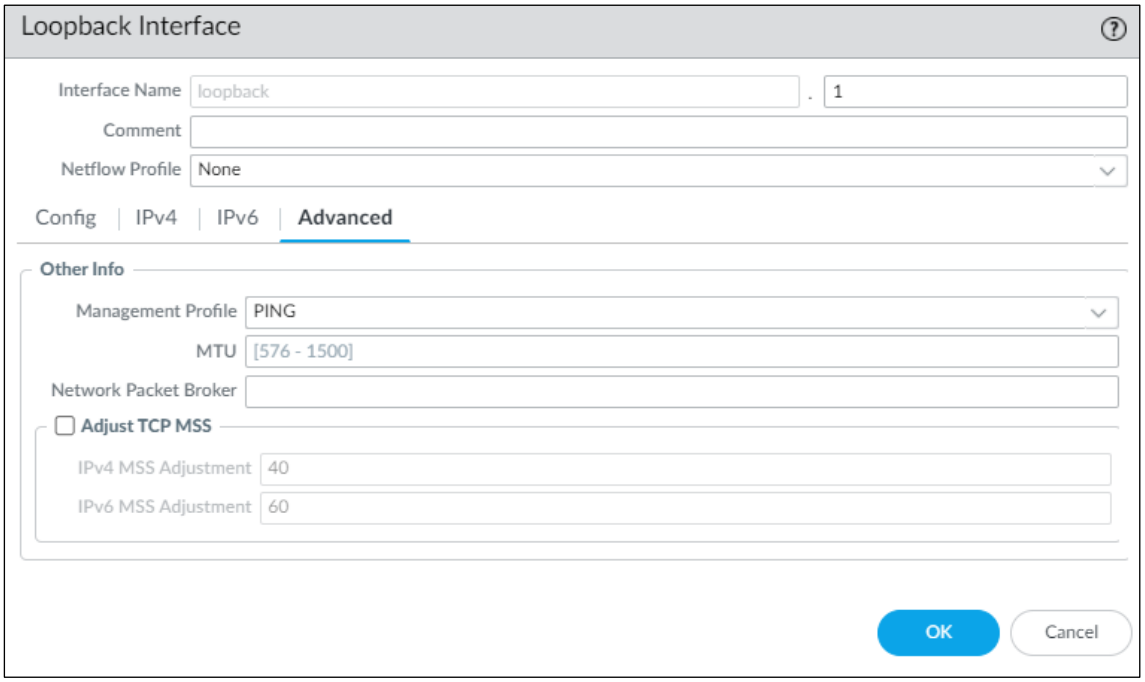
Internet Interface:



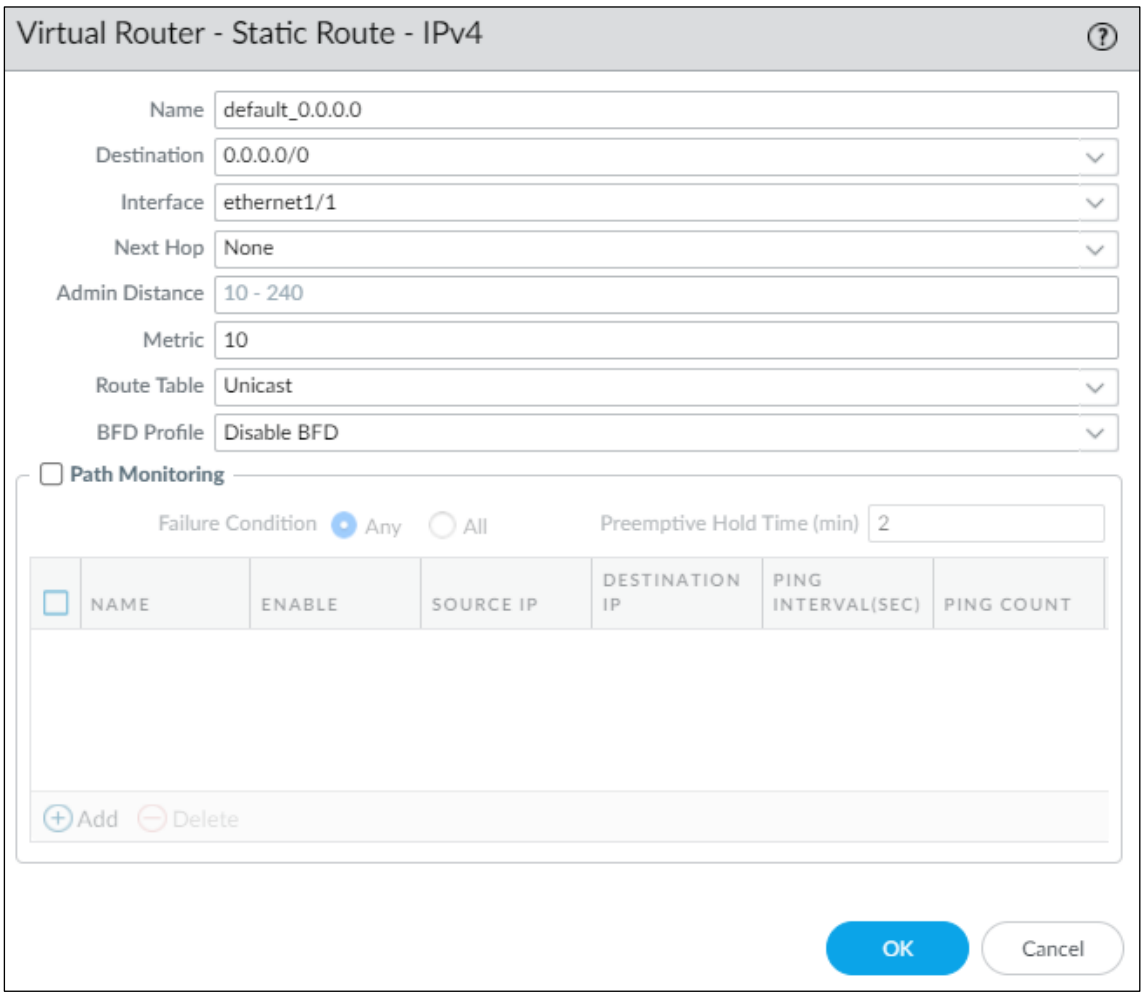
Interface IP:



Management Profile:



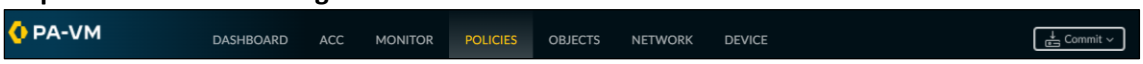
Step17: Create a static default route pointing to the internet interface. Go to **Network > Virtual Routers > default > Static Routes > Add**.



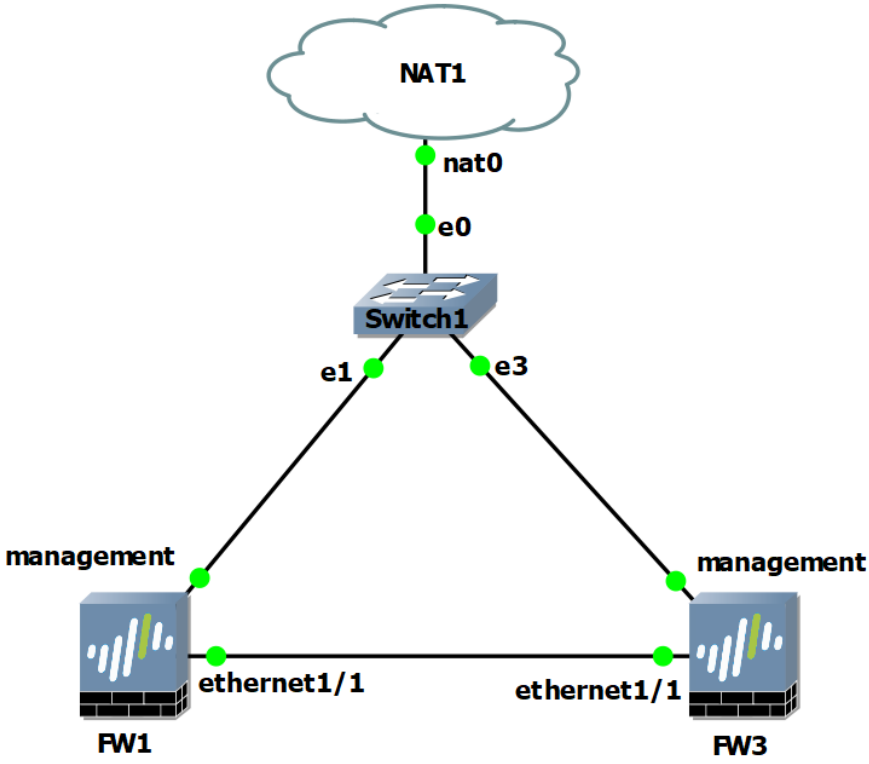
Step 18: Create a Security Policy to allow any traffic. Go to **Policies > Security> Add**. Add the name test, source and destination to any, application and service to any and action as allow.

	Source		Destination						
NAME	ZONE	ADDRESS	ZONE	ADDRESS	APPLICATION	SERVICE	ACTION	PROFILE	OPTIONS
test	any	any	any	any	any	any	Allow	none	

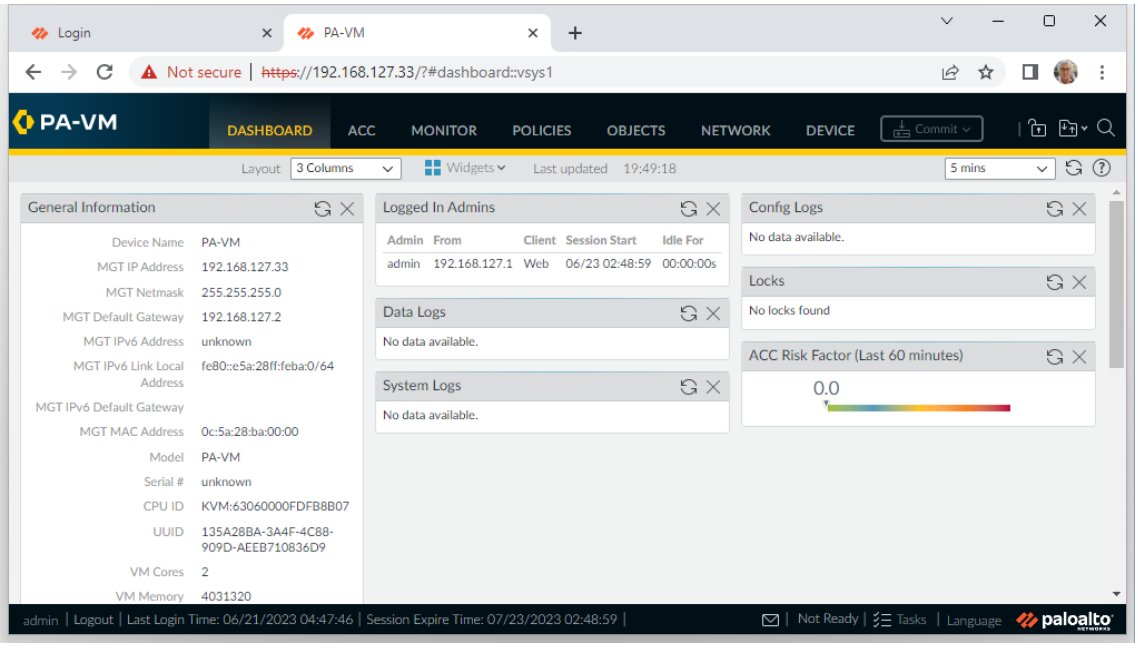
Step 19: Commit the change.



Step 20: Add a Second Palo Alto Firewall (FW3) and repeat steps 10 to 19 with the following values below. All the other values will remain similar.



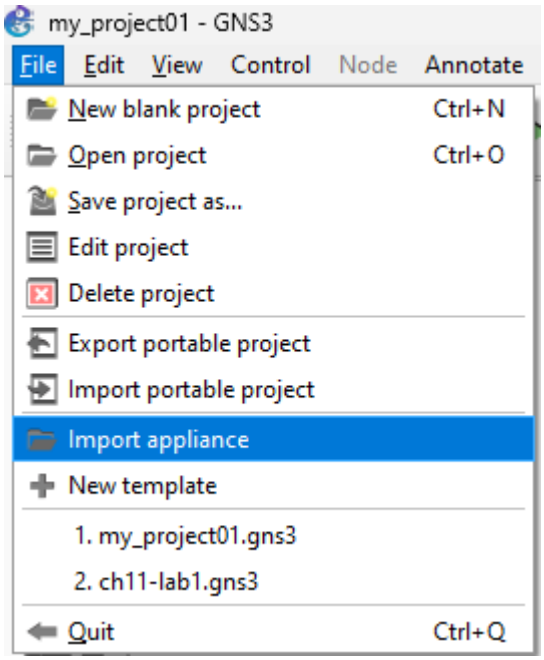
Management IP Address: 192.168.127.**33** **Ethernet1/1 IP:** 3.3.3.3 **Loopback.1 IP:** 10.10.30.1/24



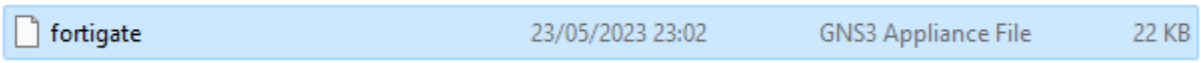
This completes Palo Alto Firewall configuration for Chapters 17-21. Let's configure Fortinet firewall for Chapters 17-18.

Fortinet FortiGate installation on GNS3

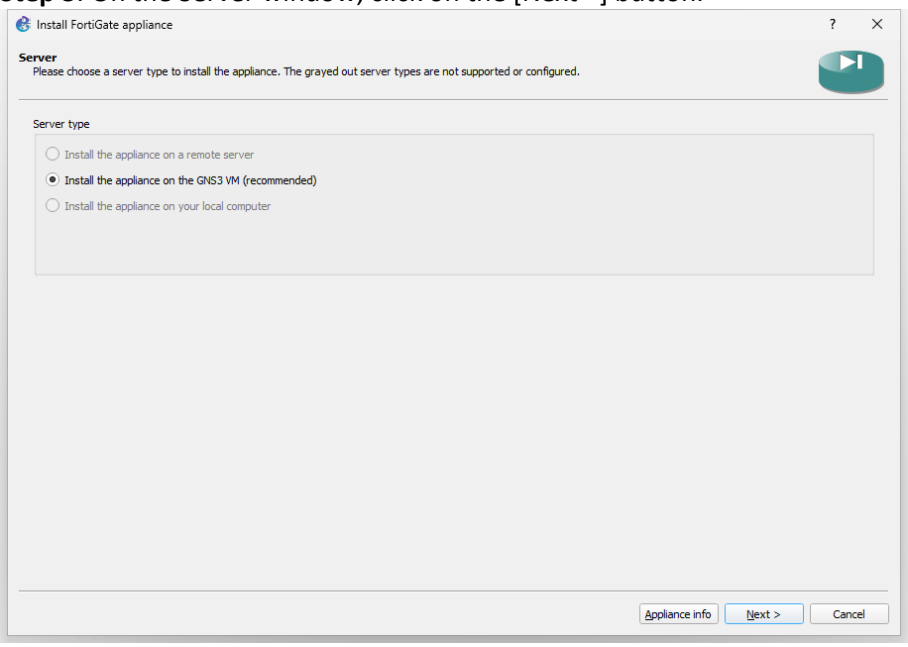
Let's continue with the installation of Fortinet's FortiGate. Please follow along.
Step 1: On GNS3 main window, go to File > Import appliance.



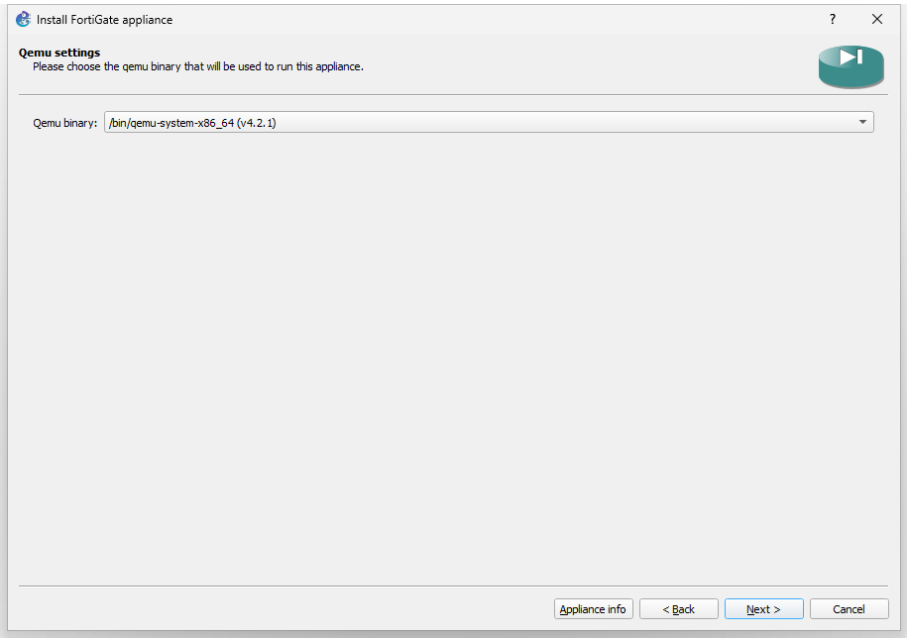
Step 2: Navigate to your Downloads folder and locate the file named 'fortigate.gns3a'. Select the file to open in the GNS3 Import appliance.



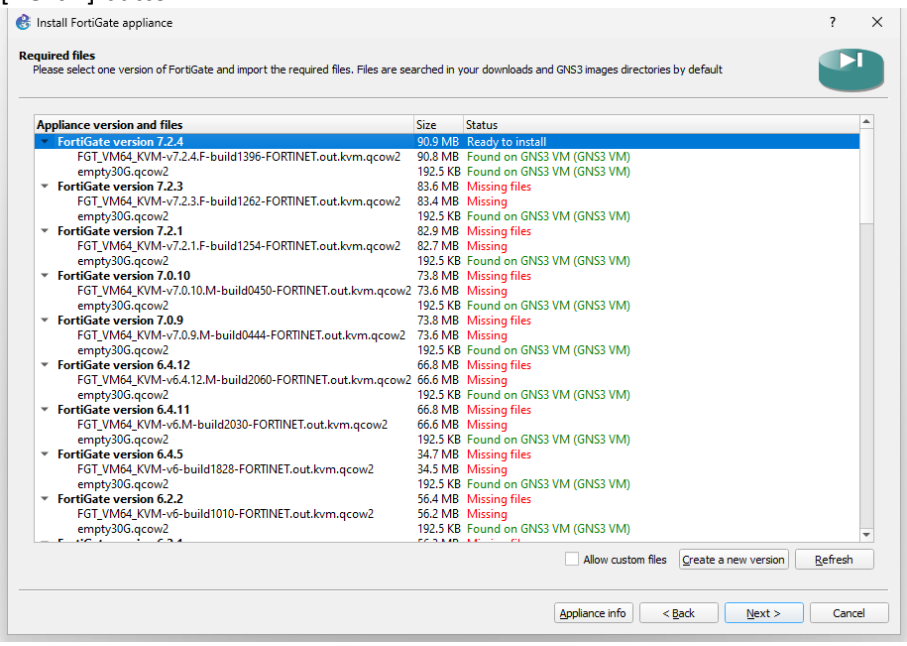
Step 3: On the Server window, click on the [Next >] button.



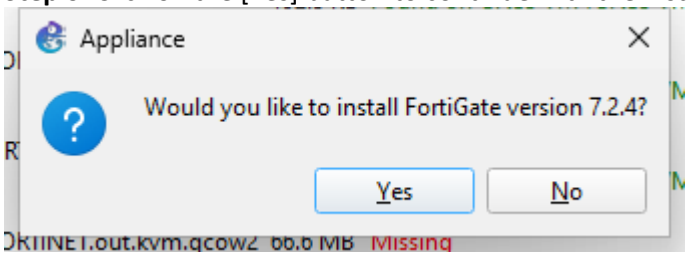
Step 4: On the Qemu settings window, click on the [Next >] button.



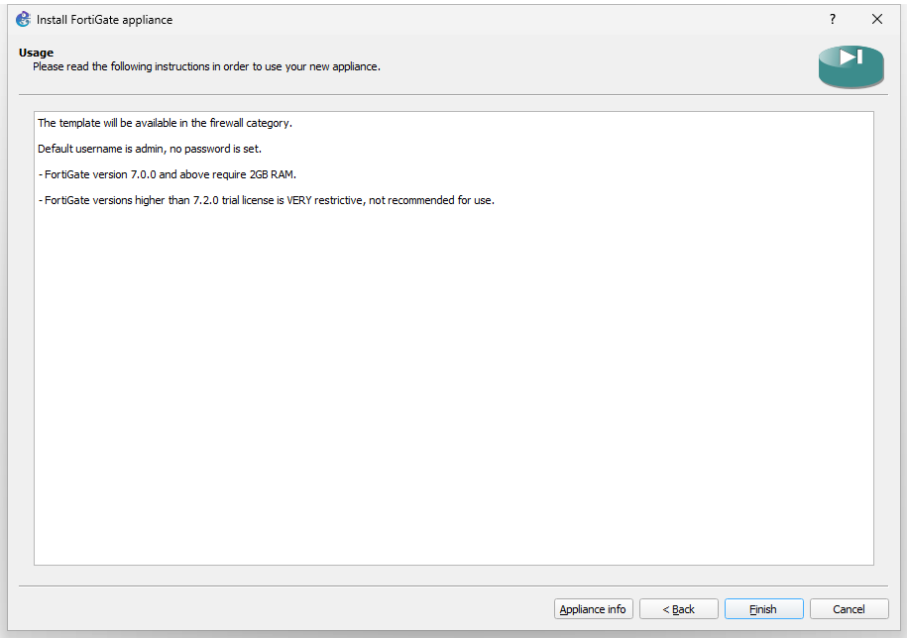
Step 5: If you have placed all the required files under the Downloads folder of your PC, you will see the FortiGate version populated in the Required Files window. Highlight your version and click on the [Next >] button.



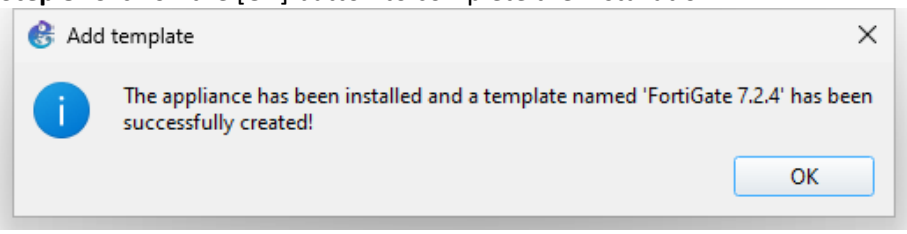
Step 6: Click on the [Yes] button to continue with the installation.



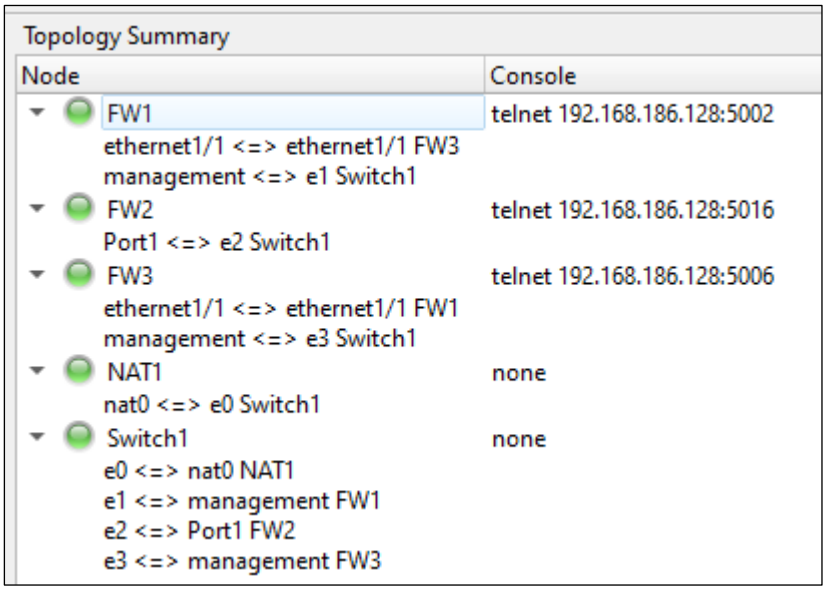
Step 7: Click on the [Finish] button to complete the installation.

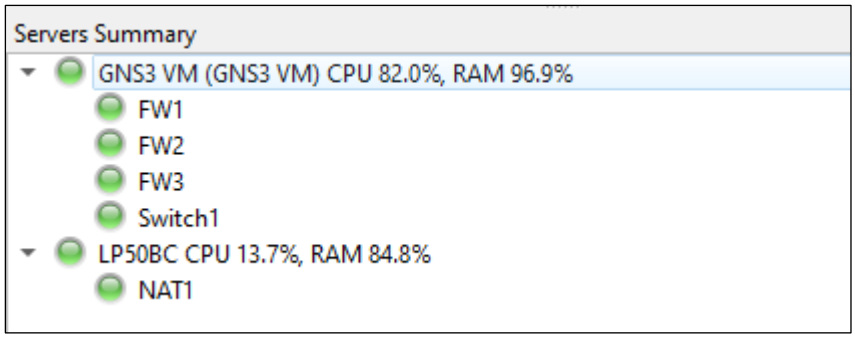


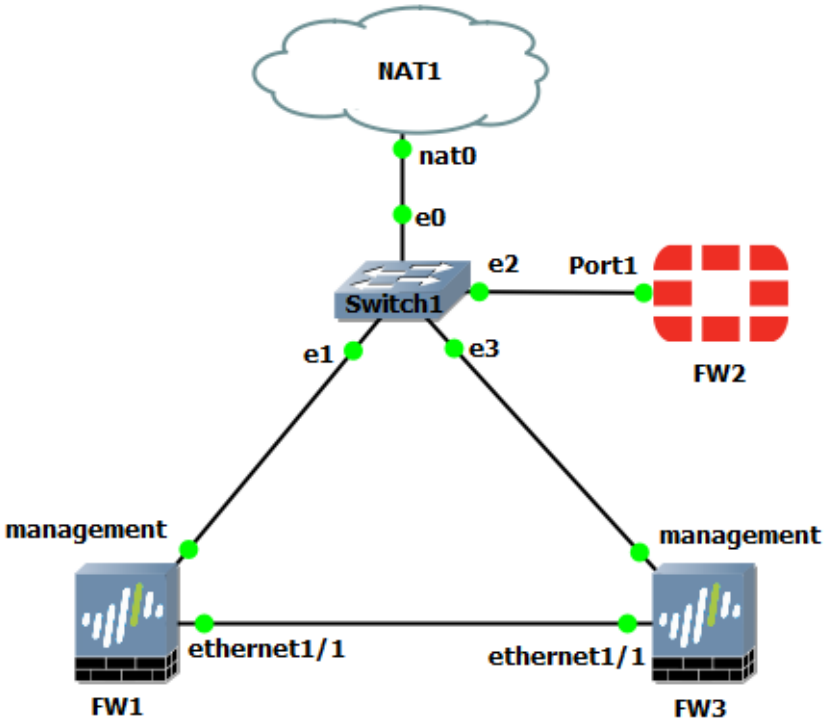
Step 8: Click on the [OK] button to complete the installation.



Step 9: Now, go to All devices in GNS3 and drag-n-drop FortiGate 7.2.4 onto the Topology canvas, then use Add a Link to connect Port1 of FortiGate to e2 of the GNS3's dummy switch. Finally, Power on the new Fortinet firewall.







Step 10: Double-click on the FortiGate icon and it will open the SSH session on the Putty. If your software loads up and you get the first login prompt, then you know that the installation has been completed successfully and you are ready to go.

```
FortiGate7.2.4-1 - PuTTY
Scanning /dev/vda1... (100%)
Scanning /dev/vda2... (100%)
Serial number is FGVMEVBYZ1-LJBC7


Disk usage changed, please wait for reboot...

Formatting the disk...
- unmounting /data2 :  ok
Partitioning and formatting /dev/vdb label LOGUSEDXEB070131 ... done


The system is going down NOW !!

Please stand by while rebooting the system.
Restarting system

System is starting...
The config file may contain errors.
Please see details by the command 'diagnose debug config-error-log read'.
Serial number is FGVMEVBYZ1-LJBC7


FortiGate-VM64-KVM login:
```

Step 11: On FortiGates, the default administrator username is admin with a blank password on the first boot. You must change the default administrator password (admin/blank) on the first admin account log in your device. Please go ahead and set the administrator password and keep the password handy.

FortiGate-VM64-KVM login: **admin**
Password: blank
You are forced to change your password. Please input a new password.
New Password:**********
Confirm Password: :**********
Welcome!

```
fw2 - PuTTY
System is starting...
Starting system maintenance...
Scanning /dev/vda1... (100%)
Scanning /dev/vda2... (100%)
Serial number is FGVMEVJAZDYLIA85


FortiGate-VM64-KVM login: admin
Password:
Welcome!

WARNING: File System Check Recommended! An unsafe reboot may have caused an inco
nsistency in the disk drive.
It is strongly recommended that you check the file system consistency before pro
ceeding.
Please run 'execute disk list' and then 'execute disk scan <ref#>'.
Note: The device will reboot and scan the disk during startup. This may take up
to an hour.
FortiGate-VM64-KVM #
```

That's it! Now you have completed the installation of two firewalls from two different vendors for your testing lab. Now continue your reading and study with the book.

Palo GNS3 files download links:

https://www.gns3.com/marketplace/appliances/pa-vm

PA-VM 10.1.0 - – The .qcow2 file will require a valid account with access to the file on the Palo Alto site.

File	MD5	Size	
PA-VM-KVM-10.1.0.qcow2	8266fd412a22694749f2cd4afcd5fa33	3597 MB	Download

PA-VM 10.0.0

File	MD5	Size	
PA-VM-KVM-10.0.0.qcow2	d73a41e4d8f6f5a5291fde08b79a071e	3059 MB	Download

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FGT_VM64_KVM-v7.2.4.F-build1396-FORTINET.out.kvm.qcow2	e3bd5958ff3d4f9363152c340e9b9578	95 MB	Download
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