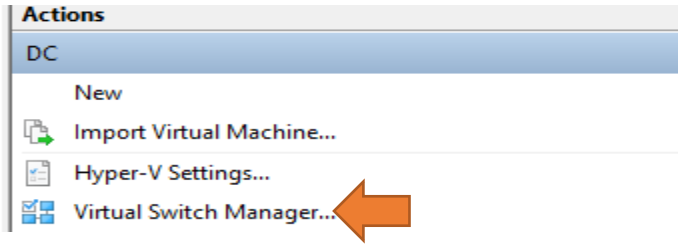
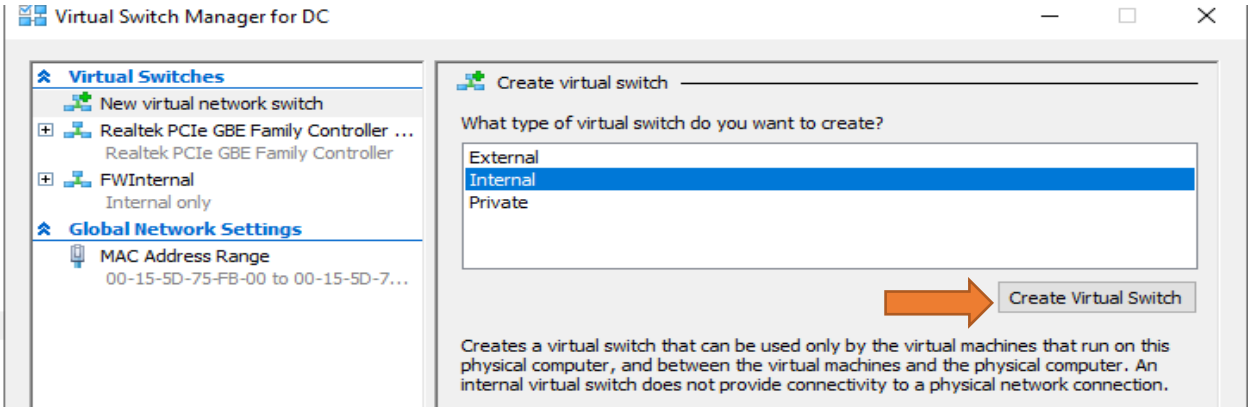
How to install Pfsense Firewall Open Source on Hyper-V (Part 1)

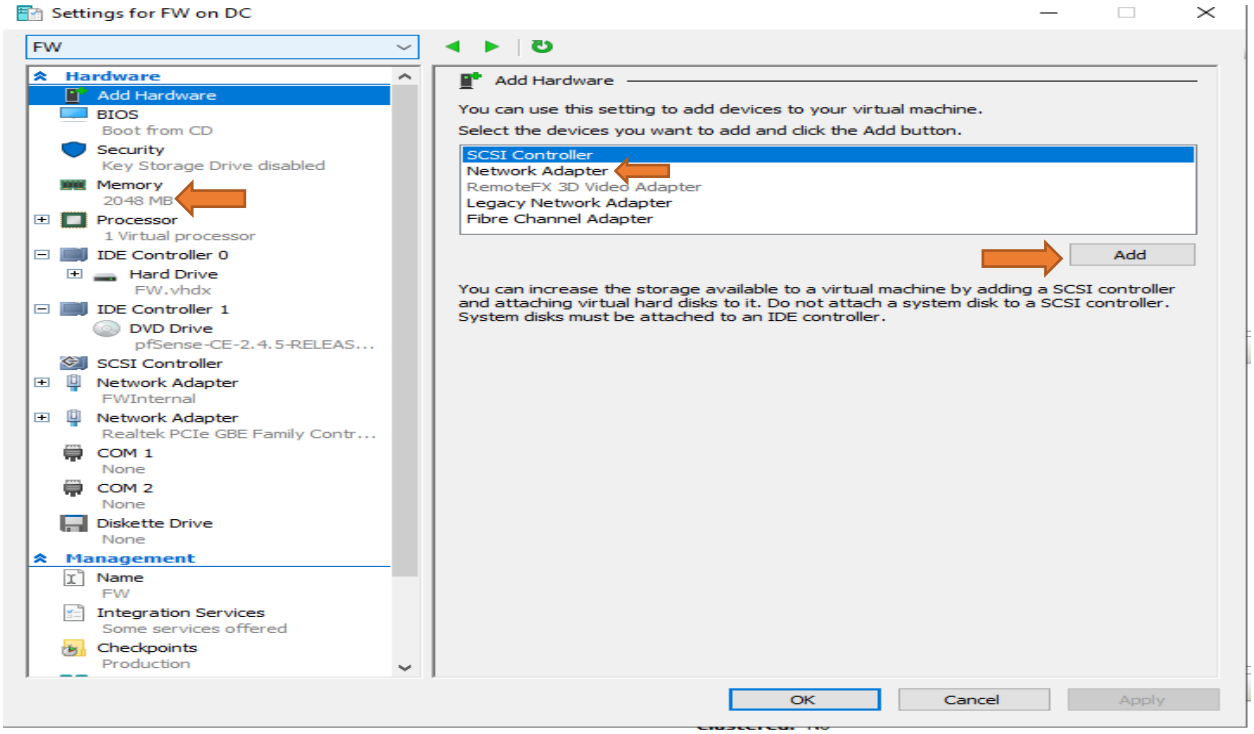
In this post, I will create a VM within Hyper-V Manager and complete basic install of Pfsense firewall v2.4.5 which is open source and **FREE**. This post will be multi part. I will walk you through the whole process during the entire setup. Sit back and enjoy!

The VM setup will have 2 NIC. Within Hyper-V Virtual switch. I created one called FWInternal and the other is my external connection which is connected to Hyper-V NIC. I created a VM within Hyper-V. Here is my settings



Click Create Virtual Switch and give it a name (FWInternal)





Settings for FW on DC

FW

Hardware
- Add Hardware
- BIOS — Boot from CD
- Security — Key Storage Drive disabled
- Memory — 2048 MB
- Processor — 1 Virtual processor
- IDE Controller 0
  - Hard Drive — FW.vhdx
- IDE Controller 1
  - DVD Drive — pfSense-CE-2.4.5-RELEAS...
- SCSI Controller
- Network Adapter — FWInternal
- Network Adapter — Realtek PCIe GBE Family Contr...
- COM 1 — None
- COM 2 — None
- Diskette Drive — None

Management
- Name — FW
- Integration Services — Some services offered
- Checkpoints — Production

Network Adapter

Specify the configuration of the network adapter or remove the network adapter.

Virtual switch: FWInternal

VLAN ID

☐ Enable virtual LAN identification

The VLAN identifier specifies the virtual LAN that this virtual machine will use for all network communications through this network adapter.

2

Bandwidth Management

☐ Enable bandwidth management

Specify how this network adapter utilizes network bandwidth. Both Minimum Bandwidth and Maximum Bandwidth are measured in Megabits per second.

Minimum bandwidth: 0 Mbps

Maximum bandwidth: 0 Mbps

To leave the minimum or maximum unrestricted, specify 0 as the value.

To remove the network adapter from this virtual machine, click Remove.

Remove

Use a legacy network adapter instead of this network adapter to perform a network-based installation of the guest operating system or when integration services are not installed in the guest operating system.

OK | Cancel | Apply

Settings for FW on DC

FW

Hardware
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- BIOS — Boot from CD
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- SCSI Controller
- Network Adapter — FWInternal
- Network Adapter — Realtek PCIe GBE Family Contr...
- COM 1 — None
- COM 2 — None
- Diskette Drive — None

Management
- Name — FW
- Integration Services — Some services offered
- Checkpoints — Production

Network Adapter

Specify the configuration of the network adapter or remove the network adapter.

Virtual switch: Realtek PCIe GBE Family Controller - Virtual Switch

This is my external NIC that is connected to Hyper-V physical machine

VLAN ID

☐ Enable virtual LAN identification

The VLAN identifier specifies the virtual LAN that this virtual machine will use for all network communications through this network adapter.

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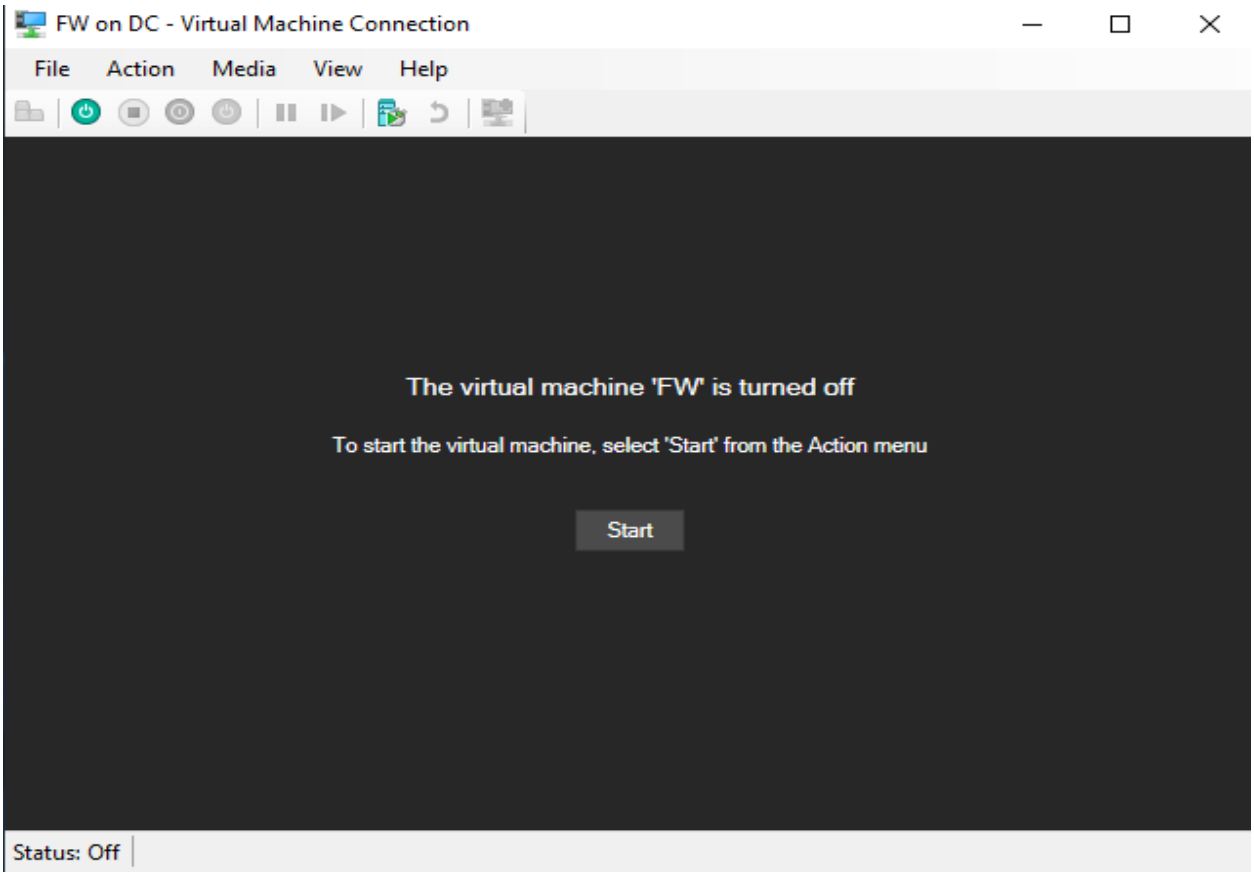
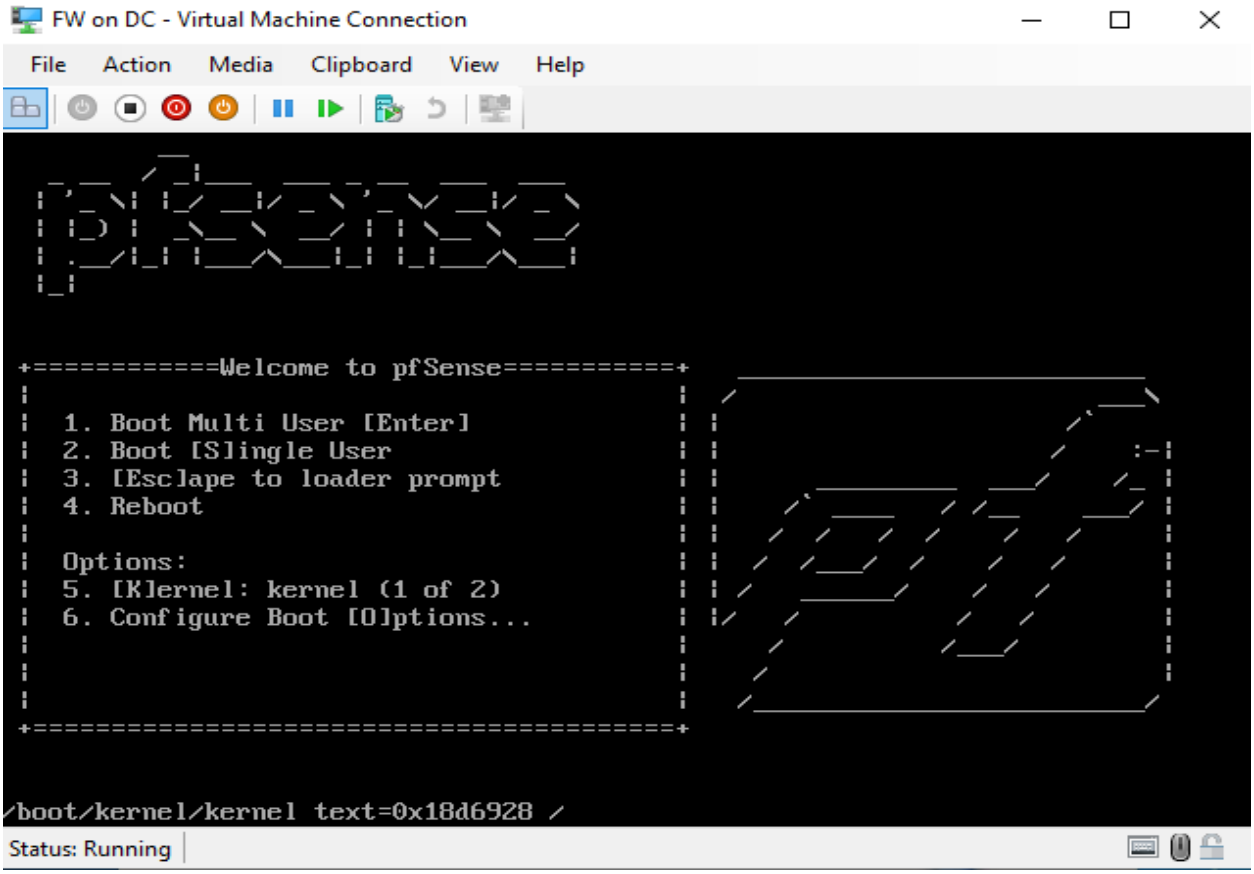
OK | Cancel | Apply

Click to start the install.





FW on DC - Virtual Machine Connection

File Action Media Clipboard View Help

pfSense Installer

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<Accept>

Status: Running

FW on DC - Virtual Machine Connection

File Action Media Clipboard View Help

pfSense Installer

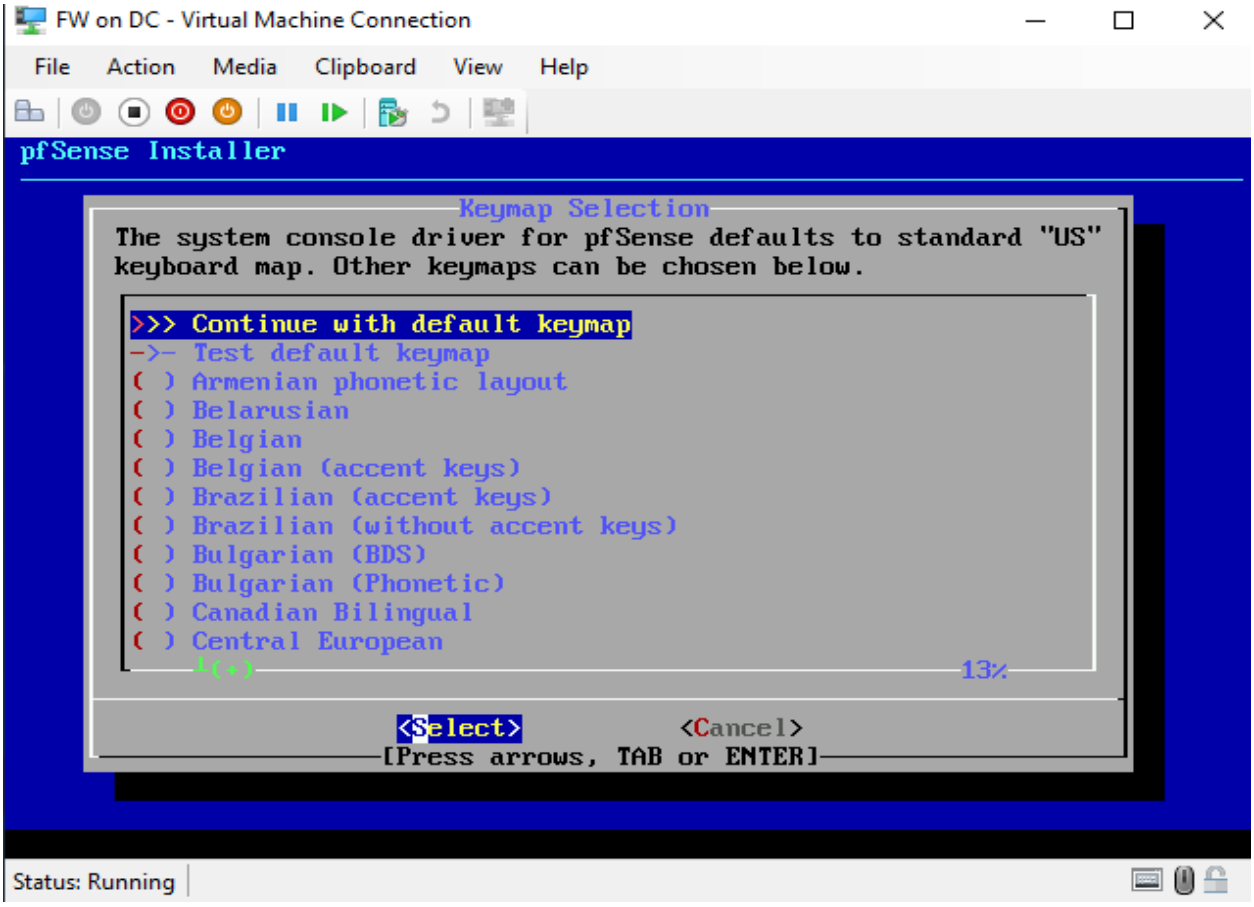
Welcome

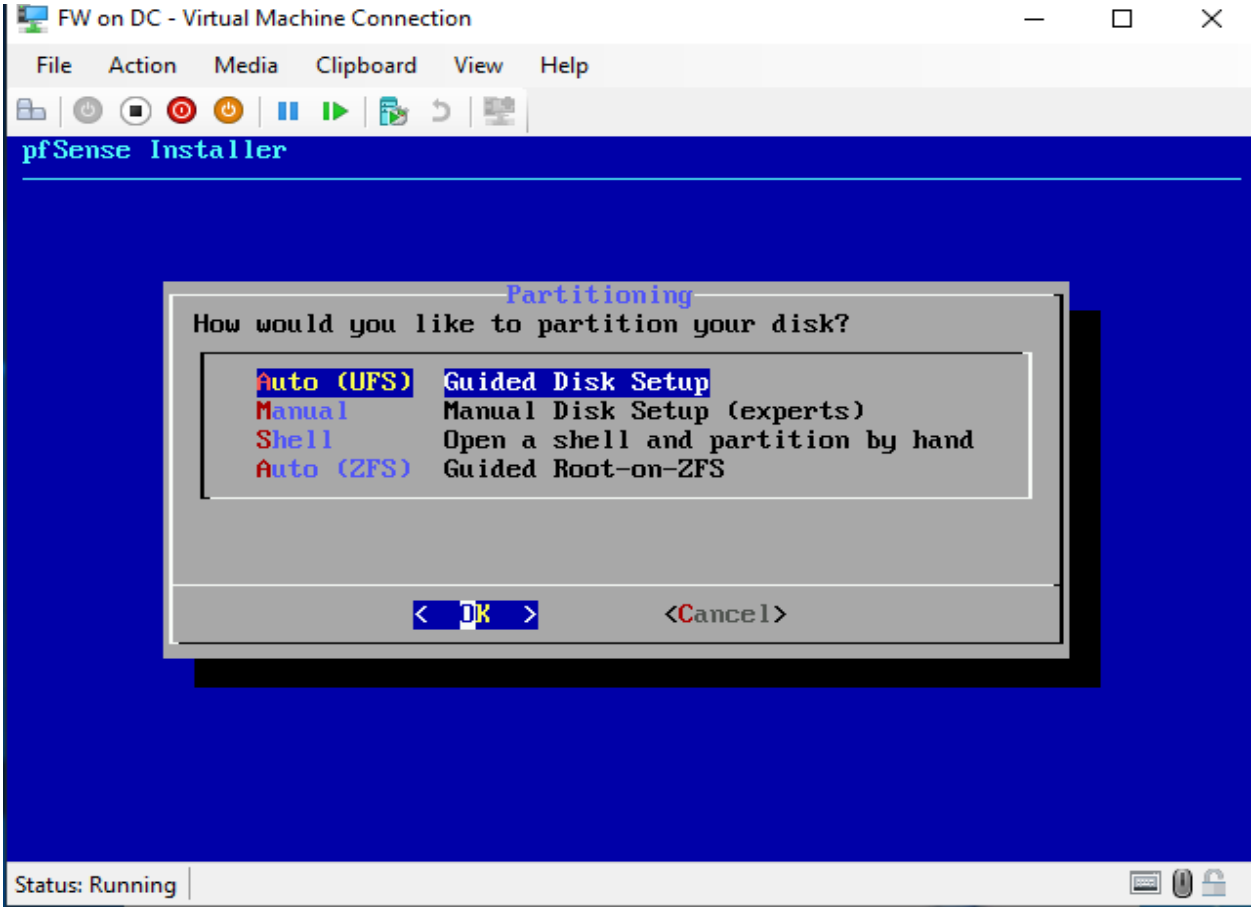
Welcome to pfSense!

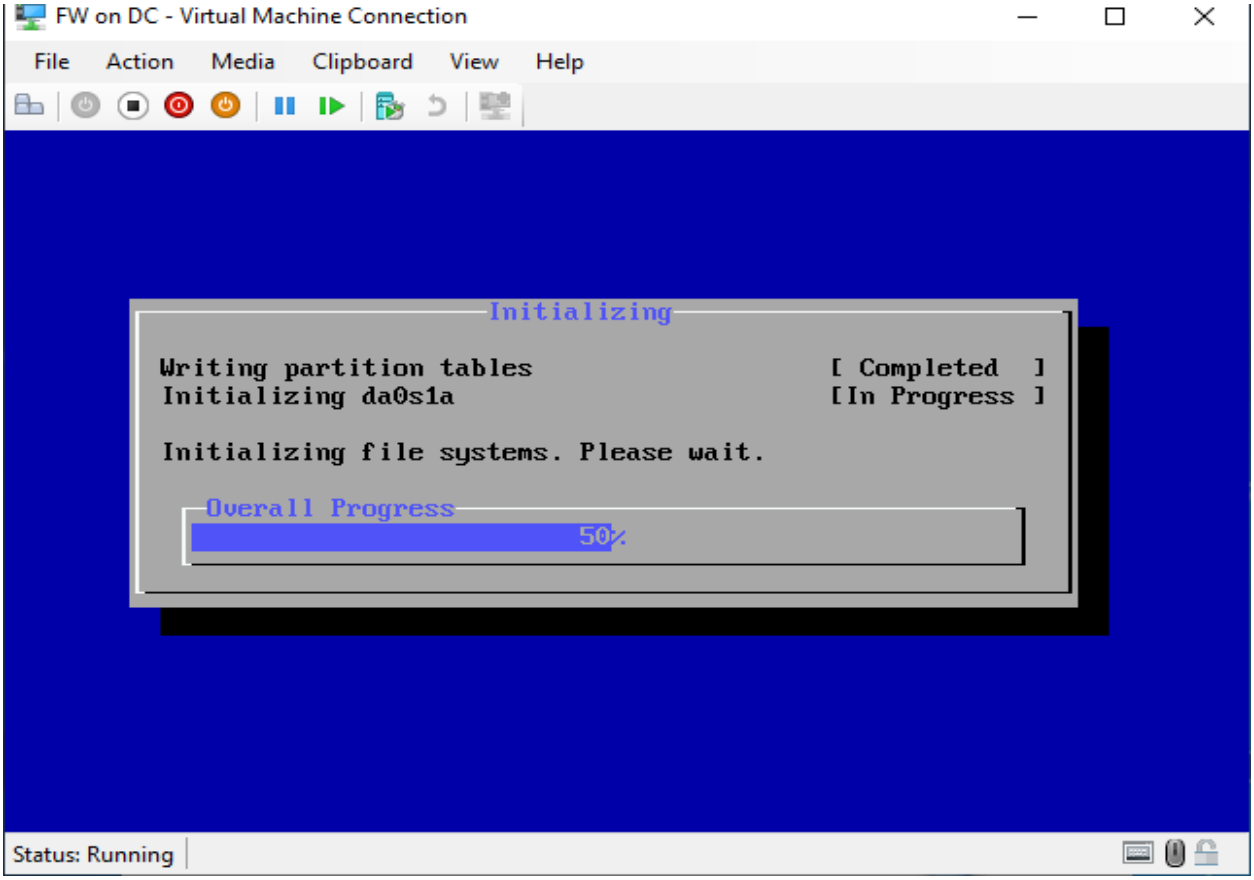
Install	Install pfSense
Rescue Shell	Launch a shell for rescue operations
Recover config.xml	Recover config.xml from a previous install

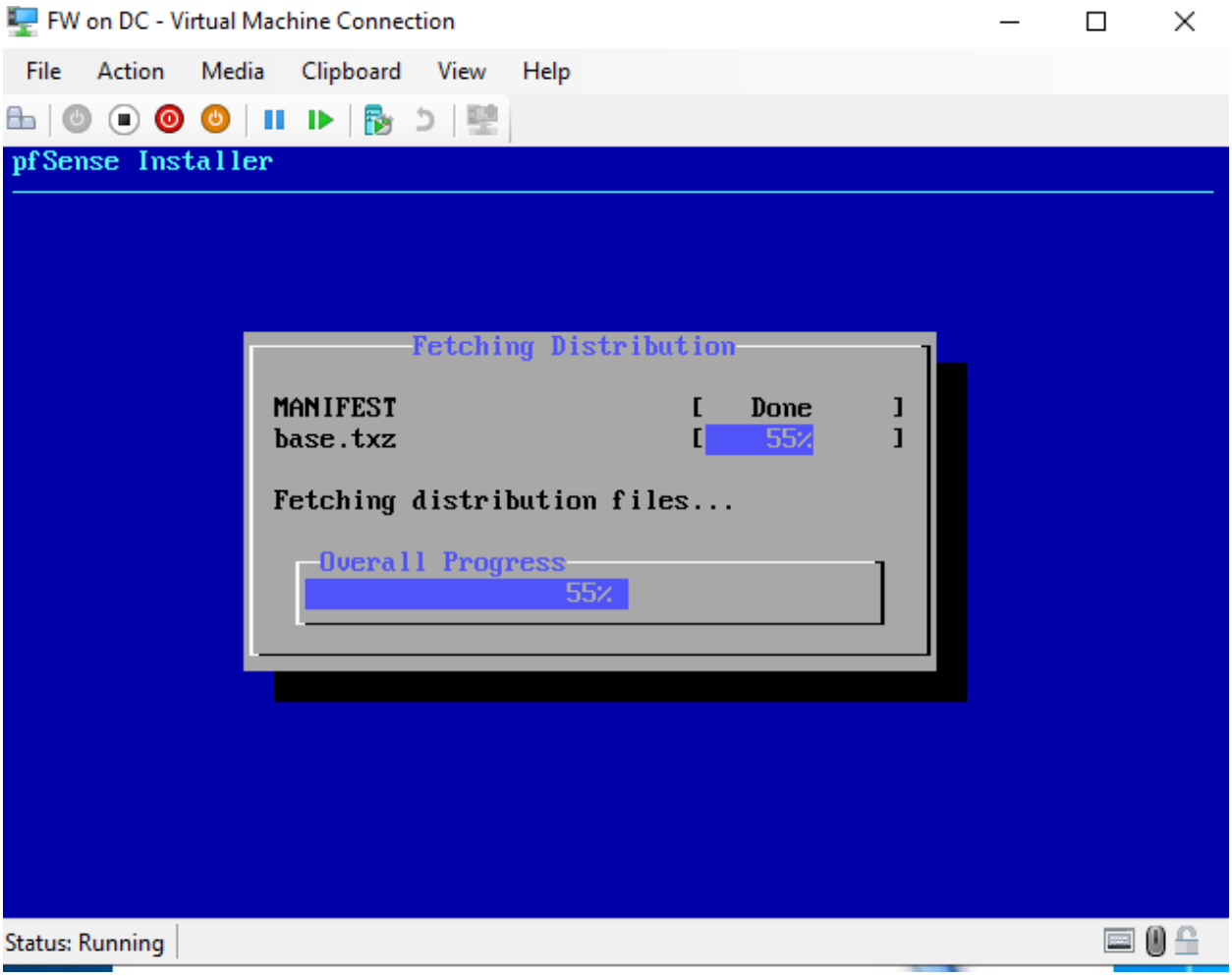
< OK > <Cancel>

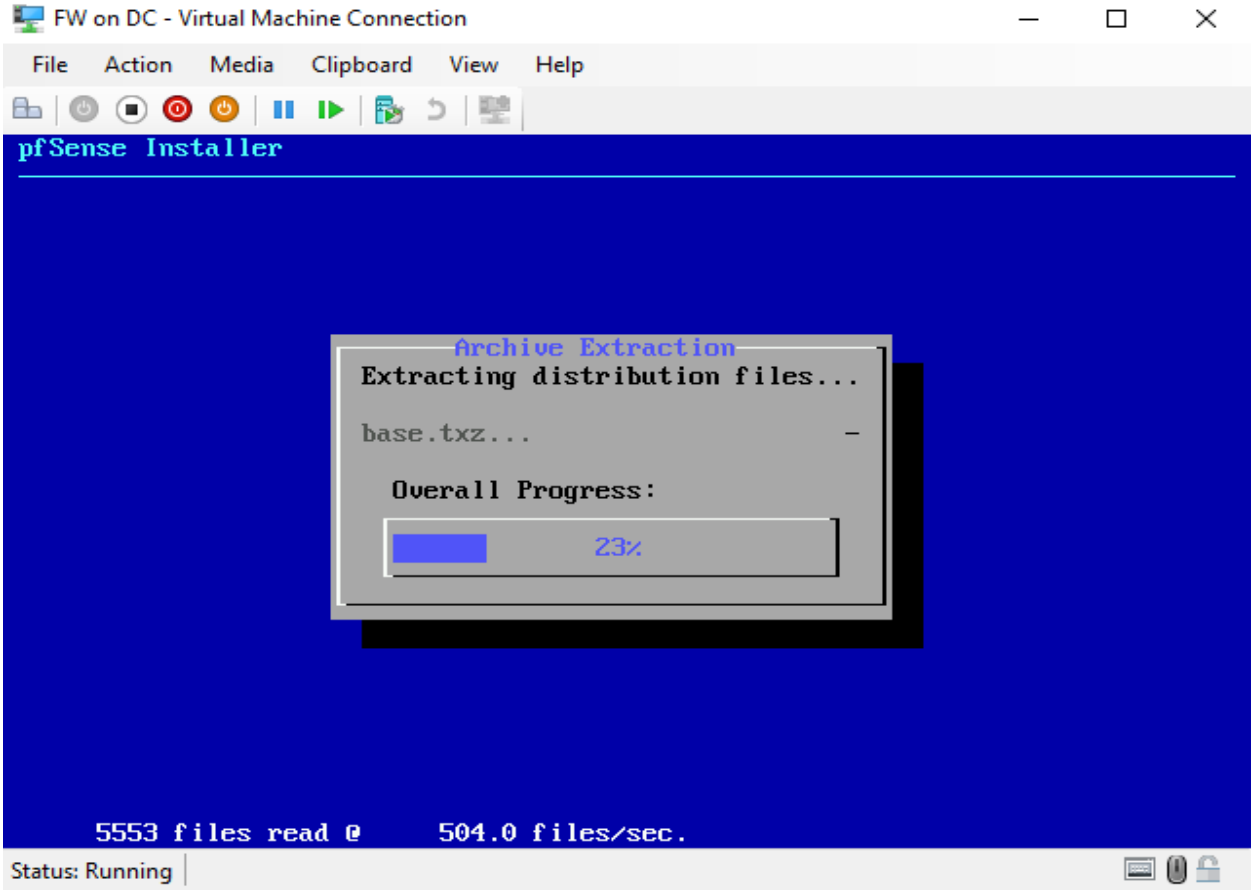
Status: Running

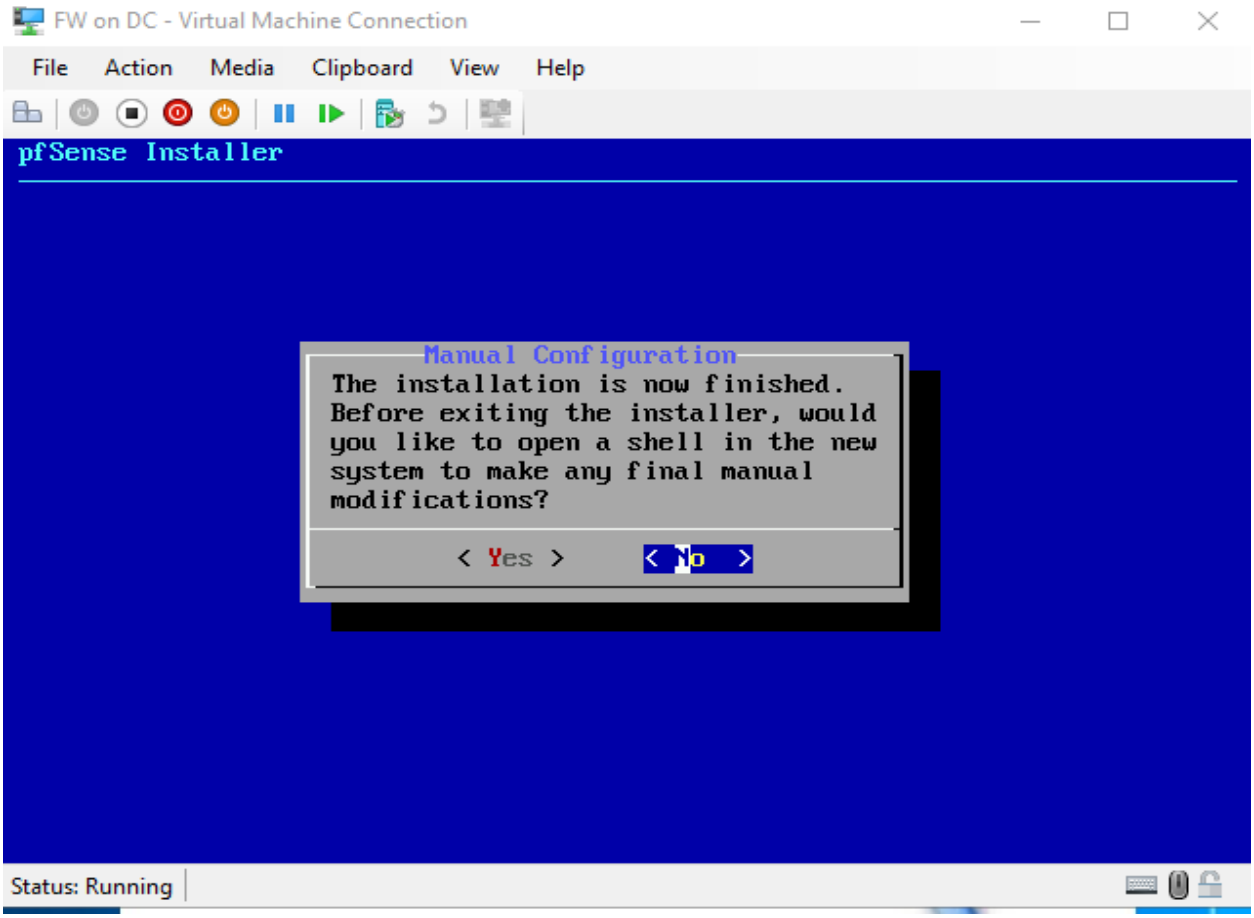

FW on DC - Virtual Machine Connection
File Action Media Clipboard View Help
pfSense Installer
Keymap Selection
The system console driver for pfSense defaults to standard "US" keyboard map. Other keymaps can be chosen below.
>>> Continue with default keymap
->- Test default keymap
( ) Armenian phonetic layout
( ) Belarusian
( ) Belgian
( ) Belgian (accent keys)
( ) Brazilian (accent keys)
( ) Brazilian (without accent keys)
( ) Bulgarian (BDS)
( ) Bulgarian (Phonetic)
( ) Canadian Bilingual
( ) Central European
13%
<Select> <Cancel>
[Press arrows, TAB or ENTER]
Status: Running


FW on DC - Virtual Machine Connection
File Action Media Clipboard View Help
pfSense Installer
Partitioning
How would you like to partition your disk?
Auto (UFS) Guided Disk Setup
Manual Manual Disk Setup (experts)
Shell Open a shell and partition by hand
Auto (ZFS) Guided Root-on-ZFS
< OK > <Cancel>
Status: Running

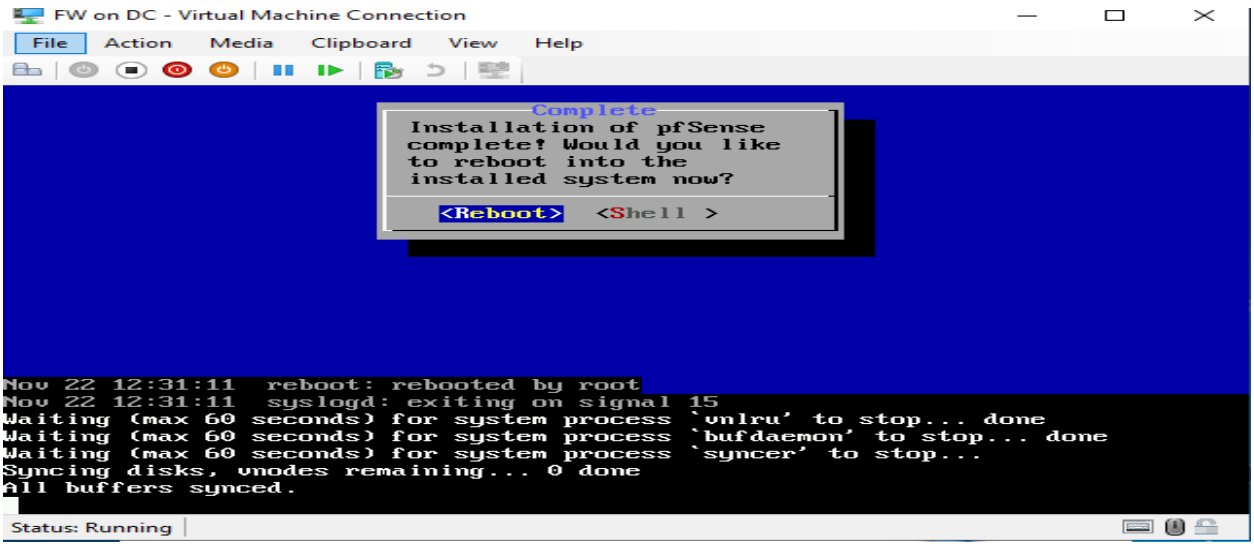

FW on DC - Virtual Machine Connection
File Action Media Clipboard View Help
Initializing
Writing partition tables [Completed]
Initializing da0s1a [In Progress]
Initializing file systems. Please wait.
Overall Progress
50%
Status: Running

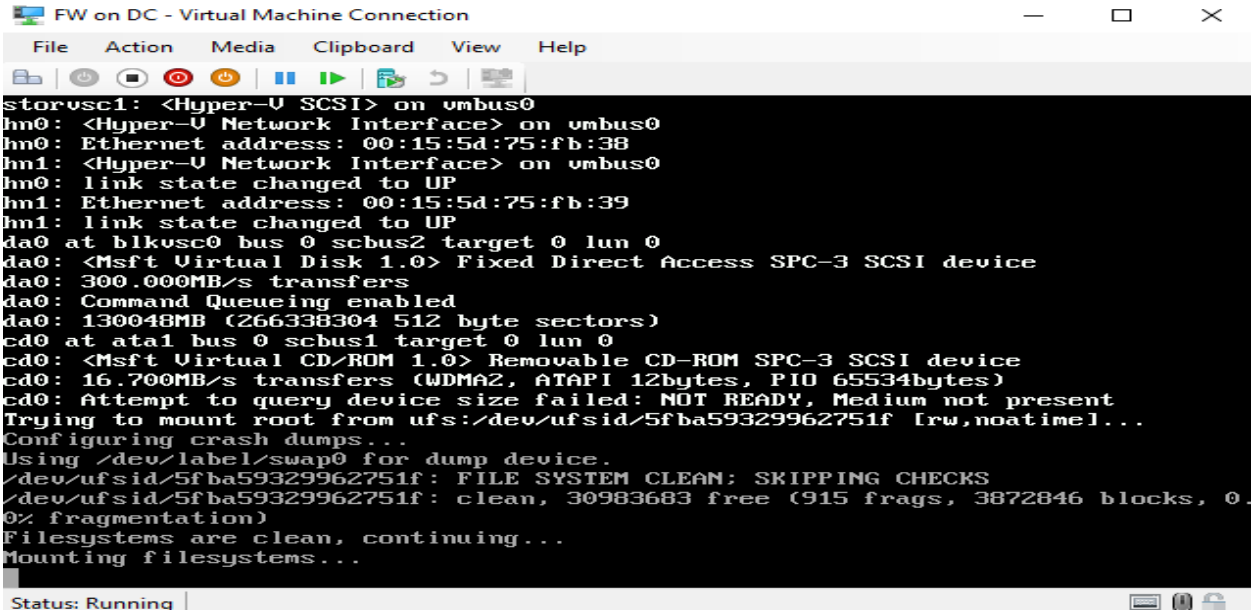

FW on DC - Virtual Machine Connection
File Action Media Clipboard View Help
pfSense Installer
Fetching Distribution
MANIFEST [Done]
base.txz [55%]
Fetching distribution files...
Overall Progress
55%
Status: Running

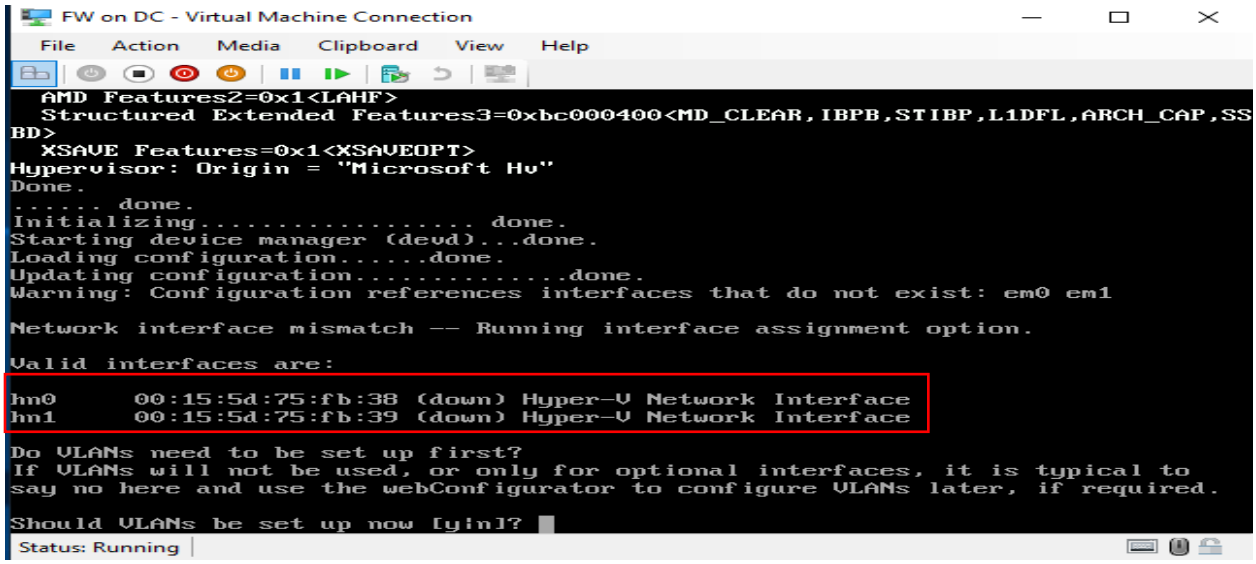

FW on DC - Virtual Machine Connection
File Action Media Clipboard View Help
pfSense Installer
Archive Extraction
Extracting distribution files...
base.txz...
Overall Progress:
23%
5553 files read @ 504.0 files/sec.
Status: Running


FW on DC - Virtual Machine Connection
File Action Media Clipboard View Help
pfSense Installer
Manual Configuration
The installation is now finished.
Before exiting the installer, would
you like to open a shell in the new
system to make any final manual
modifications?
< Yes >
< No >
Status: Running

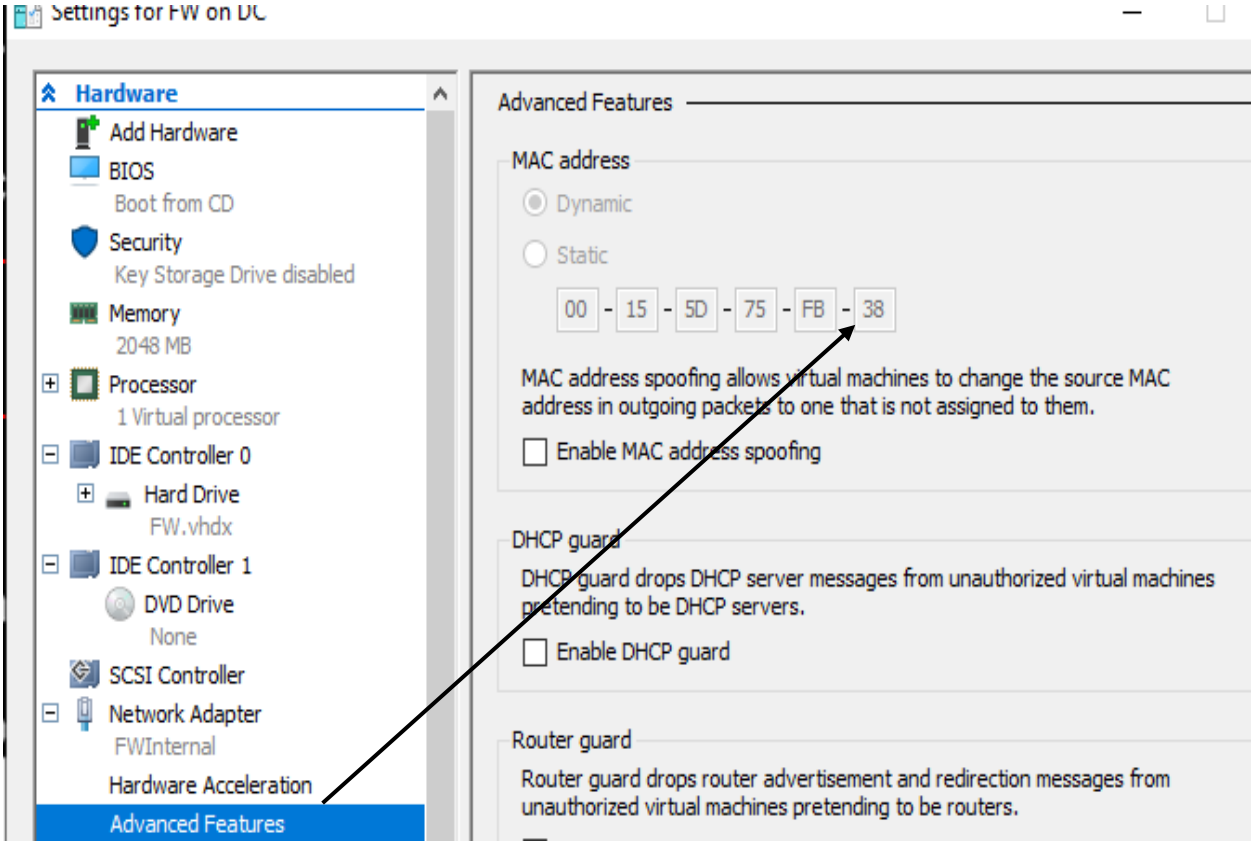
After clicking Reboot – make sure to eject media from DVD Drive (Click Media – Eject)

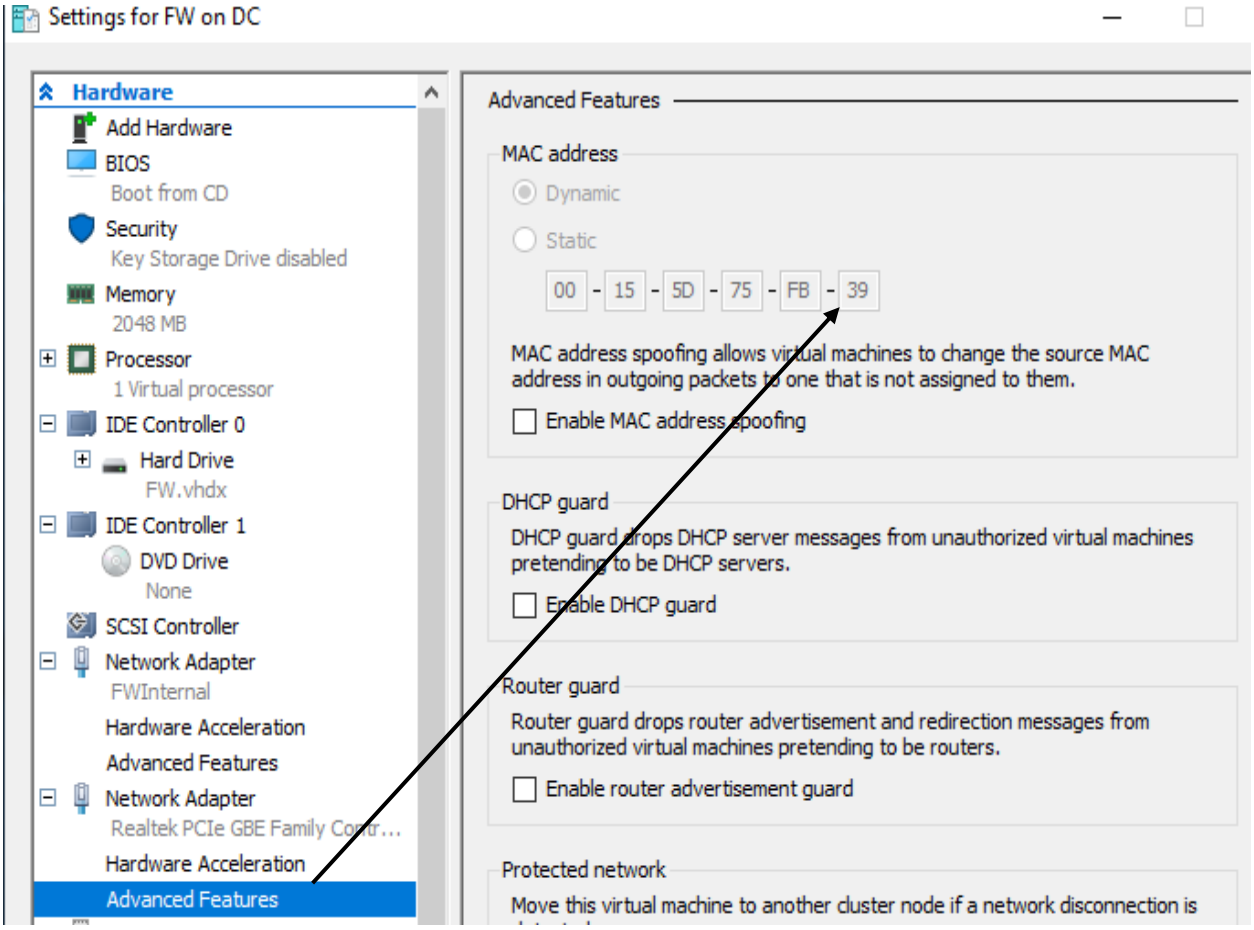






We have hn0 and hn1. We need to find out which is FWInternal and External. We can from the settings.





We are not going to use VLAN within the lab network. So, type N to continue

FW on DC - Virtual Machine Connection

File Action Media Clipboard View Help

```
  AMD Features2=0x1<LAHF>
  Structured Extended Features3=0xbc000400<MD_CLEAR,IBPB,STIBP,L1DFL,ARCH_CAP,SS
BD>
  XSAVE Features=0x1<XSAVEOPT>
Hypervisor: Origin = "Microsoft Hv"
Done.
..... done.
Initializing..................... done.
Starting device manager (devd)...done.
Loading configuration......done.
Updating configuration..............done.
Warning: Configuration references interfaces that do not exist: em0 em1

Network interface mismatch -- Running interface assignment option.

Valid interfaces are:

hn0     00:15:5d:75:fb:38 (down) Hyper-V Network Interface
hn1     00:15:5d:75:fb:39 (down) Hyper-V Network Interface

Do VLANs need to be set up first?
If VLANs will not be used, or only for optional interfaces, it is typical to
say no here and use the webConfigurator to configure VLANs later, if required.

Should VLANs be set up now [y|n]?
```

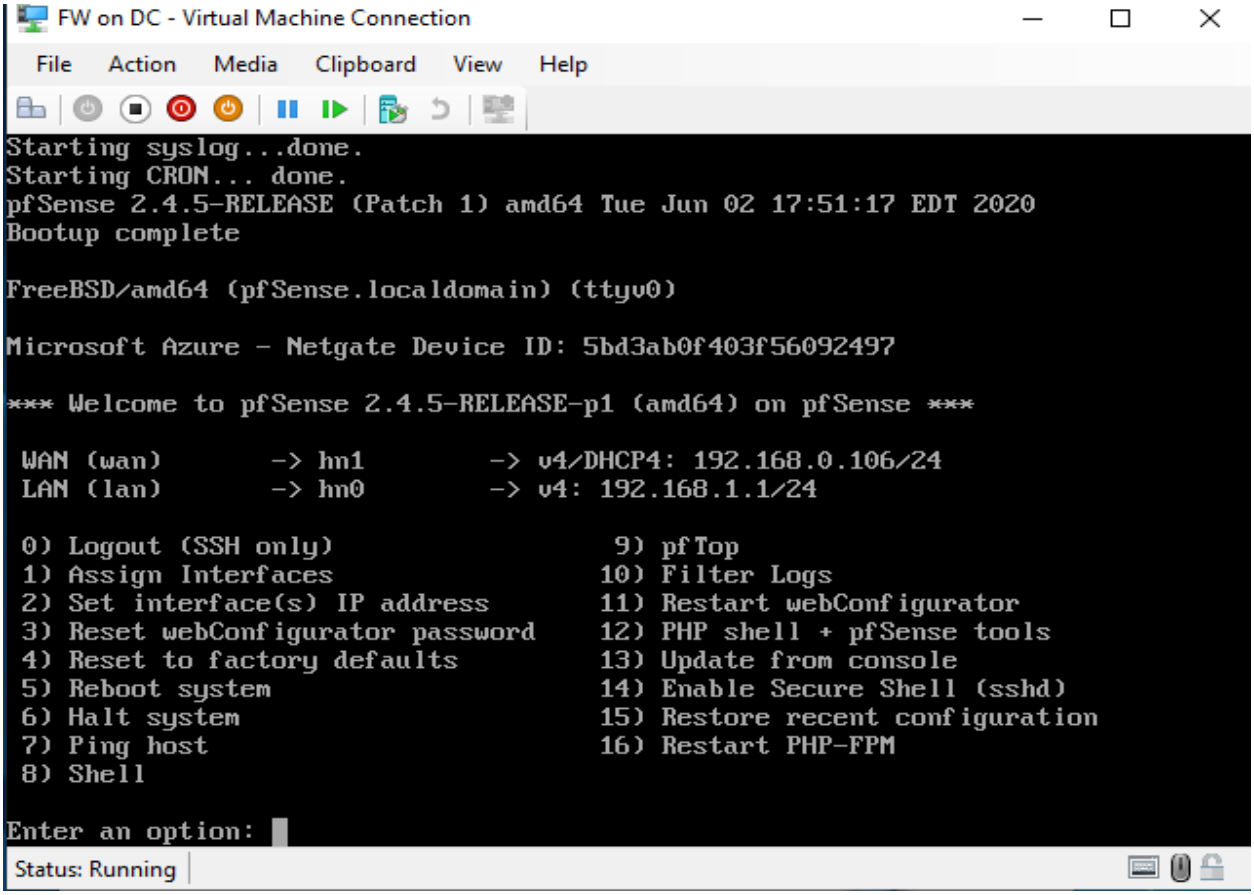
Status: Running

FW on DC - Virtual Machine Connection

File Action Media Clipboard View Help

```
hn1     00:15:5d:75:fb:39 (down) Hyper-V Network Interface

Do VLANs need to be set up first?
If VLANs will not be used, or only for optional interfaces, it is typical to
say no here and use the webConfigurator to configure VLANs later, if required.

Should VLANs be set up now [y|n]? n

If the names of the interfaces are not known, auto-detection can
be used instead. To use auto-detection, please disconnect all
interfaces before pressing 'a' to begin the process.

Enter the WAN interface name or 'a' for auto-detection
(hn0 hn1 or a): hn1

Enter the LAN interface name or 'a' for auto-detection
NOTE: this enables full Firewalling/NAT mode.
(hn0 a or nothing if finished): hn0

The interfaces will be assigned as follows:

WAN  -> hn1
LAN  -> hn0

Do you want to proceed [y|n]?
```

Status: Running



With this we have completed basic setup of Pfsense. In part 2, I will complete remaining configuration.

Thanks

Ram Lan
22nd Nov 2020