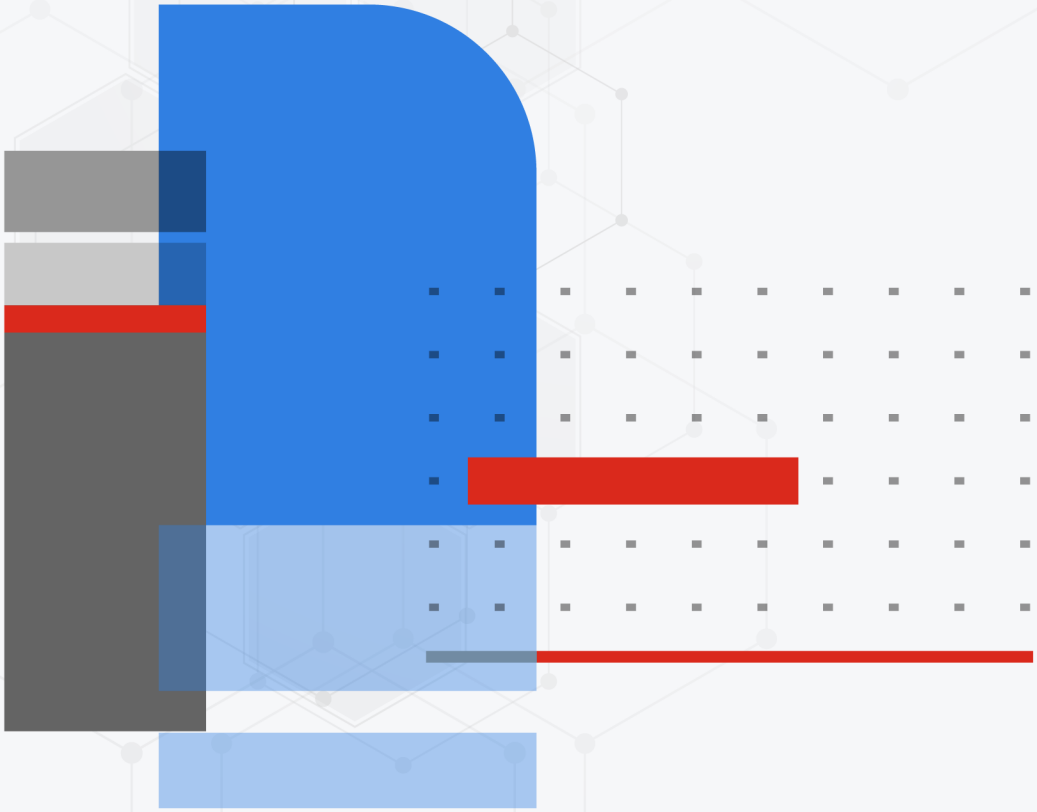
Microsoft Hyper-V Deployment Guide

FortiProxy 7.4



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FortiProxy 7.4 Microsoft Hyper-V Deployment Guide
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Change log

Date	Change Description
2024-04-18	Initial document release.
2024-08-26	Updated Downloading the FortiProxy-VM deployment package on page 8.
2025-08-14	Updated Getting started on page 5.

Getting started

FortiProxy is a secure web proxy that protects employees against internet-borne attacks by incorporating multiple detection techniques such as web filtering, DNS filtering, data loss prevention, antivirus, intrusion prevention, and advanced threat protection. It helps enterprises enforce internet compliance using granular application control. High-performance physical and virtual appliances deploy on-site to serve small, medium, and large enterprises

FortiProxy provides multiple detection methods such as reputation lookup, signature-based detection, and sandboxing to protect against known malware, emerging threats, and zero-day malware. It also intercepts outgoing client connections to the internet and has some firewall capabilities. However, the primary focus of FortiProxy is to be a secure web gateway solution that provides visibility, compliance, web security, and threat protection for any organization.

This document describes how to deploy a FortiProxy-VM in a Microsoft Hyper-V environment. More information about configuring and using FortiProxy is available in the Fortinet Document Library.

In the initial setup, the following ports are used:

- DNS lookup — UDP 53
- FortiGuard licensing — TCP 443

Evaluation license

FortiProxy-VM can be evaluated with a free 15-day trial license that includes most features, except:

- HA
- FortiGuard updates
- Technical support

You do not need to manually upload the trial license; it is built-in. The trial period begins the first time you start FortiProxy-VM. When the trial expires, most functionality is disabled. You must purchase a license to continue using FortiProxy-VM.

License sizes

VM licenses are available in the following sizes:

	Evaluation	VM02	VM04	VM08	VM16	VMUL
Maximum number of CPUs	2	4	8	16	32	Unlimited

	Evaluation	VM02	VM04	VM08	VM16	VMUL
Memory (GB)	2	Unlimited				
Number of disks (boot + storage)	1+1	1+2	1+2	1+4	1+8	16 total

The maximum number of IP sessions varies by license and by available vRAM, just as it does for hardware models. For more information, see the FortiProxy Datasheet.

License validation

FortiProxy-VM must periodically revalidate its license with the Fortinet Distribution Network (FDN). If it cannot contact the FDN for 30 days, access to the FortiProxy-VM web UI and CLI are locked.

By default, FortiProxy-VM attempts to contact FDN over the internet. If the management port cannot access the internet (for example, in closed network environments), it is possible for FortiProxy-VM to validate its license with a FortiManager that has been deployed on the local network to act as a local FDS (FortiGuard Distribution Server).

On the FortiProxy-VM, specify the FortiManager IP address for the “override server” in the FortiGuard configuration:

```
config system central-management
    set type fortimanager
    config server-list
        edit 1
            set server-type update
            set server-address <FortiManager IP address for updates>
        next
        edit 2
            set server-type rating
            set server-address <FortiManager IP address for web filter ratings>
        next
    end
    set include-default-servers disable
end
```

TCP port 8890 is the port where the built-in FDS feature listens for requests. For more information on the FortiManager local FDS feature, see the FortiManager Administration Guide. Although FortiManager can provide FortiGuard security service updates to some Fortinet devices, for FortiProxy, its FDN features can provide license validation only.

Preparing for deployment

This documentation assumes that before deploying the FortiProxy-VM on the Microsoft Hyper-V virtual platform, you have addressed the following requirements:

Virtual environment

For best performance, install FortiProxy-VM on a “bare metal” hypervisor. Hypervisors that are installed as applications on top of a general-purpose operating system (Windows, Mac OS X, or Linux) host and have fewer computing resources available due to the host OS’s own overhead.

Hardware-assisted virtualization (VT) must be enabled in the BIOS.

You have installed the Microsoft Hyper-V software on a physical server with sufficient resources to support the FortiProxy-VM and all other VMs deployed on the platform.

If you configure the FortiProxy-VM to operate in transparent mode, or include it in an high availability (HA) cluster, configure any virtual switches to support the FortiProxy-VM's operation before you create the FortiProxy-VM.

VM Environment	Tested Versions
Hyper-V	Hyper-V Server 2008 R2, 2012, 2012R2, 2016, and 2019

Management software

If you plan to use the GUI to manage the Microsoft Hyper-V server remotely, ensure that the management software is installed on a computer with network access to the Hyper-V server.

Options for remote management of Microsoft Hyper-V include:

- Hyper-V Manager
- Virtual Machine Manager

Platform	Management software
Open Microsoft Hyper-V	Virtual Machine Manager
Citrix Microsoft Hyper-V Server	Microsoft Hyper-VCenter

Connectivity

The FortiProxy-VM requires an internet connection to contact FortiGuard to validate its license.

Registering the FortiProxy-VM

When you purchase a FortiProxy-VM, you receive an email that contains a registration number. This registration number is used to download the software, your purchased license, and also to register your purchase with Fortinet Customer Service & Support so that your FortiProxy-VM will be able to validate its license with Fortinet.

Many Fortinet customer services such as firmware updates, technical support, and FortiGuard services require product registration.

For registration instructions, see Registering products in the FortiCloud Account ServicesAsset Management guide.

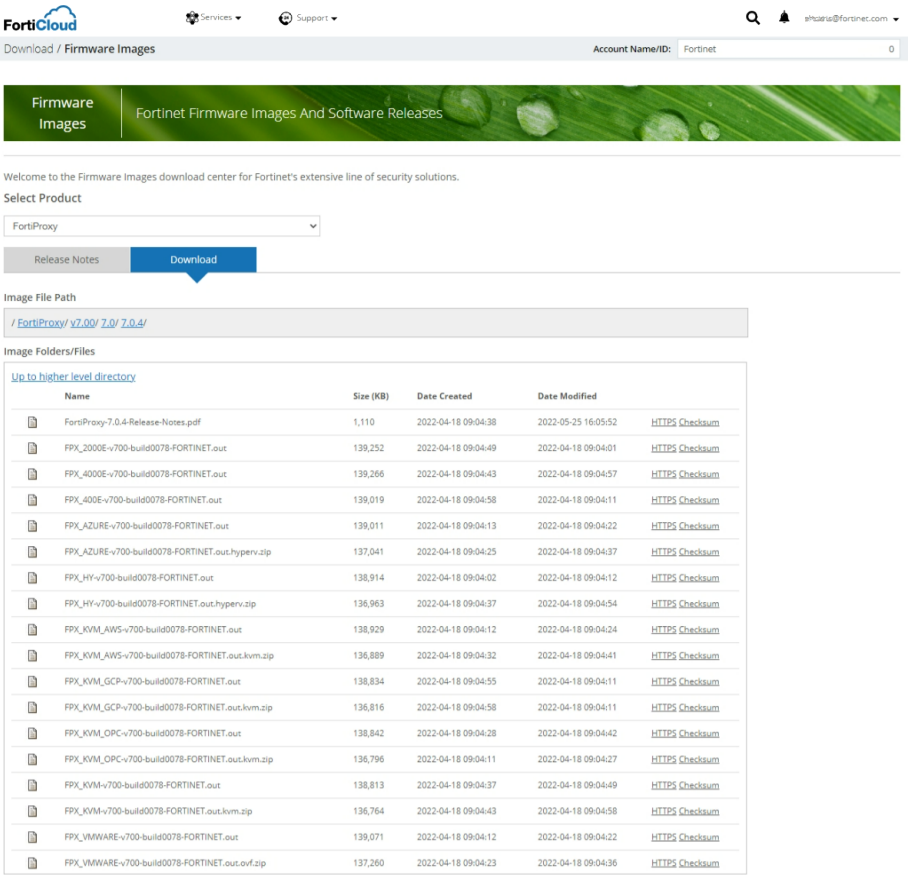
For information about downloaded the license file, see Viewing licenses and keys in the Product details topic of the FortiCloud Account ServicesAsset Management guide.

Downloading the FortiProxy-VM deployment package

FortiProxy-VM deployment packages can be downloaded from the Customer Service & Support.

To download the VM deployment package:

1. Log in to your FortiCloud account.
2. Go to *Support* > *Firmware Download*.
3. In the *Select Product* list, select *FortiProxy*.
4. Select the *Download* tab.
5. Browse to the appropriate directory for the version that you need to download.



6. Download the firmware `.zip` file by clicking the *HTTPS* link to its right.

   The `.out` image files are for upgrades of existing installations only and cannot be used for a new installation.
7. Extract the .zip file contents to a folder.

Deployment package contents

The *FPX_HY-vxxx-buildxxxx-FORTINET.out.hyperv.zip* file contains:

- In the *Virtual Hard Disks* folder:
  - *fortios.vhd*: the FortiProxy-VM system hard disk in VHD format
  - *DATADRIVE.vhd*: the FortiProxy-VM log disk in VHD format
- In the *Virtual Machines* folder:
  - *fortios.xml*: XML file containing virtual hardware configuration settings for Hyper-V. This is compatible with Windows Server 2012.

Deploying FortiProxy-VM

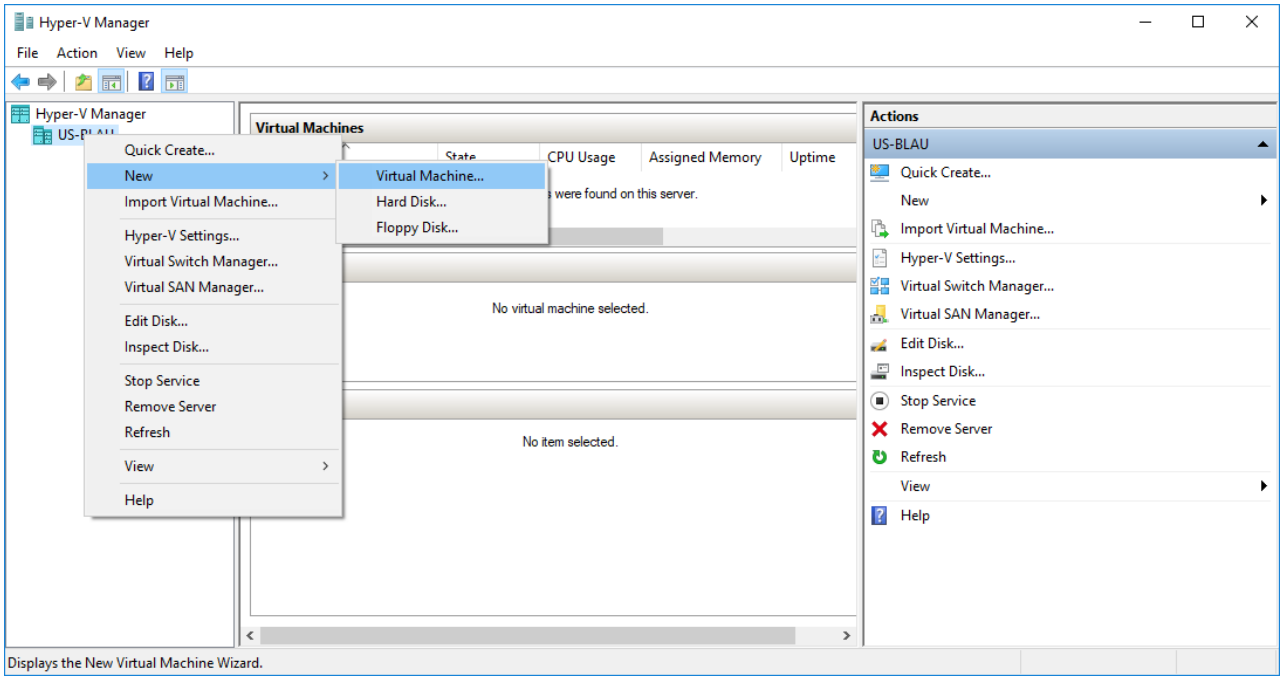
After you have downloaded the FPX_HY-vxxx-buildxxxx-FORTINET.out.hyperv.zip file and extracted the package contents to a folder on your Microsoft server, you can deploy the VHD package to your Microsoft Hyper-V environment.

This chapter covers the following topics:

Create the FortiProxy-VM

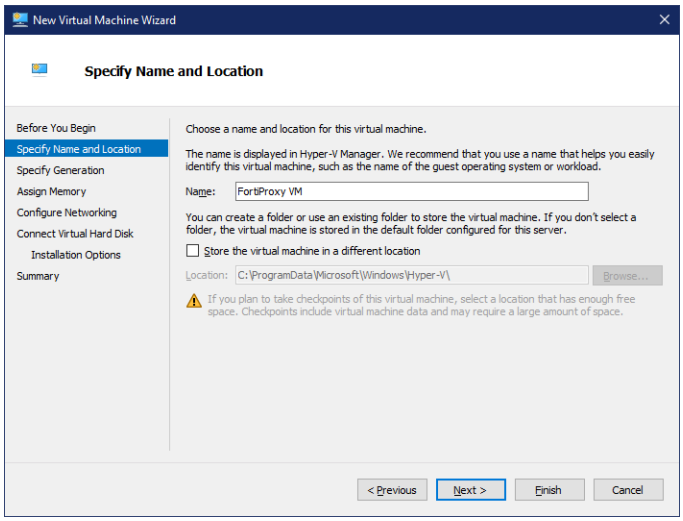
To create the FortiProxy-VM:

1. Launch the Hyper-V Manager on your Microsoft server.
2. Select the server in the left pane. The server details page is displayed.
3. Right-click the server and select *New* > *Virtual Machine*.

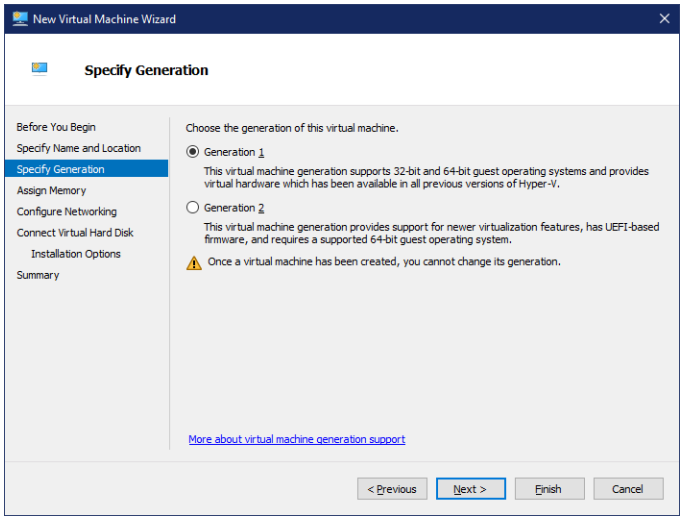


The *New Virtual Machine Wizard* opens.

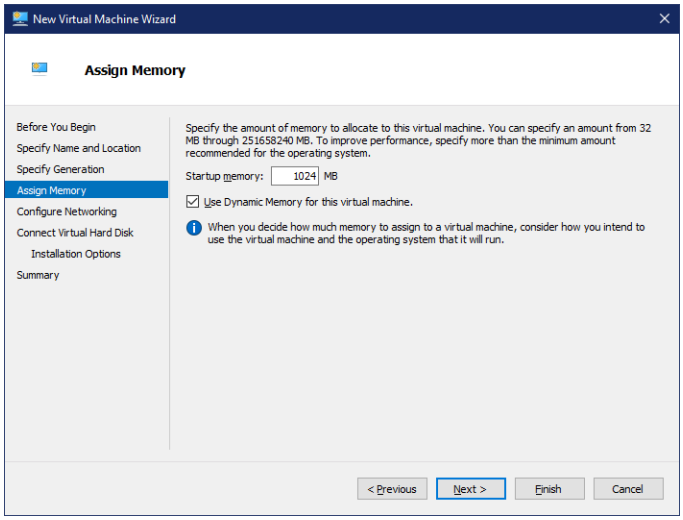
4. Click *Next* to create a virtual machine with a custom configuration. The *Specify Name and Location* page is displayed.



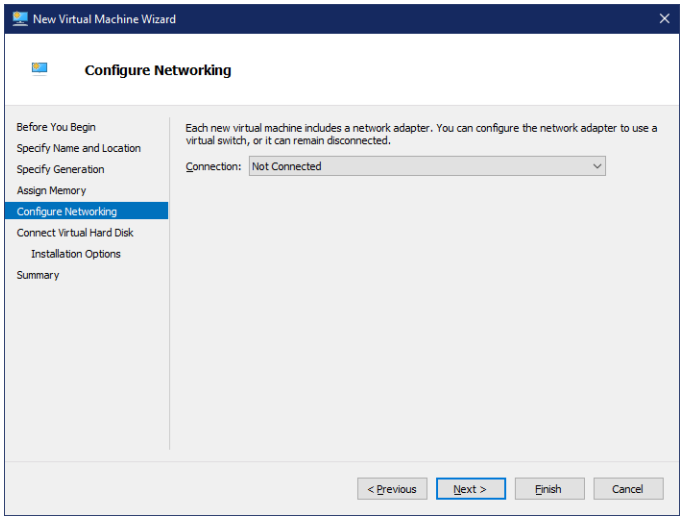
5. Enter a name for this virtual machine. The name is displayed in the Hyper-V Manager.
6. Click *Next* to continue. The *Specify Generation* page is displayed.



7. Select *Generation 1* or *Generation 2* and then click *Next*. The *Assign Memory* page is displayed.

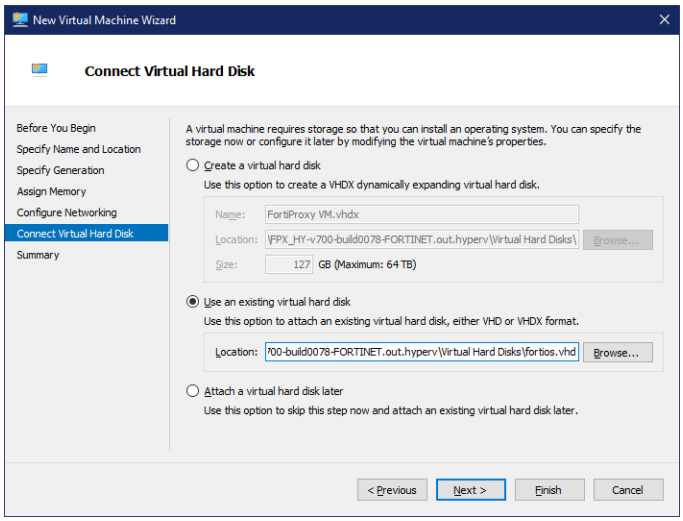


8. Specify the amount of memory to allocate to this virtual machine. The default memory for the FortiProxy-VM is 1 GB (1024 MB).
9. Click *Next* to continue. The *Configure Networking* page is displayed.

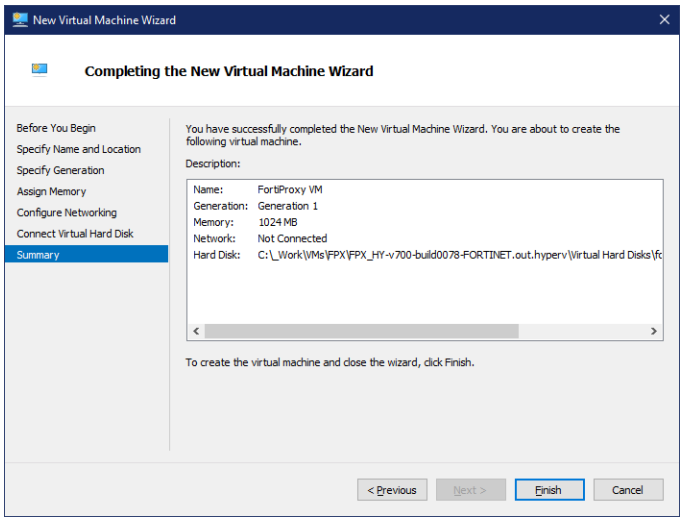


Each new virtual machine includes a network adapter. You can configure the network adapter to use a virtual switch, or it can remain disconnected. The FortiProxy-VM requires four network adapters. You must configure network adapters in the *Settings* page, described in Configure the FortiProxy-VM hardware settings on page 13.

10. Click *Next* to continue. The *Connect Virtual Hard Disk* page is displayed.
11. Select *Use an existing virtual hard disk* and browse for the `fortios.vhd` file that you downloaded from the Fortinet Customer Service & Support portal.



12. Click *Next* to continue. The *Summary* page is displayed

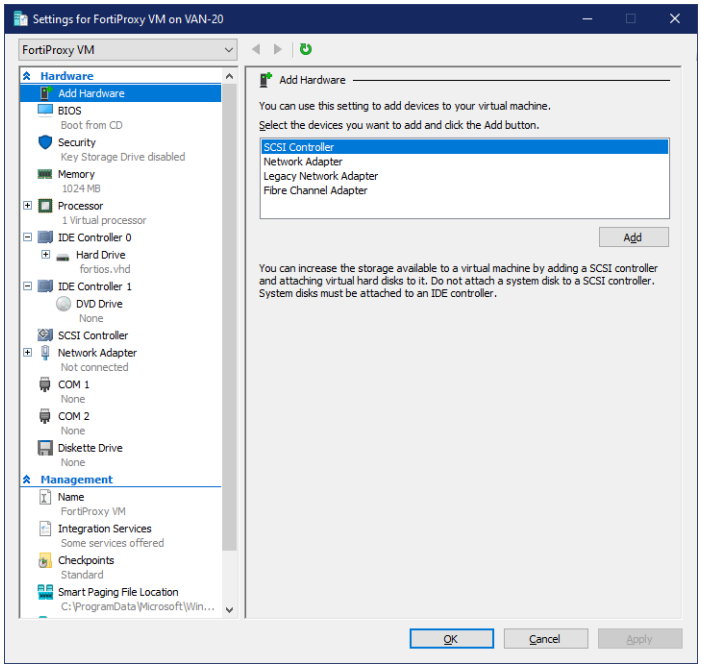


13. Click *Finish* to create the virtual machine and close the wizard.

Configure the FortiProxy-VM hardware settings

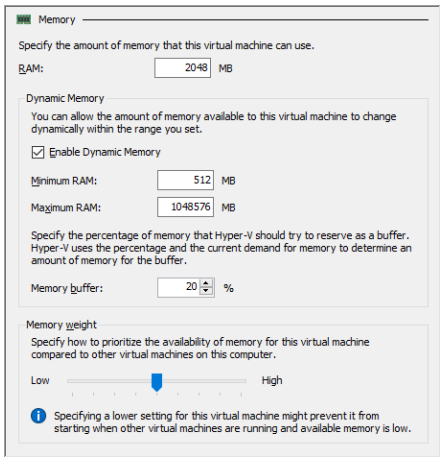
Before powering on your FortiProxy-VM you must configure the processors, network adapters, memory, and hard disks to match your FortiProxy-VM license.

To open the Settings page, right-click the name of the virtual machine in the middle column and select *Settings*.



To configure virtual memory:

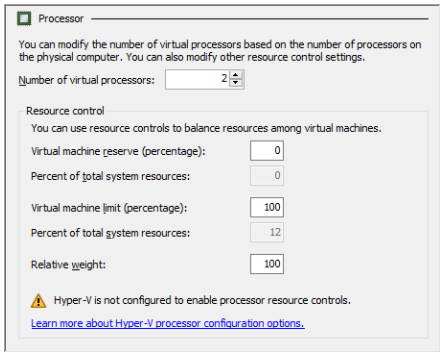
1. In the *Settings* page, go to *Hardware* > *Memory*. The *Processor* page is displayed.
2. Configure the VM memory. At least 2GB is required.



3. Click *Apply* to save your settings.

To configure virtual processors:

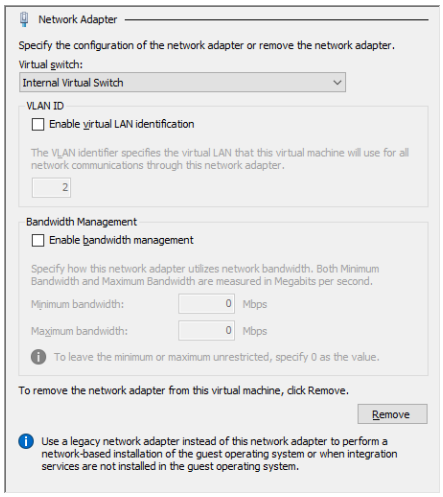
1. In the *Settings* page, go to *Hardware* > *Processor*. The *Processor* page is displayed.



2. Configure the number of virtual processors for the FortiProxy-VM. Optionally, you can use resource controls to balance resources among virtual machines.
3. Click *Apply* to save the settings.

To configure network adapters:

1. In the *Settings* page, go to *Hardware* > *Add Hardware*.
2. In the *Add Hardware* list, click *Network Adapter* and then *Add*. The *Network Adapter* page is displayed.

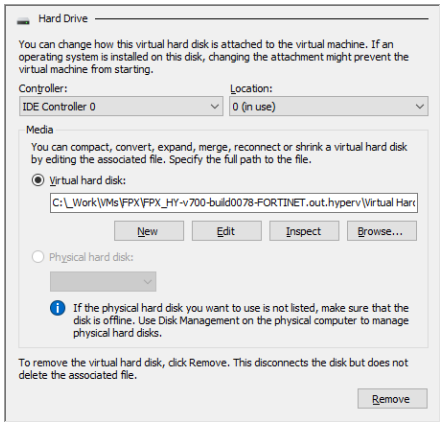


3. Manually configure four network adapters for the FortiProxy-VM in the *Settings* page. For each network adapter, select the default switch from the drop-down list.
4. Click *Apply* to save the settings.

To configure a virtual hard drive:

If you know your environment will expand in the future, it is recommended to increase the hard disk size beyond 30 GB. The VM license limit is 2 TB.

1. In the *Settings* page, go to *Hardware > IDE Controller 0 > Hard Drive* from the *Hardware* menu. The *Hard Drive* page is displayed.

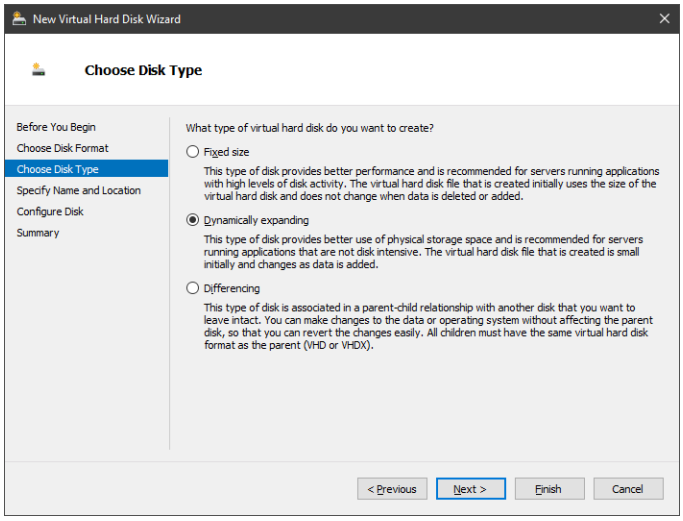


2. Click *New* to create a new virtual hard disk. The *New Virtual Hard Disk Wizard* opens to help you create a new virtual hard disk.
3. Click *Next* to continue. The *Choose Disk Format* page opens.
4. Select *VHDX* to use VHDX format virtual hard disks. This format supports virtual disks up to 64 TB and is resilient to consistency issues that might occur from power failures. Operating systems

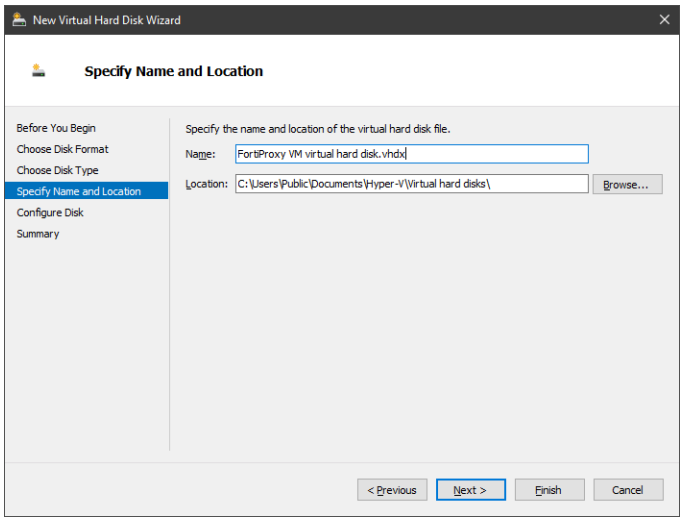
earlier than Windows Server 2012 do not support this format.

FortiProxy-VM does not support hard disks larger than 2 TB.

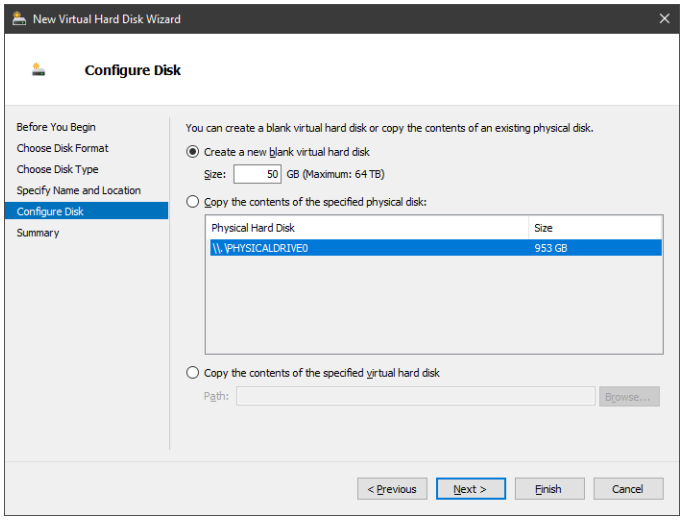
5. Click *Next* to continue. The *Choose Disk Type* page opens.



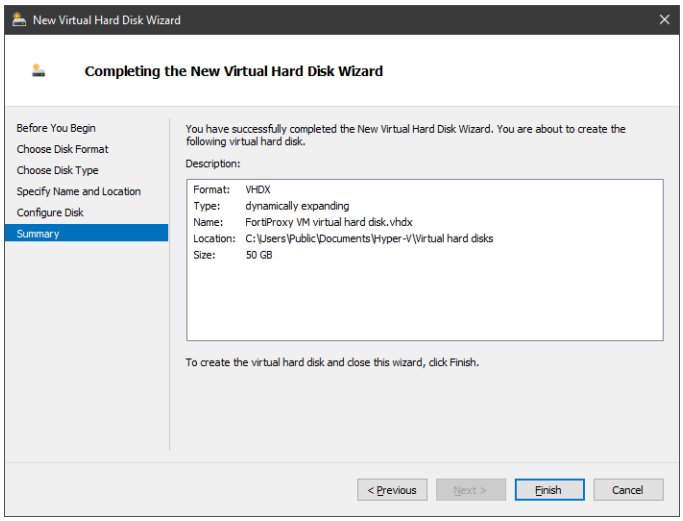
6. Select the type of virtual disk you want to use. Select one of the following disk types:
   - *Fixed size*: This type of disk provides better performance and is recommended for servers running applications with high levels of disk activity. The virtual hard disk file that is created initially uses the size of the virtual hard disk and does not change when data is deleted or added.
   - *Dynamic expanding*: This type of disk provides better use of physical storage space and is recommended for servers running applications that are not disk intensive. The virtual disk file that is created is small initially and changes as data is added.
   - *Differencing*: This type of disk is associated in a parent-child relationship with another disk that you want to leave intact. You can make changes to the data or operating system without affecting the parent disk, so that you can revert the changes easily. All children must have the same virtual hard disk format as the parent (VHD or VHDX).
7. Click *Next* to continue. The *Specify Name and Location* page opens.
8. Specify the name and location of the virtual hard disk file. Use the *Browse* button to select a specific file folder on your server.



9. Click *Next* to continue. The *Configure Disk* page opens.
10. Click *Create a new blank virtual hard disk* and enter the size of the disk in GB. The maximum size is dependent on your server environment.



11. Click *Next* to continue. The *Summary* page opens. It provides details about the virtual hard disk.



12. Click *Finish* to create the virtual hard disk.
13. Click *Apply* to save the settings and click *OK* to exit the *Settings* page.

High availability Hyper-V configuration

Promiscuous mode and support for MAC address spoofing is required for FortiProxy-VM for Hyper-V to support high availability (HA). By default, the FortiProxy-VM for Hyper-V has promiscuous mode enabled in the XML configuration file in the FortiProxy-VM Hyper-V image. If you have problems with HA mode, confirm that this is still enabled.

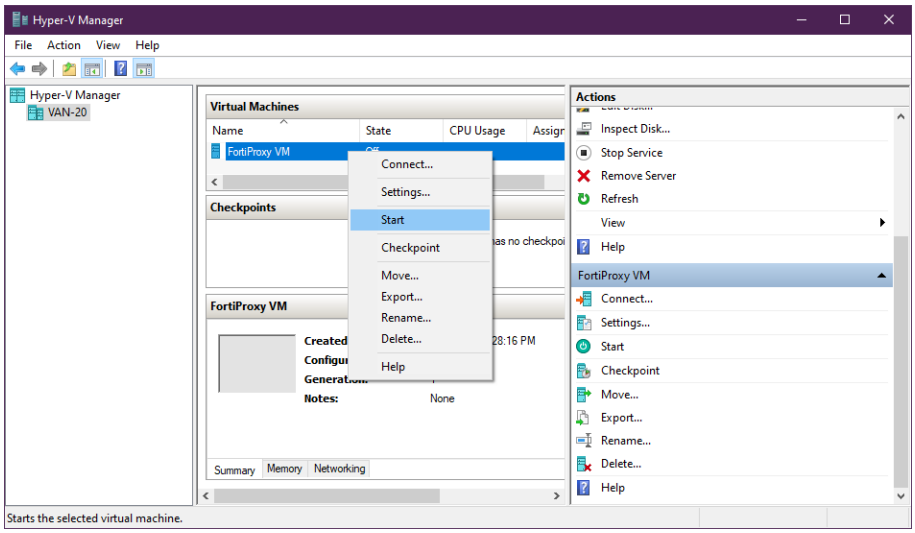
In addition, because the HA applies virtual MAC addresses to FortiProxy data interfaces and because these virtual MAC addresses mean that matching interfaces of different FortiProxy-VM instances will have the same virtual MAC addresses, you have to configure Hyper-V to allow MAC spoofing. But you should only enable MAC spoofing for FortiProxy-VM data interfaces. You should not enable MAC spoofing for FortiProxy HA heartbeat interfaces.

With promiscuous mode enabled and the correct MAC spoofing settings, you can configure HA between two or more FortiProxy-VM for Hyper-V instances.

Start the FortiProxy-VM

You can now power on your FortiProxy-VM.

In the list of VMs, right-click the *FortiProxy-VM* name and select *Start*.



After the VM starts, proceed with the Initial settings on page 20.

Initial settings

The first time that you start the FortiProxy-VM, you will only have access through the console window of your Microsoft Hyper-V environment. After you configure one FortiProxy network interface with an IP address and administrative access, you can access the FortiProxy-VM GUI.

Every FortiProxy-VM includes a 15-day trial license. During this time the VM operates in evaluation mode. Before using the VM, you must upload the license file that you downloaded from Customer Service & Support upon registration.

More information about configuring and operating FortiProxy-VM after a successful deployment is available in the Fortinet Document Library.

To configure GUI access on the port1 interface:

1. In your hypervisor manager, start the FortiProxy-VM and access the console window. You might need to press *Enter* to see the login prompt.
2. At the login prompt, enter the username `admin` then press `Enter`.
3. Enter an administrator password, and then confirm the password.
4. Configure the port1 IP address and netmask:

```
config system interface
    edit port1
        set mode static
        set ip <IP address> <netmask>
        append allowaccess https
    next
end
```

5. Configure the default gateway:

```
config router static
    edit 1
        set device port1
        set gateway <ip_address>
    next
end
```

6. Optionally, configure the DNS servers:

```
config system dns
    set primary <Primary DNS server>
    set secondary <Secondary DNS server>
end
```

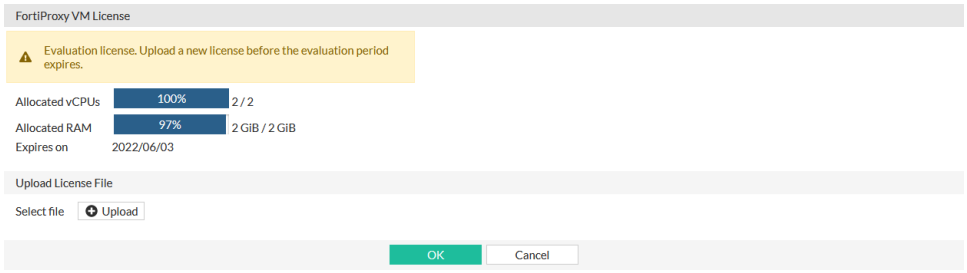
The default DNS servers are 208.91.112.53 and 208.91.112.52.

To connect to the FortiProxy-VM GUI:

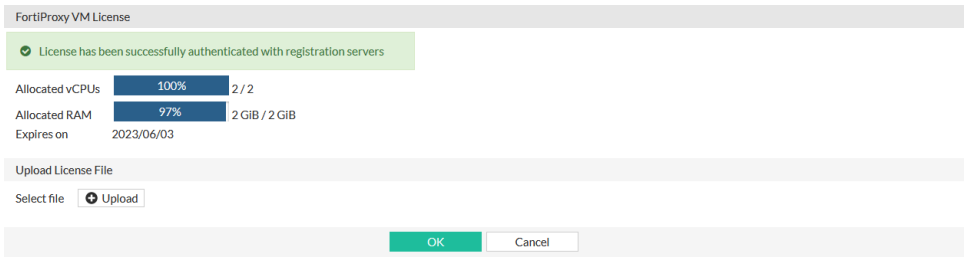
1. Launch a web browser, and enter the IP address you configured for the port1 management interface. For example: `https://192.168.0.1`.
2. At the login page, enter the username `admin` and the password that you configured.

To upload the license file:

1. Go to *System* > *FortiGuard* and click *FortiProxy-VM License*.



2. Click *Upload* and find the license file (.lic) on your computer.
3. Click *OK* to upload the license.
4. Log in to the FortiProxy-VM.
5. Confirm that the license has been successfully uploaded and validated by FortiGuard Distribution Network (FDN):
   a. Go to *Dashboard* > *Status*. The VM registration status appears as valid in the *Virtual Machine* and *Licenses* widgets
   b. Go to *System* > *FortiGuard* and click *FortiProxy-VM License*. A message reports that the license was successfully authenticated.



   c. If logging is enabled, the log message "`License status changed to VALID`" is recorded in the event log.
   d. If the update failed:
      i. Check the following settings on the FortiProxy-VM:
         - Time and time zone
         - DNS settings
         - Network interface statuses and IP addresses
         - Static routes
      ii. On the management computer, verify that FortiGuard domain names are resolving:

```
C:\>nslookup update.fortiguard.net
Server:  google-public-dns-a.google.com
Address:  8.8.8.8
```

```
Name:    fds1.fortinet.com
Addresses:  2620:101:9005:1100::205
          192.168.100.205
          192.168.100.220
Aliases:  update.fortiguard.net
```

iii. On the FortiProxy, verify that communication with the internet and FortiGuard is possible:

```
# execute ping update.fortiguard.net
PING fds1.fortinet.com (173.243.138.67): 56 data bytes
64 bytes from 173.243.138.67: icmp_seq=0 ttl=58 time=8.1 ms
64 bytes from 173.243.138.67: icmp_seq=1 ttl=58 time=3.2 ms
64 bytes from 173.243.138.67: icmp_seq=2 ttl=58 time=3.0 ms
64 bytes from 173.243.138.67: icmp_seq=3 ttl=58 time=3.8 ms
64 bytes from 173.243.138.67: icmp_seq=4 ttl=58 time=2.6 ms

--- fds1.fortinet.com ping statistics ---
5 packets transmitted, 5 packets received, 0% packet loss
round-trip min/avg/max = 2.6/4.1/8.1 ms
```

```
# execute traceroute update.fortiguard.net
traceroute to update.fortiguard.net (173.243.138.67), 32 hops max, 3 probe packets per
hop, 84 byte packets
 1  192.168.0.7  10.584 ms  2.927 ms  5.073 ms
 2  10.29.206.1  5.982 ms  8.006 ms  4.199 ms
 3  154.11.11.113  3.584 ms  7.947 ms  8.679 ms
 4  154.11.2.86  2.428 ms  2.337 ms  2.645 ms
 5  * 66.163.69.46 <rd3bb-tge0-11-0-0.vc.shawcable.net>  1.586 ms  1.915 ms
 6  * 64.141.25.113 <h64-141-25-113.bigpipeinc.com>  3.491 ms  2.571 ms
 7  64.141.25.114 <h64-141-25-114.bigpipeinc.com>  1.563 ms  2.385 ms  1.966 ms
 8  96.45.47.39  2.475 ms  2.106 ms  2.105 ms
 9  173.243.138.252  2.452 ms  2.305 ms  1.877 ms
10  173.243.138.67 <update.fortiguard.net>  2.220 ms  1.620 ms  1.990 ms
```

iv. Wait for the next automatic license query (about 30 minutes), or reboot the FortiProxy-VM: `execute reboot`.

If FortiProxy is unable to validate the license after four hours a warning message it displayed in the local console.

www.fortinet.com