



# FortiManager - Microsoft Hyper-V Cookbook

Version 6.4

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November 18, 2022

FortiManager 6.4 Microsoft Hyper-V Cookbook

02-640-620525-20221118

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## Change log

Date	Change description
2020-04-09	Initial release.
2021-03-09	Updated <a href="#">Minimum system requirements on page 7</a> .
2021-05-13	Updated <a href="#">About FortiManager on Microsoft Hyper-V on page 5</a> .
2021-05-28	Updated information about trial licenses and add-on licenses.
2022-11-18	Updated "Minimum system requirements" on page 7.

# About FortiManager on Microsoft Hyper-V

This document provides information about deploying a FortiManager virtual appliance in Microsoft Hyper-V server environments.

This includes how to configure the virtual appliance's virtual hardware settings. This guide presumes that the reader has a thorough understanding of virtualization servers.

This document does not cover configuring and operating the virtual appliance after successfully installing and starting it. For that information, see the [FortiManager Administration Guide](#).

## Licensing

Fortinet offers the FortiManager-VM with a limited, free trial license. Stackable licenses can be purchased, letting you expand your VM solution as your environment expands. You can purchase perpetual or subscription-based licenses. Perpetual licenses never expire.

For information on purchasing a FortiManager-VM license, contact your Fortinet-authorized reseller, or visit [How To Buy](#).

When configuring your FortiManager-VM, ensure that you configure hardware settings as the following table outlines and consider future expansion. Contact your Fortinet-authorized reseller for more information.

License	Devices/VDOMs	GB/day of logs with FortiAnalyzer enabled (not stackable)
Trial License	3	0 FortiAnalyzer features not supported
VM-10-UG	+10	2
VM-100-UG	+100	5
VM-1000-UG	+1000	10
VM-5000-UG	+5000	25
VM-10K-UG	+10000	50

See [Minimum system requirements on page 7](#).

See also the [FortiManager product datasheet](#).

## Trial license

With a FortiCare account and FortiManager 6.4.1 or later, FortiManager-VM includes a free limited non-expiring trial license.

The free trial license includes support for to add 3 devices/VDOMs and use 3 ADOMs.

The free trial license does not include services or support.

You can activate the trial license when you connect to the GUI for the FortiManager-VM. Full-feature products and services are available for purchase with an add-on license. See [Connecting to the GUI and enabling a trial license on page 16](#).

## Add-on license

You must activate a trial license before you can upgrade FortiManager-VM to a purchased add-on license.

See also [FortiManager 6.4 Trial License Guide](#).

# Preparing for deployment

You can prepare for deployment by reviewing the following information:

- [Minimum system requirements](#)
- [Deployment package for Microsoft Hyper-V](#)
- [Downloading a deployment package](#)

## Minimum system requirements



FortiManager-VM has a minimum requirement of 4 CPU, 8 GB of RAM, and 500 GB of disk storage.

The following table lists the minimum system requirements for your VM hardware, based on the number of devices, VDOMs, or ADOMs that your VM manages.

Maximum devices/ VDOMs	VM hardware requirements	
	RAM (GB)	CPU cores
100	8	4
300	16	6
1200	32	6
4000	64	16
10000	128	24



This table does not take into account other hardware specifications, such as bus speed, CPU model, or storage type.



Enabling FortiAnalyzer features requires more resources.

## Deployment package for Microsoft Hyper-V

FortiManager deployment packages are included with firmware images on the [Customer Service & Support site](#). The following table lists the available VM deployment package.

VM Platform	Deployment File
Microsoft Hyper-V Server 2012 and 2016	FMG_VM64_HV-vX-buildxxxx-FORTINET.out.hyperv.zip

The `.out.hyperv.zip` file contains:

- `FMG.vhd`: The FortiManager system hard disk in VHD format.  
The log disk and virtual hardware settings have to be configured manually.

For more information FortiManager, see the FortiManager [datasheet](#).

## Downloading a deployment package

Firmware image FTP directories are organized by firmware version, major release, and patch release. The firmware images in the directories follow a specific naming convention. Each firmware image is specific to the device model. For example, the `FMG_VM64_HV-vX-buildxxxx-FORTINET.out.hyperv.zip` image, found in the 5.6.0 directory, is specific to the 64-bit Microsoft Hyper-V Server virtualization environment.



You can download the *FortiManager Release Notes* and MIB file from this directory. The Fortinet Core MIB file is located in the *FortiManager > Download* tab.



Download the `.out` file to upgrade your existing FortiManager installation.

### To download deployment packages:

1. Log in to the Fortinet Customer Service & Support portal then, from the toolbar select *Download > Firmware Images*. The *Firmware Images* page opens.
2. Select *FortiManager* from the *Select Product* dropdown list, then select *Download*.
3. Browse to the appropriate directory for the version that you would like to download.
4. Download the appropriate firmware image and release notes to your management computer.
5. Extract the contents of the package to a new folder on your management computer.



## Compatibility for VM hardware versions

FortiManager-VM supports ESXi 6.5 and later versions. Using corresponding hardware versions 13 and later is highly recommended, as mentioned in [Virtual machine hardware versions](#).

It is recommended to upgrade hardware versions incrementally with only one delta at a time. For example, upgrading from 10 to 11, 11 to 12, 12 to 13, then 13 to 14 is recommended, although directly upgrading from 10 to 14 generally has no issues.

### To upgrade hardware versions:

1. Log in to vSphere Client web console.
2. In the left pane tree-menu, right-click the FortiManager-VM.
3. From the shortcut menu, select *Compatibility > Schedule VM Compatibility Upgrade*.
4. Click *YES*.
5. From the *Compatible with* dropdown, select the desired compatibility.
6. Click *OK*.
7. Reboot the FortiManager-VM.

# Deployment

Prior to deploying the FortiManager, the VM platform must be installed and configured so that it is ready to create virtual machines. The installation instructions for FortiManager presume that you are familiar with the management software and terminology of your VM platform.

You might also need to refer to the documentation provided with your VM server. The deployment information in this guide is provided as an example because, for any particular VM server, there are multiple ways of creating a virtual machine - command line tools, APIs, alternative graphical user interface tools.

Before you start your FortiManager appliance for the first time, you might need to adjust virtual disk sizes and networking settings. The first time you start FortiManager, you will have access only through the console window of your VM server environment. After you configure one network interface with an IP address and administrative access, you can access the FortiManager GUI (see [Enabling GUI access on page 16](#)).

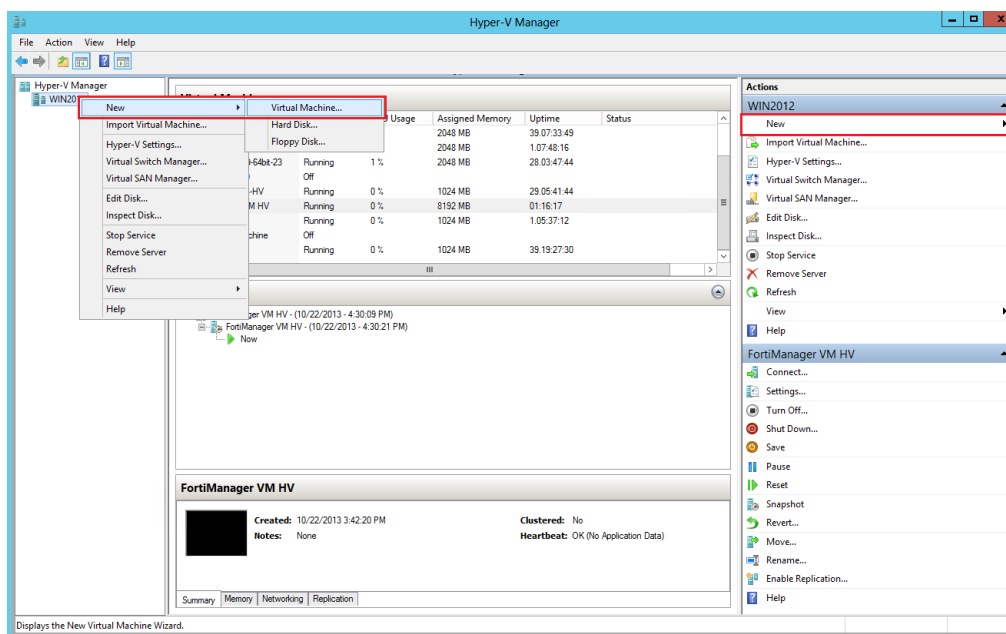
## Deploying FortiManager on Microsoft Hyper-V

After you download the `FMG_VM64_HV-vX-buildxxxx-FORTINET.out.hyperv.zip` file and extract the package contents to a folder on your Microsoft server, you can deploy the VHD package to your Microsoft Hyper-V environment.

### Creating the virtual machine

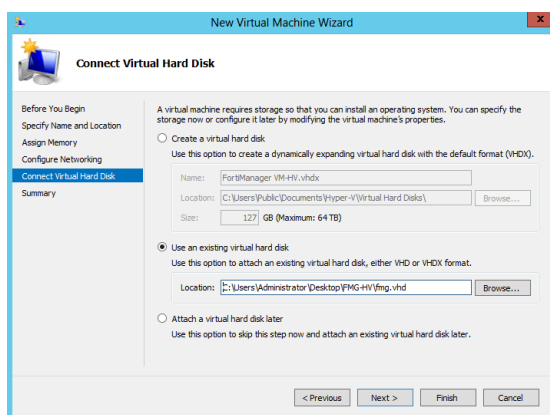
**To create the virtual machine:**

1. Launch the Hyper-V Manager in your Microsoft server. The *Hyper-V Manager* homepage opens.
2. Select the server in the right tree menu. The server details page opens.
3. Right-click the server and select *New > Virtual Machine*, or in the *Actions* menu, select *New > Virtual Machine*. The *New Virtual Machine Wizard* opens.



#### 4. Configure the VM:

- a. Click *Next* to create a VM with a custom configuration. The *Specify Name and Location* page opens.
- b. Enter a name for this VM. The name displays in the Hyper-V Manager.
- c. Click *Next* to continue to the *Specify Generation* page.
- d. Select *Generation 1*. Generation 2 is currently not supported.
- e. Click *Next* to continue to the *Assign Memory* page.
- f. Specify the amount of memory to allocate to this VM. See [Minimum system requirements on page 7](#) to determine your required memory.
- g. Click *Next* to continue to the *Configure Networking* page.
- h. You must configure network adapters in the *Settings* page. Each new VM includes a network adapter. You can configure the network adapter to use a virtual switch, or it can remain disconnected. FortiManager requires four network adapters.
- i. Select *Next* to continue to the *Connect Virtual Hard Disk* page.

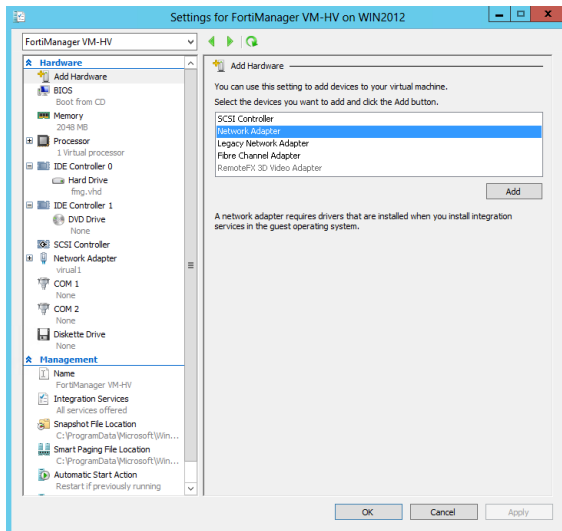


- j. Select to use an existing virtual hard disk and browse for the `fmg.vhd` file that you downloaded from the [Fortinet Customer Service & Support portal](#).
5. Select *Next* to continue to the *Summary* page.
  6. To create the VM and close the wizard, select *Finish*.

## Configuring hardware settings

Before powering on your FortiManager-VM, you must configure the virtual processors, memory, network adapters, and hard disk to match your FortiManager license. See [Licensing on page 5](#) for FortiManager license information.

To open the *Settings* page, in the Hyper-V Manager, right-click the VM name and select *Settings*, or select the VM then click *Settings* from the *Actions* menu.

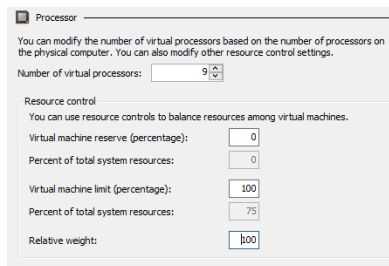


### To configure virtual memory:

1. In the *Settings* page, select *Memory* from the *Hardware* menu. The *Memory* page displays.
2. Configure the VM memory. See [Minimum system requirements on page 7](#) to determine your required memory.
3. Click *Apply* to save your settings.

### To configure virtual processors:

1. In the *Settings* page, select *Processor* from the *Hardware* menu. The *Processor* page displays.



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

### To configure network adapters:

1. In the *Settings* page, select *Add Hardware* from the *Hardware* menu.
2. From the device list, select *Network Adapter*, then click *Add*. The *Network Adapter* page opens.

Network Adapter

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

Virtual switch:  
Broadcom NetXtreme Gigabit Ethernet - Virtual Switch

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.

*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.*

3. Manually configure four network adapters in the settings page. For each network adapter, select a virtual switch from the dropdown list.
4. Click *Apply* to save your settings.

### To configure the virtual hard disk:



The FortiManager-VM requires at least two virtual hard disks. Before powering on the FortiManager-VM, you must add at least one more virtual hard disk. The default hard drive, `fmg.vhd`, contains the OS. The FortiManager-VM uses the second hard drive for logs.



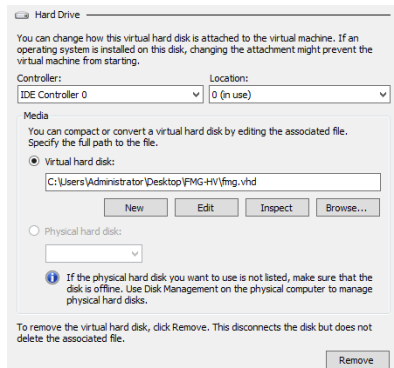
If you know your environment will expand in the future, adding hard disks larger than the 500 GB base license requirement is recommended. This allows your environment to expand as required while not taking up more space in the Storage Area Network (SAN) than is needed.



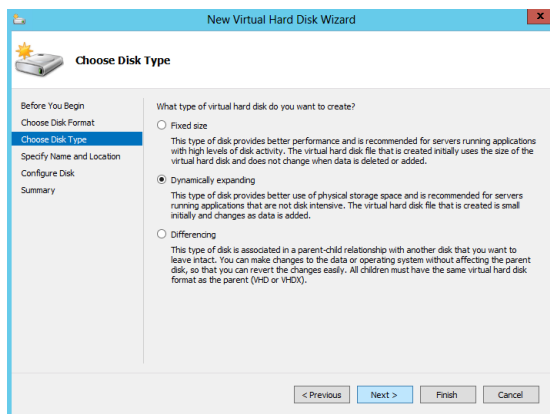
The FortiManager-VM allows you to add twelve virtual log disks to a deployed instance. When adding additional hard disks, use the following CLI command to extend the LVM logical volume:

```
execute lvm start
execute lvm extend <arg ..>
```

1. In the *Settings* page, select *IDE Controller 0* from the *Hardware* menu.
2. Select the type of drive that you want to attach to the controller, then click *Add*. The *Hard Drive* page opens.

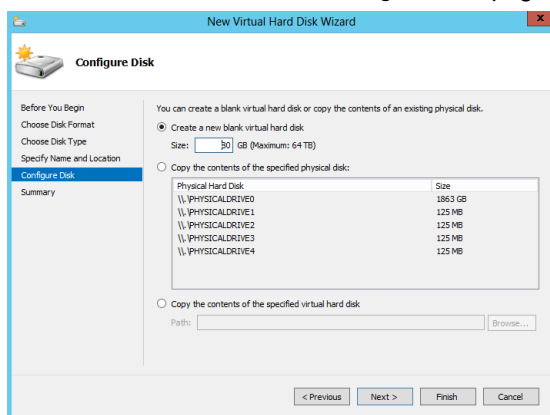


3. Click *New* to create a new virtual hard disk. The *New Virtual Hard Disk Wizard* opens to help you create a new virtual hard disk.
4. Configure the new virtual hard disk:
  - a. Click *Next* to continue to the *Choose Disk Format* page.
  - b. Select to use VHDX format virtual hard disks. This format supports virtual disks up to 64 TB and is resilient to consistency issues that may occur from power failures. Operating systems earlier than Windows Server 2012 do not support this format.
  - c. Click *Next* to continue to the *Choose Disk Type* page.



- d. Select the type of virtual disk you want to use, one of the following:
  - **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.
  - **Dynamically 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).
- e. Click *Next* to continue to the *Specify Name and Location* page.
- f. Specify the name and location of the virtual hard disk file. Use the *Browse* button to select a specific file folder on your server.

- g. Click *Next* to continue to the *Configure Disk* page.



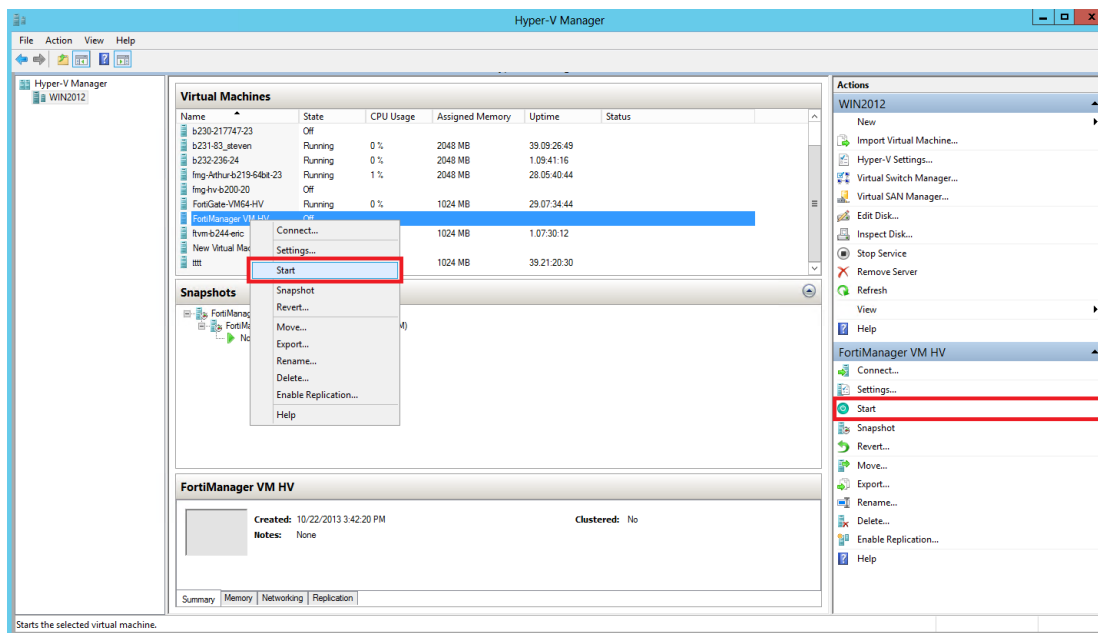
- h. Select *Create a new blank virtual hard disk*, then enter the size of the disk in GB. The maximum size depends on your server environment.
- Click *Next* to continue to the *Summary* page. The summary page provides details about the virtual hard disk.
  - Click *Finish* to create the virtual hard disk, then click *Apply* to save the settings, and then click *OK* to exit the settings page.

## Starting the virtual machine

You can now proceed to power on your FortiManager.

### To start the FortiManager-VM:

- In the list of VMs, right-click the FortiManager-VM name and select *Start*.
- Select the FortiManager-VM from the list of VMs, then click *Start* from the *Actions* menu.



After the VM starts, proceed with the initial configuration. See [Configuring initial settings on page 16](#).

## Configuring initial settings

Before you can connect to the FortiManager-VM, you must configure basic network settings via the CLI console. Once configured, you can connect to the FortiManager GUI.

### Enabling GUI access

To enable GUI access to the FortiManager, you must configure the IP address and network mask of the appropriate port on the FortiManager. The following instructions use port 1.



You can determine the appropriate by matching the network adapter's MAC address and the HWaddr that the CLI command `diagnose fmnetwork interface list` provides.

#### To configure the port1 IP address and netmask:

1. In your hypervisor manager, start the FortiManager and access the console window. You might need to press *Enter* to see the login prompt.
2. At the FortiManager login prompt, enter the username *admin*, then press *Enter*. By default, there is no password.
3. Using CLI commands, configure the port1 IP address and netmask.

```
config system interface
  edit port1
    set ip <IP address> <netmask>
  end
```



The port management interface should match the first network adapter and virtual switch that you have configured in the hypervisor VM settings.

4. To configure the default gateway, enter the following commands:

```
config system route
  edit 1
    set device port1
    set gateway <gateway_ipv4_address>
  end
```



The Customer Service & Support portal does not currently support IPv6 for FortiManager license validation. You must specify an IPv4 address in the support portal and the port management interface.

### Connecting to the GUI and enabling a trial license

Once you have configured a port's IP address and network mask, you can connect to the GUI by using a web browser.



**To connect to the GUI and enable a trial license:**

1. Launch a web browser, and enter the IP address you configured for the port management interface.
2. At the login page, click the *Login with FortiCloud* button to start the process of activating your free trial license.

See also [FortiManager 6.4 Trial License Guide](#).

## Upgrading to an add-on license

You must activate a trial license before you can upgrade FortiManager-VM to a purchased add-on license.

See also [FortiManager 6.4 Trial License Guide](#).

## Configuring your FortiManager

Once the FortiManager license has been validated, you can configure your device.



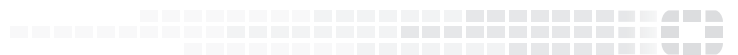
If the amount of memory or number of CPUs is too small for the VM, or if the allocated hard drive space is less than the licensed VM storage volume, warning messages show in the GUI in the *System Resources* widget on the dashboard and in the *Notification* list.

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For more information on configuring your FortiManager, see the [FortiManager Administration Guide](#).



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