

KVM Administration Guide

FortiManager 8.0.0



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FortiManager 8.0.0 KVM Administration Guide

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Change log

Date	Change description
2026-04-21	Initial release of FortiManager 8.0.0.

About FortiManager on KVM

This document provides information about deploying a FortiManager virtual appliance in Linux KVM 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 according to the minimum system requirements 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, FortiManager-VM includes a free limited non-expiring trial license.

The free trial license includes support 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 17](#).

Add-on license

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

See also the [FortiManager VM Trial License Guide](#) on the [Document Library](#).

Licensing in an air-gap environment

Enabling the trial license requires internet access. This is used to connect to FortiCloud and your FortiCare account on the Technical Support Site. It is also used to receive the license agreement. If you are licensing in an air-gap environment, see [Licensing in an air-gap environment in the FortiManager Administration Guide](#).

Preparing for deployment

You can prepare for deployment by reviewing the following information:

- [Minimum system requirements](#)
- [Registering your FortiManager-VM](#)
- [Deployment package for Linux KVM on page 9](#)
- [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. In 7.2.5 and later and 7.4.1 and later, the minimum requirement for RAM is increased to 16 GB.

The following table includes example minimum system requirements for your VM hardware based on the number of devices/VDOMs that your VM will manage. This table is not inclusive of all scenarios and is based on the minimum requirements introduced in version 7.4.1.

Maximum devices/ VDOMs	VM hardware requirements	
	RAM (GB)	CPU cores
100	16	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

Enabling FortiAnalyzer features requires additional resources.

See the minimum system requirements for FortiAnalyzer-VM as a guideline for how many additional resources your deployment may require.

Using FortiManager as a FortiGuard distribution server

When FortiManager is configured as a FortiGuard Distribution Server (FDS), memory usage can increase significantly when large query rating service databases are loaded into memory.

The total required memory for a FortiManager-VM is the sum of the minimum system requirements plus two times the total size of all rating databases that have preloading enabled.

For more information, see [FortiManager performance and sizing in closed networks](#).

Registering your FortiManager-VM


After placing an order for a FortiManager-VM, you receive a license registration code to the email address that you used in the order form. Use the license registration code provided to register the FortiManager-VM with [Customer Service & Support](#).

Upon registration, you can download the license file. You need this file to activate your FortiManager-VM. You can configure basic network settings from the CLI to complete the deployment. Once the license file is uploaded and validated, the CLI and GUI are fully functional.

For more information on registering assets in FortiCloud, see the [FortiCloud Asset Management Guide](#).

To register your FortiManager:

1. Ensure that you have the following items needed to complete the procedure:
 - License registration code emailed to you after you placed an order for a FortiManager-VM
 - Support contract number
 - A static FortiManager IPv4 address
2. Log in to [FortiCloud](#) using a support account, or create an account.
3. In the main page, select *Register Now*.
4. Enter the registration code from the FortiManager license certificate emailed to you, select the *End User Type*, then click *Next*.
5. Enter an optional product description and the static IP address that will be used during license validation, then click *Next*.

 As a part of the license validation process, the FortiManager-VM compares its configured IP addresses with the IP address information in the license file. The license must be associated with an IP address assigned to one of the interfaces on the FortiManager. If a new license has been imported or the FortiManager's associated IP address has changed, you must reboot the FortiManager for the system to validate the change and operate with a valid license.

 The [FortiCloud](#) portal does not support IPv6 for FortiManager license validation. You must specify an IPv4 address in the support portal and the port management interface.

6. Review your asset details and accept the terms of the contract, then click *Confirm*.

7. From the *Registration Completed* page, you can download the FortiManager license file, select *Register More* to register another FortiManager, or select *Done* to complete the registration process.
8. Select *License File Download* to save the license file (.lic) to your management computer.
 - In FortiCloud, you can also download your license file by selecting your FortiManager in *Products > Product List* and selecting the license file under *Product Information*.

Deployment package for Linux KVM

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

VM Platform	Deployment File
Linux KVM	FMG_VM64_KVM-vX-buildxxxx-FORTINET.out.kvm.zip

 Fortinet has verified deployment using RedHat 9.1, but other versions and Linux KVM distributions are also supported.

The .out.kvm.zip file contains:


- FMG.qcow2: TheFortiManager system hard disk in QCOW2 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_KVM-v8.0.0-buildxxxx-FORTINET.out.kvm.zip image, found in the 8.0.0 directory, is specific to the KVM 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 the deployment package:

1. Log in to the [FortiCloud portal](#) and select your account if applicable.
2. From the top menu bar, select *Support > Firmware Downloads*.
3. From the *Select Product* dropdown, select *FortiManager*. Then select the *Download* tab underneath the dropdown.
4. Browse to the appropriate directory for the version that you would like to download.
5. Download the appropriate firmware image and release notes to your management computer.
6. Extract the contents of the package to a new folder on your management computer.

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 KVM

After you download the `FMG_VM64_KVM-vX-buildxxxx-FORTINET.out.kvm.zip` file and extract the virtual hard drive image file, you can create the VM in your KVM environment.

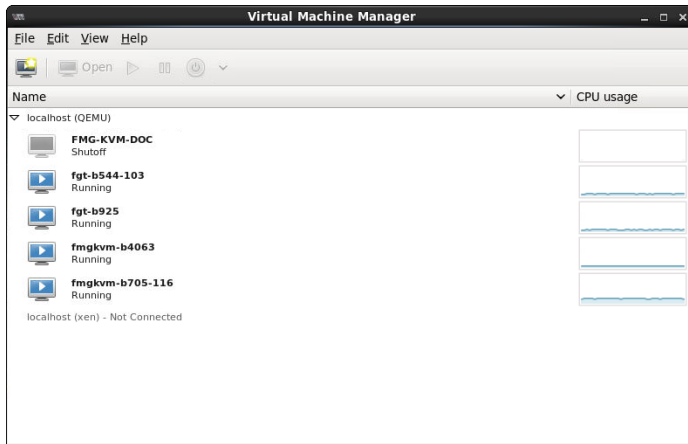
Creating the virtual machine

Use the following steps to create the virtual machine, including the default disk in the `.ovf` file. This default disk contains the OS and should not be modified.

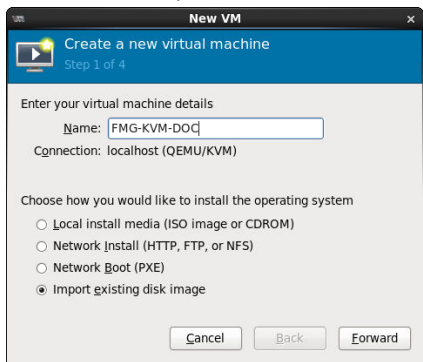
The default disk is not used for logs. After completing the steps to create the virtual machine, you must proceed to create additional disks. See [Configuring the log disks and network interfaces on page 13](#).

To create the virtual machine:

1. Launch Virtual Machine Manager (`virt-manager`) on your KVM host server. The *Virtual Machine Manager* homepage opens.

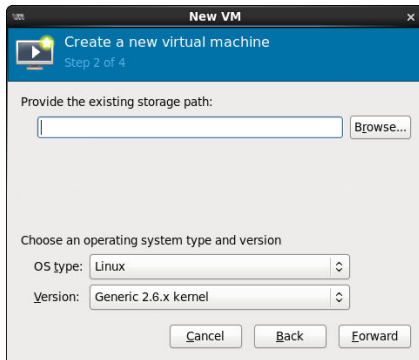


2. On the toolbar, click *Create a new virtual machine*.



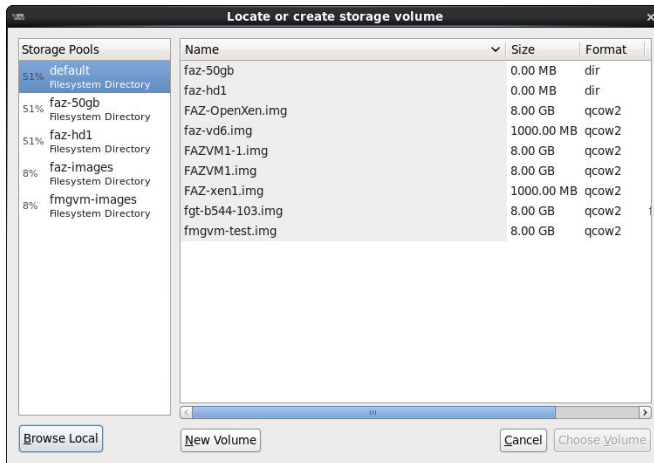
3. Configure the VM:

- a. Enter the VM name, such as *FMG-KVM-DOC*.
- b. Ensure that *Connection* is *localhost*, select *Import existing disk image*, then click *Forward* to continue.

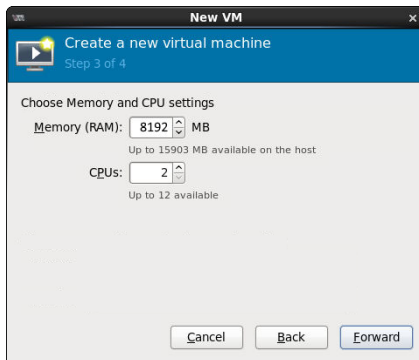


- c. From the *OS type* dropdown list, select *Linux*.
- d. From the *Version* dropdown list, select *Generic 2.6.x kernel*. You may have to first select *Show all OS options*.

- e. Click *Browse* to locate the storage volume.




- f. If you copied the *fmg.qcow2* file to */var/lib/libvirt/images* it shows on the right. If you saved it elsewhere on the server, click *Browse Local* to find it.
- g. Once the file has been located, click *Choose Volume*, then click *Forward*.



- h. Specify the amount of memory and the number of CPUs to allocate to this VM, then select *Forward*. To determine your required memory, see [Minimum system requirements on page 7](#).
- i. Expand the *Advanced options* section. By default, a new VM includes one network adapter. Select a network adapter on the host computer. Optionally, set a specific MAC address for the virtual network interface.
- j. Set *Virt Type* to *virtio* and set *Architecture* to *qcow2*.
4. Click *Finish* to create the VM.
5. Proceed to configure the log disks and additional network interfaces. See [Configuring the log disks and network interfaces on page 13](#).

Configuring the log disks and network interfaces

After creating the VM, you can configure the other disks and network interface(s). The additional disks are required; they are used by LVM for logs, reports, swap, and other storage requirements.

 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 (ideally above 500 GB).

The VM should therefore be configured with the following disks:


- The default hard drive that contains the OS and **should not** be modified. In this example, the default hard drive is referred to as Disk1.
- One or more additional disks, for example Disk2 and Disk3, used by LVM for logs, reports, swap, and other storage requirements.

The default virtual hard disk storage size (Disk1) should not be modified to increase capacity. Only increasing Disk2, Disk 3, or adding extra disks will extend LVM disk on the FortiManager-VM.

 The FortiManager-VM allows you to add fifteen 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 extend
```

For more information about this command, see the [FortiManager CLI Reference](#).

 VM platforms may automatically restart or prompt you to restart when resizing an active VM. As a precaution to prevent database corruption and preserve data in FortiManager, it is best to perform a graceful shutdown before resizing. For more information, see the [FortiManager Best Practices Guide](#).

Use the following steps to configure virtual hard disks and network interfaces on the server.

To configure settings on the server:

1. In the Virtual Machine Manager, locate the VM name, then click *Open* on the toolbar.
2. In the Virtual Machine window, select *Show virtual hardware details*.
3. Click *Add Hardware* to open the *Add Hardware* window.
4. Select *Storage*.



5. Select *Create a disk image on the computer's harddrive*, and set the size.

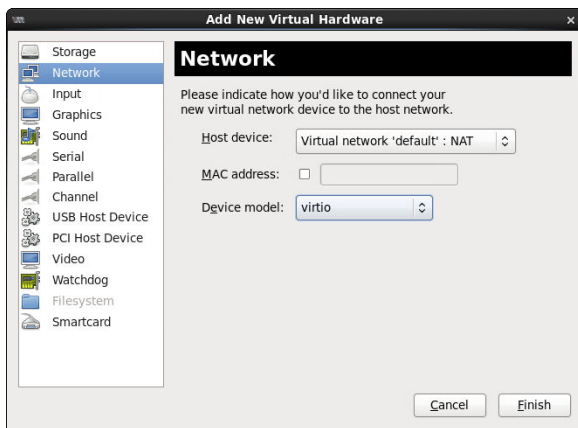


If you know your environment will expand in the future, or if you will be using ADOMs, add hard disks larger than 500 GB. This allows your environment to expand as required while not taking up more space than is needed.

6. Enter the following information:

Device Type	Virtio disk
Cache mode	writethrough
Storage format	raw

7. Select *Network* to add more network interfaces. The *Device Model* must be *Virtio*.



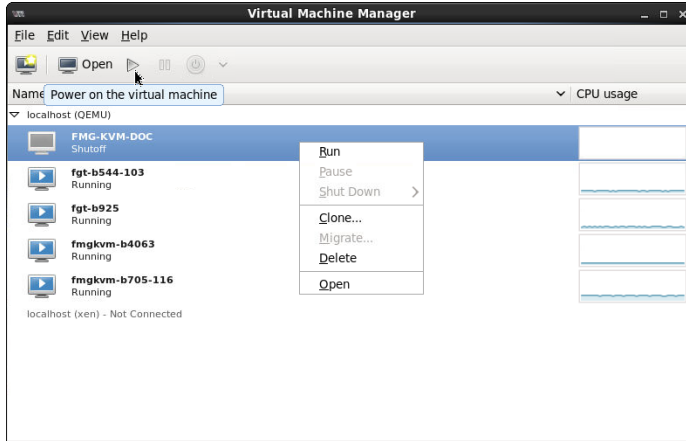
A new VM includes one network adapter by default. You can add more through the *Add Hardware* window. You can configure network adapters to connect to a virtual switch or to network adapters on the host computer.

8. Click *Finish*.

Starting the VM

You can now proceed to power on your FortiManager-VM.

1. Do one of the following:
 - a. Right-click the FortiManager-VM and select *Run*.
 - b. Select the FortiManager-VM from the list of VMs, then click *Power on the virtual machine* from the toolbar.



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. To enable access to the GUI from a browser, HTTP and HTTPS access must be enabled as well. In FortiManager 7.4.2 and later, you must also change the mode from dhcp to static.

The following instructions use port 1.

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

In FortiManager 7.4.2 and later, the default configuration for port 1 is as follows:

```
config system interface
  edit port1
    set mode dhcp
    set allowaccess https ssh
    set type physical
  next
end
```

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.

- At the FortiManager login prompt, enter the username *admin*, then press *Enter*.

By default, there is no password.

- Enter and confirm a new password.

There is a default password policy in FortiManager 7.6.4 and later. The new password must be at least 8 characters and must contain uppercase letter(s), lowercase letter(s), number(s), and special character(s). For more information about configuring the password policy once you have access, see the FortiManager Administration Guide in the [Fortinet Document Library](#).

- Using CLI commands, configure port 1.

```
config system interface
  edit port1
    set mode static <--- this variable only needs to be configured in FortiManager v7.4.2
      and later
    set ip <IP address> <netmask>
    set allowaccess http https <--- other management access, such as SSH, can be included
      in the list as well
  next
end
```

For more information about CLI commands, see the FortiManager CLI Reference in the [Fortinet Document Library](#).



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

- 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.

Enabling the trial license requires internet access. This is used to connect to FortiCloud and your FortiCare account on the Technical Support Site. It is also used to receive the license agreement. If you are licensing in an air-gap environment, see [Licensing in an air-gap environment in the FortiManager Administration Guide](#).

To connect to the GUI and enable a trial license:

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

If you do not have a FortiCloud account, click *Register with FortiCloud* to create one.

See also the [FortiManager VM Trial License Guide](#) on the [Document Library](#).

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 the [FortiManager VM Trial License Guide](#) on the [Document Library](#).

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.

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



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