FortiManager VM (Microsoft Hyper-V) Install Guide
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## Change Log

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<td>2013-10-30</td>
<td>Initial release.</td>
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<tr>
<td>2014-02-06</td>
<td>Minor document update for v5.0.6. FortiManager VM now supports up to 12 virtual disks via the <code>execute lvm CLI command</code>.</td>
</tr>
<tr>
<td>2014-02-07</td>
<td>Updated the license code registration procedure to match changes to the Customer Service &amp; Support portal.</td>
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<tr>
<td>2014-04-29</td>
<td>Updated instructions for adding a second virtual hard drive.</td>
</tr>
<tr>
<td>2014-12-05</td>
<td>Minor document update.</td>
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Introduction

FortiManager Security Management appliances allow you to centrally manage any number of Fortinet Network Security devices, from several to thousands, including FortiGate, FortiWiFi, and FortiCarrier. Network administrators can better control their network by logically grouping devices into administrative domains (ADOMs), efficiently applying policies and distributing content security/firmware updates. FortiManager is one of several versatile Network Security Management Products that provide a diversity of deployment types, growth flexibility, advanced customization through APIs and simple licensing.

This document includes the following sections:

- FortiManager VM Overview
- FortiManager VM Deployment
- FortiManager VM Initial Configuration

FortiManager documentation

The following FortiManager product documentation is available:

- **FortiManager Administration Guide**
  This document describes how to set up the FortiManager system and use it to manage supported Fortinet units. It includes information on how to configure multiple Fortinet units, configuring and managing the FortiGate VPN policies, monitoring the status of the managed devices, viewing and analyzing the FortiGate logs, updating the virus and attack signatures, providing web filtering and email filter service to the licensed FortiGate units as a local FortiGuard Distribution Server (FDS), firmware revision control and updating the firmware images of the managed units.

- **FortiManager device QuickStart Guides**
  These documents are included with your FortiManager system package. Use these document to install and begin working with the FortiManager system and Web-based Manager.

- **FortiManager Online Help**
  You can get online help from the FortiManager Web-based Manager. FortiManager online help contains detailed procedures for using the Web-based Manager to configure and manage FortiGate units.

- **FortiManager CLI Reference**
  This document describes how to use the FortiManager Command Line Interface (CLI) and contains references for all CLI commands.

- **FortiManager Release Notes**
  This document describes new features and enhancements in the FortiManager system for the release, and lists resolved and known issues. This document also defines supported platforms and firmware versions.
- **FortiManager VM (VMware) Install Guide**
  This document describes installing FortiManager VM in your VMware ESX or ESXi virtual environment.

- **FortiManager VM (Microsoft Hyper-V) Install Guide**
  This document describes installing FortiManager VM in your Microsoft Hyper-V Server 2008 R2 or 2012 virtual environment.
FortiManager VM Overview

This section provides an overview of FortiManager VM for Microsoft Hyper-V Server 2008 R2 and 2012.

The following topics are included in this section:

- Licensing
- System requirements
- Register FortiManager VM with Customer Service & Support
- Download the FortiManager VM software
- FortiManager VM Evaluation license

Licensing

Fortinet offers the FortiManager VM in a stackable license model. This model allows you to expand your VM solution as your environment expands. When configuring your FortiManager VM, ensure to configure hardware settings as outlined in Table 1 and consider future expansion. Contact your Fortinet Authorized Reseller for more information.

Table 1: FortiManager VM license information

<table>
<thead>
<tr>
<th>Technical Specification</th>
<th>VM-BASE</th>
<th>VM-10-UG</th>
<th>VM-100-UG</th>
<th>VM-1000-UG</th>
<th>VM-5000-UG</th>
<th>VM-U-UG</th>
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<tr>
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<td></td>
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<td></td>
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<td></td>
<td>Microsoft Hyper-V Server 2008 R2 and 2012</td>
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<tr>
<td>VM Form Factor</td>
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<td>Virtual CPU Support</td>
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<td></td>
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<td>(Minimum / Maximum)</td>
<td>1 / Unlimited</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Network Interface Support</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>(Minimum / Maximum)</td>
<td>1 / 4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Memory Support</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| (Minimum / Maximum)     | 2GB / Unlimited  
The default memory size is 2GB. |
| Storage Support         |         |          |           |            |            |         |
| (Minimum / Maximum)     | 80GB / 16TB |
| GB / Day of logs        | 1       | 2        | 5         | 10         | 25         | 50      |
| Device Quota            | 100GB   | 200GB    | 1TB       | 4TB        | 8TB        | 16TB    |
| Licensed Network Devices| 10      | +10      | +100      | +1000      | +5000      | Unlimited |
| Administrative Domains  | 10      | +10      | +100      | +1000      | +5000      | Unlimited |
| Admin Web Portals /     | 10      | +10      | +100      | +1000      | +5000      | Unlimited |
| Maximum Portal Users    |         |          |           |            |            |         |
For more information, see the FortiManager product data sheet available on the Fortinet website, http://www.fortinet.com/sites/default/files/productdatasheets/FortiManager-VM.pdf.

After placing an order for FortiManager VM, a license registration code is sent to the email address used in the order form. Use the license registration code provided to register the FortiManager VM with Fortinet Customer Service & Support at https://support.fortinet.com.

Upon registration, you can download the license file. You will 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, the CLI and Web-based Manager are fully functional.

System requirements

Prior to deploying the FortiManager VM virtual appliance, Microsoft Hyper-V Server (2008 R2 or 2012) must be installed and configured. The installation instructions for FortiManager VM assume you are familiar with Microsoft Hyper-V server and terminology. For more details, refer to http://www.microsoft.com/en-us/server-cloud/hyper-v-server/default.aspx.

Register FortiManager VM with Customer Service & Support

To obtain the FortiManager VM license file you must first register your FortiManager VM with Fortinet Customer Service & Support.

To register your FortiManager VM:

1. Log in to the Fortinet Customer Service & Support portal using an existing support account or select Create an Account to create a new account.

2. In the toolbar select Asset > Register/Renew.
   The Registration Wizard opens.

   Figure 1: Registration Wizard

3. Enter the license registration code from the FortiManager VM License Certificate that was emailed to you and select Next. The Registration Info page is displayed.
4. Enter the support contract number, product description, Fortinet Partner, and IP address.

As a part of the license validation process FortiManager VM compares its IP address with the IP information in the license file. If a new license has been imported or the FortiManager VM’s IP address has been changed, the FortiManager VM must be rebooted in order for the system to validate the change and operate with a valid license.

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

5. Select Next to continue. The *Fortinet Product Registration Agreement* page is displayed.

6. Select the checkbox to indicate that you have read, understood, and accepted the service contract, and select Next to continue. The Verification page is displayed.
7. The verification page displays the product entitlement. Select the checkbox to indicate that you accept the terms and select Confirm to submit the request. The Registration Completed page is displayed.

8. In the Registration Completed page you can download the FortiManager VM license file. Select the License File Download link. You will be prompted to save the license file (.lic) to your management computer. See “Upload the FortiManager VM license file” on page 32 for instructions on uploading the license file to your FortiManager VM via the Web-based Manager.
To edit the FortiManager VM IP address:

1. In the toolbar select Asset > Manage/View Products.
   The View Products page opens.

   **Figure 6:** View Products page

2. Select the FortiManager VM serial number.
   The Product Details page opens.

   **Figure 7:** Product Details page

3. Select **Edit** to change the description, partner information, and IP address of your FortiManager VM.
   The **Edit Product Info** page opens.
4. Enter the new IP address and select **Save**.

You can change the IP address five (5) times on a regular FortiManager VM license. There is no restriction on a full evaluation license.

5. Select the **License File Download** link. You will be prompted to save the license file (.lic) to your management computer. See “Upload the FortiManager VM license file” on page 32 for instructions on uploading the license file to your FortiManager VM via the Web-based Manager.

**Download the FortiManager VM software**

Fortinet provides the FortiManager VM software for Hyper-V environments in two formats:

- FMG_VM64_HV-v500-build0xxx-FORTINET.out: Download this firmware image to upgrade your existing FortiManager VM installation.
- FMG_VM64_HV-v500-build0xxx-FORTINET.out.hyperv.zip: Download this package for a new FortiManager VM installation.

The FMG_VM64_HV-v500-build0xxx-FORTINET.out.hyperv.zip file folder contains the following file:

- fmg.vhd: Virtual hard disk (VHD) format file.
Firmware images in the Customer Service & Support portal directories are organized by firmware version, major release, and patch release. FortiManager VM image for Microsoft Hyper-V are identified by the _HV in the image name. The firmware images in the directories follow a specific naming convention and each firmware image is specific to the device model. For example, the FMG_VM64_HV-v500-build0618-FORTINET.out.hyperv.zip image found in the v5.2.0 directory is specific to the FortiManager VM Microsoft Hyper-V server environment.

You can download the FortiManager Release Notes, and MIB file in this directory. The Fortinet Core MIB file is located in the main FortiManager v5.00 directory.

To download the FortiManager VM .hyperv.zip package:

1. In the toolbar, select **Download > Firmware Images**.
   The **Firmware Images** page opens.

   **Figure 9:** Firmware images page

   ![Firmware Images Page](image)

   *Welcome to the firmware images download center for fortinet's extensive line of security solutions.*

   *Select Product*

   Select **FortiManager** from the dropdown list and select **Download**.

   *Download via FTP is not secure, HTTPS is recommended. Please always verify your image by checksum code before installation. If your browser has a problem to show below content, click here.*

   *Image File Path*

   `/fortimanager`

   *Image Folders/Files*

<table>
<thead>
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<th>Date Created</th>
<th>Date Modified</th>
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<td>2009-12-12 13:43:52</td>
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<td>2009-12-12 13:43:52</td>
</tr>
<tr>
<td>v5.00</td>
<td>Directory</td>
<td>2009-12-12 13:43:52</td>
<td>2009-12-12 13:43:52</td>
</tr>
</tbody>
</table>

2. Select **FortiManager** from the drop-down list and select **Download**.
3. Browse to the appropriate directory for the version that you would like to download.
4. Download the .hyperv.zip file and FortiManager Release Notes, and save these files to your management computer.

5. Select the .hyperv.zip file on your management computer and extract the files to a new file folder. See “Create the FortiManager VM virtual machine” on page 16 for information on deploying the VHD file to your Hyper-V server environment.

**FortiManager VM Evaluation license**

FortiManager VM includes a free 15-day trial license that includes all features. No activation is required for the built-in evaluation license. The trial period begins the first time you start FortiManager VM. Once the trial expires, functionality is disabled until you upload a license file.

**Figure 11: Expired license dialog box**

Technical support is not included with the 15-day evaluation.
Contact your Fortinet Reseller to request a full evaluation (60-days) FortiManager VM license.
FortiManager VM Deployment

Once you have downloaded the .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.

The following topics are included in this section:
- Create the FortiManager VM virtual machine
- Configure FortiManager VM hardware settings
- Start the FortiManager VM

Create the FortiManager VM virtual machine

To create the FortiManager VM virtual machine:
1. Launch the Hyper-V Manager in your Microsoft server.
   The Hyper-V Manager home page opens.
   
   Figure 12: Hyper-V Manager home page

2. Select the server in the right-tree menu. The server details page is displayed.
3. Right-click the server and select **New** and select **Virtual Machine** from the menu. Optionally, in the **Actions** menu, select **New** and select **Virtual Machine** from the menu.

The **New Virtual Machine Wizard** opens.

**Figure 14:** New Virtual Machine Wizard

4. Select **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. Select Next to continue. The Assign Memory page is displayed.

6. Specify the amount of memory to allocate to this virtual machine. The default memory for FortiManager VM is 2GB (2048MB). Select Next to continue. The Configure Networking page is displayed.
7. Each new virtual machine includes a network adapter. You can configure the network adapter to use a virtual switch, or it can remain disconnected. FortiManager VM requires four network adapters. You must configure network adapters in the **Settings** page. Select **Next** to continue. The **Connect Virtual Hard Disk** page is displayed.

**Figure 18:** Connect Virtual Hard Disk page

8. 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. Select **Next** to continue. The **Summary** page is displayed.
9. To create the virtual machine and close the wizard, select *Finish*.

**Configure FortiManager VM hardware settings**

Before powering on your FortiManager VM you must configure the virtual CPU, and create network adapters and virtual disk configuration to match your FortiManager VM license. See “FortiManager VM license information” on page 7 for FortiManager VM license information.

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It is recommended to configure the FortiManager VM hardware settings prior to powering on the FortiManager VM.

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**To configure settings for FortiManager VM on the server:**

1. In the Hyper-V Manager, locate the name of the virtual machine, right-click the entry, and select *Settings* from the menu. Optionally, you can select the virtual machine and select *Settings* in the Actions menu.
2. Configure virtual processors, network adapters, and virtual hard drive settings.
3. Select Apply to save the settings and then select OK to close the settings page.
FortiManager VM virtual processors

You must configure FortiManager VM virtual processors in the server settings page. The number of processors is dependent on your server environment.

Configure FortiManager VM virtual processors:
1. In the Settings page, select Processor from the Hardware menu.
   The Processor page is displayed.

   Figure 22: Processor page

2. Configure the number of virtual processors for the FortiManager VM virtual machine. Optionally, you can use resource controls to balance resources among virtual machines.

3. Select Apply to save the settings.

FortiManager VM network adapters

You must configure FortiManager VM network adapters in the server settings page. FortiManager VM supports four network adapters.

Configure FortiManager VM network adapters:
1. In the Settings page, select Add Hardware from the Hardware menu, select Network Adapter in the device list, and select the Add button.
   The Network Adapter page is displayed.
2. You must manually configure four network adapters for FortiManager VM in the settings page. For each network adapter, select the virtual switch from the drop-down list.
3. Select Apply to save the settings.

**FortiManager VM virtual hard disk**

You must configure the FortiManager VM virtual hard disk in the server settings page.

FortiManager VM requires at least two virtual hard disks. Before powering on the FortiManager VM, you need to add at least one more virtual hard disk. The default hard drive, `fmg.vhd`, contains the operating system. The second hard drive will be used for logs.

If you know your environment will expand in the future, it is recommended to add hard disks larger than the 200GB FortiManager VM base license requirement. This will allow your environment to be expanded as required while not taking up more space in the SAN than is needed.

FortiManager VM allows for twelve virtual log disks to be added to a deployed instance. When adding additional hard disks to your FortiManager VM use the following CLI command to extend the LVM logical volume:

```
execute lvm start
execute lvm extend <arg ..>
```
Create a FortiManager VM virtual hard drive:

1. In the *Settings* page, select *IDE Controller 0* from the *Hardware* menu.

   **Figure 24:** Settings page

2. Select the type of drive you want to attach to the controller and then select *Add*.
   The *Hard Drive* page is displayed.

4. This wizard helps you to create a new virtual hard disk. Select Next to continue. The Choose Disk Format page opens.
5. Select to use VHDX format virtual hard disks. This format supports virtual disks up to 64TB and is resilient to consistency issues that might occur from power failures. This format is not supported in operating systems earlier that Windows Server 2012. Select 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).

Select **Next** to continue. The *Specify Name and Location* page opens.

**Figure 29**: Specify Name and Location

7. Specify the name and location of the virtual hard disk file. Use the *Browse* button to select a specific file folder on your server.

Select **Next** to continue. The *Configure Disk* page opens.
8. Select to 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. Select Next to continue. The Summary page opens.

9. The summary page provides details of the virtual hard disk. Select Finish to create the virtual hard disk.

10. Select Apply to save the settings and select OK to exit the settings page.
Start the FortiManager VM

You can now proceed to power on your FortiManager VM. Select the name of the FortiManager VM in the list of virtual machines, right-click, and select **Start** in the menu. Optionally, you can select the name of the FortiManager VM in the list of virtual machines and select **Start** in the *Actions* menu.

**Figure 32:** Start the FortiManager VM virtual machine
FortiManager VM Initial Configuration

Before you can connect to the FortiManager VM Web-based Manager you must configure basic configuration via console in Microsoft Hyper-V Server. Once configured, you can connect to the FortiManager VM Web-based Manager and upload the FortiManager VM license file that you downloaded from the Customer Service & Support portal.

The following topics are included in this section:
- FortiManager VM console access
- Connect to the FortiManager VM Web-based Manager
- Upload the FortiManager VM license file
- Configure your FortiManager VM

FortiManager VM console access

To enable Web-based Manager access to the FortiManager VM you must configure the port1 IP address and network mask of the FortiManager VM.

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

1. In the list of virtual machines, select the FortiManager VM that you deployed, right-click, and select Connect from the menu.
   
   The Console window appears

   ![Figure 33: FortiManager VM console access](image)
2. At the FortiManager VM login prompt enter the user name admin and password. The default password is no password.

3. To configure the port1 IP address and netmask, enter the following CLI commands:

   ```
   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 Microsoft Hyper-V Server virtual machine settings.

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

   ```
   config system route
   edit 1
   set device port1
   set gateway <IP address Netmask>
   end
   ```

**Connect to the FortiManager VM Web-based Manager**

Once you have configured the port1 IP address and network mask, launch a web browser and enter the IP address you configured for the port management interface. At the login page, enter the user name admin and password and select Login. The default password is no password. The Web-based Manager will appear with an Evaluation License dialog box, see Figure 34.

By default, the Web-based Manager is accessible via HTTPS.
Upload the FortiManager VM license file

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

To upload the FortiManager VM licence file:

1. In the Evaluation License dialog box, select Enter License. Optionally, select Upload License in the License Information dashboard widget.

You can also upload the license file via the CLI using the following CLI command:

```
execute add-vm-license <vm license string>
```

You can open the FMG-VM.lic license file using Wordpad or Notepad++.
The license upload page opens.

**Figure 35:** License upload page

2. Select **Browse** and locate the license file (.lic) on your computer. Select **OK** to upload the license file.
   
   You will receive a reboot message. The FortiManager VM system will reboot and load the license file.

3. Refresh the browser to login.

4. Enter **admin** in the Name field and select **Login**. The VM registration status appears as valid in the **License Information** widget once the license has been validated.

As a part of the license validation process FortiManager VM compares its IP address with the IP information in the license file. If a new license has been imported or the FortiManager’s IP address has been changed, the FortiManager VM must be rebooted in order for the system to validate the change and operate with a valid license.

5. If the IP address in the license file and the IP address configured in the FortiManager VM do not match, you will receive the following error message dialog box when you log back into the VM.
If this occurs, you will need to change the IP address in the Customer Service & Support portal to match the management IP and re-download the license file. To change the management IP address, see "To edit the FortiManager VM IP address:" on page 11.

After an invalid license file is loaded to FortiManager VM, the Web-based Manager will be locked until a valid license file is uploaded.

**Configure your FortiManager VM**

Once the FortiManager VM license has been validated you can begin to configure your device. For more information on configuring your FortiManager VM, see the *FortiManager Administration Guide* available at the Fortinet Document Library.

In VM environments, it is recommended that you clone the VM instance. In the event of an issue with the firmware upgrade, you can to revert to the VM clone.
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