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ESX Installation Guide

FortiSIEM 6.5.1



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10/03/2023 FortiSIEM 6.5.1 ESX Installation Guide

TABLE OF CONTENTS

Change Log	4
Fresh Installation	6
Pre-Installation Checklist	
All-in-one Installation	
Set Network Time Protocol for ESX	7
Import FortiSIEM into ESX	
Edit FortiSIEM Hardware Settings	
Start FortiSIEM from the VMware Console	
Configure FortiSIEM via GUI	
Upload the FortiSIEM License	
Choose an Event Database	17
Cluster Installation	
Install Supervisor	19
Install Workers	
Register Workers	
Install Collectors	
Register Collectors	
Install Manager	
Register Instances to Manager	
Installing on ESX 6.5	
Importing a 6.5 ESX Image	
Resolving Disk Save Error	
Adding a 5th Disk for /data	
Install Log	

Change Log

Date	Change Description
09/05/2018	Initial version of FortiSIEM - ESX Installation Guide.
03/29/2019	Revision 1: updated the instructions for registering the Collector on the Supervisor node.
05/22/2019	Revision 2: added a note regarding VMotion support.
11/20/2019	Release of FortiSIEM - ESX Installation Guide for 5.2.6.
03/30/2020	Release of FortiSIEM - ESX Installation Guide for 5.3.0.
08/15/2020	Revision 3: Updated deployment and installation for FortiSIEM 6.1.0 on VMware ESX.
11/03/2020	Revision 4: Updated deployment and installation for FortiSIEM 6.1.1 on VMware ESX.
02/04/2021	Revision 5: Updated Migration content.
02/16/2021	Revision 6: Added Installing on ESX 6.5 content to 6.1.1.
02/23/2021	Revision 7: Minor update to Pre-Migration Checklist.
03/18/2021	Revision 8: Minor update to Pre-Migration Checklist for 6.1.1.
03/29/2021	Revision 9: Minor update to Pre-Migration Checklist for 6.1.1.
04/21/2021	Revision 10: Added Installing on ESX 6.5 content to 6.2.0. Minor update to Pre-Installation Checklist to 6.1.1 and 6.2.0.
04/22/2021	Revision 11: Added Installing on ESX 6.5 content to 6.1.0. Minor update to Pre-Installation Checklist to 6.1.0.
4/28/2021	Revision 12: Updated Pre-Installation Checklist for 6.1.0, 6.1.1 and 6.2.0.
05/07/2021	Release of FortiSIEM - ESX Installation Guide for 6.2.1.
06/07/2021	Revision 13: Elasticsearch screenshot updated for 6.2.x guides.
07/06/2021	Release of FortiSIEM - ESX Installation Guide for 6.3.0.
08/26/2021	Release of FortiSIEM - ESX Installation Guide for 6.3.1.
09/13/2021	Updated Importing a 6.5 ESX Image section for 6.3.x guides.
10/15/2021	Release of FortiSIEM - ESX Installation Guide for 6.3.2.
11/17/2021	Updated Register Collectors instructions for 6.x guides.
12/22/2021	Release of FortiSIEM - ESX Installation Guide for 6.3.3.

Change Log

Date	Change Description
01/18/2022	Release of FortiSIEM - ESX Installation Guide for 6.4.0.
05/09/2022	Release of FortiSIEM - ESX Installation Guide for 6.5.0.
08/18/2022	Updated All-in-one Installation section.
09/12/2022	Release of FortiSIEM - ESX Installation Guide for 6.5.1.
10/06/2022	Added Collector with Reduced Disk in OT Environments under Install Collectors for 6.4.0-6.6.2 guides.
10/20/2022	Updated Register Collectors instructions for 6.x guides.
08/23/2023	Changed "Collector with Reduced Disk in OT Environments" to "Collector with Different OPT Disk Sizes" under Install Collectors.
09/01/2023	Release of FortiSIEM - ESX Installation Guide for 6.5.2.

Fresh Installation

- Pre-Installation Checklist
- All-in-one Installation
- Cluster Installation
- Installing on ESX 6.5

Pre-Installation Checklist

Before you begin, check the following:

- Release 6.5.1 requires at least ESX 6.5, and ESX 6.7 Update 2 is recommended. To install on ESX 6.5, See Installing on ESX 6.5.
- Ensure that your system can connect to the network. You will be asked to provide a DNS Server and a host that can be resolved by the DNS Server and responds to ping. The host can either be an internal host or a public domain host like google.com.
- Deployment type for Supervisor, Worker, and Collector Enterprise or Service Provider. The Service Provider deployment provides multi-tenancy.
- Whether FIPS should be enabled
- Install type:
 - All-in-one with FortiSIEM Manager
 Note: FortiSIEM Manager installation has slight differences from the Supervisor/Worker/Collector installation.
 - Cluster with Manager, Supervisor and Workers
 - · All-in-one with Supervisor only, or
 - Cluster with Supervisor and Workers
- Storage type for Supervisor, Worker, and/or Collector
 - Online Local or NFS or ClickHouse or Elasticsearch
 - Archive NFS or HDFS
- Before beginning FortiSIEM deployment, you must configure external storage excluding FortiSIEM Manager.
- Determine hardware requirements:

Node	vCPU	RAM	Local Disks
Manager	Minimum – 16 Recommended - 32	Minimum • 24GB Recommended • 32GB	OS – 25GB OPT – 100GB CMDB – 60GB SVN – 60GB
Supervisor (All in one)	Minimum – 12 Recommended - 32	Minimum without UEBA – 24GB with UEBA - 32GB Recommended without UEBA – 32GB 	OS – 25GB OPT – 100GB CMDB – 60GB SVN – 60GB

Node	vCPU	RAM	Local Disks
		• with UEBA - 64GB	Local Event database – based on need
Supervisor (Cluster)	Minimum – 12 Recommended - 32	Minimum without UEBA – 24GB with UEBA - 32GB Recommended without UEBA – 32GB with UEBA - 64GB 	OS – 25GB OPT – 100GB CMDB – 60GB SVN – 60GB
Workers	Minimum – 8 Recommended - 16	Minimum – 16GB Recommended – 24GB	OS – 25GB OPT – 100GB
Collector	Minimum – 4 Recommended – 8 (based on load)	Minimum – 4GB Recommended – 8GB	OS – 25GB OPT – 100GB

Note: compared to FortiSIEM 5.x, you need one more disk (OPT) which provides a cache for FortiSIEM.

For OPT - 100GB, the 100GB disk for /opt will consist of a single disk that will split into 2 partitions, /OPT and swap. The partitions will be created and managed by FortiSIEM when configFSM.shruns.

Before proceeding to FortiSIEM deployment, you must configure the external storage.

- For NFS deployment, see FortiSIEM NFS Storage Guide here.
- For Elasticsearch deployment, see FortiSIEM Elasticsearch Storage Guide here.

All-in-one Installation

This is the simplest installation with a single Virtual Appliance. If storage is external, then you must configure external storage before proceeding with installation.

- Set Network Time Protocol for ESX
- Import FortiSIEM into ESX
- Edit FortiSIEM Hardware Settings
- Start FortiSIEM from the VMware Console
- Configure FortiSIEM via GUI
- Upload the FortiSIEM License
- Choose an Event Database

Set Network Time Protocol for ESX

FortiSIEM needs accurate time. To do this you must enable NTP on the ESX host which FortiSIEM Virtual Appliance is going to be installed.

- 1. Log in to your VCenter and select your ESX host.
- 2. Click the Configure tab.

- 3. Under System, select Time Configuration. □ ussvnplesx51.fortinet-us.com ACTIONS -Summary Monitor Configure Permissions VMs Datastores Networks Updates vivi atantuo/anutuo. Time Configuration EDIT Agent VM Settings Default VM Compati... Date & Time 06/17/2020, 4:33:48 PM Swap File Location NTP Client Enabled System Licensing NTP Service Status Running Host Profile NTP Servers 172.30.254.1, 172.30.254.65 Time Configuration Authentication Se Certificate Power Management
- 4. Click Edit.
- 5. Enter the time zone properties.

Specify how the date and time on this h	st should be set.	
O Manually configure the date and tim	on this host	
06/17/2020 16:37:22		
(time is in ISO 8601 format)		
Use Network Time Protocol (Enable	ITP client)	
NTP Servers		
172.30.254.1,172.30.254.65		
Separate servers with commas, e.g. 1	31.21.2, fe00::2800	
NTP Service Status:	Running	
NTP Service Startup Policy:	Start and stop with host	

- Enter the IP address of the NTP servers to use. If you do not have an internal NTP server, you can access a publicly available one at http://tf.nist.gov/tfcgi/servers.cgi.
- 7. Choose an NTP Service Startup Policy.
- 8. Click **OK** to apply the changes.

Import FortiSIEM into ESX

- 1. Go to the Fortinet Support website https://support.fortinet.com to download the ESX package FSM_FULL_ALL_ ESX_6.5.1_Build1520.zip. See Downloading FortiSIEM Products for more information on downloading products from the support website.
- 2. Uncompress the packages for Super/Worker and Collector (using 7-Zip tool) to the location where you want to install the image. Identify the .ova file.
- **3.** Right-click on your own host and choose **Deploy OVF Template**. The Deploy OVA Template dialog box appears.
- 4. In 1 Select an OVF template select Local file and navigate to the .ova file. Click Next. If you are installing from a URL, select URL and paste the OVA URL into the field beneath URL.
- 5. In 2 Select a Name and Folder, make any needed edits to the Virtual machine name field. Click Next.

6. In 3 Select a compute resource, select any needed resource from the list. Click Next.

Deploy OVF Template

~	1 Select an OVF template	Select a compute resource
~	2 Select a name and folder	Select the destination compute resource for this operation
	3 Select a compute resource	
	4 Review details	✓ 📠 US-NPL
	5 Select storage	> 🗍 NPL
	6 Ready to complete	> 📋 NPL-MGMT

- 7. Review the information in 4 Review details and click Next.
- 8. 5 License agreements. Click Next.

Deploy OVF Template

2 Select a name and folder 3 Select a compute resource				
	Fortinet Product License Agreement / EULA and Warranty Terms Trademarks and Copyright Statement			
4 Review details	FortinetÆ, FortiGateÆ, and FortiGuardÆ are registered trademarks of Fortinet,			
5 License agreements	Inc., and other Fortinet names may also be trademarks, registered or otherwise,			
6 Select storage	of Fortinet. All other product or company names may be trademarks of their			
7 Select networks	respective owners. Copyright © 2018 Fortinet, Inc., All Rights reserved. Contents			
8 Ready to complete	and terms are subject to change by Fortinet without prior notice. No part of this			
	publication may be reproduced in any form or by any means or used to make any			
	derivative such as translation, transformation, or adaptation without permission			
	from Fortinet, Inc., as stipulated by the United States Copyright Act of 1976.			
	Product License Agreement			
	The parties to this agreement are you, the end customer, and either (i) where you			
	have purchased your Product within the Americas, Fortinet, Inc., or (ii) where you	-		

- 9. In 6 Select Storage select the following, then click Next:
 - a. A disk format from the Select virtual disk format drop-down list. Select Thin Provision.
 - b. A VM Storage Policy from the drop-down list.
 - c. Select **Disable Storage DRS for this virtual machine**, if necessary, and choose the storage DRS from the table.

Deploy OVF Template

1 Select an OVF template	Select storage					
2 Select a name and folder	Select the storage for the configuration and disk files					
″ 3 Select a compute re्Imurce ″ 4 Review details	Select virtual disk format:		Thin Provision	~		
5 License agreements	VM Storage Policy:				~]	
6 Select storage	Disable Storage DRS for the	nis virtual machir	ne			
7 Select networks 8 Ready to complete	Name	Capacity	Provisioned	Free	Tyr	
	PL_DSCluster	100.04 TB	58.07 TB	41.97 TB		
	_templates	931.25 GB	133.79 GB	918.01 GB	VN	
	archive	2.73 TB	1.14 TB	1.59 TB	VN	
	ISO	931.25 GB	67.6 GB	863.65 GB	VN •	
	Compatibility					
	✓ Compatibility checks su	cceeded.				
			CANCEL	ВАСК	NEX	

10. In 7 Select networks, select the source and destination networks from the drop down lists. Click Next.

 3 Select a compute resource 4 Review details 5 License agreements 	Source Network			 Select networks Select a destination network for each source network.					
5 License agreements		Ŧ	Destination Network	T					
5 License agreements	NAT		VLAN- Sanbox	~					
6 Select storage				1 item	s				
	IP allocation: IP protocol:	Sta	atic - Manual /4						

- 11. In 8 Ready to complete, review the information and click Finish.
- **12.** In the VSphere client, go to your installed OVA.

- 13. Right-click your installed OVA (example: FortiSIEM-611.1520.ova) and select Edit Settings > VM Options > General Options . Setup Guest OS and Guest OS Version (Linux and 64-bit).
- 14. Open the Virtual Hardware tab. Set CPU to 16 and Memory to 64GB.
- 15. Click Add New Device and create a device.

Add additional disks to the virtual machine definition. These will be used for the additional partitions in the virtual appliance. An All In One deployment requires the following additional partitions.

Disk	Size	Disk Name
Hard Disk 2	100GB	/opt For OPT - 100GB, the 100GB disk for /opt will consist of a single disk that will split into 2 partitions, /OPT and swap. The partitions will be created and managed by FortiSIEM when configFSM.shruns.
Hard Disk 3	60GB	/cmdb
Hard Disk 4	60GB	/svn
Hard Disk 5	60GB+	/data (see the following note)

Note on Hard Disk 5:

- Add a 5th disk if using local storage in an All In One deployment. Otherwise, a separate NFS share or Elasticsearch cluster must be used for event storage.
- 60GB is the minimum event DB disk size for small deployments, provision significantly more event storage for higher EPS deployments. See the FortiSIEM Sizing Guide for additional information.
- NFS or Elasticsearch event DB storage is mandatory for multi-node cluster deployments.

After you click **OK**, a Datastore Recommendations dialog box opens. Click **Apply**.

Datastore Recommendations

 \times

vCenter Server recommends the following datastores for the virtual machines. Recommedations for virtual machines within the same datastore cluster are linked together and must either be accepted or rejected as a group. Click Apply if these recommendations are acceptable.

Recommendation	Space Utilization %	Space Utilization %	I/O Latency Before	
Recommendation 1 (Reason: Satisfy storage initial placement				4
requests) Place FortiSIEM-VA-6.1.0.1238"'s disk "New Hard Disk 0" Place FortiSIEM-VA-6.1.0.1238"'s disk "New Hard Disk 1" Place FortiSIEM-VA-6.1.0.1238"'s disk "New Hard Disk 1"	57.2 57.2 57.2	62.6 62.6 62.6	3.9 3.9 3.9	
Place FortiSIEM-VA-6.1.0.1238"'s disk "New Hard Disk 2" Place FortiSIEM-VA-6.1.0.1238"'s disk "New Hard Disk 3"	57.2	62.6	3.9	

16. Do not turn off or reboot the system during deployment, which may take 7 to 10 minutes to complete. When the deployment completes, click **Close**.

Edit FortiSIEM Hardware Settings

- 1. In the VMware vSphere client, select the imported Supervisor.
- 2. Go to Edit Settings > Virtual hardware.
- 3. Set hardware settings as in Pre-Installation Checklist. The recommended settings for the Supervisor node are:
 - CPU = 16
 - Memory = 64 GB
 - Four hard disks:
 - OS 25GB
 - OPT 100GB
 - CMDB-60GB
 - SVN-60GB

Example settings for the Supervisor node:

- If event database is local, then choose another disk for storing event data based on your needs.
- · Network Interface card

Start FortiSIEM from the VMware Console

- 1. In the VMware vSphere client, select the Supervisor, Worker, or Collector virtual appliance.
- 2. Right-click to open the options menu and select **Power > Power On**.
- 3. Open the Summary tab for the , select Launch Web Console. Network Failure Message: When the console starts up for the first time you may see a Network eth0 Failed message, but this is expected behavior.
- 4. Select Web Console in the Launch Console dialog box.

Launch Console	×
• Web Console	
○ VMware Remote Console (VMRC)	
Remember my choice	
	CANCEL

- 5. When the command prompt window opens, log in with the default login credentials user: root and Password: ProspectHills.
- 6. You will be required to change the password. Remember this password for future use.

At this point, you can continue configuring FortiSIEM by using the GUI.

Configure FortiSIEM via GUI

Follow these steps to configure FortiSIEM by using a simple GUI.

- 1. Log in as user root with the password you set in Step 6 above.
- 2. At the command prompt, go to /usr/local/bin and enter configFSM.sh, for example:
 # configFSM.sh

3. In VM console, select 1 Set Timezone and then press Next.



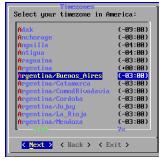
4. Select your Region, and press Next.

Africa
America
Antarctica
Arctic
Asia
Atlantic
Australia
Brazil
Canada
Chile
Etc
Europe
bur ope

5. Select your Country, and press Next.



6. Select the Country and City for your timezone, and press Next.



7. If installing a Supervisor, select 1 Supervisor. Press Next. If installing a Worker, select 2 Worker, and press Next. If installing a Collector, select 3 Collector, and press Next. If Installing FortiSIEM Manager, select 4 FortiSIEM Manager, and press Next. Note: The appliance type cannot be changed once it is deployed, so ensure you have selected the correct option.

Select what you would	Config Target d like to confi	gure	
1 Supervisor 2 Worker 3 Collector 4 FortiSIEM Manager			
K Next >	< Back >	< Exit >	

11

Regardless of whether you select **FortiSIEM Manager,Supervisor**, **Worker**, or **Collector**, you will see the same series of screens with only the header changed to reflect your target installation, unless noted otherwise.

- 8. If you want to enable FIPS, then choose 2. Otherwise, choose 1. You have the option of enabling FIPS (option 3) or disabling FIPS (option 4) later.
- 9. Configure the IPv4 network by entering the following fields, then press Next.

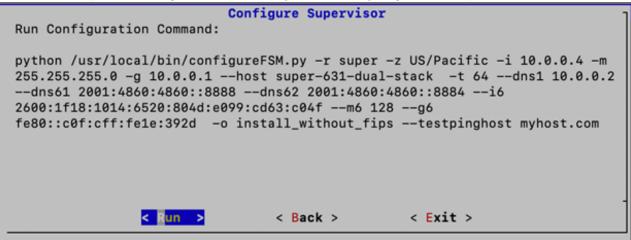
Option	Description
Host Name	The Manager/Supervisor/Worker/Collector's host name
IPv4 Address	The Manager/Supervisor/Worker/Collector's IPv4 address
NetMask	The Manager/Supervisor/Worker/Collector's IPv4 subnet
Gateway	IPv4 Network gateway address
FQDN	Fully-qualified domain name
DNS1, DNS2	Addresses of the IPv4 DNS server 1 and DNS server2

IPv4 Address: Netmask:	172.30.57.52 255.255.252.0	
Gateway:	172.30.56.1	
DNS1:	172.30.1.105	
DNS2:	172.30.1.106	

10. Test network connectivity by entering a host name that can be resolved by your DNS Server (entered in the previous step) and can respond to a ping. The host can either be an internal host or a public domain host like google.com. Press **Next**.

Enter host for checking	<mark>igure Supervis</mark> ng network con		
myhost.com_			
< Next >	< Back >	< Exit >	

11. The final configuration confirmation is displayed. Verify that the parameters are correct. If they are not, then press **Back** to return to previous dialog boxes to correct any errors. If everything is OK, then press **Run**.



The options are described in the following table.

Fresh Installation

Option	Description
-r	The FortiSIEM component being configured
-Z	The time zone being configured
-i	IPv4-formatted address
-m	Address of the subnet mask
-g	Address of the gateway server used
host	Host name
-f	FQDN address: fully-qualified domain name
-t	The IP type. The values can be either 4 (for ipv4) or 6 (for v6) or 64 (for both IPv4 and IPv6). Note : The 6 value is not currently supported.
dns1,dns2	Addresses of DNS server 1 and DNS server 2.
-0	Installation option (install_without_fips , install_with_fips , enable_fips , or disable_fips , or change_ip)
-Z	Time zone. Possible values are US/Pacific , Asia/Shanghai, Europe/London , or Africa/Tunis
testpinghost	The URL used to test connectivity

12. It will take some time for this process to finish. When it is done, proceed to Upload the FortiSIEM License. If the VM fails, you can inspect the ansible.log file located at /usr/local/fresh-install/logs to try and identify the problem.

Upload the FortiSIEM License



Before proceeding, make sure that you have obtained valid FortiSIEM license from Forticare. For more information, see the Licensing Guide.

You will now be asked to input a license.

- 1. Open a Web browser and log in to the FortiSIEM UI. Use link https://<supervisor-ip> to login.
- 2. The License Upload dialog box will open.

🔀 FortiSIEM		
Hardware ID:	17082942-2e97-01cd-7f81-d0eb9fd682f2	
Select license file:	Browse	
User ID:		
Password:		
License Type:	ullet Enterprise $igodot$ Service Provider	
	Upload	

- Click Browse and upload the license file.
 Make sure that the Hardware ID shown in the License Upload page matches the license.
- 4. For User ID and Password, choose any Full Admin credentials. For the first time installation, enter admin as the user and admin*1 as the password. You will then be asked to create a new password for GUI access.
- 5. Choose License type as Enterprise or Service Provider.

This option is available only for a first time installation. Once the database is configured, this option will not be available.

For FortiSIEM Manager, **License Type** is not an available option, and will not appear. At this point, FortiSIEM Manager installation is complete. You will not be taken the Event Database Storage page, so you can skip **Choose an Event Database**.

Note: The FortiSIEM Manager license allows a certain number of instances that can be registered to FortiSIEM Manager.

6. Proceed to Choose an Event Database.

Choose an Event Database

For a fresh installation, you will be taken to the Event Database Storage page. From the **Event Database** drop-down list, choose **EventDB on Local Disk**, **EventDB on NFS**, **ClickHouse**, or **Elasticsearch**. For more details, see Configuring Storage.

FortiSIEM			
Event Database:	EventDB on Local Disk 🗸		
Disk Name:	EventDB on Local Disk EventDB on NFS ClickHouse Elasticsearch	/e	

After the License has been uploaded, and the Event Database Storage setup is configured, FortiSIEM installation is complete. If the installation is successful, the VM will reboot automatically. Otherwise, the VM will stop at the failed task.

You can inspect the ansible.log file located at /usr/local/fresh-install/logs if you encounter any issues during FortiSIEM installation.

After installation completes, ensure that the phMonitor is up and running, for example:

phstatus

For the Supervisor, Worker and Collector, the response should be similar to the following.

Every 1.0s: /opt/phoen:	ix∕bin∕phstatu	s.py		
System uptime: 21:12:0 Tasks: 27 total, 0 runn Cpu(s): 16 cores, 6.240 Mem: 65702100k total, 1 Swap: 2621436k total, 1	ning, 26 sleep us, 2.1%sy, 0.1 10366036k used	ing, 0 stoppe 0%ni, 91.4%id , 55336064k fi	d, 0 zombie , 0.0χωα, 0.2χhi, ree, 4352k buffers	0.1%si, 0.0%st
owap: coerisok cocari (SK GSEG) LOLLI	30K 1166) E10.	JOLOX CUCHCU	
PROCESS	UPTIME	CPU>	VIRT_MEM	RES_MEM
phParser	41:23	0	2176m	558m
phQueruMaster	41:41	0	1020m	77m
phRuleMaster	41:41	ø	1079m	504m
phRuleWorker	41:41	Ø	1363m	285m
phQueryWorker	41:41	0	1383m	279m
phDataManager	41:41	0	1419m	285m
phDiscover	41:41	Ø	513m	53m
phReportWorker	41:41	0	1433m	95m
phReportMaster	41:41	0	603m	67m
phlpldentituWorker	41:41	0	1027m	58m
phIpIdentityMaster	41:41	Ø	491m	39m
phAgentManager	41:41	ø	1425m	54m
phCheckpoint	42:31	0	325m	34m
phPerfMonitor	41:41	ø	782m	70m
phReportLoader	41:41	ด	769m	278m
phBeaconEventPackager	41:41	Ø	1125m	65m
phDataPurger	41:41	8	588m	58m
nhEventForwarder	41:41	й	548m	46m
phMonitor	37:24	ø	2888m	53m
Apache	01:10:40	Ø	310m	16m
Node. is-charting	Ø1:10:19	ø	916m	71m
Node.js-pm2	01:10:13	ø	Я	26m
AppSvr	01:10:07	й И	15172m	3026m
DRSor	Ø1:10:38	R	317m	38m
phânomalu	01:08:07	8	987m	64m
phFortiInsightAI	01:10:40	ø	23432m	438m
Redis	01:10:18	0	55m	25m

For FortiSIEM Manager, the response should look similar to the following.

Every 1.0s: /opt/phoenix/bin/phstatus.py

System uptime: 11:34:52 up 1 day, 1:39, 2 users, load average: 0.80, 0.88, 0.92 Tasks: 5 total, 0 running, 5 sleeping, 0 stopped, 0 zombie Cpu(s): 8 cores, 7.2%us, 0.2%sy, 0.0%ni, 92.3%id, 0.0%wa, 0.1%hi, 0.1%si, 0.0%st Mem: 24468724k total, 6696192k used, 16212508k free, 5248k buffers Swap: 26058744k total, 0k used, 26058744k free, 2352072k cached

PROCESS	UPTIME	CPU%	VIRT_MEM	RES_MEM
ph M onitor	20:57:20	0	1130m	64m
Apache	1-01:20:00	0	305m	16m
Rsyslogd	1-01:38:42	0	192m	7388k
AppSvr	1-01:38:34	5	11153m	4182m
DBSvr	1-01:38:43	0	425m	39m

Cluster Installation

For larger installations, you can choose Worker nodes, Collector nodes, and external storage (NFS, ClickHouse, or Elasticsearch).

- Install Supervisor
- Install Workers
- Register Workers
- Install Collectors
- Register Collectors
- Install Manager
- Register Instances to Manager

Install Supervisor

Follow the steps in All-in-one Install with two differences:

- Setting up hardware you do not need an event database.
- Setting up an external Event database configure the cluster for NFS, ClickHouse, or Elasticsearch.

NFS

	FortiSIEM
Event Database:	EventDB on NFS
Server:	IP O Host Server IP/Host
Exported Directory:	Exported Directory
	Test Save

ClickHouse

	🔀 FortiS	IEM
Event Database: (Storage Tiers: (ClickHouse	
Hot Tier:	Disk Path	Row
Warm Tier:	Disk Path	Row
	Test Save]

Elasticsearch

	×	Fortis	SIEM		
Event Database:	Elasticsearc	ch 🗸			
ES Service Type:	● Native ○ A	Amazon 🔿 Elasti	ic Cloud		
Endpoint:	URL		Ingest	Query	Row
	https://				
REST Port:	443				
User Name:	(Optional)				
Password:	(Optional)				
Confirm Password:					
Shard Allocation:	○ Fixed ●	Dynamic			
Shards:	5				
Replicas:	1				
Per Org Index					
		Test Save	2		

You must choose external storage listed in Choose an Event Database.

Install Workers

Once the Supervisor is installed, follow the same steps in All-in-one Install to install a Worker except only choose OS and OPT disks. The recommended settings for Worker node are:

- CPU = 8
- Memory = 24 GB
- Two hard disks:
 - OS 25GB

• OPT - 100GB

For OPT - 100GB, the 100GB disk for /opt will consist of a single disk that will split into 2 partitions, /OPT and swap. The partitions will be created and managed by FortiSIEM when configFSM.shruns.

Register Workers

Once the Worker is up and running, add the Worker to the Supervisor node.

- 1. Go to ADMIN > License > Nodes.
- 2. Select Worker from the drop-down list and enter the Worker's IP address. Click Add.

🌣 Setup	General	Usage Nodes		
🖨 Device Support	Add Del	ete		
📑 Health	Mode			IP Address
License	Supervisor			172.30.57.2
¢\$ Settings	A	Add Node		×
		Type:	Worker	~
		Worker IP Address:	172.30.57.3	
			OK Cancel	

3. See ADMIN > Health > Cloud Health to ensure that the Workers are up, healthy, and properly added to the system.

-)									
🌣 Setup	Cloud Health Colle	ector Health							
🖨 Device Support	Search	Columns 👻						Lines: 2 Last update at 8:4	9:17 PM 🔁
🗮 Health	Name	IP Address	Module Role H	lealth Ve	rsion	Load Average	e CPU	Swap Used	
	sp572.fortinet.com	172.30.57.2	Supervisor 1	Normal 6.1	.0.1238	0.95,0.47,0.4	13 4%	0 KB	
I License	wk573.fortinet.com	172.30.57.3	Worker 1	Normal 6.1	.0.1238	0.1,0.2,0.16	2%	0 KB	
😂 Settings									
	Search	Columns 👻		Process	level metrics for wk5	73.fortinet.com (1	72.30.57.3)		Lines: 17
	Process Name	Status	Up Time	CPU	Physical Memory	Virtual Memory	SharedStore ID	SharedStore Position	
	Node.js-charting	Up	1h 3m	0%	70 MB	916 MB			Â
	httpd	Up	14m 6s	0%	16 MB	310 MB			
	Redis	Up	14m 6s	0%	22 MB	51 MB			
	Node.js-pm2	Up	1h 3m	0%	44 MB	899 MB			
	rsyslogd	Up	1h 3m	0%	7 MB	189 MB			
	phDataManager	UD	14m 6s	0%	103 MB	1229 MB	1	126108	-
Copyright © 2020 Fortinet, Inc. All rights re-	served.		Organization: S	uper User: admi	n Scope: Global				FortiSIEA

Install Collectors

Once Supervisor and Workers are installed, follow the same steps in All-in-one Install to install a Collector except in Edit FortiSIEM Hardware Settings, only choose OS and OPT disks.

- Collector in Regular IT Environments
- Collector with Different OPT Disk Sizes

Collector in Regular IT Environments

The recommended settings for Collector node are:

- CPU = 4
- Memory = 8GB
- Two hard disks:
 - OS 25GB
 - OPT 100GB

For OPT - 100GB, the 100GB disk for /opt will consist of a single disk that will split into 2 partitions, /OPT and swap. The partitions will be created and managed by FortiSIEM when configFSM.shruns.

Collector with Different OPT Disk Sizes

FortiSIEM installations require the disk for OPT+SWAP to have exactly 100 GB. This is valid for all three node options (Supervisor, Worker and Collectors).

Depending on your situation, you may want to increase or decrease the size of the log collector. For example, an Operational Technology (OT) may find it difficult to dedicate 125 GB to a log collector, and want to decrease the size of the log collector. In another circumstance, a company may want to increase the event cache for their collectors, which usually means increasing the OPT disk size. For more information, see Increasing Collector Event Buffer Size in the Online Help.

The steps here explain how to bypass the requirement for Collector install. Be aware that reducing the size of the disk also reduces the size of the available cache when there is a connection interruption between Collector and Workers/Supervisor, and may result in loss of logs. Increasing the size of the disk provides a larger available cache.

- 1. Follow the installation guide but instead of adding a 100 GB disk for OPT, add a disk of whatever size you require.
- 2. In this example, we will assume the OPT disk is 35 GB, so in total, the Collector VM will have 70 GB (25 for OS + 35 for OPT).

	ADD NEW DEVIC
> CPU	<u> </u>
> Memory	24 × <u>G8 ×</u>
> Hard disk 1	25 <u>GB ~</u>
✓ Hard disk 2	35 <u>GB ~</u>
Maximum Size	1.19 TB
VM storage policy	
Туре	Thin Provision
Sharing	No sharing Y
Disk File	[PVVol_B008] JYU-COL-REDUCE_OPT-OT-VA-
Shares	Normal V 1000 V
Limit - IOPs	
Disk Mode	Dependent 👻
Virtual Device Node	SCSI controller 0 👻 SCSI(0:1) Hard disk 2 🛩
> SCSI controller 0	VMware Paravirtual
> Network adapter 1	Connect
> Video card	Specify custom settings 🛩
VMCI device	
> Other	Additional Hardware

- 3. After you boot the VM and change the password, you will be editing the following files.
 - /usr/local/syslib/config/disksConfig.json
 - /usr/local/install/roles/fsm-disk-mgmt/tasks/disks.yml

Note: You must make changes to these files before running the configureFSM.sh installer.

4. The disksConfig.json file contains a map of installation types and node types. It defines the required sizes of disks so that the installer can validate them. Since we are changing the KVM Collector opt disk requirement to 35 GB in this example, we must reflect that size in this file. Using a text editor, modify the "opt" line in the disksConfig.json file, shown in blue to your requirement.

```
"FSIEMVMWARE": {
  "SUPER": {
    "number": "3",
    "opt": "100",
    "svn": "60",
    "cmdb": "60"
  },
 "FSMMANAGER": {
    "number": "2",
    "opt": "100",
   "cmdb": "60"
 },
 "WORKER": {
   "number": "1",
    "opt": "100"
  },
  "COLLECTOR": {
    "number": "1",
    "opt": "35"
  }
},
```

- 5. Save the disksConfig.json file.
- 6. Load the /usr/local/install/roles/fsm-disk-mgmt/tasks/disks.yml file via a text editor. You can choose to adjust only the (step a) OPT disk or (step b) adjust the swap disk and OPT disk. To change only the OPT disk, proceed with step a, then skip to step 7. To adjust the swap disk and reduce the OPT disk, skip step a and proceed with step b.

a. ADJUST OPT DISK ONLY

Navigate to line 54 in the /usr/local/install/roles/fsm-disk-mgmt/tasks/disks.yml file and change the line. Original line (The original line assumes the drive is 100 GB)

```
parted -a optimal --script "{{ item.disk }}" mkpart primary "{{ item.fstype }}" 26G
100G && sleep 5
```

Change this line to reflect the size of your OPT disk (in this example 35 GB), marked in blue.

```
parted -a optimal --script "{{ item.disk }}" mkpart primary "{{ item.fstype }}" 26G
35G && sleep 5
```

Skip step b and c, and proceed to step 7.

b. ADJUST SWAP DISK and REDUCE OPT DISK

Reduce the Swap Disk by changing the following original line (The original line assumes swap disk to be 25GB).

```
parted -a optimal --script "{{ item.disk }}" mklabel gpt mkpart primary linux-swap 1G
25G && sleep 5
```

Change to (in this example 10G), marked in blue:

```
parted -a optimal --script "{{ item.disk }}" mklabel gpt mkpart primary linux-swap 1G 10G && sleep 5
```

c. Reduce /OPT disk: by changing the following line (The original line assumes the drive is 100 GB).

parted -a optimal --script "{{ item.disk }}" mkpart primary "{{ item.fstype }}" 26G
100G && sleep 5

Change to reflect the size of your OPT disk (in this example 35 GB), marked in blue.

parted -a optimal --script "{{ item.disk }}" mkpart primary "{{ item.fstype }}" 11G 35G && sleep 5

- 7. Save the disks.yml file.
- 8. Run configFSM.sh to install the collector. When it reboots, you can provision it using the phProvisionCollector command. Your partition output should appear similar to the following.

Partition	Output of	deploy	yment:			
sdb	8:16	0	35G 0	disk		
-sdb1	8:17	0 8	.4G 0	part	[SWAP]	
L _{sdb2}	8:18	0 22	.4G 0	part	/opt	
# df -h						
Filesystem	L	Size	Used	Avail	Use%	Mounted on
devtmpfs		12G	0	12G	0%	/dev
tmpfs		12G	0	12G	0%	/dev/shm
tmpfs		12G	17M	12G	1%	/run
tmpfs		12G	0	12G	0%	/sys/fs/cgroup
/dev/mappe	r/rl-root	22G	8.1G	14G	38%	/
/dev/sdb2		23G	4.3G	19G	19%	/opt
/dev/sda1		1014M	661M	354M	66%	/boot
tmpfs		2.4G	0	2.4G	0%	/run/user/500
tmpfs		2.4G	0	2.4G	0%	/run/user/0

Register Collectors

Collectors can be deployed in Enterprise or Service Provider environments.

- Enterprise Deployments
- Service Provider Deployments

Enterprise Deployments

For Enterprise deployments, follow these steps.

- 1. Log in to Supervisor with 'Admin' privileges.
- 2. Go to ADMIN > Settings > System > Event Worker.
 - a. Enter the IP of the Worker node. If a Supervisor node is only used, then enter the IP of the Supervisor node. Multiple IP addresses can be entered on separate lines. In this case, the Collectors will load balance the upload of events to the listed Event Workers.

Note: Rather than using IP addresses, a DNS name is recommended. The reasoning is, should the IP addressing change, it becomes a matter of updating the DNS rather than modifying the Event Worker IP addresses in FortiSIEM.

- b. Click OK.
- 3. Go to ADMIN > Setup > Collectors and add a Collector by entering:
 - a. Name Collector Name
 - b. Guaranteed EPS this is the EPS that Collector will always be able to send. It could send more if there is

excess EPS available.

- c. Start Time and End Time set to Unlimited.
- 4. SSH to the Collector and run following script to register Collectors:

/opt/phoenix/bin/phProvisionCollector --add <user> '<password>' <Super IP or
Host> <Organization> <CollectorName>

The password should be enclosed in single quotes to ensure that any non-alphanumeric characters are escaped.

- a. Set user and password using the admin user name and password for the Supervisor.
- **b.** Set Super IP or Host as the Supervisor's IP address.
- c. Set Organization. For Enterprise deployments, the default name is Super.
- d. Set CollectorName from Step 2a. The Collector will reboot during the Registration.
- 5. Go to ADMIN > Health > Collector Health for the status.

🌣 Setup	Cloud Health C	ollector Health												
🗇 Device Support	Show Processes	Tunnels 🏚	Action 👻	Search		Columns	·				Lines: 1	Last update at 8	8:54:17 PM	Ç
📑 Health	Organization	Name	IP A	ddress	Status	Hea	lth Up	Time	CPU	Memory	Allocated EPS	Incoming EPS	Version	Col
🗉 License	Super	CO-ORG	172.	.30.57.4	up	Nor	mal 3m	4s	65%	5%	200	0	6.1.0	100
🗢 🗘														
	Close Panel Se	earch	Co	olumns 🕶	_	_			-	_	Lir	es: 9 Last updal	te at 8:54:2	► 24 PM
	Process Name	11	Status Up	o Time	CP	U I Pł	ysical Memory	Virtual Memor	y SI	haredStore	SharedStore P	osition		
	phMonitorAgent		Up 29	9s	0%	5	75 MB	1116 MB						*
	phParser		Up 17	7s	0%	1	06 MB	1190 MB	9	9	0			
	phPerfMonitor		Up 17	7s	0%	7	9 MB	766 MB						
	phEventForwarder		Up 17	7s	0%	4	B MB	547 MB						
	phDiscover		Up 17	7s	0%	5	MB	513 MB						
				-		-								*

Service Provider Deployments

For Service Provider deployments, follow these steps.

- 1. Log in to Supervisor with 'Admin' privileges.
- 2. Go to ADMIN > Settings > System > Event Worker.
 - a. Enter the IP of the Worker node. If a Supervisor node is only used, then enter the IP of the Supervisor node. Multiple IP addresses can be entered on separate lines. In this case, the Collectors will load balance the upload of events to the listed Event Workers.

Note: Rather than using IP addresses, a DNS name is recommended. The reasoning is, should the IP addressing change, it becomes a matter of updating the DNS rather than modifying the Event Worker IP addresses in FortiSIEM.

b. Click **OK**.

😂 Settings				
I License		Save		
📑 Health				
🖨 Device Support	Worker Address:	172.30.57.3	+ -	
🌣 Setup	← All Settings > Syst	em > Event Worker		

	3.	Go to ADMIN > Setup >	Organizations and click New to add a	an Organization
--	----	-----------------------	--------------------------------------	-----------------

rganization Definiti	on (ORG)		
Organization:	ORG	Include IP/IP Range:	
Full Name:		Exclude IP/IP Range:	
Admin User:	admin	Agent User:	
Admin Password:	•••••	Agent Password:	
Confirm Admin Password:	•••••	Confirm Agent Password:	
Admin Email:	Required	Max Devices:	
Phone:		Address:	
Account Number:		Account Type:	
Support Tier:		Account Status:	
Support Team:		Account Manager:	
Collectors:	New Edit Delete		
	Collector Name Collector EPS	UpLoad Rate Limit	Valid Start Date Valid End Da
	Save	Cancel	

- 4. Enter the Organization Name, Admin User, Admin Password, and Admin Email.
- 5. Under Collectors, click New.
- Enter the Collector Name, Guaranteed EPS, Start Time, and End Time.
 The last two values could be set as Unlimited. Guaranteed EPS is the EPS that the Collector will always be able to send. It could send more if there is excess EPS available.

Organization Definition (ORG) - Add Collector						
Name:	Required					
Guaranteed EPS:						
	Required					
Upload Rate Limit (Kbps):	Unlimited					
Start Time:	✓ Unlimited					
End Time:	Unlimited					
	< Save < Cancel					

7. SSH to the Collector and run following script to register Collectors:

# /opt	t/phoenix/bin/pł	nProvisionCollector	add	<user></user>	' <password>'</password>	<super< th=""><th>IP</th><th>or</th></super<>	IP	or
Host>	<organization></organization>	<collectorname></collectorname>						

The password should be enclosed in single quotes to ensure that any non-alphanumeric characters are escaped.

- a. Set user and password using the admin user name and password for the Organization that the Collector is going to be registered to.
- **b.** Set Super IP or Host as the Supervisor's IP address.
- c. Set Organization as the name of an organization created on the Supervisor.
- d. Set CollectorName from Step 6.



The Collector will reboot during the Registration.

8.	Go to ADMIN > Health >	Collector Health and check the status.
----	------------------------	--

Setup	Cloud Health Col	llector Health	1								
Device Support	Show Processes	Tunnels	Action - Search		Columns 🕶				Lines: 1	Last update at 8	8:54:17 PM
📕 Health	Organization	Name	IP Address	Status	Health	Up Time	CPU	Memory	Allocated EPS	Incoming EPS	Version
I License	Super	CO-ORG	172.30.57.4	up	Normal	3m 4s	65%	5%	200	0	6.1.0
Settings											
	< Close Panel Sear	rch	Columns 🕶				_	_	Lin	nes: 9 Last upda	te at 8:54:
	Close Panel Sear Process Name		Columns 🕶 Status Up Time	CPU	Physical M	emory Virtual Men	nory SI	haredStore	Lin		te at 8:54:
				: CPU 0%	Physical M 575 MB	emory : Virtual Men 1116 MB	nory i SI	haredStore)			te at 8:54:2
	Process Name		Status Up Time				iory ie	haredStore			te at 8:54:
	Process Name phMonitorAgent		Status Up Time Up 29s	0%	575 MB	1116 MB	iory ie)	SharedStore Po		te at 8:54:
	Process Name phMonitorAgent phParser		StatusUp TimeUp29sUp17s	0%	575 MB 106 MB	1116 MB 1190 MB	iory ie)	SharedStore Po		te at 8:54:2

Install Manager

Starting with release 6.5.0, you can install FortiSIEM Manager to monitor and manage multiple FortiSIEM instances. An instance includes a Supervisor and optionally, Workers and Collectors. The FortiSIEM Manager needs to be installed on a separate Virtual Machine and requires a separate license. FortiSIEM Supervisors must be on 6.5.0 or later versions.

Follow the steps in All-in-one Install to install Manager. After any Supervisor, Workers, and Collectors are installed, you add the Supervisor instance to Manager, then Register the instance itself to Manager. See Register Instances to Manager.

Register Instances to Manager

To register your Supervisor instance with Manager, you will need to do two things in the following order.

- First, add the instance to Manager
- Then register the instance itself to Manager

Note that Communication between FortiSIEM Manager and instances is via REST APIs over HTTP(S).

Add Instance to Manager

You can add an instance to Manager by taking the following steps.

Note: Make sure to record the FortiSIEM Instance Name, Admin User and Admin Password, as this is needed when you register your instance.

- 1. Login to FortiSIEM Manager.
- 2. Navigate to ADMIN > Setup.
- 3. Click New.
- 4. In the FortiSIEM Instance field, enter the name of the Supervisor instance you wish to add.
- 5. In the Admin User field, enter the Account name you wish to use to access Manager.
- 6. In the Admin Password field, enter the Password that will be associated with the Admin User account.

- 7. In the Confirm Admin Password field, re-enter the Password.
- 8. (Optional) In the **Description** field, enter any information you wish to provide about the instance.
- 9. Click Save.

	A INCIDENTS CMDB LE RESOURCES K ADMIN	0 🛦 🗉 🛔 🕩
🛱 Setup	FortiSIEM Instances	
Health	New Edit Delete Unregister Q. (111)	Ø N < 1/1 1 > N
I License	ID Instance Name Instance FQDN Admin User Registered Description	
S Content Update	FortiSIEM Instance Definition (sp56148)	
© Settings	FortiSIEM Instance Name: sp56148	
	Admin User: admin	
	Admin Password:	
	Confirm Admin Password: •••••••	
	Description:	
	Save Cancel	

10. Repeat steps 1-9 to add any additional instances to Manager. Now, follow the instructions in Register the Instance Itself to Manager for each instance.

Register the Instance Itself to Manager

To register your instance with Manager, take the following steps.

- 1. From your FortiSIEM Supervisor/Instance, navigate to **ADMIN > Setup > FortiSIEM Manager**, and take the following steps.
 - a. In the FortiSIEM Manager FQDN/IP field, enter the FortiSIEM Manager Fully Qualified Domain Name (FQDN) or IP address.
 - b. In the FortiSIEM Instance Name field, enter the instance name used when adding the instance to Manager.
 - c. In the Account field, enter the Admin User name used when adding the instance to Manager.
 - d. In the **Password** field, enter your password to be associated with the Admin User name.
 - e. In the Confirm Password field, re-enter your password.
 - f. Click **Test** to verify the configuration.
 - g. Click Register.

A dialog box displaying "Registered successfully" should appear if everything is valid.

🔀 FortiSIEM	🙆 DASHBOARD 🛛 🖿 ANALYTICS	🜲 INCIDENTS 🗧 CASES 🏾 S CMDB	H RESOURCES	5 🚝 TASKS 🗱 A	DMIN		
🌣 Setup	Storage • Organizations Cre	edentials Discovery Pull Events Mon	tor Performance	STM Maintenance	Windows Agent	Linux Agent	FortiSIEM Manager
🖨 Device Support	FortiSIEM Manager FQDN/IP:						
📰 Health	FortiSIEM Instance FQDN/IP:	com					
🖪 License	FortiSIEM Instance Name:	DRSetup					
S Content Update	Account:	admin					
🕫 Settings	Password:	••••••					
	Confirm Password:	••••••					
	Registered:	No					
		Test Register Delete					

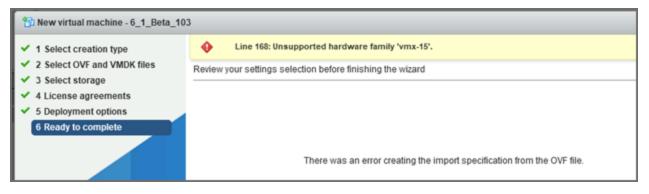
- h. Login to Manager, and navigate to any one of the following pages to verify registration.
 - ADMIN > Setup and check that the box is marked in the Registered column for your instance.
 - ADMIN > Health, look for your instance under FortiSIEM Instances.
 - ADMIN > License, look for your instance under FortiSIEM Instances.

Installing on ESX 6.5

- Importing a 6.5 ESX Image
- Resolving Disk Save Error
- Adding a 5th Disk for /data

Importing a 6.5 ESX Image

When installing with ESX 6.5, or an earlier version, you will get an error message when you attempt to import the image.



To resolve this import issue, you will need to take the following steps:

- 1. Install 7-Zip.
- 2. Extract the OVA file into a directory.

3. In the directory where you extracted the OVA file, edit the file <code>FortiSIEM-VA-6.5.1.1520.ovf</code>, and replace all references to <code>vmx-15</code> with your compatible ESX hardware version shown in the following table. Note: For example, for ESX 6.5, replace <code>vmx-15</code> with <code>vmx-13</code>.

() operatingereseres (
<virtualhardwaresection></virtualhardwaresection>
<info>Virtual hardware requirements for a virtual machine</info>
<system></system>
<vssd:elementname>Virtual Hardware Family</vssd:elementname>
<vssd:instanceid>0</vssd:instanceid>
<vssd:virtualsystemidentifier>FSM-VA-C8</vssd:virtualsystemidentifier>
<vssd:virtualsystemtype>vmx-15</vssd:virtualsystemtype>
<item></item>
<rasd:caption>4 virtual CPU</rasd:caption>
<rasd:description>Number of virtual CPUs</rasd:description>
<pre><rasd.flementname>16 virtual CPU</rasd.flementname></pre>

Note: For example, for ESX 6.5, replace vmx-15 with vmx-13.

Compatibility	Description
EXSi 6.5 and later	This virtual machine (hardware version 13) is compatible with ESXi 6.5.
EXSi 6.0 and later	This virtual machine (hardware version 11) is compatible with ESXi 6.0 and ESXi 6.5.
EXSi 5.5 and later	This virtual machine (hardware version 10) is compatible with ESXi 5.5, ESXi 6.0, and ESXi 6.5.
EXSi 5.1 and later	This virtual machine (hardware version 9) is compatible with ESXi 5.1, ESXi 5.5, ESXi 6.0, and ESXi 6.5.
EXSi 5.0 and later	This virtual machine (hardware version 8) is compatible with ESXI 5.0, ESXi 5.1, ESXi 5.5, ESXi 6.0, and ESXi 6.5.
ESX/EXSi 4.0 and later	This virtual machine (hardware version 7) is compatible with ESX/ESXi 4.0, ESX/ESXi 4.1, ESXI 5.0, ESXi 5.1, ESXi 5.5, ESXi 6.0, and ESXi 6.5.
EXS/ESXi 3.5 and later	This virtual machine (hardware version 4) is compatible with ESX/ESXi 3.5, ESX/ESXi 4.0, ESX/ESXi 4.1, ESXI 5.1, ESXi 5.5, ESXi 6.0, and ESXi 6.5. It is also compatible with VMware Server 1.0 and later. ESXi 5.0 does not allow creation of virtual machines with ESX/ESXi 3.5 and later compatibility, but you can run such virtual machines if they were created on a host with different compatibility.
ESX Server 2.x and later	This virtual machine (hardware version 3) is compatible with ESX Server 2.x, ESX/ESXi 3.5, ESX/ESXi 4.0, ESX/ESXi 4.1, and ESXI 5.0. You cannot create, edit, turn on, clone, or migrate virtual machines with ESX Server 2.x compatibility. You can only register or upgrade them.

Note: For more information, see here.

- 4. Right click on your host and choose **Deploy OVF Template**. The Deploy OVA Template dialog box appears.
- 5. In 1 Select an OVF template, select Local File.
- 6. Navigate to the folder with the OVF file.
- 7. Select all the contents that are included with the OVF.

8. Click Next.

Resolving Disk Save Error

You may encounter an error message asking you to select a valid controller for the disk if you attempt to add an additional 4th disk (/opt, /cmd, /svn, and /data). This is likely due to an old IDE controller issue in VMware, where you are normally limited to 2 IDE controllers, 0, 1, and 2 disks per controller (Master/Slave).

🚯 E	D Edit settings - FSM6_1_Beta (ESXi 6.5 virtual machine)				
	Please select a valid controller f	or the disk			
8	Add hard disk 🛤 Add network ada	pter 🗧 Add other device			
Þ	CPU	8 🔻 🚺			
•	Memory	16384 MB •			
•	Ard disk 1	25 GB •			
Þ	New Hard disk	100 GB •			
Þ	New Hard disk	60 GB •			
Þ	New Hard disk	60 GB •			
Þ	New Hard disk	75 GB •			
•	ME Network Adapter 1	VM Network			
•	Video Card	Spealty oustage actions			

If you are attempting to add 5 disks in total, such as this following example, you will need to take the following steps:

Disk	Usage
1st	25GB default for image
2nd	100GB for /opt For OPT - 100GB, the 100GB disk for /opt will consist of a single disk that will split into 2 partitions, /OPT and swap. The partitions will be created and managed by FortiSIEM when configFSM.sh runs.
3rd	60GB for / cmdb
4th	60GB for /svn
5th	75GB for /data (optional, or use with NFS or ES storage)

- Go to Edit settings, and add each disk individually, clicking save after adding each disk. When you reach the 4th disk, you will receive the "Please select a valid controller for the disk" message. This is because the software has failed to identify the virtual device node controller/Master or Slave for some unknown reason.
- 2. Expand the disk setting for each disk and review which IDE Controller Master/Slave slots are in use. For example, in one installation, there may be an attempt for the 4th disk to be added to IDE Controller 0 when the Master/Slave

slots are already in use. In this situation, you would need to put the 4th disk on IDE Controller 1 in the Slave position, as shown here. In your situation, make the appropriate configuration setting change.

🔂 Edit settings - FSM6_1_Beta (ESXi 6.5 virtual machine)			
Please select a valid controller for the disk			
	• •••••••••••••••••••••••••••••••••••		
✓	60 GB V		
Maximum Size	2.02 TB		
Location	[datastore1] FSM6_1_Beta/ Browse		
Disk Provisioning	 Thin provisioned Thick provisioned, lazily zeroed Thick provisioned, eagerly zeroed 		
Shares	Normal		
Limit - IOPs	Unlimited		
Virtual Device Node	IDE controller 1 Slave		
Disk mode	Dependent v		

3. Click save to ensure your work has been saved.

Adding a 5th Disk for /data

When you need to add a 5th disk, such as for /data, and there is no available slot, you will need to add a SATA controller to the VM by taking the following steps:

- **1.** Go to Edit settings.
- 2. Select Add Other Device, and select SCSI Controller (or SATA).

You will now be able to add a 5th disk for /data, and it should default to using the additional controller. You should be able to save and power on your VM. At this point, follow the normal instructions for installation.

Note: When adding the local disk in the GUI, the path should be /dev/sda or /dev/sdd. You can use one of the following commands to locate:

```
# fdisk -1
or
# lsblk
```

Install Log

The install ansible log file is located here: /usr/local/fresh-install/logs/ansible.log.

Errors can be found at the end of the file.



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