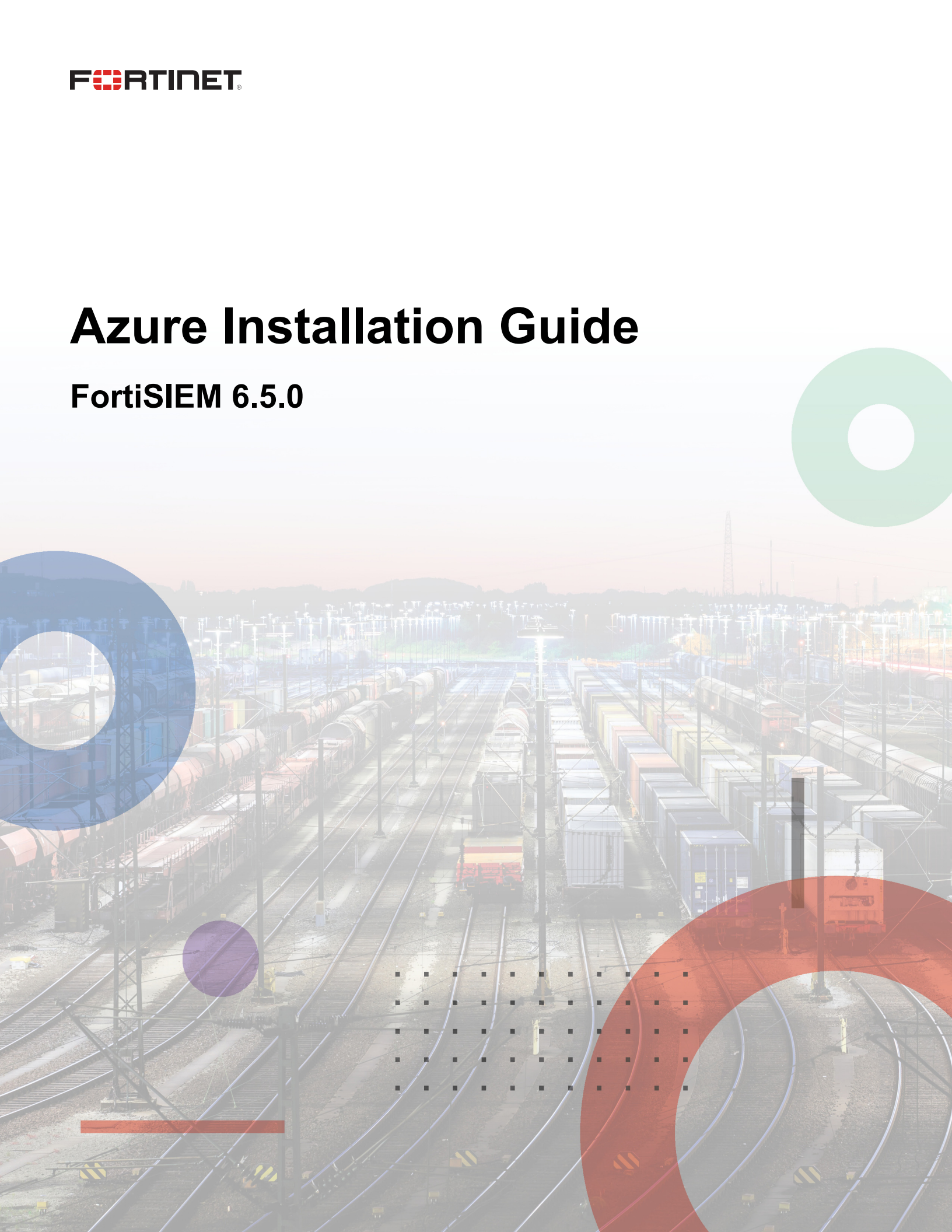


# Azure Installation Guide

**FortiSIEM 6.5.0**



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10/03/2023

FortiSIEM 6.5.0 Azure Installation Guide

# TABLE OF CONTENTS

<b>Change Log</b> .....	<b>4</b>
<b>Fresh Installation</b> .....	<b>5</b>
Pre-Installation Checklist .....	5
All-in-one Installation .....	6
Find the FortiSIEM Offer in Azure Using the Azure Marketplace .....	7
Create a VM Using a FortiSIEM 6.5.0 Azure Marketplace Image .....	8
Configure FortiSIEM .....	19
Upload the FortiSIEM License .....	25
Configure an Event Database .....	26
Final Check .....	26
Cluster Installation .....	27
Install Supervisor .....	28
Install Workers .....	30
Register Workers .....	31
Create ClickHouse Topology (Optional) .....	32
Install Collectors .....	32
Register Collectors .....	32
Install Manager .....	35
Register Instances to Manager .....	35
<b>Install Log</b> .....	<b>38</b>

# Change Log

Date	Change Description
10/06/2020	Initial release of Azure Installation and Migration Guide.
11/03/2020	Revision 1: Release of Azure Installation and Migration Guide for 6.1.1.
12/07/2020	Revision 2: Small addition to Register Collectors.
02/05/2021	Revision 3: Migration update.
03/23/2021	Revision 4: Release of Azure Installation Guide for 6.2.0.
04/22/2021	Revision 5: Added Install Log section.
05/07/2021	Revision 6: Release of Azure Installation Guide for 6.2.1.
06/07/2021	Revision 7: Updated Elasticsearch screenshot for 6.2.x guides.
07/06/2021	Revision 8: Release of Azure Installation Guide for 6.3.0.
08/26/2021	Revision 9: Release of Azure Installation Guide for 6.3.1.
10/15/2021	Revision 10: Release of Azure Installation Guide for 6.3.2.
11/17/2021	Revision 11: Updated Register Collectors instructions for 6.x guides.
12/22/2021	Revision 12: Release of Azure Installation Guide for 6.3.3.
01/18/2022	Revision 13: Release of Azure Installation Guide for 6.4.0.
01/28/2022	Revision 14: Section "Find the FortiSIEM Offer in Azure Using the Azure Marketplace" replaces "Create a FortiSIEM Image in Azure Using the Published VHD ". Section "Create a VM Using a FortiSIEM Azure (Marketplace) Image" updated for 6.4.0 Installation Guide.
05/09/2022	Revision 15: Release of Azure Installation Guide for 6.5.0.
08/18/2022	Revision 16: Updated All-in-one Installation section.
09/12/2022	Revision 17: Release of Azure Installation Guide for 6.5.1.
10/20/2022	Revision 18: Updated Register Collectors instructions for 6.x guides.
05/18/2023	Revision 19: Updated steps in Create a VM Using a FortiSIEM ### Azure Marketplace Image.
09/01/2023	Revision 20: Release of Azure Installation Guide for 6.5.2.

# Fresh Installation

This section describes how to install FortiSIEM for the current release.

- [Pre-Installation Checklist](#)
- [All-in-one Installation](#)
- [Cluster Installation](#)

## Pre-Installation Checklist

Before you begin, check the following:

- 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.
- Choose deployment type – Enterprise or Service Provider. The Service Provider deployment provides multi-tenancy.
- Determine whether FIPS should be enabled
- Choose install type:
  - All-in-one with FortiSIEM Manager
  - Cluster with Manager, Supervisor and Workers
  - All-in-one with Supervisor only, or
  - Cluster with Supervisor and Workers
- Choose the storage type for Supervisor, Worker, and/or Collector
  - Online - There are 4 choices
    - EventDB on local disk
    - EventDB on NFS
    - ClickHouse
    - Elasticsearch
  - Archive – There are 2 choices
    - EventDB on NFS
    - HDFS
- Determine hardware requirements and choose the Azure instance type accordingly:

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	OS – 25GB OPT – 100GB

Node	vCPU	RAM	Local Disks
		<ul style="list-style-type: none"> <li>with UEBA - 32GB</li> </ul> Recommended <ul style="list-style-type: none"> <li>without UEBA – 32GB</li> <li>with UEBA - 64GB</li> </ul>	CMDb – 60GB SVN – 60GB Local Event database – based on need
Supervisor (Cluster)	Minimum – 12 Recommended - 32	Minimum <ul style="list-style-type: none"> <li>without UEBA – 24GB</li> <li>with UEBA - 32GB</li> </ul> Recommended <ul style="list-style-type: none"> <li>without UEBA – 32GB</li> <li>with UEBA - 64GB</li> </ul>	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

- If your Online event database is external (e.g. EventDB on NFS or Elasticsearch), then you must configure external storage before proceeding to FortiSIEM deployment.
  - For NFS deployment, see [here](#).
  - For Elasticsearch deployment, see [here](#).
- If your Online event database is internal, that is, inside Supervisor or Worker nodes, then you need to determine the size of the disks based on your EPS and event retention needs.
  - For EventDB on local disk, see [here](#).
  - For ClickHouse, see [here](#).
- 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.

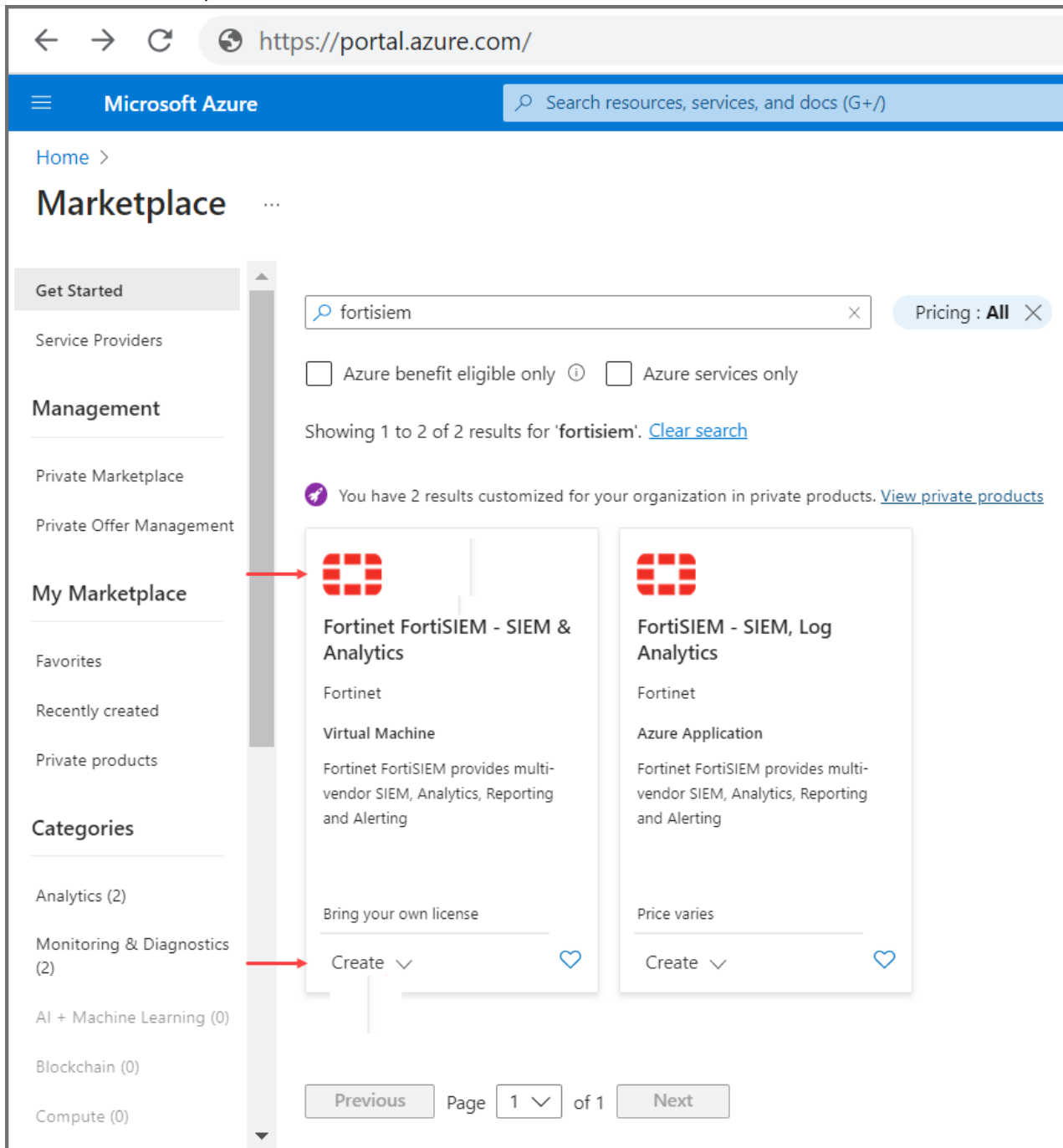
## All-in-one Installation

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

- [Find the FortiSIEM Offer in Azure Using the Azure Marketplace](#)
- [Create a VM Using a FortiSIEM 6.5.0 Azure Marketplace Image](#)
- [Configure FortiSIEM](#)
- [Upload the FortiSIEM License](#)
- [Configure an Event Database](#)
- [Final Check](#)

## Find the FortiSIEM Offer in Azure Using the Azure Marketplace

1. On the Azure portal, search for Marketplace and navigate to **Azure Marketplace**.
2. Search for the keyword "fortisiem".
3. Select the **Create** drop-down, and choose **Fortinet FortiSIEM for Azure**.



At this point, Azure will take you through the steps to create a virtual machine by first taking you to the **Create a virtual machine** page. Follow the steps in [Create a VM Using a FortiSIEM 6.5.0 Azure Marketplace Image](#) to continue.



## Create a VM Using a FortiSIEM 6.5.0 Azure Marketplace Image

From the **Create a virtual machine** page, take the following steps:

1. From the **Resource group** drop-down list, select a resource group.
2. In the **Virtual machine name** field, enter a name for your virtual machine.
3. From the **Image** drop-down list, select the image.

portal.azure.com/#create/Microsoft.VirtualMachine-ARM

Microsoft Azure Search resources, services, and docs (G+)

Home > Virtual machines >

### Create a virtual machine

Basics Disks Networking Management Monitoring Advanced Tags Review + create

Create a virtual machine that runs Linux or Windows. Select an image from Azure marketplace or use your own customized image. Complete the Basics tab then Review + create to provision a virtual machine with default parameters or review each tab for full customization. [Learn more](#)

**Project details**

Select the subscription to manage deployed resources and costs. Use resource groups like folders to organize and manage all your resources.

Subscription \* ⓘ [Redacted]

Resource group \* ⓘ (New) test [Create new](#)

**Instance details**

Virtual machine name \* ⓘ fsm-super ✓

Region \* ⓘ (US) West US

Availability options ⓘ No infrastructure redundancy required

Security type ⓘ Standard

Image \* ⓘ Fortinet FortiSIEM for Azure - x64 Gen1 [See all images](#) | [Configure VM generation](#)

VM architecture ⓘ  Arm64  x64

[Review + create](#) < Previous Next : Disks >

4. From the **Size** drop-down list, select a size based on your node type and hardware requirements.



- Under **Administrator account**, select **SSH public key** for Authentication type.
- The **Username** field is specified as `azureuser`.
- From the **Key pair name** drop-down list, select your existing key pair. If needed, generate a new key pair, then select it here.

The screenshot shows the 'Create a virtual machine' page in the Azure portal. The configuration is as follows:

- Image:** Fortinet FortiSIEM for Azure - x64 Gen1
- VM architecture:** x64 (selected)
- Run with Azure Spot discount:**
- Size:** Standard\_B8ms - 8 vcpus, 32 GiB memory (\$289.81/month)
- Administrator account:**
  - Authentication type:** SSH public key (selected)
  - Username:** azureuser
  - SSH public key source:** Generate new key pair
  - Key pair name:** fsm-super\_key

A blue information box states: "Azure now automatically generates an SSH key pair for you and allows you to store it for future use. It is a fast, simple, and secure way to connect to your virtual machine."

Navigation buttons at the bottom include "Review + create", "< Previous", and "Next : Disks >".

- When done with this step for configuration , click **Next: Disks >**.
- On the **Create a new disk** page, you will need to create disks based on the following table.

Volume Name	Size	Disk Name
Data Disk LUN 0	100GB	/opt

Volume Name	Size	Disk Name
		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 <code>configFSM.sh</code> runs.
Data Disk LUN 1	60GB for FortiSIEM Supervisor or 200GB for FortiSIEM Manager	/cmdb
Data Disk LUN 2	60GB	/svn
Data Disk LUN 3	60GB+	/data (see the following note)

**Note on Data Disk LUN 3:**

- Add the 4th Data Disk only if using EventDB on local storage or ClickHouse. In all other cases, this disk is not required.
  - For EventDB on local disk, choose a disk based on your EPS and event retention policy. See [EventDB Sizing Guide](#) for guidance. 60GB is the minimum.
  - For ClickHouse, choose disks based on the number of Tiers and disks on each Tier. These depend on your EPS and event retention policy. See [ClickHouse Sizing Guide](#) for guidance. For example, you can choose 1 large disk for Hot Tier. Or you can choose 2 Tiers - Hot Tier comprised of one or more SSD disks and Warm Tier comprised of one or more magnetic hard disks.
  - Choose Standard SSD volume type for all volumes. For the CMDB partition, you can choose to modify your volume type to Premium SSD or Ultra SSD based on your system workload if you see the consistently high IOPS requirement in your deployment.
- a. In the **Name** field, enter the name of the disk.
  - b. In the **Source** type drop-down list, leave as **None (empty disk)**.
  - c. In the **Size** drop-down list, select **Change size**, select the **Custom disk size (GiB)** option, and enter the disk size in the available field.
  - d. Click **OK**.
  - e. For each new disk, click **Create and attach a new disk** and repeat steps a-d until all the necessary disks have

been created.

portal.azure.com/#view/Microsoft\_Azure\_Compute/CreateDataDiskBlade/

Microsoft Azure Search resources, services, and docs (G+/)

Home > Virtual machines > Create a virtual machine >

## Create a new disk ...

Create a new disk to store applications and data on your VM. Disk pricing varies based on factors including disk size, storage type, and number of transactions. [Learn more](#)

Name \* fsm-super\_opt\_disk ✓

Source type \* ⓘ None (empty disk) ▼

Size \* ⓘ **100 GiB**  
Standard SSD LRS  
[Change size](#)

Key management ⓘ Platform-managed key ▼

Enable shared disk  Yes  No

Delete disk with VM

OK

10. After entering your disk partition values, click **Next: Networking >**.

Microsoft Azure

Home > Virtual machines >

## Create a virtual machine

Azure VMs have one operating system disk and a temporary disk for short-term storage. You can attach additional data disks. The size of the VM determines the type of storage you can use and the number of data disks allowed. [Learn more](#)

### VM disk encryption

Azure disk storage encryption automatically encrypts your data stored on Azure managed disks (OS and data disks) at rest by default when persisting it to the cloud.

Encryption at host

**i** Encryption at host is not registered for the selected subscription. [Learn more about enabling this feature](#)

### OS disk

OS disk type \*

If performance is critical for your workloads, choose Premium SSD disks for lower latency, higher IOPS and bandwidth, and bursting. [Learn more](#)

Delete with VM

Key management

Enable Ultra Disk compatibility

### Data disks for fsm-super

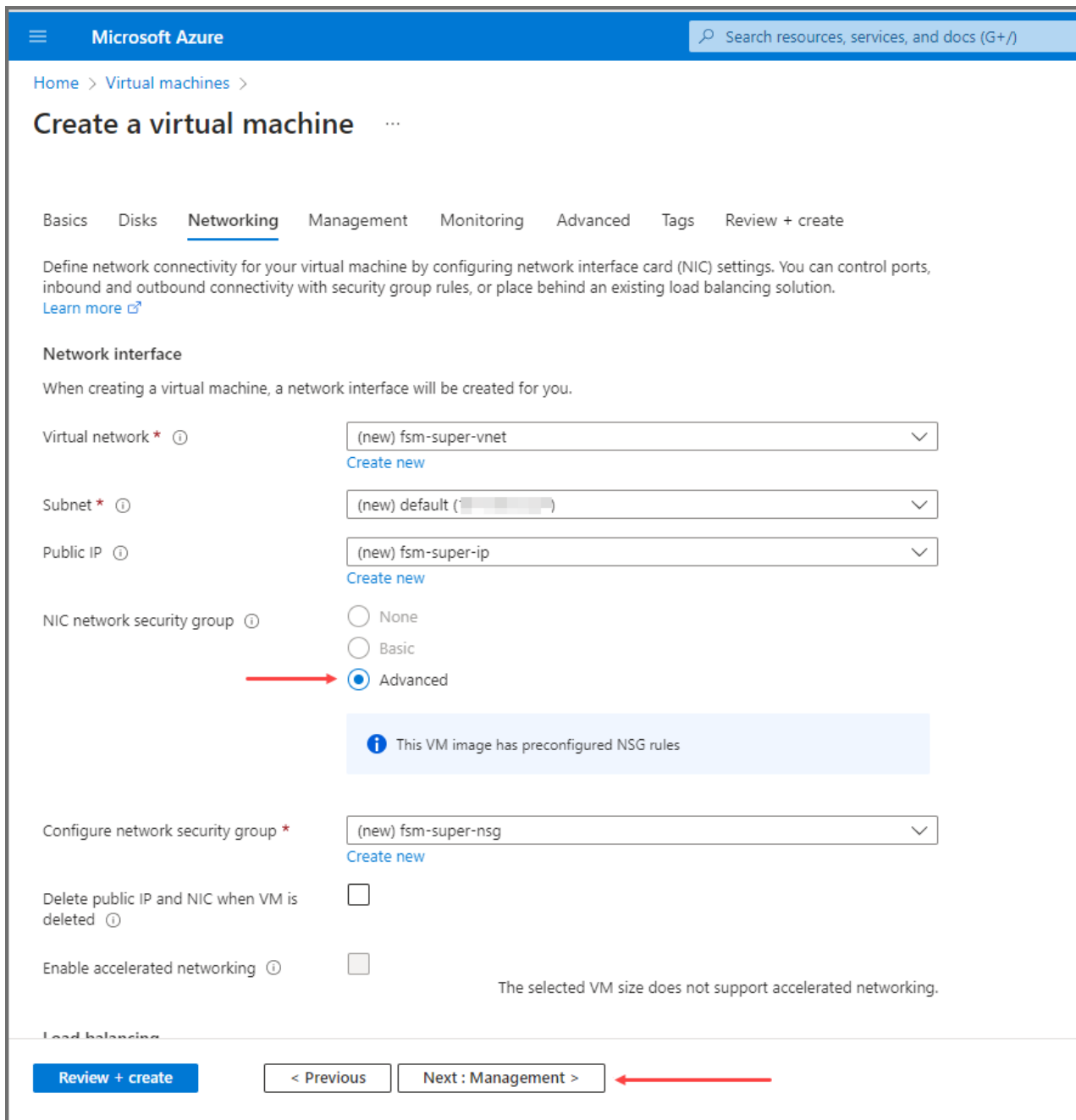
You can add and configure additional data disks for your virtual machine or attach existing disks. This VM also comes with a temporary disk.

LUN	Name	Size (GiB)	Disk type	Host caching	Delete with VM
<input type="text" value="0"/>	fsm-super_opt_disk	100	Standard SSD LRS	None	<input checked="" type="checkbox"/>
<input type="text" value="1"/>	fsm-super_cmdb_disk	60	Standard SSD LRS	None	<input checked="" type="checkbox"/>
<input type="text" value="2"/>	fsm-super_svn-lite_disk	60	Standard SSD LRS	None	<input checked="" type="checkbox"/>
<input type="text" value="3"/>	fsm-super_DataDisk_3	120	Standard SSD LRS	None	<input checked="" type="checkbox"/>

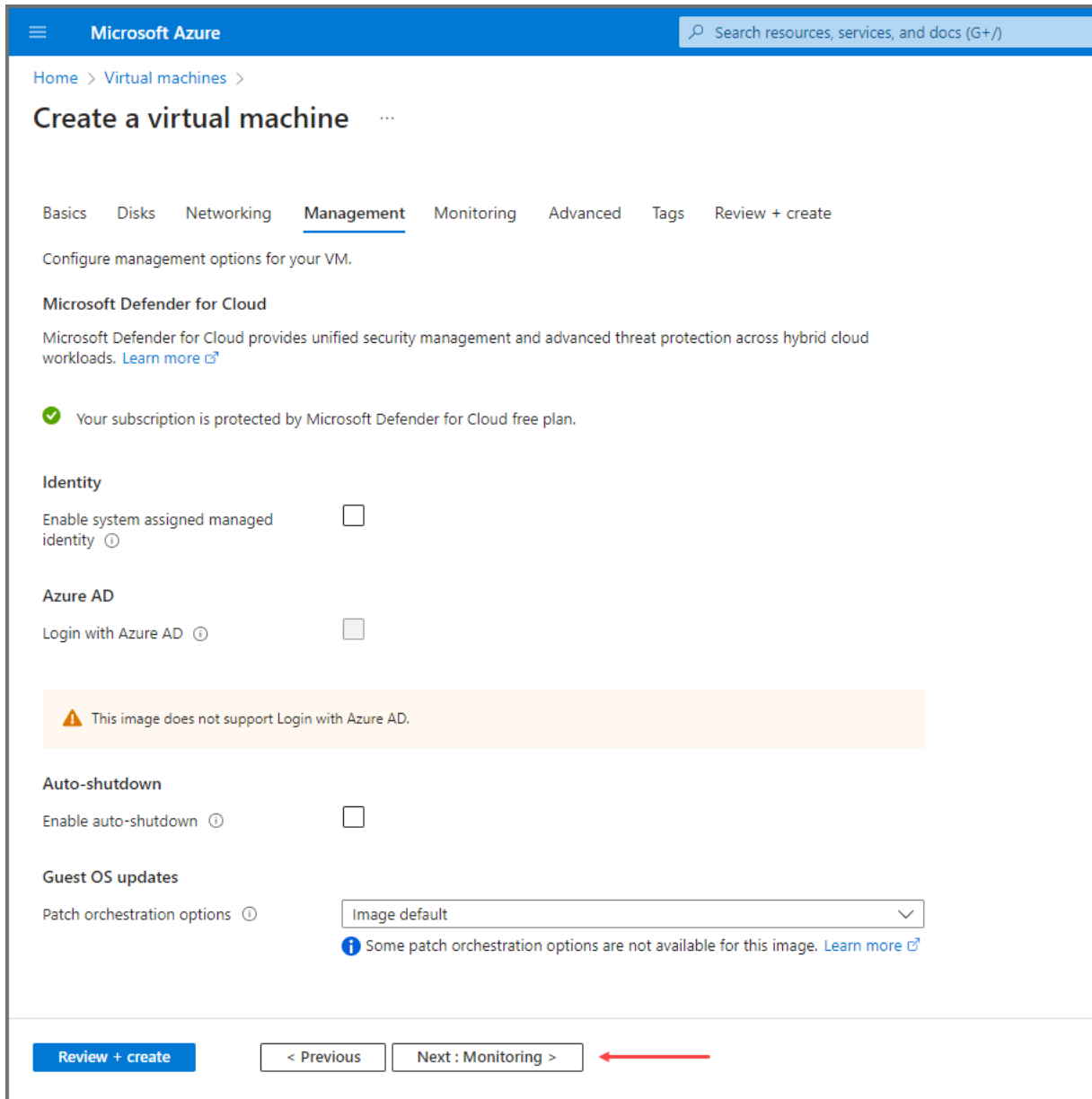
[Create and attach a new disk](#) [Attach an existing disk](#)

[Review + create](#) [< Previous](#) [Next: Networking >](#)

- From the Networking page (Networking tab), accept the defaults except for **NIC network security groups**. For production, choose **Advanced** and configure the required inbound ports and IP addresses (refer to [Azure documentation](#)).



12. Click **Next: Management >**.
13. From the Management page (Management tab), accept the defaults provided or change them as needed per the [Azure documentation](#).
14. Click **Next: Monitoring**.

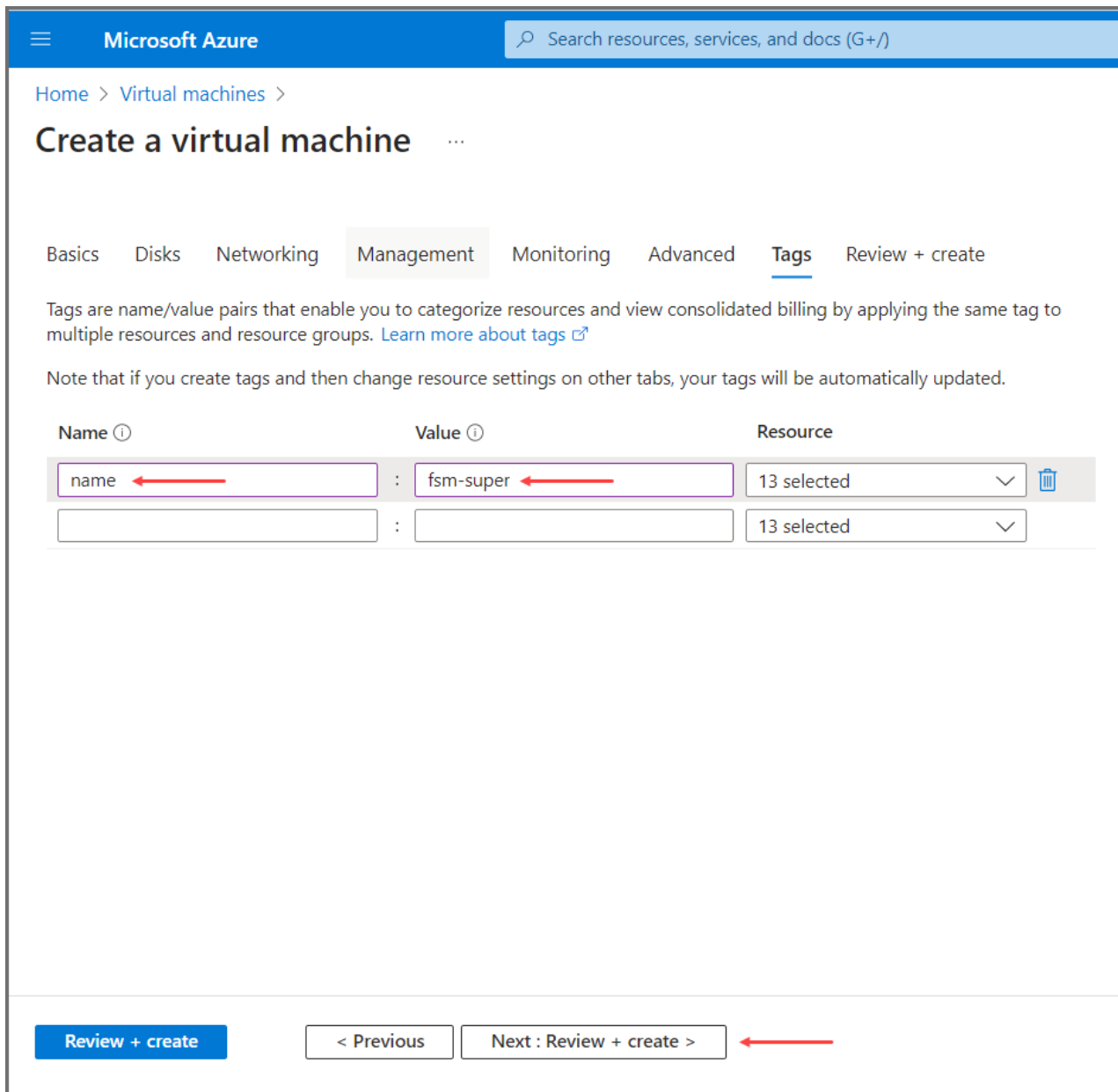


- From the Monitoring page (Monitoring tab), under **Diagnostics**, select **Enable with managed storage account (recommended)**.  
Click **Next: Advanced >**.

The screenshot shows the 'Create a virtual machine' wizard in the Microsoft Azure portal, specifically the 'Monitoring' tab. The breadcrumb navigation is 'Home > Virtual machines >'. The title is 'Create a virtual machine'. Below the title are tabs for 'Basics', 'Disks', 'Networking', 'Management', 'Monitoring' (selected), 'Advanced', 'Tags', and 'Review + create'. The instruction is 'Configure monitoring options for your VM.' There are three sections: 'Alerts' with 'Enable recommended alert rules' (checkbox), 'Diagnostics' with 'Boot diagnostics' (radio buttons) and 'Enable OS guest diagnostics' (checkbox). The 'Enable with managed storage account (recommended)' option is selected and highlighted with a red arrow. At the bottom, there are three buttons: 'Review + create' (blue), '< Previous', and 'Next : Advanced >' (highlighted with a red arrow).

16. Leave Advanced settings alone, and click **Next: Tags >**.
17. From the Tags page (Tags tab), add a Name tag and any other tags as needed.





18. Click **Next: Review + create >**.
19. From the Review + create page tab, verify that all the information is correct. Click **Create**.

Microsoft Azure

Search resources, services, and docs (G+)

Home > Virtual machines >

## Create a virtual machine

Validation passed

**Basics**

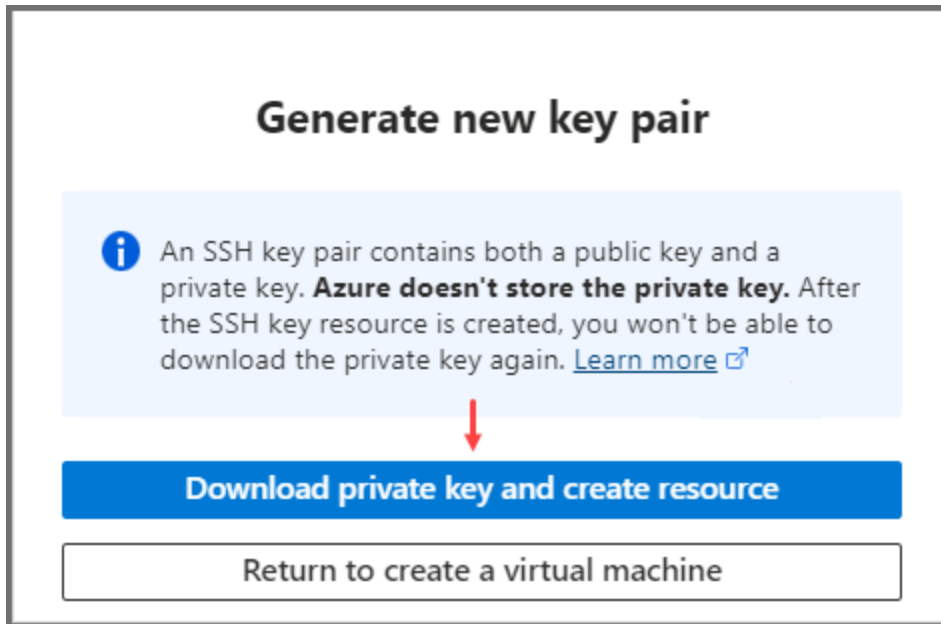
Subscription	Software Development/Engineering
Resource group	(new) test
Virtual machine name	fsm-super
Region	West US
Availability options	No infrastructure redundancy required
Security type	Standard
Image	Fortinet FortiSIEM for Azure - Gen1
VM architecture	x64
Size	Standard B8ms (8 vcpus, 32 GiB memory)
Authentication type	SSH public key
Username	azureuser
Key pair name	fsm-super_key
Azure Spot	No

**Disks**

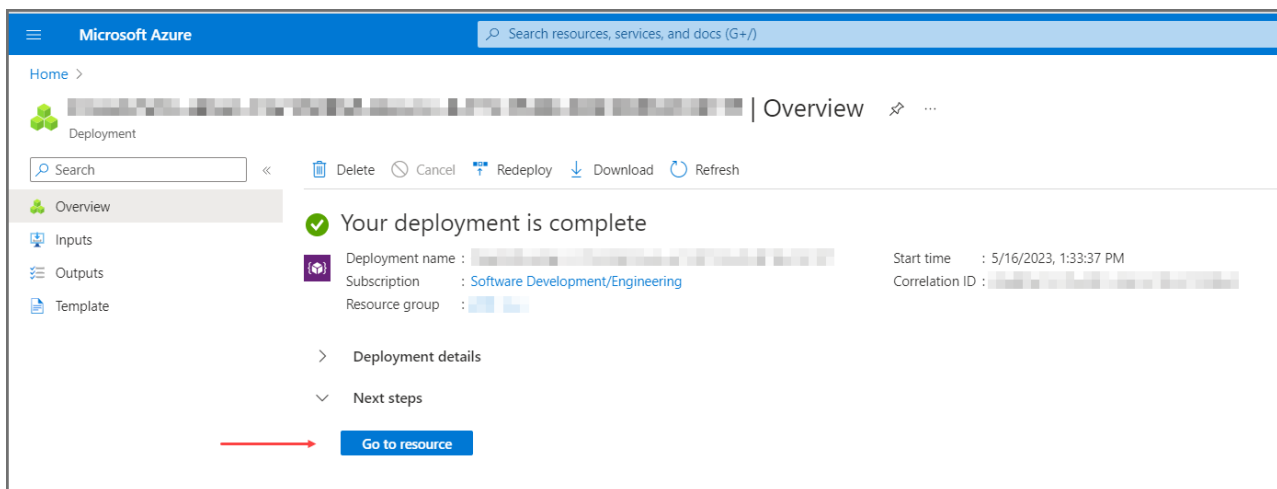
OS disk type	Standard SSD LRS
Use managed disks	Yes
Delete OS disk with VM	Enabled
Data disks	4

[Create](#)
[< Previous](#)
[Next >](#)
[Download a template for automation](#)

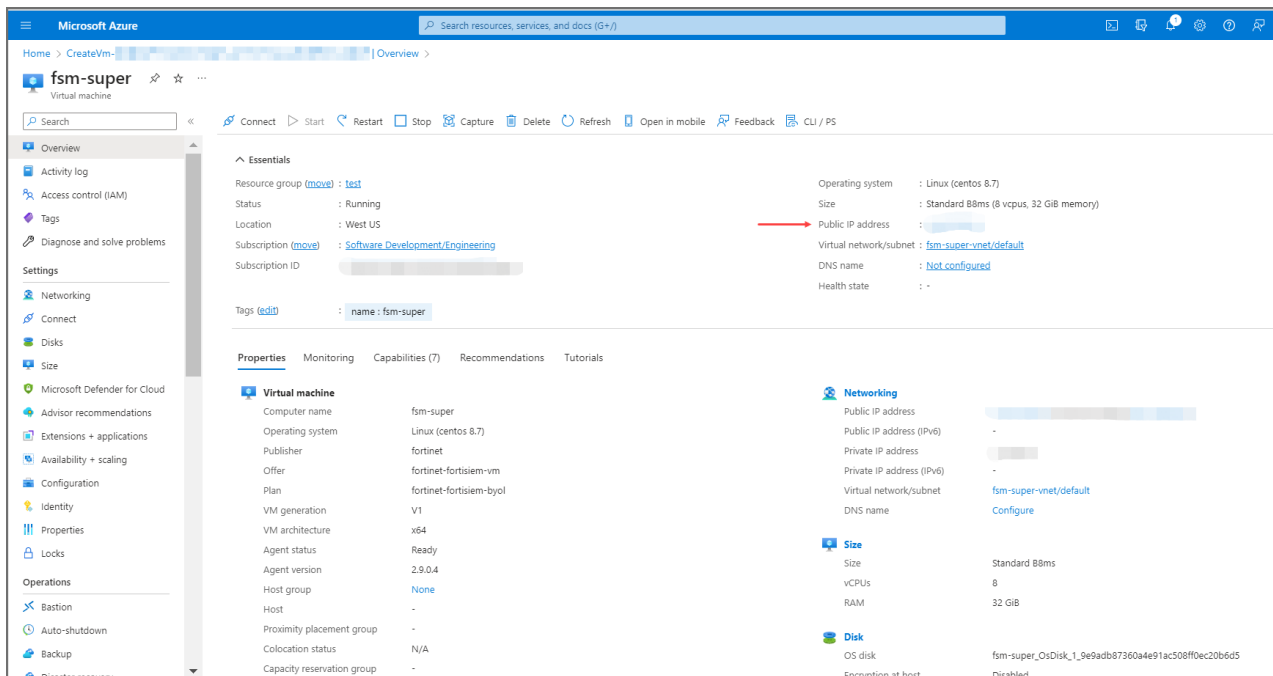
20. If you chose to create a new SSH key, then you will be asked to download the private key and create the resource. Click **Download private key and create resource**.



21. Wait for deployment to succeed. Click **Go to resource**.



22. Note the **Public IP address** and copy it to the clipboard.



23. (Optional) Configure the DNS name according to [Azure documentation](#).
24. SSH to the FortiSIEM VM with user `azureuser` (as specified [here](#)) and the downloaded SSH key. Run `sudo su -` to become user `root`. Run `configFSM.sh`.

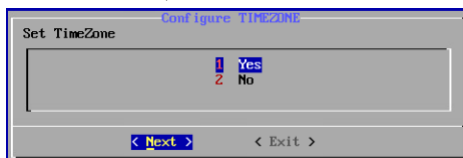
```

$ ssh -i ~/.ssh/fsm-westus-ssh-key.pem azureuser@1[redacted] 7
Last login: Tue Sep 22 17:55:11 2020 from 6[redacted] 7
[azureuser@super ~]$ sudo su -
Last login: Tue Sep 22 17:55:15 CDT 2020 on pts/0
[root@super ~]# configFSM.sh
    
```

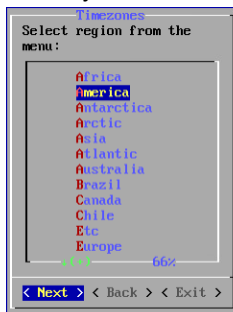
## Configure FortiSIEM

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

1. At the `root` command prompt, go to `/usr/local/bin` and enter `configFSM.sh`, for example:  
`# configFSM.sh`
2. In VM console, select **1 Set Timezone** and then press **Next**.



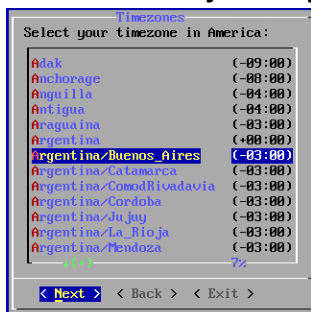
3. Select your **Location**, and press **Next**.



4. Select your **Continent**, and press **Next**.



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



6. 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**.  
 If installing FortiSIEM Supervisor Follower, select **5 Supervisor Follower** and press **Next**.

**Note:** The appliance type cannot be changed once it is deployed, so ensure you have selected the correct option.



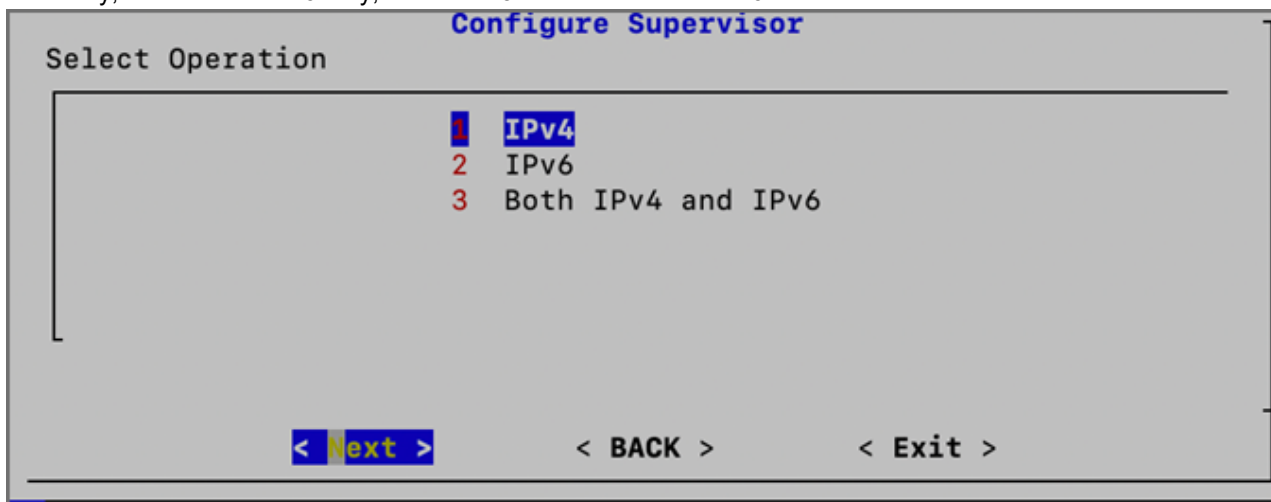


Regardless of whether you select **FortiSIEM Manager, Supervisor, Supervisor Follower, Worker, or Collector**, you will see the same series of screens with only the header changed to reflect your target installation, unless noted otherwise.

- If you want to enable FIPS, then choose **2 install\_with\_fips**. Otherwise, choose **1 install\_without\_fips**. You have the option of enabling FIPS (option **3**) or disabling FIPS (option **4**) later. **Note:** After Installation, a 5th option to change your network configuration (**5 change\_network\_config**) is available. This allows you to change your network settings and/or host name.



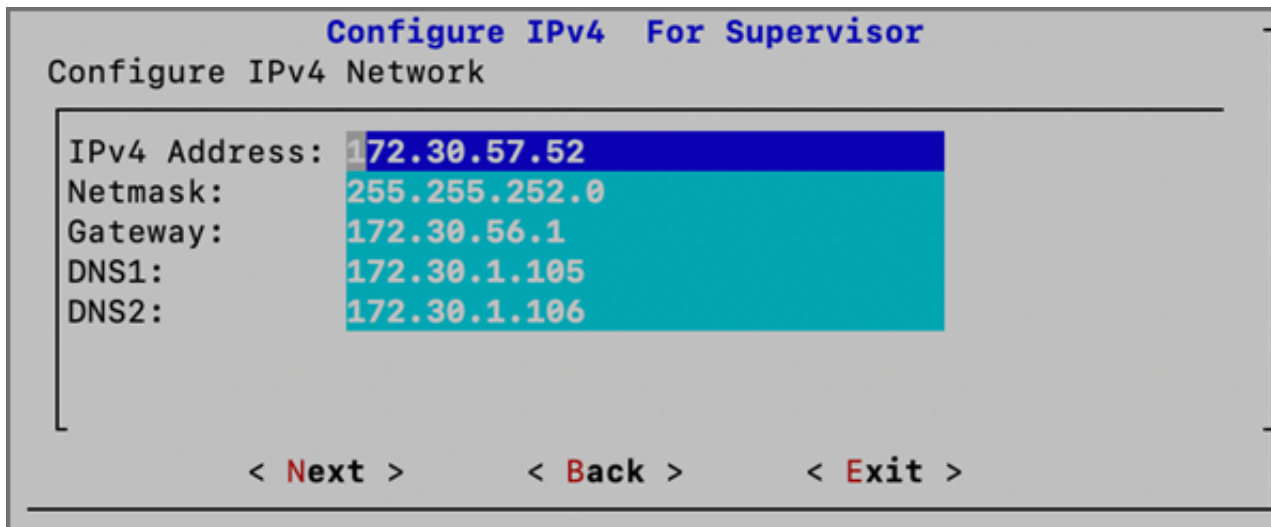
- Determine whether your network supports IPv4-only, IPv6-only, or both IPv4 and IPv6 (Dual Stack). Choose **1** for IPv4-only, choose **2** for IPv6-only, or choose **3** for both IPv4 and IPv6.



- If you choose **1** (IPv4) or choose **3** (Both IPv4 and IPv6), and press **Next**, then you will move to step 10. If you choose **2** (IPv6), and press **Next**, then skip to step 11.
- Configure the IPv4 network by entering the following fields. Press **Next**.

Option	Description
IPv4 Address	The Manager/Supervisor/Worker/Collector's IPv4 address
Netmask	The Manager/Supervisor/Worker/Collector's

Option	Description
	subnet
Gateway	Network gateway address
DNS1, DNS2	Addresses of the DNS servers



11. If you chose 1 in step 8, then you will need to skip to step 12. If you chose 2 or 3 in step 8, then you will configure the IPv6 network by entering the following fields, then press **Next**.

Option	Description
IPv6 Address	The Manager/Supervisor/Worker/Collector's IPv6 address
prefix (Netmask)	The Manager/Supervisor/Worker/Collector's IPv6 prefix
Gateway ipv6	IPv6 Network gateway address
DNS1 IPv6, DNS2 IPv6	Addresses of the IPv6 DNS server 1 and DNS server2



```

Configure IPv6 for Supervisor
Configure IPv6 Network

IPv6 Address: 2001:815a:1:1::ac1e:2050
prefix (Netmask): 64
Gateway ipv6: 2001:815a:1:1::ac1e:3820
DNS1 IPv6: 2001:815a:1:1::ac1e:1007
DNS2 IPv6:

< Next >    < Back >    < Exit >

```

**Note:** If you chose option 3 in step 8 for both IPv4 and IPv6, then even if you configure 2 DNS servers for IPv4 and IPv6, the system will only use the first DNS server from IPv4 and the first DNS server from the IPv6 configuration.

**Note:** In many dual stack networks, IPv4 DNS server(s) can resolve names to both IPv4 and IPv6. In such environments, if you do not have an IPv6 DNS server, then you can use public IPv6 DNS servers or use IPv4-mapped IPv6 address.

12. Configure Hostname for the FortiSIEM Manager/Supervisor/Worker/Collector. Press **Next**.

```

Configure Hostname For Supervisor
Configure hostname

Host name: Supervisor-Hostname

< Next >    < Back >    < Exit >

```

**Note:** FQDN is no longer needed.

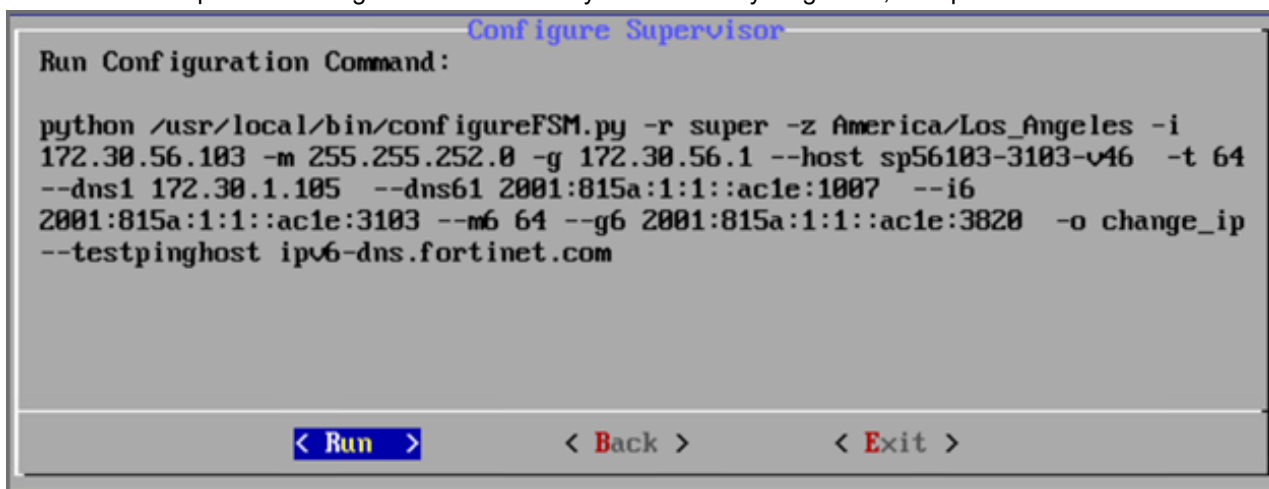
13. Test network connectivity by entering a host name that can be resolved by your DNS Server (entered in the previous step) and responds to ping. The host can either be an internal host or a public domain host like google.com. In order for the migration to complete, the system still needs https connectivity to FortiSIEM OS update servers - `os-pkgs-cdn.fortisiem.fortinet.com` and `os-pkgs-c8.fortisiem.fortinet.com`. Then, click **Next**.

**Note:** By default, "google.com" is shown for the connectivity test, but if configuring IPv6, you must enter an accessible internally approved IPv6 DNS server, for example: "ipv6-dns.fortinet.com"

**Note:** When configuring both IPv4 and IPv6, only testing connectivity for the IPv6 DNS is required because the IPV6 takes higher precedence. So update the host field with an approved IPv6 DNS server.



14. 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.

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 <b>4</b> (for <b>ipv4</b> ) or <b>6</b> (for <b>v6</b> ) or <b>64</b> (for both IPv4 and IPv6).
--dns1, --dns2	Addresses of the DNS server 1 and DNS server 2.

Option	Description
--i6	IPv6-formatted address
--m6	IPv6 prefix
--g6	IPv6 gateway
-o	Installation option ( <b>install_without_fips</b> , <b>install_with_fips</b> , <b>enable_fips</b> , <b>disable_fips</b> , <b>change_network_config*</b> ) *Option only available after installation.
-z	Time zone. Possible values are <b>US/Pacific</b> , <b>Asia/Shanghai</b> , <b>Europe/London</b> , or <b>Africa/Tunis</b>
--testpinghost	The URL used to test connectivity

15. 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.

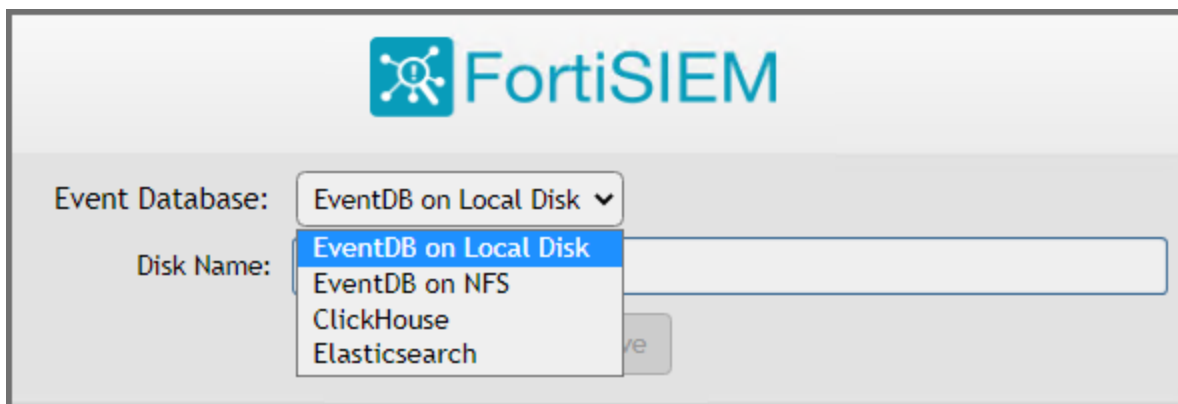
1. Open a Web browser and log in to the FortiSIEM UI. Use link `https://<supervisor-ip>` to login. Please note that if you are logging into FortiSIEM with an IPv6 address, you should input `https://[IPv6 address]` on the browser tab.
2. The License Upload dialog box will open.

3. 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.

- For Supervisor, Worker, or Collector, choose **License type** as **Enterprise** or **Service Provider**. The following option will be available for first time installations. 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 **Configure an Event Database**.  
**Note:** The FortiSIEM Manager license allows a certain number of instances that can be registered to FortiSIEM Manager.
- Proceed to [Configure an Event Database](#).

## Configure an Event Database

Choose the event database.



The screenshot shows the FortiSIEM configuration interface. At the top, the FortiSIEM logo is displayed. Below it, there are two fields: "Event Database:" and "Disk Name:". The "Event Database:" field has a dropdown menu with the following options: "EventDB on Local Disk", "EventDB on NFS", "ClickHouse", and "Elasticsearch". The "EventDB on Local Disk" option is currently selected and highlighted in blue. The "Disk Name:" field is empty and has a text input box next to it.

If the Event Database is one of the following options, additional disk configuration is required.

- **EventDB on Local Disk:** See Case 2 in [Creating EventDB Online Storage](#).
- **ClickHouse:** See Case 2 in [Creating ClickHouse Online Storage](#).

## Final Check

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

```

Every 1.0s: /opt/phoenix/bin/phstatus.py
System uptime: 21:12:02 up 1:11, 1 user, load average: 0.16, 0.20, 0.36
Tasks: 27 total, 0 running, 26 sleeping, 0 stopped, 0 zombie
Cpu(s): 16 cores, 6.2%us, 2.1%sy, 0.0%ni, 91.4%id, 0.0%wa, 0.2%hi, 0.1%si, 0.0%st
Mem: 65702190k total, 10366036k used, 55336054k free, 4352k buffers
Swap: 2621436k total, 0k used, 2621436k free, 2465020k cached

PROCESS                UPTIME                CPU%                VIRT_MEM            RES_MEM
phParser                41:23                 0                   2176m                550m
phQueryMaster          41:41                 0                   1020m                77m
phAlertMaster          41:41                 0                   1079m                504m
phAlertWorker          41:41                 0                   1363m                205m
phQueryWorker          41:41                 0                   1383m                279m
phDataManager          41:41                 0                   1419m                205m
phDiscover             41:41                 0                   513m                 53m
phReportWorker         41:41                 0                   1433m                95m
phReportMaster         41:41                 0                   602m                 67m
phIdentityWorker       41:41                 0                   1027m                50m
phIdentityMaster       41:41                 0                   491m                 39m
phAgentManager         41:41                 0                   1425m                54m
phCheckpoint           42:31                 0                   325m                 39m
phEventManager         41:41                 0                   702m                 70m
phReportLoader         41:41                 0                   769m                270m
phBeaconEventPackager 41:41                 0                   1125m                65m
phDataPurger           41:41                 0                   588m                 50m
phEventForwarder       41:41                 0                   540m                 46m
phMonitor              37:24                 0                   2000m                57m
Apache                 01:10:40             0                   310m                 16m
Node.js-charting       01:10:19             0                   916m                 71m
Node.js-pm2            01:10:13             0                   0                    26m
AppSvr                 01:10:07             0                   15172m               3026m
DBSvr                  01:10:38             0                   317m                 30m
phAnomaly              01:00:07             0                   907m                 64m
phFortiInsightAI      01:10:40             0                   23432m               430m
Redis                  01:10:10             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: 0.00, 0.00, 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
phMonitor              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).

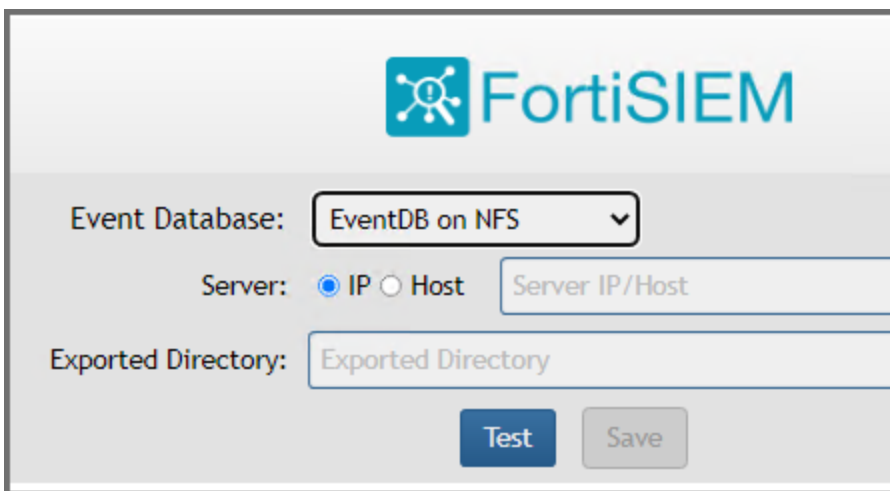
- [Install Supervisor](#)
- [Install Workers](#)
- [Register Workers](#)
- [Create ClickHouse Topology \(Optional\)](#)

- [Install Collectors](#)
- [Register Collectors](#)
- [Install Manager](#)
- [Register Instances to Manager](#)

## Install Supervisor

Follow the steps in [All-in-one Installation](#), except with the following differences.

1. Event Database choices are **EventDB on NFS**, **ClickHouse**, or **Elasticsearch**.
2. If you choose **EventDB on NFS**
  - a. Disk 4 is not required (From [Create a VM Using a FortiSIEM 6.5.0 Azure Marketplace Image Step 8](#)).
  - b. You need to configure NFS after license upload.



The screenshot shows the FortiSIEM configuration interface. At the top, there is the FortiSIEM logo. Below it, the 'Event Database' is set to 'EventDB on NFS' in a dropdown menu. Underneath, the 'Server' configuration has two radio buttons: 'IP' (which is selected) and 'Host'. To the right of these radio buttons is a text input field labeled 'Server IP/Host'. Below the 'Server' section, there is another text input field labeled 'Exported Directory'. At the bottom of the form, there are two buttons: a blue 'Test' button and a grey 'Save' button.

3. If you choose **ClickHouse**
  - a. You need to create disks during [Create a VM Using a FortiSIEM 6.5.0 Azure Marketplace Image Step 8](#) based on the role of the Supervisor node in the ClickHouse cluster. See the [ClickHouse Sizing Guide](#) for details.

- b. You need to configure disks after license upload.

The screenshot shows the FortiSIEM configuration interface. At the top, the FortiSIEM logo is displayed. Below it, the 'Event Database' is set to 'ClickHouse'. The 'Storage Tiers' are set to '2'. There are two sections for configuring storage tiers: 'Hot Tier' and 'Warm Tier'. Each section has a 'Disk Path' input field and a 'Row' column with '+' and '-' buttons. At the bottom, there are 'Test' and 'Save' buttons.

- 4. If you choose **Elasticsearch**, define Elasticsearch endpoints after license upload. See the [Elasticsearch Sizing Guide](#) for details.



The screenshot shows the FortiSIEM configuration interface for Elasticsearch. At the top, the FortiSIEM logo is displayed. Below it, the configuration options are as follows:

- Event Database:** A dropdown menu set to "Elasticsearch".
- ES Service Type:** Radio buttons for "Native" (selected), "Amazon", and "Elastic Cloud".
- Endpoint:** A table with columns "URL", "Ingest", "Query", and "Row". The "URL" column contains "https://". The "Ingest" and "Query" columns have checked checkboxes. The "Row" column has "+" and "-" buttons.
- REST Port:** A text input field containing "443".
- User Name:** A text input field containing "(Optional)".
- Password:** A text input field containing "(Optional)".
- Confirm Password:** An empty text input field.
- Shard Allocation:** Radio buttons for "Fixed" and "Dynamic" (selected).
- Shards:** A text input field containing "5".
- Replicas:** A text input field containing "1".
- Per Org Index:** A checkbox that is unchecked.

At the bottom of the form, there are two buttons: "Test" and "Save".

## Install Workers

Once the Supervisor is installed, take the same steps in [All-in-one Installation](#) to install a Worker with the following differences.

1. Choose appropriate CPU and memory for the Worker nodes based on Sizing guide.
2. Two hard disks for Operating Systems and FortiSIEM Application:
  - 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.sh` runs.

3. If you are running ClickHouse, then create additional data disks based on the role of the Worker in ClickHouse topology. If it is a Keeper node, then a smaller disk is needed. If it is a data node, then a bigger disk is needed based on your EPS and retention policy. See ClickHouse Sizing Guide for details.

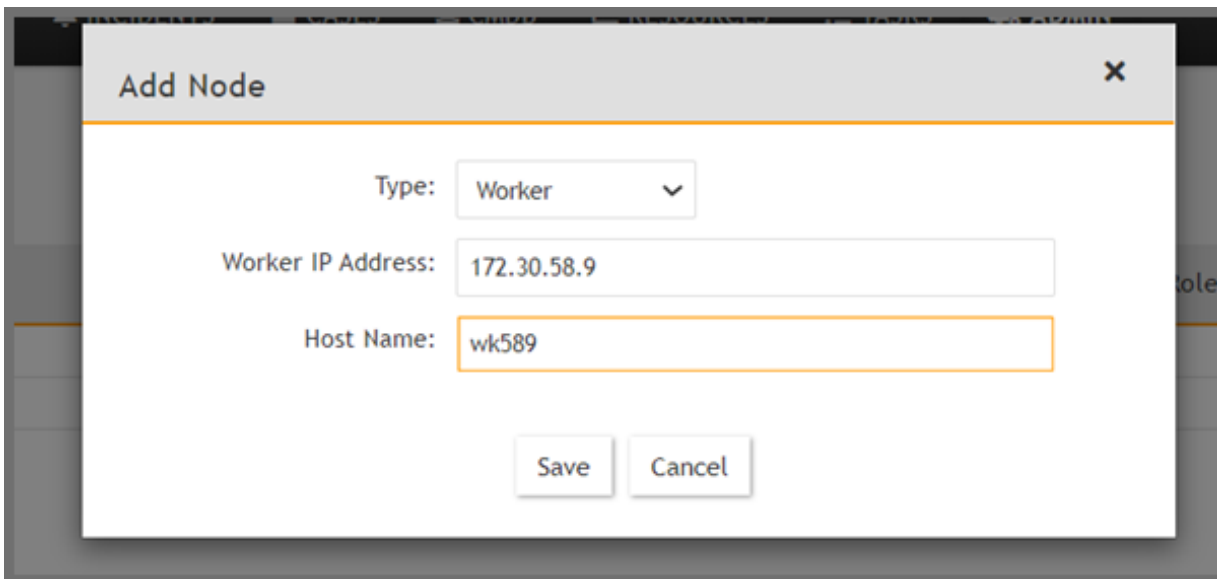
Sizing Guide References:

- [ClickHouse Sizing Guide](#)
- [EventDB Sizing Guide](#)
- [Elasticsearch Sizing Guide](#)

## 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 **Mode** drop-down list and enter the following information:
  - a. In the **Host Name** field, enter the Worker's host name.
  - b. In the **IP Address** field, enter the Worker's IP address.
  - c. If you are running ClickHouse, then select the number for Storage Tiers from the **Storage Tiers** drop-down list, and input disk paths for disks in each Tier in the **Disk Path** fields.
  - d. Click **Test**.



The screenshot shows a modal dialog titled "Add Node" with a close button (X) in the top right corner. The dialog contains the following fields and controls:

- Type:** A dropdown menu with "Worker" selected.
- Worker IP Address:** A text input field containing "172.30.58.9".
- Host Name:** A text input field containing "wk589".
- Buttons:** "Save" and "Cancel" buttons at the bottom.

- e. If the test succeeds, then click **Save**.
3. See **ADMIN > Health > Cloud Health** to ensure that the Workers are up, healthy, and properly added to the

system.

The screenshot displays the FortiSIEM Cloud Health interface. On the left, a navigation menu includes Setup, Device Support, Health (selected), License, and Settings. The main content area is divided into two sections. The top section, titled 'Cloud Health', shows a table with columns: Name, IP Address, Module Role, Health, Version, Load Average, CPU, and Swap Used. It lists two nodes: 'sp572.fortinet.com' (Supervisor, Normal health) and 'wk573.fortinet.com' (Worker, Normal health). The bottom section, titled 'Process level metrics for wk573.fortinet.com (172.30.57.3)', shows a table with columns: Process Name, Status, Up Time, CPU, Physical Memory, Virtual Memory, SharedStore ID, and SharedStore Position. It lists several processes including Node.js-charting, httpd, Redis, Node.js-pm2, rsyslogd, and ohDataManaaer.

Name	IP Address	Module Role	Health	Version	Load Average	CPU	Swap Used
sp572.fortinet.com	172.30.57.2	Supervisor	Normal	6.1.0.1238	0.95,0.47,0.43	4%	0 KB
wk573.fortinet.com	172.30.57.3	Worker	Normal	6.1.0.1238	0.1,0.2,0.16	2%	0 KB

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		
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		
ohDataManaaer	Up	14m 6s	0%	103 MB	1229 MB	1	126108

4. Copyright © 2020 Fortinet, Inc. All rights reserved. Organization: Super User: admin Scope: Global FortiSIEM

## Create ClickHouse Topology (Optional)

If you are running ClickHouse, you need to configure ClickHouse topology by specifying which nodes belong to ClickHouse Keeper and Data Clusters. Follow the steps in [Configuring ClickHouse Topology](#).

## Install Collectors

Once Supervisor and Workers are installed, follow the same steps in [All-in-one Install](#) to install a Collector except when adding disks, you need to only add a data disk for OPT. 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.sh` runs.

## 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 > Cluster Config**.
  - a. Enter the IP of the Worker node in the **Event Upload Workers** column. 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 **Save**.
  - c. In the **Supervisors** column, enter the IP of the Supervisor node and click **Save**.
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:
 

```
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.

The screenshot shows the 'Collector Health' page in FortiSIEM. It features a table with columns for Organization, Name, IP Address, Status, Health, Up Time, CPU, Memory, Allocated EPS, Incoming EPS, Version, and Col. The table contains one entry for 'Super' with organization 'CO-ORG' and IP '172.30.57.4'. Below this is a detailed view of processes with columns for Process Name, Status, Up Time, CPU, Physical Memory, Virtual Memory, SharedStore ID, and SharedStore Position. The processes listed are phMonitorAgent, phParser, phPerfMonitor, phEventForwarder, and phDiscover.

Organization	Name	IP Address	Status	Health	Up Time	CPU	Memory	Allocated EPS	Incoming EPS	Version	Col
Super	CO-ORG	172.30.57.4	up	Normal	3m 4s	65%	5%	200	0	6.1.0...	100

Process Name	Status	Up Time	CPU	Physical Memory	Virtual Memory	SharedStore ID	SharedStore Position
phMonitorAgent	Up	29s	0%	575 MB	1116 MB		
phParser	Up	17s	0%	106 MB	1190 MB	99	0
phPerfMonitor	Up	17s	0%	79 MB	766 MB		
phEventForwarder	Up	17s	0%	48 MB	547 MB		
phDiscover	Up	17s	0%	53 MB	513 MB		

## Service Provider Deployments

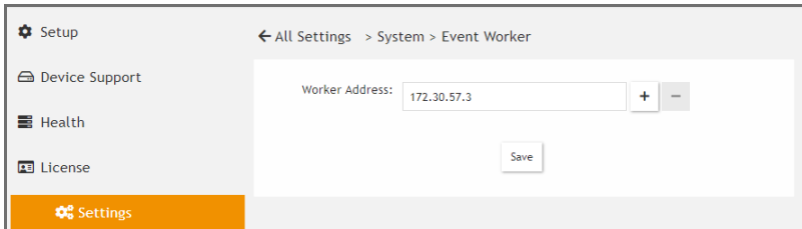
For Service Provider deployments, follow these steps.

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

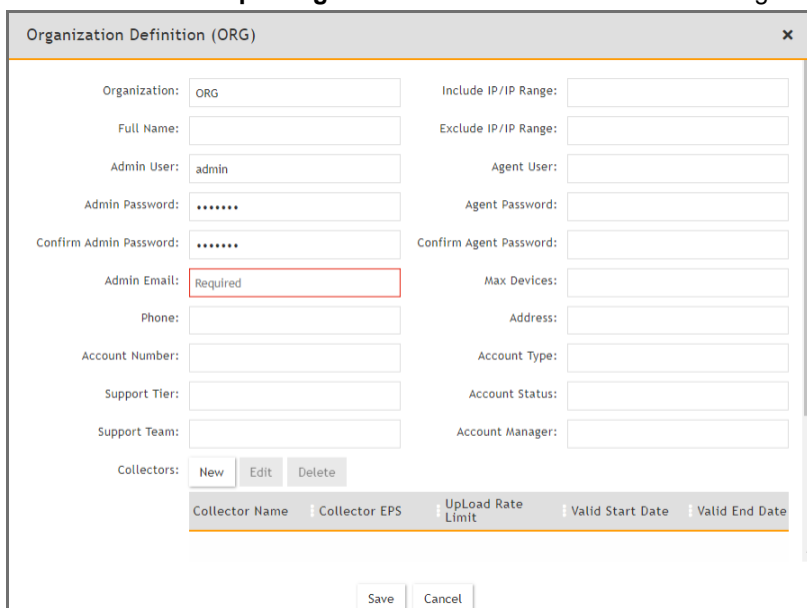
of events to the listed Event Workers.

**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**.
- c. In the **Supervisors** column, enter the IP of the Supervisor node and click **Save**.



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

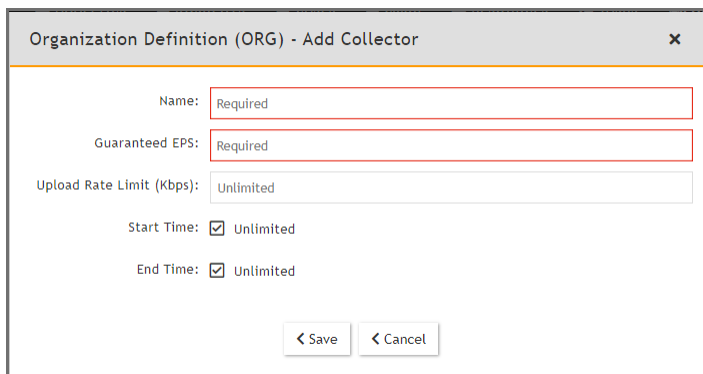


- 4. Enter the **Organization Name, Admin User, Admin Password, and Admin Email**.

- 5. Under **Collectors**, click **New**.

- 6. 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.



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

```
phProvisionCollector --add <user> '<password>' <Super IP or Host> <Organization>
<CollectorName>
```

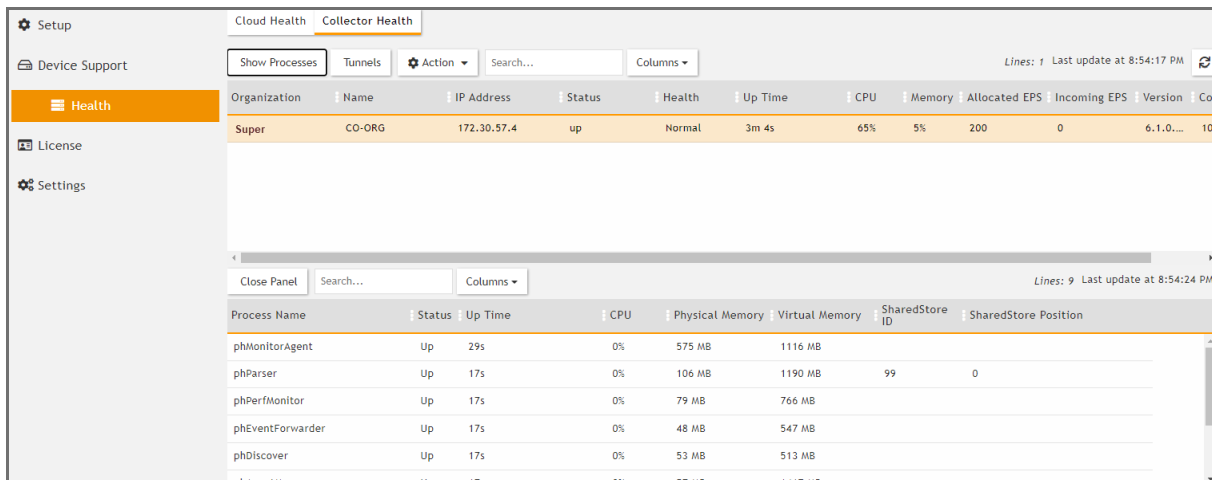
The password should be enclosed in single quotes to ensure that any non-alphanumeric characters are escaped.

- a. Set `user` and `password` using the admin user name and password for the 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](#).

```
root@co574 ~# phProvisionCollector
Usage: phProvisionCollector --add <Organization-user-name> <Organization-user-password> <Supervisor-IP> <Organization-name> <Collector-name>
root@co574 ~# phProvisionCollector --add admin Admin@11 172.30.57.2 ORG CO-ORG
Continuing to provision the Collector
This collector is registered successfully. Normal Exit and restart of phMonitor after collector license registration.
root@co574 ~# _
```

The Collector will reboot during the Registration.

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



## 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 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](#)

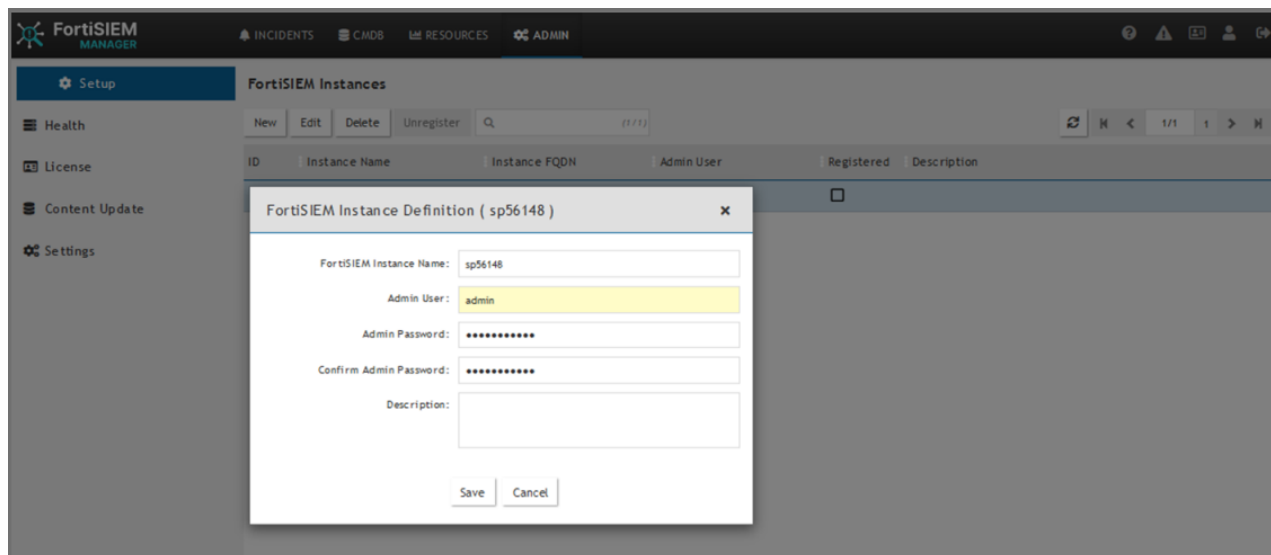
Note that Communication between FortiSIEM Manager and instances is via REST APIs over HTTP(S).

## Adding 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**.



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.

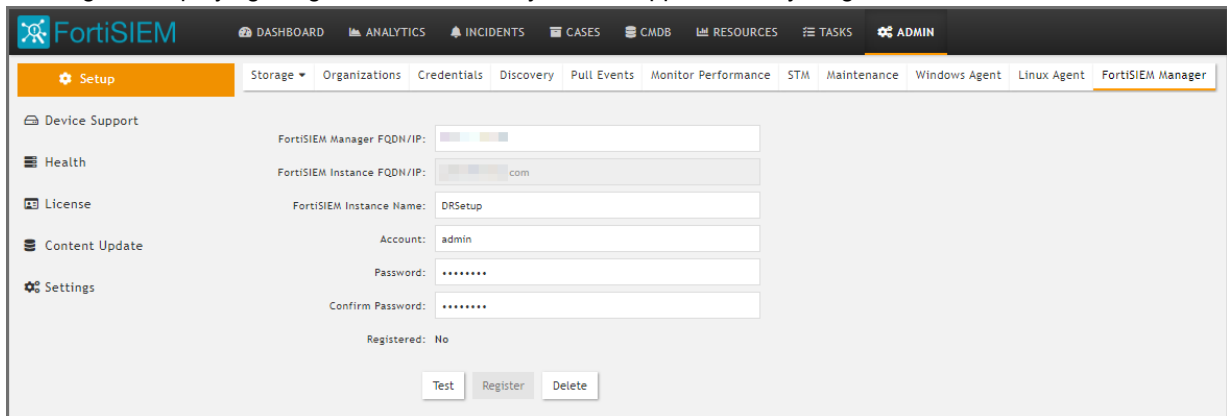
## Register the Instance Itself to Manager

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. If the Supervisor is under a Supervisor Cluster environment, in the **FortiSIEM super cluster FQDN/IP** field, enter the Supervisor Cluster Fully Qualified Domain Name (FQDN) or IP address.
  - c. In the **FortiSIEM Instance Name** field, enter the instance name used when adding the instance to Manager.
  - d. In the **Account** field, enter the Admin User name used when adding the instance to Manager.
  - e. In the **Password** field, enter your password to be associated with the Admin User name.



- f. In the **Confirm Password** field, re-enter your password.
  - g. Click **Test** to verify the configuration.
  - h. Click **Register**.
- A dialog box displaying "Registered successfully" should appear if everything is valid.



- i. 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.

## 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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