



# Operational Technology Defense Console – Virtual Appliance 1.5

## Quick Setup Guide (for VMware ESXi and Workstation)

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This documentation introduces the main features of the product and/or provides installation instructions for a production environment. Read through the documentation before installing or using the product.

Detailed information about how to use specific features within the product may be available at the Trend Micro Online Help Center and/or the Trend Micro Knowledge Base.

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# ODC Onboarding to VMware ESXi

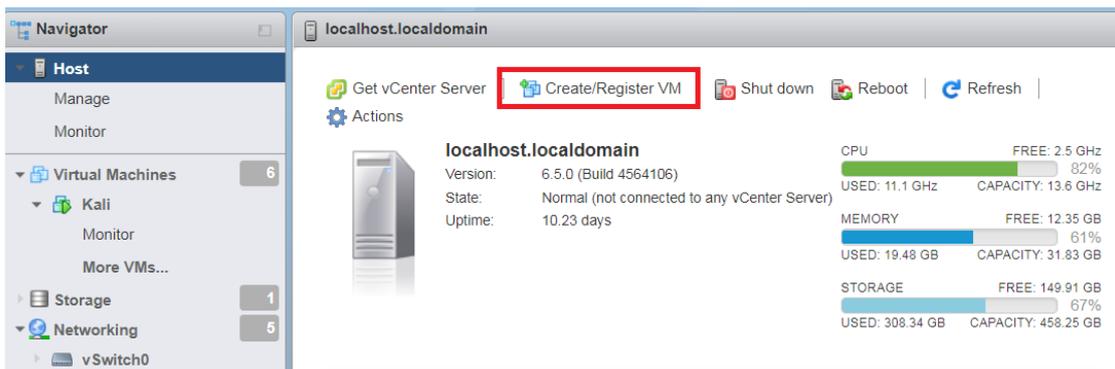
This chapter describes how to deploy OT Defense Console to a VMware ESXi system.

## Prerequisites

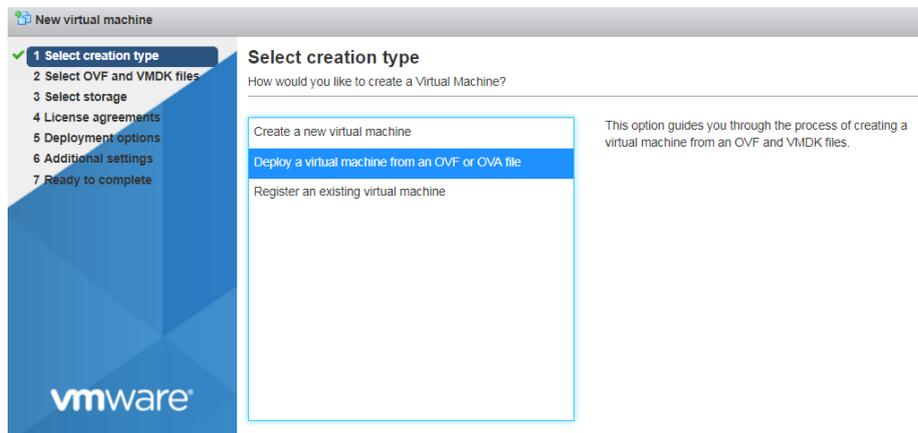
- The OVA packages provided by Trend Micro must be available and accessible to VMware ESXi.
- ESXi version 6 or above with the required specifications.
- The necessary networks have been properly created in ESXi.

## Deploying OT Defense Console

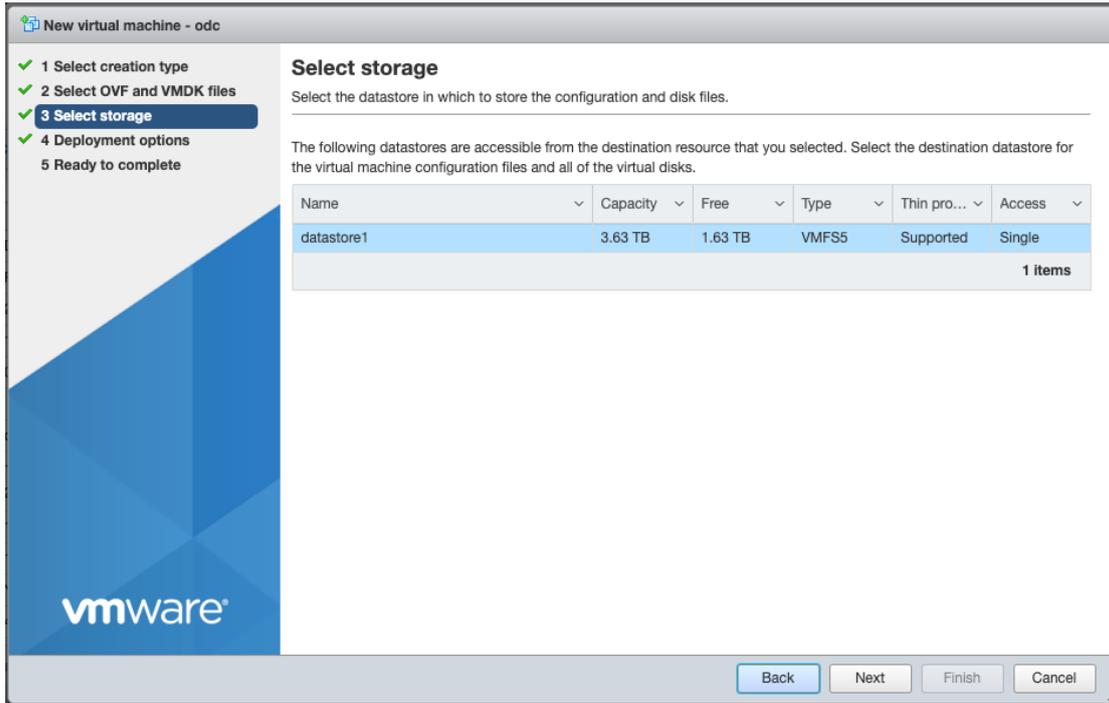
1. Log in to the VMware vSphere web client.
2. Under [Navigator], click [Host] and then click [Create/Register VM].



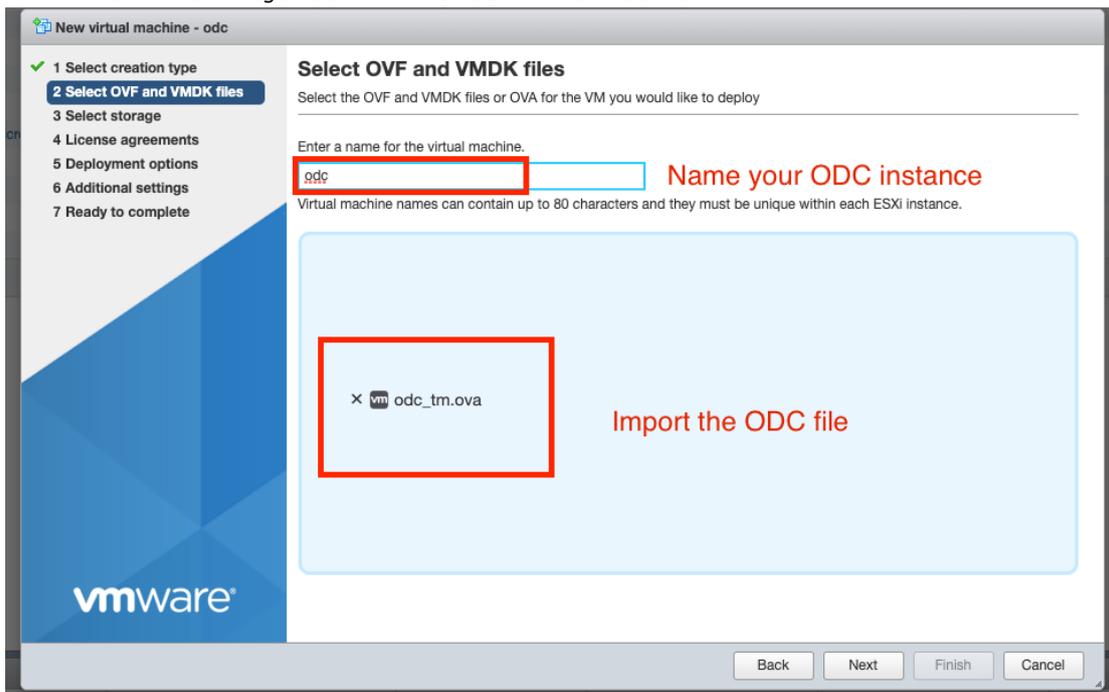
3. Select [Deploy a virtual machine from an OVF or OVA file].



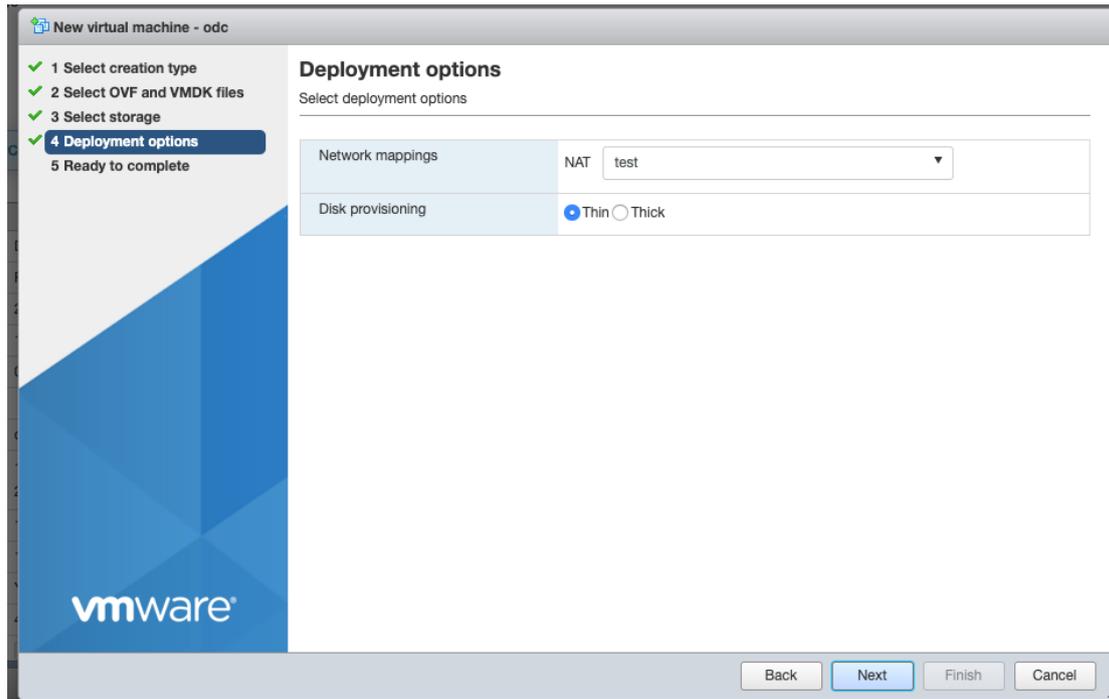
4. Input a name for your ODC and then select an ODC image to upload.



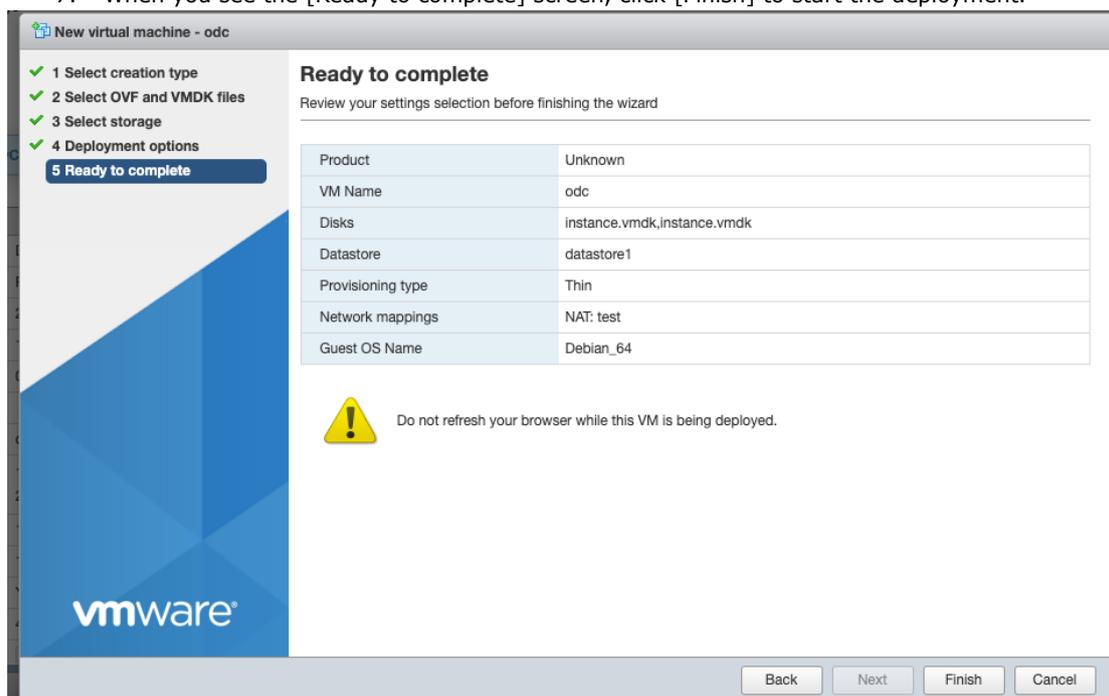
5. Choose a storage location for the ODC virtual machine.



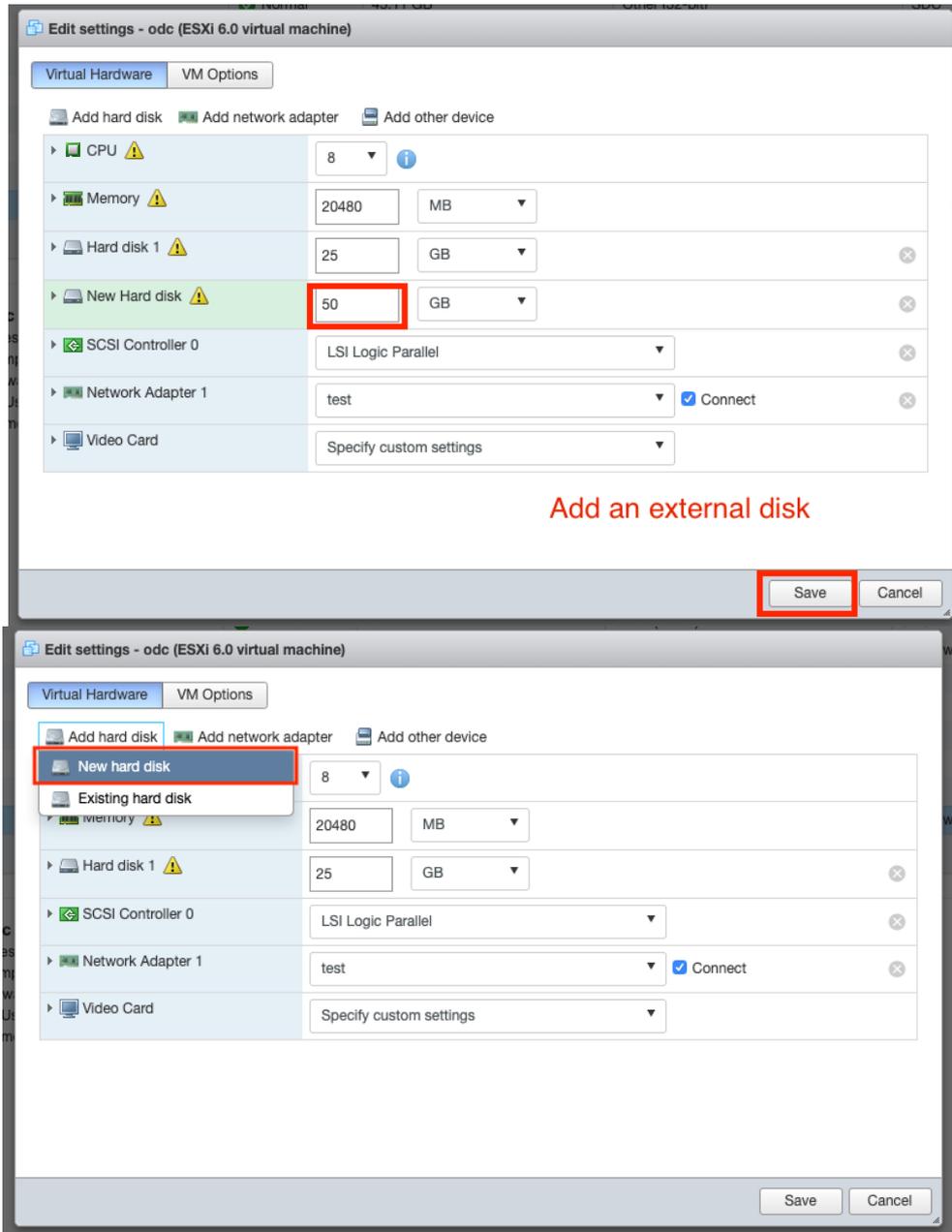
6. Select deployment options.



7. When you see the [Ready to complete] screen, click [Finish] to start the deployment.



8. Under the [Recent tasks] pane, you will see a progress bar indicating that the ODC image is being uploaded. Please wait until the upload is finished.
9. Add an external disk with at least 50 GB space to the ODC instance.
  - a. Power off the ODC instance if it is powered on.
  - b. Add the external disk by the following steps: [Actions] → [Edit settings] → [Add hard disk] → [Save].



- c. The external disk size can be decided depending on the number of logs to be stored, as shown on the suggestion table below.
  
- d. If ODC needs to increase the number of the logs to be stored, the steps are (1) power off the ODC, (2) enlarge the external disk size to fit the maximum log requirement, and (3) power on the ODC instance. After that, ODC will enlarge the storage available for log files.
  
- e. If we want to migrate the existing ODC setting to the newly launched VM, please refer to [System Migration on page 21](#).

The external disk size can be decided depending on the number of logs to be stored, as shown on the suggestion table below.

Disk space	Maximum event logs	Note
>= 50 GB	5,000,000 logs	Modified and enlarge size since support more log type
>= 170 GB	10,000,000 logs	Modified and enlarge size since support more log type
>= 330 GB	50,000,000 logs	Modified and enlarge size since support more log type
>= 600 GB	100,000,000 logs	Modified and enlarge size since support more log type

**Note:** The ODC requires one external disk and the minimum size of the external disk must be above 50GB, otherwise the ODC will not finish initialization and will not complete the boot process.

**Note:** The external disk is used to store the system configurations and event logs. You may attach the external disk of a terminated ODC instance here instead of adding a new disk if you want to migrate the previous configurations and logs to the new ODC instance.

10. Power on the VM.



**odc**  
 Guest OS Other (32-bit)  
 Compatibility ESXi 6.0 and later (VM version 11)  
 VMware Tools Yes  
 CPUs 8  
 Memory 20 GB

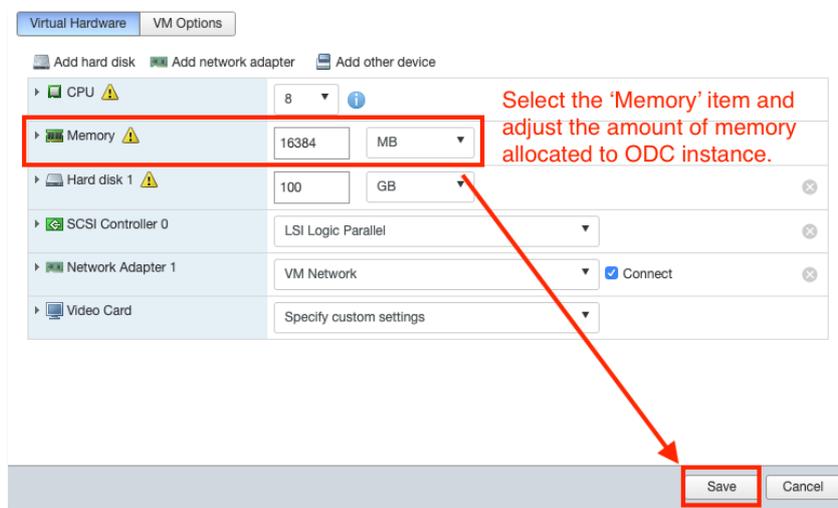
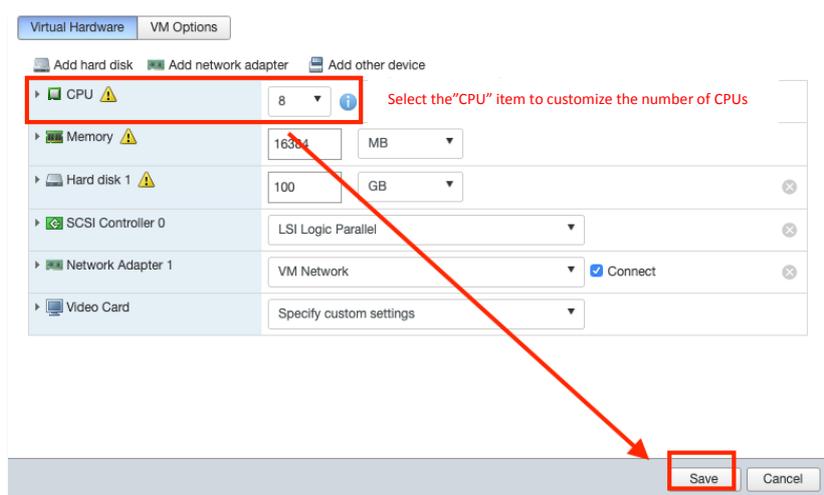
Click the window to log into the vShell of ODC

11. **(Optional)** Adjust your ODC instance to use proper resource configurations based on the following sizing table or using the default settings (8 core CPU, 16 GB memory).

- Shut down the instance of ODC and click [Edit].  
The [Edit settings] window will appear.
- Configure the number of CPU cores.
- Configure the amount of memory.
- Boot the ODC instance.

#### Sizing Table

Nodes	CPU	Memory
50	4 cores	16 GB
100	4 cores	16 GB
150	6 cores	32 GB
200	8 cores	32 GB
300	12 cores	64 GB
500	16 cores	96 GB
1000	32 cores	128 GB



## Accessing the ODC CLI

1. Open the ODC VM console.
2. Log in with "root / txone"
3. Change the default password
  - a. Type oobe
  - b. Change the default password
  - c. Re-log in to the ODC with your new password

```

If you want to exit this shell, please type 'exit' or 'Ctrl-D'.

Caution: please type the command ""oobe"" to activate the vShell.
Caution: please type the command ""oobe"" to activate the vShell.
Caution: please type the command ""oobe"" to activate the vShell.
Caution: please type the command ""oobe"" to activate the vShell.
Caution: please type the command ""oobe"" to activate the vShell.
$ oobe
Type current password:
Type the new password:
  
```

4. After re-logging in to ODC, you may optionally type the "help" command to see a list of available commands for the instance.

```
vShell, version v1.5.4
The commands provided in:
access-list  Manage the IP whitelists
dx           Curl the target server.
env         Manage system environment variables
exit       Exit this shell
help       List all command usage
iface     Manage the network interfaces
ping      Test the reachability of a host
poweroff  Shut down the machine immediately
pwd       Change the root user password
reboot    Restart the machine immediately
resolv    Manage the domain name server
scp       Send files via scp
service   Manage the device center services
sftp     Send files via sftp
web       Commands of the device center web

Shortcut table:
Tab       Auto-complete or choose the next suggestion on the list
Ctrl + A  Go to the head of the line (Home)
Ctrl + E  Go to the tail of the line (End)
Ctrl + D  Delete the character located at the cursor
Ctrl + L  Clear the screen
```

## Getting the IP Address of the ODC Instance

1. Type the following command to get the IP address of the ODC Instance

```
$ iface ls
[
  {
    "Name": "lo",
    "Family": "inet",
    "Method": "loopback"
  },
  {
    "Name": "eth0",
    "Family": "inet",
    "Method": "dhcp"
  }
]
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
        valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host
        valid_lft forever preferred_lft forever
2: eth0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state UP group default qlen 1000
    link/ether 00:0c:29:09:80:3c brd ff:ff:ff:ff:ff:ff
    inet 10.7.19.195/24 brd 10.7.19.255 scope global eth0
        valid_lft forever preferred_lft forever
    inet6 fe80::20c:29ff:fe09:803c/64 scope link
        valid_lft forever preferred_lft forever
$
```

## [Optional] Configure the IP Address Settings

You can choose to configure the IP address manually.

1. Use the "iface update" command to update the settings of an existing network interface. For example, the following command sets the interface "eth0" to a static IP address 10.7.19.157/24 with the Gateway IP address 10.7.19.254:

```
$ iface update eth0 --method static --address 10.7.19.157 --netmask 255.255.255.0 --gateway 10.7.19.254
```

```
$ iface update eth0 --method static --address 10.7.19.157 --netmask 255.255.255.0 --gateway 10.7.19.254
Interface settings are changed. Please type this command to take effect: 'iface restart eth0'
$
```

2. Confirm the network interface settings are correct and execute the following command to bring the new settings into effect:

```
$ iface restart eth0
```

3. Execute the following command to view the network interface settings:

```
$ iface ls
```

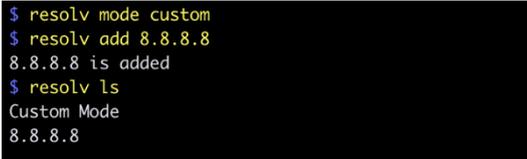
```
[
  {
    "Name": "lo",
    "Family": "inet",
    "Method": "loopback"
  },
  {
    "Name": "eth0",
    "Family": "inet",
    "Method": "static",
    "Address": "10.7.19.157",
    "Netmask": "255.255.255.0",
    "Gateway": "10.7.19.254"
  }
]
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
        valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host
        valid_lft forever preferred_lft forever
2: eth0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state UP group default qlen 1000
    link/ether 00:0c:29:2f:05:2d brd ff:ff:ff:ff:ff:ff
    inet 10.7.19.157/24 brd 10.7.19.255 scope global eth0
        valid_lft forever preferred_lft forever
    inet6 fe80::20c:29ff:fe2f:52d/64 scope link
        valid_lft forever preferred_lft forever
$
```

4. Use the "resolv add" command to add a DNS server and "resolv ls" to list the DNS servers you've added. For example, the following command adds "8.8.8.8" to the DNS server list.

```
$ resolv mode custom  
$ resolv add 8.8.8.8
```

5. Type the following command to view the DNS server settings.

```
$ resolv ls
```



```
$ resolv mode custom  
$ resolv add 8.8.8.8  
8.8.8.8 is added  
$ resolv ls  
Custom Mode  
8.8.8.8
```

6. Execute the following command to reboot the VM:

```
$ reboot
```

## Opening the Management Console

OT Defense Console provides a built-in management console that you can use to configure and manage the product. View the management console using a web browser.

**Note:** View the management console using Google Chrome version 63 or later; Firefox version 53 or later; Safari version 10.1 or later; or Edge version 15 or later.

### Procedure

1. In a web browser, type the address of the OT Defense Console in the following format:

```
https://<target server IP address or FQDN>
```

The login screen will appear.

2. Enter your credentials (user name and password).

Use the default administrator credentials when logging in for the first time:

- User name: admin
- Password: txone

3. Click Log On.

If this is your first log on, the Login Information Setup frame will appear.

**Note:** You must change the default login name and password at first log on before you can access the management console.

**Note:** New login name can not be "root", "admin", "administrator" or "auditor" (case-insensitive).

- a. Confirm your password settings.
  - New Login Name
  - New Password
  - Retype Password
- b. Click Confirm.

You will be automatically logged out of the system. The Log On screen will appear again.
- c. Log on again using your new credentials.

Dashboard

**Environment Summary (Group Summary)**

All Groups

50 Assets

5 Devices

**Asset Types**

All Groups

- SCADA 9
- Industrial Network Appliance 4
- Industrial Embedded PC 3
- HMI 6
- Industrial Production Machines 4

1/2

**Device List**

Device	IP	Status	Pattern Version	Firmware Version	Model	Assets
IPS-355eb2	172.24.0.34	Online	TM_200921_12	1.1.4	IPS-102-BP_TM	10
IPS-48e12f	172.24.0.35	Online	TM_200921_12	1.1.4	IPS-102-BP_TM	10
IPSP-41bfc	172.24.0.36	Online	TM_IPSP_200930_14	1.0.17	IPS-Pro-1048-BP-TM	10
IEF-b69e2b	172.24.0.33	Online	TM_190115_1_RELS	1.1.4	IEF-1012_TM	10

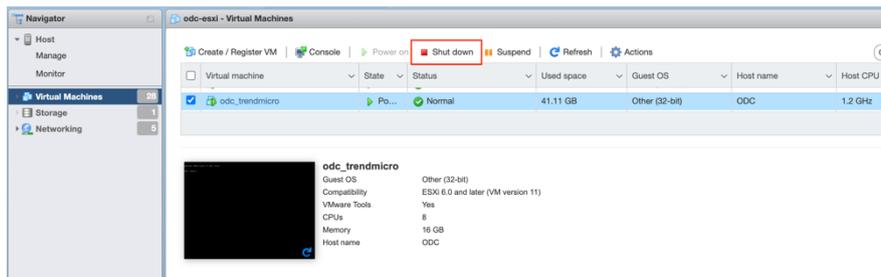
## System Migration

When a new version of ODC is released, we can migrate the settings of the old ODC by attaching the external disk of the old ODC to the new ODC VM. The migration of settings includes:

- The UUID of the old ODC
- The pattern and firmware downloaded by the old ODC
- The system configuration set from the old ODC including its license, accounting information, security policies, and so on
- The security event logs stored by old ODC

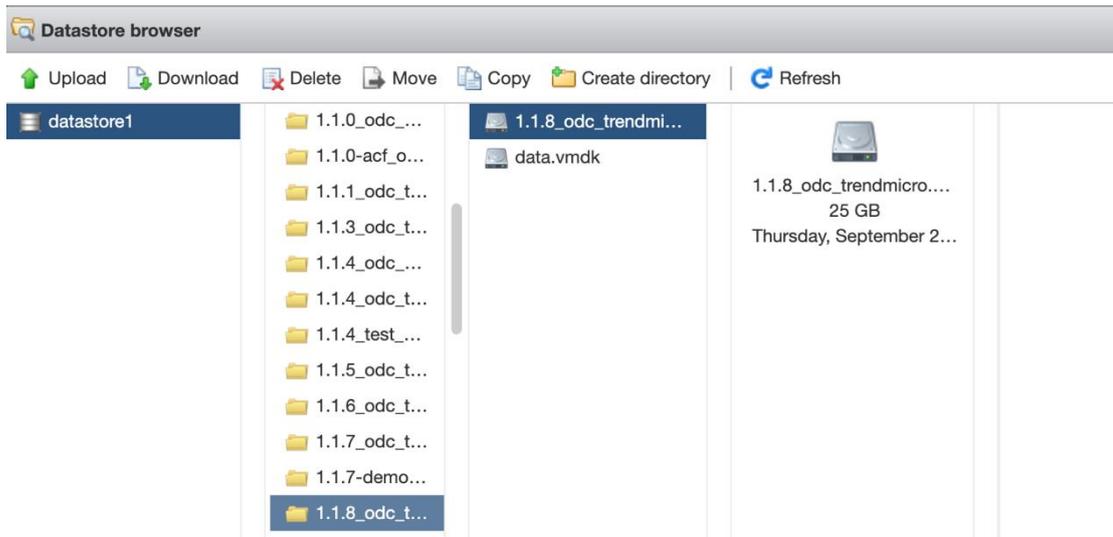
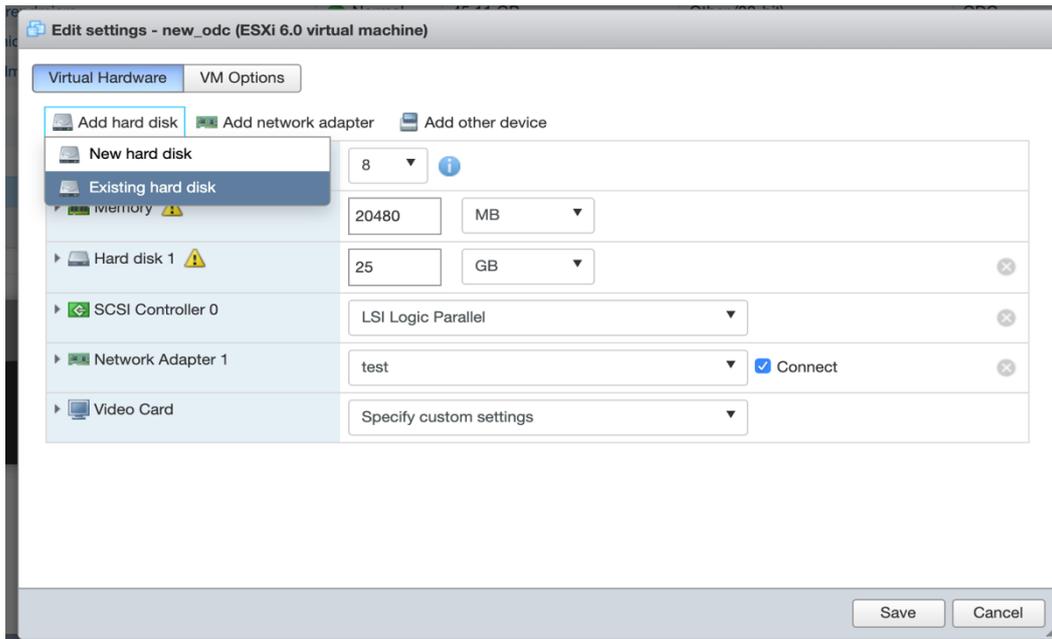
### Procedure

1. Launch the new instance of ODC (refer to section "Deploying OT Defense Console")
2. Power off the old ODC



3. Attach the external disk of the old ODC to the new ODC.

4. The old ODC's information will be migrated into the new ODC.



# Installing ODC on a VMware Workstation

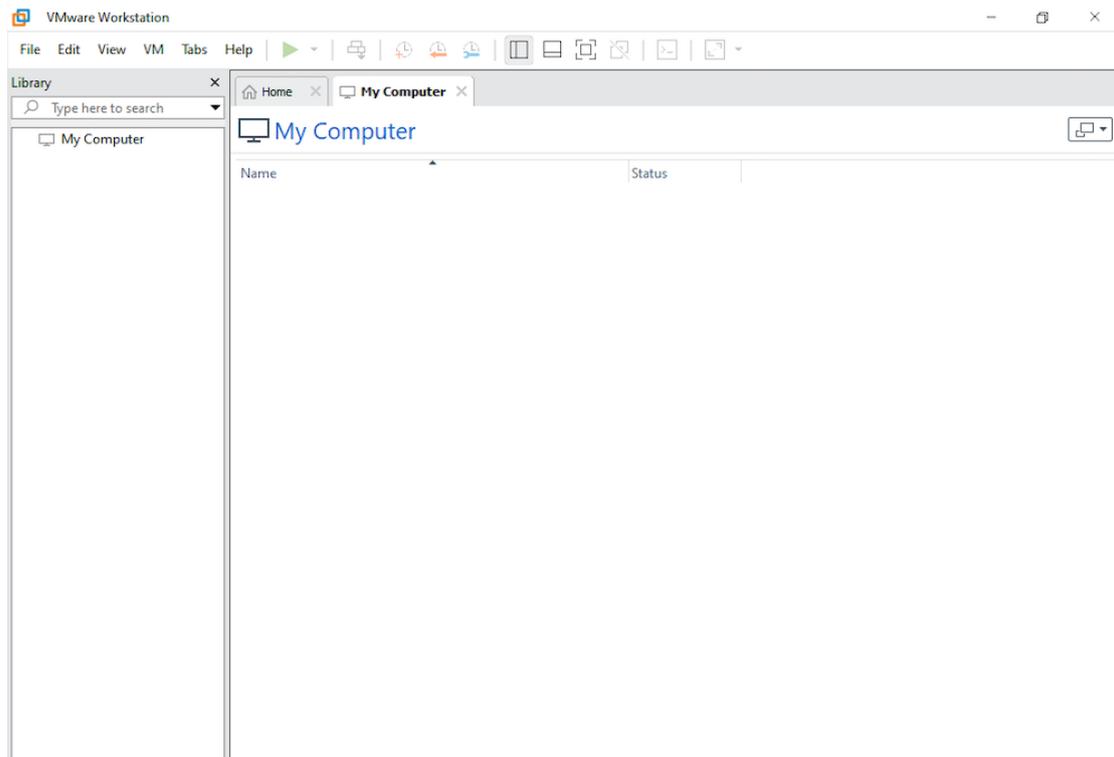
This chapter describes how to deploy OT Defense Console to a VMware Workstation system.

## Prerequisites

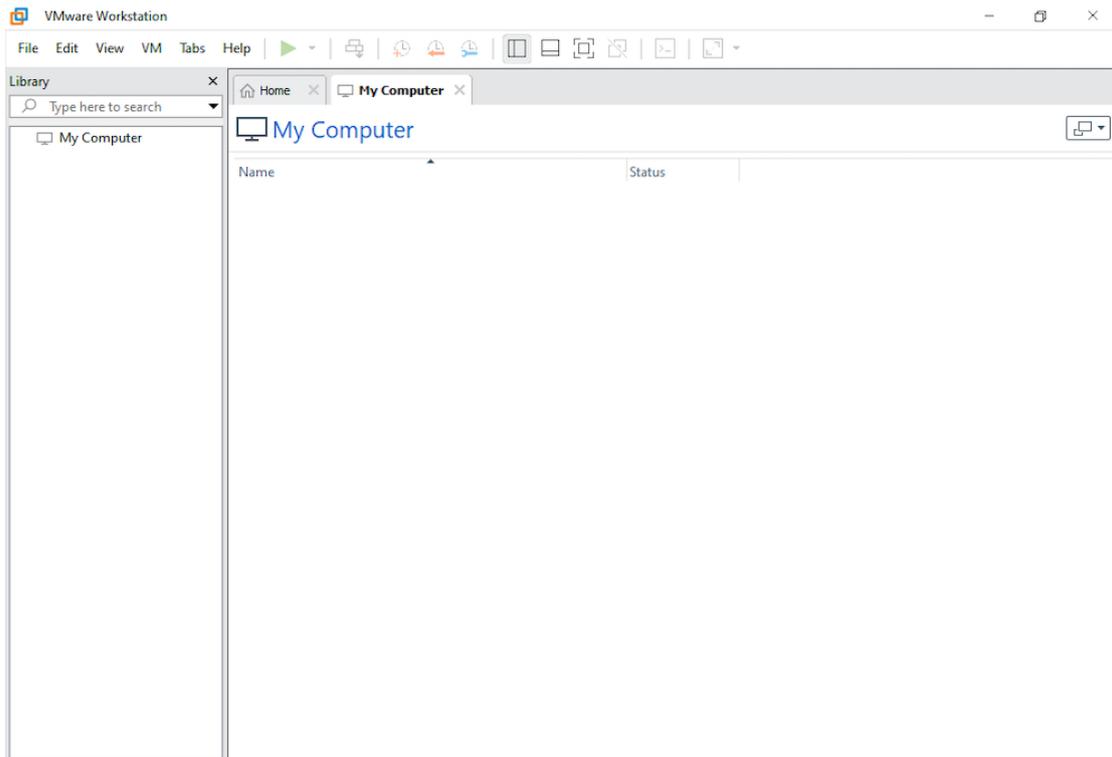
- The OVA packages provided by Trend Micro must be available and accessible to the VMware Workstation.
- VMware workstation 14 or later is required.

## Deploying OT Defense Console

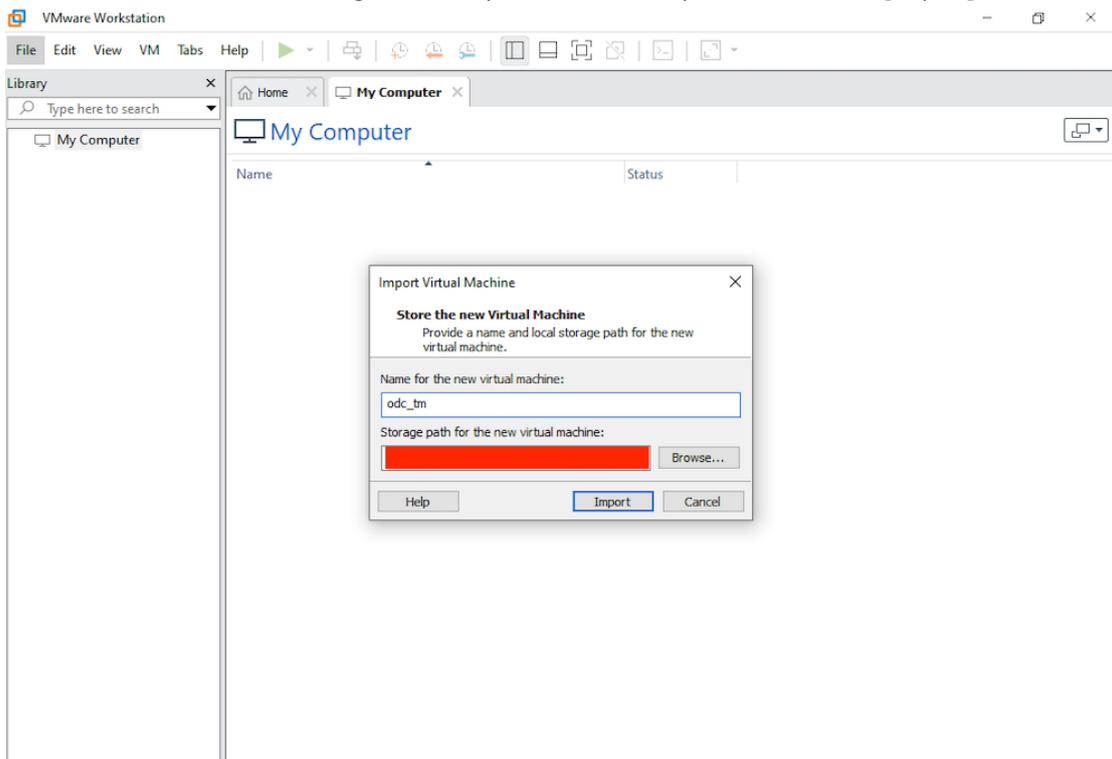
1. Start the VMware Workstation and click [File] on the menu bar.



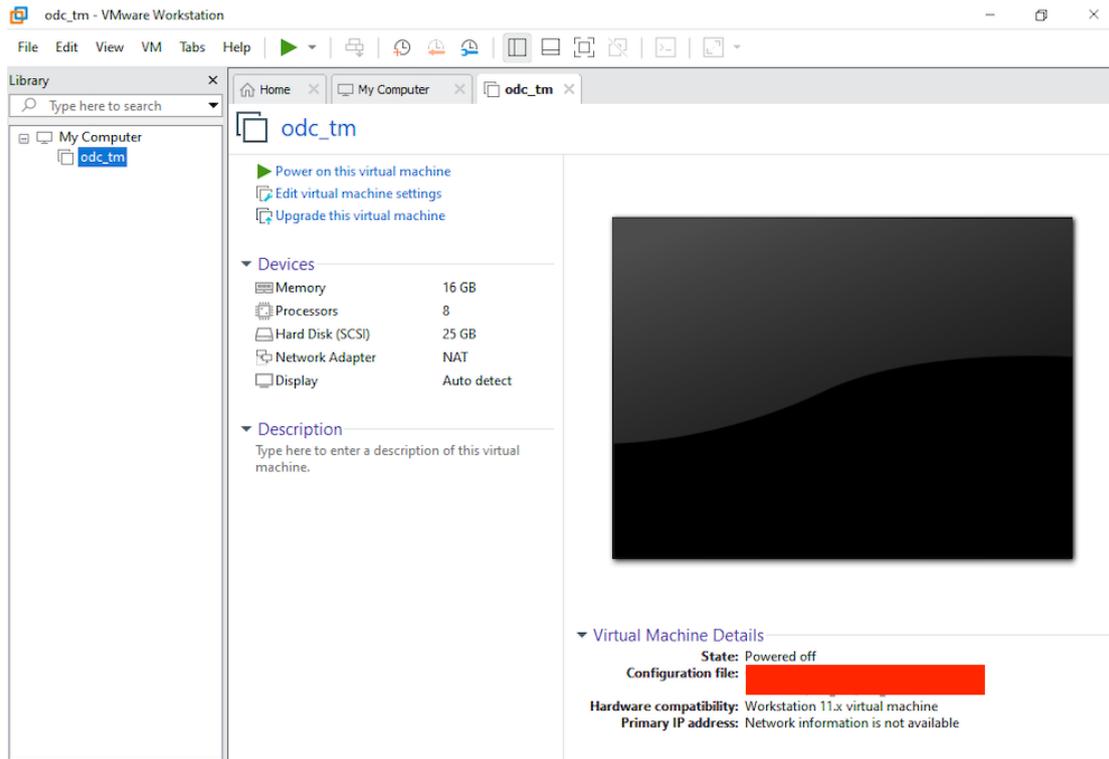
2. Select [Open] to import the ODC VM image file (\*.ova).



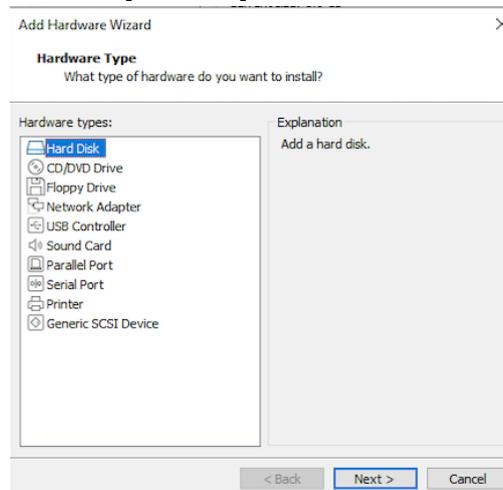
3. Select the ODC VM image file from your localhost file path and click the [Import] button.



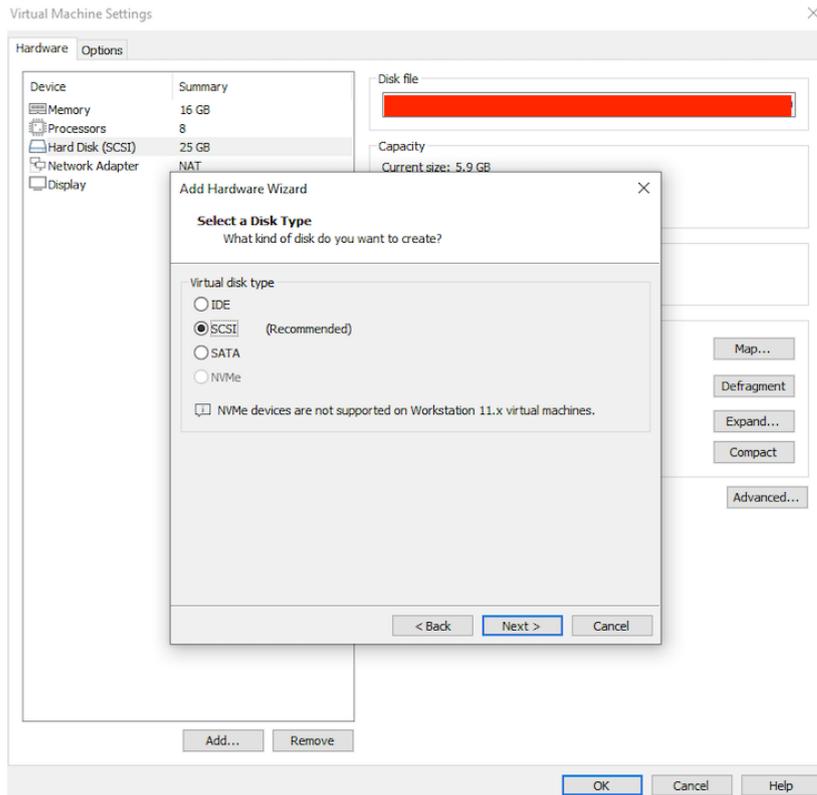
4. Check the detailed VM information of the imported ODC VM.



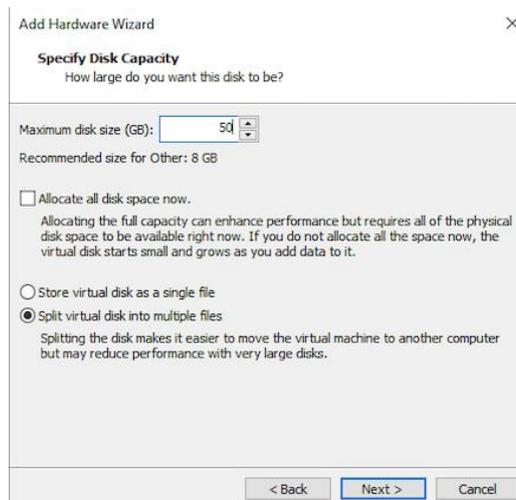
5. Add an extra disk.
  - a. Click [Edit virtual machine settings].
  - b. Click [Add], then choose [Hard Disk].



- c. Select Disk type.



d. Select Disk size.



e. Select path to store the disk.

f. Click [OK].

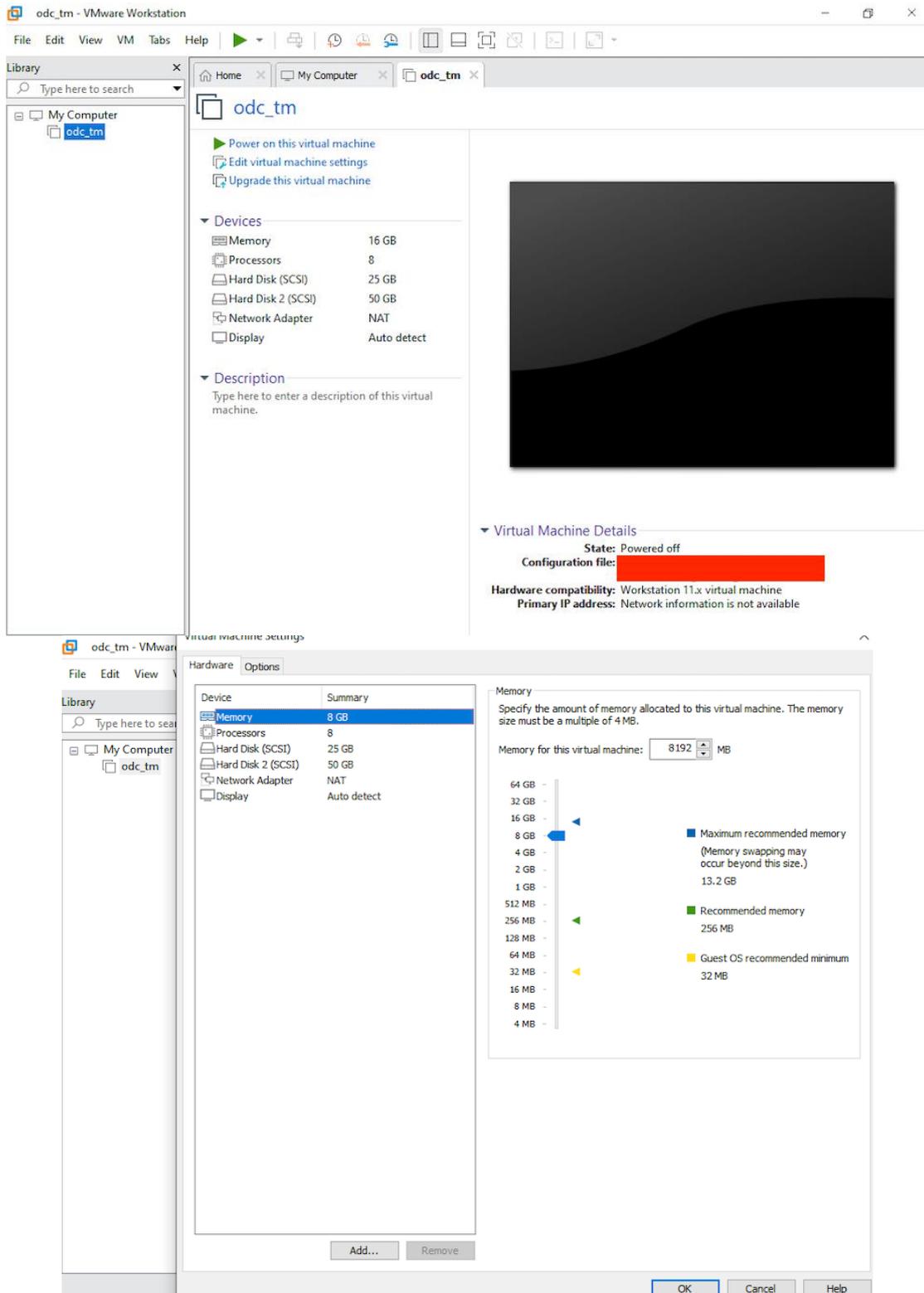
6. **(Optional)** Adjust your ODC instance to use proper resource configurations based on the following sizing table or using default settings (8 CPU cores, 16 GB of memory).

**Sizing Table**

Nodes	CPU	Memory
50	4 cores	16 GB
100	4 cores	16 GB
150	6 cores	32 GB
200	8 cores	32 GB

a. Click [Edit virtual machine settings].

- b. Configure the amount of memory.
- c. Configure the number of CPU cores.



The screenshot shows the VMware Workstation interface for a virtual machine named 'odc\_tm'. The main window displays the VM's configuration, including a list of devices and a description field. Below this, the 'Virtual Machine Details' section shows the VM is powered off, with its configuration file path redacted. A second window, 'Virtual Machine Settings', is open, showing the 'Hardware' tab. In this window, the 'Memory' section is expanded, showing a table of device settings and a slider for memory allocation. The current memory is set to 8192 MB. The slider indicates that the maximum recommended memory is 13.2 GB, the recommended memory is 256 MB, and the guest OS recommended minimum is 32 MB.

**Virtual Machine Details**

- State: Powered off
- Configuration file: [REDACTED]
- Hardware compatibility: Workstation 11.x virtual machine
- Primary IP address: Network information is not available

**Virtual Machine Settings - Hardware**

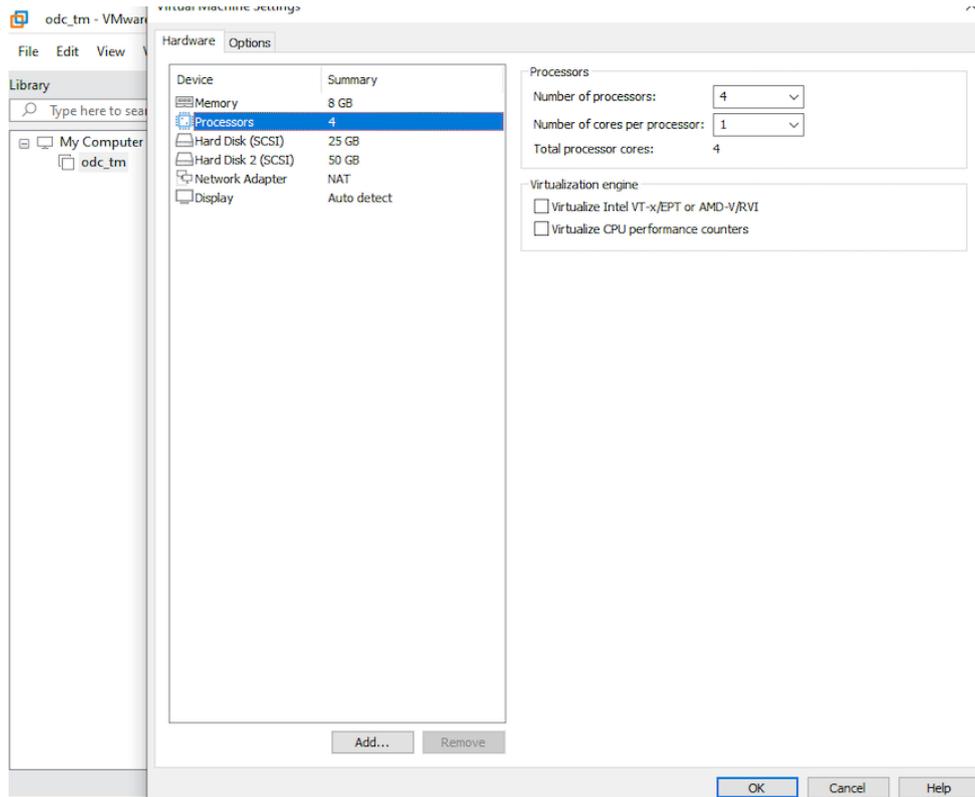
Device	Summary
Memory	8 GB
Processors	8
Hard Disk (SCSI)	25 GB
Hard Disk 2 (SCSI)	50 GB
Network Adapter	NAT
Display	Auto detect

**Memory Configuration**

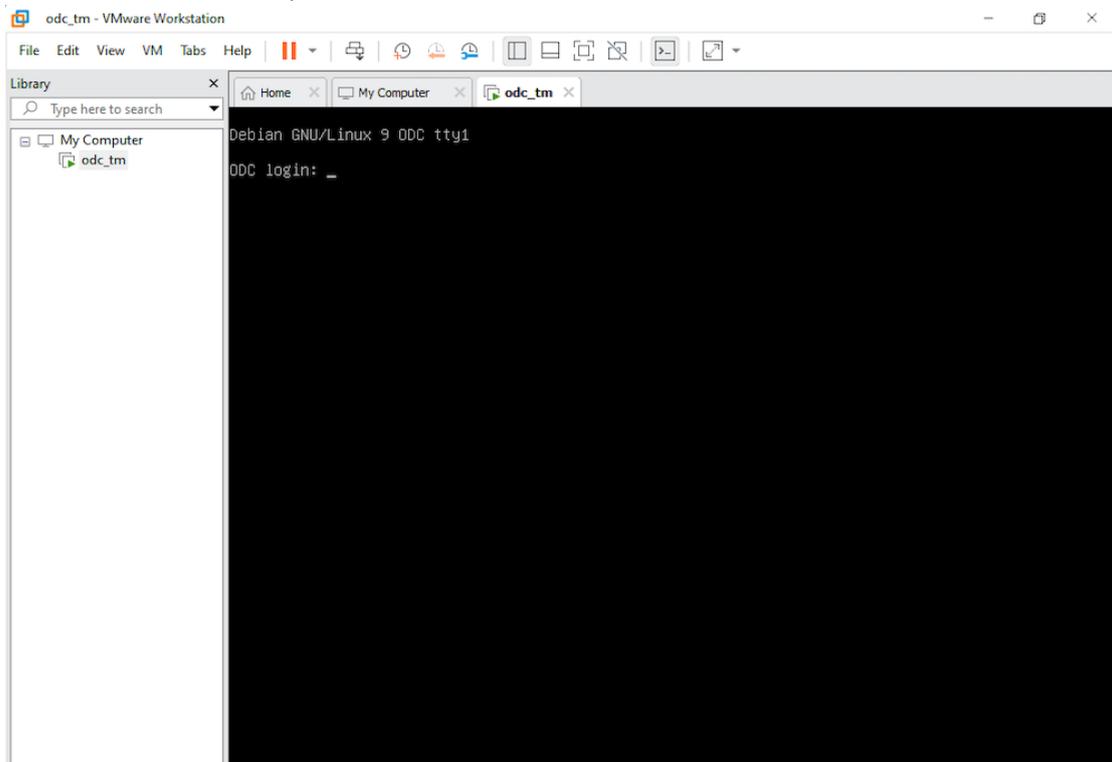
Specify the amount of memory allocated to this virtual machine. The memory size must be a multiple of 4 MB.

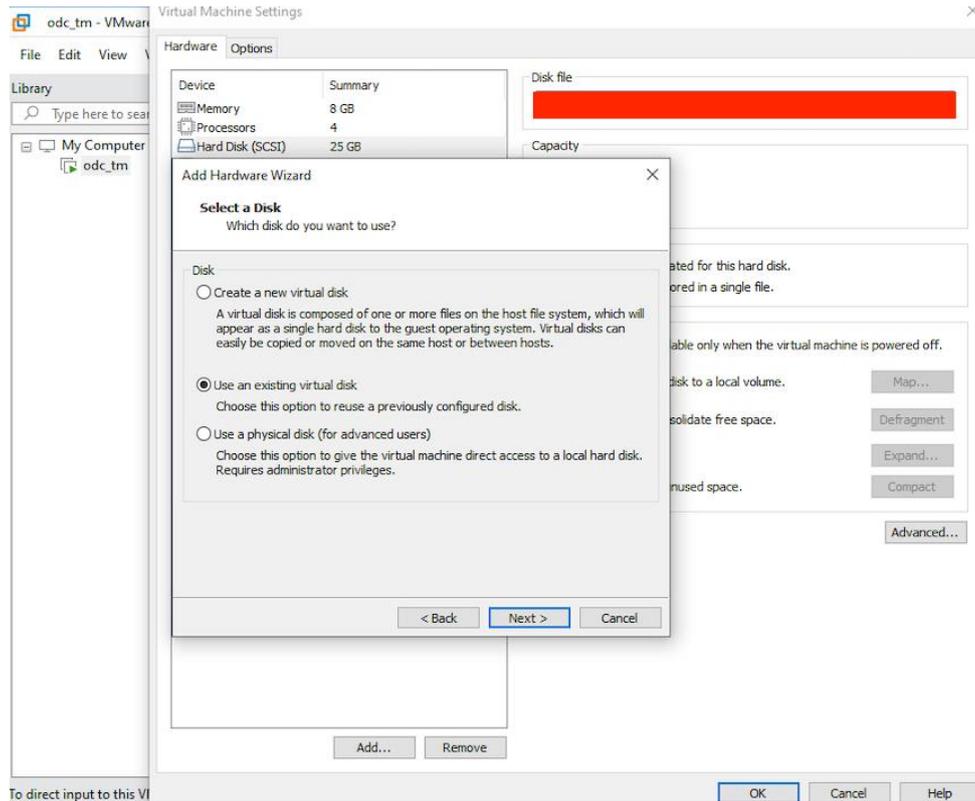
Memory for this virtual machine: 8192 MB

- Maximum recommended memory (Memory swapping may occur beyond this size.): 13.2 GB
- Recommended memory: 256 MB
- Guest OS recommended minimum: 32 MB



7. **(Optional)** Change the network adapter setting from 'NAT' to 'Bridged'.
  - a. Right click the ODC VM icon and select [Settings].
  - b. Select [Network Adapter] and change the default setting from [NAT] to [Bridged] if necessary.
8. Boot the ODC VM, and the ODC instance will start.





## System Migration

When a new version of ODC is released, we can migrate the setting of the old ODC by attaching the external disk of the old ODC to the new ODC VM. The migration of settings can include:

- The UUID of the old ODC
- The pattern and firmware downloaded by the old ODC
- The system configuration set by the old ODC including license, accounting information, security policies, and so on.
- The security event logs stored by the old ODC

### Procedure

1. Launch the new ODC instance (refer to section "Deploying OT Defense Console")
2. Power off the old ODC
3. Attach the external disk of the old ODC to the new ODC.
4. A window will come up where you can select which settings and data will be migrated into the new ODC, and after your confirmation the old ODC's selected information will be migrated into the new ODC.

## Configuring the ODC system

Please check the following sections for directions on configuring your ODC system:

- [Accessing the ODC CLI on page 9](#)
-



- [Getting the IP Address of the ODC Instance on page 11](#)
- [\[Optional\] Configure the IP Address Settings on page 11](#)
- [Opening the Management Console on page 12](#)

## Terms and Acronyms

The following table lists the terms and acronyms used in this document.

<b>Term/Acronym</b>	<b>Definition</b>
EWS	Engineering Workstation
HMI	Human-Machine Interface
ICS	Industrial Control System
IT	Informational Technology
ODC	Operational Technology Defense Console
OT	Operational Technology
OT Defense Console	Operational Technology Defense Console
PLC	Programmable Logic Controller
SCADA	Supervisory Control and Data Acquisition