Simulate ONTAP® 9.9.1

Installation and Setup Guide

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NetApp®

Contents

Introduction to Simulate ONTAP

Simulate ONTAP is a simulator for running ONTAP software. It enables you to test the features of ONTAP without having to buy new hardware or disturb your production environment.

Simulate ONTAP is a VMware virtual machine that runs on a hypervisor. You can run Simulate ONTAP on a Windows or a Mac system.

Supported VMware applications

You can install Simulate ONTAP only on certain VMware applications.

You need to install one of the following VMware applications on the host system to use Simulate ONTAP:

- VMware Workstation Pro
- VMware Workstation Player
- VMware Fusion

Limitations and unsupported features

Simulate ONTAP supports most ONTAP functionality and most of its features. However, Simulate ONTAP has some functional limitations and does not support some ONTAP features because of the virtualization architecture.

Simulate ONTAP has the following limitations:

- Non-Volatile RAM (NVRAM) is simulated and is not persistent.

  Data loss might occur after power cycles. You must shut down the simulator properly to avoid data loss.

- You can have a maximum of four simulated disk shelves with 14 disk drives per shelf, for a total of 56 drives per simulator.
  Note: SSD disk drive type is not supported.

- Each simulated drive is limited to 9 GB.

Note: The simulator image comes pre-configured with 28 1 GB disks; 14 each on simulated disk shelves 0 and 1. Simulated disk shelves 2 and 3 are not populated. You can configure up to a maximum of 220 GB total space for each Simulate ONTAP node.

- You can create 64-bit aggregates, but they are limited to a maximum of 9 GB per simulated disk drive.
- Simulate ONTAP is not suitable for applications that require high performance or heavy I/O.
- No more than two instances of the simulator can be booted simultaneously.

Simulate ONTAP does not support the following features:

- High Availability (CFO/SFO)
- Fiber channel and SAN connectivity
- RLM (Remote LAN Module)
- CFE, BIOS, shelf FW, and so on
- Multipathing

Downloading Simulate ONTAP software

The Simulate ONTAP software is a set of VMware files that have been packaged in an `.ova` file. You need to download the appropriate software and license files from the NetApp Support Site.

Steps

1. Log in to the NetApp Support Site at *https://mysupport.netapp.com/*.
2. Go to the **Tools** section.
3. Search for and select **Simulate ONTAP** to open the Download page.
4. Download **Simulate ONTAP 9.9.1 for VMware Workstation, VMware Player, and VMware Fusion**.
5. Save the ***.ova** file to the applicable location:

If you are downloading to...	Then...
A Windows system	Save the file to the `C:\Virtual Machines` folder.
A Mac system	Save the file to the download folder.

6. Click **CMode Licenses** file to get the list of ONTAP licenses that you need to unlock certain ONTAP features.

Installing Simulate ONTAP on a Windows system

You can install Simulate ONTAP on a Windows system and test the features of ONTAP.

In a Windows system, you need to have one of the following VMware applications installed before you can run Simulate ONTAP:

- VMware Workstation Pro
- VMware Workstation Pro Player

Windows system requirements

You must ensure that the hardware and software prerequisites are met before installing Simulate ONTAP on a Windows system. Also ensure that you have administrative privileges.

Hardware requirements

- Dual core 64-bit Intel or AMD system
- 6 GB of RAM for one instance of the simulator
- 12 GB of RAM for two instances of the simulator
- 40 GB of free disk space for each instance of the simulator
- VT support for Intel system

Software requirements

- Microsoft Windows 10

- VMware Workstation 16.1.2 Pro or VMware Workstation 16.1.2 Player.

Enabling the VT feature

To install Simulate ONTAP on a Windows system, you must enable the VT feature. The VT can be referred to as Vanderpool Technology, Virtualization Technology, or Virtual Machine Extensions. The VT setting can be found under a Security or CPU screen in the BIOS.

About this task

By default, VT is disabled on an Intel-based system.

Steps

1. Access the system BIOS while booting your laptop or desktop.
2. In the BIOS, enable VT if it is not already enabled.
3. Save the changes to the BIOS settings and then *turn off* the system.
4. Turn on the system again.

Note: If you reboot the system without turning it off, VT is not enabled.

Installing Simulate ONTAP on VMware Workstation Pro

You can download and install VMware Workstation Pro on a Windows laptop or desktop, configure the VMware Workstation Pro for Simulate ONTAP, start Simulate ONTAP Guest OS on the VMware Workstation Pro, and configure the network adapters on the VMware Workstation Pro.

Note: You cannot install multiple versions of VMware Workstation Pro on the same host.

For information about installing VMware Workstation Pro software, and for VMware Workstation Pro documentation, see the *VMware Web site*.

Related information

VMware Workstation Pro software

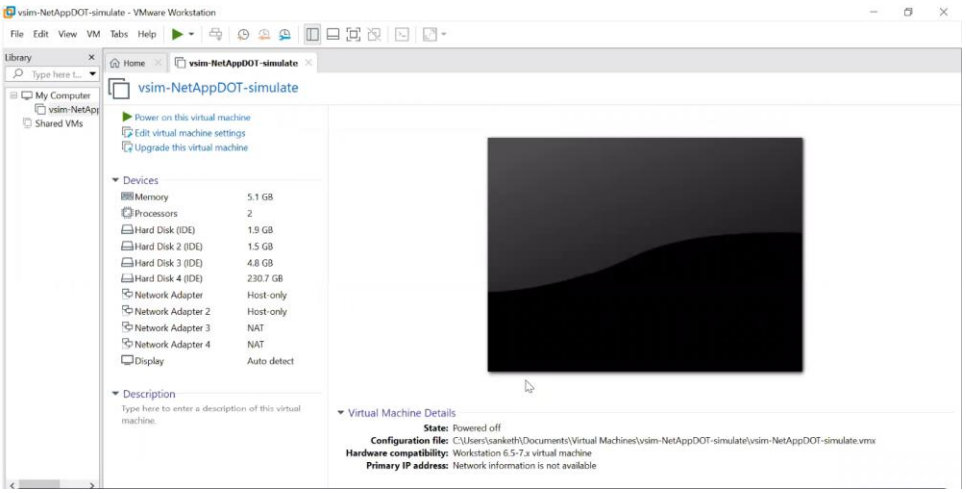
Workstation Pro User Manual

Starting Simulate ONTAP on VMware Workstation Pro

You must start Simulate ONTAP on VMware Workstation Pro to access the Simulate ONTAP console.

Steps

1. Click **Start** > **All Programs** > **VMware** > **VMware Workstation**.
2. In the **VMware Workstation** window, click **File** > **Open**.
3. In the **Open** window, select the `.ova` file you previously downloaded and click **Open**.
4. In the **Import Virtual Machine** window, provide a name and local storage path for the new virtual machine, and then click **Import**.
5. In the virtual machine tab, click the **Power on this virtual machine** icon.



Installing Simulate ONTAP on VMware Workstation Player

You can download and install the VMware Workstation Player on a Windows laptop or desktop, start Simulate ONTAP, set preferences for the Simulate ONTAP virtual machine, and configure network adapters on the VMware Workstation Player.

For information about installing VMware Workstation Player software and VMware Workstation Player documentation, see the *VMware Web site*.

Related information

VMware Workstation Player software

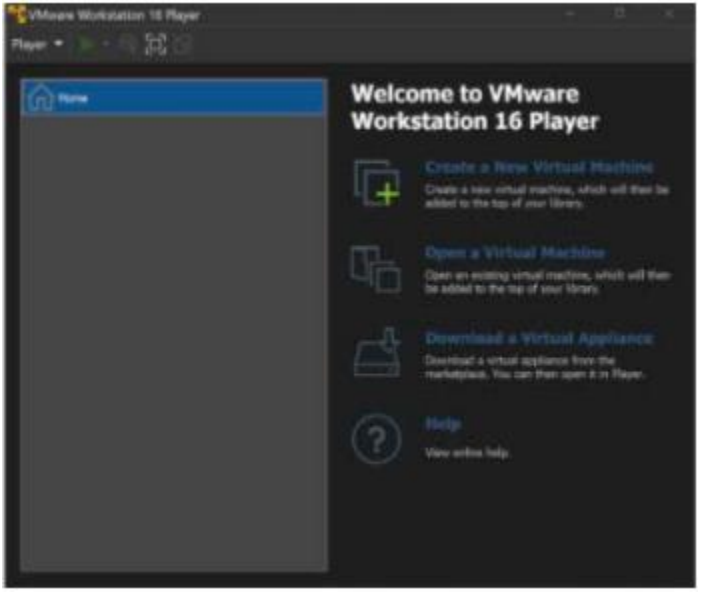
VMware Workstation Player Getting Started Guide

Starting Simulate ONTAP on VMware Workstation Player

You must start the Simulate ONTAP virtual machine to configure ONTAP in the VMware Workstation Player console.

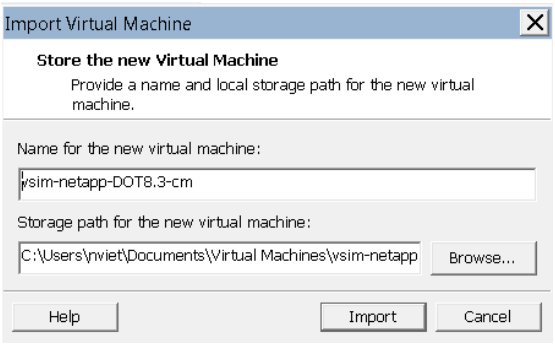
Steps

1. Click **Start** > **All Programs** > **VMware** > **VMware Workstation Player.**
2. In the **VMware Workstation Player** window, click **Open a Virtual Machine**.



3. In the **Open Virtual Machine** window, select the `.ova` file you previously downloaded and click **Open**.

4. In the **Import Virtual Machine** window, provide a name and local storage path for the new virtual machine and then click **Import**.



Result

Simulate ONTAP opens in the VMware Workstation Player console.

Installing Simulate ONTAP on a Mac system

You can install Simulate ONTAP on a Mac operating system to test the features of ONTAP.

Mac system requirements

You must ensure that the hardware and software prerequisites are met before installing Simulate ONTAP on a Mac (Apple) operating system. Also ensure that you have administrative privileges.

Hardware requirements

- Intel Core 2 Duo processor
- 6 GB of RAM for one instance of the simulator
- 12 GB of RAM for two instances of the simulator
- 40 GB of free disk space for each instance of the simulator
- Physical Address Extension (PAE) support

Software requirements

- Mac OS X 11 (validated on 11.4)
- VMware Fusion 12.1.1

Installing Simulate ONTAP on VMware Fusion

You can download and install VMware Fusion on a Mac (Apple) system, configure VMware Fusion to run Simulate ONTAP, add Simulate ONTAP on VMware Fusion, start Simulate ONTAP, and configure the network adapters on VMware Fusion.

For information about installing VMware Fusion software and VMware Fusion documentation, see the *VMware Web site*.

Related information

VMware Fusion software

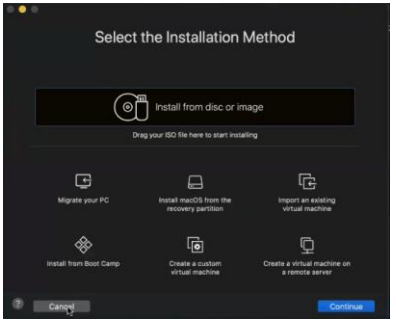
VMware Fusion documentation

Adding Simulate ONTAP on VMware Fusion

To install Simulate ONTAP on VMware Fusion, you must add Simulate ONTAP to the virtual machine library by using the VMware Fusion software.

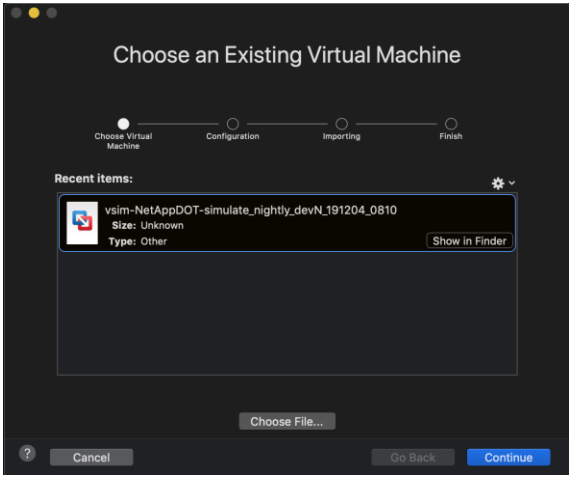
Steps

1. On the desktop, click **Applications**.
2. In the **Applications** window, click **VMware Fusion**.



3. Click **Cancel** on the Select the Installation Method screen.

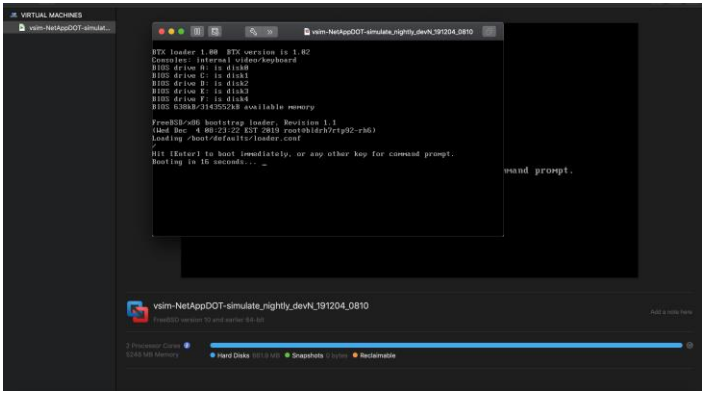
4. Click **File > Import**.
5. In the **Choose an Existing Virtual Machine** window, choose the `.ova` file you downloaded and click **Continue**.



6. Provide a name for the new virtual machine in the **Save As** text box and then click **Save**.
7. In the Finished window, click **Finish** to run the virtual machine.

Result

The added Simulate ONTAP virtual machine appears in the Virtual Machine Library.

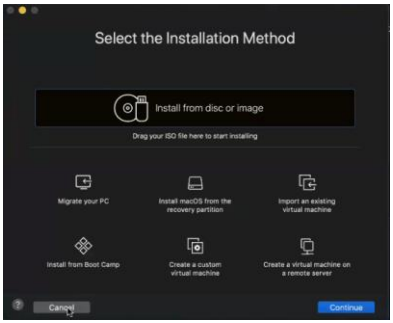


Starting Simulate ONTAP on VMware Fusion

You must start the Simulate ONTAP virtual machine to configure ONTAP in the VMware Fusion console.

Steps

1. On the desktop, click **Applications**.
2. In the **Applications** window, click **VMware Fusion**.



3. Click **Cancel** on the Select the Installation Method screen.
4. Select **Window** > **Virtual Machine Library**.
5. Select the imported virtual machine and click the **Play** icon to start it.

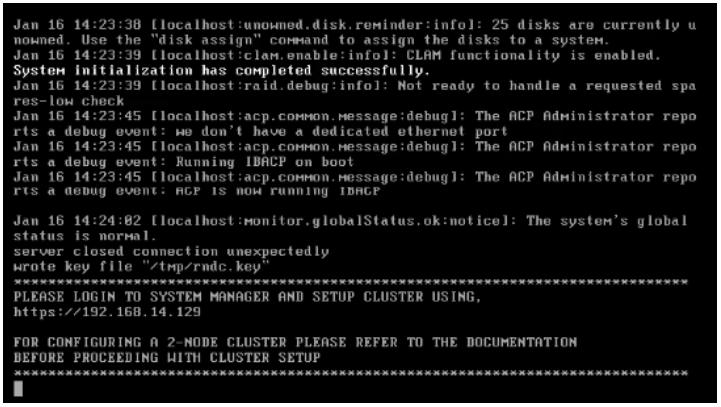
Using Simulate ONTAP: Single node

Start and configure a single node cluster using Simulate ONTAP, VMware, and System Manager.

Steps

1. After a few minutes from starting the virtual machine, you receive a message to log in to System Manager to complete cluster setup. This message includes an

IP address. Copy this **IP address** and paste it into your browser address bar to open System Manager.



2. Ignore the message indicating that the partner node is not found.
3. Configure the single node cluster in System Manager. Follow the on-screen prompts. For more information, see the *System Manager documentation*.

Using Simulate ONTAP: Two nodes

Configure a Two Node Cluster

Start and configure a two node cluster using Simulate ONTAP, VMware, System Manager, and the command line.

Steps

1. Create the first Simulate ONTAP virtual machine and name it **node1**.
2. Power on the **node1** virtual machine.

Note: DO NOT OPEN SYSTEM MANAGER UNTIL INSTRUCTED IN THESE STEPS.

3. Create the second Simulate ONTAP virtual machine and name it **node2**.
4. Power on the **node2** virtual machine.

   Change the system ID and serial number of the second node before joining the cluster as shown in the following steps.

5. Press the space bar when the `Hit [Enter] to boot immediately, or any other key for command prompt. Booting in 10 seconds...` message is displayed in the console of **node2**.
6. You should see a `VLOADER>` prompt.
7. Change the serial number and system ID for this node:

   a) `VLOADER> setenv SYS_SERIAL_NUM 4034389-06-2`

   b) `VLOADER> setenv bootarg.nvram.sysid 4034389062`
8. Verify that the information was saved correctly:

   a) `VLOADER> printenv SYS_SERIAL_NUM`

   b) `VLOADER> printenv bootarg.nvram.sysid`
9. Enter the boot command to boot the node:

   a) `VLOADER> boot`
10. The simulator begins the boot process with the new system ID and serial number.
11. After the IP address shows for **node2**, go back to **node1** and open the System Manager in a browser window using the IP address that is shown in the console.
12. You receive a message indicating that the partner node details were not found. Ensure that both the nodes were detected by cross checking the serial numbers (4082368-50-7 and 4034389-06-2) displayed in the message.
13. Follow the on-screen prompts to configure the cluster. For more information, see the *System Manager help.*
14. Click **Submit**.
15. After the cluster creation is successful, you are redirected to the cluster IP provided earlier.
16. Log in to the System Manager using the password provided earlier.
17. Open **Network > Overview** and pick an IP address with a Type of **Cluster** and starting with `169.254.x.x` in the Network interfaces section.
18. Open the **node2** virtual machine console, login with `admin` and enter the following command to join **node1**.

"`cluster join -clusteripaddr <IP address picked in the previous step>`"

Wait until a message stating "`This node has joined to cluster`" is displayed.

Disabling root snapshots

Root snapshots consume a large amount of space on the root volume with snapshots of log files. If you are concerned about running out of space on your root volume, you should disable root snapshots before creating aggregates and volumes.

Steps

1. From the command line, enter `run local`.

   This takes you into the node shell.

2. Delete all existing snapshots on the root volume and suppress confirmation request.

   ```
   snap delete –a –f vol0
   ```

3. Disable the automatic snapshot schedule.

   ```
   snap sched vol0 0 0 0
   ```

4. Enable snapshot autodelete.

   ```
   snap autodelete vol0 on
   ```

5. Set the snapshot autodelete threshold to 35% for the volume free space. This guarantees the volume has a minimum of free space equal to 35% of its overall size.

   ```
   snap autodelete vol0 target_free_space 35
   ```

6. Confirm the autodelete has been configured correctly.

   ```
   snap autodelete vol0
   ```

Expanding the root volume size

If your root volume is too small, you can expand it. Your root aggregate must have enough free space to accommodate an increase in the size of your root volume.

Steps

1. If necessary, add more disks to your root aggregate to increase its size and accommodate the additional space needed in your root volume.

   ```
   storage aggregate add-disks -aggregate aggr0 -diskcount <n>
   ```

2. Set the root volume to a new size.

   ```
   volume size -vserver <vserver_name> -volume vol0 -new-size
   <new_size>
   ```

3. View the root volume size details to verify the new size.

   ```
   volume show -volume vol0
   ```

Evaluating ONTAP

Explore ONTAP using Simulate ONTAP and the *ONTAP documentation center*.

Troubleshooting

If an IP address is not automatically configured, complete the following steps.

Steps

1. Open command prompt and execute "`ipconfig`" in Windows and "`ifconfig`" in Mac.
2. Look for the ethernet network adapter "`VMware Network Adapter VMnet8`" in Windows and "`vmnet8`" in Mac.

   Windows example:

```
Ethernet adapter VMware Network Adapter VMnet8:
Connection-specific DNS Suffix  . . . . . . . :
Link-local IPv6 Address. . . . . . . . . . . .: fe80::3179:c654:ddb2:7dfc%11
IPv4 Address. . . . . . . . . . . . . . . . . : 192.168.201.1
```



```
Subnet Mask . . . . . . . . . . . . . . . . .: 255.255.255.0
Default Gateway . . . . . . . . . . . . . . . :
```

MAC Example:

```
vmnet8:
flags=8863<UP,BROADCAST,SMART,RUNNING,SIMPLEX,MULTICAST> mtu 1500
ether 00:50:56:c0:00:08
inet 172.16.208.1 netmask 0xffffff00 broadcast 172.16.208.255
```

3. Pick an unused IP from the subnet of "`IPv4 Address`" in Windows and "`inet`" in Mac.
4. Login to the console of the virtual machine and execute the following command to configure the IP.

```
network interface create -vserver Default -lif mgmt_auto -role node-mgmt -
address <IP picked in step 2> -netmask <Netmask of IP picked in step2> -home-
port e0c
```

5. Use the following URL to login to System Manager:

   `https://< IP picked in step 3>`

Appendix A: Configuring network access on the Ethernet port

By default, network adapter 3 and 4 of Simulate ONTAP are configured as **NAT / Share with my MAC**. To access and mount the volumes created on Simulate ONTAP through the physical ethernet port of the laptop, please modify **network adapter 4** to **Bridged / Thunderbolt Ethernet** and use **e0d** network port within Simulate ONTAP for mounting the volumes. This works only if the IP addresses and subnet are static.

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