Hillstone Networks, Inc.

vHSM Installation Guide

Version 3.0R2P1

Hillstone Networks, Inc.

Contact Information:

US Headquarters:

Hillstone Networks

292 Gibraltar Drive, Suite 105

Sunnyvale, CA 94089

Phone: 1-408-508-6750

http://www.hillstonenet.com/about-us/contact/

About this Guide:

This guide gives you comprehensive installation instructions of Hillstone Networks, Inc.vHSM .

For more information, refer to the documentation site: http://docs.hillstonenet.com.cn.

To provide feedback on the documentation, please write to us at:

hs-doc@hillstonenet.com

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Overview

The Virtual Hillstone Security Management (vHSM) is a software product, a HSM system running on a virtual machine.vHSM can centralize the control and management of multiple Hillstone devices in the network.

About This Guide

This guide introduces how to install vHSM on VMware virtualization platform (VMware ESXi and Workstation) and KVM platform. This document does not cover how to configure the operating system itself. For information of how to configure HSM system, please refer to *Hillstone Security Management User Guide.*

Targeted Readers

This guide is intended for administrators who want to install vHSM of Hillstone Networks, Inc.. Before deploying vHSM, the administrator should be familiar with the concept and components of VMware or KVM. This document is written with readers in mind that have already known basic virtualization knowledge, and it will only introduce operations of how to install vHSM.

vHSM Deployment Scenarios

- To install vHSM on Workstation host, please refer to "Installing vHSM on Workstation" on Page 17.
- To install vHSM on ESXi Server host, please refer to "Installing vHSM on VMware ESXi" on Page 6.
- To install vHSM on KVM host, please refer to "Deploying vHSM on KVM" on Page 20.

vHSM Models

vHSM is available in three models in terms of hard disk capacity: 100G, 500G and 2T. All models can be installed on VMware ESXi and VMware Workstation. You can choose product according to your actual needs.

The capacity is as listed below:

Capacity	vHSM
CPU	4 Cores
Memory	4 GB
Hard Drive	100 GB (extendible)
Interface	Physical server requires creating at least 2 interfaces.
Maximum Number of Managed Devices	1000
Maximum Shared Policies	1,000
Maximum Nested Levels of Shared Object	8

Capacity	vHSM
Shared Address Books/Maximum Number of Members	1,024/512
Shared Service Books/Maximum Number of Members	4,096/8
Shared Service Groups/Maximum Number of Members	512/2,048
Shared Schedules/Maximum Number of Members	512/16

Supported Features

vHSM supports the following features:

- Viewing the running status, resource utilization, logs, etc. of the managed devices;
- Monitoring the managed devices and viewing monitor details, including traffic monitor, user monitor, NBC monitor, etc.;
- Monitoring the operation status of managed devices by alarms. This function can help you to learn problems in network devices timely, speed up response to network problems, and lower risks of network failures;
- Obtaining device statistics reports periodically. This function allows you to learn network status and analyze network accurately;
- Centralizing policy management and batch deploying rules. This function improves availability and usability of policy management;
- Centralizing device upgrade. This function simplifies software management.

Licensing vHSM

Hillstone Networks, Inc.provides license to control the number of devices which can be managed by vHSM. Only after activating the system and installing formal license can the vHSM manage the listed number of devices. If there are more than 15 to be managed, you can contact sales person to purchase an official license.

Official Licenses

Official licenses can enable you to use vHSM to manage specified number of devices. It is restrict to time: within the validity period, vHSM supports system upgrading; when it expires, vHSM can still manage the specified number of devices, but can not be upgraded to the higher version after expiring date.

Generating Application Code

To install a license, log in the vHSM via WebUI and generate application code. Before logging in your vHSM, you need to refer to the installation instructions to set up your vHSM first (VMware ESXi or VMware Workstation). Make sure the system is activated.

To generate application code in WebUI:

1. Log in the vHSM system.
2. Select **System > License > Register** to enter the license page.
3. Fill in the required fields under the **Apply for License** section.
4. Click **Apply**, and a series of code appears.
5. Copy and send the code to sales person or vendor. They will return the license to you soon.

Installing License

After receiving license, you need to upload and install the license to make it take effect.

To install a license:

1. Select **System > License > Register** to enter the license page.
2. Under **Install License**, click **Browse**, select the license plain text file (.txt) to upload it to the system:
3. Click **Upload**, then license(s) will take effect.

Note: Only after the system is activated can the **Apply** button and **Upload** button be available.

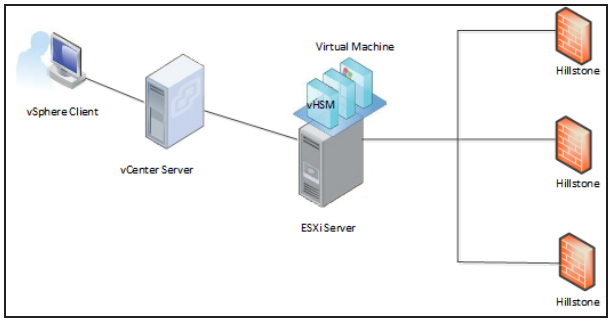
Installing vHSM on VMware ESXi

vHSM is packed in an OVA file, and can be installed on a VMware ESXi server running on a 64-bit system.

Before installing vHSM, you should be already familiar with VMware vSphere hypervisor, ESXi host and VMware virtual machines.

Deployment Scenario

You may refer to the following deployment scenario to deploy your vHSM.



System Requirements

To deploy vHSM:

- VMware ESXi 5.1, 5.5 or 6.0.
- The physical server should have at least 4 vCPU and 4 GB memory available.
- At least 2 NICs will be created.
- The USB interfaces of physical server should be able to be virtualized.

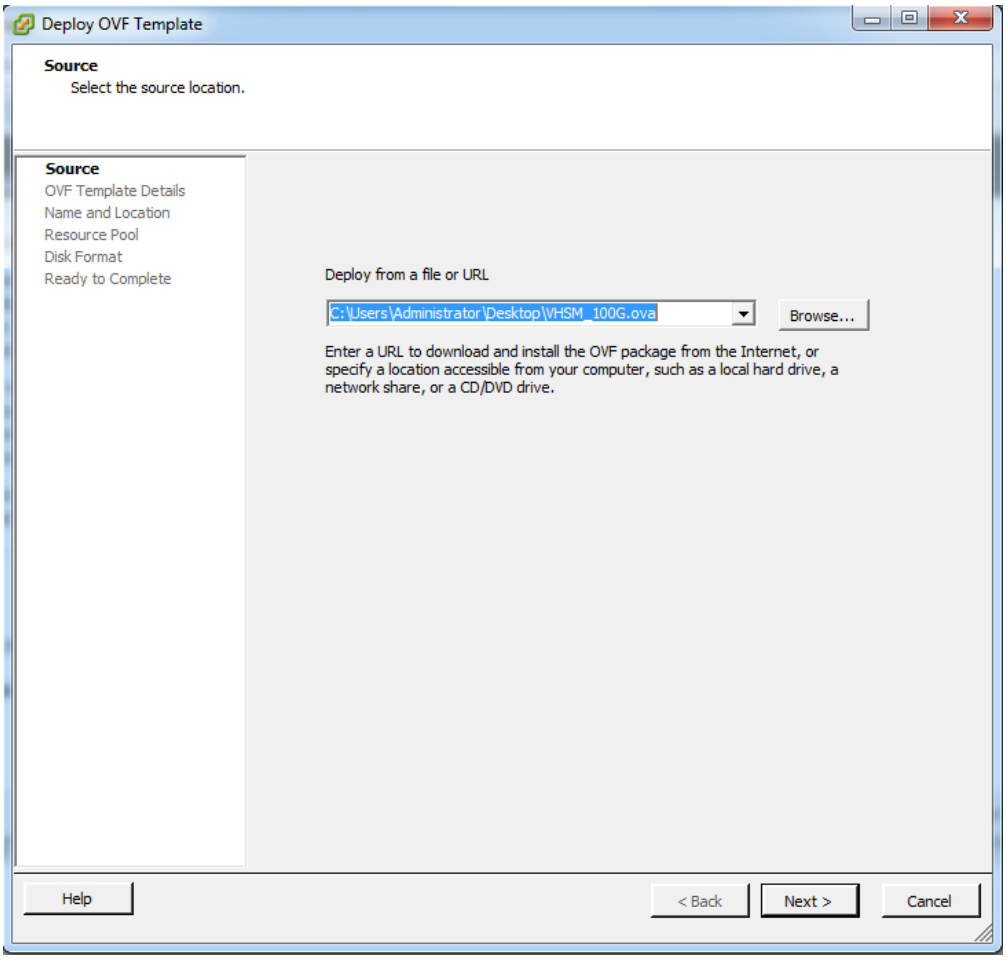
Deploying vHSM

To improve manageability and make full use of vSphere Hypervisor, we suggest you to use vCenter and vSphere Client to manage ESXi servers.

Installing vHSM

Before installation of vHSM, please set up your ESXi Server, vCenter Server and vSphere Client host, then get the vHSM disk.

1. Save the OVA file in your local computer.
2. In vSphere Client, enter the IP address or name of vCenter Server, then username and password, click **Login**.
3. After logging in vCenter, from left list, click the ESXi host which vHSM will belong to, then select **File > Deploy OVF Template**.



4. In the pop-up dialog box, click **Browse**, browse your PC and import vHSM's OVA file to vCenter, click **Next**.

5. Confirm the details of the OVF template, click **Next**.
6. Enter the name of the OVF template, and select the location of list, click **Next**.
7. Select the host or cluster to deploy the OVF template on it, click **Next**.
8. Select the resource pool to run the OVF template in it, click **Next**.
   This page is displayed only when the cluster contains a resource pool.
9. Select data storage to store the deployed OVF template, then choose the **Thick Provision Lazy Zeroed** format, click **Next**.
10. Click **Finish** to start the deployment.
    Wait for a while, and your vHSM will be deployed successfully.

Visiting vHSM via Console

After all the setups above, you can now start your vHSM.

1. In vCenter, click **Home > Inventory > VMs and Templates**.
2. Right click vHSM on virtual machine, and select **Open Console**. In the prompt, you are accessing to vHSM's console port.
3. Click the green button to start the vHSM virtual machine.

4. Wait for a while, and the system will be up.
5. When the prompt shows the command line interface below, enter default username and password (hillstone/hillstone) to log in vHSM.

Visiting WebUI of vHSM

In order to operate vHSM easily, it is recommended to log in and configure via WebUI. For the first time to access vHSM via WebUI, take the following steps:

1. Collect necessary information from your network administrator. You need to have eth0's IP address, network mask, and gateway IP address.

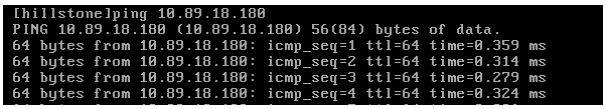
2. Modify eth0's default IP address to a static IP address you collected from administrator(192.168.1.1 by default). To modify IP address for eth0, use the following command:

   [hillstone]ipconfigeth0*ip-addressnetmask***up**

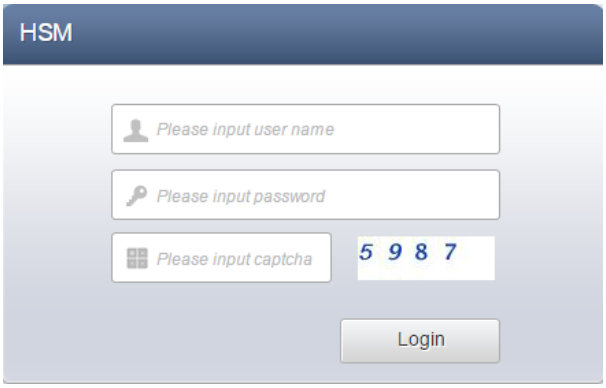
3. Add a static route. Use the command below to add a route whose next hop is the gateway.

   [hillstone]route add*ip-address*

4. Test if the gateway is accessible.



5. In the Web browser (IE9 is recommended) of the management PC, type http://192.168.1.1 or https://192.168.1.1 , and press Enter. If you use HTTPS, select Continue when the Web Browser displays security tips. The login page is shown below:



6. Type the default username (admin), password (hillstone) and verification code into the boxes respectively. If typing the wrong password for three times, HSM will lock your account for 30 minutes, and disable your account for 30 minutes when you type wrong password the fourth times.

7. Click **Login** to log into the main page of vHSM.

Note: To make vHSM to manage devices normally, make sure that the vHSM is routed up to the managed devices.

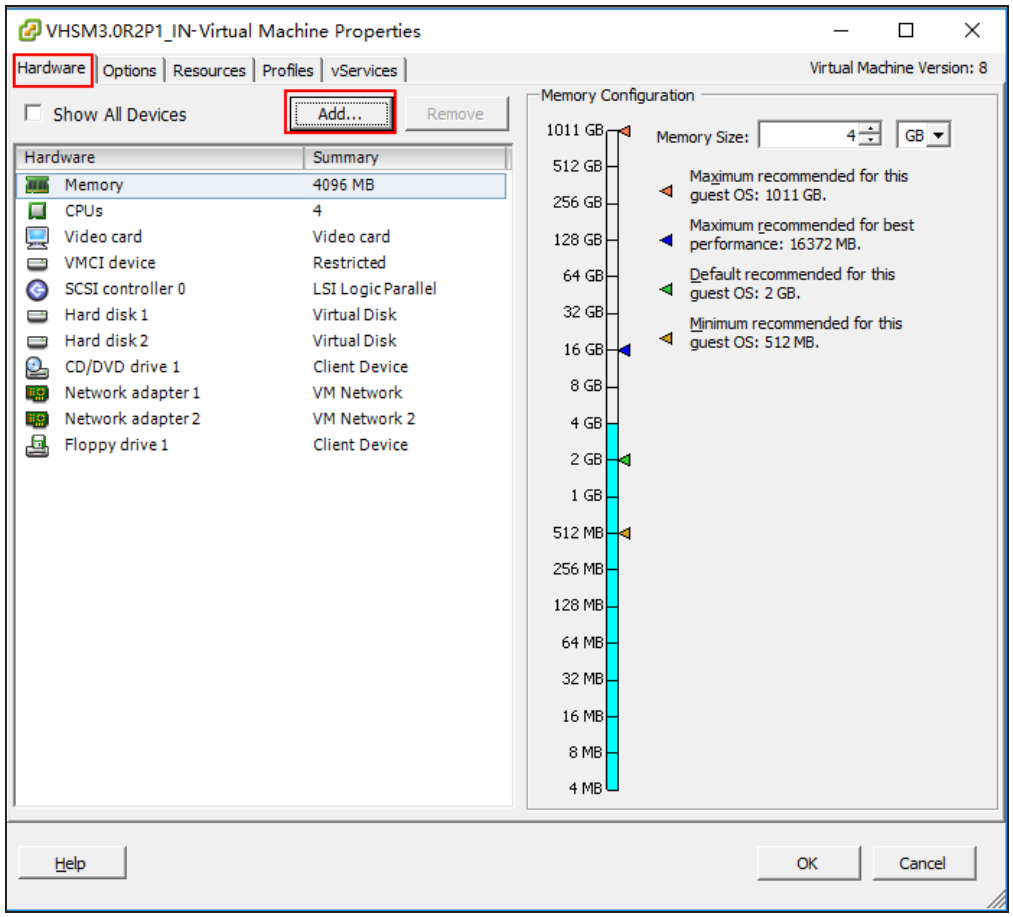
Disk Expansion

You can expand disks if necessary. Take the vHSM deployed on EXSi server as an example, take the following steps:

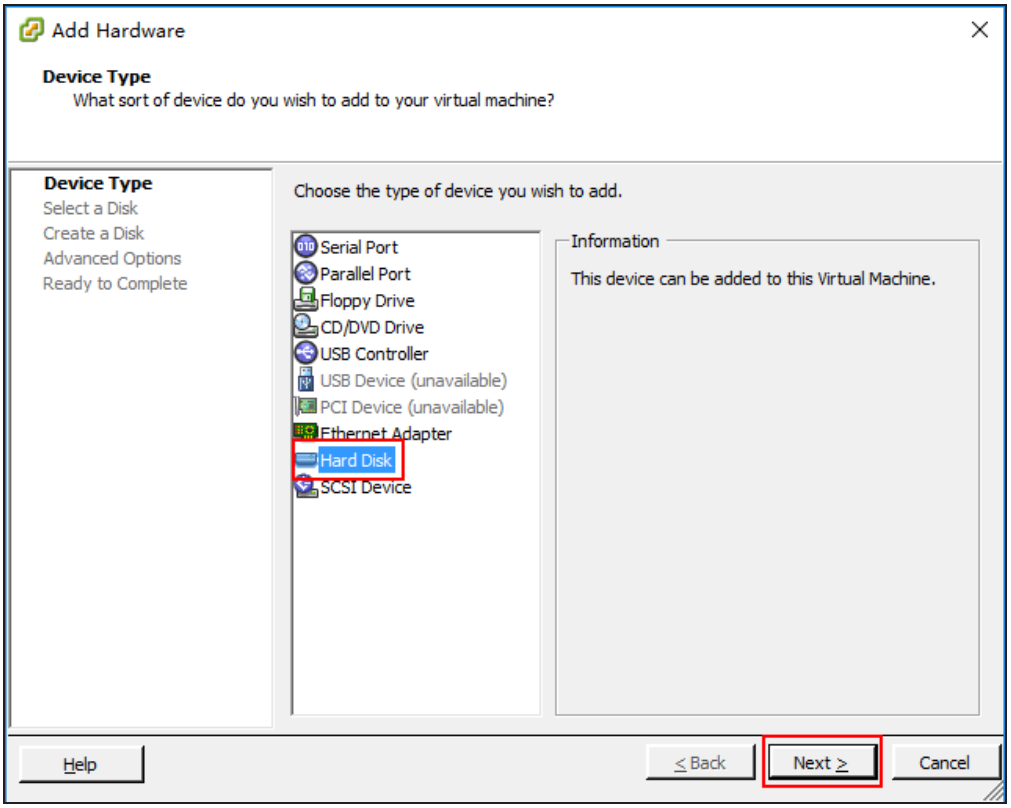
1. In VMware, click **Home > Inventory > VMs and Templates**.

2. You can expand the disk capacity only when powering off the virtual machine. Right-click the virtual machine in the left list and choose **Power> Power Off**.

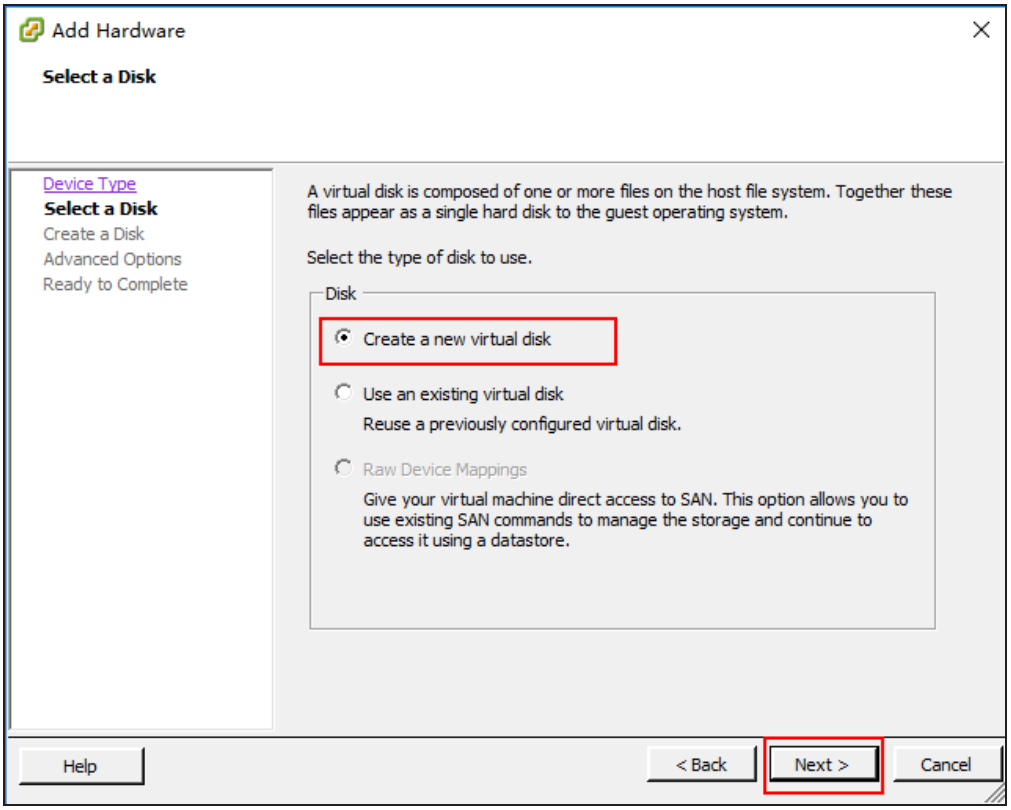
3. Right-click the virtual machine in the left list and choose **Edit Settings**. The **Virtual Machine Properties** dialog box appears. Select **Hardware** tab, and then click **Add** to enter the **Add Hardware** dialog box.



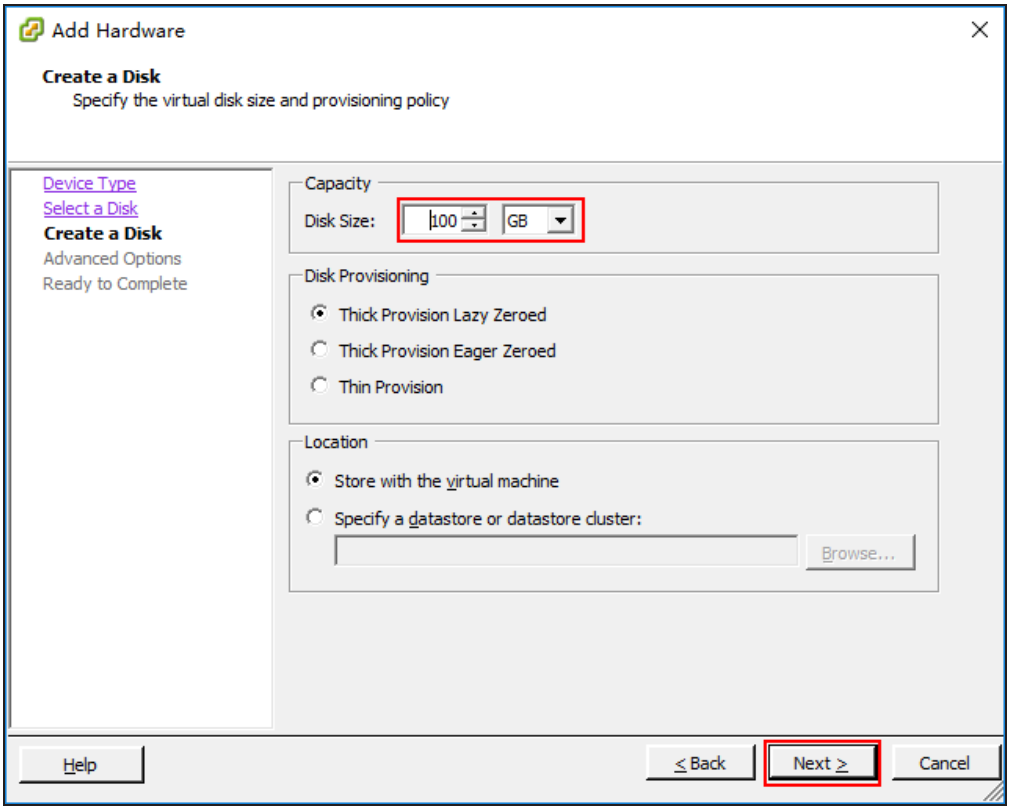
4. Select **Hard Disk** tab, and then click **Next** .



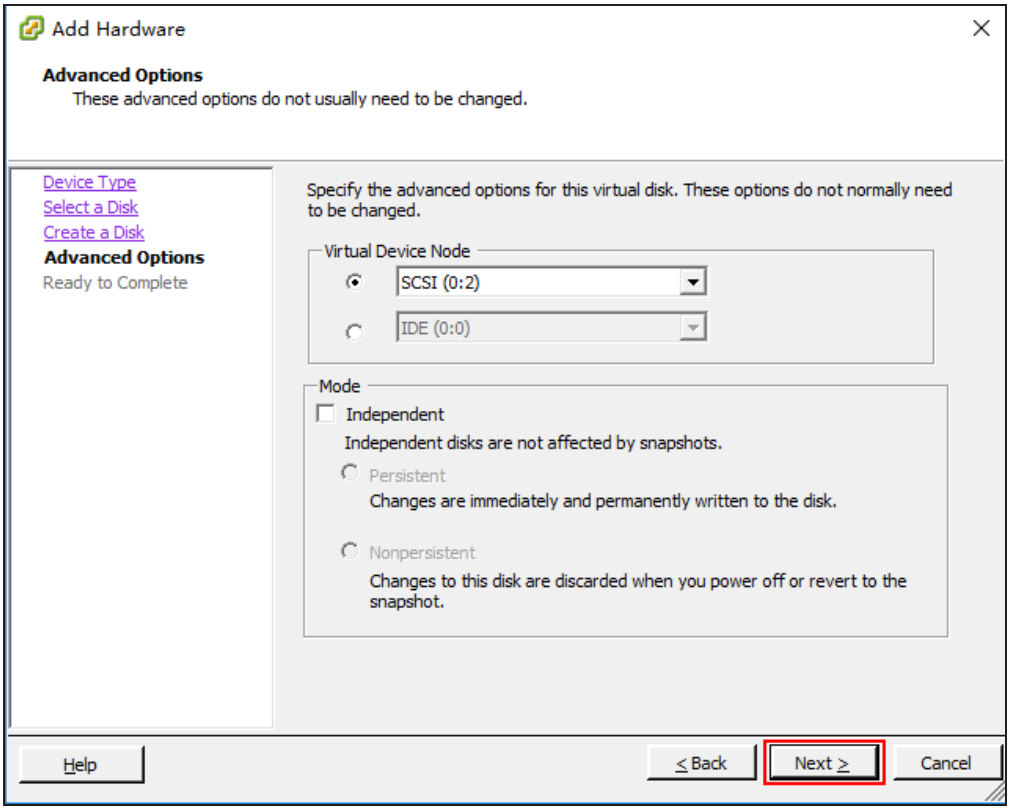
5. Select **Create a new virtual disk** , and then click **Next** .



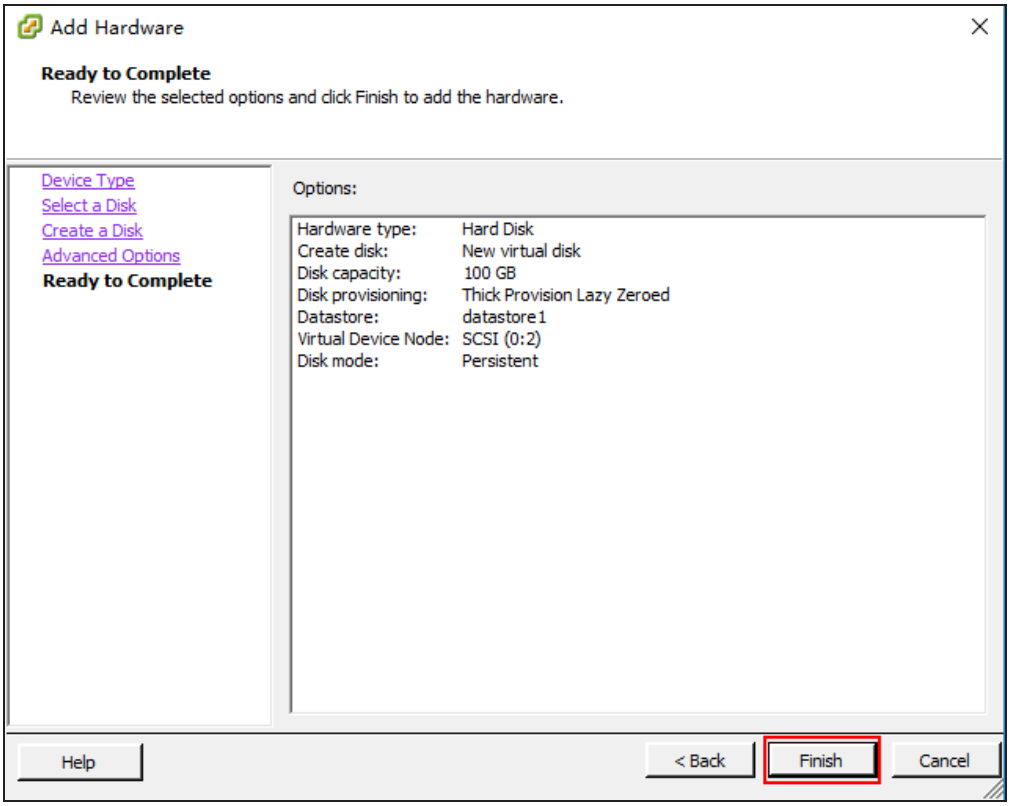
6. Set the disk capacity by requirement, and then click **Next** .



7. Select the default virtual device node, and then click **Next** .



8. Click **Finish** to add the hardware. When the **Hardware** tab appears, click **OK** .



9. Right click vHSM on virtual machine, and select **Open Console**. In the prompt, you are accessing to vHSM's console port.

10. Click the green button to start the vHSM virtual machine.

11. Wait for a while, and the system will be up.

12. When the prompt shows the command line interface below, enter default username and password to log in vHSM.

13. To expand the disk, use the following command:

```
[hillstone]extendLVM
```

Installing vHSM on Workstation

vHSM is packed in an OVA file, and can be installed on a VMware Workstation host running on a 64-bit system.

Before installing vHSM, you should be already familiar with VMware Workstation virtual machines.

System Requirements

To deploy vHSM:

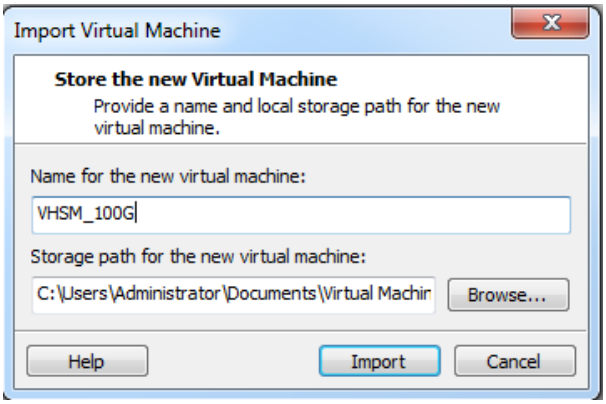
- VMware Workstation 12 Pro and above.
- The physical server should have at least 4 vCPU and 4 GB memory available.
- At least 2 NICs will be created.
- The USB interfaces of physical server should be able to be virtualized.

Deploying vHSM

Installing vHSM

Before installation of vHSM, please set up your Workstation host, then get the vHSM disk and USB Key.

1. Copy the OVA file in the disk to your local computer.
2. In Workstation, select **File > Open**, browse your PC and click **Open** to import vHSM's OVA file in the pop-up dialog box.
3. Enter the name of the virtual machine, and type or select the directory where stores virtual machine, click **Import**.



4. Wait for a while, and your vHSM will be installed successfully.

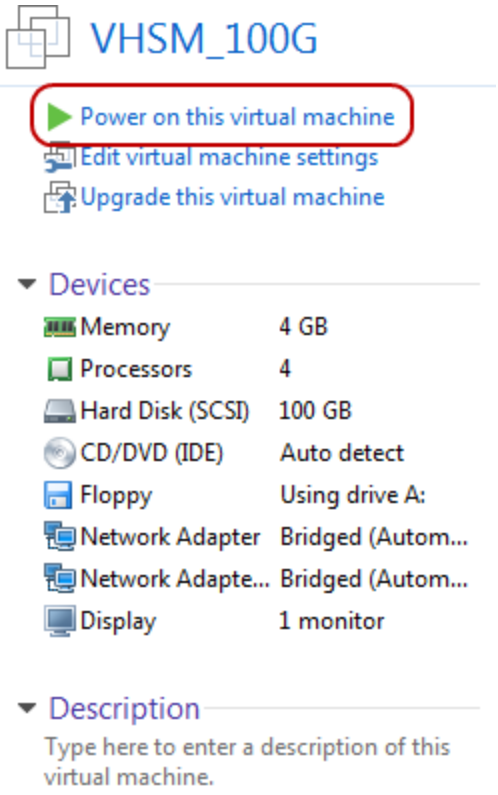
   Workstation will perform OVFs' specification and conformance checks and virtual hardwares' compliance checks. The progress dialog box will display the installing progress.After the successful installation in Workstation, the vHSM virtual machine appears in the virtual machine library.

Starting and Visiting vHSM

After all the setups above, you can now start your vHSM.

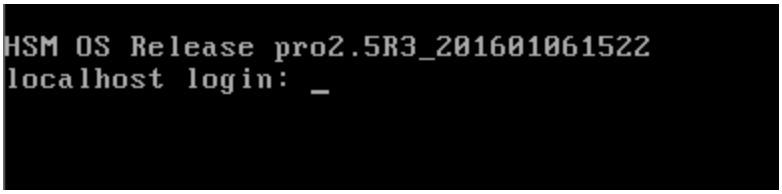
1. In Workstation, click the virtual machine which vHSM will run on.

2. Click **Power on this virtual machine** on right page, in the prompt, you are accessing to vHSM's console port.



3. Wait for a while, and the system will be up.

4. When the prompt shows the command line interface below, enter default username and password (hillstone/hillstone) to log in vHSM.



Visiting WebUI of vHSM

Please refer to "Deploying vHSM" on Page 7 in Installing vHSM on VMware ESXi chapter.

Disk Expansion

Please refer to "Disk Expansion" on Page 10 in Installing vHSM on VMware ESXi chapter.

Deploying vHSM on KVM

vHSM is packed in an qcow2 file, and can be installed on a KVM host running on a Linux system with libvirt library whose version is 1.2.2 or later.

To deploy vHSM on Kernel-based Virtual Machine (KVM), you should be already familiar with Linux system and KVM installation.

Now we respectively use Ubuntu and CentOS as example to describe how to deploy vHSM on KVM.

Deploying vHSM on KVM Running on Ubuntu

System Requirements

To deploy vHSM on KVM running on Ubuntu, the host should meet the following requirements:

- Support Intel VT or AMD-V
- At least 2 NICs will be created
- 64 bit CPU which can provide four virtual cores, and its virtualization is enabled
- at least 4 GB memory
- Support virtual SATA, SCSI or IDE hard disk
- Ubuntu 14.04 or later is recommended
- Graphical interface of Ubuntu is recommended
- For KVM environment establishment, the Linux system should have installed KVM, qemu, qemu-kvm, lrzsz, bridge-utils, libvirt, virtinst , python-libvirt, virt-viewer and virt-manager(To install these components, use command: **`sudo apt-get install kvm qemu qemu-kvm lrzsz bridge-utils libvirt-bin virtinst python-libvirt virt-manager virt-viewer`**).

Installing vHSM on KVM Host

To install vHSM on a KVM host, use the following steps:

Step 1: Importing system package

The following steps use Windows system to access KVM host.

1. Copy the qcow2 file in the disk to your local PC.
2. In Windows, log into the KVM host, enter the following command to create a directory which will be used to store qcow2 file.

   `sudo mkdir` `/images/disk/`

3. In this directory, enter the following command, a dialog box will prompt.

   rz

4. In the dialog box, browse your computer and select the qcow2 file. The files will be uploaded to the above directory of KVM host.

5. Enter the following command to check if the file is uploaded.

   ls

6. If there is an qcow2 file in the file list, it means file is uploaded successfully.

Step 2: Creating a virtual bridge

If the vHSM wants to access to external networks, you should create a virtual bridge on the KVM host, and then place the host's two interfaces i.e. eth0 and eth1 under the virtual bridge. Once vHSM is installed successfully, each interface becomes a virtual bridge, and automatically connects to a vnet interface of KVM. So, when you install the qcow2 file, place the vnet interface of KVM under the new created virtual bridge, then the external networks can be accessible.

1. In the root directory of KVM host, enter the following command to create a virtual bridge.

   sudo brctl addbr br0

2. Add eth0 and eth1 to the virtual bridge.

   sudo brctl addif br0 eth0

   sudo brctl addif br0 eth1

3. Modify the IP address of eth0 or eth1 to arbitrary one, then assign the original IP address of eth0 or eth1 to the virtual bridge interface.

   sudo ifconfig eth0*ip-address* **netmask***netmask*

   sudo ifconfig br0*ip-address* **netmask***netmask*

4. In Linux, use command **brctl show** to show virtual bridge and interfaces.

5. Reconfigure the default route.

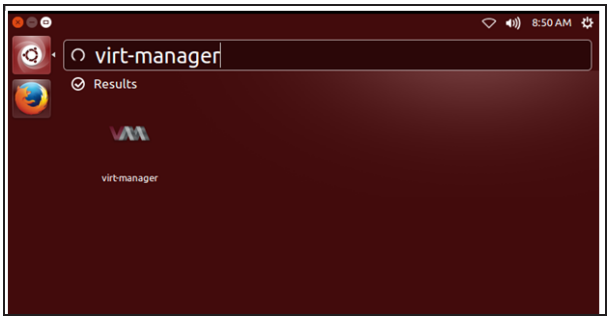
   sudo route del defaule gw*gateway*

   sudo route add defaule gw*gateway*

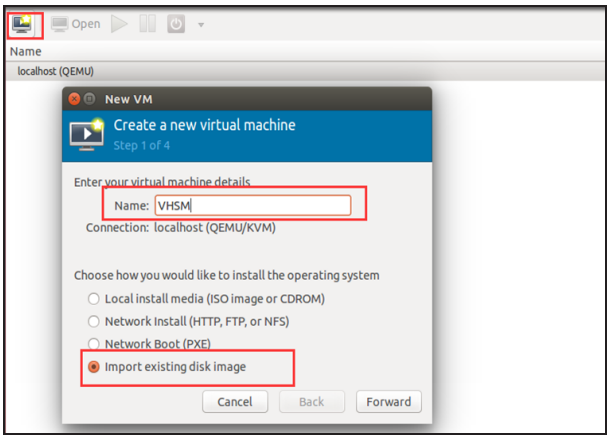
Step 3: Installing system package

Enter into the Linux graphical interface, to install and start vHSM, use the following steps:

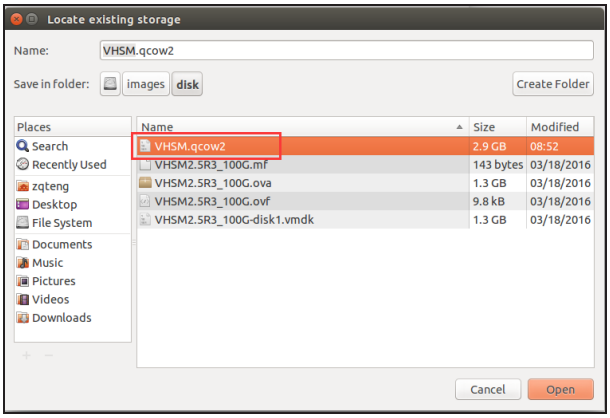
1. Search and open **Virtual Machine Manager**.



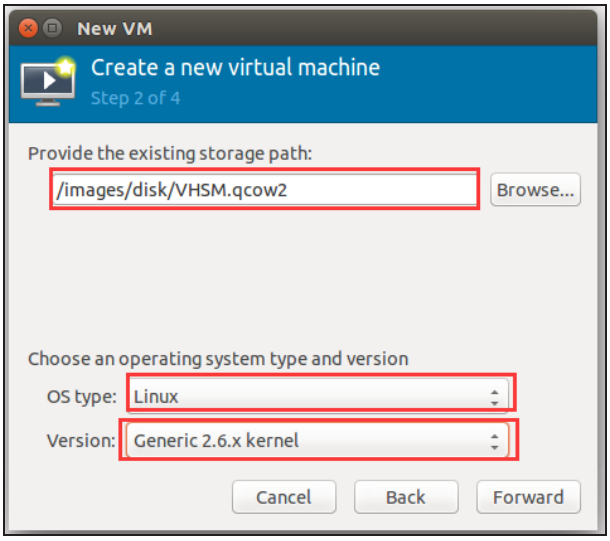
2. Click the icon which is used to create a new virtual machine, and set as shown below.



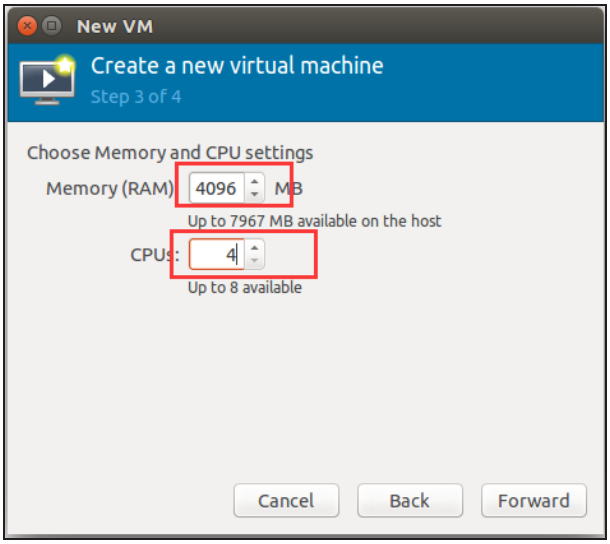
3. Browse the file system of KVM host and select the qcow2 file in step 1.



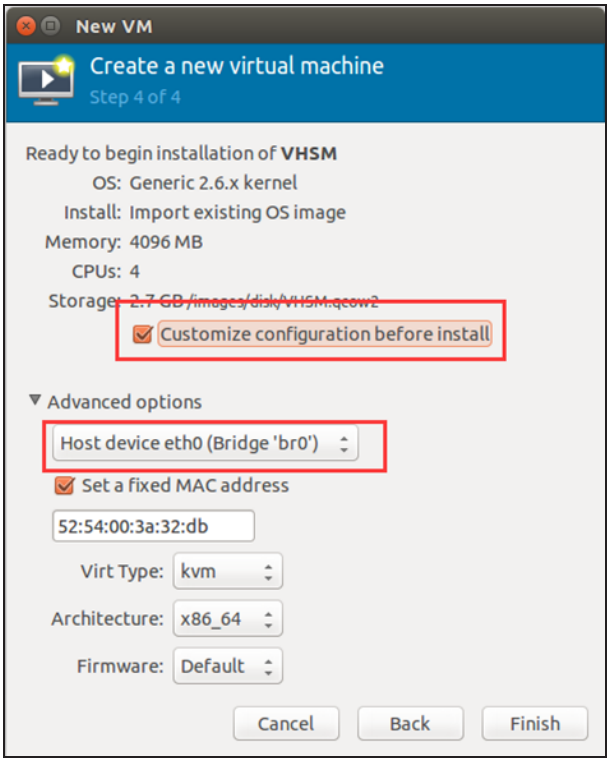
4. Choose an OS type and version.



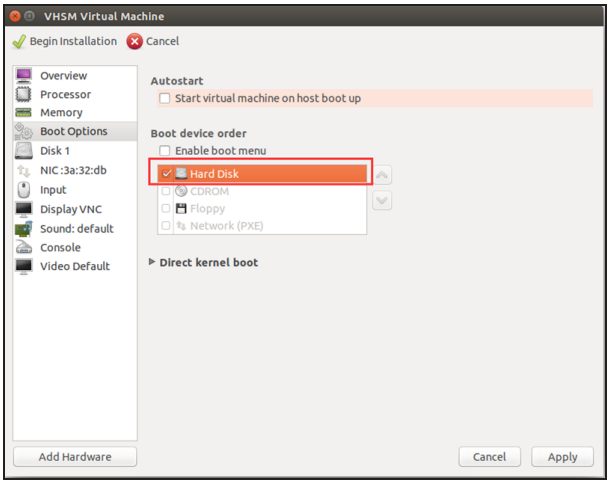
5. Choose Memory and CPU settings.



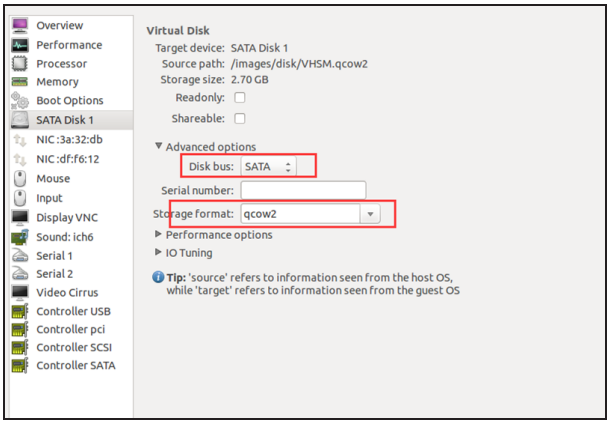
6. Check the **Customize configuration before install** check box, then select virtual bridge.



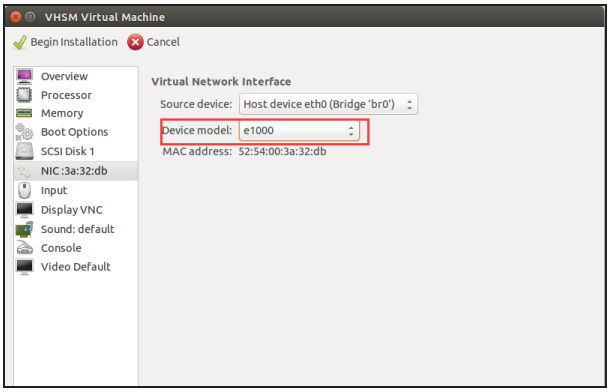
7. Select the **Boot Options** tab, then check **Hard Disk** in the right page.



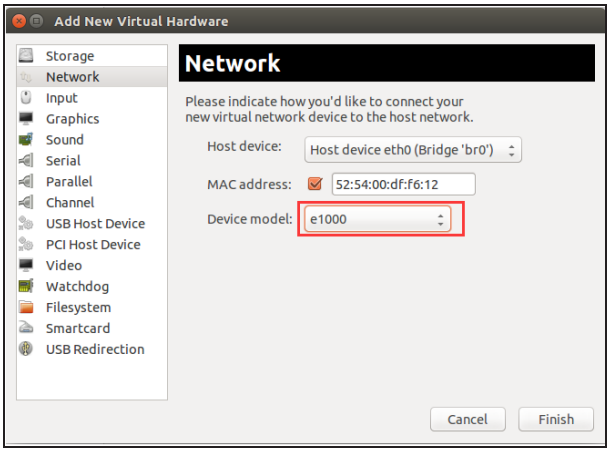
8. Select the **SATA Disk 1** tab, then set **Disk bus** and **Storage format** in the right page.



9. Add the vnet interface to the virtual bridge created in step 2 and set device model.



10. Create a virtual network interface and add it to the virtual bridge created in step 2.



11. Click **Begin Installation** to install and start vHSM.

Step 4: Initial login of vHSM

After vHSM started, enter username and password "hillstone"/"hillstone".

From now on, you can use command line interface to manage vHSM. It is recommended to change your password at earliest convenience.

Visiting WebUI of vHSM

Please refer to "Deploying vHSM" on Page 7 in Installing vHSM on VMware ESXi chapter.

Deploying vHSM on KVM Running on CentOS

System Requirements

To deploy vHSM on KVM running on CentOS, the host should meet the following requirements:

- Support Intel VT or AMD-V
- At least 2 NICs will be created
- 64 bit CPU which can provide four virtual cores, and its virtualization is enabled
- at least 4 GB memory
- Support virtual SATA, SCSI or IDE hard disk
- CentOS 7 or later is recommended
- Graphical interface of CentOS is recommended
- For KVM environment establishment, the Linux system should have installed KVM, qemu, qemu-kvm, lrzsz, bridge-utils, libvirt, virtinst , python-libvirt, virt-viewer and virt-manager(To install these components, use command: **`yum -y install kvm qemu qemu-kvm lrzsz bridge-utils libvirt-bin virtinst python-libvirt virt-manager virt-viewer`**).

Installing vHSM on KVM Host

To install vHSM on a KVM host, use the following steps:

Step 1: Importing system package

The following steps use Windows system to access KVM host.

1. Copy the qcow2 file in the disk to your local PC.
2. In Windows, log into the KVM host, enter the following command to create a directory which will be used to store qcow2 file.

   `sudo mkdir` `/images/release/`

3. In this directory, enter the following command, a dialog box will prompt.

   rz

4. In the dialog box, browse your computer and select the qcow2 file. The files will be uploaded to the above directory of KVM host.

5. Enter the following command to check if the file is uploaded.

   ls

6. If there is an qcow2 file in the file list, it means file is uploaded successfully.

Step 2: Creating a virtual bridge

If the vHSM wants to access to external networks, you should create a virtual bridge on the KVM host, and then place the host's two interfaces i.e. eth0 and eth1 under the virtual bridge. Once vHSM is installed successfully, each interface becomes a virtual bridge, and automatically connects to a vnet interface of KVM. So, when you install the qcow2 file, place the vnet interface of KVM under the new created virtual bridge, then the external networks can be accessible.

1. In the root directory of KVM host, enter the following command to create a virtual bridge.

   sudo brctl addbr br0

2. Add eth0 and eth1 to the virtual bridge.

   sudo brctl addif br0 eth0

   sudo brctl addif br0 eth1

3. Modify the IP address of eth0 or eth1 to arbitrary one, then assign the original IP address of eth0 or eth1 to the virtual bridge interface.

   sudo ifconfig eth0*ip-address* **netmask***netmask*

   sudo ifconfig br0*ip-address* **netmask***netmask*

4. In Linux, use command **brctl show** to show virtual bridge and interfaces.

5. Reconfigure the default route.

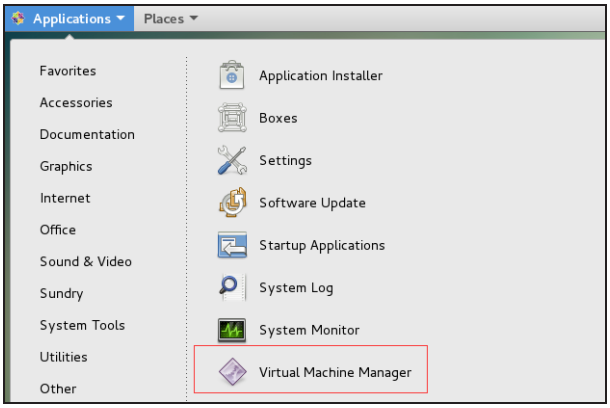
   sudo route del defaule gw*gateway*

   sudo route add defaule gw*gateway*

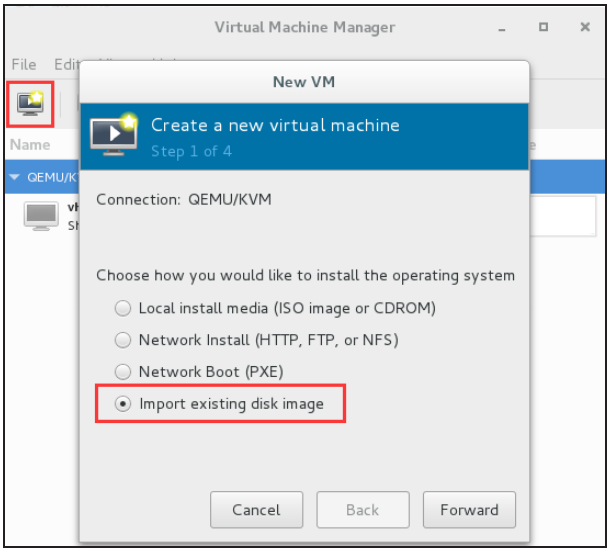
Step 3: Installing system package

Enter into the Linux graphical interface, to install and start vHSM, use the following steps:

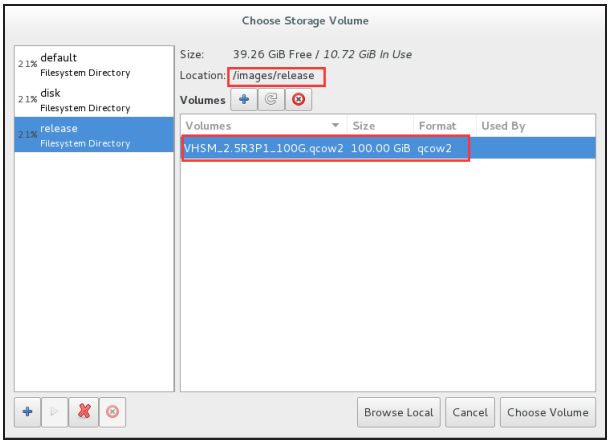
1. Open **Virtual Machine Manager**.



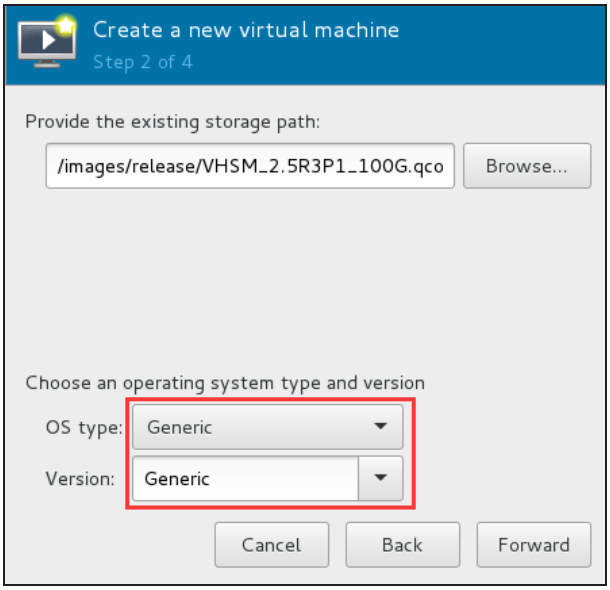
2. Click the icon which is used to create a new virtual machine, and set as shown below.



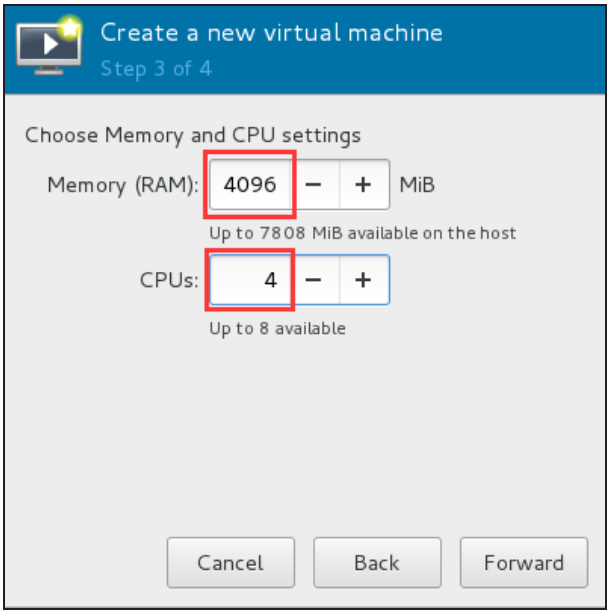
3. Browse the file system of KVM host and select the qcow2 file in step 1.



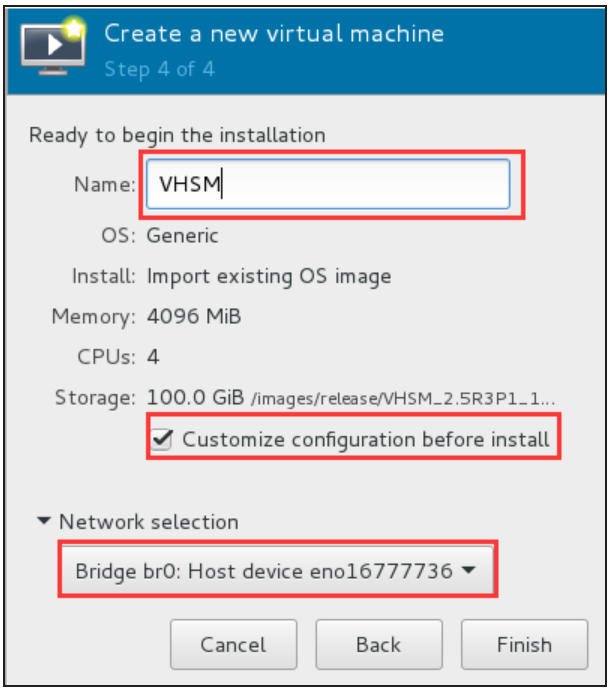
4. Choose an OS type and version.



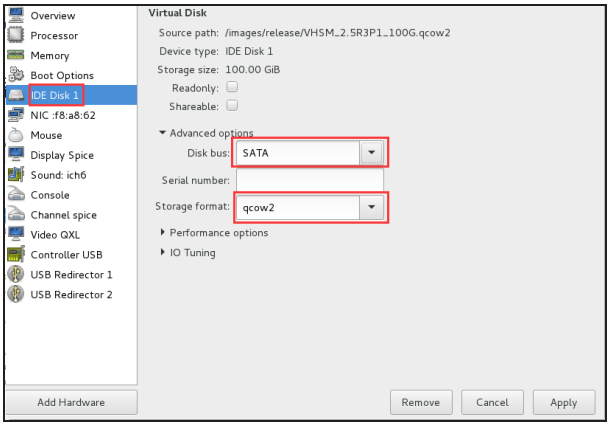
5. Choose Memory and CPU settings.



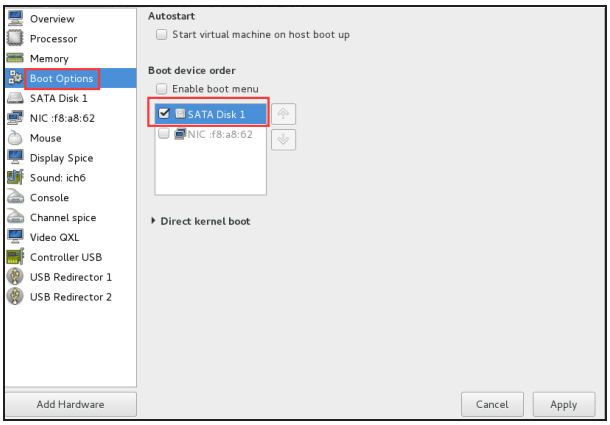
6. Set the virtual machine name, and check the **Customize configuration before install** check box, then select virtual bridge.



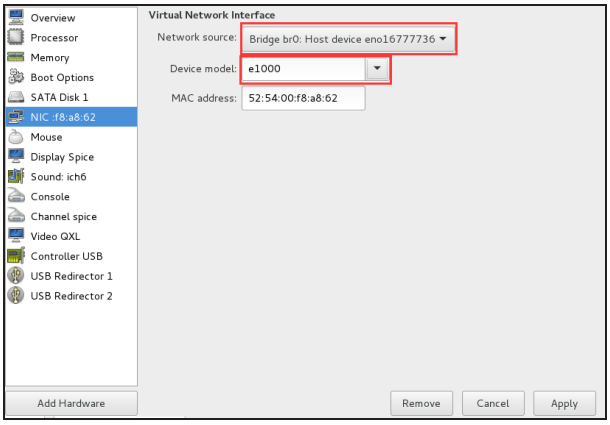
7. Select the **IDE Disk 1** tab, then set **Disk bus** and **Storage format** in the right page.



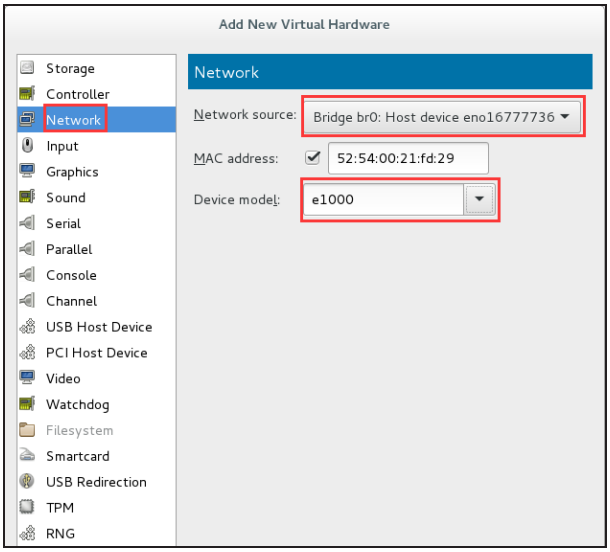
8. Select the **Boot Options** tab, then check **SATA Disk 1** in the right page.



9. Add the vnet interface to the virtual bridge created in step 2 and set device model.



10. Create a virtual network interface and add it to the virtual bridge created in step 2.



11. Click **Begin Installation** to install and start vHSM.

Step 4: Initial login of vHSM

After vHSM started, enter username and password "hillstone"/"hillstone".

From now on, you can use command line interface to manage vHSM. It is recommended to change your password at earliest convenience.

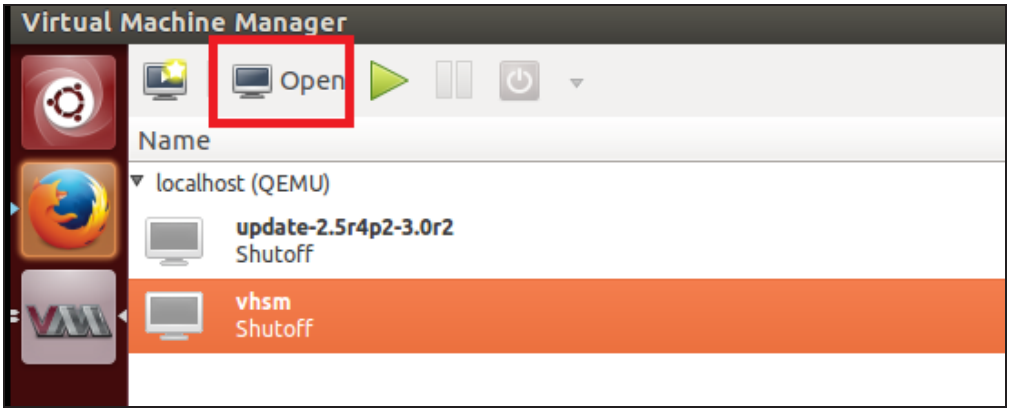
Visiting WebUI of vHSM

Please refer to "Deploying vHSM" on Page 7 in Installing vHSM on VMware ESXi chapter.

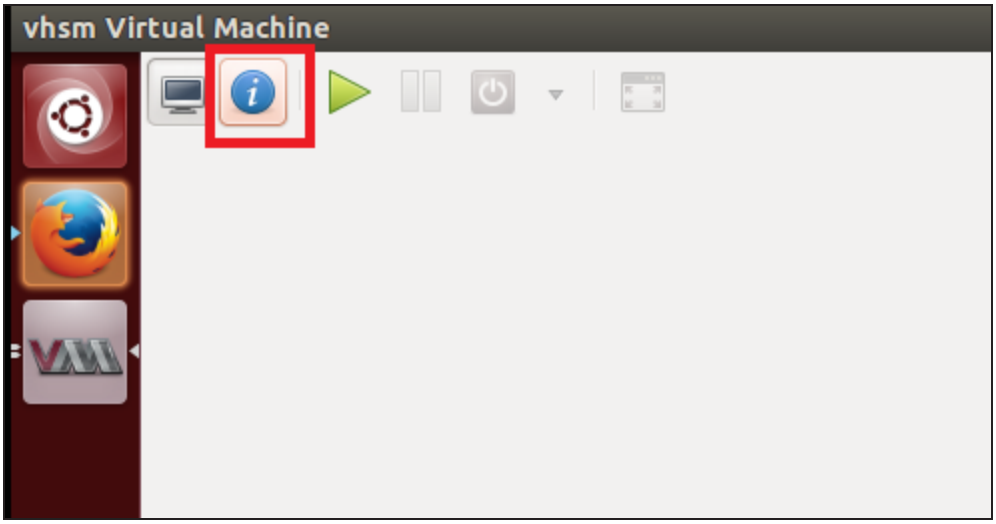
Disk Expansion

Take the vHSM deployed on KVM server as an example, take the following steps:

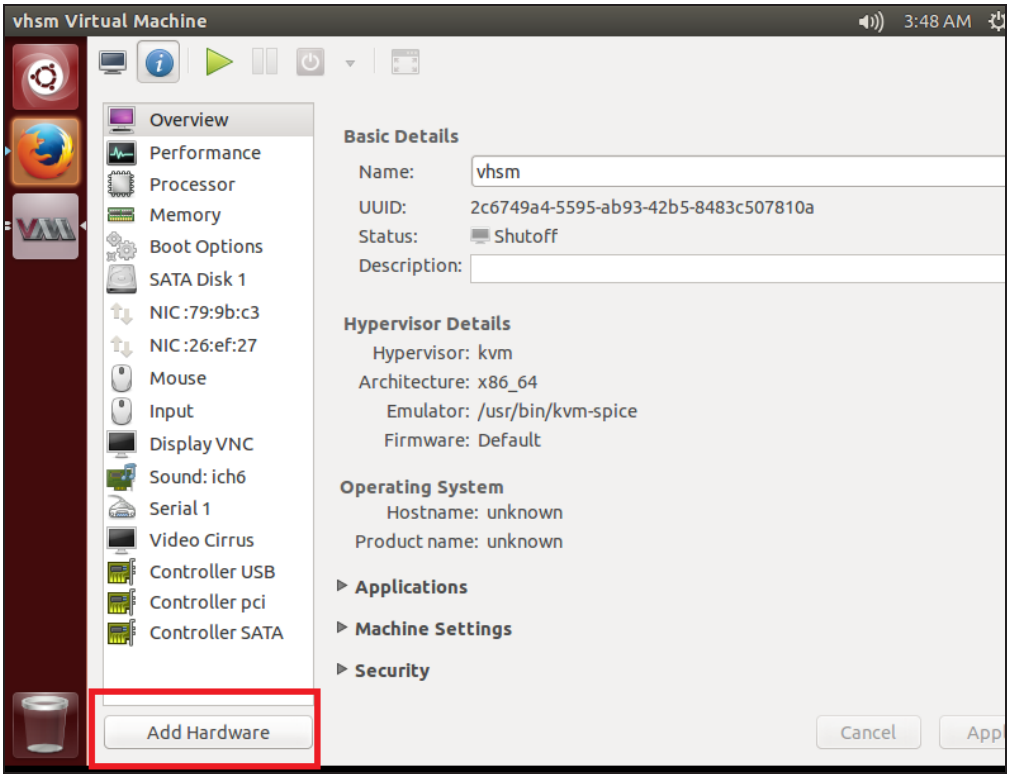
1. powering off the virtual machine and click **open**.



2. Click the icon which is used to display the dedails of virtual machine.

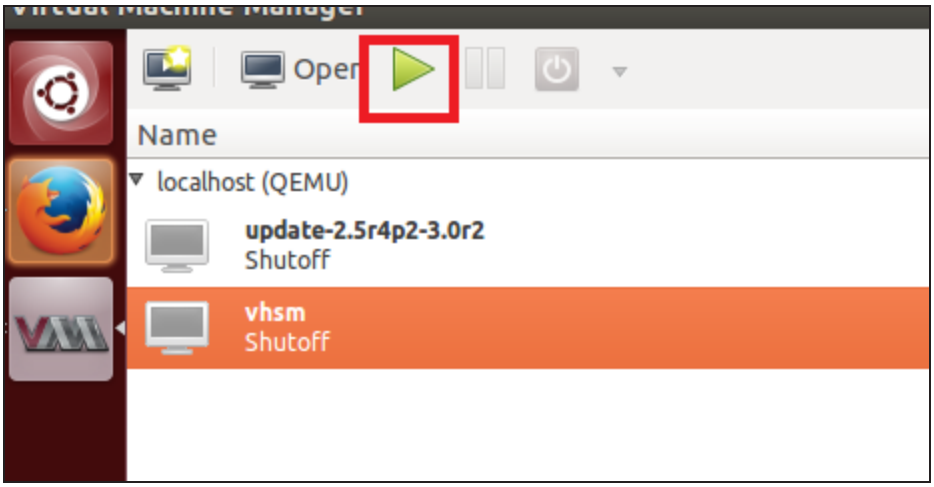


3. Click **Add Hardware** to create a new disk.



4. In the **Add New Virtual Hardware** dialog, set the disk capacity by requirement, and then click **Finish** .

5. Click the icon which is used to start the virtual machine.



6. Wait for a while, When the prompt shows the command line interface below, enter default username and password to log in vHSM.

7. To expand the disk, use the following command:

```
[hillstone]extendLVM
```

Upgrading to Official Version

To make vHSM to manage multiple devices, you need to upgrade the trial version to the official version. vHSM product includes official version and trial version:

- **official version**:After being activated, the system becomes into an official version. By default, the official version can manage 15 devices.
- **trial version**:If not being activated, vHSM is a trial version. The trial version only can manage three devices. You can use trial version for 30 days.
  Within the time limit, you can use all the functions of vHSM. After the trial version expired, functions including configuration management, task management, alarm management and log management are not supported, however, the system can still collect logs.

Upgrading Method

To upgrade to official version, please take the following steps:

1. Log in vHSM via WebUI.
2. Select **System > License > System Activation** to enter the **Activation Guide** page. Click **Add** in the pop-up dialog box.
3. Enter the SN registration code(please contact salesperson to acquire), then click **Next**.
4. Select activation type.
   When vHSM can connect to Internet, we recommend you to select online activation. Otherwise, please select offline activation.
5. Click **Next**.
   If online activation is selected, the **Online Activation** page pops up and the system will be activated automatically.
   If offline activation is selected, please copy the code in step 1 in **Offline Activation** dialog box, then visit vHSM activation system(activation.hillstonenet.com) and paste the code to the text box. Click the **Activate** button, the activation code will be displayed in the below area. Paste the activation code to the step 2 text box in **Offline Activation** dialog box, then click **Activate**.
6. Finish the activation.

If you want to apply and install an official license, please refer to "Licensing vHSM" on Page 5.

Note:

- When not being activated, the system will display the remaining time dynamically in the upper-right corner of the WebUI page. Click on the link to enter the **Activation Guide** page.
- In the process of offline activation, vHSM can not be restarted, otherwise activation may be failed.