

vCenter Management Tutorial

Version: ZStack 3.10.0

Issue: V3.10.0

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1 Introduction

VMware vCenter Server is a centralized management platform of a VMware vCenter.

If you deployed VMware vCenter Server, ZStack would allow you to manipulate the VMware vCenter via public API interfaces provided by VMware. In addition, ZStack can be highly compatible with and manipulate a portion of features of VMware vCenter Server to achieve a unified management of multiple virtualization platforms.

With ZStack, you can manage VMware virtualization environments in an existing data center, and view vSphere server resources and VM resources managed by VMware vCenter Server. In addition, you can use VMware vSphere resources in a virtual data center, and perform common operations on VM instances in your VMware vCenter cluster.

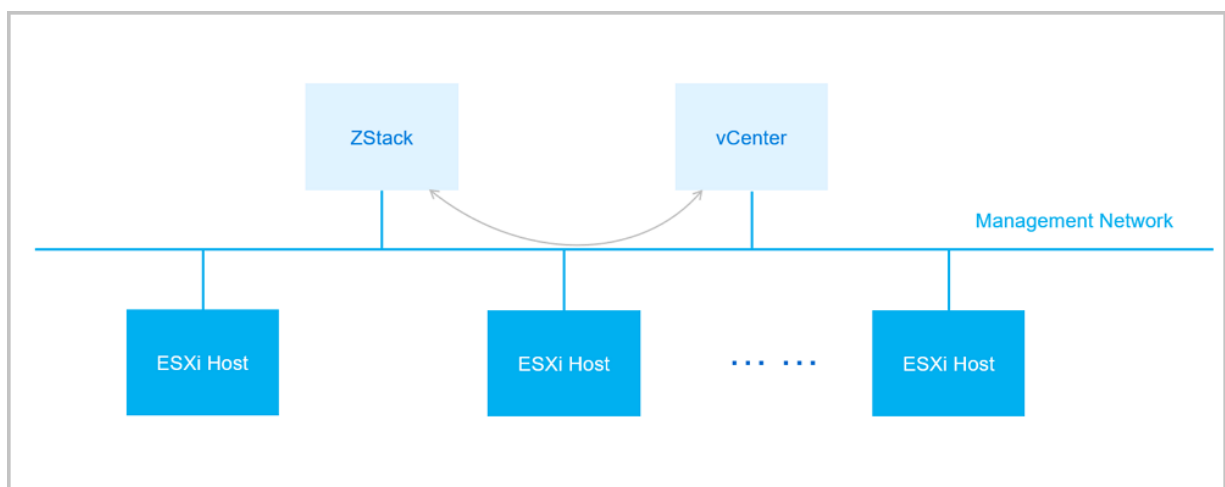
Currently, ZStack supports multiple vCenter versions, including 5.5, 6.0, 6.5, and 6.7.

External Access Workflow

ZStack sends Cloud resource control requests to a vCenter via the asynchronous event listening method, and receives the returned event contents. ZStack can also receive contents that are intuitively pushed by the vCenter to achieve the bidirectional information synchronization.

The following figure shows how ZStack logically manages a vCenter, as shown in [Figure 1-1: ZStack vCenter Logical Management Graph](#).

Figure 1-1: ZStack vCenter Logical Management Graph



2 Environment Preparation

To manage a vCenter via ZStack, you need to prepare a ZStack Private Cloud environment and a vCenter environment in advance.

Prepare a ZStack Private Cloud Environment

You can either deploy a ZStack management node via an independent physical server, or deploy a ZStack management node via a VM instance of a vCenter cluster.

1. Prepare software.

- ZStack Custom ISO
 - File name: ZStack-x86_64-DVD-3.10.0-c76.iso or ZStack-x86_64-DVD-3.10.0-c74.iso
 - Download address: Click [here](#).
- ZStack Installation Package
 - File name: ZStack-installer-3.10.0.bin
 - Download address: Click [here](#).

**Note:**

After you download the installation package, confirm the integrity of the file by using the MD5 checksum tool.

2. Prepare hardware.

Prepare a physical server, or a VM instance of a vCenter cluster. The configuration requirements are listed as follows.

Physical Server/vCenter VM	Parameter
ZStack management node	<ul style="list-style-type: none">• 64-bit CPU with a minimum of 4 cores• A minimum of 8 GB memory• A minimum of one hard disk with a minimum of 500 GB capacity• A minimum of one Gigabit NIC
Network	Allocates network addresses and accesses vCenter servers smoothly

3. Install ZStack.

Within the physical server or vCenter VM instance, use ZStack Custom ISO to install the operating system, and select ZStack Enterprise Management Node. After you complete installing and rebooting the operating system successfully, ZStack will be automatically installed. For more information, see the [Installation and Deployment](#) topic in the [User Guide](#).

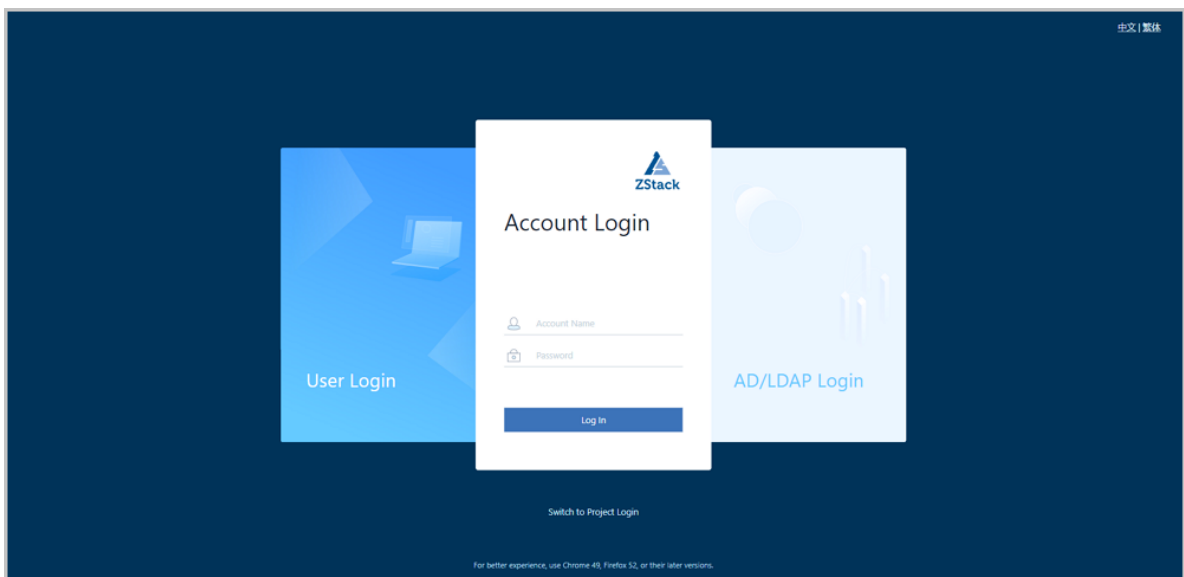
**Note:**

For a vCenter VM instance, select the **CentOS 5/6/7 (64-bit)** operating system.

4. Log in to ZStack.

We recommend that you use Chrome or Firefox to log in to the ZStack management page via `http://your_machine_ip:5000`. The default user name is admin, and the default password is password.

Figure 2-1: Login Page

**Note:**

If you use a vCenter VM instance to install a ZStack management node, we recommend that you create a snapshot (excluding memories) at this time, and name this snapshot **Initialization**.

Prepare a vCenter Environment

To ensure that ZStack takes over virtualization resources of a vCenter, make sure that this vCenter meets the following requirements:

- The vCenter has a resource structure of **Data Center**, **Cluster**, and **Host**.
- The vCenter can display added local storages and shared storages such as vSAN, FC, iSCSI, and NFS storages.

**Note:**

Currently, Datastore Cluster is not supported.

- The port group information is configured for a distributed switch (dvSwitch) or standard switch (vSwitch) of the vCenter.

— dvSwitch scenario:

Only resources of the hosts added to a dvSwitch can be imported to ZStack. If you do not add a host to a dvSwitch, the associated resources cannot be imported to ZStack.

— vSwitch scenario:

Only resources of the hosts in the same cluster, added to at least one same vSwitch, and have at least one same port group attribute (including the same network labels and the same VLAN ID) can be imported to ZStack.

**Note:**

ZStack can only take over VM networks rather than VMkernels or management networks.

- The existing template VM in a vCenter must be converted to the **Template** type, as shown in [Cluster and Host in vCenter](#), [Distributed Switch in vCenter](#) and [Template in vCenter](#).

Figure 2-2: Cluster and Host in vCenter

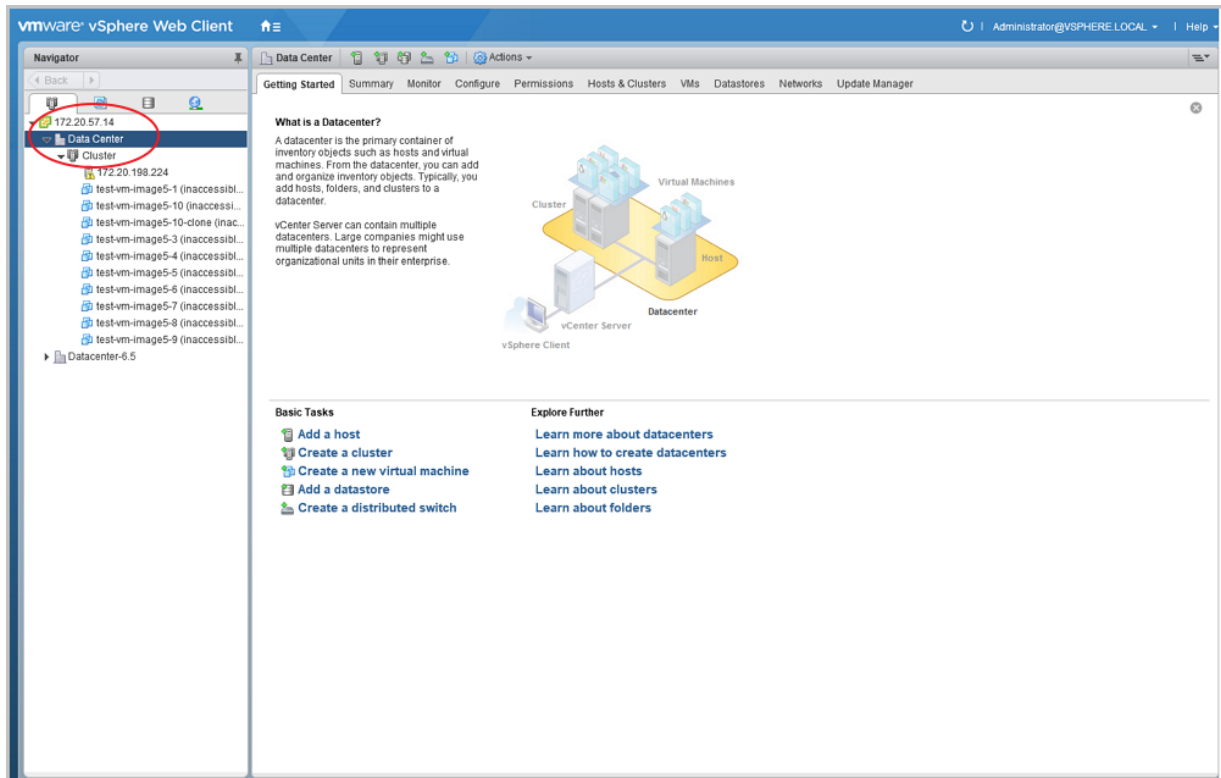


Figure 2-3: Distributed Switch in vCenter

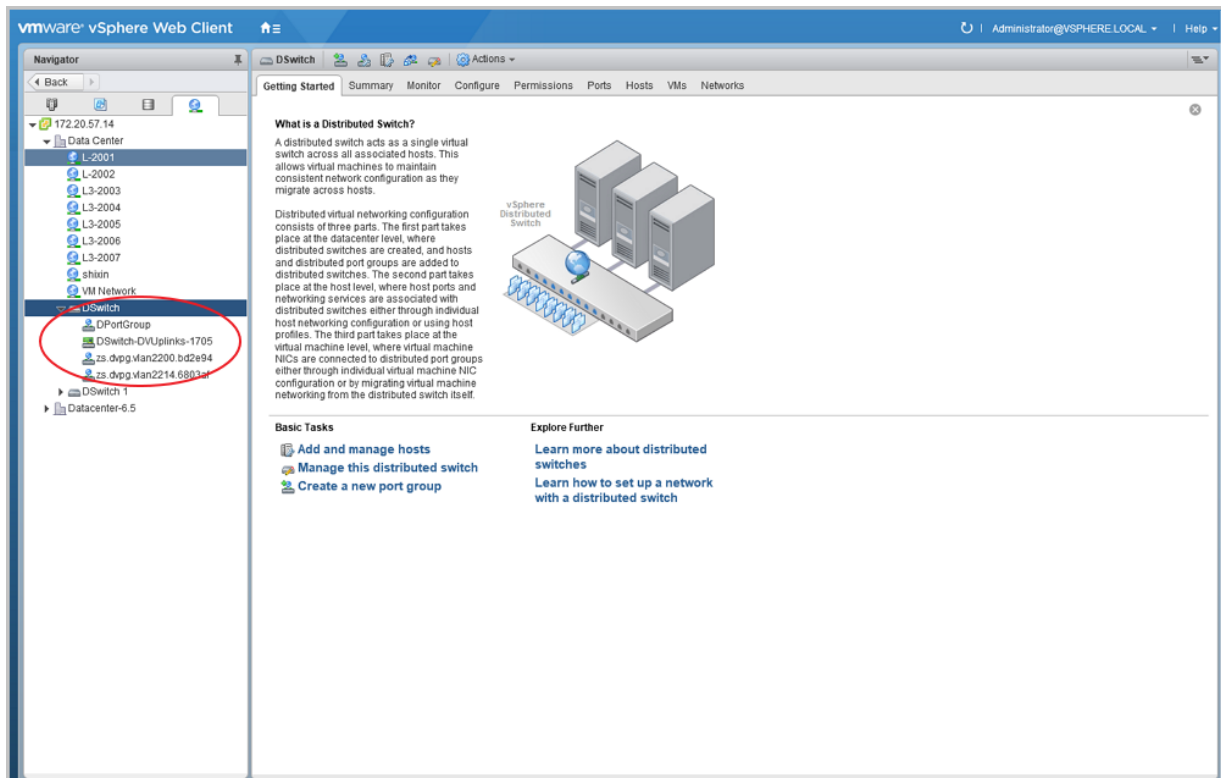
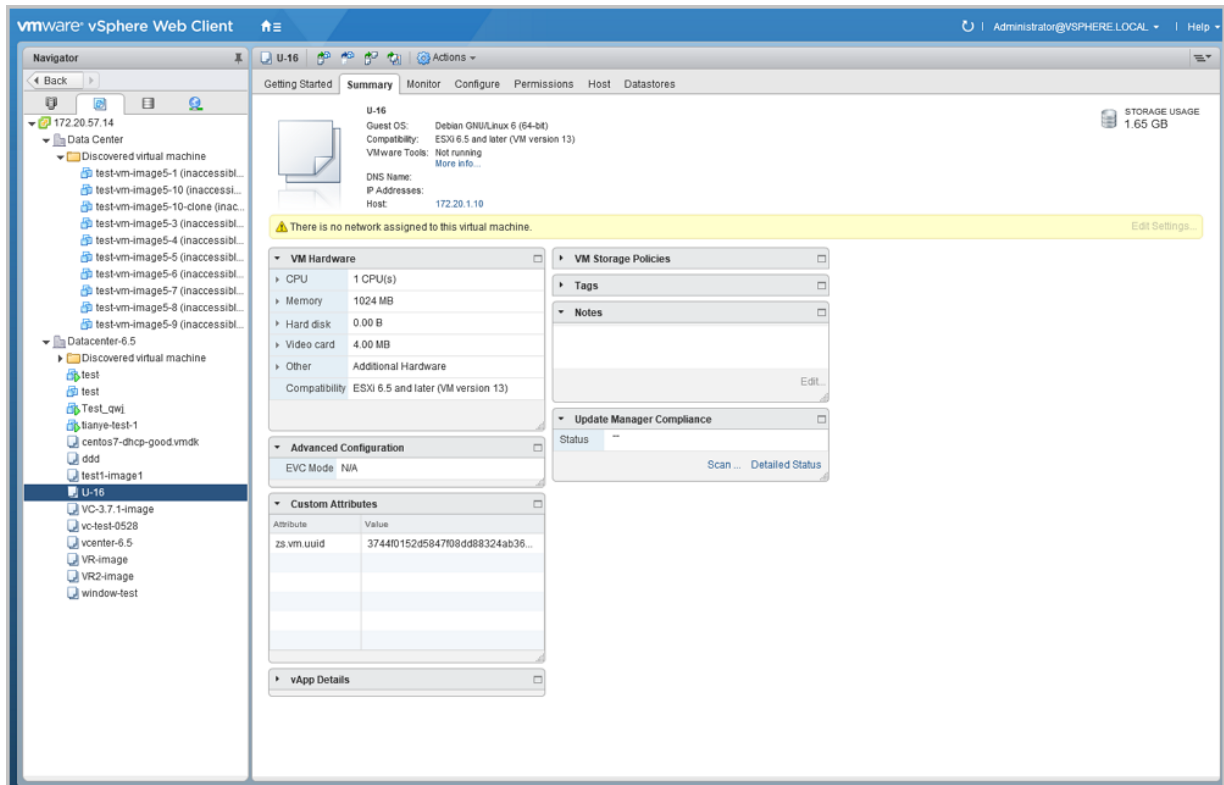


Figure 2-4: Template in vCenter

3 Basic Resource

Context

ZStack can manage vCenter basic resources, namely vCenter virtual resources, in a unified manner, including adding a vCenter, synchronizing data for a vCenter, and deleting a vCenter.

After you add a vCenter for the first time, ZStack will automatically synchronize the clusters, hosts, VM instances, templates, storages, networks, and other resources in the vCenter. To use a managed vCenter, click **Sync Data** to synchronize vCenter resources to your current Cloud. Then, you can view the associated resources in the UI.

- You can add and manage multiple vCenters.
- You can filter resources before you import vCenter resources to ZStack.

— dvSwitch scenario:

Only resources of the hosts added to a dvSwitch can be imported to ZStack. If you do not add a host to a dvSwitch, the associated resources cannot be imported to ZStack.

— vSwitch scenario:

Only resources of the hosts in the same cluster, added to at least one same vSwitch, and have at least one same port group attribute (including the same network labels and the same VLAN ID) can be imported to ZStack.



Note:

ZStack can only take over VM networks rather than VMkernels or management networks.

Next, we will introduce how to add a vCenter in ZStack.

Procedure

1. Prepare the following information in advance.

Field	Description	Example
Access domain name	vCenter access address: domain name or IP address	<ul style="list-style-type: none">• vc.test.com• 172.20.1.166
Administrator	vCenter administrator name, including the intact domain	administrator@vsphere.local
Access password	vCenter administrator password	Testing123

2. Add a vCenter.

In the navigation pane of the ZStack Private Cloud UI, choose **vCenter > vCenter**. On the **vCenter** page, click **Add vCenter**. On the displayed **Add vCenter** page, set the following parameters:

- **Name:** Enter a name for the vCenter.
- **Description:** Optional. Enter a description for the vCenter.
- **Domain Name:** Enter a domain name for the vCenter.
- **Port Number:** Enter a port No. of the vCenter.
- **User Name:** Enter a user name for the vCenter.
- **Password:** Enter the password that corresponds to the vCenter user name according to your actual practice. Note that the password is case sensitive.
- **HTTPS/HTTP:** Select a transfer protocol when you synchronize the vCenter. The supported transfer protocols include HTTPS and HTTP. Default option: HTTPS.

As shown in [Add vCenter](#). Click **OK**. Then, the vCenter is added.

Figure 3-1: Add vCenter

OK Cancel

Add vCenter

Name *

vCenter

Description

Domain Name *

172.20.1.166

Port Number *

443

User Name *

administrator@vsphere.local

Password *

.....

HTTPS/HTTP

☒ HTTPS ☐ HTTP

3. After you add the vCenter successfully, ZStack will import the existing clusters, hosts, VM instances, templates, storages, networks, and other resources in the vCenter.

On the vCenter details page, you can view the basic attributes, clusters, primary storages, backup storages, hosts, resource pools, and audit information.

- Specifically, the **Basic Attributes** tab page displays the overview, resource count, and other information about the vCenter, as shown in [Basic Attributes](#).

Figure 3-2: Basic Attributes

The screenshot shows the 'Basic Attributes' tab in the vCenter interface. It is divided into two main sections: 'Overview' and 'Resource'.

Overview:

- vCenter:** 172.20.57.1
- HTTP/HTTPS:** HTTPS
- Domain Name:** 172.20.57.1
- Port Number:** 443
- User Name:** administrator@vsphere.local
- Password:** *****
- Creation Time:** 2020-05-09 16:44:20
- Last Update Time:** 2020-05-09 16:44:20
- More Information:** UUID: 79a5c740ed204eb1b8bdaa12b249...

Resource:

- Number of Cluster: 2
- Number of Resource...: 2
- Number of Primary S...: 5
- Number of Backup S...: 5
- Number of Host: 3
- Number of VM Insta...: 38
- Number of Volume: 13
- Number of Image: 23
- Number of L3 Netw...: 28

- The **Cluster** tab page displays a list of the vCenter clusters managed by the Cloud, and displays the cluster name, hypervisor type, host count, state, and other information.
- Both the **Primary Storage** tab page and **Backup Storage** tab page can display a datastore list, as shown in [vCenter Primary Storage](#) and [vCenter Backup Storage](#).

Figure 3-3: vCenter Primary Storage

The screenshot shows the 'Primary Storage' tab in the vCenter interface. It displays a table of datastores with the following columns: Name, Type, URL, Available Capacity, Available Physical Capa..., Total Capacity, State, and Status.

Name	Type	URL	Available Capacity	Available Physical Capa...	Total Capacity	State	Status
data-1-2-4-SSD	vCenter	ds:///vmfs/volumes/S...	47.24 GB	7.93 GB	104.25 GB	Enabled	Connected
data-1-2-1	vCenter	ds:///vmfs/volumes/S...	2.52 TB	1.56 TB	2.73 TB	Enabled	Connected
data-1-2-5	vCenter	ds:///vmfs/volumes/S...	2.69 TB	2.66 TB	2.73 TB	Enabled	Connected

Figure 3-4: vCenter Backup Storage

Backup Storage:						
Name	Type	Available Capacity	Total Capacity	State	Status	Creation Time
datastore-1-7	vCenter	2.66 TB	2.72 TB	Enabled	Connected	2020-05-09 16:44:25
datastore1	vCenter	2.28 TB	3.63 TB	Enabled	Connected	2020-05-09 16:44:25
data-1-2-1	vCenter	1.56 TB	2.73 TB	Enabled	Connected	2020-05-09 16:44:25

- The **Host** tab page displays the state of the maintenance mode, as shown in [vCenter Host](#).

Figure 3-5: vCenter Host

Host:				
Name	Host IP	State	Status	Creation Time
test_host1	172.20.1.7	Enabled	Connected	2020-05-09 16:44:25
172.20.1.2	172.20.1.2	Enabled	Connected	2020-05-09 16:44:25
172.20.1.107	172.20.1.107	Enabled	Connected	2020-05-09 16:44:25

**Note:**

- If hosts on a remote vCenter enter the maintenance mode, you can view the resource state locally via data synchronization.
- The **Resource Pool** tab page displays a list of the vCenter resource pools managed by the Cloud. The resource pools and resources (including another resource pools and VM instances) in these pools are displayed in cascade. In addition, the resource pool tab page displays the resource pool name, type, parent item, VM quota, CPU capacity limit, and memory capacity limit, as shown in [Resource Pool](#).

Figure 3-6: Resource Pool

Resource Pool						
Name	Type	Parent Item	VM Instance(used/total)	CPU Limitation	Memory Limitation	Creation Time
resource-01	Resource Pool	Cluster-1	0/0	Unlimited	Unlimited	2020-05-09 16:44:26
R1-1	Resource Pool	resource-01	-/-	Unlimited	Unlimited	2020-05-09 16:44:26

**Note:**

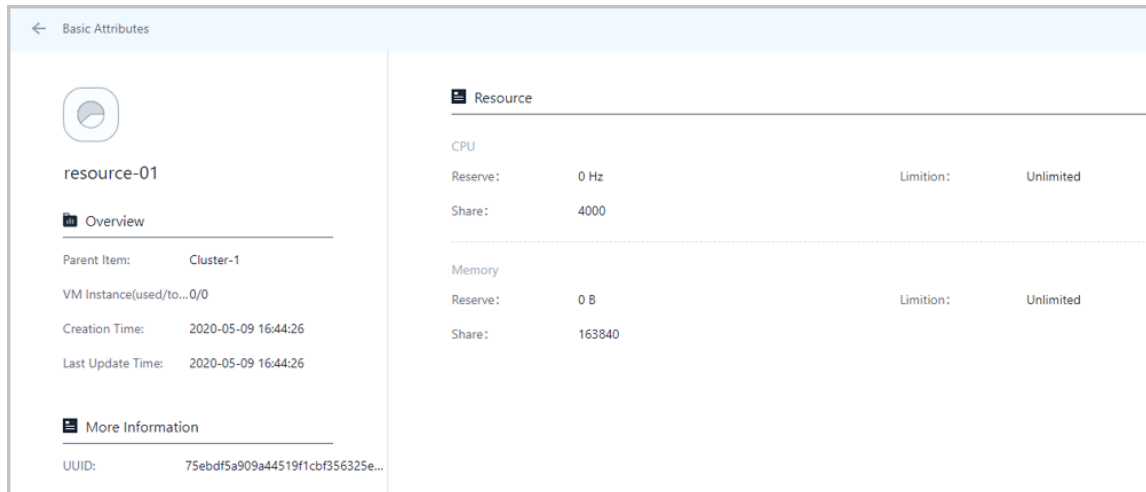
- vCenter VM instances that are created in ZStack do not display resource pool attributes, and will not be displayed on the preceding **Resource Pool** tab page.
- After a historical version (earlier than ZStack 3.3.0) is upgraded to the latest version, click **Sync Data** before you can view the vCenter resource pool information.

You can click on the resource pool name or VM name to enter the corresponding details page. The details page of a single resource pool displays information such as the CPU reservation, memory reservation (reserved resource capacities cannot be allocated), limits (the upper limit of allocated resource capacity), and quotas (weight of shared resources), as shown in [Single Resource Pool Details Page](#).

- **Reservation:** Specify a proper CPU quota or memory quota for the resource pool. Default value: 0.
- **Limit:** Specify the upper limit for the CPU quota or memory quota in the resource pool. Default value: unlimited.
- **Quota:** Specify the share (quota) value of the resource pool with respect to the total resources of a parent object (a host, or another resource pool). Sibling resource pools share resources according to their relative share value bounded by the reservation and limit.

For more information, see [VMware Official Documentation](#).

As shown in [Figure 3-7: Single Resource Pool Details Page](#).

Figure 3-7: Single Resource Pool Details Page

- The **Audit** tab page displays vCenter operation logs.

On the vCenter details page, click **Actions** to synchronize data or delete a vCenter.

What's next

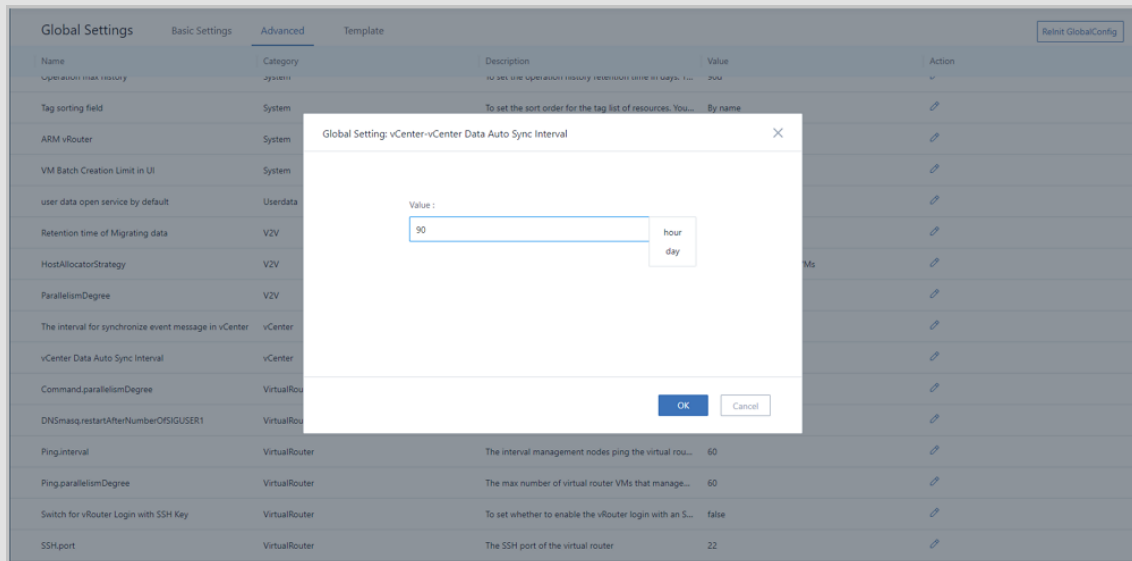
You can perform the following operations on a vCenter:

- **Add vCenter:** Add a vCenter. After you add a vCenter, ZStack will automatically synchronize the clusters, hosts, VM instances, templates, storages, networks, and other resources of the vCenter. You can view the associated resources in the UI.
- **Synchronize data:** After you synchronize the data for the vCenter, vCenter resources will be synchronized locally in real time.



Note:

- vCenter Server Appliance (vCSA) that you deployed in the remote vCenter will not be synchronized locally to avoid error operations.
- ZStack allows you to automatically synchronize vCenter data. The method is as follows:
In the navigation pane of the ZStack UI, choose **Settings > Global Settings > Advanced**. On the **Advanced** tab page, set **vCenter Data Auto Sync Interval**, as shown in [vCenter Data Auto Sync Interval](#).

Figure 3-8: vCenter Data Auto Sync Interval

- **Delete:** Delete a vCenter. After you delete a vCenter, the local records of associated vCenter resources will be deleted as well. However, the actual resources in the remote vCenter will not be affected.
- **View cluster:** View vCenter cluster information.
- **View primary storage:** View vCenter primary storage information and datastore lists.
- **View backup storage:** View vCenter backup storage information and datastore lists.
- **View host:** View vCenter host information.
- **View resource pool:** View vCenter resource pools, VM lists, and detailed information.

4 VM Instance

Context

After you add a vCenter, the vCenter VM instances will be automatically synchronized to ZStack. In addition, you can create vCenter VM instances on your Cloud.

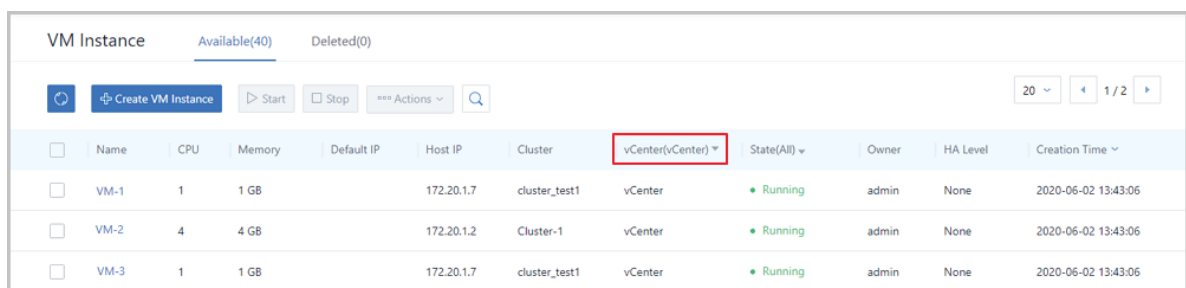
This topic describes how to create vCenter VM instances in ZStack.

Procedure

1. On the **VM Instance** page, check the details about the VM instances synchronized from the vCenter you added to ZStack.

In the navigation pane of the ZStack Private Cloud UI, choose **vCenter > VM Instance**. Then, the **VM Instance** page is displayed, as shown in [vCenter VM Page](#).

Figure 4-1: vCenter VM Page



VM Instance											
Available(40) Deleted(0)											
	Name	CPU	Memory	Default IP	Host IP	Cluster	vCenter(vCenter)	State(All)	Owner	HA Level	Creation Time
<input type="checkbox"/>	VM-1	1	1 GB		172.20.1.7	cluster_test1	vCenter	Running	admin	None	2020-06-02 13:43:06
<input type="checkbox"/>	VM-2	4	4 GB		172.20.1.2	Cluster-1	vCenter	Running	admin	None	2020-06-02 13:43:06
<input type="checkbox"/>	VM-3	1	1 GB		172.20.1.7	cluster_test1	vCenter	Running	admin	None	2020-06-02 13:43:06



Note:

ZStack allows you to manage resources of multiple vCenters. You can view resources of all vCenters or a vCenter by clicking the **vCenter** drop-down arrow.

2. Create a vCenter VM instance on the current Cloud.

Before you create a vCenter VM instance on your current Cloud, you need to set up a vCenter vRouter network or vCenter flat network in advance in ZStack. For more information, see [Network](#).

After you create a vCenter vRouter network or flat network, click **Create VM Instance** on the **VM Instance** page of the vCenter. On the displayed **Create VM Instance** page, set the following parameters:

- **Add Type:** Select an add type to determine whether to create multiple VM instances at a time. Options: Single | Multiple.

- **VM Name:** Enter a name for the vCenter VM instance.

**Note:**

The vCenter VM name cannot be identical with the vCenter image name.

- **VM Description:** Optional. Enter a description for the vCenter VM instance.
- **Instance Offering:** Select an instance offering for the vCenter VM instance.
- **Image:** Select a vCenter image to create the vCenter VM instance.
- **Network:** Select a vCenter vRouter network or vCenter flat network that you created before.
- **Advanced:** Optional. Specify resources for the vCenter VM instance. If not specified, the system will automatically specify resources for the vCenter VM instance.
 - **Data Disk Offering:** Select a data disk offering for the vCenter VM instance.
 - **Cluster:** Specify a cluster in the vCenter for the vCenter VM instance.
 - **Primary Storage:** Specify a primary storage in the vCenter for the vCenter VM instance.
 - **Host:** Specify a host in the vCenter for the vCenter VM instance.

As shown in [Create vCenter VM Instance to Your Current Cloud](#). Click **OK**. Then, the vCenter VM instance is created.

Figure 4-2: Create vCenter VM Instance on the Current Cloud

OK

Cancel

Create VM Instance

Add Type

☒ Single ☐ Multiple

VM Name *

vCenterVM

VM Description

Instance Offering *

InstanceOffering-1

Image *

vCenterImage

Network *

☒ L3-wt

Default Network

VM NIC Setting

Advanced

Data Disk Offering

DiskOffering-1

Cluster

Cluster-1

Primary Storage

datastore-10

Host

172.20.1.10

What's next

You can perform the following operations on a vCenter VM instance:

- **Create:** Create a vCenter VM instance on the current Cloud.
- **Start:** Start a vCenter VM instance that is in the stopped state.
- **Stop:** Stop the vCenter VM instance.
- **Reboot:** Reboot the vCenter VM instance.
- **Pause:** Pause the vCenter VM instance.
- **Resume:** Resume the vCenter VM instance that is in the paused state.
- **Migrate:** Migrate the vCenter VM instance to the other compute node.
 - Currently, only hot migrations are supported.
 - Shared storages allow you to perform hot migrations for the vCenter VM instance with data volumes.
 - Currently, local storages do not support migrations.
 - The migration speed is associated to network configurations of two hosts. If the network configurations are relatively low, the migration speed will probably be slow.
 - Before you perform migrations for the vCenter VM instance, make sure that vMotion is enabled.
 - For vCenter 5.5, configure specific VMkernel networks and enable vMotion. In addition, make sure that IP addresses of the vMotion sub-interface for both source VMkernels and destination VMkernels can be intercommunicated.
 - For vCenter 6.0 or later, enable vMotion in management networks.
- **Clone:** Clone a root volume of the vCenter VM instance. According to the instance offering of the vCenter VM instance, the system clones out a VM instance that has the identical system with the current vCenter VM instance.
 - The vCenter VM instance supports online cloning and offline cloning.
 - The vCenter VM instance with data volumes cannot be cloned with together with its data volumes.
 - The vCenter VM instance can be cloned as a VM instance rather than as a template.
- **Power off:** Power off the vCenter VM instance directly.
- **Change instance offering:** Change the CPU or memory offline for the vCenter VM instance.
- **Change owner:** Change the owner of the vCenter VM instance.

**Note:**

ZStack supports multi-tenant management in the managed vCenter. Normal accounts and project members can perform operations on vCenter VM instances.

- Set HA level: Set the high availability (HA) level to NeverStop or None.

- None: Disable the HA feature for the vCenter VM instance.

- NeverStop: Enable the HA feature for the vCenter VM instance.

If you set the HA level to NeverStop for a VM instances that is running on the **LocalStorage** primary storage, note that:

- When the host where the vCenter VM instance is running is in the **Enable** state and the **Connected** status, this vCenter VM instance will keep running. Even if this vCenter VM instance is forced to stop, this vCenter VM instance will be rebooted.

**Note:**

If you want a vCenter VM instance with the NeverStop HA level to not be automatically rebooted, select **Check the box will make NeverStop VM instance would not start automatically after stop.** in the displayed **Stop VM Instance** dialog box.

- When the host where the vCenter VM instance is running is powered off or disconnected, this vCenter VM instance will enter the **Stopped** state.
- If a remote vCenter environment enabled the Distributed Resource Scheduler (DRS) service to provide HA for the vCenter VM instance, the HA setting in ZStack is not affected.
- Open console: Open the console of the vCenter VM instance to log in to and control this vCenter VM instance.

**Note:**

After ZStack takes over a vCenter, you cannot directly open the console of the running VM instances synchronized from the vCenter.

You can directly open the console of the following vCenter VM instances:

- vCenter VM instances that are created in ZStack
- vCenter VM instances that are rebooted in ZStack
- vCenter VM instances that are dynamically migrated via ZStack based on shared storages
- Set console password: Set a console password for the vCenter VM instance.

- Cancel console password: Cancel a console password for the vCenter VM instance.
- Attach volume: Attach an available volume to the current vCenter VM instance.
- Detach volume: Detach a volume that you added before from the vCenter VM instance.
- Attach NIC: Attach an available NIC to the current vCenter VM instance. Both public network NICs and private network NICs are supported.
- Detach NIC: Detach a NIC that you added before from the vCenter VM instance.
- Delete: Delete a vCenter VM instance. If you delete a vCenter VM instance, the local records will be deleted as well. Simultaneously, the actual VM instance in the remote vCenter will be stopped.
- Recover: Recover a vCenter VM instance that is in the deleted state.
- Expunge: Completely delete a vCenter VM instance that is in the deleted state. If you expunge the vCenter VM instance, the local records and the actual VM instance in the remote vCenter will be expunged.
- View monitoring data: View the monitoring data of the vCenter VM instance. On the vCenter VM instance details page, click on the **Monitoring Data** tab page. Then, you can view real-time display of the CPU, memory, disk, virtual disk, and NIC information about the vCenter VM instance.

5 Network

Before you create new VM instances in the vCenter managed by ZStack, you need to create a vRouter network or a flat network in the vCenter in advance.

5.1 vRouter Network

Context

To create vCenter a vRouter network, make sure in advance that a ZStack management node and a vCenter host can communicate with each other.

This topic describes how to create a vCenter vRouter network.

Procedure

1. Create a public network in the vCenter, including a public L2 network and a public L3 network.

In the navigation pane of the ZStack Private Cloud UI, choose **vCenter > Network**. On the **Network** page, click **Create Network**. On the displayed **Create Network** page, set the following parameters:

- **Public network:** Select public network.
- **Name:** Enter a name for the vCenter public network.
- **Description:** Optional. Enter a description for the vCenter public network.
- **Type:** Select a public L2 network type as needed.
 - Supported types: L2NoVlanNetwork and L2VlanNetwork.
 - If you select L2VlanNetwork, enter a VLAN ID.
- **Switch:** Enter the dvSwitch name or vSwitch name of the vCenter as needed.
- **Cluster:** Select a vCenter cluster.
- **Stop DHCP server:** By default, this checkbox is grey, indicating that you are not allowed to make any configuration for this checkbox.



Note:

vCenter public networks do not support the DHCP service. The DHCP service defaults to be disabled so that you need to manually configure an IP address for a VM instance.

- **Add IP Range:** Select **IP Range** or **CIDR**.
 - IP Range

If you use an IP range, enter a start IP address and an end IP address, respectively, for example, *172.20.58.200* and *172.20.58.220*. For the netmask, enter *255.255.0.0*. For the gateway, enter *172.20.0.1*.

— CIDR

If you use CIDR, enter a CIDR such as *192.168.1.1/24*.

- **Add DNS:** Add a DNS server. You can specify *8.8.8.8* or *114.114.114.114*.

As shown in [Create vCenter Public Network](#). Click **OK**. Then, the vCenter public network is created.

Figure 5-1: Create vCenter Public Network

OK Cancel

Create Network

☒ Public network
☐ Private network

Name *

Public vCenter Network

Description

Type

L2NoVlanNetwork

Switch *

D5switch

Cluster

Cluster_6.0

☒ Stop DHCP server

Add IP Range

Method

☒ IP Range ☐ CIDR

Start IP *

172.20.58.200

End IP *

172.20.58.220

Netmask *

255.255.0.0

Gateway *

172.20.0.1

2. To create a vCenter vRouter network, prepare a vRouter image and a vRouter offering in advance on the **Network Resource** page of the Cloud.

a) Add a vCenter vRouter image.

In the navigation pane of the ZStack Private Cloud UI, choose **Network Resource > vRouter Resource > vRouter Image**. On the **vRouter Image** page, click **Add vRouter Image**. On the displayed **Add vRouter Image** page, set the following parameters:

- **Name:** Enter a name for the vRouter image.
- **Description:** Optional. Enter a description for the vRouter image.
- **Backup Storage:** Select a vCenter backup storage.
- **Image URL:** Currently, you can upload a vCenter vRouter image by enter a URL.



Note:

ZStack Private Cloud provides users with specific vCenter vRouter images. You can find the download address of the latest vRouter image on [ZStack Official Website](#).

- File name: zstack-vRouter-3.10.0.vmdk
- Download address: Click [here](#)

As shown in [Add vCenter vRouter Image](#).

Figure 5-2: Add vCenter vRouter Image

OK Cancel

Add vRouter Image

Name *

vRouter Image

Description

Backup Storage *

datastore_111

Image URL *

☒ URL ☐ Local file

http://192.168.1.100/mirror/diskimages/centos7-vrout

b) Add a vCenter vRouter offering.

In the navigation pane of the ZStack Private Cloud UI, choose **Network Resource** > **vRouter Resource** > **vRouter Offering**. On the **vRouter Offering** page, click **Create vRouter Offering**. On the displayed **Create vRouter Offering** page, set the following parameters:

- **Name:** Enter a name for the vRouter offering.
- **Description:** Optional. Enter a description for the vRouter offering.
- **CPU:** Set a CPU count for the vRouter offering.
- **Memory:** Set the memory size for the vRouter offering. Unit: M | G | T.
- **Image:** Select a vCenter vRouter image that you added before.
- **Management L3 Network:** Select a management network as needed. In the following sample, the management network and the public network are the same network.
- **L3 Network:** Select a vCenter public network that you created before.

As shown in [Create vCenter vRouter Offering](#).

Figure 5-3: Create vCenter vRouter Offering

OK Cancel

Create vRouter Offering

Zone: EMC-1~36

Name *

vCenter vRouter Offering

Description

CPU *

8

Memory *

8 G

Image *

vRouter Image

Management L3 Network *

vCenter Public Network

L3 Network *

vCenter Public Network

3. Create a vCenter vRouter network.

In the navigation pane of the ZStack Private Cloud UI, choose **vCenter > Network**. On the **Network** page, click **Create Network**. On the displayed **Create Network** page, set the following parameters:

- **Private network:** Select private network.
- **Name:** Enter a name for the vCenter vRouter network.
- **Description:** Optional. Enter a description for the vCenter vRouter network.
- **Type:** Select a public L2 network type as needed.
 - Supported types: L2NoVlanNetwork and L2VlanNetwork.
 - If you select L2VlanNetwork, enter a VLAN ID.
- **Switch:** Enter the dvSwitch name or vSwitch name of the vCenter as needed.
- **Cluster:** Select a vCenter cluster.
- **vRouter:** Select the vRouter network architecture type.
- **vRouter Offering:** Select a vCenter vRouter offering that you created before.
- **Add IP Range:** Select **IP Range** or **CIDR**.

1. IP Range

If you use an IP range, enter a start IP address and an end IP address, respectively, for example, *172.20.58.200* and *172.20.58.220*. For the netmask, enter *255.255.0.0*. For the gateway, enter *172.20.0.1*.

2. CIDR

If you use CIDR, enter a CIDR such as *192.168.1.1/24*.

- **Add DNS:** Optional. Add a DNS server. You can specify *8.8.8.8* or *114.114.114.114*.

As shown in [Create vCenter vRouter Network](#). Click **OK**. Then, a vCenter vRouter network is created.

Figure 5-4: Create vCenter vRouter Network

OK

Cancel

Create Network

☐ Public network

☒ Private network

Name *

vCenter vRouter Network

Description

Type

L2VlanNetwork

Vlan ID *

2200

Switch *

DSwitch

Cluster

Cluster_6.0

☐ Flat Network

☒ vRouter

vRouter Offering *

vCenter vRouter Offering

Add IP Range

Method

☐ IP Range

☒ CIDR

CIDR *

192.168.1.1/24

5.2 Flat Network

Context

This topic describes how to create a vCenter flat network.

Procedure

1. Create a vCenter flat network.

In the navigation pane of the ZStack Private Cloud UI, choose **vCenter > Network**. On the **Network** page, click **Create Network**. On the displayed **Create Network** page, set the following parameters:

- **Private network:** Select private network.
- **Name:** Enter a name for the vCenter flat network.
- **Description:** Optional. Enter a description for the vCenter flat network.
- **Type:** Select a private L2 network type as needed.
 - Supported types: L2NoVlanNetwork and L2VlanNetwork.
 - If you select L2VlanNetwork, enter a VLAN ID.
- **Switch:** Enter the dvSwitch name or vSwitch name of the vCenter as needed.
- **Cluster:** Select a vCenter cluster.
- **Flat Network:** Select the flat network architecture type.
 - By default, the **Stop DHCP server** checkbox is grey, indicating that you are not allowed to make any configuration for this checkbox.
 - vCenter flat networks do not support the DHCP service. The DHCP service defaults to be disabled so that you need to manually configure an IP address for a VM instance.
- **Add IP Range:** Select **IP Range** or **CIDR**.

1. IP Range

If you use an IP range, enter a start IP address and an end IP address, respectively, for example, *172.20.58.200* and *172.20.58.220*. For the netmask, enter *255.255.0.0*. For the gateway, enter *172.20.0.1*

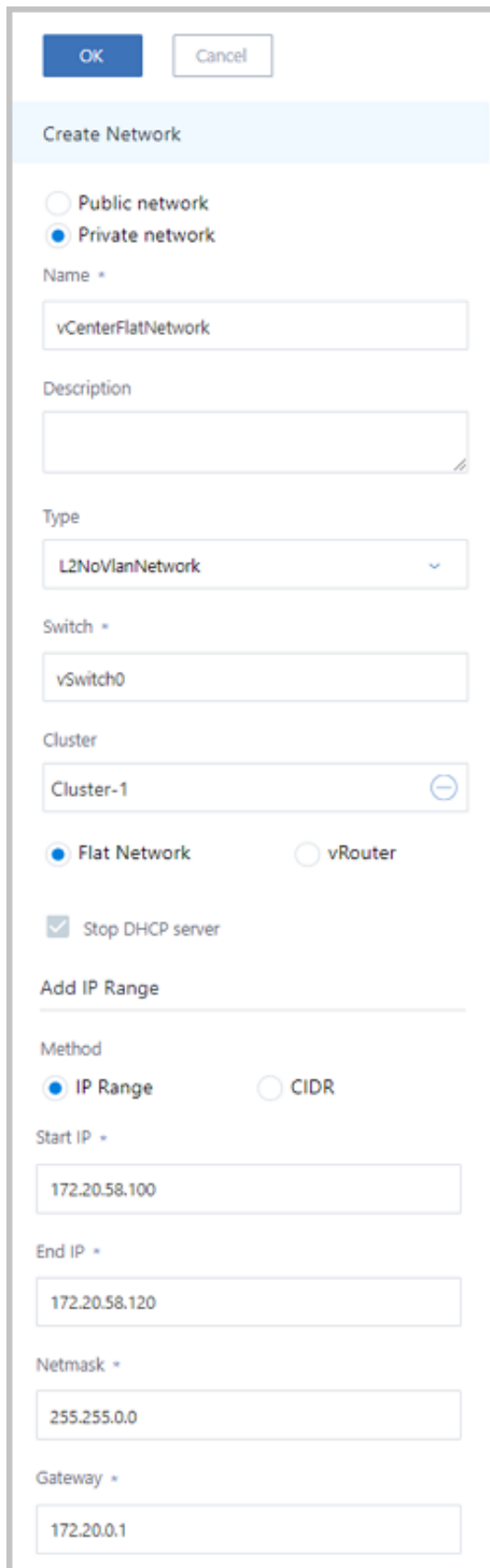
2. CIDR

If you use CIDR, enter a CIDR such as *192.168.1.1/24*.

- **Add DNS:** Add a DNS server. You can specify *8.8.8.8* or *114.114.114.114*.

2. Click **OK**. Then, a vCenter flat network is created.

As shown in [Create vCenter Flat Network](#).

Figure 5-5: Create vCenter Flat Network

OK Cancel

Create Network

☐ Public network
☒ Private network

Name *

vCenterFlatNetwork

Description

Type

L2NoVlanNetwork

Switch *

vSwitch0

Cluster

Cluster-1

☒ Flat Network ☐ vRouter

☒ Stop DHCP server

Add IP Range

Method

☒ IP Range ☐ CIDR

Start IP *

172.20.58.100

End IP *

172.20.58.120

Netmask *

255.255.0.0

Gateway *

172.20.0.1

What's next

You can perform the following operations on a vCenter network:

- vCenter public network: Add an IP range, add a DNS, share a public network globally, recall a public network globally, delete a public network, change the name and description for the public network, attach a cluster, delete an IP range, delete a DNS, share a public network to the specified accounts or projects, and recall a public network from the specified accounts or projects.
- vCenter flat network: Add an IP range, add DNS, share a flat network globally, recall a flat network globally, delete a flat network, change name and description for the flat network, attach a cluster, delete an IP range, delete a DNS, share a flat network to the specified accounts or projects, and recall the flat network from the specified accounts or projects.
- vCenter vRouter network: Add an IP range, add DNS, attach a vRouter offering, detach the vRouter offering, share a vRouter network globally, recall a vRouter network globally, delete a vRouter network, change the name and description for a vRouter network, attach a cluster, delete an IP range, delete a DNS, share a vRouter network to the specified accounts or projects, and recall a vRouter network from the specified accounts or projects.



Note:

- ZStack supports multi-tenant management in the managed vCenter. Normal accounts and project members can use the vCenter networks shared by an administrator.
- If you delete vCenter network resources, the local records will be deleted as well without affecting your actual network resources in your remote vCenter. When you delete an L3 network in your vCenter, the vCenter VM instances that are attached to the L3 network will be detached from the L3 network.

5.3 Network Service

vCenter network services currently support the vRouter network architecture model.

A vCenter vRouter network provides network services such as DNS, SNAT, Elastic IP (EIP), port forwarding, load balancing, IPsec tunnel, and Netflow.

- DNS:
 - A vCenter vRouter can act as a DNS server to provide DNS services.

- By default, the DNS address that you see in a vCenter VM instance is the IP address of the corresponding vCenter vRouter. The DNS address set by a user is forwarded and configured by the vCenter vRouter.
- SNAT:
 - A vCenter vRouter provides the source network address translation (SNAT) service to vCenter VM instances.
 - vCenter VM instances can directly access the Internet by using SNAT.
- EIP: Allows a vCenter vRouter to access the private network of a vCenter VM instance through a public network.
- Port forwarding: Forwards the port traffics of a specified public IP address to the port of a corresponding vCenter VM IP address.
- Load balancing: Distributes inbound traffics from a public IP address to a group of backend vCenter VM instances, and then automatically detects and isolates unavailable vCenter VM instances.
- IPsec tunnel: Uses the IPsec tunnel protocol to provide site-to-site VPN connections.

**Note:**

ZStack supports multi-tenant management in a managed vCenter. Normal accounts and project members can use vCenter network services, including EIP, port forwarding, and load balancing.

5.3.1 VIP (ESX)

A vCenter vRouter network uses ESX virtual IP addresses (VIPs) to provide network services, such as elastic IP address (EIP), port forwarding, load balancing, IPsec tunnel, and Netflow.

Similar to KVM VIPs, an ESX VIP has two types: custom ESX VIP and system ESX VIP.

1. Custom ESX VIP

- Creation: A custom ESX VIP is manually created by users.
- Network service:
 - The custom VIP in a vCenter vRouter environment can be used for network services, such as EIP, port forwarding, load balancing, and IPsec tunnel.
 - One custom VIP is used for only one EIP service instance.

- One custom VIP can be used for network services such as port forwarding, load balancing, and IPsec tunnel at the same time, and supports multiple instances of the same service type.

**Note:**

Different types of services cannot use the same port No.

- Custom VIPs cannot be used across vCenter vRouters.
- Deletion:
 - Deleting a custom VIP will automatically delete all services associated with the VIP.
 - Deleting a service of a custom VIP does not affect other services associated with the VIP

2. System ESX VIP

- Creation:

A system ESX VIP is automatically created by the system after a vCenter vRouter is successfully created. This system VIP is the default public IP address of the routing device.

- Network service:

- The system VIP in a vCenter vRouter environment can be used for network services, such as port forwarding, load balancing, and IPsec tunnel.
- One system VIP can be used for network services such as port forwarding, load balancing, and IPsec tunnel at the same time, and supports multiple instances of the same service type.

**Note:**

Different types of services cannot use the same port No.

- One system VIP corresponds to one vCenter vRouter.
- Deletion:
 - Deleting a service of a system VIP does not affect other services associated with the VIP
 - Deleting a vCenter vRouter will automatically delete the corresponding system VIP and all services associated with the VIP.

How to Use ESX VIP

The method of using ESX VIPs is basically the same as that of using KVM VIPs.

- Custom ESX VIP:

The custom VIP in a vCenter vRouter environment can be used for network services, such as EIP, port forwarding, load balancing, and IPsec tunnel. The following are two methods to use custom ESX VIPs:

- In the navigation pane of the ZStack Private Cloud UI, choose **Network Service > VIP**. On the **Custom** tab page, create a custom VIP. Then, you can choose to use the existing VIP on the **EIP**, **Port Forwarding**, **Load Balancing**, or **IPsec Tunnel** page.
- In the navigation pane of the ZStack Private Cloud UI, choose **Network Service > EIP/Port Forwarding/Load Balancing/IPsec Tunnel**. On the **EIP**, **Port Forwarding**, **Load Balancing**, or **IPsec Tunnel** page, you can choose to create a new VIP.
- System ESX VIP

The system VIP in a vCenter vRouter environment can be used for network services, such as port forwarding, load balancing, and IPsec tunnel. The method to use system ESX VIPs is as follows:

- In the navigation pane of the ZStack Private Cloud UI, choose **Network Service > Port Forwarding/Load Balancing/IPsec Tunnel**. On the **Port Forwarding**, **Load Balancing**, or **IPsec Tunnel** page, you can choose to use an existing VIP.

Create Custom ESX VIP

The method of creating a custom ESX VIP is basically the same as that of creating a custom KVM VIP.

In the navigation pane of the ZStack Private Cloud UI, choose **Network Service > VIP**. On the **Custom** tab page, click **Create VIP**. On the displayed **Create VIP** page, set the parameters.

**Note:**

For **Network**, select the public network that you created in vCenter.

As shown in [Figure 5-6: Create Custom ESX VIP](#).

Figure 5-6: Create Custom ESX VIP

OK Cancel

Create VIP

Name *

VIP

Description

Network *

vCenterPublicNetwork

IP Range

Specified IP

10.108.10.11

ESX VIP Operations

The operations that you can perform on an ESX VIP are basically the same as those on a KVM VIP.

- Create VIP: Create a custom VIP. Note that system VIPs are created automatically by the Cloud.
- Change name and description: Change the name and description of the VIP.
- Change owner: Change the owner of the VIP.
- Delete:
 - Custom VIP:
 - Deleting a custom VIP will also delete the services associated with the VIP.
 - Deleting a service of a custom VIP does not affect other services associated with the VIP

— System VIP:

- Deleting a service of a system VIP does not affect other services associated with the VIP.
- Deleting a vCenter vRouter will automatically delete the corresponding system VIP and all services associated with the system VIP.

5.3.2 EIP

A vCenter vRouter network uses custom ESX virtual IP addresses (VIPs) to provide elastic IP address (EIP) services.

- With an EIP, a vCenter vRouter can access the private network of a vCenter VM instance through a public network.

Create EIP

The method of creating an EIP in a vCenter vRouter environment is basically the same as that in a KVM vRouter environment.

In the navigation pane of the ZStack Private Cloud UI, choose **Network Service** > **EIP**. On the **EIP** page, click **Create EIP**. On the displayed **Create EIP** page, set the parameters.



Note:

- If you choose to create a new VIP, select the public network that you created in the vCenter for **Network**.

As shown in [Figure 5-7: Create New VIP](#).

Figure 5-7: Create New VIP

- If you choose to use an existing VIP, select an existing custom ESX VIP for **VIP**.

As shown in [Figure 5-8: Use Existing VIP](#).

Figure 5-8: Use Existing VIP

EIP Operations

The operations that you can perform on an EIP in a vCenter vRouter environment are basically the same as those in a KVM vRouter environment.

- Change name and description: Change the name and description of the EIP.
- Associate: Associate the EIP with a VM NIC.
- Disassociate: Disassociate the EIP from a VM NIC.
- Change owner: Change the owner of the EIP.
- Delete: Delete the EIP. Note that the IP services provided by the EIP will also be deleted. To delete its associated VIP at the same time, select **Delete VIP**.
- Audit: View related operations of the EIP.

5.3.3 Port Forwarding

A vCenter vRouter network uses custom ESX virtual IP addresses (VIPs) or system ESX VIPs to provide port forwarding services.

- With the port forwarding service, a vCenter vRouter can forward the port traffics of a specified public IP address to the port of a corresponding vCenter VM IP address.
- When public IP addresses are insufficient, the port forwarding service can provide multiple vCenter VM instances, which saves the public IP address resources.

Create Port Forwarding Rule

The method of creating a port forwarding rule in a vCenter vRouter environment is basically the same as that in a KVM vRouter environment.

In the navigation pane of the ZStack Private Cloud UI, choose **Network Service > Port Forwarding**. On the **Port Forwarding** page, click **Create Port Forwarding**. On the displayed **Create Port Forwarding** page, set the parameters.

**Note:**

- If you choose to create a new VIP, select the public network that you created in the vCenter for **Network**.

As shown in [Figure 5-9: Create New VIP](#).

Figure 5-9: Create New VIP

The screenshot shows a dialog box titled "Select VIP". Under the "Method" section, there are two radio buttons: "Create new VIP" (which is selected) and "Use existing VIP". Below this, there is a label "Network *" followed by a text input field containing "vCenterPublicNetwork". A minus sign icon is visible on the right side of the input field.

- If you choose to use an existing VIP, select an existing custom ESX VIP or system ESX VIP for **VIP**.

As shown in [Figure 5-10: Use Existing VIP](#).

Figure 5-10: Use Existing VIP

The screenshot shows a dialog box titled "Select VIP". Under the "Method" section, there are two radio buttons: "Create new VIP" and "Use existing VIP" (which is selected). Below this, there is a label "VIP *" followed by a text input field containing "VIP_vCenter". A minus sign icon is visible on the right side of the input field.

Associate Port Forwarding Rule to VM NIC

On the displayed **Associate VM NIC** page, click the plus sign (+) in the **VM Instance** section. On the displayed **Select VM Instance** page, select the target vCenter VM instance, and click **OK**.

As shown in [Figure 5-11: Select VM NIC](#) and [Figure 5-12: Associate Port Forwarding Rule to VM NIC](#).

Figure 5-11: Select VM NIC

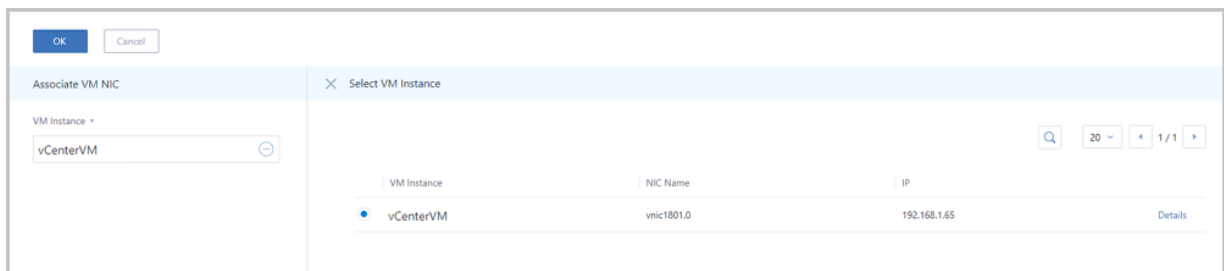


Figure 5-12: Associate Port Forwarding Rule to VM NIC

<input type="checkbox"/>	Name	Public IP	Private IP	Protocol Type	Source Port	VM Instance	VM Instance Port	State	Owner	Creation Time
<input type="checkbox"/>	PF-1	10.151.0.95	192.168.1.65	TCP	22	vCenterVM	22	Enabled	admin	2020-05-15 10:38:39

Port Forwarding Operations

The operations that you can perform on a port forwarding in a vCenter vRouter environment are basically the same as those in a KVM vRouter environment.

- **Modify name and description:** Modify the name and description of the port forwarding rule.
- **Associate:** Associate the port forwarding rule with a VM NIC.
- **Disassociate:** Disassociate the port forwarding rule from a VM NIC.
- **Delete:** Delete the port forwarding rule. Note that the port forwarding service provided by the port forwarding rule will also be deleted. However, the associated VIP and other services will not be affected.
- **Audit:** View the related operations supported by the port forwarding.

Port Forwarding Constraints

The port forwarding constraints in a vCenter vRouter environment are basically the same as those in a KVM vRouter environment.

- To use port forwarding, make sure that the firewall policy in the VM instances can be accessed by the specified ports.

- When you use a VIP to provide the port forwarding service, make sure that the ports used by the VIP are not duplicated.
- A VIP can provide the port forwarding service to different ports of multiple VM NICs on the same L3 network.
- A VM instance can only use one VIP to provide the port forwarding service.
- When you disassociate a VIP from a VM instance and associate a VM instance again, you can only select the VM NIC on the same L3 network of the VM instance that you disassociated before.
- If you select port range for port forwarding, make sure that the source port range and the VM port range are the same. For example, if you set the range of the source port to 22-80, the port range of the VM instance is also 22-80.

5.3.4 Load Balancing

A vCenter vRouter network uses custom ESX virtual IP addresses (VIPs) or system ESX VIPs to provide load balancing services.

- The load balancing service can distribute inbound traffics from a public vCenter IP address to a group of backend vCenter VM instances, and then automatically detect and isolate unavailable vCenter VM instances. This helps to improve the service capability and availability.
- A load balancing listener supports HTTP and TCP protocols.
- A load balancer allows you to flexibly configure multiple forwarding policies to achieve advanced forwarding controlling.

How to Use Load Balancing

The basic workflow for using load balancing in a vCenter vRouter environment is basically the same as that in a KVM vRouter environment.

1. Create a load balancer.
2. Create a listener and add it to the load balancer that you created in the preceding step. Then, specify the mapping between the public port and the VM port, and set the rules and algorithms.
3. Select a VM NIC from a specified L3 network and attach the NIC to the listener for the load balancer to take effect.

Create Load Balancer

The method of creating a load balancer in a vCenter vRouter environment is basically the same as that in a KVM vRouter environment.

In the navigation pane of the ZStack Private Cloud UI, choose **Network Service > Load Balancing > Load Balancer**. On the **Load Balancer** page, click **Create Load Balancer**. On the displayed **Create Load Balancer** page, set the parameters.

**Note:**

- If you choose to create a new VIP, select the public network that you created in the vCenter for **Network**.

As shown in [Figure 5-13: Create New VIP](#).

Figure 5-13: Create New VIP

The screenshot shows a 'Select VIP' dialog box. Under the 'Method' section, the 'Create new VIP' radio button is selected. Below this, the 'Network' field is labeled with an asterisk and contains the text 'vCenterPublicNetwork'. A minus sign icon is visible on the right side of the network selection box.

- If you choose to use an existing VIP, select an existing custom ESX VIP or system ESX VIP for **VIP**.

As shown in [Figure 5-14: Use Existing VIP](#).

Figure 5-14: Use Existing VIP

The screenshot shows the same 'Select VIP' dialog box, but now the 'Use existing VIP' radio button is selected. The 'VIP' field is labeled with an asterisk and contains the text 'VIP_vCenter'. A minus sign icon is visible on the right side of the VIP selection box.

Add Listener

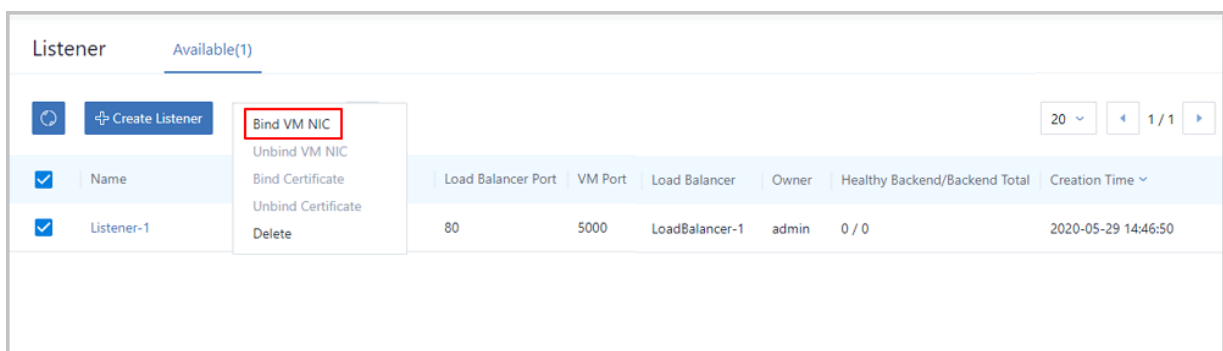
The method of adding a listener in a vCenter vRouter environment is basically the same as that in a KVM vRouter environment.

Bind VM NIC to Listener

On the **Load Balancer** page, click on the name of an existing load balancer. Then, the details page of the load balancer is displayed. Click on the **Listener** tab. Then, the **Listener** tab page is displayed. Click on the name of an existing listener. Then, the details page of the listener is displayed. Click on the **VM NIC** tab. Then, the **VM NIC** tab page is displayed. Click **Actions** > **Bind VM NIC**. Then, the **Bind VM NIC** page is displayed.

As shown in [Figure 5-15: Go to Listener Details Page](#).

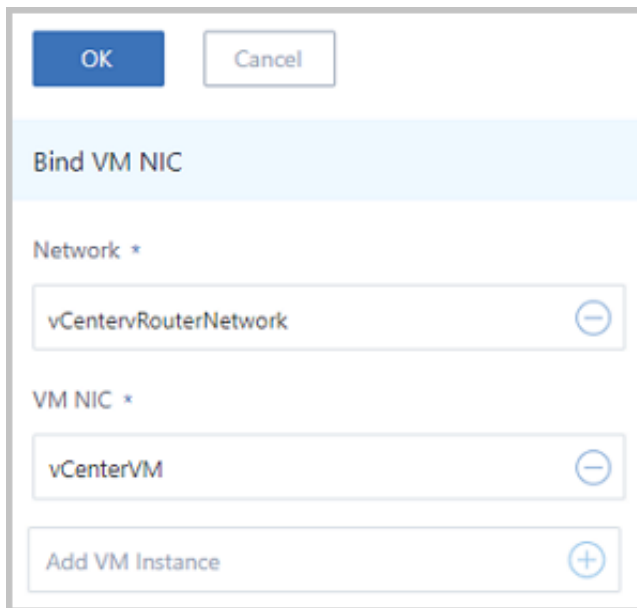
Figure 5-15: Go to Listener Details Page



On the displayed **Bind VM NIC** page, set the following parameters:

- **Network:** Select the L3 private network attached to the vCenter vRouter.
- **VM NIC:** Select the vCenter VM NIC.

As shown in [Figure 5-16: Bind VM NIC to Listener](#). Click **OK**. Then, the chosen VM NIC will be bound to the listener.

Figure 5-16: Bind VM NIC to Listener

Load Balancer Operations

The operations that you can perform on a load balancer in a vCenter vRouter environment are basically the same as those in a KVM vRouter environment.

- **Change name and description:** Change the name and description of the load balancer.
- **Create listener:** Create a listener for the load balancer.
- **Delete:** Delete the load balancer. Note that the associated listeners and load balancing service will also be deleted. However, the related VIP and services associated with the VIP will not be affected.
- **Audit:** View related operations supported by the load balancer.

The operations that you can perform on a listener in a vCenter vRouter environment are basically the same as those in a KVM vRouter environment.

- **Change name and description:** Change the name and description of the listener.
- **Bind VM NIC:** Bind a VM NIC to the listener of a load balancer. Then, the VM instance becomes a load balancing resource that works according to the listener rule.
- **Unbind VM NIC:** Unbind a VM NIC from the listener. Note that the VM NIC will be removed from the load balancing pool.
- **Set weight value:** When the load balancing algorithm uses weighted round robin, set the weight value for the corresponding VM instances as needed. Value range: 0-100.

- **Bind certificate:** If the protocol of your listener is HTTPS, bind a certificate or a certificate link to your listener. Note that this operation is not supported if the listener type is TCP, HTTP, or UDP.
- **Unbind certificate:** If the protocol of your listener is HTTPS, you can unbind a certificate from the listener. Note that this operation is not supported if the listener type is TCP, HTTP, or UDP.
- **Display the number of healthy VM instances:** Display the number of healthy VM instances attached to the listener on the listener page. For example, healthy backend/total backend number.
- **Monitoring data:** Display the monitoring data, such as the sessions and inbound/outbound traffics, of the listener.
- **Delete:** Delete the listener. Note that the load balancing service provided by the listener will be automatically deleted.
- **Audit:** View related operations supported by the listener.

Load Balancing Constraints

The load balancing constraints in a vCenter vRouter environment are basically the same as those in a KVM vRouter environment.

- You can create more than one listener for a load balancer.
- The VM NICs bound to the listener of a load balancer must share the same L3 network.
- If the protocol of your listener is HTTPS, you can bind only one certificate to your listener at a time. To change your certificate, unbind the current one first.

5.3.5 IPsec Tunnel

A vCenter vRouter network uses custom ESX virtual IP addresses (VIPs) or system ESX VIPs to provide IPsec tunnel services.

- The IPsec tunnel service provides site-to-site VPN connections.

How to Use IPsec Tunnel in vRouter Network

The basic workflow of using an IPsec tunnel in a vCenter vRouter environment is basically the same as that in a KVM vRouter environment.

1. In the first environment, create an IPsec tunnel, specify the local public IP address of the first environment, and specify a local private network that is available. Enter the public IP address of the second environment as the peer IP address, and enter the private network specified in the second environment as the peer network.

2. In the second environment, create an IPsec tunnel, specify the local public IP address of the second environment, and specify a local private network that is available. Enter the public IP address of the first environment as the peer IP address, and enter the private network specified in the first environment as the peer network.

**Note:**

The private IP ranges in these two vRouter network environments cannot overlap.

Create IPsec Tunnel in the First ZStack Environment

The method of creating an IPsec tunnel in a vCenter vRouter environment is basically the same as that in a KVM vRouter environment.

In the navigation pane of the ZStack Private Cloud UI, choose **Network Service > VPN > IPsec Tunnel**. On the **IPsec Tunnel** page, click **Create IPsec Tunnel**. On the displayed **Create IPsec Tunnel** page, set the parameters.

**Note:**

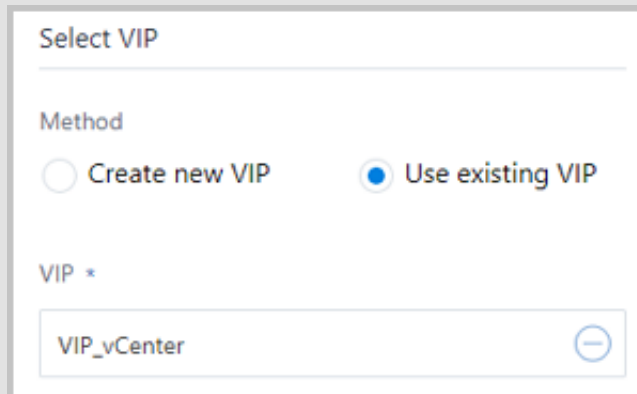
- If you choose to create a new VIP, select the public network that you created in the vCenter for **Network**.

As shown in [Figure 5-17: Create New VIP](#).

Figure 5-17: Create New VIP

- If you choose to use an existing VIP, select an existing custom ESX VIP or system ESX VIP for **VIP**.

As shown in [Figure 5-18: Use Existing VIP](#).

Figure 5-18: Use Existing VIP

Select VIP

Method

☐ Create new VIP ☒ Use existing VIP

VIP *

VIP_vCenter

- For **Local Subnet**, select a private network attached by the local vCenter vRouter. If only one private network is attached by the vCenter vRouter, this private network will be selected by default.

As shown in [Figure 5-19: Create IPsecTunnel-1](#).

Figure 5-19: Create IPsecTunnel-1

OK

Cancel

Create IPsec Tunnel

Name *

IPsecTunnel-1

Description

Select VIP

Method

☒ Create new VIP ☐ Use existing VIP

Network *

vCenterPublicNetwork

⊖

IP Range

⊕

Specified IP

Local Subnet *

vCentervRouterNetwork

⊖

Peer Public IP *

10.108.14.126

Peer CIDR *

192.168.100.0/24

Authentication Key *

test1234

Create IPsec Tunnel in the Second ZStack Environment

The procedures for creating an IPsec Tunnel in the second ZStack environment are the same as those in the first environment. You only need to modify some parameters in the second environment.

After these two IPsec tunnels are created, the private networks in these two ZStack environments can communicate with each other.

IPsec Tunnel Operations

The operations that you can perform on an IPsec tunnel in a vCenter vRouter environment are basically the same as those in a KVM vRouter environment.

- **Change name and description:** Change the name and description of the IPsec tunnel.
- **Delete:** Delete the IPsec tunnel. Note that the services provided by the IPsec tunnel will also be deleted. However, the corresponding VIP and services associated with the VIP are not affected.
- **Audit:** View the related operations supported by the IPsec tunnel.

6 Volume

Context

In vCenter, a volume provides storages for vCenter VM instances. A volume can either be a root volume or a data volume.

- Root volume: a system disk where the VM instance operating system is installed.
- Data volume: a data disk that provides additional storages for a VM instance.

In vCenter, data volumes are mainly involved in volume management.

The following part describes how to create a vCenter volume in ZStack.

Procedure

1. Create a vCenter volume.

In the navigation pane of the ZStack Private Cloud UI, choose **vCenter > Volume**. Then, the **Volume** page is displayed, as shown in [Figure 6-1: vCenter Volume](#).

Figure 6-1: vCenter Volume

Volume

Available(6)

Not Instantiated(0)

Deleted(0)

Create Volume

Enable

Disable

*** Actions

20

1 / 1

<input type="checkbox"/>	Name	Type	Size	State	Status	VM Instance	Shared Volume	Primary Storage	vCenter(All)	Owner	Creation Time
<input type="checkbox"/>	Volume-3	Data	10 MB	Enabled	Ready	vCenter VM	No	datastore-10	vCenter_1	admin	2020-06-02 19:57:11
<input type="checkbox"/>	Volume-2	Data	10 MB	Enabled	Ready	vCenter VM	No	datastore-10	vCenter_1	admin	2020-06-02 19:56:59
<input type="checkbox"/>	Volume-1	Data	10 MB	Enabled	Ready	vCenter VM	No	datastore-10	vCenter_1	admin	2020-06-02 13:50:19
<input type="checkbox"/>	DATA-for-2	Data	407 MB	Enabled	Ready	2	No	datastore-10	vCenter_1	admin	2020-06-02 13:34:46
<input type="checkbox"/>	DATA-for-test	Data	40 GB	Enabled	Ready	test	No	datastore-10	vCenter_1	admin	2020-06-02 13:34:46
<input type="checkbox"/>	DATA-for	Data	1 GB	Enabled	Ready	1	No	datastore-10	vCenter_1	admin	2020-06-02 13:34:46



Note:

ZStack allows you to manage resources of multiple vCenters. You can view resources of all vCenters or a vCenter by clicking the **vCenter** drop-down arrow.

Click **Create Volume**. On the displayed **Create Volume** page, set the following parameters:

- **Name:** Enter a name for the vCenter volume.
- **Description:** Optional. Enter a description for the vCenter volume.

- **Create Method:** Select a method to create the vCenter volume. Options: Disk offering | Volume image.

— Disk offering:

If you choose to create a vCenter volume by using a disk offering, set the following parameters:

- **Disk offering:** Select a proper disk offering.
- **Primary Storage** and **VM Instance:** Optional. Select a primary storage or VM instance.

- If neither of these two parameters is specified, the volume you created will not be instantiated, and will be displayed on the **Not Instantiated** tab page.



Note:

Uninstantiated volumes are only conceptual devices that do not occupy any actual space. These volumes will be instantiated after they are attached to a VM instance.

- If both of these two parameters are specified, the volume will be created in the specified primary storage and attached to the specified VM instance.
- If only **VM Instance** is specified, the volume will be created in the primary storage where the VM instance is located.
- If only **Primary Storage** is specified, the volume will be created in the specified primary storage. In addition, the volume will be in the available state and will occupy actual spaces.

— Volume image:

If you choose to create a vCenter volume by using a volume image, set the following parameters:

- **Volume image:** Select a proper volume image. Note that you need to upload the required volume image to the backup storage in advance.
- **VM Instance:** Select the VM instance to attach the volume. After selected, the volume will be created in the primary storage where the VM instance is located.
- **Specify primary storage:** Optional. If this checkbox is selected, the volume will be created in the specified primary storage.

The following figure is an example of creating a vCenter volume by using a disk offering, as shown in [Figure 6-2: Create vCenter Volume from Disk Offering](#).

Figure 6-2: Create vCenter Volume from Disk Offering

OK Cancel

Create Volume

Name *

vCenterVolume

Description

Create Method *

☒ Disk offering ☐ Volume image

DiskOffering-1

Primary Storage

datastore-10

VM Instance

vCenter VM

The following figure is an example of creating a vCenter volume by using a volume image, as shown in [Figure 6-3: Create vCenter Volume from Volume Image](#).

Figure 6-3: Create vCenter Volume from Volume Image

OK Cancel

Create Volume

Name *

vCenterVolume

Description

Create Method *

☐ Disk offering ☒ Volume image

vCenterVolumeImage

VM Instance *

vCenter VM

☒ Specify primary storage

Primary Storage

datastore-10

2. Click **OK**. Then, the vCenter volume is successfully created.

What's next

Similar to volumes in a KVM environment, vCenter volumes are divided into existing volumes, uninstantiated volumes, and deleted volumes.

You can perform the following operations on an existing volume:

- Create: Create a new volume based on a disk offering or volume image.
- Enable: Enable a volume that is the stopped state.
- Disable: Disable a volume.

- Attach: Attach a volume to a specified VM instance to act as a data volume.
- Detach: Detach a volume from a VM instance.
- Change owner: Change the owner of a volume.

**Note:**

ZStack supports multi-tenant management in the managed vCenter. Normal accounts and project members can perform operations on vCenter volumes.

- Delete: After you delete a volume, you can view it on the **Deleted** tab page.
- Modify name and description: Modify the name and description of a volume.

You can perform the following operations on an uninstatiated volume:

- Enable: Enable an uninstatiated volume that is in the disabled state.
- Disable: Disable an uninstatiated volume.
- Attach: Attach an uninstatiated volume to a specified VM instance to act as a data volume.
- Delete: After you delete an uninstatiated volume, you can view it on the **Deleted** tab page.
- Modify name and description: Modify the name and description of an uninstatiated volume.

You can perform the following operations on a deleted volume:

- Restore: After you restore a deleted volume, you can view it on the **Available** tab page.
- Expunge: Completely delete a volume.

When you use a vCenter volume, note that:

- Volumes are hypervisor specific. That is, a volume that has been attached to a VM instance of one hypervisor type cannot be attached to a VM instance of another hypervisor type. For example, a volume of KVM VM instances cannot be attached to vCenter VM instances.
- A volume can be attached to or detached from different VM instances of the same hypervisor type.
- A volume can only be attached to one VM instance at a time.
- A volume can have two sizes: real size and virtual size. The space occupied by a volume is calculated by using its virtual size. When you create a volume, the virtual size is occupied, and only a small amount of actual size is used. As the number of written files increases, the real size will gradually increase.
- A root volume is always attached to its owner VM instance and cannot be detached.

7 Image

Context

In ZStack, you can add a local image of the VMDK format to a vCenter. Then, you can synchronize the vCenter image between the local client and the remote client by synchronizing data. Both system images and volume images can be added.

The following part describes how to add a vCenter image in ZStack.

Procedure

1. Add a vCenter image.

In the navigation pane of the ZStack Private Cloud UI, choose **vCenter > Image**. Then, the **Image** page is displayed, as shown in [Figure 7-1: vCenter Image](#).

Figure 7-1: vCenter Image

Image

Available(11)

Deleted(0)

+ Add Image

Enable

Disable

Actions

20

1 / 1

<div></div>	Name	Backup Storage	vCenter(All)	Image Type	Format	State	Status	Platform	Size	Owner	Creation ...
<div></div>	VR-image	datastore-10	vCenter_1	System image	vmx	<div>Enabled</div>	<div>Ready</div>	Linux	1.95 GB	admin	2020-06-02 ...
<div></div>	window-test	datastore-10	vCenter_1	System image	vmx	<div>Enabled</div>	<div>Ready</div>	Windows	1.67 GB	admin	2020-06-02 ...
<div></div>	vc-test-0528	datastore-10	vCenter_1	System image	vmx	<div>Enabled</div>	<div>Ready</div>	Linux	1.95 GB	admin	2020-06-02 ...
<div></div>	centos7-dhc...	datastore-10	vCenter_1	System image	vmx	<div>Enabled</div>	<div>Ready</div>	Linux	1.69 GB	admin	2020-06-02 ...
<div></div>	VR2-image	datastore-10	vCenter_1	System image	vmx	<div>Enabled</div>	<div>Ready</div>	Linux	1.95 GB	admin	2020-06-02 ...



Note:

ZStack allows you to manage resources of multiple vCenters. You can view resources of all vCenters or a vCenter by clicking the **vCenter** drop-down arrow.

Click **Add Image**. On the displayed **Add Image** page, set the following parameters:

- **Name:** Enter a name for the vCenter image.



Note:

The name of the vCenter image cannot be the same as that of the vCenter VM instance.

- **Description:** Optional. Enter a description for the vCenter image.
- **Image Type:** Select an image type. Options: System image | Volume image.

— System image:

If you choose to add a system image, set the following parameters:

- **Platform:** Select a platform on which the vCenter image will be running. Options: Linux | Windows | Other.

**Note:**

An image platform decides whether to use a Virtio driver (including disk driver and NIC driver) when you create VM instances.

- Linux: Uses a Virtio driver.
 - Windows: Not to use a Virtio driver. The image operating system is a Windows OS without a Virtio driver installed.
 - Other: Not to use a Virtio driver. The image operating system can be of any types.
- **Backup Storage:** Select a vCenter backup storage.
 - **URL:** Enter the URL from which a system vCenter image can be downloaded.

— Volume image:

If you choose to add a vCenter volume image, set the following parameters:

- **Backup Storage:** Select a vCenter backup storage.
- **URL:** Enter the URL from which a system vCenter image can be downloaded.

The following figure is an example of adding a system vCenter image, as shown in [Figure 7-2: Add System vCenter Image](#).

Figure 7-2: Add System vCenter Image

OK

Cancel

Add Image

Name *

vCenterImage

Description

Image Type *

☒ System image

☐ Volume image

Platform

Linux

Backup Storage *

datastore-10

URL *

http://cdn.10.10.10.10.io/product_downloads/images/2018/08/20/10.10.10.10.png

The following figure is an example of adding a vCenter volume image, as shown in [Figure 7-3: Add vCenter Volume Image](#).

Figure 7-3: Add vCenter Volume Image

OK Cancel

Add Image

Name *

vCenterImage

Description

Image Type *

☐ System image ☒ Volume image

Backup Storage *

datastore-10

URL *

http://cdn.1024.io/product_downloads/images/1024

2. Click **OK**. Then, the vCenter image is successfully created.

What's next

You can perform the following operations on a vCenter image:

- Add: Add a local image of the VMDK format to a vCenter. Currently, images of the ISO format cannot be added.
- Enable: After you enable an image, the image can be used as a backup.
- Disable: After you disable an image, the image cannot be used as a backup.
- Share to all: After you share an image globally, all normal accounts and projects can use this image.
- Recall from all: After you recall an image globally, the image will be invisible to all accounts and projects.
- Share: Share an image to a specified account or project.

- Recall: Recall an image from a specified account or project.
- Change owner: Change the owner of an image.
- Delete: Deleting an image will also delete the local records and the actual image resource in the remote vCenter.

**Note:**

ZStack supports multi-tenant management in the managed vCenter. Normal accounts and project members can use the vCenter images shared by an administrator.

8 Event Message

In the navigation pane of the ZStack Private Cloud UI, choose **vCenter > Event Message**. Then, the **Event Message** page is displayed, as shown in [Event Message](#).

Figure 8-1: Event Message

Description	Type	vCenter(All) *	User	Target	Date
Alarm 'PSC Service Health Alarm.' on Datacenters c...	info	vCenter	-	-	2020-05-22 07:05:21
pschealth status changed from red to green	info	vCenter	Vmonuser	-	2020-05-22 07:05:20
Alarm 'PSC Service Health Alarm.' on Datacenters c...	info	vCenter	-	-	2020-05-22 07:05:20
pschealth status changed from green to red	info	vCenter	Vmonuser	-	2020-05-22 07:05:19
Alarm 'PSC Service Health Alarm.' on Datacenters c...	info	vCenter	-	-	2020-05-22 07:04:21
Alarm 'PSC Service Health Alarm.' on Datacenters c...	info	vCenter	-	-	2020-05-22 07:04:21
Alarm 'PSC Service Health Alarm.' on Datacenters c...	info	vCenter	-	-	2020-05-22 07:04:21
pschealth status changed from red to green	info	vCenter	Vmonuser	-	2020-05-22 07:04:20

The Event Message feature allows you to check vCenter alarm messages, such as the message description, type, the vCenter from which the event message is sent, triggered user, target, and date.

- The UI can display up to 300 event messages. You can set a time range to check alarm messages within the time range via the time adjustment button at the upper left.
- You can choose to display alarm message count for each page via the display count button at the upper right. Optional value: 10 | 20 | 50 | 100. In addition, you can turn pages by clicking the left arrow button and the right arrow button.

So far, we have introduced how to use a vCenter managed by ZStack.

Glossary

Zone

A zone is a logical group of resources such as clusters, L2 networks, and primary storages. Zone is the largest resource scope defined in ZStack.

Cluster

A cluster is a logical group of analogy hosts (compute nodes). Hosts in the same cluster must be installed with the same operating system, have the same network configuration, and be able to access the same primary storage. In a real data center, a cluster usually maps to a rack.

Management Node

A management node is a host with operating system installed to provide UI management and Cloud deployment.

Compute Node

A compute node is a physical server (also known as a host) that provides VM instances with compute, network, and storage resources.

Primary Storage

A primary storage is a storage server used to store disk files in VM instances. Local storage, NFS, Ceph, Shared Mount Point, and Shared Block are supported.

Backup Storage

A backup storage is a storage server used to store image template files. ImageStore, SFTP (Community Edition), and Ceph are supported. We recommend that you deploy backup storage separately.

ImageStore

ImageStore is a type of backup storage. You can use ImageStore to create images for VM instances that are in the running state and manage image version updates and release.

ImageStore allows you quickly upload, download, export images, and create image snapshots as needed.

VM Instance

A VM instance is a virtual machine instance running on a host. A VM instance has its own IP address to access public network and run application services.

Image

An image is an image template used by a VM instance or volume. Image templates include system volume images and data volume images.

Volume

A volume can either be a data volume or a root volume. A volume provides storage to a VM instance. A shared volume can be attached to one or more VM instances.

Instance Offering

An instance offering is a specification of the VM instance CPU and memory, and defines the host allocator strategy, disk bandwidth, and network bandwidth.

Disk Offering

A disk offering is a specification of a volume, which defines the size of a volume and how the volume will be created.

L2 Network

An L2 network is a layer 2 broadcast domain used for layer 2 isolation. Generally, L2 networks are identified by names of devices on the physical network.

L3 Network

An L3 network is a collection of network configurations for VM instances, including the IP range, gateway, and DNS.

Public Network

A public network is generally allocated with a public IP address by Network Information Center (NIC) and can be connected to IP addresses on the Internet.

Private Network

A private network is the internal network that can be connected and accessed by VM instances.

L2NoVlanNetwork

L2NoVlanNetwork is a network type for creating an L2 network. If L2NoVlanNetwork is selected, VLAN settings are not used for host connection.

L2VlanNetwork

L2VlanNetwork is a network type for creating an L2 network. If L2VlanNetwork is selected, VLAN settings are used for host connection and need to be configured on the corresponding switches in advance.

VXLAN Pool

A VXLAN pool is an underlay network in VXLAN. You can create multiple VXLAN overlay networks (VXLAN) in a VXLAN pool. The overlay networks can operate on the same underlay network device.

VXLAN

A VXLAN network is a L2 network encapsulated by using the VXLAN protocol. A VXLAN network belongs to a VXLAN pool. Different VXLAN networks are isolated from each other on the L2 network.

vRouter

A vRouter is a custom Linux VM instance that provides various network services.

Security Group

A security group provides L3 network firewall control over the VM instances. It can be used to set different security rules to filter IP addresses, network packet types, and the traffic flow of network packets.

EIP

An elastic IP address (EIP) is a method to access a private network through a public network.

Snapshot

A snapshot is a point-in-time capture of data status in a disk. A snapshot can be either an automatic snapshot or a manual snapshot.