

A large, faint, abstract network graph is visible in the background on the left side of the page, consisting of numerous small blue dots connected by thin lines.

CLI Command Manual

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1 Introduction

Product Version

This documentation applies to ZStack Cloud 4.3.12.

Intended Audience

This documentation elaborates on how to use ZStack Cloud 4.3.12 zstack-cli, and is intended for the following audiences:

- Architects
- Developmental engineers
- Test engineers
- Project implementation engineers
- People who are interested in ZStack Cloud.

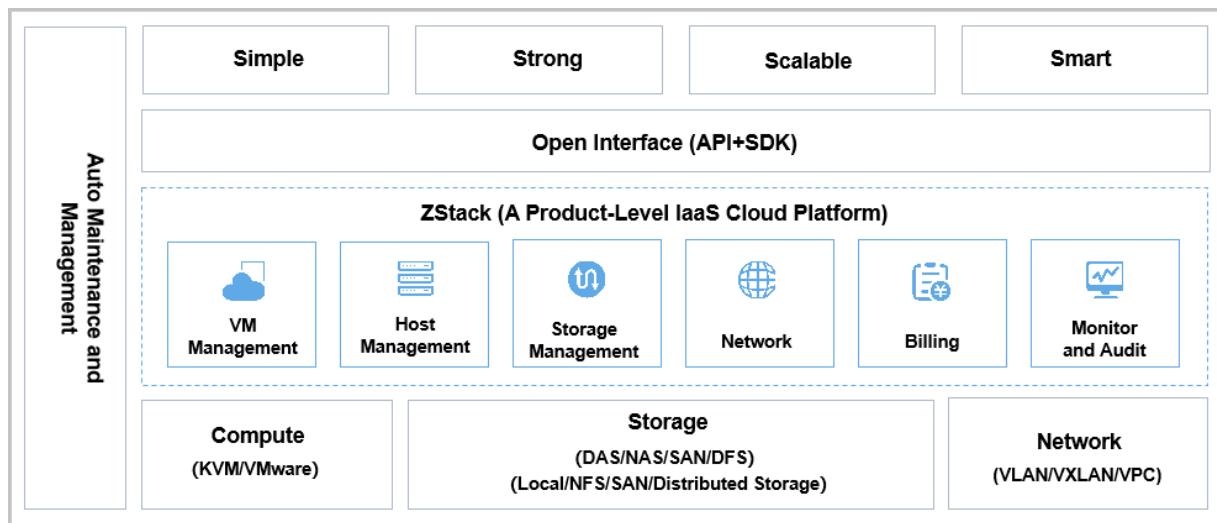
2 System Architecture

ZStack Cloud is a next-generation product-level Private Cloud management platform that aims to manage various resources, such as compute, storage, and network resources in data centers by providing flexible and comprehensive APIs.

2.1 ZStack Cloud Functional Architecture

The functional architecture of ZStack Cloud is shown in [Figure 2-1: ZStack Cloud Functional Architecture](#).

Figure 2-1: ZStack Cloud Functional Architecture



ZStack Cloud helps enterprises better manage infrastructure resources, such as the compute, storage, and network resources, in their data centers. The bottom layer of ZStack Cloud supports both KVM and VMware virtualization technologies. In addition, ZStack Cloud supports various storage types, such as DAS, NAS, SAN, and DFS. To be more specific, local storage, NFS storage, SAN storage, and distributed block storage are supported. ZStack Cloud also supports various network models, such as VLAN and VXLAN.

ZStack Cloud uses a message bus to communicate with the MariaDB database and different service modules, providing diversified features such as VM instance management, host management, storage management, network management, billing management, and real-time monitoring. That is the core Cloud engine of ZStack Cloud. In addition, ZStack Cloud provides Java SDKs and Python SDKs, and allows you to schedule and manage resources by using RESTful APIs. With ZStack Cloud, you can build a private Cloud that is Simple, Strong, Scalable, and Smart.

Highlights of ZStack Cloud functional architecture:

1. Asynchronous Architecture: asynchronous message, asynchronous method, and asynchronous HTTP call

- ZStack Cloud uses a message bus to connect various services. When a service calls another service, the source service sends a message to the destination service, registers a callback function, and then returns back immediately. Once the destination service finishes the task, it gives a feedback on the task result by triggering the callback function that was registered by the source service. Asynchronous messages can be processed in parallel.
- Services in ZStack Cloud communicate with each other through asynchronous messages. Inside services, the associated components and plugins are also called by using asynchronous methods. These methods are consistent with that of calling asynchronous messages.
- Every plugin in ZStack Cloud has a corresponding agent. ZStack Cloud puts a callback URL in the HTTP header of every request. Therefore, agents can send responses to the URL of the caller when tasks are finished.
- Based on asynchronous message, asynchronous method, and asynchronous HTTP call, ZStack Cloud builds a layered architecture to ensure that asynchronous operations can be performed on all components.
- Based on the asynchronous architecture, a single ZStack Cloud management node can process tens of thousands of concurrent API requests per second, and simultaneously manage tens of thousands of servers and hundreds of thousands of VM instances.

2. Stateless Service: A single request does not rely on other requests.

- In ZStack Cloud, requests sent by compute node agents, storage agents, network services, console agent services, and configuration services can be processed without relying on other requests. The sent requests contain all the required information, and related nodes do not need to maintain and store any information.
- ZStack Cloud authenticates resources such as management nodes and compute nodes through consistent hashing ring by using their UUIDs as the unique ID. Because of the consistent hashing ring, a message sender does not need to know which service instance is about to handle the message. Services do not need to maintain and exchange information about what resources they are managing. All the services need to do is to handle the incoming messages.

- Little information is shared among ZStack Cloud management nodes. Therefore, a minimum of two management nodes can meet the requirements of high availability and scalability.
- The stateless service mechanism makes the system more robust. Restarting the server will not lose any state information. This also simplifies the scaling out and scaling in of a data center.

3. Lock-free Architecture: consistent hashing algorithm

- The consistent hashing algorithm guarantees all messages of the same resource are always handled by the same service instance. In this way, messages are congregated to a specified node, reducing the complexity of synchronization and concurrency.
- ZStack Cloud uses work queue to avoid lock contention. Serial tasks are stored in memory as work queues. Work queues can process any operation of any resource in parallel to improve system concurrency.
- The queue-based lock-free architecture enables tasks to run in parallel, thereby improving the system performance.

4. In-Process Microservices Architecture: microservices decoupling

- ZStack Cloud uses a message bus to isolate and control various services, such as VM instance services, identity authentication services, snapshot services, volume services, network services, and storage services. All microservices are enclosed in the same process of a management node. These services communicate with each other through the message bus. After all messages are sent to the message bus, the destination service is selected by the consistent hashing ring for message forwarding.
- In-process microservices provide a star-like architecture, ensuring every service in microservices to run independently. This architecture also decouples the highly centralized control business, and achieves a high degree of autonomy and isolation of the system. Failure of any service does not affect other components. This effectively guarantees the system reliability and stability.

5. Versatile Plugin System: supports horizontal expansion of plugins

- In ZStack Cloud, every plugin provides services independently. Any newly added plugin has no impact on other existing plugins.
- ZStack Cloud concludes plugins into two patterns: strategy pattern and observer pattern. Strategy pattern plugins will inherit parent-class interfaces and then perform specific implementations. Observer pattern plugins will register a listener to monitor event changes of the internal business logic in an application. Once an event is detected inside the

application, the observer pattern plugins will respond to this event automatically and execute a piece of code to affect the corresponding business flow.

- ZStack Cloud supports horizontal expansion of plugins. The Cloud can be quickly upgraded, and the overall system architecture still remains robust.

6. Workflow Engine: sequence-based management, rollback on errors

- ZStack Cloud clearly defines every workflow by using XML files. Every flow can be rolled back on errors. A workflow can roll back all prior executed steps and clean up the garbage resources during the execution when an error happens in a step.
- Every workflow can contain sub-flow to decouple the business logic further.

7. Tag System: extends the business logic and adds resource properties

- ZStack Cloud uses system tags and plugins to extend the original business logic.
- You can use tags to group your resources and search for resources with specific tags.

8. Cascade Framework: supports cascading operations on resources

- ZStack Cloud uses a cascade framework to perform cascading operations on resources. The cascade framework allows an operation to be cascaded from one resource to other resources. For example, the operation of uninstalling or deleting a resource can be cascaded to the descendant resources.
- Resources can join a cascade framework through a plugin. Joining or quitting the cascade framework will not affect other resources.
- The cascading mechanism makes the configuration of ZStack Cloud more flexible and simple, meeting the requirements of resource configuration changes.

9. Full Automation By Ansible: automated deployment by agentless Ansible

- Being seamlessly integrated with Ansible (which is agentless), ZStack Cloud can automatically install dependencies, configure physical resources, and deploy agents. This whole process is transparent to users and requires no additional intervention. You can upgrade your agents simply by reconnecting the agents.

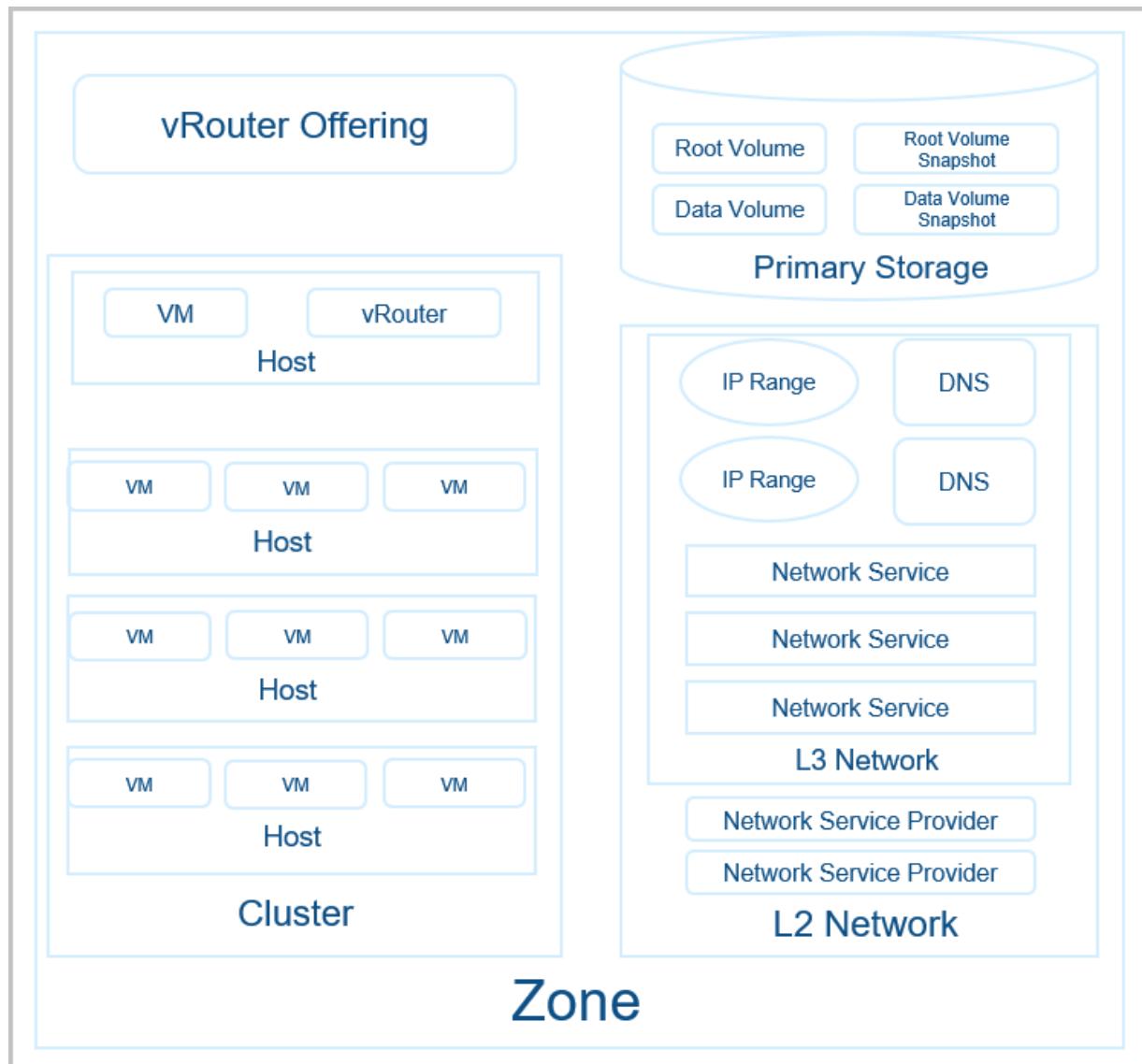
10. Comprehensive Query API: Every property of every resource can be queried.

- ZStack Cloud supports millions of query conditions, comprehensive query APIs, and any way of condition combinations.

2.2 ZStack Cloud Resource Model

ZStack Cloud is essentially a configuration management system for resources in the Cloud. The following figure describes the resource model managed by ZStack Cloud, as shown in [Figure 2-2: ZStack Cloud Resource Model](#).

Figure 2-2: ZStack Cloud Resource Model



ZStack Cloud mainly has the following resources:

- Zone: the largest resource scope defined in ZStack Cloud. A zone is a logical group of resources, such as clusters, L2 networks, and primary storages.
- Cluster: a logical group of analogy hosts (compute nodes).

- Host: also known as a compute node, is a physical server that provides VM instances with compute, network, and storage resources.
- Primary storage: a storage system that stores disk files, including root volumes, data volumes , root volume snapshots, data volume snapshots, and image caches, for VM instances. The types of primary storage include local storage, NFS, Shared Mount Point, SharedBlock, and Ceph.
- Backup storage: a storage system that stores image templates. The types of backup storage include ImageStore, SFTP, and Ceph.
- VXLAN pool: 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. The types of VXLAN pool include software SDN and hardware SDN.
- L2 network: a layer 2 broadcast domain used for layer 2 isolation. Generally, L2 networks are identified by names of devices on the physical network. The types of L2 network include L2NoVlanNetwork, L2VlanNetwork, VxlanNetwork, and HardwareVxlanNetwork.
- L3 network: a collection of network configurations for VM instances, including the IP range, gateway, DNS, and network services.
- Instance offering: a specification of the VM instance CPU, memory, disk bandwidth, and network bandwidth.
- Disk offering: a specification of a volume, which defines the size of a volume and how the volume will be created.
- VM instance: a virtual machine instance running on a host. A VM instance has its own IP address to access public network and run application services. VM instances are core components of ZStack Cloud.
- Image: an image template used by a VM instance or volume. Image template includes root volume images and data volume images. The types of root volume image include ISO and Image, while the type of data volume image is Image.
- Root volume: the system disk where the VM instance operating system is installed.
- Data volume: the data disk that provides additional storage for a VM instance.
- Snapshot: a point-in-time capture of data in a disk. Snapshots are captured incrementally.
- Network service module: a module for providing network services. This resource is hidden in the UI.

- Network service: provides various network services for VM instances, including VPC firewall, security group, virtual IP (VIP), elastic IP (EIP), port forwarding, load balancing, IPsec tunnel, and flow monitoring.
- VPC firewall: manages north-south traffic of the VPC network. You can manage the network access policy by configuring rule sets and rules.
- Security group: provides L3 network firewall control over the VM instances, and controls TCP, UDP, and ICMP data packets for effective filtering. You can use a security group to effectively control specified VM instances on specified networks according to specified security rules.
- Virtual router offering: an instance offering that defines the CPU, memory, virtual router (vRouter) image, management network, and public network used by a vRouter (including ordinary vRouter, VPC vRouter, and ARM vRouter).
- Virtual router (vRouter): a custom Linux VM instance that provides network services such as DHCP, DNS, SNAT, route table, EIP, port forwarding, load balancing, and IPsec tunnel.
- VPC vRouter: a router created directly from vRouter offering. VPC vRouter, which has a public network and a management network, is the core of VPC. VPC vRouter provides various network services, including DHCP, DNS, SNAT, route table, EIP, port forwarding, load balancing, IPsec tunnel, dynamic routing, multicast routing, VPC firewall, and Netflow.

The resource relationships in ZStack Cloud are as follows:

- Parent-child: A resource can be the parent or child of another resource. For example, a host is the child resource of cluster, while a host is the parent resource of VM instance.
- Sibling: Resources sharing the same parent resource are siblings. For example, clusters and L2 networks are sibling resources because all of them are child resources of zone.
- Ancestor-descendant: A resource can be the lineal ancestor or lineal descendant of another resource. For example, a cluster is the ancestor resource of VM instance, while a host is a descendant resource of zone.
- Friend: Resources that do not have the above three relationships but still need to cooperate with each other in some scenarios are friends. For example, primary storage and backup storage are friends. Also, zone and backup storage are friends.



Note:

Relationship between primary storage and backup storage:

- When you create a VM instance, primary storage needs to download images of the VM instance as caches from backup storage.

- When you create an image, primary storage needs to copy the root volume to backup storage and save it as a template.

The following properties are common to almost all resources in ZStack Cloud:

- UUID: the universally unique identifier. ZStack Cloud uses version 4 UUIDs to uniquely identify a resource.
- Name: a human readable string that is used to identify resources. Names can be duplicated and are usually required.
- Description: also known as a brief introduction that is used to briefly describe a resource. Description is usually optional.
- Creation date: the date and time when a resource was created.
- Last operation date: the date and time when a resource was updated last time.

Resources support full or partial Create, Read, Update, Delete (CRUD) operations.

- Create: create or add a new resource.
- Read: read or query information about a resource.
- Update: update information about a resource.
- Delete: delete a resource. Due to the cascade framework provided by ZStack Cloud, if a parent resource is deleted, its associated child resources and descendant resources will also be deleted.

3 Command Line Tool

3.1 Overview

`zstack-cli` is a command line tool that you can use to call all ZStack Cloud APIs. All API examples in this documentation are demonstrated by using `zstack-cli`.

ZStack Cloud is built on a service-oriented architecture (SOA). Therefore, all API operations in ZStack Cloud are essentially API messages. For example, the CLI command `StartVmInstance` actually maps to the API message `APIStartVmInstanceMsg`.

ZStack Cloud includes a built-in HTTP service that encapsulates all API messages into HTTP POST requests. `zstack-cli` calls API requests based on the built-in HTTP service for business processing.

3.2 Usage

Connect to ZStack Cloud Management Node

`zstack-cli` is installed by default after you install a ZStack Cloud management node. You can start the management node by typing `zstack-cli` in a shell console.

```
[root@localhost ~]# zstack-cli
zstack command line tool
Type "help" for more information
Type Tab key for auto-completion
Type "quit" or "exit" or Ctrl-d to exit
```

If no parameters are specified, `zstack-cli` will automatically connect to port 8080 on localhost. To connect a remote ZStack Cloud management node, you can specify the IP address and the port No. by using `-H` and `-p` respectively.

```
[root@localhost ~]# zstack-cli --help
Usage: -c [options]

Options:
  -h, --help          show this help message and exit
  -H HOST, --host=HOST [Optional] IP address or DNS name of a zstack
                      management node. Default value: localhost
  -p PORT, --port=PORT [Optional] Port that the zstack management
                      node is
                      listening on. Default value: 8080
  -d DEPLOY_CONFIG_FILE, --deploy=DEPLOY_CONFIG_FILE
                      [Optional] deploy a cloud from a XML file.
  -t DEPLOY_CONFIG_TEMPLATE_FILE, --
  template=DEPLOY_CONFIG_TEMPLATE_FILE
                      [Optional] variable template file for XML file
                      specified in option '-d'
```

```

-D ZSTACK_CONFIG_DUMP_FILE, --dump=ZSTACK_CONFIG_DUMP_FILE
    [Optional] dump a cloud to a XML file
-P ADMIN_PASSWORD, --password=ADMIN_PASSWORD
    [Optional] admin account password for dumping
and
    recovering cloud environment. It can only be
used when
    set -D or -d option. Default is 'password'.
-s, --no-secure      [Optional] if setting -s, will save password
information in command history.
[root@localhost ~]# zstack-cli -H 172.20.16.35

zstack command line tool
Type "help" for more information
Type Tab key for auto-completion
Type "quit" or "exit" or Ctrl-d to exit

admin >>>

```

With **zstack-cli**, you can connect any management node in a multi-management node environment.

Modes

- Command mode

zstack-cli can work in command mode that receives parameters from shell. In the command mode, **zstack-cli** runs only once and prints an output result to shell. For example,

```
[root@localhost ~]# zstack-cli -H 172.20.16.35 QueryZone name=Zone-1
{
    "inventories": [
        {
            "createDate": "Nov 17, 2017 8:27:47 PM",
            "lastOpDate": "Nov 17, 2017 8:27:47 PM",
            "name": "Zone-1",
            "state": "Enabled",
            "type": "zstack",
            "uuid": "c3a228078e8c4f81ba7da0b16fb8d77f"
        }
    ],
    "success": true
}
```

- Interactive mode

zstack-cli also works in interactive mode. In the interactive mode, **zstack-cli** keeps a session to continuously execute commands. For example,

```

...
admin >>>query
BatchQuery                               Prometheus
QueryLabelValues                         Prometheus
PrometheusQueryMetadata                  Prometheus
QueryPassThrough
```

PrometheusQueryVmMonitoringData	QueryAccessKey
QueryAccount	QueryAccou
ntResourceRef	
QueryAffinityGroup	QueryAlarm
QueryAlert	QueryAliyu
nDiskFromLocal	
...	
QueryVmCdRom	QueryVmInstance
QueryVmNic	QueryVmNic
InSecurityGroup	
QueryVniRange	QueryVolume
QueryVolumeBackup	QueryVolum
eSnapshot	
QueryVolumeSnapshotTree	QueryVpcIk
eConfigFromLocal	
QueryVpcIpSecConfigFromLocal	QueryVpcRouter
QueryVpcUserVpnGatewayFromLocal	QueryVpcVp
nConnectionFromLocal	
QueryVpcVpnGatewayFromLocal	QueryVtep
QueryWebhook	QueryZone
ZQLQuery	
admin >>>QueryZone	

The interactive mode is more suitable for manual execution, while the command mode is more suitable for script integration.

Login

ZStack Cloud Identity and Access Management (IAM) supports three login methods: account login, user login, and AD/LDAP login.

Account includes admin account and ordinary account. The admin account uses a default login password: password.

Before you execute any commands, you need to run the login command `LogInByAccount` to obtain a session token. This token is automatically saved to `~/.zstack/cli/session` and needs to be maintained independently.

```
admin >>>LogInByAccount accountName=admin password=password
```

Logout

Once you finish your work, you can run the `LogOut` command to end your current session.

```
admin >>>LogOut
```

The `LogOut` command can receive the `sessionUuid` parameter, which is optional. You do not need to provide it because zstack-cli can automatically read sessions that were saved.

Execute API Commands

Each API has multiple parameters. You can execute API commands in command mode or interactive mode.

- Command mode:

```
[root@localhost ~]# zstack-cli StartVmInstance
uuid=f1bd87fe2a40498db78ee596766f57b0
```

- Interactive mode:

```
admin >>>StartVmInstance uuid=f1bd87fe2a40498db78ee596766f57b0
```

View Command History

You can use the `more` command to view your command history. For example,

- Command mode:

```
[root@localhost ~]# zstack-cli more
```

- Interactive mode:

```
admin >>>more
```

The output format is similar to the Linux command `more`. You can glance or search any entry with the up and down arrow keys.

```
[NUM]      COMMAND
-----
[1]      LogInByAccount accountName=admin password=*****
[2]      ['LogOut']
[3]      ['QueryVmInstance', 'state=Running']
[4]      ['QueryZone']
[5]      ['QueryVmInstance']
[6]      LogInByAccount accountName=admin password=*****
[7]      [u'QueryVmInstance', u'count=True', u'state=Stopped']
[8]      [u'QueryVmInstance', u'count=True', u'state=Running']
[9]      [u'QueryVmInstance', u'count=True']
...

```

You can add a command No. behind `more` to query the command details.

- Command mode:

```
[root@localhost ~]# zstack-cli more 6
```

- Interactive mode:

```
admin >>>more 6
```

The result is as follows:

```
Command:
    LogInByAccount accountName=admin password=*****
Result:
{
    "inventory": {
        "accountUuid": "36c27e8ff05c4780bf6d2fa65700f22e",
        "createDate": "Dec 28, 2017 5:13:59 PM",
        "expiredDate": "Dec 28, 2017 7:13:59 PM",
        "userUuid": "36c27e8ff05c4780bf6d2fa65700f22e",
        "uuid": "c0488a149e1244799317a84ab3378763"
    },
    "success": true
}
(END)
```

Export Command Result

You can run the `save` command to export command results. You can save only one history or multiple histories at a time.

- Saving only one history at a time

- Command mode:

```
[root@localhost ~]# zstack-cli save 1
Saved command: 1 result to file: /root/LogInByAccount-1.json
```

- Interactive mode:

```
admin >>>save 1
Saved command: 1 result to file: /root/LogInByAccount-1.json
```

- Saving multiple histories at a time

- Command mode:

```
[root@localhost ~]# zstack-cli save 1,2,3
[u'CreateDataVolume',
 u'primaryStorageUuid=4db283cfa9ac4b0a9994aab52bff4069',
 u'diskOfferingUuid=7c3ba7609e2e44d2a429e93e2944871e',
 u'name=volume',
 u'systemTags=localStorage::hostUuid::37bfae93611541039aec7ae87a204e5a']
Saved command: 1 result to file: /usr/local/
CreateDataVolume-1.json
[u'CreateDataVolume',
 u'primaryStorageUuid=4db283cfa9ac4b0a9994aab52bff4069',
```

```

u'diskOfferingUuid=7c3ba7609e2e44d2a429e93e2944871e',
u'name=volume',
u'systemTags=localStorage::hostUuid::37bfae93611541039aec7ae87a204e5a' ]
Saved command: 2 result to file: /usr/local/
CreateDataVolume-2.json
[u'CreateDataVolume',
 u'primaryStorageUuid=4db283cfa9ac4b0a9994aab52bff4069',
 u'diskOfferingUuid=7c3ba7609e2e44d2a429e93e2944871e',
 u'name=volume',
 u'systemTags=localStorage::hostUuid::37bfae93611541039aec7ae87a204e5a' ]
Saved command: 3 result to file: /usr/local/
CreateDataVolume-3.json

```

— Interactive mode:

```

admin >>>save 1,2,3
[u'CreateDataVolume', u'primaryStorageUuid=4db283cfa9ac4b0a9994
aab52bff4069', u'diskOfferingUuid=7c3ba7609e2e44d2a429e93e2944871e
', u'name=volume', u'systemTags=localStorage::hostUuid::37bfae9361
1541039aec7ae87a204e5a']
Saved command: 1 result to file: /usr/local/CreateDataVolume-1.
json
[u'CreateDataVolume', u'primaryStorageUuid=4db283cfa9ac4b0a9994
aab52bff4069', u'diskOfferingUuid=7c3ba7609e2e44d2a429e93e2944871e
', u'name=volume', u'systemTags=localStorage::hostUuid::37bfae9361
1541039aec7ae87a204e5a']
Saved command: 2 result to file: /usr/local/CreateDataVolume-2.
json
[u'CreateDataVolume', u'primaryStorageUuid=4db283cfa9ac4b0a9994
aab52bff4069', u'diskOfferingUuid=7c3ba7609e2e44d2a429e93e2944871e
', u'name=volume', u'systemTags=localStorage::hostUuid::37bfae9361
1541039aec7ae87a204e5a']
Saved command: 3 result to file: /usr/local/CreateDataVolume-3.
json

```

By default, the results are saved to the current directory. You can also specify a file path as the destination folder.

```
save 1 /tmp
```

4 Query

4.1 Overview

ZStack Cloud provides comprehensive APIs to query every field of every resource.

4.2 Architecture

Every resource in ZStack Cloud groups its properties as an inventory in JSON format.

The following is an example of a zone inventory:

```
{
    "createDate": "Nov 17, 2017 8:27:47 PM",
    "description": "Test",
    "lastOpDate": "Nov 20, 2017 5:40:52 PM",
    "name": "Zone-1",
    "state": "Enabled",
    "type": "zstack",
    "uuid": "c3a228078e8c4f81ba7da0b16fb8d77f"
}
```

A resource inventory can include inventories of other resources. For example, an L3 network inventory includes an IP range inventory.

```
{
    "category": "Public",
    "createDate": "Nov 17, 2017 9:11:59 PM",
    "dns": [
        "223.5.5.5"
    ],
    "ipRanges": [
        {
            "createDate": "Nov 17, 2017 9:18:47 PM",
            "endIp": "10.108.10.110",
            "gateway": "10.0.0.1",
            "l3NetworkUuid": "a8b7054aaa9141f696afebdb1721e5c8",
            "lastOpDate": "Nov 17, 2017 9:18:47 PM",
            "name": "L3-Pub",
            "netmask": "255.0.0.0",
            "networkCidr": "10.0.0.1/8",
            "startIp": "10.108.10.100",
            "uuid": "df5b1ab49a53440bb44eb14c7ebfd50a"
        }
    ],
    "l2NetworkUuid": "16fecf5ff5754c3fb6669986ec1fe645",
    "lastOpDate": "Nov 17, 2017 9:11:59 PM",
    "name": "L3-Pub",
    "networkServices": [
        {
            "l3NetworkUuid": "a8b7054aaa9141f696afebdb1721e5c8",
            "networkServiceProviderUuid": "3d46e334773845adac0d90c86a5999ee",
            "type": "Layer2"
        }
    ]
}
```

```

        "networkServiceType": "Userdata"
    },
{
    "l3NetworkUuid": "a8b7054aaa9141f696afebdb1721e5c8
",
    "networkServiceProviderUuid": "3d46e33477
3845adac0d90c86a5999ee",
    "networkServiceType": "Eip"
},
{
    "l3NetworkUuid": "a8b7054aaa9141f696afebdb1721e5c8
",
    "networkServiceProviderUuid": "3d46e33477
3845adac0d90c86a5999ee",
    "networkServiceType": "DHCP"
}
],
"state": "Enabled",
"system": false,
"type": "L3BasicNetwork",
"uuid": "a8b7054aaa9141f696afebdb1721e5c8",
"zoneUuid": "c3a228078e8c4f81ba7da0b16fb8d77f"
}

```

An inventory has two types of fields: primitive field and nested field.

- A primitive field consists of primitive types, such as **number**, **string**, **boolean**, and **date**. In the example above, **uuid**, **name**, and **system** are primitive fields.
- A nested field includes other types except for the primitive types. In the example above, **ipRanges** is a nested field.



Note:

- Unless explicitly stated, every field of every inventory can be queried.
- Every inventory has its corresponding query API, such as **QueryZone**, **QueryHost**, and **QueryVmInstance**.
- The response of a query API always carries a list of inventories, or an empty list if no matching result is found.
- The following is an example of a query response:

```
{
    "inventories": [
        {
            "allocatorStrategy": "LeastVmPreferredHostAllocators
trategy",
            "cpuNum": 1,
            "cpuSpeed": 0,
            "createDate": "Nov 17, 2017 8:48:06 PM",
            "lastOpDate": "Nov 17, 2017 8:48:06 PM",
            "memorySize": 1073741824,
            "name": "instance-offering",
            "sortKey": 0,
        }
    ]
}
```

```

        "state": "Enabled",
        "type": "UserVm",
        "uuid": "32c3405f7bbf43009cfaf58cb41e39fc"
    }
],
"success": true
}

```

A query API consists of a list of query conditions and several helper parameters.

Parameters

Name	Description	Optional	Valid Value	Starting Version
conditions	A list of :ref:`QueryCondition` <QueryCondition>.			0.6
limit	The maximum number of inventories that can be returned by the query API . Default value: 1000.	true		0.6
start	The first inventory to return. Default value: 0.	true		0.6
count	If true, the query response only returns the inventory count . Default value: false.		<ul style="list-style-type: none"> • true • false 	0.6
replyWithCount	If true, the query response returns both the inventories and the inventory count. Default value: false.		<ul style="list-style-type: none"> • true • false 	0.6
sortBy	The field by which the result inventories will be sorted. This	true		0.6

Name	Description	Optional	Valid Value	Starting Version
	field must be a primitive field.			
sortDirection	If <code>sortBy</code> is not null, this parameter specifies the sort direction. Default value: asc.		<ul style="list-style-type: none"> • asc • desc 	0.6
fields	A list of primitive fields. If specified, only these primitive fields will be included in the query response.	true		0.6

Query Condition

Query APIs receive a list of query conditions. Properties included in the query conditions are as follows.

Name	Description	Optional	Valid Value	Starting Version
name	The field name.			0.6
op	The comparison operator.		<ul style="list-style-type: none"> • = • != • > • >= • < • <= • in • not in • is null • is not null • like • not like 	0.6
value	The query value.			0.6

The field name can be a primitive field name, a sub-field name of a nested field, or a sub-field name of an expanded field. (See :ref:Join <query join>). `op` is a comparison operator in SQL.

Operator	CLI Form	Description
=	=	The equal operator. The string comparison is case-sensitive.
!=	!=	The not equal operator. The string comparison is case-sensitive.
>	>	The greater than operator. For information about the string comparison, see Operators in MySQL Reference Manual.
>=	>=	The greater than or equal operator. For information about the string comparison, see Operators in MySQL Reference Manual.
<	<	The less than operator. For information about the string comparison, see Operators in MySQL Reference Manual.
<=	<=	The less than or equal operator. For information about the string comparison, see Operators in MySQL Reference Manual.
in	?=	Checks whether a value is within a set of values.
not in	!?=	Checks whether a value is NOT within a set of values.
is null	=null	Checks whether a value is NULL.
is not null	!=null	Checks whether a value is not NULL.
like	~=	Simple pattern matching. Use % to match any number of characters, even zero characters. Use _ to match exactly one character.
not like	!~=	Negation of simple pattern matching. Use % to match any number of characters, even zero characters. Use _ to match exactly one character.

The relationship between query conditions is logical AND, which is the only relationship supported currently. For example,

```
# Query the L3 network with the name of L3Network1 and one or more IP range named rangel1.
```

```
QueryL3Network ipRanges.name=rangel name=L3Network1
```

Query Conditions in zstack-cli

Two methods of using query conditions are available in zstack-cli.

- Original form of query API:

```
QueryHost conditions='[{"name": "name", "op": "=", "value": "KVM1"}]'
```

- zstack-cli form:

```
QueryHost name=KVM1
```

Obviously, the zstack-cli form is more intuitive and readable. The following zstack-cli form is usually used to express query conditions:

```
condition_name(no_space)CLI_comparison_operator(no_space)condition_value
```

When you type a command in zstack-cli, you can use the **Tab** key for automatic completion or reminding you of the queryable fields, including primitive fields, nested fields, and expanded fields.

```
admin >>>QueryVmInstance
[Query Conditions:]
allVolumes.           cluster.          host.
image.                instanceOffering.   vmCdRoms.
resourcePool.         rootVolume.       zone.

__systemTag__=        __tagUuid__=        __userTag__=
allocatorStrategy=   clusterUuid=      createDate=
cpuNum=               cpuSpeed=        description=
defaultL3NetworkUuid= hostUuid=        hypervisorType=
groupBy=             instanceOfferingUuid= lastOpDate=
imageUuid=            lastOpDate=      memorySize=
lastHostUuid=         platform=       state=
name=                 rootVolumeUuid=  userTags=
rootVolumeUuid=       state=          systemTags=
type=                 userTags=       zoneUuid=
uuid=                 zoneUuid=       timeout=
```

[Parameters:]

```
count=                fields=          limit=
replyWithCount=       sortBy=          sortDirection=
```

Join (Expanded Query)

In ZStack Cloud, Join is called expanded query. This kind of query allows you to query a resource by fields that have relation to this resource. In ZStack Cloud, these fields are called expanded fields.

For example, you can query an L3 network according to the VIP `10.108.10.102`, which is the EIP of a VM NIC.

```
admin >>>QueryL3Network vmNic.eip.vipIp=10.108.10.102
```

In the example above, the L3 network inventory does not have the `vmNic.eip.vipIp` field. However, this IP address has a relation to the VM NIC inventory. Meanwhile, the VM NIC inventory has a relation to the EIP inventory. Therefore, you can construct an expanded query across three inventories, including the L3 network inventory, the VM NIC inventory, and the EIP inventory.

Based on the Join (expanded query) condition, ZStack Cloud can provide nearly 4 million query conditions and countless combinations of conditions.

The following is a complex example to show the strong query function:

```
QueryVolumeSnapshot volume.vmInstance.vmNics.l3Network.l2Network.attachedClusterUuids?=13238c8e0591444e9160df4d3636be82
```

The example above is to query volume snapshots that were created from volumes of VM instances. The VM instances have NICs on L3 networks whose parent L2 networks are attached to a cluster with the UUID of `13238c8e0591444e9160df4d3636be82`.

Query List

When a field is a list, it can contain primitive types such as `int`, `long`, `string`, and nested inventories.

Query list is not special. This section is to remind you that do not think you can only use `in (?=)` and `not in (!?=)` to query a list. In fact, you can use all comparison operators.

For example,

```
# To query all L3 networks with the similar DNS 72.72.72.*  
QueryL3Network dns~=72.72.72.%
```

```
# To query all L3 networks with the IP range starting from 192.168.0.10  
QueryL3Network ipRanges.startIp=192.168.0.10
```

Query Tags

In this section, you can see that every resource have system tags and user tags. Both the system tags and user tags can be a part of query conditions.

ZStack Cloud uses two special fields (`__userTag__` and `__systemTag__`) to query resources.

For example,

```
QueryVmInstance __userTag__?=web-tier-VMs
```

```
QueryHost __systemTag__?=os::distribution::Ubuntu managementIp=192.168
.0.212
```

- Operators, such as **>**, **>=**, **<** and **<=**, only return resources with tags that match specified conditions.
- **is not null** returns all resources that have tags.
- **is null** returns all resources that have no tags.
- **!=**, **not in**, and **not like** return resources with tags that do not match conditions and resources that have no tags.

Avoid Loop Query

Most ZStack Cloud resources support bidirectional expanded query.

For example, a host query can be expanded to a cluster to which the host belongs, and a cluster query can also be expanded to a host in the cluster. This makes it possible to query resources in any direction, which might also lead to loop query at the same time.

For example,

```
QueryHost vmInstance.vmNics.eip.vmNic.vmInstance.uuid=d40e459b97
db5a63dedaffcd05cf3c2
```

The example above is a loop query and does the same thing as the following query example does:

```
QueryHost vmInstance.uuid=d40e459b97db5a63dedaffcd05cf3c2
```

The behavior of a loop query is undefined. You may or may not get the correct result. Therefore, we recommend that you avoid loop query in your practice.

Use Query Efficiently

With the powerful query APIs, you can get the same result by using different query methods.

For example, you can use one of the following methods to query VM instances that are running on a host with the host UUID **e497e90ab1e64db099eea93f998d525b**.

Method 1:

```
QueryVmInstance hostUuid=e497e90ab1e64db099eea93f998d525b
```

Method 2:

```
QueryVmInstance host.uuid=e497e90ab1e64db099eea93f998d525b
```

In the above two methods, Method 1 is more effective because it queries a primitive field that only involves the VM instance inventory table. Method 2 is an expanded query that joins both the VM instance inventory table and the host inventory table.

When you use UUID as the query condition, we recommend that you query a primitive field instead of the sub-field of an expanded field.

4.3 Examples

Normal Query

```
QueryVmInstance defaultL3NetworkUuid=7e52c8b7b6f94e4485a61f3f1a8bfe42
QueryPortForwardingRule protocolType=TCP
```

Query Count

```
QueryVmInstance defaultL3NetworkUuid=7e52c8b7b6f94e4485a61f3f1a8bfe42
count=true
QueryPortForwardingRule protocolType=TCP count=true
```

Normal Query with Count

```
QueryVmInstance defaultL3NetworkUuid=7e52c8b7b6f94e4485a61f3f1a8bfe42
replyWithCount=true
QueryPortForwardingRule protocolType=TCP replyWithCount=true
```

Set Limit

```
QueryVmInstance defaultL3NetworkUuid=7e52c8b7b6f94e4485a61f3f1a8bfe42
limit=3
QueryPortForwardingRule protocolType=TCP limit=2
```

Set Condition

```
QueryVmInstance name~=clone
QueryPortForwardingRule vipPortStart?=23,24
```

Set Start

```
QueryVmInstance imageUuid=4b5e37a47a402977a3b285ccecf9c0c1 start=2
limit=3
```

```
QueryPortForwardingRule protocolType=TCP start=1 limit=3
```

Select Field

```
QueryVmInstance fields=name,uuid clusterUuid=5cac8330d5ab4c2ea393  
b8c3986c8850  
QueryPortForwardingRule fields=uuid,privatePortStart,privatePortEnd  
vipPortStart=23 vipPortEnd=23
```

Sort

```
QueryVmInstance clusterUuid=5cac8330d5ab4c2ea393b8c3986c8850 sortBy=  
createDate sortDirection=asc  
QueryPortForwardingRule sortBy=privatePortStart sortDirection=desc
```

5 Resource Center

5.1 Resource Pool

5.1.1 VM Instance

5.1.1.1 Overview

A VM instance is a virtual machine instance running on a host. A VM instance has its own IP address to access a public network and run application services. VM instances are core components of ZStack Cloud.

5.1.1.2 Inventory

Properties

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			0.6
name	The name. For more information, see Resource Property .			0.6
description	The description. For more information, see Resource Property .	Yes		0.6
zoneUuid	The zone UUID. For more information, see Zone and Location .	Yes		0.6
clusterUuid	The cluster UUID. For more information, see Cluster and Location .	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
hostUuid	The UUID of the host on which the VM instance is running. For more information, see Host and Location .	Yes		0.6
lastHostUuid	The UUID of the host on which the VM instance was running last time. For more information, see Host and Location .	Yes		0.6
imageUuid	The UUID of the image from which the root volume of the VM instance is created. For more information, see Image .			0.6
instanceOfferingUuid	The instance offering UUID. For more information, see Instance Offering .			0.6
rootVolumeUuid	The root volume UUID of a VM instance. For more information, see Volume .			0.6
defaultL3NetworkUuid	The default L3 network UUID of a VM instance. For more information, see L3 Network and Networks .			0.6

Name	Description	Optional	Valid Value	Starting Version
cpuSpeed	The speed of the virtual CPU (vCPU). For more information, see CPU Capacity .			0.6
cpuNum	The CPU count of the VM instance (the vCPU count). For more information, see CPU Capacity .			0.6
allocatorStrategy	The host allocator strategy. For more information, see Allocator Strategy .		<ul style="list-style-type: none"> • DefaultHostAllocatorStrategy • LastHostPreferredAllotatorStrategy • LeastVmPreferredHostAllocatorStrategy • MinimumCPUUsageHostAllocatorStrategy • MinimumMemoryUsageHostAllocatorStrategy • MaxInstancePerHostHostAllocatorStrategy 	0.6
type	<p>The VM instance type.</p> <ul style="list-style-type: none"> • UserVm: The VM instance created by users. 		<ul style="list-style-type: none"> • UserVm • ApplianceVm 	0.6

Name	Description	Optional	Valid Value	Starting Version
	<ul style="list-style-type: none"> ApplianceVm: The VM instance created by ZStack Cloud to help manage the cloud. 			
hypervisorType	The hypervisor type of the VM instance. For more information, see Host and Hypervisor Type .		<ul style="list-style-type: none"> KVM 	0.6
state	The VM instance state. For more information, see State .		<ul style="list-style-type: none"> Created Starting Running Stopping Stopped Rebooting Destroying Destroyed Migrating Expunging Pausing Paused Resuming VolumeMigrating Unknown 	0.6
vmNics	The NICs of the VM instance. For more information, see NIC Inventory .			0.6
allVolumes	The volumes of the VM instance. For			0.6

Name	Description	Optional	Valid Value	Starting Version
	more information, see Volume Inventory .			
createDate	The creation date. For more information, see Resource Property .			0.6
lastOpDate	The last operation date. For more information, see Resource Property .			0.6

Sample

```
{
    "inventories": {
        "agentPort": 7272,
        "allVolumes": [
            {
                "actualSize": 293641216,
                "createDate": "Oct 30, 2017 10:37:51 AM",
                "description": "Root volume for VM[uuid:0f7730d25ff413d9ab42c174722c9d8]",
                "deviceId": 0,
                "format": "qcow2",
                "installPath": "/Cloud_ps/rootVolumes/acct-36c27e8ff05c4780bf6d2fa65700f22e/vol-1f9\19d46bd7a43689b6401bf82b3e190/1f919d46bd7a43689b6401bf82b3e190.qcow2",
                "isShareable": false,
                "lastOpDate": "Oct 30, 2017 10:37:51 AM",
                "name": "ROOT-for-vrouter.13.The private network of the private cloud.ac5c7e",
                "primaryStorageUuid": "2376c2874ae34e95a2309fa3453c547d",
                "rootImageUuid": "bca9ad917cf3178281f27bc64d2dc96b",
                "size": 8589934592,
                "state": "Enabled",
                "status": "Ready",
                "type": "Root",
                "uuid": "1f919d46bd7a43689b6401bf82b3e190",
                "vmInstanceUuid": "0f7730d25fff413d9ab42c174722c9d8"
            }
        ],
        "allocatorStrategy": "LeastVmPreferredHostAllocatorStrategy",
        "applianceVmType": "vrouter",
        "clusterUuid": "175a8917ee794b849e4e96f0b680b717",
        "cpuNum": 2,
    }
}
```

```

        "cpuSpeed": 0,
        "createDate": "Oct 30, 2017 10:37:51 AM",
        "defaultRouteL3NetworkUuid": "e315b2cb6151454bbab3
62a6e92909e7",
        "hostUuid": "232a730a0c9f4280803a8b0eddfecd77",
        "hypervisorType": "KVM",
        "imageUuid": "bca9ad917cf3178281f27bc64d2dc96b",
        "instanceOfferingUuid": "03a0a2b129f547b5bcb0745db8333390
",
        "lastHostUuid": "232a730a0c9f4280803a8b0eddfecd77",
        "lastOpDate": "Oct 30, 2017 7:34:35 PM",
        "managementNetworkUuid": "e315b2cb6151454bbab362a6e92909e7
",
        "memorySize": 2147483648,
        "name": "vrouter.l3.The private network of the private
cloud.ac5c7e",
        "platform": "Linux",
        "publicNetworkUuid": "e315b2cb6151454bbab362a6e92909e7",
        "rootVolumeUuid": "1f919d46bd7a43689b6401bf82b3e190",
        "state": "Running",
        "status": "Connected",
        "type": "ApplianceVm",
        "uuid": "0f7730d25fff413d9ab42c174722c9d8",
        "vmNics": [
            {
                "createDate": "Oct 30, 2017 10:37:51 AM",
                "deviceId": 0,
                "gateway": "10.0.0.1",
                "ip": "10.58.22.43",
                "l3NetworkUuid": "e315b2cb6151454bbab362a6e92909e7
",
                "lastOpDate": "Oct 30, 2017 10:37:51 AM",
                "mac": "fa:08:2b:92:42:00",
                "metaData": "3",
                "netmask": "255.0.0.0",
                "uuid": "bf1d8e2848fd48e39e71c9f859a2158b",
                "vmInstanceUuid": "0f7730d25fff413d9ab42c174722c9
d8"
            }
        ],
        "zoneUuid": "12489c7dce2b4e73811da4a1d38b53dc"
    }
}

```

Location

ZStack Cloud arranges compute resources through zones, clusters, and hosts. Therefore, the location of a VM instance can be identified according to the zoneUuid, clusterUuid, and hostUuid.

- When a VM instance is running, these UUIDs will be set to values that represent the current location of the VM instance.
- After a VM instance is stopped, hostUuid will be set to NULL, while zoneUuid and clusterUuid will remain unchanged.
- The lastHostUuid parameter is special, as it represents the host on which the VM instance was running last time.

- For newly created VM instances, lastHostUuid is set to NULL.
- Once a VM instance is stopped, lastHostUuid is set to the previous value of lastHostUuid.

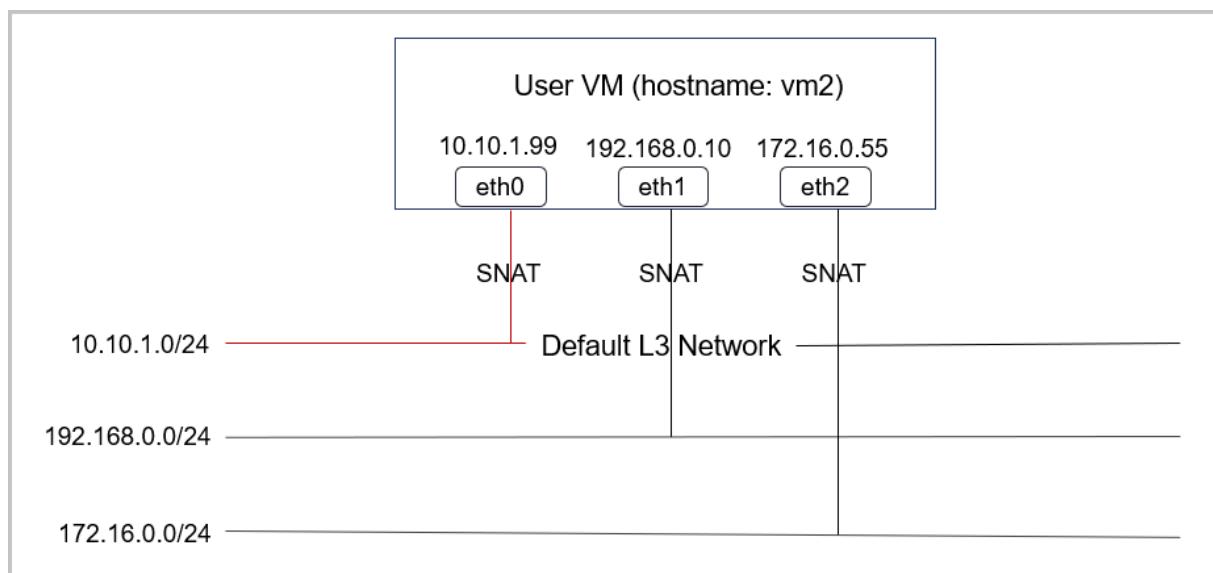
Networks

A VM instance can have one or more L3 networks. The [VM NIC Inventory](#) section lists the IP address, netmask, MAC address, and other information about each L3 network.

- If a VM instance has more than one L3 network, you must set a default L3 network for this VM instance. The default L3 network provides default route, DNS, and hostname.
- If a VM instance has only one L3 network, this one automatically becomes the default L3 network.

The following example helps you understand what a default L3 network is. Suppose you have a user VM instance, as shown in [Figure 5-1: User VM Instance](#).

Figure 5-1: User VM Instance



As shown in the figure above, the VM instance has three L3 networks, all of which provide the Source Network Address Translation (SNAT) service. The default L3 network is 10.10.1.0/24.

```
CIDR: 10.10.1.0/24
Gateway: 10.10.1.1
DNS domain: web.tier.mycompany.com
```

Then, the routing table of the VM instance would be as follows:

```
default via 10.10.1.1 dev eth0
10.10.1.0/24 dev eth0 proto kernel scope link src 10.10.1.99
192.168.0.0/24 dev eth1 proto kernel scope link src 192.168.0.10
```

```
172.16.0.0/24 dev eth2 proto kernel scope link src 172.16.0.55
```

As you can see, the default route points to 10.10.1.1, which is the gateway of the default L3 network. Meanwhile, the /etc/resolv.conf of the VM instance is as follows:

```
search web.tier.mycompany.com
nameserver 10.10.1.1
```

That is, the DNS domain is also from the default L3 network. In addition, the DNS name server is also set to the gateway 10.10.1.1 because the default L3 network provides a DNS server. Then, the Full Qualified Domain Name (FQDN) of the VM instance would be as follows:

```
vm2.web.tier.mycompany.com
```

FQDN is an extension of the DNS domain.

VM NIC Inventory

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			0.6
vmInstanceUuid	The UUID of the parent VM instance.			0.6
l3NetworkUuid	The UUID of the L3 network to which the NIC is attached.			0.6
ip	The IP address.			0.6
mac	The MAC address.			0.6
hypervisorType	The hypervisor type.			0.6
netmask	The netmask.			0.6
gateway	The gateway.			0.6
metaData	The reserved field for internal use.	Yes		0.6
deviceId	The device ID, which is an			0.6

Name	Description	Optional	Valid Value	Starting Version
	integer that indicates the order of NICs in the Ethernet device of the guest operating system. For example, 0 usually means eth0, and 1 usually means eth1.			
usedIps				0.6
ipVersion	The IP version.			0.6

Sample

```
{
  "inventories": [
    {
      "createDate": "Sep 1, 2021 1:19:41 PM",
      "deviceId": 0,
      "driverType": "virtio",
      "gateway": "10.34.0.1",
      "hypervisorType": "KVM",
      "internalName": "vnic7.0",
      "ip": "10.34.0.199",
      "l3NetworkUuid": "fa7ae74a3bc64532b672bcdac820c3c6",
      "lastOpDate": "Sep 1, 2021 1:19:41 PM",
      "mac": "fa:4e:29:d7:6e:00",
      "netmask": "255.255.255.0",
      "type": "VNIC",
      "usedIps": [
        {
          "createDate": "Sep 1, 2021 1:19:41 PM",
          "gateway": "10.34.0.1",
          "ip": "10.34.0.199",
          "ipInLong": 170000583,
          "ipRangeUuid": "e04aea52053443de9bb7b82af8233303",
          "ipVersion": 4,
          "l3NetworkUuid": "fa7ae74a3bc64532b672bcdac820c3c6"
        },
        {
          "lastOpDate": "Sep 1, 2021 1:19:41 PM",
          "netmask": "255.255.255.0",
          "uuid": "0a678264c3d338358a6c1615d808a8e4",
          "vmNicUuid": "2e1d6026e32e402ca1d3db5119940f29"
        }
      ],
      "uuid": "2e1d6026e32e402ca1d3db5119940f29",
      "vmInstanceUuid": "8049b3be8efb46c6aa143236d184c843"
    }
  ]
}
```

```

        "success": true
    }
}

```

Volume

The allVolumes field is a list of volumes, including root volumes and data volumes. To find the root volumes, you can iterate the list by checking the volume type or by using the rootVolumeUuid field to match the volume UUID. A root volume will be always with the VM instance until the VM instance is destroyed.

Hypervisor Type

The hypervisor type of a VM instance might be inherited from the hypervisor type of an image or a host. This depends on how the VM instance is created.

- For a VM instance that is created from RootVolumeTemplate:

Images already have operating system installed. Therefore, the VM instance will be created on a host with the same hypervisor type as the VM instance image. In this case, the hypervisor type of the VM instance is inherited from image.

- For a VM instance that is created from ISO:

ISO is used to install the operating system on a blank root volume of the VM instance.

Therefore, the VM instance might be created on a host of any hypervisor type. In this case, the hypervisor type of the VM instance is inherited from host.

State

A VM instance has the following states during its lifecycle:

- Created

Indicates that the VM instance is just created as a record in the database and is not started on any host. This state only exists when you create a new VM instance.

- Starting

Indicates that the VM instance is being started on a host.

- Running

Indicates that the VM instance is running on a host.

- Stopping

Indicates that the VM instance is being stopped on a host.

- Stopped

Indicates that the VM instance is stopped and is not running on any host.

- Rebooting

Indicates that the VM instance is being rebooted on the host where the VM instance was running last time.

- Destroying

Indicates that the VM instance is being deleted.

- Destroyed

Indicates that the VM instance is deleted

- Migrating

Indicates that the VM instance is being migrated to the other host.

- Expunging

Indicates that the database of the VM instance is being deleted.

- Pausing

Indicates that the VM instance is being paused on a host.

- Paused

Indicates that the VM instance is paused.

- Resuming

Indicates that the VM instance is being resumed from the Paused state to the Running state.

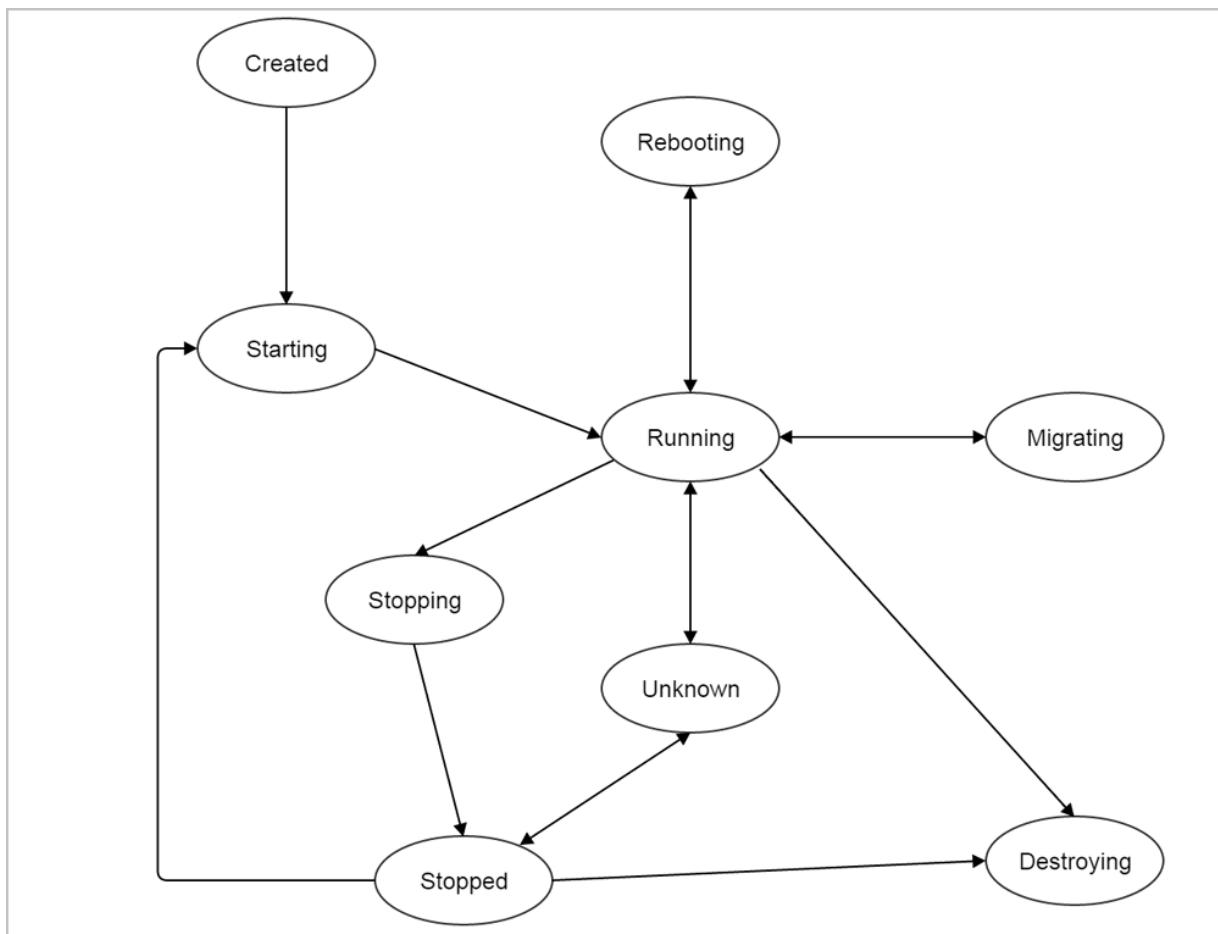
- VolumeMigrating

Indicates that the root volume of the VM instance is being migrated from local storage to the other host.

- Unknown

Indicates that ZStack Cloud fails to detect the state due to reasons such as losing disconnection to the host.

The state transition diagram of a VM instance is shown in [Figure 5-2: VM Instance State Transition Diagram](#).

Figure 5-2: VM Instance State Transition Diagram

ZStack Cloud uses VM Tracer to periodically track the state of VM instances. The default interval is 60 seconds. The state of a VM instance might be affected by factors outside ZStack Cloud.

- For example, the power outage of a host will cause all VM instances running on the host to stop running. Once VM Tracer detects a mismatch between the actual state of a VM instance and the recorded state in the database, VM Tracer will update the database to catch up with the actual state.
- If VM Tracer fails to check the state of a VM instance due to reasons such as disconnection between the management node and the host, VM Tracer will set the state of the VM instance to Unknown. Once VM Tracer successfully detects the VM instance state again, for example, after the management node is reconnected to the host, VM Tracer will update the VM instance to the actual state.

VM CD-ROM Inventory

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			3.3.0
name	The name. For more information, see Resource Property .			3.3.0
description	The description. For more information, see Resource Property .	Yes		3.3.0
deviceID	The device ID.	Yes		3.3.0
isoInstallPath	The installation path on the backup storage.			3.3.0
isoUuid	The ISO UUID.			3.3.0
vmlInstanceUuid	The VM instance UUID.			3.3.0
groupBy	Groups rows into subgroups based on values of columns or expressions. This field is equivalent to the Group By clause in MySQL, such as <code>groupBy =type</code> .	Yes		3.3.0
createDate	The creation date. For more information, see Resource Property .			3.3.0

Name	Description	Optional	Valid Value	Starting Version
lastOpDate	The last operation date. For more information, see Resource Property .			3.3.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.3.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.3.0

Sample

```
{
    "inventories": [
        {
            "createDate": "Jan 15, 2019 4:59:25 PM",
            "deviceId": 0,
            "lastOpDate": "Jan 15, 2019 4:59:25 PM",
            "name": "vm-6e243d2edf8443a4968d3878a4fed2a6-cdRom",
            "uuid": "29f6e8c277a94e57bd0b7c627bd65e85",
            "vmInstanceUuid": "6e243d2edf8443a4968d3878a4fed2a6"
        }
    ],
    "success": true
}
```

VM Priority Configuration Inventory

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			3.7.0
accountUuid	The account UUID.			3.7.0
cpuShares				3.7.0
level	The resource priority.			3.7.0

Name	Description	Optional	Valid Value	Starting Version
oomScoreAdj				3.7.0
groupBy	Groups rows into subgroups based on values of columns or expressions. This field is equivalent to the Group By clause in MySQL, such as <code>groupBy =type</code> .	Yes		3.7.0
createDate	The creation date. For more information, see Resource Property .			3.7.0
lastOpDate	The last operation date. For more information, see Resource Property .			3.7.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.7.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.7.0

Sample

```
{
  "inventories": [
    {
      "cpuShares": 512,
      "createDate": "Oct 16, 2019 9:51:40 AM",
      "lastOpDate": "Oct 16, 2019 9:51:40 AM",
      "level": "Normal",
      "oomScoreAdj": 0,
      "uuid": "b29df0c34e874a1c83033a3cf61f086"
    },
  ]
}
```

```
{
    "cpuShares": 1024,
    "createDate": "Oct 16, 2019 9:51:40 AM",
    "lastOpDate": "Oct 16, 2019 9:51:40 AM",
    "level": "High",
    "oomScoreAdj": -900,
    "uuid": "c804903064f54e36b3a066be0cd24aef"
}
],
"success": true
}
```

5.1.1.3 Operations

5.1.1.3.1 CreateVmInstance

Creates a VM instance. For example,

```
CreateVmInstance name=vm imageUuid=d720ff0c60ee48d3a2e6263dd3e12c33 \
instanceOfferingUuid=76789b62aeb542a5b4b8b8488fbaced2 \
l3NetworkUuids=37d3c4a1e2f14a1c8316a23531e62988
```

```
#Specify multiple NICs and the default L3 network.
CreateVmInstance name=test imageUuid=ee14c7c8cc46309d821c51bbae3adb70 \
\
instanceOfferingUuid=1cf417bfd0e94175aea92131f1000011 \
l3NetworkUuids='ac5c7e736f1b499bbd0c12763b30051d,e315b2cb6151454bbab3
62a6e92909e7' \
defaultL3NetworkUuid=ac5c7e736f1b499bbd0c12763b30051d
```

```
#Specify multiple NICs, the default L3 network, the static IP address
, the console VNC mode, and the VNC password, and set the high
availability level to NeverStop.
CreateVmInstance name=test imageUuid=ee14c7c8cc46309d821c51bbae3adb70 \
\
instanceOfferingUuid=1cf417bfd0e94175aea92131f1000011 \
l3NetworkUuids='ac5c7e736f1b499bbd0c12763b30051d,e315b2cb6151454bbab3
62a6e92909e7' \
defaultL3NetworkUuid="ac5c7e736f1b499bbd0c12763b30051d" \
systemTags="consolePassword::123456","ha::NeverStop","vmConsoleMode::vnc",
"staticIp::ac5c7e736f1b499bbd0c12763b30051d::172.24.0.5"
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
name	The resource name. For more information, see Resource Property .			0.6
resourceUuid	The resource UUID. For more information,	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
	see Resource Property .			
description	The resource description. For more information, see Resource Property .	Yes		0.6
instanceOfferingUuid	The instance offering UUID, which specifies the CPU, memory, and other parameters of a VM instance.			0.6
imageUuid	The image UUID, which specifies the image from which the root volume of the VM instance is created.			0.6
l3NetworkUuids	The L3 network UUID list. You can specify one or more L3 networks. Then the VM instance will create a NIC on each network.			0.6
type	The VM instance type. This parameter is a reserved field for internal use.		<ul style="list-style-type: none"> • UserVm • ApplianceVm 	0.6
rootDiskOfferingUuid	The disk offering UUID of the root volume. If the image type specified in imageUuid	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
	is ISO, you must specify rootDiskOfferingUuid to determine the size of the root volume to be created. If the image type is not ISO, this parameter is optional.			
dataDiskOfferingUuids	The disk offering UUID list. You can specify one or more disk offering UUIDs to create one or more data volumes for the VM instance. (The UUIDs can be repeated.)	Yes		0.6
zoneUuid	The zone UUID. If specified, the VM instance will be created in the specified zone. This parameter can be overridden by clusterUuid and hostUuid .	Yes		0.6
clusterUuid	The cluster UUID. If specified, the VM instance will be created in the specified cluster. This parameter can	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
	be overridden by hostUuid .			
hostUuid	The host UUID. If specified, the VM instance will be created on the specified host.	Yes		0.6
defaultL3NetworkUuid	The UUID of the default L3 network. If I3NetworkUuids contains the UUIDs of multiple L3 networks, this parameter is required to specify the default L3 network. If I3NetworkUuids has only one L3 network UUID, this parameter is optional.	Yes		0.6
primaryStorageUuidForRootVolume	The primary storage UUID. If specified, the root volume of the VM instance will be created on the specified primary storage.	Yes		1.8
strategy	The VM instance creation strategy. You can choose to start the VM instance immediately after creation or not	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
	to start it after creation.			
tagUuids	The tag UUID list.	Yes		3.4.0
userTags	The user tags. For more information, see CreateUser Tag . The resource type is VmInstanceVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is VmInstanceVO.	Yes		0.6
timeout		Yes		



Note:

- When you create a VM instance in ZStack Cloud, you can specify an affinity group by adding the **affinityGroup** option to **SystemTags**.
 - Format of the **affinityGroup** option: `affinityGroupUuid::UUID`
 - Example: `affinityGroupUuid::5fd71606d5af451d981413f35367a8d6`
- When you create a VM instance in ZStack Cloud, you can specify a PCI device by adding the **PCI** option to **SystemTags**.
 - Format of the **PCI** option: `pciDevice::UUID`
 - Example: `pciDevice::634b48a7bca139d9944a0f95b0c2dddf`
- When you create a VM instance in ZStack Cloud, you can bind a CPU by adding the **vmCpuPinning** option to **SystemTags**.
 - Format of the **vmCpuPinning** option: `vmCpuPinning::binding policy`
 - Example: `vmCpuPinning::1:3;1-3:4-7,^6`
 - Only the administrator can update, create, or delete the SystemTag. When you clone a VM instance, you will also clone this SystemTag.

- When you create a VM instance in ZStack Cloud, you can use the userdata feature by adding the **userdata** option to **SystemTags**.
 - Format of the **userdata** option: `userdata::base64 encoded script`
 - Example: `userdata::I2Ns...b290L2xpc3Qu...c2g=`
- When you create a VM instance in ZStack Cloud, you can specify an SSH key by adding the **sshkey** option to **SystemTags**.
 - Format of the **sshkey** option: `sshkey::public key content`
 - Example: `sshkey::ssh-rsa AAAAB3NzaC1yc2EAAAQABAAQDPAGDmLG2y...HpoL4ZN...HhGJXExIK+58Nvaqfj/03yN8IfO7sj root@hpe-77`
- When you create a VM instance in ZStack Cloud, you can specify the high availability (HA) level by adding the **ha** option to **SystemTags**.
 - Format of the **ha** option: `ha::NeverStop`
 - Example: `ha::NeverStop`
- When you create a VM instance in ZStack Cloud, you can specify the console mode by adding the **vmConsoleMode** option to **SystemTags**.
 - Format of the **vmConsoleMode** option: `vmConsoleMode::console mode`
 - Example: `vmConsoleMode::spice or vmConsoleMode::vnc`

- When you create a VM instance in ZStack Cloud, you can specify the USB redirection by adding the **usbRedirect** option to **SystemTags**.
 - Format of the **usbRedirect** option: `usbRedirect::true`
 - Example: `usbRedirect::true`
- When you create a VM instance in ZStack Cloud, you can specify the console password by adding the **consolePassword** option to **SystemTags**.
 - Format of the **consolePassword** option: `consolePassword::console password`
 - Example: `consolePassword::123456`
- When you create a VM instance in ZStack Cloud, you can specify an IP address for the L3 network by adding the **staticIp** option to **SystemTags**. If the network address type is double stack (IPv4+IPv6), you can add two **staticIp** options, which are IPv4 and IPv6, respectively.
 - Format of the **staticIp** option: `staticIp::L3 network UUID::specified IP`
 - Example: `staticIp::81a21a81cde84c1084c191354053a3b5::172.20.196.0`
- When you create a VM instance in ZStack Cloud, you can specify the MAC address of the corresponding NIC on the L3 network by adding the **customMac** option to **SystemTags**.
 - Format of the **customMac** option: `customMac::L3 network UUID::specified MAC address`
 - Example: `customMac::81a21a81cde84c1084c191354053a3b5::fa:00:37:ee:9f:00`
- When you create a VM instance in ZStack Cloud, you can specify the volume provisioning strategy by adding the **volumeProvisioningStrategy** option to **SystemTags**. The SystemTag is passed by using the **rootVolumeSystemTags** parameter.
 - Format of the **volumeProvisioningStrategy** option: `volumeProvisioningStrategy::ThinProvisioning, volumeProvisioningStrategy::ThickProvisioning`
 - Example: `volumeProvisioningStrategy::ThinProvisioning, volumeProvisioningStrategy::ThickProvisioning`
- When you create a VM instance in ZStack Cloud, you can specify the Ceph pool where the root volume is located by adding the **rootPoolName** option to **SystemTags**. The SystemTag is passed by using the **rootPoolName** parameter.
 - Format of the **rootPoolName** option: `ceph::rootPoolName::xxx`. Here, `xxx` is the pool name.

- Example: `ceph::rootPoolName::pri-v-r-26e11ca6814d4e1ba504d845f7848db3`
- When you create a VM instance in ZStack Cloud, you can specify the mother board type by adding the **vmMachineType** option to **SystemTags**. The SystemTag is passed by using the **vmMachineType** parameter.
 - Format of the **vmMachineType** option: `vmMachineType::xx`. Here, `xx` is `pc` or `q35`.
 - Example: `vmMachineType::pc`
- When you create a VM instance in ZStack Cloud, you can specify the CD-ROM list by adding the **cdroms** option to **SystemTags**. The SystemTag is passed by using the **cdroms** parameter.
 - Format of the **cdroms** option: `cdroms::${cdrom-1 config}::${cdrom-2 config}::${cdrom-3 config}`. The CD-ROM configuration (`cdrom config`) has three options: `iso` `uuid` (the UUID of the ISO to be attached by the CD-ROM), `empty` (do not select any ISO), and `none` (do not configure the CD-ROM).
 - Examples:
 - Create an empty list: `cdrom: cdroms::empty::none::none`
 - Create three empty lists: `cdrom: cdroms::empty::empty::empty`
 - Create three lists with ISO attached: `cdrom : cdroms::iso_1_uuid::iso_2_uuid ::iso_3_uuid`
- When you create a VM instance in ZStack Cloud, you can choose not to create any CD-ROM by adding the **createWithoutCdRom** option to **SystemTags**. The SystemTag is passed by using the **createWithoutCdRom** parameter.
 - Format of the **createWithoutCdRom** option: `createWithoutCdRom::true`
 - Example: `createWithoutCdRom::true`
- When you create a VM instance in ZStack Cloud, you can specify a MDEV device by adding the **mdevDevice** option to **SystemTags**.
 - Format of the **mdevDevice** option: `mdevDevice::MDEV_DEV_UUID`
 - Example: `mdevDevice::e2af8f869eff49d2a3d6f86cadc27090`
- When you create a VM instance in ZStack Cloud, you can specify whether to automatically uninstall the physical PCI device allocated from the device specifications when the VM instance is shut down. You can also delete or change the configurations of existing VM
 - Example: `uninstallPhysicalDevice::true`

instances. Note that you can add the **autoReleaseSpecReleatedPhysicalPciDevice** option to **SystemTags**.

- Format of the **autoReleaseSpecReleatedPhysicalPciDevice** option: `autoReleaseSpecReleatedPhysicalPciDevice`
- Example: `autoReleaseSpecReleatedPhysicalPciDevice`
- When you create a VM instance in ZStack Cloud, you can specify whether to automatically uninstall the virtual PCI device allocated from the device specifications when the VM instance is shut down. You can also delete or change the configurations of existing VM instances. Note that you can add the **autoReleaseSpecReleatedVirtualPciDevice** option to **SystemTags**.
- Format of the **autoReleaseSpecReleatedVirtualPciDevice** option: `autoReleaseSpecReleatedVirtualPciDevice`
- Example: `autoReleaseSpecReleatedVirtualPciDevice`
- When you create a VM instance in ZStack Cloud, you can specify the MDEV device specification and the device count allocated from the specification by adding the **mdevDeviceSpec** option to **SystemTags**.
- Format of the **mdevDeviceSpec** option: `mdevDeviceSpec::MDEV_SPEC_UUID::MDEV_DEV_NUM`
- Example: `mdevDeviceSpec::e2af8f869eff49d2a3d6f86cadc27090::4`
- When you create a VM instance in ZStack Cloud, you can specify the PCI device specification and the device count allocated from the specification by adding the **pciDeviceSpec** option to **SystemTags**.
- Format of the **pciDeviceSpec** option: `pciDeviceSpec::PCI_SPEC_UUID::PCI_DEV_NUM`
- Example: `pciDeviceSpec::e2af8f869eff49d2a3d6f86cadc27090::4`
- When you create a VM instance in ZStack Cloud, you can specify the resource priority by adding the **vmPriority** option to **SystemTags**.
- Format of the **vmPriority** option: `vmPriority::PRIORITY_LEVEL`. Here, `PRIORITY_LEVEL` can be Normal or High.
- Example: `vmPriority::Normal`
- When you create a VM instance in ZStack Cloud, the cloud records the version of the GuestTools ISO installed in the VM instance, compares the ISO version with that of the host,

and decides whether to upgrade the GuestTools ISO. Note that you can add the **GuestTools** option to **SystemTags**.

- Format of the **GuestTools** option: `GuestTools::TOOLS_VERSION`. Here, the initial value of `TOOLS_VERSION` is 1.0.0. This value will change as the version of GuestTools is upgraded.
- Example: `GuestTools::1.0.0`
- Note: When a VM instance is created from an image, if the image has the **GuestTools** tag, the value of the **GuestTools** tag will be copied from the image to the new VM instance.
- When you create a VM instance in ZStack Cloud, you can set a cross-cluster HA policy by adding the **resourceBindings** option to **SystemTags**.
 - Format of the **resourceBindings** option: `resourceBindings::Cluster:clusterUuid`
 - d. Here, `clusterUuid` is the UUID of the cluster.
 - Example: `resourceBindings::Cluster:2sdasf231jvznsdak`
- When you create a VM instance in ZStack Cloud, you can specify a hostname by adding the **hostname** option to **SystemTags**.
 - Format of the **hostname** option: `hostname::xxxxxx`. Here, `xxxxxx` is the hostname.
 - Example: `hostname::host.zstack.org`
- When you create a VM instance in ZStack Cloud, you can enable SR-IOV by adding the **enableSRIOV** option to **SystemTags**.
 - Format of the **enableSRIOV** option: `enableSRIOV::{L3_NETWORK_UUID}`
 - Example: `enableSRIOV::9e19dafe81c64fed8e34f72e27582339`
- When you create a VM instance in ZStack Cloud, you can use the `systemTags` parameter to specify whether the VM instance uses the **virtio** driver. You can set the value of the **systemTags** parameter to **driver**.
 - Format: `driver::virtio`.
 - Example: `driver::virtio`.
- When you create a VM instance in ZStack Cloud, you can set vNUMA for the VM instance. You can set the value of the **systemTags** parameter to **vmNumaEnable**.
 - Format: `vmNumaEnable::boolean`
 - Example: `vmNumaEnable::true`
- When you create a VM instance in ZStack Cloud, you can set EmulatorPin for the VM instance. You can set the value of the **systemTags** parameter to **vmEmulatorPinning**.

- Format: `vmEmulatorPinning::CPU`
- Example: `vmEmulatorPinning::1,2,3,4,5,6,7`

5.1.1.3.2 CreateVmInstanceFromVolume

Creates a VM instance from a volume. For example,

```
CreateVmInstanceFromVolume name=vm instanceOfferingUuid=80c606e35b
c038bbb102e31cae191ea2 l3NetworkUuids=333817afcaf63f13a101f674761c8a77
volumeUuid=23984cd68b903fd4883aa962c70d83fc
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
name	The resource name. For more information, see Resource Property .			3.10.0
description	The resource description. For more information, see Resource Property .	Yes		3.10.0
instanceOfferingUuid	The instance offering UUID, which specifies the CPU, memory, and other parameters of a VM instance.	Yes		3.10.0
cpuNum	The CPU count.	Yes		3.10.0
memorySize	The memory size.	Yes		3.10.0
l3NetworkUuids	The L3 network UUID.			3.10.0
type	The VM instance type. This parameter is a reserved field for internal use.	Yes	<ul style="list-style-type: none"> • UserVm • ApplianceVm 	3.10.0

Name	Description	Optional	Valid Value	Starting Version
volumeUuid	The volume UUID.			3.10.0
platform	The system platform of the volume.	Yes		3.10.0
zoneUuid	The zone UUID. If specified, the VM instance will be created in the specified zone. This parameter can be overridden by clusterUuid and hostUuid .	Yes		3.10.0
clusterUuid	The cluster UUID. If specified, the VM instance will be created in the specified cluster. This parameter can be overridden by hostUuid .	Yes		3.10.0
hostUuid	The host UUID. If specified, the VM instance will be created on the specified host.	Yes		3.10.0
primaryStorageUuid	The primary storage UUID. If specified, the root volume of the VM instance will be created on the specified primary storage.	Yes		3.10.0
defaultL3NetworkUuid	The UUID of the default L3 network. If I3NetworkUuids	Yes		3.10.0

Name	Description	Optional	Valid Value	Starting Version
	contains the UUIDs of multiple L3 networks, this parameter is required to specify the default L3 network. If I3NetworkUuids has only one L3 network UUID, this parameter is optional.			
strategy	The VM instance creation strategy . You can choose to start the VM instance immediately after creation or not to start it after creation.	Yes		3.10.0
resourceUuid	The resource UUID.	Yes		3.10.0
tagUuids	The tag UUID list.	Yes		3.10.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.10.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.10.0
timeout		Yes		

5.1.1.3.3 CreateVmInstanceFromVolumeSnapshot

Create a VM instance from a snapshot. For example,

```
CreateVmInstanceFromVolumeSnapshot name=vm instanceOfferingUuid=80c606e35bc038bbb102e31cae191ea2 l3NetworkUuids=333817afcaf63f13a101f674761c8a77 volumeSnapshotGroupUuid=23984cd68b903fd4883aa962c70d83fc
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
name	The VM instance name.			4.1.0
description	The detailed description of the VM instance.	Yes		4.1.0
instanceOfferingUuid	The instance offering UUID.	Yes		4.1.0
cpuNum	The number of CPU cores.	Yes		4.1.0
memorySize	The memory size.	Yes		4.1.0
l3NetworkUuids	The L3 network UUID.			4.1.0
type	The VM type. This is a reserved field.	Yes	<ul style="list-style-type: none"> • UserVm • ApplianceVm 	4.1.0
volumeSnapshotUuid	The snapshot UUID.			4.1.0
platform	The platform type of the VM instance.	Yes	<ul style="list-style-type: none"> • Linux • Windows • Other • Paravirtualization • WindowsVirtio 	4.1.0
zoneUuid	The zone UUID.	Yes		4.1.0
clusterUuid	The cluster UUID.	Yes		4.1.0
hostUuid	The host UUID.	Yes		4.1.0
primaryStorageVolume	The UUID of the primary storage.	Yes		4.1.0

Name	Description	Optional	Valid Value	Starting Version
defaultL3NetworkUuid	The default L3 network UUID.	Yes	The default L3 network UUID.	4.1.0
strategy	The policy that specifies whether to start a VM instance when the instance is created.	Yes	<ul style="list-style-type: none"> • InstantStart • CreateStarted 	4.1.0
resourceUuid	The resource UUID.	Yes		4.1.0
tagUuids	The tag UUIDs.	Yes		4.1.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		4.1.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		4.1.0
timeout		Yes		

5.1.1.3.4 CreateVmInstanceFromVolumeSnapshotGroup

Create a VM instance from a snapshot group. For example,

```
CreateVmInstanceFromVolumeSnapshotGroup name=vm instanceOfferingUuid
=80c606e35bc038bbb102e31cae191ea2 l3NetworkUuids=333817afcaf63f13a101
f674761c8a77 volumeSnapshotGroupUuid=23984cd68b903fd4883aa962c70d83fc
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
name	The VM instance name. For more information, see Resource properties .			4.1.0
description	The detailed description of the	Yes		4.1.0

Name	Description	Optional	Valid Value	Starting Version
	VM instance. For more information, see Resource properties .			
instanceOfferingUuid	The instance offering UUID.	Yes		4.1.0
cpuNum	The number of CPU cores.	Yes		4.1.0
memorySize	The memory size.	Yes		4.1.0
l3NetworkUuids	The L3 network UUID.			4.1.0
type	The VM type. This is a reserved field.	Yes	<ul style="list-style-type: none"> • UserVm • ApplianceVm 	4.1.0
volumeSnapshotGroupUuid	The snapshot group UUID.			4.1.0
zoneUuid	<p>The zone UUID . If you specify this parameter, the VM instance is created in the specified zone . The clusterUuid and hostUuid parameter settings have higher priorities than this parameter setting .</p>	Yes		4.1.0
clusterUuid	<p>The cluster UUID . If you specify this parameter, the VM instance is created in the specified cluster . The hostUuid parameter setting has higher</p>	Yes		4.1.0

Name	Description	Optional	Valid Value	Starting Version
	priorities than this parameter setting.			
hostUuid	The host UUID. If you specify this parameter, the VM instance is created in the specified host.	Yes		4.1.0
primaryStorageUuidForRootVolume	The UUID of the primary storage where the root volume resides.	Yes		4.1.0
defaultL3NetworkUuid	The default L3 network UUID. This parameter is used if the value of the l3NetworkUids parameter consists of multiple UUID entries. If the value of the l3NetworkUids parameter consists of only one UUID entry , you do not need to set this parameter.	Yes		4.1.0
strategy	The policy that specifies whether to start a VM instance when the instance is created.	Yes	<ul style="list-style-type: none"> • InstantStart • CreateStarted 	4.1.0
resourceUuid	The resource UUID.	Yes		4.1.0
tagUuids	The tag UUIDs.	Yes		4.1.0

Name	Description	Optional	Valid Value	Starting Version
userTags	The user tags. For more information, see CreateUserTag .	Yes		4.1.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		4.1.0
timeout		Yes		

5.1.1.3.5 DestroyVmInstance

Deletes a VM instance. For example,

```
DestroyVmInstance uuid=76789b62aeb542a5b4b8b8488fbaced2
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The VM instance UUID.			0.6
deleteMode	The delete mode. For more information, see Delete Resources .	Yes	<ul style="list-style-type: none"> • Permissive • Enforcing 	0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is VmInstanceVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
	resource type is VmInstanceVO.			
timeout		Yes		

5.1.1.3.6 RecoverVmInstance

Recover a VM instance that is in Destroyed state. The VM instance would be in Stopped state and has no IP address after recovery. For example,

```
RecoverVmInstance uuid=76789b62aeb542a5b4b8b8488fbaced2
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The VM instance UUID.			0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is VmInstanceVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is VmInstanceVO.	Yes		0.6
timeout		Yes		

5.1.1.3.7 ExpungeVmInstance

Completely deletes a VM instance that is in Destroyed state. This operation deletes the VM instance from the database and deletes the root volume of the VM instance on the primary storage. This operation cannot be resumed once performed. For example,

```
ExpungeVmInstance uuid=76789b62aeb542a5b4b8b8488fbaced2
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The VM instance UUID.			0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is VmInstanceVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is VmInstanceVO.	Yes		0.6
timeout		Yes		

5.1.1.3.8 QueryVmInstance

Queries a VM instance. For example,

```
QueryVmInstance state=Running hostUuid=33107835aee84c449ac04c9622892dec
```

```
QueryVmInstance vmNics.eip.guestIp=10.23.109.23
```

Primitive Fields of Query

See [VM Instance Inventory](#).

Nested and Expanded Fields of Query

Field	Inventory	Description	Starting Version
vmNics	VM NIC Inventory	The NICs of the VM instance.	0.6
allVolumes	Volume Inventory	The volumes of the VM instance.	0.6
zone	Zone Inventory	The zone to of VM instance.	0.6
cluster	Cluster Inventory	The cluster of the VM instance.	0.6
host	Host Inventory	The parent host of the VM instance.	0.6
image	Image Inventory	The image used for creating the VM instance.	0.6
instanceOffering	Instance Offering Inventory	The instance offering used for creating the VM instance.	0.6
rootVolume	Volume Inventory	The root volume of the VM instance.	0.6
vmlInstance	VM Instance Inventory	The VM instances running on the host.	3.3.0

5.1.1.3.9 StartVmInstance

Starts a VM instance. For example,

```
StartVmInstance uuid=76789b62aeb542a5b4b8b8488fbaced2
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The VM instance UUID.			0.6
clusterUuid	The cluster UUID . If specified, the VM instance will be started in the specified cluster.	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
hostUuid	The host UUID. If specified, the VM instance will be started on the specified host.	Yes		0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is VmInstanceVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is VmInstanceVO.	Yes		0.6
timeout		Yes		

**Note:**

- When you start a VM instance in ZStack Cloud, the cloud records whether a VPC vRouter is added to an HA group. Note that you can add the **haUuid** option to **SystemTags**.
 - Format of the **haUuid** option: `haUuid::HA_GROUP_UUID`
 - Example: `haUuid::e2af8f869eff49d2a3d6f86cadc27090`

5.1.1.3.10 StopVmInstance

Stops a VM instance. For example,

```
StopVmInstance uuid=76789b62aeb542a5b4b8b8488fbaced2
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The VM instance UUID.			0.6

Name	Description	Optional	Valid Value	Starting Version
type	<p>The method to stop (shut down) the VM instance.</p> <p>Options:</p> <ul style="list-style-type: none"> • grace: graceful shutdown. To use this method, make sure that the corresponding ACPI driver is installed in the VM instance. • cold: cold shutdown, which means to power off the VM instance directly. 	Yes	<ul style="list-style-type: none"> • grace • cold 	0.6
stopHA	Completely stops the HA VM instance.	Yes		2.2
userTags	<p>The user tags.</p> <p>For more information, see CreateUser Tag. The resource type is VmInstanceVO.</p>	Yes		0.6
systemTags	<p>The system tags. For more information, see CreateSystemTag. The resource type is VmInstanceVO.</p>	Yes		0.6
timeout		Yes		

5.1.1.3.11 RebootVmInstance

Reboots a VM instance. For example,

```
RebootVmInstance uuid=76789b62aeb542a5b4b8b8488fbaced2
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The VM instance UUID.			0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is VmInstanceVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is VmInstanceVO.	Yes		0.6
timeout		Yes		

5.1.1.3.12 PauseVmInstance

Pauses a VM instance. The state of the VM instance is still stored in the memory and can be resumed later. For example,

```
PauseVmInstance uuid=76789b62aeb542a5b4b8b8488fbaced2
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The VM instance UUID.			0.6
userTags	The user tags. For more information, see CreateUser Tag	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
	Tag . The resource type is VmInstanceVO.			
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is VmInstanceVO.	Yes		0.6
timeout		Yes		

5.1.1.3.13 ResumeVmInstance

Resumes a VM instance that is paused. The paused VM instance will be resumed from the memory. For example,

```
ResumeVmInstance uuid=76789b62aeb542a5b4b8b8488fbaced2
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The VM instance UUID.			0.6
userTags	The user tags. For more information, see CreateUserTag . The resource type is VmInstanceVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is VmInstanceVO.	Yes		0.6
timeout		Yes		

5.1.1.3.14 ReimageVmInstance

Resets the root volume of a VM instance to its initial state. This operation is valid only for VM instances that are created from non-ISO images. For example,

```
ReimageVmInstance vmInstanceUuid=76789b62aeb542a5b4b8b8488fbaced2
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
vmlInstanceUuid	The VM instance UUID.			0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is VmInstanceVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is VmInstanceVO.	Yes		0.6
timeout		Yes		

5.1.1.3.15 MigrateVm

Migrates a VM instance to the other host. For example,

```
MigrateVm vmInstanceUuid=76789b62aeb542a5b4b8b8488fbaced2
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
vmlInstanceUuid	The VM instance UUID.			0.6
hostUuid	The host UUID.	Yes		0.6
migrateFromDestination	Initiates the migration	Yes		2.3

Name	Description	Optional	Valid Value	Starting Version
	command from the destination host.			
userTags	The user tags. For more information, see CreateUser Tag . The resource type is VmInstanceVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is VmInstanceVO.	Yes		0.6
timeout		Yes		

5.1.1.3.16 GetVmMigrationCandidateHosts

Obtains the candidate hosts that support live migration of a VM instance. For example,

```
GetVmMigrationCandidateHosts vmInstanceUuid=2616ea7df73e4f01b48b
0fcda5719e88
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
vmInstanceUuid	The VM instance UUID.			0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is VmInstanceVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
	CreateSystemTag . The resource type is VmInstanceVO.			
timeout		Yes		

5.1.1.3.17 GetCandidatePrimaryStoragesForCreatingVm

Obtains the candidate primary storages that can be used to create a VM instance. For example,

```
GetCandidatePrimaryStoragesForCreatingVm l3NetworkUuids=a2fd057c28b4417282faf5b8e2502662 imageUuid=001ab9827b3d566f91ad985d0d41dd72
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
clusterUuid	The cluster UUID.	Yes		2.1
dataDiskOfferingUuids	The UUID of the disk offering used by the data volume.	Yes		2.1
defaultL3NetworkUuid	The UUID of the default L3 network.	Yes		2.1
imageUuid	The image UUID.			2.1
l3NetworkUuids	The L3 network UUID.			2.1
rootDiskOfferingUuid	The UUID of the disk offering used by the root volume. This parameter is required if the image type is ISO.	Yes		2.1
rootDiskSize	Optional. The size of the root volume. You need to specify this parameter	Yes		4.3.12

Name	Description	Optional	Valid Value	Starting Version
	only when you set <code>imageUuid</code> to ISO and do not specify <code>rootDiskOfferingUuid</code> .			
zoneUuid	The zone UUID.	Yes		2.1
dataDiskSizes	Optional. The size of the data volume.	Yes		4.3.12
userTags	The user tags. For more information, see CreateUserTag .	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		0.6
timeout		Yes		

5.1.1.3.18 GetCandidateIsoForAttachingVm

Obtains the candidate ISO images that can be attached to a VM instance. For example,

```
GetCandidateIsoForAttachingVm vmInstanceUuid=2616ea7df73e4f01b48b0fcda5719e88
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
vmInstanceUuid	The VM instance UUID.			0.6
userTags	The user tags. For more information, see CreateUserTag . The resource type is <code>VmInstanceVO</code> .	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is VmInstanceVO.	Yes		0.6
timeout		Yes		

5.1.1.3.19 GetCandidateVmForAttachingIso

Obtains the candidate VM instances to which an ISO image can be attached. For example,

```
GetCandidateVmForAttachingIso isoUuid=3ef82fa895bd3a18b081ca6166864e24
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
isoUuid	The ISO image UUID.			0.6
userTags	The user tags. For more information, see CreateUserTag . The resource type is VmInstanceVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is VmInstanceVO.	Yes		0.6
timeout		Yes		

5.1.1.3.20 AttachIsoToVmInstance

Attaches an ISO image to a VM instance that is in Running or Stopped state. For example,

```
AttachIsoToVmInstance vmInstanceUuid=f99402a68cd44c2dbeceeed98a5b1dc2
isoUuid=3ef82fa895bd3a18b081ca6166864e24
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
vmlInstanceUuid	The VM instance UUID.			0.6
isoUuid	The ISO image UUID.			0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is VmInstanceVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is VmInstanceVO.	Yes		0.6
timeout		Yes		



Note:

- When you attach an ISO image to a VM instance in ZStack Cloud, you can specify the target CD-ROM by adding the **cdromUuid** option to **SystemTags**. The SystemTag is passed by using the **cdromUuid** parameter.
 - Format of the **cdromUuid** option: `cdromUuid::cdrom_xx_uuid`
 - Example: `cdromUuid::cdrom_xx_uuid`

5.1.1.3.21 DetachIsoFromVmInstance

Detaches an ISO image from a VM instance. For example,

```
DetachIsoFromVmInstance    vmInstanceUuid=f99402a68cd44c2dbeceeed98a5b1dc2
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
vmlInstanceUuid	The VM instance UUID.			0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is VmInstanceVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is VmInstanceVO.	Yes		0.6
timeout		Yes		

5.1.1.3.22 GetVmAttachableDataVolume

Obtains the candidate volumes that can be attached to a VM instance. For example,

```
GetVmAttachableDataVolume    vmInstanceUuid=f99402a68cd44c2dbeceeed98a5b1dc2
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
vmlInstanceUuid	The VM instance UUID.			0.6
userTags	The user tags. For more information, see CreateUser	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
	Tag . The resource type is VmInstanceVO.			
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is VmInstanceVO.	Yes		0.6
timeout		Yes		

5.1.1.3.23 GetVmAttachableL3Network

Obtains the candidate L3 networks that can be attached to a VM instance. For example,

```
GetVmAttachableL3Network  vmInstanceUuid=f99402a68cd44c2dbece
eed98a5b1dc2
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
vmInstanceUuid	The VM instance UUID.			0.6
userTags	The user tags. For more information, see CreateUserTag . The resource type is VmInstanceVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is VmInstanceVO.	Yes		0.6
timeout		Yes		

5.1.1.3.24 AttachL3NetworkToVm

Attaches an L3 network to a VM instance that is in Running or Stopped state. For example,

```
AttachL3NetworkToVm vmInstanceUuid=7c4162e8d32d4bea8f7e799024c6b735
l3NetworkUuid=e10b482d91964ef5b59af7f1d27cbd8f
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
vmInstanceUuid	The VM instance UUID.			0.6
l3NetworkUuid	The L3 network UUID.			0.6
driverType	The NIC driver type.		<ul style="list-style-type: none"> • E1000E • E1000 • Vmxnet3 • Sriosv 	4.0.0
staticIp	Specifies the IP address to be allocated to the VM instance.	Yes		0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is VmInstanceVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is VmInstanceVO.	Yes		0.6
timeout		Yes		



Note:

- When you attach an L3 network to a VM instance in ZStack Cloud, you can enable SR-IOV by adding the **enableSRIOV** option to **SystemTags**.
 - Format of the **enableSRIOV** option: `enableSRIOV:::{L3_NETWORK_UUID}`
 - Example: `enableSRIOV:::9e19dafe81c64fed8e34f72e27582339`
- When you create a VM instance in ZStack Cloud, you can specify an IP address for the L3 network by adding the **staticIp** option to **SystemTags**. If the network address type is double stack (IPv4+IPv6), you can add two **staticIp** options, which are IPv4 and IPv6, respectively.
 - Format of the **staticIp** option: `staticIp:::L3 network UUID::specified IP`
 - Example: `staticIp:::81a21a81cde84c1084c191354053a3b5::172.20.196.0`

5.1.1.3.25 DetachL3NetworkFromVm

Detaches an L3 network from a VM instance that is in Running or Stopped state. For example,

```
DetachL3NetworkFromVm vmNicUuid=fb8121aded94453fa49d74f0721da609
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
vmNicUuid	The VM NIC UUID. The network where the NIC is located will be detached from the VM instance.			0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is VmInstanceVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is VmInstanceVO.	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
timeout		Yes		

5.1.1.3.26 CreateVmNic

Creates a VM NIC. For example,

```
CreateVmNic l3NetworkUuid=a761ac08ca483af4a81d9ed3d9930ef4
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
l3NetworkUuid	The L3 network UUID.			4.0.0
ip		Yes		4.0.0
resourceUuid		Yes		4.0.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		4.0.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		4.0.0
timeout		Yes		

5.1.1.3.27 AttachVmNicToVm

Attaches an NIC to a VM instance. For example,

```
AttachVmNicToVm vmNicUuid=a761ac08ca483af4a81d9ed3d9930ef4 vmInstance  
Uuid=325fb3ba704f40a6a57d54734aaa028a
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
vmNicUuid	The NIC UUID.			4.0.0
vmInstanceUuid	The VM UUID.			4.0.0
userTags	The user tags. For more	Yes		4.0.0

Name	Description	Optional	Valid Value	Starting Version
	information, see CreateUserTag .			
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		4.0.0
timeout		Yes		

5.1.1.3.28 DeleteVmNic

Deletes a VM NIC. For example,

```
DeleteVmNic l3NetworkUuid=a761ac08ca483af4a81d9ed3d9930ef4
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The VM NIC UUID.			4.0.0
deleteMode		Yes		4.0.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		4.0.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		4.0.0
timeout		Yes		

5.1.1.3.29 QueryVmNic

Queries the NIC of a VM instance. For example,

```
QueryVmNic gateway=10.1.1.1
```

```
QueryVmNic eip.guestIp=11.168.2.13
```

Primitive Fields of Query

See [VM NIC Inventory](#).

Nested and Expanded Fields of Query

Field	Inventory	Description	Starting Version
eip	EIP Inventory		0.6
l3Network	L3 Network Inventory		0.6
loadBalancerListener	Load Balancer Listener Inventory		0.6
portForwarding	Port Forwarding Inventory		0.6
securityGroup	Security Group Inventory		0.6
vmlInstance	VM Instance Inventory		0.6

5.1.1.3.30 GetVmNicAttachedNetworkService

Retrieves the network services associated with a specified VM NIC. For example,

```
GetVmNicAttachedNetworkService vmNicUuid=dfb4e8245e32361db57b  
92c95c84c01b
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
vmNicUuid	The VM NIC UUID.			4.1.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		4.1.0
systemTags	The system tags. For more	Yes		4.1.0

Name	Description	Optional	Valid Value	Starting Version
	information, see CreateSystemTag .			
timeout		Yes		

5.1.1.3.31 ChangeVmNicNetwork

Changes the L3 network of the NIC of a stopped VM instance. For example,

```
ChangeVmNicNetwork vmNicUuid=dfb4e8245e32361db57b92c95c84c01b
destL3NetworkUuid=f77af7d247c54355b9eea17cde55fdab
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
vmNicUuid	The VM NIC UUID.			4.1.0
destL3NetworkUuid				4.1.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		4.1.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		4.1.0
timeout		Yes		

5.1.1.3.32 GetCandidateL3NetworksForChangeVmNicNetwork

Retrieves the available L3 networks that can be attached to a specified VM NIC. For example,

```
GetCandidateL3NetworksForChangeVmNicNetwork vmNicUuid=dfb4e8245e  
32361db57b92c95c84c01b
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
vmNicUuid	The VM NIC UUID.			4.1.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		4.1.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		4.1.0
timeout		Yes		

5.1.1.3.33 SetNicQoS

Sets the NIC QoS of a VM instance. For example,

```
SetNicQos uuid=dc6a7bd608054f0795463a76580b5190 inboundBandwidth=  
819200
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The VM NIC UUID.			0.6
outboundBandwidth	The outbound bandwidth.	Yes		0.6
inboundBandwidth	The inbound bandwidth.	Yes		0.6
userTags	The user tags. For more information, see CreateUser	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
	Tag . The resource type is VmInstanceVO.			
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is VmInstanceVO.	Yes		0.6
timeout		Yes		

5.1.1.3.34 GetNicQoS

Obtains the NIC QoS of a VM instance. For example,

```
GetNicQos uuid=dc6a7bd608054f0795463a76580b5190
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The VM NIC UUID.			0.6
userTags	The user tags. For more information, see CreateUserTag . The resource type is VmInstanceVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is VmInstanceVO.	Yes		0.6
timeout		Yes		

5.1.1.3.35 DeleteNicQoS

Deletes the NIC QoS of a VM instance. For example,

```
DeleteNicQos uuid=dc6a7bd608054f0795463a76580b5190 direction=in
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The VM NIC UUID.			0.6
direction	The direction, including inbound and outbound.		<ul style="list-style-type: none"> in out 	0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is VmInstanceVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is VmInstanceVO.	Yes		0.6
timeout		Yes		

5.1.1.3.36 GetInterdependentL3NetworksImages

In ZStack Cloud, an L3 network belongs to a zone, and the backup storage where images reside can be attached to one or more zones. Backup storage also has a dependency on cluster.

For example, a Ceph backup storage can only work with Ceph primary storage. Due to this dependency, the L3 network and image specified when you create a VM instance might not work together.

Obtains the dependency between an image and an L3 network. For example,

```
GetInterdependentL3NetworksImages zoneUuid=61092e77aedd41f0b885  
7b40652e5b1e \
```

```
imageUuid=2eac1a40becd28dda463dd379027028e
```

If the **l3NetworkUuids** parameter is specified, a list of images that can work with these L3 networks is returned. If the **imageUuid** parameter is specified, a list of L3 networks that can work with the image is returned.

Parameters

Name	Description	Optional	Valid Value	Starting Version
zoneUuid	The zone UUID . This parameter is required to specify the dependency between the L3 network and image.			0.6
l3NetworkUuids	The L3 network UUID list.	Yes		0.6
imageUuid	The image UUID.	Yes		0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is VmInstanceVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is VmInstanceVO.	Yes		0.6
timeout		Yes		

5.1.1.3.37 SetVmSshKey

Sets the SSH key of a VM instance. For example,

```
SetVmSshKey SshKey="ssh-rsa AAAAB3NzaC1yc2EAAAQABAAQDRhFQ2kf92
WDBAG51T6wnH6cpZ147L7uMV4mIs\"
```

```
jWlCvOyAGruAqdT2WZ8aAwDy1lH9roHCP+pDgJX5/ib+KVV4sbXHQbffEz6fKygm
Q3GhFqtrbgUL+x6Xy3vs8z5Vdy4ChtopaLGkwNYCOHC\
XH3nRFiGinwyGK4pmYQJ5hYEwsYzg+PT20zBwV1ivXFP2JdMh7DP4w4ZMOa6JsY2ffcQRi
zhJcIj4BIIKvlUG2heok4/wjho9eiU8Sfumgt\
PW3PTujvn4EAKorhDuqRQ/w2VWZvtP8F0HhJQ/E+hnEKIk/DHVUlhbAtgVMEDSeZv21
GFZlQKtztZAhZg7ZX1AL94t root@10-0-11-139"\ \
uuid=7c4162e8d32d4bea8f7e799024c6b735
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The VM instance UUID.			0.6
SshKey				0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is VmInstanceVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is VmInstanceVO.	Yes		0.6
timeout		Yes		

5.1.1.3.38 GetVmSshKey

Obtains the SSH key of a VM instance. For example,

```
GetVmSshKey uuid=7c4162e8d32d4bea8f7e799024c6b735
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The VM instance UUID.			0.6
userTags	The user tags. For more information, see	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
	CreateUser Tag . The resource type is VmInstanceVO.			
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is VmInstanceVO.	Yes		0.6
timeout		Yes		

5.1.1.3.39 DeleteVmSshKey

Deletes the SSH key of a VM instance. For example,

```
DeleteVmSshKey uuid=7c4162e8d32d4bea8f7e799024c6b735
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The VM instance UUID.			0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is VmInstanceVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is VmInstanceVO.	Yes		0.6
timeout		Yes		

5.1.1.3.40 ChangeVmPassword

Changes the password of a VM instance. For example,

```
ChangeVmPassword uuid=14d27431b45c405b9ba0f339606129f0 account=root
password=changepassword
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The VM instance UUID.			0.6
password	The password.			0.6
account	The account.			0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is VmInstanceVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is VmInstanceVO.	Yes		0.6
timeout		Yes		

5.1.1.3.41 SetVmConsolePassword

Sets the console password of a VM instance. For example,

```
SetVmConsolePassword uuid=14d27431b45c405b9ba0f339606129f0 consolePas
sword=12345678
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The VM instance UUID.			0.6

Name	Description	Optional	Valid Value	Starting Version
consolePassword	The console password, which is a plain text string.			0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is VmInstanceVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is VmInstanceVO.	Yes		0.6
timeout		Yes		

5.1.1.3.42 GetVmConsolePassword

Obtains the console password of a VM instance. For example,

```
GetVmConsolePassword uuid=14d27431b45c405b9ba0f339606129f0
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The VM instance UUID.			0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is VmInstanceVO.	Yes		0.6
systemTags	The system tags. For more	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
	information, see CreateSystemTag . The resource type is VmInstanceVO.			
timeout		Yes		

5.1.1.3.43 DeleteVmConsolePassword

Deletes the console password of a VM instance. For example,

```
DeleteVmConsolePassword uuid=14d27431b45c405b9ba0f339606129f0
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The VM instance UUID.			0.6
userTags	The user tags. For more information, see CreateUserTag . The resource type is VmInstanceVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is VmInstanceVO.	Yes		0.6
timeout		Yes		

5.1.1.3.44 GetVmConsoleAddress

Obtains the console address and access protocol of a VM instance. For example,

```
GetVmConsoleAddress uuid=14d27431b45c405b9ba0f339606129f0
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The VM instance UUID.			0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is VmInstanceVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is VmInstanceVO.	Yes		0.6
timeout		Yes		

5.1.1.3.45 SetVmHostname

Sets the hostname of a VM instance. For example,

```
SetVmHostname uuid=108af59a0f4e4d6cb838a5591db1016a hostname=vm2.zstack.org
```



Note:

ZStack Cloud configures the hostname of a VM instance through the DHCP server. If the VM instance has its own static hostname, the hostname configured through this operation does not take effect.

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The VM instance UUID.			0.6
hostname	The hostname , which must conform to the RFC 1123 specification.			0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is VmInstanceVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is VmInstanceVO.	Yes		0.6
timeout		Yes		

5.1.1.3.46 GetVmHostname

Obtains the hostname of a VM instance. For example,

```
GetVmHostname uuid=108af59a0f4e4d6cb838a5591db1016a
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The VM instance UUID.			0.6
userTags	The user tags. For more information, see CreateUser Tag . The	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
	resource type is VmInstanceVO.			
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is VmInstanceVO.	Yes		0.6
timeout		Yes		

5.1.1.3.47 DeleteVmHostname

Deletes the hostname of a VM instance. For example,

```
DeleteVmHostname uuid=108af59a0f4e4d6cb838a5591db1016a
```



Note:

This operation only deletes the hostname of the VM instance that is configured in the database and on the DHCP server. The hostname that is manually configured in the VM instance will not be deleted.

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The VM instance UUID.			0.6
userTags	The user tags. For more information, see CreateUserTag . The resource type is VmInstanceVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
	resource type is VmInstanceVO.			
timeout		Yes		

5.1.1.3.48 GetVmBootOrder

Obtains the device boot order of a VM instance. For example,

```
GetVmBootOrder uuid=108af59a0f4e4d6cb838a5591db1016a
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The VM instance UUID.			0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is VmInstanceVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is VmInstanceVO.	Yes		0.6
timeout		Yes		

5.1.1.3.49 SetVmBootOrder

Sets the device boot order of a VM instance. For example,

```
SetVmBootOrder uuid=108af59a0f4e4d6cb838a5591db1016a bootOrder=CdRom
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The VM instance UUID.			0.6
bootOrder	<p>The boot device. Options:</p> <ul style="list-style-type: none"> • CdRom: CD-ROM • HardDisk: hard disk • Network: network <p>If not specified, the default boot order (HardDisk, CdRom, CdRom) will be used.</p>	Yes	<ul style="list-style-type: none"> • CdRom • HardDisk • Network 	0.6
userTags	<p>The user tags. For more information, see CreateUser Tag. The resource type is VmInstanceVO.</p>	Yes		0.6
systemTags	<p>The system tags. For more information, see CreateSystemTag. The resource type is VmInstanceVO.</p>	Yes		0.6
timeout		Yes		

**Note:**

- When you specify the boot device of a VM instance in ZStack Cloud, you can specify the boot order by adding the **BOOT_ORDER_ONCE** option to **SystemTags**. Note that the setting will take effect during next boot.
 - Format of the **BOOT_ORDER_ONCE** option: `bootOrderOnce::{ %s }`
 - Example: `bootOrder::Network,CdRom,HardDisk`

5.1.1.3.50 GetCandidateZonesClustersHostsForCreatingVm

Obtains the candidate zones, clusters, and hosts that are available for creating a VM instance. For example,

```
GetCandidateZonesClustersHostsForCreatingVm imageUuid=034883acd9
312da4a7c71ac2b4c01498 l3NetworkUuids=4d855bb0c72640f5a643ba8e88ae85df
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
instanceOfferingUuid	The instance offering UUID.			0.6
imageUuid	The image UUID.			0.6
l3NetworkUuids	The L3 network list.			0.6
rootDiskOfferingUuid	The disk offering of the root volume . This parameter is required only when the image type specified in imageUuid is ISO .	Yes		0.6
dataDiskOfferingUuids	The disk offering list.	Yes		0.6
zoneUuid	The zone UUID.	Yes		0.6
clusterUuid	The cluster UUID.	Yes		0.6
defaultL3NetworkUuid	The UUID of the default L3 network.	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
cpuNum	The CPU count.	Yes		3.10.0
memorySize	The memory size . Unit: Byte.	Yes		3.10.0
userTags	The user tags. For more information, see CreateUser Tag . The resource type is VmInstanceVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is VmInstanceVO.	Yes		0.6
timeout		Yes		

5.1.1.3.51 GetVmStartingCandidateClustersHosts

Obtains the candidate zones, clusters, and hosts on which a stopped VM instance can be started.

For example,

```
GetVmStartingCandidateClustersHosts uuid=7c4162e8d32d4bea8f7e  
799024c6b735
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The VM instance UUID.			0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is VmInstanceVO.	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is VmInstanceVO.	Yes		0.6
timeout		Yes		

5.1.1.3.52 SetVmStaticIp

Specifies an IP address for a VM NIC, that is, controls the IP address that ZStack Cloud can assign to the VM NIC. Make sure that the specified IP address is on the specified L3 network and is not occupied. For example,

```
SetVmStaticIp vmInstanceUuid=7c4162e8d32d4bea8f7e799024c6b735
l3NetworkUuid=4d855bb0c72640f5a643ba8e88ae85df ip=10.141.13.85
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
vmInstanceUuid	The VM instance UUID.			0.6
l3NetworkUuid	The L3 network UUID.			0.6
ip	The specified IP address.			0.6
ip6	The specified IPv6 address.	Yes		3.10.0
userTags	The user tags. For more information, see CreateUserTag . The resource type is VmInstanceVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
	emTag. The resource type is VmInstanceVO.			
timeout		Yes		

5.1.1.3.53 DeleteVmStaticIp

Deletes the IP address that is specified on the L3 network of a VM instance. For example,

```
DeleteVmStaticIp vmInstanceUuid=7c4162e8d32d4bea8f7e799024c6b735 \
l3NetworkUuid=4d855bb0c72640f5a643ba8e88ae85df deleteMode=Permissive
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
vmInstanceUuid	The VM instance UUID.			0.6
l3NetworkUuid	The L3 network UUID.			0.6
deleteMode	The delete mode. For more information, see Delete Resources .	Yes	<ul style="list-style-type: none"> • Permissive • Enforcing 	0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is VmInstanceVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is VmInstanceVO.	Yes		0.6
timeout		Yes		

5.1.1.3.54 GetVmCapabilities

Obtains the capabilities of a VM instance to check whether the VM instance can perform some specific operations. For example,

```
GetVmCapabilities uid=7c4162e8d32d4bea8f7e799024c6b735
```

The following table lists the system-defined capabilities of a VM instance.

Name	Description	Type
LiveMigration	Whether live migration is supported.	Boolean
Reimage	Whether VM instance reimaging is supported.	Boolean
VolumeMigration	Whether root volume migration is supported.	Boolean

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The VM instance UUID.			0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is VmInstanceVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is VmInstanceVO.	Yes		0.6
timeout		Yes		

5.1.1.3.55 UpdateVmInstance

Updates information about a VM instance. For example,

```
UpdateVmInstance uuid=7c4162e8d32d4bea8f7e799024c6b735 name=new-vm
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The VM instance UUID.			0.6
name	The VM instance name.	Yes		0.6
description	The detailed description of the VM instance.	Yes		0.6
state	<p>The state of the VM instance.</p> <ul style="list-style-type: none"> Generally, the state of a VM instance cannot be updated directly. Otherwise, ZStack Cloud might misjudge the state of the VM instance. This parameter can be used only when the actual state of the VM instance is inconsistent with the state recorded by ZStack Cloud, and the 	Yes	<ul style="list-style-type: none"> Stopped Running 	0.6

Name	Description	Optional	Valid Value	Starting Version
	<p>synchronization mechanism of ZStack Cloud has expired (which is usually a bug).</p> <ul style="list-style-type: none"> The administrator must fully understand the consequences of using this parameter. 			
defaultL3NetworkUuid	The UUID of the default L3 network.	Yes		0.6
platform	The platform type of the VM instance.	Yes	<ul style="list-style-type: none"> Linux Windows Windows Virtio Other Paravirtualization 	0.6
cpuNum	<ul style="list-style-type: none"> The CPU count of the VM instance. You must stop or enable the VM instance for the setting of this parameter to take effect. The VM instance that is created when NUMA is set to true in global settings can be adjusted. 	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
memorySize	<ul style="list-style-type: none"> The memory size of the VM instance. You must stop or enable the VM instance for the setting of this parameter to take effect. The VM instance that is created when NUMA is set to true in global settings can be adjusted. 	Yes		0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is VmInstanceVO.	Yes		0.6
guestOsType		Yes		4.1.0
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is VmInstanceVO.	Yes		0.6
timeout		Yes		

5.1.1.3.56 CloneVmInstance

Clones a VM instance to a specified host. For example,

```
CloneVmInstance vmInstanceUuid=108af59a0f4e4d6cb838a5591db1016a
strategy=InstantStart \
```

```
names=new-vm1,new-vm2
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
vmlInstanceUuid	The VM instance UUID.			0.6
full	Whether to clone the data volume that is attached to the VM instance.	Yes		2.5.0
names	The VM instance name list.			0.6
strategy	The clone strategy.	Yes	<ul style="list-style-type: none"> • InstantStart • JustCreate 	0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is VmInstanceVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is VmInstanceVO.	Yes		0.6
timeout		Yes		



Note:

- When you clone a VM instance in ZStack Cloud, you can specify an affinity group by adding the **affinityGroup** option to **SystemTags**.
 - Format of the **affinityGroup** option: affinityGroupUuid::UUID
 - Example: affinityGroupUuid::5fd71606d5af451d981413f35367a8d6

- When you clone a VM instance in ZStack Cloud, you can specify the volume provisioning strategy by adding the **volumeProvisioningStrategy** option to **SystemTags**. The SystemTag is passed by using the **rootVolumeSystemTags** parameter.
 - Format of the **volumeProvisioningStrategy** option: `volumeProvisioningStrategy::ThinProvisioning, volumeProvisioningStrategy::ThickProvisioning`
 - Example: `volumeProvisioningStrategy::ThinProvisioning, volumeProvisioningStrategy::ThickProvisioning`

5.1.1.3.57 SetVmClockTrack

Set the clock sync of a VM instance. For example,

```
SetVmClockTrack uuid=108af59a0f4e4d6cb838a5591db1016a track=guest
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			4.1.0
track				4.1.0
userTags	The user tags. For more information, see CreateUser Tag . The resource type is VmInstanceVO.	Yes	<ul style="list-style-type: none"> guest host 	4.1.0
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is VmInstanceVO.	Yes		4.1.0
timeout		Yes		

5.1.1.3.58 SetVmInstanceHaLevel

Sets the high availability (HA) level of a VM instance. For example,

```
SetVmInstanceHaLevel uuid=108af59a0f4e4d6cb838a5591db1016a level=
NeverStop
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The VM instance UUID.			0.6
level	The HA level of the VM instance. Option: <ul style="list-style-type: none">• NeverStop: The VM instance will never be stopped.		• NeverStop	0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is VmInstanceVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is VmInstanceVO.	Yes		0.6
timeout		Yes		

5.1.1.3.59 GetVmInstanceHaLevel

Obtains the HA level of a VM instance. For example,

```
GetVmInstanceHaLevel uuid=108af59a0f4e4d6cb838a5591db1016a
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The VM instance UUID.			0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is VmInstanceVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is VmInstanceVO.	Yes		0.6
timeout		Yes		

5.1.1.3.60 DeleteVmInstanceHaLevel

Cancels HA of a VM instance. For example,

```
DeleteVmInstanceHaLevel uuid=108af59a0f4e4d6cb838a5591db1016a
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The VM instance UUID.			0.6
userTags	The user tags. For more information, see CreateUser Tag . The	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
	resource type is VmInstanceVO.			
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is VmInstanceVO.	Yes		0.6
timeout		Yes		

5.1.1.3.61 GetVmQga

Obtains the VM instance QGA. For example,

```
GetVmQga uuid=108af59a0f4e4d6cb838a5591db1016a
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The VM instance UUID.			0.6
userTags	The user tags. For more information, see CreateUserTag . The resource type is VmInstanceVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is VmInstanceVO.	Yes		0.6
timeout		Yes		

5.1.1.3.62 SetVmQga

Sets the VM instance QGA. For example,

```
SetVmQga uuid=108af59a0f4e4d6cb838a5591db1016a enable=false
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The VM instance UUID.			0.6
enable			<ul style="list-style-type: none"> • true • false 	0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is VmInstanceVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is VmInstanceVO.	Yes		0.6
timeout		Yes		

5.1.1.3.63 GetVmRDP

Obtains the RDP status, that is, whether the RDP switch is enabled or disabled. For example,

```
GetVmRDP uuid=2503d2eb486e43469fef0e4864fb6c90
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			2.1
userTags	The user tags. For more	Yes		2.1

Name	Description	Optional	Valid Value	Starting Version
	information, see CreateUserTag .			
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.1
timeout		Yes		

5.1.1.3.64 SetVmRDP

Sets the RDP status, that is, enable or disable the RDP switch. For example,

```
SetVmRDP uuid=e2889e09bb0a4f1b9f2757d8bd0c1fc6 enable=true
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			2.2
enable	Whether the RDP switch is enabled for the VM instance. That is, whether the VM instance can be accessed through RDP.			2.2
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.2
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.2
timeout		Yes		

5.1.1.3.65 GetVmMonitorNumber

Obtains the number of monitors supported by a VM instance. For example,

```
GetVmMonitorNumber uuid=dc6e40115e674ccab14d9425d0028428
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			2.2
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.2
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.2
timeout		Yes		

5.1.1.3.66 SetVmMonitorNumber

Sets the number of monitors supported by a VM instance. For example,

```
SetVmMonitorNumber uuid=eb57f91af28a48dcbb6c56220a9b6d24 monitorNumber=2.0
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			2.2
monitorNumber	The number of monitors.			2.2
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.2
systemTags	The system tags. For more	Yes		2.2

Name	Description	Optional	Valid Value	Starting Version
	information, see CreateSystemTag .			
timeout		Yes		

5.1.1.3.67 ChangeVmImage

Changes the root volume image of a VM instance. For example,

```
ChangeVmImage vmInstanceUuid=7ab6c02b92124e96ac92a43a7cb8b368 \
imageUuid=71b02f0b26232ae1b22af3a18b3b85d0
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
vmlInstanceUuid	The VM instance UUID.			2.2
imageUuid	The image UUID.			2.2
userTags	The user tags. For more information, see CreateUser Tag . The resource type is VmInstanceVO.	Yes		2.2
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is VmInstanceVO.	Yes		2.2
timeout		Yes		



Note:

- When you change the root volume of a VM instance in ZStack Cloud, you can specify the Ceph pool where the root volume is located by adding the **rootPoolName** option to **SystemTags**. The SystemTag is passed by using the **rootPoolName** parameter.

- Format of the **rootPoolName** option: `ceph::rootPoolName::xxx`. Here, `xxx` is the name of the Ceph pool.
- Example: `ceph::rootPoolName::pri-v-r-26e11ca6814d4e1ba504d845f7848db3`

5.1.1.3.68 GetImageCandidatesForVmToChange

Obtains the candidate images that can be used to change the root volume of a VM instance. For example,

```
GetImageCandidatesForVmToChange vmInstanceUuid=7ab6c02b92124e96ac92a43a7cb8b368
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
vmInstanceUuid	The VM instance UUID.			2.2
userTags	The user tags. For more information, see CreateUser Tag . The resource type is VmInstanceVO.	Yes		2.2
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is VmInstanceVO.	Yes		2.2
timeout		Yes		

5.1.1.3.69 UpdateVmNicMac

Updates the MAC address of a VM instance. For example,

```
UpdateVmNicMac vmNicUuid=d94104e8f150419f8a41bea24b0b8167 mac=fa:4c:ee
:9a:76:00
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
vmNicUuid	The VM NIC UUID.			2.2
mac	The MAC address.			2.2
userTags	The user tags. For more information, see CreateUser Tag . The resource type is VmInstanceVO.	Yes		2.2
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is VmInstanceVO.	Yes		2.2
timeout		Yes		

5.1.1.3.70 SetVmCleanTraffic

Sets the clean-traffic (anti IP spoofing) status of a VM instance. For example,

```
SetVmCleanTraffic uuid=1e62596491bb4a708e737f1ec626a08e enable=true
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			3.1.0
enable	Whether to enable clean-		• true	3.1.0

Name	Description	Optional	Valid Value	Starting Version
	traffic for the VM instance.		• false	
userTags	The user tags. For more information, see CreateUser Tag . The resource type is VmInstanceVO.	Yes		3.1.0
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is VmInstanceVO.	Yes		3.1.0
timeout		Yes		

5.1.1.3.71 CreateVmCdRom

Creates the CD-ROM for a VM instance. For example,

```
CreateVmCdRom name=test vmInstanceUuid=325fb3ba704f40a6a57d54734aaa028a
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
name	The resource name.			3.3.0
vmlInstanceUuid	The VM instance UUID.			3.3.0
isoUuid	The ISO image UUID.	Yes		3.3.0
description	The detailed description of the resource.	Yes		3.3.0
resourceUuid	The resource UUID.	Yes		3.3.0

Name	Description	Optional	Valid Value	Starting Version
userTags	The user tags. For more information, see CreateUser Tag . The resource type is VmInstanceVO.	Yes		3.3.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.3.0
timeout		Yes		

5.1.1.3.72 DeleteVmCdRom

Deletes the CD-ROM of a VM instance. For example,

```
DeleteVmCdRom uuid=325fb3ba704f40a6a57d54734aaa028a
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			3.3.0
deleteMode		Yes		3.3.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.3.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.3.0
timeout		Yes		

5.1.1.3.73 UpdateVmCdRom

Updates the CD-ROM of a VM instance. For example,

```
UpdateVmCdRom uuid=325fb3ba704f40a6a57d54734aaa028a
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			3.3.0
description	The detailed description of the resource.	Yes		3.3.0
name	The resource name.	Yes		3.3.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.3.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.3.0
timeout		Yes		

5.1.1.3.74 SetVmInstanceDefaultCdRom

Sets the default CD-ROM of a VM instance. For example,

```
SetVmInstanceDefaultCdRom name=test vmInstanceUuid=325fb3ba704f40a6a57d54734aaa028a
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
name	The resource name.			3.3.0
vmInstanceUuid	The VM instance UUID			3.3.0

Name	Description	Optional	Valid Value	Starting Version
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.3.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.3.0
timeout		Yes		

5.1.1.3.75 QueryVmCdRom

Queries the CD-ROM inventory of a VM instance. For example,

```
QueryVmCdRom uuid=42bd9ac18f984dd683ad22a36a5b756c
```

Primitive Fields of Query

See [VM CD-ROM Inventory](#).

Nested and Expanded Fields of Query

Field	Inventory	Description	Starting Version
vmlInstance	VM Instance inventory	All the VM instances that run on this host.	3.3.0

5.1.1.3.76 UpdateVmPriority

Changes the priority of a VM instance. For example,

```
UpdateVmPriority uuid=face4c7ce31f3a5a98708f60a7fc935a priority=high
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			3.7.0
priority				3.7.0
userTags	The user tags. For more	Yes		3.7.0

Name	Description	Optional	Valid Value	Starting Version
	information, see CreateUserTag .			
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.7.0
timeout		Yes		

5.1.1.3.77 SetVmQxlMemory

Sets the QXL memory of a VM instance. For example,

```
SetVmQxlMemory uuid=cc590b2129c437a487311b0f9a8a0dbc
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The VM instance UUID.			3.7.0
ram	The Random Access Memory (RAM) size. Default value: 65536.	Yes		3.7.0
vram	The video RAM (VRAM) size. Default value: 32768.	Yes		3.7.0
vgamem	The Video Graphics Array (VGA) memory size. Default value: 16384.	Yes		3.7.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.7.0
systemTags	The system tags. For more	Yes		3.7.0

Name	Description	Optional	Valid Value	Starting Version
	information, see CreateSystemTag .			
timeout		Yes		

**Note:**

- When you create a VM instance in ZStack Cloud, you can set the QXL memory size by adding the **qxlMemory** option to **SystemTags**. The SystemTag is passed by using the **qxlMemory** parameter.
 - Format of the **qxlMemory** option: `qxlMemory::ram::vram::vgamem`
 - Example: `qxlMemory::65536::32768::16384`

5.1.1.3.78 SetVmSoundType

Sets the virtual sound card type of a VM instance. For example,

```
SetVmSoundType uuid=0ae1191601f430d88e1707716d24ff39 soundType=ac97
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The VM instance UUID.			3.7.0
soundType	The virtual sound card type. Default type: ICH6.		<ul style="list-style-type: none"> ac97 ich6 	3.7.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.7.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.7.0
timeout		Yes		

**Note:**

- When you create a VM instance in ZStack Cloud, you can set the virtual sound card type by adding the **soundType** option to **SystemTags**. The SystemTag is passed by using the **soundType** parameter.
 - Format of the **soundType** option: `soundType::type`
 - Example: `soundType::ac97`
 - Note: The system compatibility varies depending on different Windows versions. Windows XP only supports the AC97 driver. In Windows 10, ICH6 is driver-free. Windows 7 supports both AC97 and ICH6 drivers.

5.1.1.3.79 GetSpiceCertificates

Obtains the CA certificate of SPICE. For example,

```
GetSpiceCertificates
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.7.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.7.0
timeout		Yes		

5.1.1.3.80 GetVmInstanceFirstBootDevice

Obtains the first boot device of a VM instance. For example,

```
GetVmInstanceFirstBootDevice uuid=50d8c8ed7d4737fd99a2e323cefeac81
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			3.7.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.7.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.7.0
timeout		Yes		

5.1.1.3.81 GetLatestGuestToolsForVm

Obtains the latest GuestTools for a VM instance. For example,

```
GetLatestGuestToolsForVm uuid=f7be56d67fb731ac9e201c69428c6a69
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			3.7.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.7.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.7.0

Name	Description	Optional	Valid Value	Starting Version
timeout		Yes		

5.1.1.3.82 AttachGuestToolsIsoToVm

Attaches the GuestTools image to a VM instance. For example,

```
AttachGuestToolsIsoToVm uuid=f58d939e32073aa49acc4897bf81ae45
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			3.7.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.7.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.7.0
timeout		Yes		



Note:

- After you attach the GuestTools to a VM instance in ZStack Cloud, the cloud records the GuestTools version. Note that you can add the **GuestTools** option to **SystemTags**.
 - Format of the **GuestTools** option: `GuestTools::TOOLS_VERSION`. Here, the initial value of `TOOLS_VERSION` is `1.0.0`. This value will change as the version of GuestTools is upgraded.
 - Example: `GuestTools::1.0.0`
 - The cloud records the version of the GuestTools ISO installed on a host, compares the version with that in the `/opt/zstack-dvd` directory of the management node, and then decides whether to upgrade the GuestTools ISO.

5.1.1.3.83 GetVmGuestToolsInfo

Obtains information about the GuestTools of a VM instance. For example,

```
GetVmGuestToolsInfo uuid=5ecc83bf3f5033b9b78b4f9406c01f8f
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			3.7.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.7.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.7.0
timeout		Yes		



Note:

- ZStack Cloud records the version of the GuestTools ISO installed in the VM instance, compares the ISO version with that of the host, and then decides whether to upgrade the GuestTools ISO. Note that you can add the **GuestTools** option to **SystemTags**.
 - Format of the **GuestTools** option: `GuestTools::TOOLS_VERSION`. Here, the initial value of `TOOLS_VERSION` is `1.0.0`. This value will change as the version of GuestTools is upgraded.
 - Example: `GuestTools::1.0.0`
 - Note: This API is used to obtain the version and running status of the GuestTools installed in the VM instance. If the requested information is returned but the VM instance does not have a GuestTools tag, then a GuestTools tag will be created. If the requested information is returned but the returned GuestTools information is different from the current GuestTools tag value of the VM instance, then the tag will be updated.

5.1.1.3.84 UpdateVmNicDriver

Updates the type of a VM NIC driver. For example,

```
UpdateVmNicDriver vmInstanceUuid=ed3f3ea119883726b1a97ec3cc4b1583
vmNicUuid=78b119bae906373d825fa7e68faf6a0b driverType=e1000
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
vmInstanceUuid	The VM instance UUID.			3.9.0
vmNicUuid	The VM NIC UUID.			3.9.0
driverType	The type of the VM NIC driver.		<ul style="list-style-type: none"> • virtio • e1000 • rtl8139 	3.9.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.9.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.9.0
timeout		Yes		

5.1.1.3.85 GetVmDeviceAddress

Obtains the address of a VM device that corresponds to a Cloud resource. For example,

```
GetVmDeviceAddress uuid=a761ac08ca483af4a81d9ed3d9930ef4 resourceTypes
=VolumeVO
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The VM instance UUID.			3.10.0
resourceTypes	The resource type.		VolumeVO	3.10.0

Name	Description	Optional	Valid Value	Starting Version
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.10.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.10.0
timeout		Yes		

5.1.1.3.86 GetVmsCapabilities

Gets the capabilities of VM instances. For example,

```
GetVmsCapabilities vmUuids=a761ac08ca483af4a81d9ed3d9930ef4
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
vmUuids	The UUIDs of VM instances to be queried.			4.0.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		4.0.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		4.0.0
timeout		Yes		4.0.0

5.1.1.3.87 SetVmNuma

Sets vNUMA for a VM instance, for example,

```
SetVmNuma uuid=a761ac08ca483af4a81d9ed3d9930ef4 enable=true
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The VM UUID.			4.3.12
enable	Specifies whether to enable vNUMA for the VM instance.			4.3.12
userTags	The user tags. For more information, see CreateUserTag .	Yes		4.3.12
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		4.3.12
timeout		Yes		4.3.12

5.1.1.3.88 GetVmNuma

Obtains vNUMA status of a VM instance. For example,

```
GetVmNuma uuid=a761ac08ca483af4a81d9ed3d9930ef4
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The VM UUID.			4.3.12
userTags	The user tags. For more information, see CreateUserTag .	Yes		4.3.12
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		4.3.12

Name	Description	Optional	Valid Value	Starting Version
	CreateSystemTag .			
timeout		Yes		4.3.12

5.1.1.3.89 GetVmNUMATopology

Obtains the vNUMA topology of a VM instance, for example,

```
GetVmNUMATopology uuid=a761ac08ca483af4a81d9ed3d9930ef4
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The VM UUID.			4.3.12
userTags	The user tags. For more information, see CreateUserTag .	Yes		4.3.12
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		4.3.12
timeout		Yes		4.3.12

5.1.1.3.90 SetVmEmulatorPinning

Sets emulator pinning for a VM instance. For example,

```
SetVmEmulatorPinning uuid=a761ac08ca483af4a81d9ed3d9930ef4 emulatorPinning="1-4"
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			4.3.12
emulatorPinning	The emulator pinning. Format : (^?(\d+)(-\d+))*			4.3.12

Name	Description	Optional	Valid Value	Starting Version
	d+)?,)+. For example: (0-1,16)			
userTags	The user tags. For more information, see CreateUserTag .	Yes		4.3.12
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		4.3.12
timeout		Yes		4.3.12

5.1.1.3.91 GetVmEmulatorPinning

Obtains the pCPUs where the vCPUs are pinned. For example,

```
GetVmEmulatorPinning uuid=a761ac08ca483af4a81d9ed3d9930ef4
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The VM UUID.			4.3.12
userTags	The user tags. For more information, see CreateUserTag .	Yes		4.3.12
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		4.3.12
timeout		Yes		4.3.12

5.1.1.4 Tags

You can create a user tag on a VM instance by using `resourceType=VmInstanceVO`. For example,

```
CreateUserTag tag=web-server-vm resourceType=VmInstanceVO \
```

```
resourceUuid=a12b3cc9ee4440dfb00d41c1d2f72d08
```

System Tags

HostName

You can specify a hostname for the default L3 network of a VM instance. This tag is usually specified in the systemTags parameter when you call `CreateVmInstance`. If the default L3 network has a DNS domain, the hostname received by the VM instance operating system will automatically use this DNS domain extension. For example, if the hostname is web-server and the default DNS domain of the L3 network is zstack.org, then the final hostname is web-server.zstack.org.

Tag	Description	Example	Starting Version
hostname::{hostname}	The hostname of the default L3 network.	hostname::web-server	0.6

For example,

```
CreateVmInstance name=vm systemTags=hostname::vm1 imageUuid=d720ff0c60
ee48d3a2e6263dd3e12c33 \
instanceOfferingUuid=76789b62aeb542a5b4b8b8488fbaced2 \
l3NetworkUuids=37d3c4a1e2f14a1c8316a23531e62988,05266285f96245f096f3
b7dce671991d \
defaultL3NetworkUuid=05266285f96245f096f3b7dce671991d
```

5.1.2 Volume

5.1.2.1 Overview

A volume provides storages for 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.

Data volumes are mainly involved in the volume management.

Precautions

When you use volumes, 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 VMware VM instances.

- A volume can have two sizes: real size and virtual size. The real size is the size that a volume actually occupies in the storage system, while the virtual size is the size that a volume claims for. The virtual size is usually greater than or equal to the real size. As the number of written files increases, the real size will gradually increase.
- A volume (excluding shared volumes) can only be attached to one VM instance at any given time. Ceph and Shared Block primary storages support shared volumes. A shared volume can be identified and accessed by multiple VM instances at the same time.
- A root volume is always attached to its owner VM instance and cannot be detached.
- A data volume can be attached to or detached from different VM instances of the same hypervisor type.
- In the environment where multiple primary storages are available, you can specify a primary storage to create a volume. If no primary storage is specified, the default creation method is as follows:
 - For local primary storages, volumes are created from the primary storage with large capacity.
 - For NFS primary storages, volumes are created from a random primary storage.
 - For mixed primary storages (local + NFS/Shared Mount Point), volumes are created from the primary storage where the root volume of the volume does not locate.
- You can set QoS for data volumes to limit the disk bandwidth. Note that excessive low QoS might cause low I/O performance.

5.1.2.2 Inventory

Properties

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			0.6
name	The name. For more information, see Resource Property .			0.6
description	The description. For more information,	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
	see Resource Property .			
primaryStorageUuid	The UUID of the primary storage where the volume is located. For more information, see Primary Storage .			0.6
vmlInstanceUuid	The UUID of the VM instance to which the volume is attached. If the volume is not attached to any VM instance, this parameter is NULL. For more information, see Attached VM Instance .	Yes		0.6
diskOfferingUuid	The disk offering UUID. This parameter is valid if the volume is created from disk offering.	Yes		0.6
rootImageUuid	The image UUID. This parameter is valid if the volume is created from image.	Yes		0.6
installPath	The volume installation path on the primary storage.			0.6
type	The volume type.		<ul style="list-style-type: none"> • Root • Data 	0.6

Name	Description	Optional	Valid Value	Starting Version
format	The volume format. For more information, see Format .		• qcow2	0.6
size	The virtual size of the volume. Unit : byte.			0.6
actualSize				0.6
isShareable				0.6
deviceId	The device ID. For more information, see Device ID .	Yes		0.6
state	The volume state. For more information, see State .		• Enabled • Disabled	0.6
status	The volume status. For more information, see Status .		• Creating • Ready • NotInstantiated	0.6
createDate	The creation date. For more information, see Resource Property .			0.6
lastOpDate	The last operation date. For more information, see Resource Property .			0.6

Sample

```
{
  "inventories": [
    {
      "actualSize": 454033408,
      "createDate": "Nov 14, 2017 1:21:32 PM",
      "id": "00000000-0000-0000-0000-000000000000"
    }
  ]
}
```

```

        "description": "Root volume for VM[uuid:7096021b40
5e41a2afa22d0f6d7ab6f8]",
        "deviceId": 0,
        "format": "qcow2",
        "installPath": "/Cloud_ps_nxs/rootVolumes/acct-36c27e8ff0
5c4780bf6d2fa65700f22e/vol-c33a897
db91e461a9cbc011b0aa441c9/c33a897db91e461a9cbc011b0aa441c9.qcow2",
        "isShareable": false,
        "lastOpDate": "Nov 14, 2017 1:21:33 PM",
        "name": "ROOT-for-pub",
        "primaryStorageUuid": "cae8726c90784ba0946f852952731268",
        "rootImageUuid": "e29e00c1d18a486b8802a8f53c6a6e4f",
        "size": 4195352576,
        "state": "Enabled",
        "status": "Ready",
        "type": "Root",
        "uuid": "c33a897db91e461a9cbc011b0aa441c9",
        "vmInstanceId": "7096021b405e41a2afa22d0f6d7ab6f8"
    }
],
"success": true
}

```

Attached VM Instance

A data volume can be attached to a running or stopped VM instance. However, a data volume can only be attached to one VM instance at any given time. After a data volume is attached to a VM instance, the UUID of the data volume will show up in the vmlInstanceUuid field. A data volume can be detached from a VM instance and then attached to the other as long as these two VM instances are of the same hypervisors type. A root volume is always attached to its owner VM instance and cannot be detached.

Format

The volume format reveals the relationship between a volume and a hypervisor type, specifying what VM instances of which hypervisor type that a volume can be attached.

Device ID

The device ID shows the order that volumes are attached to a VM instance. Root volumes are always the first volume to be attached. Therefore, root volumes have a fixed device ID 0. Data volumes might have device IDs 1, 2, 3 ... N, depending on the sequence they are attached to a VM instance. The device ID can be used to identify the disk letter of a volume in the guest operating system. For example, in Linux, 0 usually means `/dev/xvda`, 1 usually means `/dev/xvdb`, and so forth.

State

A volume can have the following two states:

- Enabled:

Indicates that the volume can be attached to a VM instance.

- Disabled:

Indicates that the volume cannot be attached to a VM instance. However, an attached data volume can be detached even the data volume is in Disabled state.

Status

Status shows the lifecycle of a volume.

- NotInstantiated:

A specific status for only data volumes. Data volumes of this status are just database records. Data volumes of the NotInstantiated status can be attached to VM instances of any hypervisor types. After a data volume is attached to a VM instance, the hypervisorType field of the data volume will store the hypervisor type of the VM instance, and will be instantiated to concrete binaries on primary storage. Meanwhile, the status will be changed to Ready. Then, the data volume can only be re-attached to VM instances of the same hypervisor type.

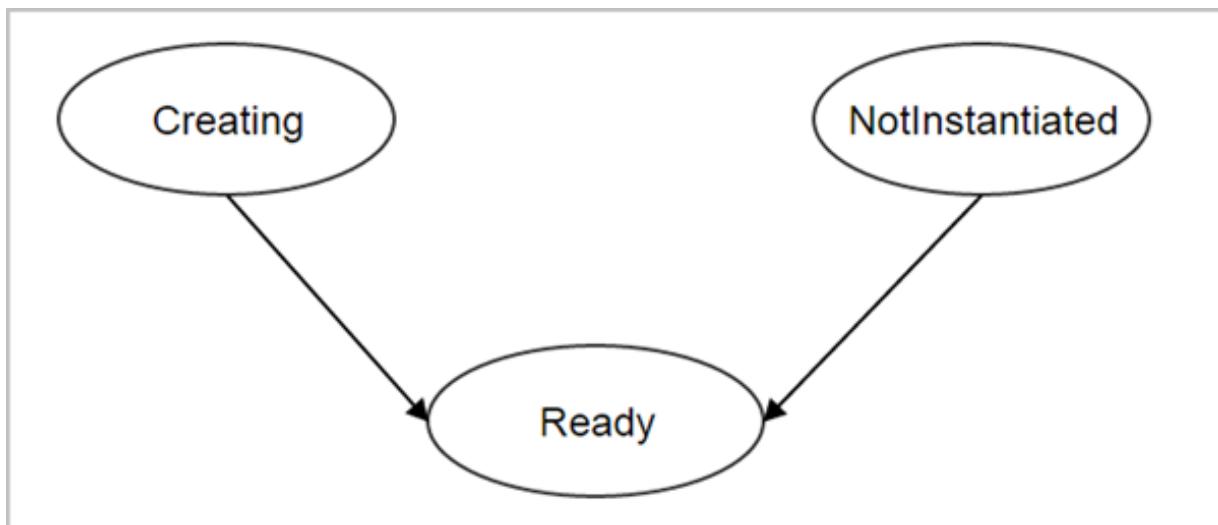
- Ready:

Indicates that the volume is already instantiated on primary storage and is ready to use.

- Creating:

Indicates that the volume is being created from image or volume snapshot, and is not ready to use.

The status transition of a volume is shown in [Figure 5-3: Volume Status Transition Diagram](#).

Figure 5-3: Volume Status Transition Diagram

5.1.2.3 Operations

5.1.2.3.1 CreateDataVolume

Creates a volume. For example,

```
CreateDataVolume name=testvolume diskOfferingUuid=73432f99feef483b97f9
84ff1830220e
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
name	The volume name .			0.6
description	The detailed description of the volume.	Yes		0.6
diskOfferingUuid	The disk offering UUID.	Yes		0.6
primaryStorageUuid	The primary storage UUID.	Yes		0.6
resourceUuid	The resource UUID. If specified , the image will use the specified value as UUID.	Yes		0.6
tagUuids	The tag UUID list.	Yes		3.4.0

Name	Description	Optional	Valid Value	Starting Version
userTags	The user tags. For more information, see CreateUser Tag . The resource type is VolumeVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is VolumeVO.	Yes		0.6
timeout		Yes		

**Note:**

- When you create a data volume in ZStack Cloud, you can specify the volume provisioning strategy by adding the **volumeProvisioningStrategy** option to **SystemTags**. The SystemTag is passed by using the **dataVolumeSystemTags** parameter.
 - Format of the **volumeProvisioningStrategy** option: `volumeProvisioningStrategy::ThinProvisioning, volumeProvisioningStrategy::ThickProvisioning`
 - Example: `volumeProvisioningStrategy::ThinProvisioning, volumeProvisioningStrategy::ThickProvisioning`

5.1.2.3.2 DeleteDataVolume

Deletes a volume. For example,

```
DeleteDataVolume uuid=2929b9e85c32478ea602824189c0d01a
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The volume UUID.			0.6
deleteMode	The delete mode. For more	Yes	• Permissive	0.6

Name	Description	Optional	Valid Value	Starting Version
	information, see Delete Resources .		• Enforcing	
userTags	The user tags. For more information, see CreateUser Tag . The resource type is VolumeVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is VolumeVO.	Yes		0.6
timeout		Yes		

5.1.2.3.3 ExpungeDataVolume

Completely deletes a volume. For example,

```
ExpungeDataVolume uuid=2929b9e85c32478ea602824189c0d01a
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The volume UUID .			0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is VolumeVO.	Yes		0.6
systemTags	The system tags. For more information, see	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
	CreateSystemTag . The resource type is VolumeVO.			
timeout		Yes		

5.1.2.3.4 RecoverDataVolume

Recovers a volume. For example,

```
RecoverDataVolume uuid=8994e6524c4945a0bf76d169297742df
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The volume UUID.			0.6
userTags	The user tags. For more information, see CreateUserTag . The resource type is VolumeVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is VolumeVO.	Yes		0.6
timeout		Yes		

5.1.2.3.5 ChangeVolumeState

Enables or disables a volume. For example,

```
ChangeVolumeState uuid=8994e6524c4945a0bf76d169297742df stateEvent=enable
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The volume UUID.			0.6
stateEvent	Whether to enable or disable the volume.		<ul style="list-style-type: none"> • enable • disable 	0.6
userTags	The user tags. For more information, see CreateUserTag . The resource type is VolumeVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is VolumeVO.	Yes		0.6
timeout		Yes		

5.1.2.3.6 CreateDataVolumeFromVolumeTemplate

Creates a volume from image. For example,

```
CreateDataVolumeFromVolumeTemplate name=new-volume imageUuid=bbe7c4538bfb420c84d417c8af0cfcc2 \
primaryStorageUuid=49304a747e2046618befdba8f64a5e47
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
imageUuid	The image UUID.			0.6

Name	Description	Optional	Valid Value	Starting Version
name	The volume name.			0.6
description	The detailed description of the volume.	Yes		0.6
primaryStorageUuid	The primary storage UUID.			0.6
hostUuid	The host UUID.	Yes		0.6
resourceUuid	The resource UUID.	Yes		0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is VolumeVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is VolumeVO.	Yes		0.6
timeout		Yes		



Note:

- When you create a volume from an image in ZStack Cloud, you can create a shared volume by adding the **shareable** option to **SystemTags**. The SystemTag is passed by using the **shareable** parameter. Note that you will create a shared volume if you add this SystemTag. If you do not add this SystemTag, you will create a normal volume.

5.1.2.3.7 CreateDataVolumeFromVolumeSnapshot

Creates a volume from snapshot. For example,

```
CreateDataVolumeFromVolumeSnapshot volumeSnapshotUuid=0e4b6901bc
964e7d9ec369eefdc8ba55 \
```

```
name=newsnapshotvolume primaryStorageUuid=49304a747e2046618bef
dba8f64a5e47
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
volumeSnapshotUuid	The volume image UUID.			0.6
name	The volume name.			0.6
description	The detailed description of the volume.	Yes		0.6
primaryStorageUuid	The primary storage UUID.			0.6
resourceUuid	The resource UUID.	Yes		0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is VolumeVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is VolumeVO.	Yes		0.6
timeout		Yes		

5.1.2.3.8 QueryVolume

Obtains a list of volumes. For example,

```
QueryVolume type=Data vmInstanceUuid=71f5376ef53a46a9abddd59c942cf45f
```

```
QueryVolume diskOffering.name=small primaryStorage.uuid=8db7eb2ccd  
ab4c4eb4784e46895bb016
```

Primitive Fields of Query

See [Volume Inventory](#).

Nested and Expanded Fields of Query

Field	Inventory	Description	Starting Version
vmlInstance	VM Instance Inventory	The VM instances to which the volume is attached.	0.6
snapshot	Volume Snapshot Inventory	The snapshots that are created from the volume.	0.6
diskOffering	Disk Offering Inventory	The disk offerings that are created from the volume.	0.6
primaryStorage	Primary Storage Inventory	The primary storage where the volume is located.	0.6
image	Image Inventory	The images that are created from the volume.	0.6

5.1.2.3.9 GetVolumeFormat

Obtains the volume format. Sample response:

```
{
  "formats": [
    {
      "format": "iso",
      "supportingHypervisorTypes": []
    },
    {
      "format": "raw",
      "masterHypervisorType": "KVM",
      "supportingHypervisorTypes": [
        "KVM"
      ]
    }
  ]
}
```

```

        },
        {
            "format": "vmtx",
            "masterHypervisorType": "ESX",
            "supportingHypervisorTypes": [
                "ESX"
            ]
        },
        {
            "format": "qcow2",
            "masterHypervisorType": "KVM",
            "supportingHypervisorTypes": [
                "KVM"
            ]
        }
    ]
}

```

Parameters

Name	Description	Optional	Valid Value	Starting Version
userTags	The user tags. For more information, see CreateUser Tag . The resource type is VolumeVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is VolumeVO.	Yes		0.6
timeout		Yes		

5.1.2.3.10 GetVolumeCapabilities

Obtains the volume capabilities. For example,

```
GetVolumeCapabilities uuid=30b1f7abb7884b80bbdacaf0fd1c7fe9
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The volume UUID.			0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is VolumeVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is VolumeVO.	Yes		0.6
timeout		Yes		

5.1.2.3.11 SyncVolumeSize

Synchronizes the volume size. For example,

```
SyncVolumeSize uuid=30b1f7abb7884b80bbdacaf0fd1c7fe9
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The volume UUID.			0.6
userTags	The user tags. For more information, see CreateUser Tag .	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
	resource type is VolumeVO.			
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is VolumeVO.	Yes		0.6
timeout		Yes		

5.1.2.3.12 ResizeRootVolume

Resizes a root volume. For example,

```
ResizeRootVolume uuid=78d879252ab84a3e96832535331bc9cc size=4294967296
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The volume UUID.			2.2
size	The new size.			2.2
userTags	The user tags. For more information, see CreateUserTag . The resource type is VolumeVO.	Yes		2.2
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is VolumeVO.	Yes		2.2
timeout		Yes		

5.1.2.3.13 ResizeDataVolume

Resizes a data volume. For example,

```
ResizeDataVolume uuid=6978048d1400484ca33a2ea84af061f5 size=1073741824
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The volume UUID.			2.2
size	The new size.			2.2
userTags	The user tags. For more information, see CreateUser Tag . The resource type is VolumeVO.	Yes		2.2
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is VolumeVO.	Yes		2.2
timeout		Yes		

5.1.2.3.14 UpdateVolume

Changes the properties of a volume. For example,

```
UpdateVolume uuid=30b1f7abb7884b80bbdacaf0fd1c7fe9 name=newvolume
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The volume UUID.			0.6
name	The volume name.	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
description	The detailed description of the volume.	Yes		0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is VolumeVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is VolumeVO.	Yes		0.6
timeout		Yes		

5.1.2.3.15 SetVolumeQoS

Sets the volume QoS. For example,

```
SetVolumeQos uuid=30b1f7abb7884b80bbdacaf0fd1c7fe9 volumeBandwidth=10000
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The volume UUID.			0.6
volumeBandwidth	The volume bandwidth.			0.6
mode		Yes	<ul style="list-style-type: none"> • total • read • write 	3.1.0
userTags	The user tags. For more information, see	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
	CreateUserTag . The resource type is VolumeVO.			
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is VolumeVO.	Yes		0.6
timeout		Yes		

**Note:**

- ZStack Cloud allows you to set the QoS read bandwidth for a volume by adding the **volumeReadBandwidth** option to **SystemTags**.
 - Format of the **volumeReadBandwidth** option: `volumeReadBandwidth::xxx`. Here, `xxx` is the read bandwidth.
 - Example: `volumeReadBandwidth::20971520`
- ZStack Cloud allows you to set the QoS write bandwidth for a volume by adding the **volumeWriteBandwidth** option to **SystemTags**.
 - Format of the **volumeWriteBandwidth** option: `volumeWriteBandwidth::xxx`. Here, `xxx` is the write bandwidth.
 - Example: `volumeWriteBandwidth::20971520`

5.1.2.3.16 GetVolumeQoS

Obtains the volume QoS. For example,

```
GetVolumeQos uuid=30b1f7abb7884b80bbdacaf0fd1c7fe9
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The volume UUID.			0.6

Name	Description	Optional	Valid Value	Starting Version
forceSync	Optional. Whether to synchronize the data on the host.	Yes		3.10.0
userTags	The user tags. For more information, see CreateUser Tag . The resource type is VolumeVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is VolumeVO.	Yes		0.6
timeout		Yes		



Note:

- ZStack Cloud allows you to obtain the QoS read bandwidth of a volume by adding the **volumeReadBandwidth** option to **SystemTags**.
 - Format of the **volumeReadBandwidth** option: `volumeReadBandwidth::xxx`. Here, `xxx` is the read bandwidth.
 - Example: `volumeReadBandwidth::20971520`
- ZStack Cloud allows you to obtain the QoS write bandwidth of a volume by adding the **volumeWriteBandwidth** option to **SystemTags**.
 - Format of the **volumeWriteBandwidth** option: `volumeWriteBandwidth::xxx`. Here, `xxx` is the write bandwidth.
 - Example: `volumeWriteBandwidth::20971520`

5.1.2.3.17 DeleteVolumeQoS

Deletes the volume QoS. For example,

```
DeleteVolumeQos uuid=30b1f7abb7884b80bbdacaf0fd1c7fe9
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The volume UUID.			0.6
mode		Yes	<ul style="list-style-type: none"> • total • read • write • all 	3.1.0
userTags	The user tags. For more information, see CreateUser Tag . The resource type is VolumeVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is VolumeVO.	Yes		0.6
timeout		Yes		



Note:

- ZStack Cloud allows you to delete the QoS read bandwidth of a volume by adding the **volumeReadBandwidth** option to **SystemTags**.
 - Format of the **volumeReadBandwidth** option: `volumeReadBandwidth::xxx`. Here, `xxx` is the read bandwidth.
 - Example: `volumeReadBandwidth::20971520`

- ZStack Cloud allows you to delete the QoS read bandwidth of a volume by adding the **volumeWriteBandwidth** option to **SystemTags**.
 - Format of the **volumeWriteBandwidth** option: `volumeWriteBandwidth::xxx`. Here, `xxx` is the write bandwidth.
 - Example: `vvolumeWriteBandwidth::20971520`

5.1.2.3.18 GetDataVolumeAttachableVm

Obtains a list of VM instances to which a volume can be attached. For example,

```
GetDataVolumeAttachableVm volumeUuid=30b1f7abb7884b80bbdacaf0fd1c7fe9
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
volumeUuid	The volume UUID.			0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is VolumeVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is VolumeVO.	Yes		0.6
timeout		Yes		

5.1.2.3.19 AttachDataVolumeToVm

Attaches a volume to a VM instance. For example,

```
AttachDataVolumeToVm volumeUuid=30b1f7abb7884b80bbdacaf0fd1c7fe9 \
```

```
vmInstanceUuid=108af59a0f4e4d6cb838a5591db1016a
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
vmInstanceUuid	The VM instance UUID.			0.6
volumeUuid	The volume UUID.			0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is VolumeVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is VolumeVO.	Yes		0.6
timeout		Yes		

5.1.2.3.20 DetachDataVolumeFromVm

Detaches a volume from a VM instance. For example,

```
DetachDataVolumeFromVm uuid=30b1f7abb7884b80bbdacaf0fd1c7fe9
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The volume UUID.			0.6
vmUuid	The VM instance UUID.			0.6
userTags	The user tags. For more information, see CreateUser Tag	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
	Tag . The resource type is VolumeVO.			
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is VolumeVO.	Yes		0.6
timeout		Yes		

5.1.2.3.21 CreateVolumeSnapshot

Creates a snapshot from volume. For example,

```
CreateVolumeSnapshot volumeUuid=30b1f7abb7884b80bbdacaf0fd1c7fe9 name=newsnapshot
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
volumeUuid	The volume UUID.			0.6
name	The snapshot name.			0.6
description	The detailed description of the snapshot.	Yes		0.6
resourceUuid	The resource UUID.	Yes		0.6
userTags	The user tags. For more information, see CreateUserTag . The resource type is VolumeVO.	Yes		0.6
systemTags	The system tags. For more	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
	information, see CreateSystemTag . The resource type is VolumeVO.			
timeout		Yes		

5.1.2.3.22 QueryVolumeSnapshot

Queries a volume snapshot. For example,

```
QueryVolumeSnapshot uuid=2a31798356754fe0a48da09d9ee879dd
```

Primitive Fields of Query

See Volume Snapshot Inventory.

Nested and Expanded Fields of Query

Field	Inventory	Description	Starting Version
backupStorage	Backup Storage Inventory		0.6
backupStorageRef			0.6
backupStorageRefs			0.6
localStorageHostRef			0.6
primaryStorage	Primary Storage Inventory		0.6
tree			0.6
volume	Volume Inventory		0.6

5.1.2.3.23 QueryVolumeSnapshotTree

Queries a volume snapshot tree. For example,

```
QueryVolumeSnapshotTree uuid=b3e785f593bd4dc7b74bd0be1f612de8
```

Primitive Fields of Query

See Volume Snapshot Inventory.

Nested and Expanded Fields of Query

Field	Inventory	Description	Starting Version
snapshot	Snapshot Inventory		0.6
volume	<i>Volume Inventory</i>		0.6

5.1.2.3.24 UpdateVolumeSnapshot

Updates a volume snapshot. For example,

```
UpdateVolumeSnapshot uuid=b3e785f593bd4dc7b74bd0be1f612de8
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The snapshot UUID.			0.6
name	The new name of the snapshot.	Yes		0.6
description	The detailed description of the snapshot.	Yes		0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is VolumeVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is VolumeVO.	Yes		0.6
timeout		Yes		

5.1.2.3.25 DeleteVolumeSnapshot

Deletes a volume snapshot. For example,

```
DeleteVolumeSnapshot uuid=b3e785f593bd4dc7b74bd0be1f612de8 deleteMode=Permissive
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The snapshot UUID.			0.6
deleteMode	The delete mode. For more information, see Delete Resources .	Yes	<ul style="list-style-type: none"> • Permissive • Enforcing 	0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is VolumeVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is VolumeVO.	Yes		0.6
timeout		Yes		

5.1.2.3.26 RevertVolumeFromSnapshot

Reverts a volume to a specified snapshot. For example,

```
RevertVolumeFromSnapshot uuid=ee70cdf1f9c4492288403a9708bb6434
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The snapshot UUID.			0.6
userTags	The user tags. For more information, see CreateUserTag . The resource type is VolumeVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is VolumeVO.	Yes		0.6
timeout		Yes		

5.1.2.3.27 GetVolumeSnapshotSize

Obtains the snapshot size of a volume. For example,

```
GetVolumeSnapshotSize uuid=ad2126f57be049ad9fcc85ccff53ce78
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The snapshot UUID.			3.5.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.5.0

Name	Description	Optional	Valid Value	Starting Version
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.5.0
timeout		Yes		

5.1.2.3.28 ShrinkVolumeSnapshot

Shrinks a volume snapshot. For example,

```
ShrinkVolumeSnapshot uuid=7d8b27866eb24dc493ccf5bacd6ec883
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			3.10.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.10.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.10.0
timeout		Yes		

5.1.2.4 Tags

You can create a tag on a volume by using `resourceType=VolumeVO`. For example,

```
CreateUserTag resourceType=VolumeVO tag=goldenVolume \
resourceUuid=f97b8cb9bcc4872a723c8b7785d9a12
```

5.1.3 Image

5.1.3.1 Overview

An image is an image template used by a VM instance or volume.

- Image templates include root volume images and data volume images.
- Root volume images can be in the format of ISO or Image, while data volume images can be in the format of Image.
- The Image format can either be raw or qcow2.
- Images are stored on backup storage. If you are creating VM instances or volumes for the first time, the images will be downloaded to primary storage and stored as image caches.

When you create a VM instance, the type of the image platform decides whether to use a KVM Virtio driver (including disk driver and NIC driver). The supported image platforms are as follows:

- Linux: Uses a Virtio driver.
- Windows: Not to use a Virtio driver. Instead, QEMU is used. The image operating system is a Windows OS without a Virtio driver installed.
- WindowsVirtio: Uses a Virtio driver. The image operating system is a Windows OS with a Virtio driver (including disk driver and NIC driver) installed.
- Other: Not to use a Virtio driver. Instead, QEMU is used. The image operating system can be of any types.
- Paravirtualization: Uses a Virtio driver. The image operating system can be any operating system with a Virtio driver installed.

To add an image, add a URL or upload a local file.

1. URL: Adds an image through the specified URL.

- *HTTP/HTTPS*:
 - Format: `http://path/file` or `https://path/file`
 - Example: `http://cdn.zstack.io/product_downloads/images/zstack-image.qcow2`
- *FTP*:
 - Anonymous format: `ftp://hostname[:port]/path/file`
Example: `ftp://172.20.0.10/pub/zstack-image.qcow2`
 - Non-anonymous format: `ftp://user:password@hostname[:port]/path/file`
Example: `ftp://zstack:password@172.20.0.10/pub/zstack-image.qcow2`
- *SFTP*:
 - Format with password specified: `sftp://user:password@hostname[:port]/path/file`
Example: `sftp://root:password@172.20.0.10/pub/zstack-image.qcow2`

- Password-free format: `sftp://user@hostname[:port]/path/file`

Example: `sftp://root@172.20.0.10/pub/zstack-image.qcow2`

- The absolute path on backup storage, which supports SFTP backup storage and ImageStore.

Example: `file:///opt/zstack-dvd/zstack-image-1.4.qcow2`



Note:

- Before you enter a URL, make sure that the URL can be accessed by a backup storage and the corresponding backup storage file exists.
- Before you upload an image by using the SFTP password-free method, make sure that password-free SSH access can be achieved between a backup storage and the SFTP server.
- Smooth, continuous display of progress bar, and breakpoint resume:
 - The ImageStore backup storage supports smooth, continuous display of progress bar, and breakpoint resume.
 - The Ceph backup storage supports smooth, continuous display of progress bar, but does not support breakpoint resume.
 - The SFTP backup storage does not support smooth, continuous display of progress bar, or breakpoint resume.
- If you upload an image by using `file:///`, make sure that:
 - The Ceph backup storage currently does not support the `file:///` format.
 - The `file:///` path contains three forward slashes (/), which correspond to the **absolute path** of the backup storage. For example, `file:///opt/zstack-dvd/zstack-image-1.4.qcow2`. The `zstack-image-1.4.qcow2` file needs to be stored in the `/opt/zstack-dvd` directory of the backup storage.

2. Upload a local file: You can upload an image that can be accessed by your current browser. Both ImageStore and Ceph backup storages are supported.



Note:

When you add an image by uploading a local file, you use the local browser as a transit point. Therefore, do not refresh or close the current browser, and do not stop the management node service. Otherwise, the image might fail to be added.

5.1.3.2 Inventory

Properties

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			0.6
name	The name. For more information, see Resource Property .			0.6
description	The description. For more information, see Resource Property .	Yes		0.6
state	The state. For more information, see State .		<ul style="list-style-type: none"> • Enabled • Disabled 	0.6
status	The status. For more information, see Status .		<ul style="list-style-type: none"> • Creating • Downloading • Ready 	0.6
size	The image size. Unit: byte.			0.6
url	The URL from which the image is registered. For more information, see URL .			0.6
mediaType	The image media type. For more information, see Media Type .		<ul style="list-style-type: none"> • RootVolume Template • DataVolume Template • ISO 	0.6
guestOsType	The string that describes the operating system	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
	type of a VM instance.			
platform	The platform of a VM instance's operating system. For more information, see Platform .		<ul style="list-style-type: none"> • Linux • Windows • Paravirtualization • Other 	0.6
system	Whether the image is a system image. For more information, see System Image .			0.6
format	The format. For more information, see Format .		<ul style="list-style-type: none"> • qcow2 • raw 	0.6
md5Sum	The MD5 checksum of the image.			0.6
type	The reserved field.		<ul style="list-style-type: none"> • zstack 	0.6
actualSize	The actual size.			0.6
exportMd5Sum				0.6
exportUrl				0.6
backupStorageRefs	The backup storage references. For more information, see Back Storage Reference .			0.6
createDate	The creation date. For more information, see Resource Property .			0.6
lastOpDate	The last operation date. For more			0.6

Name	Description	Optional	Valid Value	Starting Version
	information, see Resource Property .			

Sample

```
{
    "inventories": [
        {
            "actualSize": 293641216,
            "backupStorageRefs": [
                {
                    "backupStorageUuid": "ae840e03a0044b759b0a
8c09a141a46b",
                    "createDate": "Oct 30, 2017 4:32:11 PM",
                    "imageUuid": "fccc12fee6a411d68c42763ded705630",
                    "installPath": "zstore://fccc12fee6a411d68c42
763ded705630/b08ea6cad1f10217223192343a1d8fb72279ed47",
                    "lastOpDate": "Oct 30, 2017 4:32:11 PM",
                    "status": "Ready"
                }
            ],
            "createDate": "Oct 30, 2017 4:32:11 PM",
            "description": "",
            "exportMd5Sum": "9b38fe1fd43385b86a1c9b12ac1960fe",
            "exportUrl": "http://10.0.146.122:8001/imagestore/download
/image-b08ea6cad1f10217223192343a1d8fb72279ed47.qcow2",
            "format": "qcow2",
            "lastOpDate": "Oct 30, 2017 7:35:38 PM",
            "md5Sum": "42e98b8fc79cd8aeffeb34a2a7021fed621eec0
be926139d46e8afc26e78b7d",
            "mediaType": "RootVolumeTemplate",
            "name": "vr-test-2",
            "platform": "Linux",
            "size": 8589934592,
            "state": "Enabled",
            "status": "Ready",
            "system": true,
            "type": "zstack",
            "url": "http://192.168.200.100/mirror/diskimages/cloud-
vrouter-latest.qcow2",
            "uuid": "fccc12fee6a411d68c42763ded705630"
        }
    ],
    "success": true
}
```

State

An image has the following two states:

- Enabled:

Indicates that VM instances can be created from this image.

- Disabled:

Indicates that VM instances cannot be created from this image.

Status

Status indicates the lifecycle of an image.

- Creating:

Indicates that the image is being created from a volume, and is not ready to use.

- Downloading:

Indicates that the image is being downloaded from a URL, and is not ready to use.

- Ready:

Indicates that the image already exists in backup storage, and is ready to use.

URL

The meaning of a URL varies depending on how an image was created on a backup storage.

- If the image was downloaded from a web server, the URL is an HTTP/HTTPS link.
- If the image was created from a volume or a volume snapshot, the URL is a string encoding UUID of the volume or the volume snapshot. For example,

```
volume: //b395386bdb4a4ff1b1850a457c949c5e  
volumeSnapshot: //b395386bdb4a4ff1b1850a457c949c5e
```

Media Type

Media type indicates how an image will be used.

- RootVolumeTemplate:

This type of image is used to create root volumes.

- DataVolumeTemplate:

This type of image is used to create data volumes.

- ISO:

ISO images are used to install operating systems on blank root volumes.

Platform

Platform gives ZStack Cloud a hint that whether to use paravirtualization.

Use paravirtualization	<ul style="list-style-type: none"> • Linux • Paravirtualization
Not to use paravirtualization (The VM instance disk uses the IDE mode, and the NIC uses e1000.)	<ul style="list-style-type: none"> • Windows • Other

System Image

System images are used only for appliance VM instances, not for user VM instances.

Format

Format reveals the relationship between hypervisors and images. For example, images of qcow2 format can only be used for KVM VM instances. The current version of ZStack Cloud supports only KVM hypervisors. The relationship is as follows.

Hypervisor Type	Format
KVM	<ul style="list-style-type: none"> • qcow2 • raw

Volumes will inherit formats of images from which they are created. For example, the root volumes created from images of qcow2 format will also have the qcow2 format. The **raw** format is an exception. The volumes created from **raw** images will have the qcow2 format because ZStack Cloud will perform thin clone by using the qcow2 format.

Backup Storage Reference

An image can be stored on more than one backup storage. For each backup storage, the image has a backup storage reference that includes the backup storage UUID and the image installation path.

Name	Description	Optional	Valid Value	Starting Version
imageUuid	The image UUID.			0.6
backupStorageUuid	The backup storage UUID. For more information, see Backup Storage .			0.6

Name	Description	Optional	Valid Value	Starting Version
installPath	The installation path on the backup storage.			0.6
createDate	The creation date. For more information, see Resource Property .			0.6
lastOpDate	The last operation date. For more information, see Resource Property .			0.6

Sample

```
{
    "backupStorageUuid": "ae840e03a0044b759b0a
8c09a141a46b",
    "createDate": "Oct 30, 2017 4:32:11 PM",
    "imageUuid": "fccc12fee6a411d68c42763ded705630",
    "installPath": "zstore://fccc12fee6a411d68c42
763ded705630/b08ea6cad1f10217223192343a1d8fb72279ed47",
    "lastOpDate": "Oct 30, 2017 4:32:11 PM",
    "status": "Ready"
}
```

5.1.3.3 Operations

5.1.3.3.1 AddImage

Adds an image. For example,

```
AddImage name=testimage url=http://192.168.200.100/mirror/diskimages/
CentOS6-test-image-4G.qcow2 \
system=false format=qcow2 platform=Linux backupStorageUuids=ab3d53288b
d14e6eba6ea56324b66a3f \
mediaType=RootVolumeTemplate
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
name	The image name.			0.6

Name	Description	Optional	Valid Value	Starting Version
description	The detailed description of the image.	Yes		0.6
url	The URL of the image to be added.			0.6
mediaType	The image type.	Yes	<ul style="list-style-type: none"> • RootVolume Template • ISO • DataVolume Template 	0.6
guestOsType	The operating system type of the guest VM instance that corresponds to the image.	Yes		0.6
system	Whether the image is a system image.	Yes		0.6
format	The image format .		<ul style="list-style-type: none"> • raw • qcow2 • iso 	0.6
platform	The operating system platform of the image.	Yes	<ul style="list-style-type: none"> • Linux • Windows • Windows Virtio • Other • Paravirtualization 	0.6
backupStorageUuids	The UUID list of the backup storages on which the image is to be added.			0.6
type	The reserved field for internal use.	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
resourceUuid	The resource UUID. If specified, the image will use the specified value as UUID.	Yes		0.6
tagUuids	The tag UUIDs.			4.0.0
architecture		Yes	<ul style="list-style-type: none"> • x86_64 • aarch64 • mips64el 	4.0.0
userTags	The user tags. For more information, see CreateUserTag . The resource type is ImageVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is ImageVO.			0.6
timeout		Yes		

5.1.3.3.2 DeleteImage

Deletes an image. For example,

```
DeleteImage backupStorageUuids=ab3d53288bd14e6eba6ea56324b66a3f uuid=d10dd071a8b04c5aa4a8d98a83clf979 \
deleteMode=Permissive
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The image UUID.			0.6
backupStorageUuids	The backup storage UUID list.	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
deleteMode	The delete mode. For more information, see Delete Resources .	Yes	<ul style="list-style-type: none"> Permissive Enforcing 	0.6
userTags	The user tags. For more information, see CreateUserTag . The resource type is ImageVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is ImageVO.	Yes		0.6
timeout		Yes		

5.1.3.3.3 ExpungeImage

Completely deletes an image. For example,

```
ExpungeImage backupStorageUuids=ab3d53288bd14e6eba6ea56324b66a3f \
imageUuid=d10dd071a8b04c5aa4a8d98a83c1f979
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
imageUuid	The image UUID.			0.6
backupStorageUuids	The backup storage UUID list.	Yes		0.6
userTags	The user tags. For more information, see CreateUserTag . The resource type is ImageVO.	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is ImageVO.	Yes		0.6
timeout		Yes		

5.1.3.3.4 QueryImage

Queries an image. For example,

```
QueryImage status=Ready system=true
```

```
QueryImage volume.vmInstanceUuid=85ab231e392d4dfb86510191278e9fc3
```

Primitive Fields of Query

See [Image Inventory](#).

Nested and Expanded Fields of Query

Field	Inventory	Description	Starting Version
backupStorage	Backup Storage Inventory	The backup storage where the image is located.	0.6
volume	Volume Inventory	The volumes that are created from the image.	0.6
backupStorageRefs	Backup Storage Reference	The reference that is used to query the backup storage installation path.	0.6

5.1.3.3.5 RecoverImage

Recoveries an image that is deleted (but not expunged). For example,

```
RecoverImage backupStorageUuids=ab3d53288bd14e6eba6ea56324b66a3f \
```

```
imageUuid=2aa6ae40c4954143be0ecb9a6a160b5b
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
imageUuid	The image UUID.			0.6
backupStorageUuids	The backup storage UUID list.	Yes		0.6
userTags	The user tags. For more information, see CreateUserTag . The resource type is ImageVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is ImageVO.	Yes		0.6
timeout		Yes		

5.1.3.3.6 ChangeImageState

Changes the image state. For example,

```
ChangeImageState uuid=2aa6ae40c4954143be0ecb9a6a160b5b stateEvent=disable
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The image UUID.			0.6
stateEvent	The state of the image.		<ul style="list-style-type: none"> • enable • disable 	0.6
userTags	The user tags. For more information, see CreateUserTag	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
	. The resource type is ImageVO.			
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is ImageVO.	Yes		0.6
timeout		Yes		

5.1.3.3.7 UpdateImage

Updates an image. For example,

```
UpdateImage uuid=2aa6ae40c4954143be0ecb9a6a160b5b name=new-image
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The image UUID.			0.6
name	The image name.	Yes		0.6
description	The detailed description of the image.	Yes		0.6
mediaType	The image type.	Yes	<ul style="list-style-type: none"> • RootVolume Template • ISO • DataVolume Template 	0.6
guestOsType	The operating system type of the guest VM instance that corresponds to the image.	Yes		0.6
system	Whether the image is a system image.	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
format	The image format. .	Yes	<ul style="list-style-type: none"> raw qcow2 iso 	0.6
platform	The operating system platform of the image.	Yes	<ul style="list-style-type: none"> Linux Windows Windows Virtio Other Paravirtualization 	0.6
architecture		Yes	<ul style="list-style-type: none"> x86_64 aarch64 mips64el 	4.0.0
userTags	The user tags. For more information, see CreateUserTag . The resource type is ImageVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is ImageVO.	Yes		0.6
timeout		Yes		

5.1.3.3.8 SyncImageSize

Synchronizes the image size. For example,

```
SyncImageSize uuid=2aa6ae40c4954143be0ecb9a6a160b5b
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The image UUID.			0.6

Name	Description	Optional	Valid Value	Starting Version
userTags	The user tags. For more information, see CreateUserTag . The resource type is ImageVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is ImageVO.	Yes		0.6
timeout		Yes		

5.1.3.3.9 GetCandidateBackupStorageForCreatingImage

Obtains the candidate backup storages that can be used to create images. For example,

```
GetCandidateBackupStorageForCreatingImage volumeUuid=493a22431c  
434505b49afb16a5a6cda6
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
volumeUuid	The volume UUID . Make sure that at least one of volumeUuid and volumeSnap shotUuid is not null.	Yes		0.6
volumeSnapshotUuid	The volume snapshot UUID . Make sure that at least one of volumeUuid and volumeSnap shotUuid is not null.	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
userTags	The user tags. For more information, see CreateUserTag . The resource type is ImageVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is ImageVO.	Yes		0.6
timeout		Yes		

5.1.3.3.10 CreateRootVolumeTemplateFromRootVolume

Creates a root volume image from a root volume. For example,

```
CreateRootVolumeTemplateFromRootVolume rootVolumeUuid=cc83fc9639
cf456c8e43c35f6d2d52cd \
backupStorageUuids=ab3d53288bd14e6eba6ea56324b66a3f name=new-
rootvolume
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
name	The name of the root volume image.			0.6
description	The detailed description of the root volume image.	Yes		0.6
guestOsType	The operating system type of the guest VM instance that corresponds to the root volume image.	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
backupStorageUuids	The backup storage UUID list.	Yes		0.6
rootVolumeUuid	The root volume UUID.	Yes		0.6
platform	The operating system platform of the root volume image.	Yes	<ul style="list-style-type: none"> • Linux • Windows • Windows Virtio • Other • Paravirtualization 	0.6
system	Whether the root volume image is a system root volume image.	Yes		0.6
resourceUuid	The resource UUID. If specified, the root volume image will use the specified value as UUID.	Yes		0.6
architecture		Yes		4.0.0
tagUuids	The tag UUIDs.	Yes		4.0.0
userTags	The user tags. For more information, see CreateUserTag . The resource type is ImageVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is ImageVO.	Yes		0.6
timeout		Yes		

**Note:**

- When you create an image from a root volume, ZStack Cloud copies the value of the GuestTools tag from VM instance to image. When you use this image to create a VM instance, the value of the GuestTools tag will be copied from the image to the target VM instance. Note that you can add the **GuestTools** option to **SystemTags**.
 - Format of the **GuestTools** option: `GuestTools::TOOLS_VERSION`. Here, the initial value of `TOOLS_VERSION` is `1.0.0`. This value will change as the version of GuestTools is upgraded.
 - Example: `GuestTools::1.0.0`
 - Note: When you create an image from the root volume of a VM instance, the value of the GuestTools tag will be copied from the VM instance to the target image.

5.1.3.3.11 CreateRootVolumeTemplateFromVolumeSnapshot

Creates a root volume image from a volume snapshot. For example,

```
CreateRootVolumeTemplateFromVolumeSnapshot name=root-volume-template \
snapshotUuid=30a129c7f06243499b1ed5ec9e4a778e backupStorageUuids=
e05cad1e1e3a4778a3a0b57cddd847f3
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
name	The name of the root volume image.			0.6
description	The detailed description of the root volume image.	Yes		0.6
guestOsType	The operating system type of the guest VM instance that corresponds to the root volume image.	Yes		0.6
backupStorageUuids	The backup storage UUID list.			0.6

Name	Description	Optional	Valid Value	Starting Version
snapshotUuid	The snapshot UUID.			0.6
platform	The operating system platform of the root volume image.	Yes	<ul style="list-style-type: none"> • Linux • Windows • Windows Virtio • Other • Paravirtualization 	0.6
system	Whether the root volume image is a system root volume image.	Yes		0.6
resourceUuid	The resource UUID. If specified, the root volume image will use the specified value as UUID.	Yes		0.6
architecture		Yes		4.0.0
tagUuids	The tag UUIDs.	Yes		4.0.0
userTags	The user tags. For more information, see CreateUserTag . The resource type is ImageVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is ImageVO.	Yes		0.6
timeout		Yes		

5.1.3.3.12 CreateDataVolumeTemplateFromVolume

Creates a data volume image from a volume. For example,

```
CreateDataVolumeTemplateFromVolume name=test \
volumeUuid=3eb74bba9a5448368158c2ee6f0a61ef \
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
volumeUuid	The UUID of the volume from which the data volume image is to be created.			0.6
name	The name of the data volume image.			0.6
description	The detailed description of the data volume image.	Yes		0.6
backupStorageUuids	The backup storage UUID list.	Yes		0.6
resourceUuid	The resource UUID. If specified, the data volume image will use the specified value as UUID.	Yes		0.6
userTags	The user tags. For more information, see CreateUserTag . The resource type is ImageVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
	resource type is ImageVO.			
timeout		Yes		

5.1.3.3.13 CreateDataVolumeTemplateFromVolumeSnapshot

Creates a data volume image from a volume snapshot. For example,

```
CreateDataVolumeTemplateFromVolumeSnapshot name=data-volume-template \
snapshotUuid=30a129c7f06243499bled5ec9e4a778e backupStorageUuids=
e05cad1e1e3a4778a3a0b57cddd847f3
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
name	The name of the data volume image.			0.6
description	The detailed description of the data volume image.	Yes		0.6
guestOsType	The operating system type of the guest VM instance that corresponds to the data volume image.	Yes		0.6
backupStorageUuids	The backup storage UUID list.			0.6
snapshotUuid	The snapshot UUID.			0.6
platform	The operating system platform of the data volume image.	Yes	<ul style="list-style-type: none"> • Linux • Windows • Windows Virtio • Other • Paravirtualization 	0.6

Name	Description	Optional	Valid Value	Starting Version
system	Whether the data volume image is a system data volume image.	Yes		0.6
resourceUuid	The resource UUID. If specified, the data volume image will use the specified value as UUID.	Yes		0.6
userTags	The user tags. For more information, see CreateUserTag . The resource type is ImageVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is ImageVO.	Yes		0.6
timeout		Yes		

5.1.3.3.14 GetImageQga

Obtains the image QGA. For example,

```
GetImageQga uuid=0ed799bb11b940229e97b1fc0b09a7d3
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The image UUID.			0.6
userTags	The user tags. For more information, see CreateUserTag	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
	. The resource type is ImageVO.			
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is ImageVO.	Yes		0.6
timeout		Yes		

5.1.3.3.15 SetImageQga

Sets the image QGA. For example,

```
SetImageQga enable=true uuid=0ed799bb11b940229e97b1fc0b09a7d3
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The image UUID.			0.6
enable				0.6
userTags	The user tags. For more information, see CreateUserTag . The resource type is ImageVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is ImageVO.	Yes		0.6
timeout		Yes		

5.1.3.3.16 SetImageBootMode

Sets the image boot mode. For example,

```
SetImageBootMode uuid=4efcba4c12cc35f4a1b262038f7e7b80 bootMode=Legacy
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The image UUID.			3.9.0
bootMode	The image boot mode.		<ul style="list-style-type: none"> • Legacy • UEFI • UEFI_WITH_CSM 	3.9.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.9.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.9.0
timeout		Yes		

5.1.3.3.17 GetUploadImageJobDetails

Retrieves the details of a image upload job. For example,

```
GetUploadImageJobDetails uuid=4efcba4c12cc35f4a1b262038f7e7b80  
bootMode=Legacy
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
imageId	The user-defined image ID. We recommend that you use an MD5 value.			4.1.0
userTags	The user tags. For more	Yes		4.1.0

Name	Description	Optional	Valid Value	Starting Version
	information, see CreateUserTag .			
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		4.1.0
timeout		Yes		

5.1.3.4 Tags

You can create a user tag on an image by using `resourceType=ImageVO`. For example,

```
CreateUserTag resourceType=ImageVO tag=golden-image \
resourceUuid=ff7c04c4e2874a21a3e795501f1bc516
```

5.1.4 Affinity Group

5.1.4.1 Overview

Affinity Group Policy

Currently, ZStack Cloud provides two affinity group policies to better manage VM instances and hosts: anti-affinity group (soft) and anti-affinity group (hard).

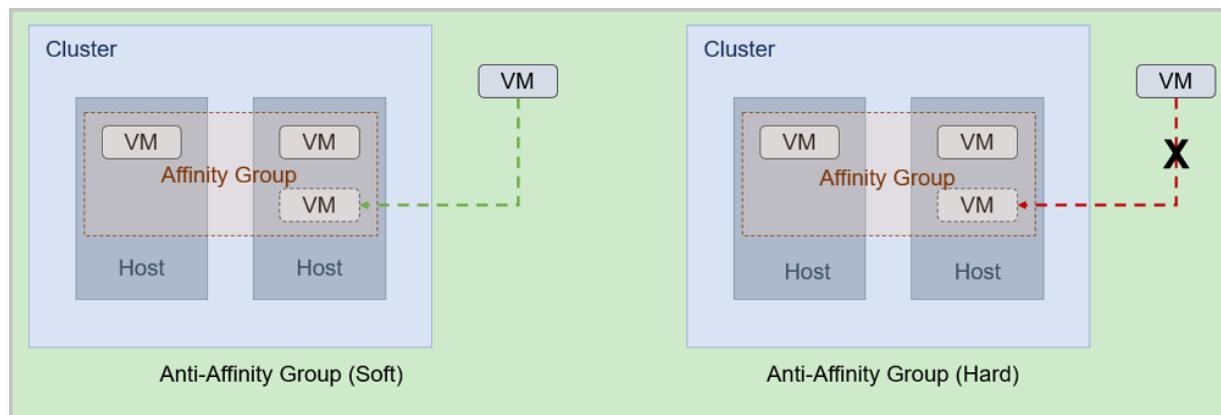
- Anti-affinity group (soft):

Allocate VM instances in the affinity group to different hosts as much as possible. If no more hosts are available, the VM instances will be allocated randomly.

- Anti-affinity group (hard):

Strictly allocate VM instances in the affinity group to different hosts. If no more hosts are available, the allocation fails.

The logic of these two anti-affinity groups is shown in [Figure 5-4: Anti-Affinity Group \(Soft\) and Anti-Affinity Group \(Hard\)](#).

Figure 5-4: Anti-Affinity Group (Soft) and Anti-Affinity Group (Hard)

Usage Scenario

This section provides some usage examples of anti-affinity group (soft) and anti-affinity group (hard) policies.

- Anti-affinity group (soft):

You might want to deploy nodes with different Hadoop roles on different hosts to improve the overall system performance.

- For example, when you deploy a Hadoop system, you might find it difficult to calculate the exact number of nodes of different roles such as NameNode, DataNode, JobTracker, and TaskTracker. However, you might know that deploying these nodes on different hosts is more effective. With the anti-affinity group (soft) policy, you can deploy Hadoop clusters on different hosts as much as possible, which relieves the I/O pressure and improves the overall performance of the system.

- Anti-affinity group (hard):

You might want to deploy two VM instances that run an active and a standby database on different hosts to ensure high availability.

- For example, you deploy two business VM instances to run an active and a standby MySQL database respectively, and require that the active and standby databases cannot be down at the same time. Therefore, you must deploy these two VM instances on different hosts. Due to deployment automation, you might not predict which hosts have sufficient resources. With the anti-affinity group (hard) policy, you can choose two different hosts to run these two VM instances respectively, which ensures the high availability.

5.1.4.2 Inventory

Properties

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			2.2
name	The name. For more information, see Resource Property .			2.2
version	The version of the affinity group allocation algorithm.			2.2
type	The affinity group type. The current type is host. In the future, network, router , data center, and rack affinity groups will be supported.	Yes	• host	2.2
policy	The affinity group policy.		• antiSoft	2.2
createDate	The creation date. For more information, see Resource Property .			2.2
lastOpDate	The last operation date. For more information, see Resource Property .			2.2
description	The description. For more information,	Yes		2.2

Name	Description	Optional	Valid Value	Starting Version
	see <i>Resource Property</i> .			
appliance	The resource that uses the affinity group.			2.2

Sample

```
{
    "inventories": [
        {
            "appliance": "VROUTER",
            "createDate": "Mar 10, 2018 2:11:07 PM",
            "description": "affinity.group.for.virtual.router",
            "lastOpDate": "Mar 10, 2018 2:11:07 PM",
            "name": "affinity.group.for.virtual.router",
            "policy": "ANTISOFT",
            "type": "HOST",
            "usages": [],
            "uuid": "d271b2fe242911e88fe0fa0754e77200",
            "version": "1.0"
        }
    ],
    "success": true
}
```

5.1.4.3 Operations

5.1.4.3.1 CreateAffinityGroup

Creates an affinity group. For example,

```
CreateAffinityGroup name=affinity-group-test policy=antiSoft
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
name	The affinity group name.			2.2
description	The detailed description of the affinity group.	Yes		2.2
policy	The affinity group policy.		• antiSoft	0.6
type	The affinity group type. The current	Yes	• host	2.2

Name	Description	Optional	Valid Value	Starting Version
	type is host. In the future, network, router, data center, and rack affinity groups will be supported.			
resourceUuid	The resource UUID.	Yes		2.2
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.2
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.2
timeout		Yes		

5.1.4.3.2 DeleteAffinityGroup

Deletes an affinity group. For example,

```
DeleteAffinityGroup uuid=1b8fa10dfe5a4cad81c341787f764c7c
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The affinity group UUID.			2.2
deleteMode	The delete mode.	Yes		2.2
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.2
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.2

Name	Description	Optional	Valid Value	Starting Version
	CreateSystemTag .			
timeout		Yes		

5.1.4.3.3 QueryAffinityGroup

Queries an affinity group. For example,

```
QueryAffinityGroup appliance=vrouter
```

```
QueryAffinityGroup usages.resourceUuid=aa9acd98a8fb4958bcaa6ecb3a712a16
```

Primitive Fields of Query

See Affinity Group Inventory.

Nested and Expanded Fields of Query

Field	Inventory	Description	Starting Version
usages	Usage Inventory		2.2

5.1.4.3.4 UpdateAffinityGroup

Updates an affinity group. For example,

```
UpdateAffinityGroup uuid=acf6a1e958148ab8e47d91cb7b26e7a
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The affinity group UUID.			2.2
name	The affinity group name.	Yes		2.2
description	The detailed description of the affinity group.	Yes		2.2
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.2

Name	Description	Optional	Valid Value	Starting Version
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.2
timeout		Yes		

5.1.4.3.5 AddVmToAffinityGroup

Adds a VM instance to an affinity group. For example,

```
AddVmToAffinityGroup affinityGroupUuid=acf6a1e958148ab8e47d91cb7b26e
7a \
uuid=9f3461b9021242268c51afe872662285
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
affinityGroupUuid	The affinity group UUID.			2.2
uuid	The resource UUID.	Yes		2.2
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.2
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.2
timeout		Yes		

5.1.4.3.6 RemoveVmFromAffinityGroup

Removes a VM instance from an affinity group. For example,

```
RemoveVmFromAffinityGroup affinityGroupUuid=acf6a1e958148ab8e47
d91cb7b26e7a \
```

```
uuid=9f3461b9021242268c51afe872662285
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
affinityGroupUuid	The affinity group UUID.			2.2
uuid	The resource UUID.	Yes		2.2
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.2
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.2
timeout		Yes		

5.1.4.3.7 ChangeAffinityGroupState

Changes the state of an affinity group. For example,

```
ChangeAffinityGroupState uuid=d8d6f572284611e8a675fa0754e77200
stateEvent=disable
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			2.3
stateEvent		Yes	<ul style="list-style-type: none"> • disable • enable 	2.3
systemTags	The system tags. For more information, see CreateSystemTag .			2.3
userTags	The user tags. For more			2.3

Name	Description	Optional	Valid Value	Starting Version
	information, see CreateUserTag .			
timeout				2.3

5.1.4.3.8 GetCandidateAffinityGroupForAttachingVm

Retrieves the affinity groups that can be attached to a VM instance. For example,

```
GetCandidateAffinityGroupForAttachingVm vmUuid=2cbb6f64b4e03753b8fb
63f497bb003a
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
vmUuid	The VM UUID.			4.0.0
systemTags	The system tags. For more information, see CreateSystemTag .			4.0.0
userTags	The user tags. For more information, see CreateUserTag .			4.0.0
timeout				4.0.0

5.1.4.3.9 GetCandidateVMForAttachingAffinityGroup

Retrieves VM instances that can be attached an affinity group. For example,

```
GetCandidateVMForAttachingAffinityGroup affinityGroupUuid=2cbb6f64b4
e03753b8fb63f497bb003a
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
affinityGroupUuid	The UUID of the affinity group.			4.0.0
systemTags	The system tags. For more information, see CreateSystemTag .			4.0.0

Name	Description	Optional	Valid Value	Starting Version
	CreateSystemTag .			
userTags	The user tags. For more information, see CreateUserTag .			4.0.0
timeout				4.0.0

5.1.4.3.10 GetCandidateAffinityGroupForCreatingVm

Retrieves available anti-affinity groups that can be attached to a VM instance that is being created.

For example,

```
GetCandidateAffinityGroupForCreatingVm zoneUuid=2cbb6f64b4e03753b8fb
63f497bb003a
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
zoneUuid	The zone UUID.			4.1.0
clusterUuid	The cluster UUID.	Yes		4.1.0
hostUuid	The host UUID.	Yes		4.1.0
systemTags	The system tags. For more information, see CreateSystemTag .			4.1.0
userTags	The user tags. For more information, see CreateUserTag .			4.1.0
timeout				4.1.0

5.1.4.4 Tags

You can create a user tag on an affinity group by using `resourceType=AffinityGroupvo`. For example,

```
CreateUserTag tag=Test1 resourceUuid=d271b2fe242911e88fe0fa0754e77200
\
```

```
resourceType=AffinityGroupVO
```

5.1.5 Instance Offering

5.1.5.1 Overview

An instance offering is the count or specification of the CPU, memory, the host allocation strategy, disk bandwidth, and network bandwidth, for a VM instance.

5.1.5.2 Inventory

Properties

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			0.6
name	The name. For more information, see Resource Property .			0.6
description	The description. For more information, see Resource Property .	Yes		0.6
cpuNum	The number of virtual CPUs (vCPUs). For more information, see CPU Capacity .			0.6
cpuSpeed	The vCPU speed. For more information, see CPU Capacity .			0.6
memorySize	The memory size. Unit: byte.			0.6
type	The instance offering type. Default type:	Yes	<ul style="list-style-type: none"> • UserVm • VirtualRouter 	0.6

Name	Description	Optional	Valid Value	Starting Version
	UserVm. For more information, see Type .			
allocatorStrategy	The host allocator strategy. For more information, see Allocator Strategy .		<ul style="list-style-type: none"> • DefaultHostAllocatorStrategy • LastHostPreferredAllotatorStrategy • LeastVmPreferredHostAllocatorStrategy • MinimumCPUUsageHostAllocatorStrategy • MinimumMemoryUsageHostAllocatorStrategy • MaxInstancePerHostHostAllocatorStrategy 	0.6
state	The state. For more information, see State .		<ul style="list-style-type: none"> • Enabled • Disabled 	0.6
sortKey				0.6
createDate	The creation date. For more information, see Resource Property .			0.6
lastOpDate	The last operation date. For more information, see Resource Property .			0.6

Sample

```
{
    "inventories": [
        {
            "allocatorStrategy": "LeastVmPreferredHostAllocatorsStrategy",
            "cpuNum": 1,
            "cpuSpeed": 0,
            "createDate": "Oct 30, 2017 3:51:50 PM",
            "description": "",
            "lastOpDate": "Oct 30, 2017 4:49:03 PM",
            "memorySize": 1073741824,
            "name": "1G-1CPU",
            "sortKey": 0,
            "state": "Enabled",
            "type": "VirtualRouter",
            "uuid": "fa550cb9bdcc4fd397ae37f9ddf4c390"
        }
    ],
    "success": true
}
```

CPU Capacity

Instance offerings use cpuNum and cpuSpeed to define the CPU capacity of a VM instance. The cpuNum field means the number of vCPUs that a VM instance has. The vCPU of a VM instance always has the same frequency as that of the host's physical CPU. Therefore, the cpuSpeed field here actually means the vCPU weight in hypervisors. The use and implementation of cpuSpeed vary depending on hypervisor types.

KVM CPU Speed

In KVM, ZStack Cloud uses the result of **shares=cpuSpeed * cpuNum** to set the VM instance XML configuration of libvirt.

```
<cputune>
    <shares>128</shares>
</cputune>

shares = cpuNum * cpuSpeed
```



Note:

When cpuSpeed is set to 0, the value of **shares** is displayed as 2 by default.

Type

The type of instance offering. Currently, two instance offering types are available:

- UserVm:

The instance offering for creating user VM instances.

- **VirtualRouter:**

The instance offering for creating virtual router (vRouter) VM instances.

Allocator Strategy

Allocator strategy defines the algorithm of selecting destination hosts for creating VM instances.

DefaultHostAllocatorStrategy

Algorithm:

```
12_networks = get_parent_12_networks(13_networks)
host_set1 = find_hosts_in_cluster_that_have_attached_to_12_networks()
check_if_backup_storage_having_image_have_attached_to_zone_of_hosts(
host_set1)
host_set2 = remove_hosts_not_having_state_Enabled_and_status_Connected(
host_set1)
host_set3 = remove_hosts_not_having_capacity_required_by_instance_offering(
host_set2)
primary_storage = find_Enabled_Connected_primary_storage_having_enough_capacity_for_root_volume_and_attached\
_to_clusters_of_hosts(image, host_set3)
host_set4 = remove_hosts_that_cannot_access_primary_storage(host_set3)
host_set5 = remove_avoided_hosts(host_set4)
host_set6 = call_tag_plugin(tags, host_set5)

return randomly_pick_one_host(host_set6)
```

LastHostPreferredAllocatorStrategy

Algorithm:

```
12_networks = get_parent_12_networks(13_networks)
host_set1 = find_hosts_in_cluster_that_have_attached_to_12_networks()
check_if_backup_storage_having_image_have_attached_to_zone_of_hosts(
host_set1)
host_set2 = remove_hosts_not_having_state_Enabled_and_status_Connected(
host_set1)
host_set3 = remove_hosts_not_having_capacity_required_by_instance_offering(
host_set2)
primary_storage = find_Enabled_Connected_primary_storage_having_enough_capacity_for_root_volume_and_attached\
_to_clusters_of_hosts(image, host_set3)
host_set4 = remove_hosts_that_cannot_access_primary_storage(host_set3)
host_set5 = remove_avoided_hosts(host_set4)
host_set6 = call_tag_plugin(tags, host_set5)

return pick_vm_last_host(host_set6)
```

LeastVmPreferredHostAllocatorStrategy

Algorithm:

```

12_networks = get_parent_12_networks(13_networks)
host_set1 = find_hosts_in_cluster_that_have_attached_to_12_networks()
check_if_backup_storage_having_image_have_attached_to_zone_of_hosts(
host_set1)
host_set2 = remove_hosts_not_having_state_Enabled_and_status_Connected(
host_set1)
host_set3 = remove_hosts_not_having_capacity_required_by_insta
nce_offering(host_set2)
primary_storage = find_Enabled_Connected_primary_storage_having_enou
gh_capacity_for_root_volume_and_attached\
_to_clusters_of_hosts(image, host_set3)
host_set4 = remove_hosts_that_cannot_access_primary_storage(host_set3)
host_set5 = remove_ignored_hosts(host_set4)
host_set6 = call_tag_plugin(tags, host_set5)

return pick_host_with_the_fewest_vm(host_set6)

```

MinimumMemoryUsageHostAllocatorStrategy

Algorithm:

```

12_networks = get_parent_12_networks(13_networks)
host_set1 = find_hosts_in_cluster_that_have_attached_to_12_networks()
check_if_backup_storage_having_image_have_attached_to_zone_of_hosts(
host_set1)
host_set2 = remove_hosts_not_having_state_Enabled_and_status_Connected(
host_set1)
host_set3 = remove_hosts_not_having_capacity_required_by_insta
nce_offering(host_set2)
primary_storage = find_Enabled_Connected_primary_storage_having_enou
gh_capacity_for_root_volume_and_attached\
_to_clusters_of_hosts(image, host_set3)
host_set4 = remove_hosts_that_cannot_access_primary_storage(host_set3)
host_set5 = remove_ignored_hosts(host_set4)
host_set6 = call_tag_plugin(tags, host_set5)

return pick_host_with_the_lowest_memory_load(host_set6)

```

MinimumCPUUsageHostAllocatorStrategy

Algorithm:

```

12_networks = get_parent_12_networks(13_networks)
host_set1 = find_hosts_in_cluster_that_have_attached_to_12_networks()
check_if_backup_storage_having_image_have_attached_to_zone_of_hosts(
host_set1)
host_set2 = remove_hosts_not_having_state_Enabled_and_status_Connected(
host_set1)
host_set3 = remove_hosts_not_having_capacity_required_by_insta
nce_offering(host_set2)
primary_storage = find_Enabled_Connected_primary_storage_having_enou
gh_capacity_for_root_volume_and_attached\
_to_clusters_of_hosts(image, host_set3)
host_set4 = remove_hosts_that_cannot_access_primary_storage(host_set3)
host_set5 = remove_ignored_hosts(host_set4)
host_set6 = call_tag_plugin(tags, host_set5)

```

```
return pick_host_with_the_lowest_cpu_load(host_set6)
```

MaxInstancePerHostHostAllocatorStrategy

Algorithm:

```
l2_networks = get_parent_l2_networks(l3_networks)
host_set1 = find_hosts_in_cluster_that_have_attached_to_l2_networks()
check_if_backup_storage_having_image_have_attached_to_zone_of_hosts(
    host_set1)
host_set2 = remove_hosts_not_having_state_Enabled_and_status_Connected(
    host_set1)
host_set3 = remove_hosts_not_having_capacity_required_by_instance_offering(
    host_set2)
primary_storage = find_Enabled_Connected_primary_storage_having_enough_capacity_for_root_volume_and_attached\
    _to_clusters_of_hosts(image, host_set3)
host_set4 = remove_hosts_that_cannot_access_primary_storage(host_set3)
host_set5 = remove_avoided_hosts(host_set4)
host_set6 = call_tag_plugin(tags, host_set5)

return pick_host_with_vm_is_less_than_expected(host_set6)
```

State

An instance offering has the following two states:

- Enabled:

Indicates that VM instances can be created from this instance offering.

- Disabled:

Indicates that VM instances cannot be created from this instance offering.

5.1.5.3 Operations

5.1.5.3.1 CreateInstanceOffering

Creates an instance offering. For example,

```
CreateInstanceOffering name=test cpuNum=1 memorySize=2097152000
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
name	The instance offering name.			0.6
description	The detailed description of the instance offering.	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
cpuNum	The number of CPUs.			0.6
memorySize	The memory size . Unit: byte.			0.6
allocatorStrategy	The allocator strategy.	Yes	<ul style="list-style-type: none"> • DefaultHostAllocatorStrategy • LastHostPreferredAllLocatorStrategy • LeastVmPreferredHostAllocatorStrategy • MinimumCPUUsageHostAllocatorStrategy • MinimumMemoryUsageHostAllocatorStrategy • MaxInstancePerHostHostAllocatorStrategy 	0.6
sortKey	The sort key.	Yes		0.6
type	The type.	Yes		0.6
resourceUuid	The resource UUID. If specified , the image will use the specified value as UUID.	Yes		0.6
userTags	The user tags. For more information, see CreateUser Tag . The	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
	resource type is InstanceOfferingVO.			
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is InstanceOfferingVO.	Yes		0.6
timeout		Yes		

**Note:**

- When you create an instance offering in ZStack Cloud, you can add a GPU specification by adding the **pciRom** option to **SystemTags**.
 - Format of the **pciRom** option: `pciRomUuid::UUID`. Here, the UUID is the UUID of the PCI device firmware.
 - Example: `pciRomUuid::5fd71606d5af451d981413f35367a8d6`
- When you create an instance offering in ZStack Cloud, you can customize the instance offering parameters by adding the **instanceOfferingUserConfig** option to **SystemTags**.
 - Format of the **instanceOfferingUserConfig** option: `instanceOfferingUserConfig ::xxx`. Here, xxx must be a JSON string.

5.1.5.3.2 DeleteInstanceOffering

Deletes an instance offering. For example,

```
DeleteInstanceOffering uuid=ecf1f40130b148b39f82c07921ee11ff
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The instance offering UUID.			0.6
deleteMode	The delete mode. For more information,	Yes	<ul style="list-style-type: none"> Permissive Enforcing 	0.6

Name	Description	Optional	Valid Value	Starting Version
	see Delete Resources .			
userTags	The user tags. For more information, see CreateUser Tag . The resource type is InstanceOfferingVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is InstanceOfferingVO.	Yes		0.6
timeout		Yes		

5.1.5.3.3 QueryInstanceOffering

Queries an instance offering. For example,

```
QueryInstanceOffering cpuSpeed=512 cpuNum>2
```

```
QueryInstanceOffering vmInstance.state=Stopped
```

Primitive Fields of Query

See [Instance Offering Inventory](#).

Nested and Expanded Fields of Query

Field	Inventory	Description	Starting Version
vmlInstance	VM Instance Inventory	The VM instances that are created from this instance offering.	0.6

5.1.5.3.4 ChangeInstanceOffering

Changes an instance offering. For example,

```
ChangeInstanceOffering vmInstanceUuid=108af59a0f4e4d6cb838a5591db1016a
```

```
instanceOfferingUuid=f1dacd026c7645deaeeaf4e89313c8e
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
vmlInstanceUuid	The VM instance UUID.			0.6
instanceOfferingUuid	The instance offering UUID.			0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is InstanceOfferingVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is InstanceOfferingVO.	Yes		0.6
timeout		Yes		

5.1.5.3.5 UpdateInstanceOffering

Updates an instance offering. For example,

```
UpdateInstanceOffering uuid=32190aabcf47470c90b20bd849767a49
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The instance offering UUID.			0.6
name	The instance offering name.	Yes		0.6
description	The detailed description of the instance offering.	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
allocatorStrategy		Yes	<ul style="list-style-type: none"> • DefaultHostAllocatorStrategy • LastHostPreferredAllLocatorStrategy • LeastVmPreferredHostAllocatorStrategy • MinimumCPUUsageHostAllocatorStrategy • MinimumMemoryUsageHostAllocatorStrategy • MaxInstancePerHostHostAllocatorStrategy 	2.3
userTags	The user tags. For more information, see CreateUserTag . The resource type is InstanceOfferingVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is InstanceOfferingVO.	Yes		0.6
timeout		Yes		

5.1.5.3.6 ChangeInstanceOfferingState

Changes the state of an instance offering. For example,

```
ChangeInstanceOfferingState stateEvent=enable uuid=32190aabcf
47470c90b20bd849767a49
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The instance offering UUID.			0.6
stateEvent	The state event.		<ul style="list-style-type: none"> • enable • disable 	0.6
userTags	The user tags. For more information, see CreateUserTag . The resource type is InstanceOfferingVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is InstanceOfferingVO.	Yes		0.6
timeout		Yes		

5.1.5.4 Tags

You can create a user tag on an instance offering by using `resourceType=InstanceOfferingVO`. For example,

```
CreateUserTag resourceType=InstanceOfferingVO tag=web-server-offering
\ resourceUuid=45f909969ce24865b1bbca4adb66710a
```

System Tags

Dedicated Primary Storage

When you create a VM instance, you can use a system tag to specify the primary storage on which root volumes will be created.

Tag	Description	Example	Starting Version
primaryStorage::allocator::uuid:{uuid}	If this tag exists, the root volume of the VM instance will be allocated on the primary storage with the specified UUID. If the specified primary storage does not exist, or if the specified primary storage does not have sufficient capacity, an allocation failure will be reported.	primaryStorage::allocator::uuid::b8398e8b7ff24527a3b81dc4bc64d974	0.6
primaryStorage::allocator::userTag::{tag}::required	If this tag exists, the root volume of the VM instance will be allocated on the primary storage with the specified user tag. If the primary storage with specified user tag does not exist, or if the specified primary storage does not have sufficient capacity, an allocation failure will be reported.	primaryStorage::allocator::userTag::SSD::required	0.6
primaryStorage::allocator::userTag::{tag}	If this tag exists, the root volume of the VM instance will be allocated on the primary storage with the specified user tag. If the primary storage with specified user tag does not exist, or if the specified primary storage does	primaryStorage::allocator::userTag::SSD	0.6

Tag	Description	Example	Starting Version
	not have sufficient capacity, ZStack Cloud will choose a random primary storage to allocate the root volume.		

If more than one system tag mentioned above exists on an instance offering, the precedent order is as follows:

```
primaryStorage::allocator::uuid::{uuid} > primaryStorage::allocator::userTag::{tag}::\
required > primaryStorage::allocator::userTag::{tag}
```

5.1.6 Disk Offering

5.1.6.1 Overview

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

Disk offerings can be used to create both root volumes and data volumes.

5.1.6.2 Inventory

Properties

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			0.6
name	The name. For more information, see Resource Property .			0.6
description	The description. For more information, see Resource Property .	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
diskSize	The disk size. Unit: byte. For more information, see Disk Size .			0.6
state	The state. For more information, see State .		<ul style="list-style-type: none"> Enabled Disabled 	0.6
type	The reserved field.		<ul style="list-style-type: none"> zstack 	0.6
allocatorStrategy	The allocator strategy. For more information, see Allocator Strategy .		<ul style="list-style-type: none"> DefaultHostAllocatorStrategy LastHostPreferredAllotatorStrategy LeastVmPreferredHostAllocatorStrategy MinimumCPUUsageHostAllocatorStrategy MinimumMemoryUsageHostAllocatorStrategy MaxInstancesPerHostHostAllocatorStrategy 	0.6
sortKey				0.6
createDate	The creation date. For more information, see Resource Property .			0.6

Name	Description	Optional	Valid Value	Starting Version
lastOpDate	The last operation date. For more information, see Resource Property .			0.6

Sample

```
{
    "inventories": [
        {
            "allocatorStrategy": "DefaultPrimaryStorageAllocationStrategy",
            "createDate": "Oct 30, 2017 3:09:45 PM",
            "description": "",
            "diskSize": 10737418240,
            "lastOpDate": "Oct 30, 2017 3:09:45 PM",
            "name": "10G",
            "sortKey": 0,
            "state": "Enabled",
            "type": "DefaultDiskOfferingType",
            "uuid": "6c2385bb60f84c269504ca6ea71fe2d1"
        }
    ],
    "success": true
}
```

Disk Size

DiskSize defines the virtual size of a volume. Virtual size is the size that a volume claims for. In other word, the virtual size is the maximum size that a volume can occupy in storage system after it is fully filled.

State

A disk offering has the following two states:

- Enabled:

Indicates that volumes can be created from this disk offering.

- Disabled:

Indicates that volumes cannot be created from this disk offering.

Allocator Strategy

Allocator strategy defines how ZStack Cloud selects a primary storage when creating a new volume. Currently, the only supported strategy is DefaultPrimaryStorageAllocationStrategy, which finds a primary storage according to the following conditions:

1. The state is Enabled.
2. The status is Connected.
3. The available capacity (availableCapacity) is greater than the disk size (diskSize) of the disk offering.
4. The primary storage is attached to the cluster that runs the VM instance to which the volume will be attached.

5.1.6.3 Operations

5.1.6.3.1 CreateDiskOffering

Creates a disk offering. For example,

```
CreateDiskOffering name=test diskSize=100
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
name	The disk offering name.			0.6
description	The detailed description of the disk offering.	Yes		0.6
diskSize	The volume size.			0.6
allocatorStrategy	The allocator strategy.	Yes	<ul style="list-style-type: none"> • DefaultHostAllocatorStrategy • LastHostPreferredAllotatorStrategy • LeastVmPreferredHostAllocatorStrategy • MinimumCPUUsageHostAllocatorStrategy • MinimumMemoryUsageHostAllocatorStrategy • MaxInstancesPerHostHost 	0.6

Name	Description	Optional	Valid Value	Starting Version
			stAllocato rStrategy	
sortKey	The sort key.	Yes		0.6
type	The type.	Yes		0.6
resourceUuid	The resource UUID. If specified , the image will use the specified value as UUID.	Yes		0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is DiskOfferingVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is DiskOfferingVO.	Yes		0.6
timeout		Yes		



Note:

- When you create a disk offering in ZStack Cloud, you can customize the disk offering parameters by adding the **diskOfferingUserConfig** option to **SystemTags**.
 - Format of the **diskOfferingUserConfig** option: `diskOfferingUserConfig::xxx`. Here, xxx must be a JSON string.

5.1.6.3.2 DeleteDiskOffering

Deletes a disk offering. For example,

```
DeleteDiskOffering uuid=84c05965795140439e86592d2fa1c965
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The disk offering UUID.			0.6
deleteMode	The delete mode. For more information, see Delete Resources .	Yes	<ul style="list-style-type: none"> Permissive Enforcing 	0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is DiskOfferingVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is DiskOfferingVO.	Yes		0.6
timeout		Yes		

5.1.6.3.3 QueryDiskOffering

Queries a disk offering. For example,

```
QueryDiskOffering diskSize>=10000000
```

```
QueryDiskOffering volume.name=data1
```

Primitive Fields of Query

See [Instance Offering Inventory](#).

Nested and Expanded Fields of Query

Field	Inventory	Description	Starting Version
volume	<i>Volume Inventory</i>	The volumes that are created from this disk offering.	0.6

5.1.6.3.4 ChangeDiskOfferingState

Changes the state of a disk offering. For example,

```
ChangeDiskOfferingState uuid=c9dd395cb5f04f4ba9eb1e62b886fe62
stateEvent=enable
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The disk offering UUID.			0.6
stateEvent	The state event.		<ul style="list-style-type: none"> • enable • disable 	0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is DiskOfferingVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is DiskOfferingVO.	Yes		0.6
timeout		Yes		

5.1.6.3.5 UpdateDiskOffering

Updates a disk offering. For example,

```
UpdateDiskOffering uuid=c9dd395cb5f04f4ba9eb1e62b886fe62 name=test
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The disk offering UUID.			0.6
name	The disk offering name.	Yes		0.6
description	The detailed description of the disk offering.	Yes		0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is DiskOfferingVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is DiskOfferingVO.	Yes		0.6
timeout		Yes		

5.1.6.4 Tags

You can create a user tag on a disk offering by using `resourceType=DiskOfferingVO`. For example,

```
CreateUserTag tag=smallDisk resourceType=DiskOfferingVO \
resourceUuid=d6c49e73927d40abbfcf13852dc18367
```

System Tags

Dedicated Primary Storage

When you create a volume from disk offering, you can use a system tag to specify the primary storage on which the volume will be created.

Tag	Description	Example	Starting Version
primaryStorage::allocator::uuid:{uuid}	If this tag exists, the volume created from the disk offering will be allocated on the primary storage with the specified UUID. If the specified primary storage does not exist, or if the specified primary storage does not have sufficient capacity, an allocation failure will be reported.	primaryStorage::allocator::uuid::b8398e8b7ff24527a3b81dc4bc64d974	0.6
primaryStorage::allocator::userTag::{tag}::required	If this tag exists, the volume created from the disk offering will be allocated on the primary storage with the specified user tag. If the primary storage with specified user tag does not exist, or if the specified primary storage does not have sufficient capacity, an allocation failure will be reported.	primaryStorage::allocator::userTag::SSD::required	0.6
primaryStorage::allocator::userTag::{tag}	If this tag exists, the volume created from the disk offering will be allocated on the primary storage with the specified user tag. If the primary storage with specified user tag does not exist, or if the specified primary storage does not have	primaryStorage::allocator::userTag::SSD	0.6

Tag	Description	Example	Starting Version
	sufficient capacity, ZStack Cloud will choose a random primary storage to allocate the volume.		

If more than one system tag mentioned above exists on a disk offering, the precedent order is as follows:

```
primaryStorage::allocator::uuid::{uuid} > primaryStorage::allocator::userTag::{tag}::required > \
primaryStorage::allocator::userTag::{tag}
```

5.1.7 Auto Scaling Group

5.1.7.1 Overview

ZStack Cloud offers auto-scaling capabilities that let you automatically add or remove VM instances from an auto scaling group (ASG) in response to load balancing of VM instances, your business load changes, and predefined scaling policies. With the auto scaling service, you can better leverage the Cloud resources, reduce the O&M costs, and ensure smooth business operations. Currently, the auto scaling service is applicable to KVM VM instances.

5.1.7.2 Inventory

Auto Scaling Group Inventory

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			3.1.0
name	The name. For more information, see Resource Property .			3.1.0
description	The description. For more information, see Resource Property .	Yes		3.1.0

Name	Description	Optional	Valid Value	Starting Version
scalingResourceType	The type of the auto scaling resource: VM instance.			3.1.0
state	The state of the auto scaling group.			3.1.0
defaultCooldown	The default cooldown time of the auto scaling rule.			3.1.0
minResourceSize	The minimum number of VM instances in the auto scaling group.			3.1.0
maxResourceSize	The maximum number of VM instances in the auto scaling group.			3.1.0
removalPolicy	The default policy for removing a VM instance.			3.1.0
attachedTemplates	The templates of VM instances attached to the auto scaling group.			3.1.0
groupBy	Groups rows into subgroups based on values of columns or expressions. This field is equivalent to the Group By clause in MySQL, such as <code>groupBy =type</code> .	Yes		3.1.0

Name	Description	Optional	Valid Value	Starting Version
createDate	The creation date. For more information, see Resource Property .			3.1.0
lastOpDate	The last operation date. For more information, see Resource Property .			3.1.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.1.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.1.0

Sample

```
{
  "inventories": [
    {
      "name": "test-group2",
      "uuid": "ed73d20804873d48bddee627a58ca71a",
      "description": "just for test",
      "createDate": "Nov 14, 2017 10:20:57 PM",
      "lastOpDate": "Nov 14, 2017 10:20:57 PM"
    }
  ]
}
```

Auto Scaling Group Activity Inventory

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			3.1.0
name	The name. For more information,			3.1.0

Name	Description	Optional	Valid Value	Starting Version
	see Resource Property .			
description	The description. For more information, see Resource Property .	Yes		3.1.0
scalingGroupUuid	The UUID of the auto scaling group.			3.1.0
activityAction	The type of the auto scaling activity.			3.1.0
scalingGroupRuleUuid	The UUID of the auto scaling rule.			3.1.0
cause	The reason that triggered the auto scaling activity.			3.1.0
status	The status of the auto scaling activity.			3.1.0
activityActionResultMessage	The result of the auto scaling activity.			3.1.0
endDate	The date and time when the auto scaling activity ends.			3.1.0
groupBy	Groups rows into subgroups based on values of columns or expressions. This field is equivalent to the Group By clause in MySQL, such as <code>groupBy =type</code> .	Yes		3.1.0

Name	Description	Optional	Valid Value	Starting Version
createDate	The creation date. For more information, see Resource Property .			3.1.0
lastOpDate	The last operation date. For more information, see Resource Property .			3.1.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.1.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.1.0

Sample

```
{
  "inventories": [
    {
      "uuid": "036f189a51633ec5bfa2f7e77ec1f5ac",
      "description": "just for test",
      "createDate": "Nov 14, 2017 10:20:57 PM",
      "lastOpDate": "Nov 14, 2017 10:20:57 PM"
    }
  ]
}
```

Auto Scaling Rule Inventory

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			3.1.0
name	The name. For more information,			3.1.0

Name	Description	Optional	Valid Value	Starting Version
	see Resource Property .			
type	The type of the auto scaling group rule.			3.1.0
cooldown	The cooldown time.			3.1.0
scalingGroupUuid				3.1.0
state				3.1.0
status				3.1.0
ruleTriggers				3.1.0
groupBy	Groups rows into subgroups based on values of columns or expressions. This field is equivalent to the Group By clause in MySQL, such as <code>groupBy =type</code> .	Yes		3.1.0
createDate	The creation date. For more information, see Resource Property .			3.1.0
lastOpDate	The last operation date. For more information, see Resource Property .			3.1.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.1.0
systemTags	The system tags. For more	Yes		3.1.0

Name	Description	Optional	Valid Value	Starting Version
	information, see CreateSystemTag .			

Sample

```
{
  "inventories": [
    {
      "type": "LoadBalanceProfile",
      "description": "just for test",
      "cooldown": 100.0,
      "state": "Enabled",
      "status": "Created",
      "createDate": "Nov 14, 2017 10:20:57 PM",
      "lastOpDate": "Nov 14, 2017 10:20:57 PM",
      "name": "test-load-balance-profile",
      "uuid": "a0d075cd82c13084b29f93325651fc65"
    }
  ]
}
```

Auto Scaling Rule Trigger Inventory

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			3.1.0
name	The name. For more information, see Resource Property .			3.1.0
description	The description. For more information, see Resource Property .	Yes		3.1.0
type	The trigger type.			3.1.0
ruleUuid	The UUID of the auto scaling rule.			3.1.0
state	The trigger state.			3.1.0
groupBy	Groups rows into subgroups	Yes		3.1.0

Name	Description	Optional	Valid Value	Starting Version
	based on values of columns or expressions. This field is equivalent to the Group By clause in MySQL, such as <code>groupBy =type</code> .			
createDate	The creation date. For more information, see Resource Property .			3.1.0
lastOpDate	The last operation date. For more information, see Resource Property .			3.1.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.1.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.1.0

Sample

```
{
  "inventories": [
    {
      "name": "test-load-balance-profile",
      "uuid": "cf762471646230209faee02b6423625c",
      "type": "Alarm",
      "description": "just for test",
      "createDate": "Nov 14, 2017 10:20:57 PM",
      "lastOpDate": "Nov 14, 2017 10:20:57 PM"
    }
  ]
}
```

{}

Auto Scaling VM Template Inventory

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			3.1.0
name	The name. For more information, see Resource Property .			3.1.0
description	The description. For more information, see Resource Property .	Yes		3.1.0
vmlInstanceName	The VM instance name.			3.1.0
vmlInstanceType	The VM instance type.			3.1.0
vmlInstance Description	The VM instance description.			3.1.0
vmlInstance OfferingUuid	The instance offering of the VM instance.			3.1.0
imageUuid	The image UUID of the VM instance.			3.1.0
l3NetworkUuids	The L3 networks of the VM instance.			3.1.0
rootDiskOfferingUuid	The disk offering of the VM instance root volume.			3.1.0
dataDiskOfferingUuids	The disk offerings of the VM			3.1.0

Name	Description	Optional	Valid Value	Starting Version
	instance data volumes.			
vmInstance ZoneUuid	The zone to which the VM instance belongs.			3.1.0
vmInstance ClusterUuid	The cluster to which the VM instance belongs.			3.1.0
hostUuid	The host UUID of the VM instance.			3.1.0
primaryStorageUuidForRootVolume	The primary storage where the root volume of the VM instance locates.			3.1.0
defaultL3NetworkUuid	The default L3 network of the VM instance.			3.1.0
type	The template type.			3.1.0
state	The template state.			3.1.0
groupBy	Groups rows into subgroups based on values of columns or expressions. This field is equivalent to the Group By clause in MySQL, such as groupBy =type.	Yes		3.1.0
createDate	The creation date. For more information, see Resource Property .			3.1.0

Name	Description	Optional	Valid Value	Starting Version
lastOpDate	The last operation date. For more information, see Resource Property .			3.1.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.1.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.1.0

Sample

```
{
  "inventories": [
    {
      "l3NetworkUuids": [
        "9f56c162374d382f9ddb7c383bce6887",
        "8e07df171471330c83306d78063fba69"
      ],
      "rootDiskOfferingUuid": "57fb695d2d033c1e849dac6fb87cebb5",
      "dataDiskOfferingUuids": [
        "52bfe290f5363130a1452e2ca1c57783",
        "8022018c7f6834d4a7a62a02128672ed"
      ],
      "vmInstanceZoneUuid": "cefa21204105347a82148c099c09a0cb",
      "vmInstanceClusterUuid": "ad7fcc77266f34e8a64fd208a9b7ed38",
      "hostUuid": "975ceb93de173b22a2b073ee856166e3",
      "primaryStorageUuidForRootVolume": "87cf45bf5a37364d85ae
9968af7d2bd1",
      "defaultL3NetworkUuid": "8e07df171471330c83306d78063fba69",
      "uuid": "785259bf48303b0d9a4a34ddc3774da5",
      "name": "test-template",
      "description": "just for test",
      "type": "VmInstance",
      "createDate": "Nov 14, 2017 10:20:57 PM",
      "lastOpDate": "Nov 14, 2017 10:20:57 PM"
    }
  ]
}
```

{}

Auto Scaling Group Instance Inventory

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			3.1.0
description	The description. For more information, see Resource Property .	Yes		3.1.0
instanceUuid	The VM instance UUID.			3.1.0
scalingGroupUuid	The UUID of the auto scaling group.			3.1.0
templateUuid	The UUID of the VM instance template in the auto scaling group.			3.1.0
scalingGroupActivityUuid	The UUID of the auto scaling activity.			3.1.0
status	The status of the VM instance in the auto scaling group.			3.1.0
healthStatus	The health status of the VM instance in the auto scaling group.			3.1.0
groupBy	Groups rows into subgroups based on values of columns or	Yes		3.1.0

Name	Description	Optional	Valid Value	Starting Version
	expressions. This field is equivalent to the Group By clause in MySQL , such as groupBy =type.			
createDate	The creation date. For more information, see Resource Property .			3.1.0
lastOpDate	The last operation date. For more information, see Resource Property .			3.1.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.1.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.1.0

Sample

```
{
  "inventories": [
    {
      "uuid": "c23dc6fd3dd13436b5d65b0a4d328f2c",
      "instanceUuid": "1dcb05b79b2b3a61b74114ff3aa00266",
      "description": "just for test",
      "createDate": "Nov 14, 2017 10:20:57 PM",
      "lastOpDate": "Nov 14, 2017 10:20:57 PM"
    }
  ]
}
```

{}

5.1.7.3 Operations

5.1.7.3.1 CreateAutoScalingGroup

Creates an auto scaling group. For example,

```
CreateAutoScalingGroup name=test scalingResourceType=VmInstance
minResourceSize=2 maxResourceSize=5 defaultCooldown=60 removalPolicy=
NewestInstance
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
name	The resource name.			3.1.0
description	The detailed description of the resource.	Yes		3.1.0
scalingResourceType	The resource type of the auto scaling group. Current type: VM instance.		• VmInstance	3.1.0
minResourceSize	The minimum number of VM instances in the auto scaling group.			3.1.0
maxResourceSize	The maximum number of VM instances in the auto scaling group.			3.1.0
defaultCooldown	The default cooldown time of the auto scaling rule.			3.1.0
removalPolicy	The policy for removing a VM instance.		• OldestInstance • NewestInstance	3.1.0

Name	Description	Optional	Valid Value	Starting Version
			<ul style="list-style-type: none"> OldestScalingConfiguration MinimumCPUUsageInstance MinimumMemoryUsageInstance 	
defaultEnable	Whether to enable the auto scaling group after creation.	Yes		3.1.0
resourceUuid		Yes		3.1.0
tagUuids	The tag UUID list.	Yes		3.1.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.1.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.1.0
timeout		Yes		

5.1.7.3.2 DeleteAutoScalingGroup

Deletes an auto scaling group. For example,

```
DeleteAutoScalingGroup uuid=09121b25fdf330538288d1ac81025563
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			3.1.0
userTags	The user tags. For more	Yes		3.1.0

Name	Description	Optional	Valid Value	Starting Version
	information, see CreateUserTag .			
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.1.0
timeout		Yes		

5.1.7.3.3 UpdateAutoScalingGroup

Modifies an auto scaling group. For example,

```
UpdateAutoScalingGroup uuid=17a8d07735b631a688d6f95f3323fe91 name=TEST
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			3.1.0
name	The resource name.	Yes		3.1.0
description	The detailed description of the resource.	Yes		3.1.0
minResourceSize	The minimum number of VM instances in the auto scaling group.	Yes		3.1.0
maxResourceSize	The maximum number of VM instances in the auto scaling group.	Yes		3.1.0
removalPolicy	The policy for removing a VM instance. The oldest and newest VM	Yes	<ul style="list-style-type: none"> • OldestInstance • NewestInstance 	3.1.0

Name	Description	Optional	Valid Value	Starting Version
	instances take precedence.		<ul style="list-style-type: none"> OldestScalingConfiguration MinimumCPUUsageInstance MinimumMemoryUsageInstance 	
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.1.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.1.0
timeout		Yes		

5.1.7.3.4 QueryAutoScalingGroup

Queries an auto scaling group. For example,

```
QueryAutoScalingGroup uuid=ed73d20804873d48bddee627a58ca71a
```

Primitive Fields of Query

See [Auto Scaling Group Inventory](#).

5.1.7.3.5 QueryAutoScalingGroupActivity

Queries activities of an auto scaling group. For example,

```
QueryAutoScalingGroupActivity uuid=036f189a51633ec5bfa2f7e77ec1f5ac
```

Primitive Fields of Query

See [Auto Scaling Group Activity Inventory](#).

5.1.7.3.6 CreateAutoScalingGroupAddingNewInstanceRule

Creates a scale-out policy (a rule for adding VM instances) for an auto scaling group. For example,

```
CreateAutoScalingGroupAddingNewInstanceRule adjustmentType=QuantityChangeInCapacity adjustmentValue=1.0 name=test autoScalingGroupUuid=9e5900b0682d3eb8868637b455567cbd
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
adjustmentType	The scale-out method. Options: <ul style="list-style-type: none"> Add a specified number of VM instances. Add VM instances by percentage. Add VM instances to a specified number. 		<ul style="list-style-type: none"> QuantityChangeInCapacity PercentChangeInCapacity TotalCapacity 	3.1.0
adjustmentValue	The scale-out size.			3.1.0
name	The resource name.			3.1.0
description	The detailed description of the resource.	Yes		3.1.0
autoScalingGroupUuid	The UUID of the auto scaling group.			3.1.0
type	The type of the auto scaling rule.	Yes		3.1.0
cooldown	The cooldown time after the auto scaling rule is triggered.	Yes		3.1.0

Name	Description	Optional	Valid Value	Starting Version
resourceUuid		Yes		3.1.0
tagUuids	The tag UUID list.	Yes		3.1.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.1.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.1.0
timeout		Yes		

5.1.7.3.7 CreateAutoScalingGroupRemovalInstanceRule

Creates a scale-in policy (a rule for removing VM instances) for an auto scaling group. For example,

```
CreateAutoScalingGroupRemovalInstanceRule adjustmentType=PercentChangeInCapacity adjustmentValue=1.0 removalPolicy=MinimumMemoryUsageInInstance name=removalInstance autoScalingGroupUuid=8a8070f9926733478acd7bf0ba60a63
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
adjustmentType	The scale-in method. Options: <ul style="list-style-type: none">• Remove a specified number of VM instances.• Remove VM instances by percentage.• Remove VM instances to a specified number.		<ul style="list-style-type: none">• QuantityChangeInCapacity• PercentChangeInCapacity• TotalCapacity	3.1.0
adjustmentValue	The scale-in size.			3.1.0

Name	Description	Optional	Valid Value	Starting Version
removalPolicy	The policy for removing a VM instance.		<ul style="list-style-type: none"> • OldestInstance • NewestInstance • OldestScalingConfiguration • MinimumCPUUsageInstance • MinimumMemoryUsageInstance 	3.1.0
name	The resource name.			3.1.0
description	The detailed description of the resource.	Yes		3.1.0
autoScalingGroupId	The UUID of the auto scaling group.			3.1.0
type	The type of the auto scaling rule.	Yes		3.1.0
cooldown	The cooldown time after the auto scaling rule is triggered.	Yes		3.1.0
resourceUuid		Yes		3.1.0
tagUuids	The tag UUID list.	Yes		3.1.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.1.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.1.0
timeout		Yes		

5.1.7.3.8 DeleteAutoScalingRule

Deletes an auto scaling rule. For example,

```
DeleteAutoScalingRule uuid=55774c4baaea33c4a47b16c772446077
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID of the auto scaling rule.			3.1.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.1.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.1.0
timeout		Yes		

5.1.7.3.9 UpdateAutoScalingRule

Modifies the auto scaling rule of an auto scaling group. For example,

```
UpdateAutoScalingRule uuid=4e8be98cd3a93176b9d38f3f934f1c2a name=TEST
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			3.1.0
name	The resource name.	Yes		3.1.0
description	The detailed description of the resource.	Yes		3.1.0
cooldown	The cooldown time.	Yes		3.1.0
userTags	The user tags. For more	Yes		3.1.0

Name	Description	Optional	Valid Value	Starting Version
	information, see CreateUserTag .			
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.1.0
timeout		Yes		

5.1.7.3.10 UpdateAutoScalingGroupAddingNewInstanceRule

Modifies the scale-out policy (a rule for adding VM instances) of an auto scaling group. For example,

```
UpdateAutoScalingGroupAddingNewInstanceRule uuid=e61646c51ac1396fb6d7d413dc5de3f8 adjustmentType=TotalCapacity
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
adjustmentType	The scale-out method. Options: <ul style="list-style-type: none">• Add a specified number of VM instances.• Add VM instances by percentage.• Add VM instances to a specified number.	Yes	<ul style="list-style-type: none">• QuantityChangeInCapacity• PercentChangeInCapacity• TotalCapacity	3.1.0
adjustmentValue	The scale-out size.	Yes		3.1.0
uuid	The resource UUID.			3.1.0
name	The resource name.	Yes		3.1.0

Name	Description	Optional	Valid Value	Starting Version
description	The detailed description of the resource.	Yes		3.1.0
cooldown	The cooldown time.	Yes		3.1.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.1.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.1.0
timeout		Yes		

5.1.7.3.11 UpdateAutoScalingGroupRemovalInstanceRule

Modifies the scale-in policy (a rule for removing VM instances) of an auto scaling group. For example,

```
UpdateAutoScalingGroupRemovalInstanceRule uuid=66d7d0b81f1c399bb980
63dfb0d3beaf removalPolicy>NewestInstance
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
adjustmentType	<p>The scale-in method. Options:</p> <ul style="list-style-type: none"> • Remove a specified number of VM instances. • Remove VM instances by percentage. • Remove VM instances to a specified number. 	Yes	<ul style="list-style-type: none"> • QuantityChangeInCapacity • PercentChangeInCapacity • TotalCapacity 	3.1.0

Name	Description	Optional	Valid Value	Starting Version
adjustmentValue	The scale-in size.	Yes		3.1.0
removalPolicy	The policy for removing a VM instance.	Yes	<ul style="list-style-type: none"> • OldestInstance • NewestInstance • OldestScalingConfiguration • MinimumCPUUsageInstance • MinimumMemoryUsageInstance 	3.1.0
uuid	The resource UUID.			3.1.0
name	The resource name.	Yes		3.1.0
description	The detailed description of the resource.	Yes		3.1.0
cooldown	The cooldown time.	Yes		3.1.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.1.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.1.0
timeout		Yes		

5.1.7.3.12 QueryAutoScalingRule

Queries an auto scaling rule. For example,

```
QueryAutoScalingRule name=test-load-balance-profile
```

Primitive Fields of Query

See [Auto Scaling Rule Inventory](#).

5.1.7.3.13 CreateAutoScalingRuleAlarmTrigger

Creates an alarm trigger for an auto scaling rule. For example,

```
CreateAutoScalingRuleAlarmTrigger name=createAlarmTrigger ruleUuid
=00f142f73b633bf0ab4a1e34aa84062b alarmUuid=14b74127a20634c6b6d3
566ef33b0600
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
alarmUuid	The alarm UUID.			3.1.0
triggerType	The trigger type.	Yes		3.1.0
name	The trigger name.			3.1.0
description	The detailed description of the resource.	Yes		3.1.0
ruleUuid	The UUID of the auto scaling rule.			3.1.0
resourceUuid		Yes		3.1.0
tagUuids	The tag UUID list.	Yes		3.1.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.1.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.1.0
timeout		Yes		

5.1.7.3.14 CreateAutoScalingRuleSchedulerJobTrigger

Creates a trigger for the scheduled job of an auto-scaling rule. For example,

```
CreateAutoScalingRuleSchedulerJobTrigger name=createSchedulerJobTrigger schedulerJobUuid=00f142f73b633bf0ab4ale34aa84062b alarmUuid=14b74127a20634c6b6d3566ef33b0600
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
schedulerJobUuid	The scheduled job UUID.			4.1.0
triggerType	The trigger type.	Yes		4.1.0
name	The trigger name.			4.1.0
description	The detailed description of the trigger.	Yes		4.1.0
ruleUuid	The rule UUID.			4.1.0
resourceUuid	The resource UUID.	Yes		4.1.0
tagUuids	The tag UUIDs.	Yes		4.1.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		4.1.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		4.1.0
timeout		Yes		

5.1.7.3.15 DeleteAutoScalingRuleTrigger

Deletes an alarm trigger from an auto scaling rule. For example,

```
DeleteAutoScalingRuleTrigger uuid=c81896a39caf320d988503625feb5a84
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			3.1.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.1.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.1.0
timeout		Yes		

5.1.7.3.16 QueryAutoScalingRuleTrigger

Queries an alarm trigger of an auto scaling rule. For example,

```
QueryAutoScalingRuleTrigger uuid=cf762471646230209faee02b6423625c
```

Primitive Fields of Query

See [Auto Scaling Rule Trigger Inventory](#).

5.1.7.3.17 CreateAutoScalingVmTemplate

Creates a VM instance template in an auto scaling group. For example,

```
CreateAutoScalingVmTemplate name=test defaultL3NetworkUuid=22247b0705a43af7a47ed6428c537934 vmInstanceName=vml vmInstanceOfferingUuid
```

```
=07e435acb1c230d5b328f23e5a840da2 imageUuid=77407eb341e732b2a45a
d5bad4a2c76e l3NetworkUuids=93edf15377e233a291fe1ab1c4190241
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
vmlInstanceName	The VM instance name.			3.1.0
vmlInstance Description	The VM instance description.	Yes		3.1.0
vmlInstance OfferingUuid	The instance offering of the VM instance.			3.1.0
imageUuid	The image UUID of the VM instance.			3.1.0
l3NetworkUuids	The L3 networks of the VM instance.			3.1.0
rootDiskOfferingUuid	The disk offering of the VM instance root volume.	Yes		3.1.0
dataDiskOfferingUuids	The disk offerings of the VM instance data volumes.	Yes		3.1.0
vmlInstance ZoneUuid	The zone to which the VM instance belongs.	Yes		3.1.0
vmlInstance ClusterUuid	The cluster to which the VM instance belongs.	Yes		3.1.0
hostUuid	The host UUID.	Yes		3.1.0
primaryStorageUuidForRootVolume	The UUID of the primary storage where the root volume locates.	Yes		3.1.0

Name	Description	Optional	Valid Value	Starting Version
defaultL3N etworkUuid	The default L3 network of the VM instance.			3.1.0
name	The resource name.			3.1.0
description	The detailed description of the resource.	Yes		3.1.0
type	The template type .	Yes		3.1.0
resourceUuid		Yes		3.1.0
tagUuids	The tag UUID list.	Yes		3.1.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.1.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.1.0
timeout		Yes		

5.1.7.3.18 AttachAutoScalingTemplateToGroup

Adds a VM instance template to an auto scaling group. For example,

```
AttachAutoScalingTemplateToGroup uuid=a53e0f84df15313bba8560f6567da2d9  
groupUuid=284172349b50324a9c2b8a09a28b3294
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The template UUID.			3.1.0
groupUuid	The UUID of the auto scaling group.			3.1.0

Name	Description	Optional	Valid Value	Starting Version
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.1.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.1.0
timeout		Yes		

5.1.7.3.19 DeleteAutoScalingTemplate

Deletes an auto scaling group template. For example,

```
DeleteAutoScalingTemplate uuid=5c9e41a7d5c9335f99d639e75c294392
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			3.1.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.1.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.1.0
timeout		Yes		

5.1.7.3.20 DetachAutoScalingTemplateFromGroup

Detaches an auto scaling template from an auto scaling group. For example,

```
DetachAutoScalingTemplateFromGroup templateUuid=801a456fff0a355f9159
d74af32026b9 groupUuid=bdbbb1d168023ec7b9331bdd1b55b88
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
templateUuid	The template UUID.			3.1.0
groupUuid	The UUID of the auto scaling group.			3.1.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.1.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.1.0
timeout		Yes		

5.1.7.3.21 QueryAutoScalingVmTemplate

Queries a VM instance template in an auto scaling group. For example,

```
QueryAutoScalingVmTemplate rootDiskOfferingUuid=57fb695d2d033c1e849d
ac6fb87cebb5
```

Primitive Fields of Query

See [Auto Scaling VM Template Inventory](#).

Nested and Expanded Fields of Query

Field	Inventory	Description	Starting Version
autoScalingGroup	Auto Scaling Group Inventory	The associated auto scaling groups.	3.1.0

5.1.7.3.22 DeleteAutoScalingGroupInstance

Manually deletes a VM instance in an auto scaling group. For example,

```
DeleteAutoScalingGroupInstance instanceUuid=3f55b1b15c273122b6b8  
15218282efe5
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
instanceUuid	The VM instance UUID.			3.1.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.1.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.1.0
timeout		Yes		

5.1.7.3.23 QueryAutoScalingGroupInstance

Queries the VM instances in an auto scaling group. For example,

```
QueryAutoScalingGroupInstance uuid=c23dc6fd3dd13436b5d65b0a4d328f2c
```

Primitive Fields of Query

See [Auto Scaling Group Instance Inventory](#).

5.1.7.3.24 ChangeAutoScalingGroupState

Changes the state of an auto scaling group. For example,

```
ChangeAutoScalingGroupState uuid=384ac055e3113366907f06e8aaefb12d  
stateEvent=disable
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			3.1.0

Name	Description	Optional	Valid Value	Starting Version
stateEvent	Whether to enable or disable the auto scaling group.	<ul style="list-style-type: none"> enable disable 		3.1.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.1.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.1.0
timeout		Yes		

5.1.7.3.25 ExecuteAutoScalingRule

Manually executes an auto scaling rule. For example,

```
ExecuteAutoScalingRule uuid=9311aaae28333775b3339b644961c990
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID of the auto scaling rule.			3.9.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.9.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.9.0
timeout		Yes		

5.1.7.3.26 UpdateAutoScalingGroupInstance

Updates information about a VM instance in an auto scaling group. For example,

```
UpdateAutoScalingGroupInstance groupUuid=a3b7616d6e6a3ed6bdf5
dd5a640a4548 instanceUuid=a6cd12ee95e345787a34175327df816
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
groupUuid	The UUID of the auto scaling group.			3.9.0
instanceUuid	The UUID of the VM instance in the auto scaling group.			3.9.0
protectionStrategy	The VM protection strategy of the auto scaling group.	Yes	<ul style="list-style-type: none"> Protected Unprotected 	3.9.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.9.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.9.0
timeout		Yes		

5.1.7.3.27 UpdateAutoScalingVmTemplate

Updates a VM template in an auto scaling group. For example,

```
UpdateAutoScalingVmTemplate uuid=dfb4e8245e32361db57b92c95c84c01b name=template
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The VM template UUID.			3.9.0
name	The template name.	Yes		3.9.0
description	The detailed description.	Yes		3.9.0
vmlInstanceName	The name of the VM instance.	Yes		3.9.0
vmlInstanceDescription	The description of the VM instance.	Yes		3.9.0
vmlInstanceOfferingUuid	The instance offering UUID of the VM instance.	Yes		3.9.0
imageUuid	The UUID of the VM image.	Yes		3.9.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.9.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.9.0
timeout		Yes		

5.1.7.4 Tags

You can create a user tag on an auto scaling group by using `resourceType=AutoScalingGroupVO`. For example,

```
CreateUserTag resourceType=AutoScalingGroupVO tag=golden-ResourceStack
resourceUuid=e4464da741324c7b8705fc4704ec5877
```

5.1.8 Snapshot

5.1.8.1 Overview

A snapshot is a point-in-time capture of data status in a disk. Before you perform mission-critical operations, you can take snapshots for the data volume or root volume of a VM instance so that you can immediately roll back on failure. For long-term backup, we recommend that you use disaster recovery related services.

5.1.8.2 Inventory

Volume Snapshot Group Inventory

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			3.6.0
name	The name. For more information, see Resource Property .			3.6.0
description	The description. For more information, see Resource Property .	Yes		3.6.0
snapshotCount	The number of snapshots in a snapshot group.			3.6.0
vmlInstanceUuid	The VM instance UUID.			3.6.0

Name	Description	Optional	Valid Value	Starting Version
volumeSnap shotRefs				3.6.0
groupBy	Groups rows into subgroups based on values of columns or expressions. This field is equivalent to the Group By clause in MySQL, such as groupBy =type.	Yes		3.6.0
createDate	The creation date. For more information, see Resource Property .			3.6.0
lastOpDate	The last operation date. For more information, see Resource Property .			3.6.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.6.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.6.0

Sample

```
{
  "inventories": [
    {
      "createDate": "Sep 12, 2019 5:26:18 PM",
      "description": "",
      "lastOpDate": "Sep 12, 2019 5:26:18 PM",
      "name": "Snapshot-4",
      "snapshotCount": 2,
      "uuid": "63854129e8aa42258aa83d0d9d45032c",
    }
  ]
}
```

```

    "vmInstanceId": "c0220ee607bf4afabc2a66532b0b0387",
    "volumeSnapshotRefs": [
        {
            "createDate": "Sep 12, 2019 5:26:18 PM",
            "deviceId": 1,
            "lastOpDate": "Sep 12, 2019 5:26:18 PM",
            "snapshotDeleted": false,
            "volumeName": "Volume-1",
            "volumeSnapshotGroupUuid": "63854129e8aa42258aa8
3d0d9d45032c",
            "volumeSnapshotInstallPath": "/Cloud_ps/dataVolume
s/acct-36c27e8ff05c4780bf6d2fa65700f22e/vol-1b746a6adb584ee89c65
ab51c3634416/snapshots/2b47066db7c641019495204a39d00abb.qcow2",
            "volumeSnapshotName": "Snapshot-4-Volume-1",
            "volumeSnapshotUuid": "75c17cf55b2a4a70877e
274d5c5ec77b",
            "volumeType": "Data",
            "volumeUuid": "1b746a6adb584ee89c65ab51c3634416"
        },
        {
            "createDate": "Sep 12, 2019 5:26:18 PM",
            "deviceId": 0,
            "lastOpDate": "Sep 12, 2019 5:26:18 PM",
            "snapshotDeleted": false,
            "volumeName": "ROOT-for-VM-1",
            "volumeSnapshotGroupUuid": "63854129e8aa42258aa8
3d0d9d45032c",
            "volumeSnapshotInstallPath": "/Cloud_ps/rootVolume
s/acct-36c27e8ff05c4780bf6d2fa65700f22e/vol-b2026ce722584b0383b2
47640e2961e2/snapshots/d0ea588f6c5d4e539a54ff4f64112e86.qcow2",
            "volumeSnapshotName": "Snapshot-4-ROOT-for-VM-1",
            "volumeSnapshotUuid": "6daba46d758445d4af78
12738ba93e7d",
            "volumeType": "Root",
            "volumeUuid": "b2026ce722584b0383b247640e2961e2"
        }
    ],
    {
        "createDate": "Sep 12, 2019 5:26:28 PM",
        "description": "",
        "lastOpDate": "Sep 12, 2019 5:26:28 PM",
        "name": "Snapshot-5",
        "snapshotCount": 2,
        "uuid": "ce6bbd10e379472886e4d74448e43066",
        "vmInstanceId": "c0220ee607bf4afabc2a66532b0b0387",
        "volumeSnapshotRefs": [
            {
                "createDate": "Sep 12, 2019 5:26:28 PM",
                "deviceId": 0,
                "lastOpDate": "Sep 12, 2019 5:26:28 PM",
                "snapshotDeleted": false,
                "volumeName": "ROOT-for-VM-1",
                "volumeSnapshotGroupUuid": "ce6bbd10e379472886e4
d74448e43066",
                "volumeSnapshotInstallPath": "/Cloud_ps/rootVolume
s/acct-36c27e8ff05c4780bf6d2fa65700f22e/vol-b2026ce722584b0383b2
47640e2961e2/snapshots/6daba46d758445d4af7812738ba93e7d.qcow2",
                "volumeSnapshotName": "Snapshot-5-ROOT-for-VM-1",
                "volumeSnapshotUuid": "9eac8e8d51fc450d91e7
13bc4fdd20a2",
                "volumeType": "Root",
            }
        ]
    }
]

```

```

        "volumeUuid": "b2026ce722584b0383b247640e2961e2"
    },
    {
        "createDate": "Sep 12, 2019 5:26:28 PM",
        "deviceId": 1,
        "lastOpDate": "Sep 12, 2019 5:26:28 PM",
        "snapshotDeleted": false,
        "volumeName": "Volume-1",
        "volumeSnapshotGroupUuid": "ce6bbd10e379472886e4
d74448e43066",
            "volumeSnapshotInstallPath": "/Cloud_ps/dataVolume
s/acct-36c27e8ff05c4780bf6d2fa65700f22e/vol-1b746a6adb584ee89c65
ab51c3634416/snapshots/75c17cf55b2a4a70877e274d5c5ec77b.qcow2",
            "volumeSnapshotName": "Snapshot-5-Volume-1",
            "volumeSnapshotUuid": "88864416e95846f68b5e
881cdcaleedf",
                "volumeType": "Data",
                "volumeUuid": "1b746a6adb584ee89c65ab51c3634416"
            }
        ]
    },
    {
        "createDate": "Sep 12, 2019 5:26:00 PM",
        "description": "",
        "lastOpDate": "Sep 12, 2019 5:26:00 PM",
        "name": "Snapshot-2",
        "snapshotCount": 2,
        "uuid": "d6939afab0824cab8e9a57a25686a7d4",
        "vmInstanceUuid": "c0220ee607bf4afabc2a66532b0b0387",
        "volumeSnapshotRefs": [
            {
                "createDate": "Sep 12, 2019 5:26:00 PM",
                "deviceId": 1,
                "lastOpDate": "Sep 12, 2019 5:26:00 PM",
                "snapshotDeleted": false,
                "volumeName": "Volume-1",
                "volumeSnapshotGroupUuid": "d6939afab0824cab8e9a
57a25686a7d4",
                    "volumeSnapshotInstallPath": "/Cloud_ps/dataVolume
s/acct-36c27e8ff05c4780bf6d2fa65700f22e/vol-1b746a6adb584ee89c65
ab51c3634416/snapshots/d403f271636a488fbdb25afd74ca589f8.qcow2",
                    "volumeSnapshotName": "Snapshot-2-Volume-1",
                    "volumeSnapshotUuid": "2b47066db7c641019495
204a39d00abb",
                        "volumeType": "Data",
                        "volumeUuid": "1b746a6adb584ee89c65ab51c3634416"
                    },
                    {
                        "createDate": "Sep 12, 2019 5:26:00 PM",
                        "deviceId": 0,
                        "lastOpDate": "Sep 12, 2019 5:26:00 PM",
                        "snapshotDeleted": false,
                        "volumeName": "ROOT-for-VM-1",
                        "volumeSnapshotGroupUuid": "d6939afab0824cab8e9a
57a25686a7d4",
                            "volumeSnapshotInstallPath": "/Cloud_ps/rootVolume
s/acct-36c27e8ff05c4780bf6d2fa65700f22e/vol-b2026ce722584b0383b2
47640e2961e2/snapshots/ce2fe3b2fabaa4b32b1c2fadbd462cc6d.qcow2",
                            "volumeSnapshotName": "Snapshot-2-ROOT-for-VM-1",
                            "volumeSnapshotUuid": "400cabe156424e7282bb
4606c40907dc",
                                "volumeType": "Root",

```

```

        "volumeUuid": "b2026ce722584b0383b247640e2961e2"
    }
],
{
    "createDate": "Sep 12, 2019 5:25:40 PM",
    "description": "",
    "lastOpDate": "Sep 12, 2019 5:25:40 PM",
    "name": "Snapshot-1",
    "snapshotCount": 2,
    "uuid": "e5bad705d61a424aa703578f86ce8522",
    "vmInstanceUuid": "c0220ee607bf4afabc2a66532b0b0387",
    "volumeSnapshotRefs": [
        {
            "createDate": "Sep 12, 2019 5:25:40 PM",
            "deviceId": 1,
            "lastOpDate": "Sep 12, 2019 5:25:40 PM",
            "snapshotDeleted": false,
            "volumeName": "Volume-1",
            "volumeSnapshotGroupUuid": "e5bad705d61a424aa703
578f86ce8522",
            "volumeSnapshotInstallPath": "/Cloud_ps/dataVolume
s/acct-36c27e8ff05c4780bf6d2fa65700f22e/vol-1b746a6adb584ee89c65
ab51c3634416/1b746a6adb584ee89c65ab51c3634416.qcow2",
            "volumeSnapshotName": "Snapshot-1-Volume-1",
            "volumeSnapshotUuid": "d403f271636a488fb25
afd74ca589f8",
            "volumeType": "Data",
            "volumeUuid": "1b746a6adb584ee89c65ab51c3634416"
        },
        {
            "createDate": "Sep 12, 2019 5:25:40 PM",
            "deviceId": 0,
            "lastOpDate": "Sep 12, 2019 5:25:40 PM",
            "snapshotDeleted": false,
            "volumeName": "ROOT-for-VM-1",
            "volumeSnapshotGroupUuid": "e5bad705d61a424aa703
578f86ce8522",
            "volumeSnapshotInstallPath": "/Cloud_ps/rootVolume
s/acct-36c27e8ff05c4780bf6d2fa65700f22e/vol-b2026ce722584b0383b2
47640e2961e2/b2026ce722584b0383b247640e2961e2.qcow2",
            "volumeSnapshotName": "Snapshot-1-ROOT-for-VM-1",
            "volumeSnapshotUuid": "ce2fe3b2faba4b32b1c2
fadbd462cc6d",
            "volumeType": "Root",
            "volumeUuid": "b2026ce722584b0383b247640e2961e2"
        }
    ]
},
"success": true

```

{}

5.1.8.3 Operations

5.1.8.3.1 CreateVolumeSnapshotGroup

Creates a snapshot group. For example,

```
CreateVolumeSnapshotGroup rootVolumeUuid=901cae4fd9f43a1ca20d
a4146ddaec50 name=test
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
rootVolumeUuid	The root volume UUID.			3.6.0
name	The resource name.			3.6.0
description	The detailed description of the resource.	Yes		3.6.0
resourceUuid		Yes		3.6.0
tagUuids	The tag UUID list.	Yes		3.6.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.6.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.6.0
timeout		Yes		

5.1.8.3.2 DeleteVolumeSnapshotGroup

Deletes a snapshot group. For example,

```
DeleteVolumeSnapshotGroup uuid=f7b2175eebba3161b029689cb32f9b14
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			3.6.0
deleteMode		Yes		3.6.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.6.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.6.0
timeout		Yes		

5.1.8.3.3 UpdateVolumeSnapshotGroup

Updates a snapshot group. For example,

```
UpdateVolumeSnapshotGroup uuid=c39089cddb836628f346b14beafe2d3 name= test
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
name	The resource name.	Yes		3.6.0
description	The detailed description of the resource.	Yes		3.6.0
uuid	The resource UUID.			3.6.0
userTags	The user tags. For more	Yes		3.6.0

Name	Description	Optional	Valid Value	Starting Version
	information, see CreateUserTag .			
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.6.0
timeout		Yes		

5.1.8.3.4 QueryVolumeSnapshotGroup

Queries a snapshot group. For example,

```
QueryVolumeSnapshotGroup vmInstanceId=9480c1736b9c3798b3030cd990f0db
8f
```

Primitive Fields of Query

See [Volume Snapshot Group Inventory](#).

Nested and Expanded Fields of Query

Field	Inventory	Description	Starting Version
volumeSnapshot	Volume Snapshot Inventory	The volume snapshots that are associated with the snapshot group.	3.6.0
volumeSnapshotRef	Volume Snapshot Inventory	The reference between volume snapshot and snapshot groups.	3.6.0
volumeSnapshotRefs	Volume Snapshot Inventory	The references between volume snapshot and snapshot groups.	3.6.0

5.1.8.3.5 CheckVolumeSnapshotGroupAvailability

Checks the availability of a snapshot group. For example,

```
CheckVolumeSnapshotGroupAvailability uuids=cc389f9eb3223c698f56  
5621d2abcf72
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuids	The snapshot group UUIDs.			3.6.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.6.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.6.0
timeout		Yes		

5.1.8.3.6 RevertVmFromSnapshotGroup

Reverts a snapshot group. For example,

```
RevertVmFromSnapshotGroup uuid=37050441a903313297e65e09ccb30f
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The snapshot group UUID.			3.6.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.6.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.6.0

Name	Description	Optional	Valid Value	Starting Version
timeout		Yes		

5.1.8.3.7 UngroupVolumeSnapshotGroup

Ungroups a snapshot group. For example,

```
UngroupVolumeSnapshotGroup uuid=8903cef5a11c3457881bfd7bd5f04757
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The snapshot group UUID.			3.6.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.6.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.6.0
timeout		Yes		

5.1.8.4 Tags

You can create a user tag on a snapshot group by using `resourceType=VolumeSnapshotVO`.

For example,

```
CreateUserTag resourceType=VolumeSnapshotVO tag=golden-ResourceStack  
resourceUuid=27260a1dfa93453087d67c69dc78805c
```

5.2 Hardware

5.2.1 Zone

5.2.1.1 Overview

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 Cloud.

When you organize a zone, note that:

1. Hosts in the same physical layer 2 broadcast domain must be in the same zone. These hosts can be grouped as one or more clusters.
2. A physical layer 2 broadcast domain cannot span multiple zones. Instead, it must be mapped as an L2 network in a single zone.
3. A primary storage cannot span multiple zones. Instead, it should be mapped as the primary storage in a single zone.
4. A data center can have multiple zones.
5. A zone can have one or more backup storages attached.
 - Resources in a zone, such as a primary storage, can only access the backup storage that is attached to the zone.
 - A backup storage can be detached from a zone. After the backup storage is detached, resources in the zone will not see the backup storage any more.
 - If a backup storage is no longer accessible to resources of a zone due to network typology changes in a data center, you can detach the backup storage from this zone.

5.2.1.2 Inventory

Properties

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			0.6
name	The name. For more information, see Resource Property .			0.6
description	The description. For more information, see Resource Property .	Yes		0.6
state	The state. For more information, see Resource Property .		<ul style="list-style-type: none"> • Enabled • Disabled 	0.6

Name	Description	Optional	Valid Value	Starting Version
createDate	The creation date. For more information, see Resource Property .			0.6
lastOpDate	The last operation date. For more information, see Resource Property .			0.6
type	The reserved field. .			0.6
userTags	The user tags. For more information, see CreateUserTag . The resource type is ZoneVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is ZoneVO.	Yes		0.6

Sample

```
{
    "createDate": "Oct 16, 2017 2:11:40 PM",
    "description": "",
    "lastOpDate": "Oct 24, 2017 10:52:31 AM",
    "name": "SH",
    "state": "Enabled",
    "type": "zstack",
    "uuid": "61092e77aedd41f0b8857b40652e5b1e"
}
```

State

- A zone has the following two states: Enabled and Disabled.
- When you change the state of a zone, the change operation will be cascaded to all clusters and hosts that belong to the zone.

- For example, disabling a zone will change the state of all clusters and hosts in this zone to Disabled. Because no VM instance can be created or started on a disabled host, you can put a zone into Disabled state to prevent any VM instances from being created or started in this zone. This will not affect the use and restart of existing VM instances.

5.2.1.3 Operations

5.2.1.3.1 CreateZone

Creates a zone. For example,

```
CreateZone name='San Jose Zone' description='this is a zone in San
Jose datacenter'
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
name	The resource name. For more information, see Resource Property .			0.6
resourceUuid	The resource UUID. For more information, see Resource Property .	Yes		0.6
description	The resource description. For more information, see Resource Property .	Yes		0.6
type	The reserved field for internal use.	Yes		0.6
userTags	The user tags. For more information, see CreateUserTag . The resource type is ZoneVO.	Yes		0.6
systemTags	The system tags. For more	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
	information, see CreateSystemTag . The resource type is ZoneVO.			
timeout		Yes		

5.2.1.3.2 DeleteZone

Deletes a zone. For example,

```
DeleteZone uuid=28e94936284b45f99842ababfc3f976d
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The zone UUID.			0.6
deleteMode	The delete mode. For more information, see DeleteResources .	Yes	<ul style="list-style-type: none"> • Permissive • Enforcing 	0.6
userTags	The user tags. For more information, see CreateUserTag . The resource type is ZoneVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is ZoneVO.	Yes		0.6
timeout		Yes		

5.2.1.3.3 QueryZone

Queries a zone. For example,

```
QueryZone name=zone1
```

```
QueryZone vmInstance.uuid=13238c8e0591444e9160df4d3636be82
```

Primitive Fields of Query

See [Zone Inventory](#).

Nested and Expanded Fields of Query

Field	Inventory	Description	Starting Version
vmInstance	VM Instance Inventory	The VM instance that belongs to this zone.	0.6
cluster	Cluster Inventory	The cluster that belongs to this zone.	0.6
host	Host Inventory	The host that belongs to this zone.	0.6
primaryStorage	Primary Storage Inventory	The primary storage that belongs to this zone.	0.6
l2Network	L2 Network Inventory	The L2 network that belongs to this zone.	0.6
l3Network	L3 Network Inventory	The L3 network that belongs to this zone.	0.6
backupStorage	Backup Storage Inventory	The backup storage that belongs to this zone.	0.6

5.2.1.3.4 UpdateZone

Updates the name, description, and tags of a zone. For example,

```
UpdateZone uuid=61092e77aedd41f0b8857b40652e5ble name=update
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The zone UUID.			0.6

Name	Description	Optional	Valid Value	Starting Version
name	The resource name. For more information, see Resource Property .	Yes		0.6
description	The resource description. For more information, see Resource Property .	Yes		0.6
userTags	The user tags. For more information, see CreateUserTag . The resource type is ZoneVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is ZoneVO.	Yes		0.6
timeout		Yes		

5.2.1.3.5 ChangeZoneState

Changes the state of a zone. For example,

```
ChangeZoneState stateEvent=enable uuid=737896724f2645de9372f11b13a482
23
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The zone UUID.			0.6
stateEvent	The state event. <ul style="list-style-type: none"> • enable: changes 		<ul style="list-style-type: none"> • enable • disable 	0.6

Name	Description	Optional	Valid Value	Starting Version
	the state to Enabled. • disable: changes the state to Disabled.			
userTags	The user tags. For more information, see CreateUserTag . The resource type is ZoneVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is ZoneVO.	Yes		0.6
timeout		Yes		

5.2.1.4 Tags

You can create a user tag on a zone by using `resourceType=ZoneVO`. For example,

```
CreateUserTag resourceType=ZoneVO resourceUuid=0cd1ef8c9b9e0ba82e0cc9cc17226a26 tag=privateZone
```

System Tags

Reserved Capacity

Tag	Description	Example	Starting Version
host::reservedMemory ::{capacity}	See Host Capacity Reservation.	host::reservedMemory ::1G	0.6

5.2.2 Cluster

5.2.2.1 Overview

A cluster is a logical group of hosts (compute nodes). In a real data center, a cluster usually maps to a rack.

When you plan a cluster, note that:

- All hosts in the same cluster must be installed with the same operating system.
- All hosts in the same cluster must have the same network configuration.
- All hosts in the same cluster must be able to access the same primary storage.
- Before a cluster can provide VM services, the cluster must have a primary storage and an L2 network attached.
- The scale of a cluster, which is the maximum number of hosts that the cluster can contain, is not enforced.

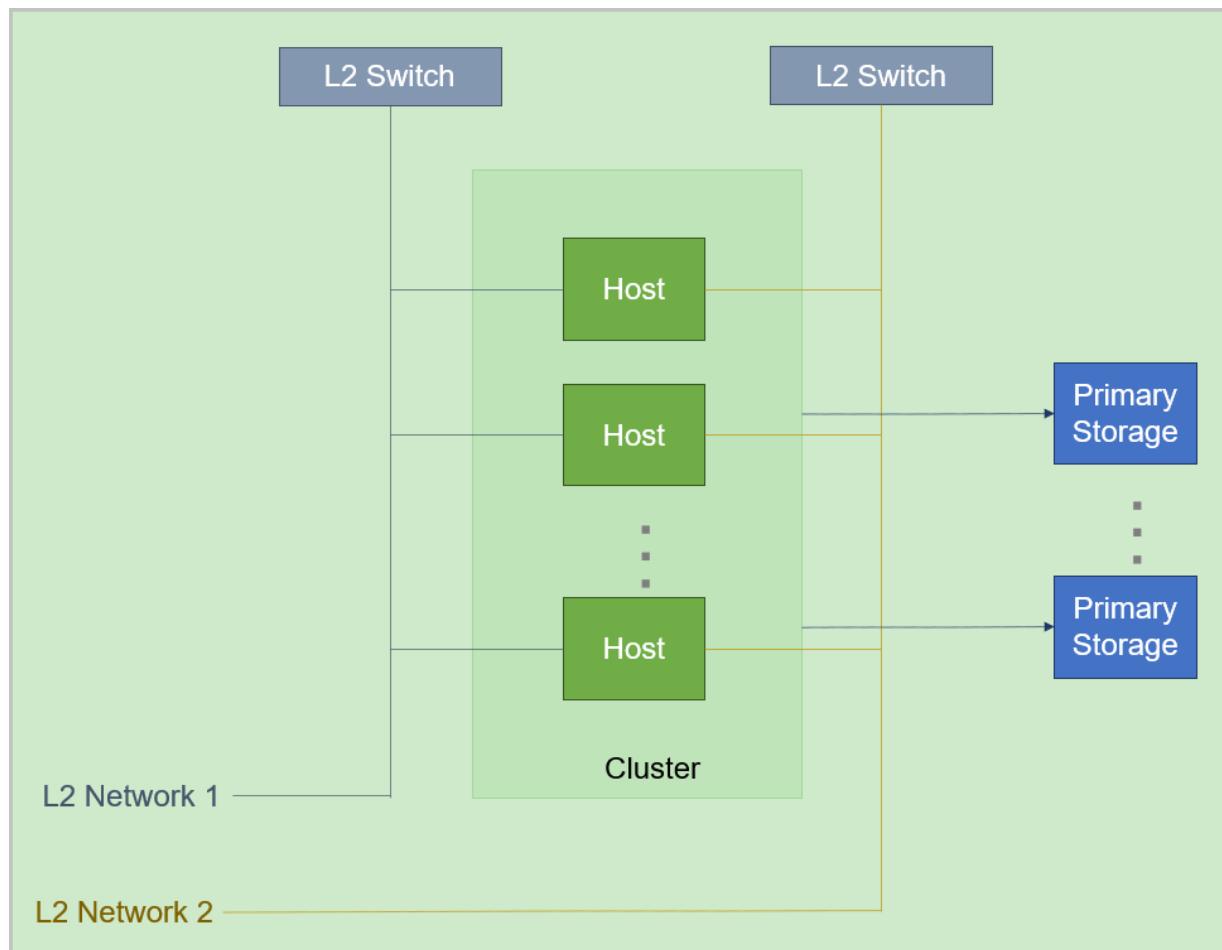
The relationship between a typical cluster and its associated resources is as follows.

Cluster | Zone

You can create more than one cluster in a zone, and allocate newly created hosts to different clusters as needed.

Cluster | Primary Storage and L2 Network

You can attach primary storages and L2 networks to or detach them from a cluster. The following diagram shows the relationship between cluster and primary storage, L2 network.

Figure 5-5: Relationship Between Cluster and Primary Storage, L2 Network**Note:**

When you attach a primary storage and an L2 network to a cluster, note that:

1. Cluster | Primary Storage

- A primary storage can be attached to one or more clusters.
- A cluster can have one or more primary storages attached.

The following are primary storages of the same type that a cluster can have:

- A cluster can have one or more LocalStorage primary storages attached.
- A cluster can have one or more NFS primary storages attached.
- A cluster can have one or more SharedBlock primary storages attached.
- A cluster can have one SharedMountPoint (SMP) primary storages attached.
- A cluster can have only one Ceph primary storage attached.
- A cluster can have only one AliyunNAS primary storage attached.

- A cluster can have only one AliyunEBS primary storage attached.

The following are combinations of primary storages that a cluster can have:

- A cluster can have both a LocalStorage and an NFS primary storage attached.
- A cluster can have both a LocalStorage and an SMP primary storage attached.
- A cluster can have both a LocalStorage and a SharedBlock primary storage attached.
- A cluster can have both a Ceph and a SharedBlock primary storage attached.
- A cluster can have both a Ceph and more than one SharedBlock primary storage attached.

The following table lists the relationship between primary storages and a cluster.

Table 5-1: Relationship Between Primary Storage and Cluster

Primary Storage	Cluster
LocalStorage	A cluster can have one or more LocalStorage primary storages attached.
NFS	A cluster can have one or more NFS primary storages attached.
SharedBlock	A cluster can have one or more SharedBlock primary storages attached.
SMP	A cluster can have one SMP primary storage attached.
Ceph	A cluster can have only one Ceph primary storage attached.
AliyunNAS	A cluster can have only one AliyunNAS primary storage attached.
AliyunEBS	A cluster can have only one AliyunEBS primary storage attached.
LocalStorage + NFS	A cluster can have one LocalStorage and one NFS primary storage attached.
LocalStorage + SMP	A cluster can have one LocalStorage and one SMP primary storage attached.
LocalStorage + SharedBlock	A cluster can have one LocalStorage and one SharedBlock primary storage attached.
Ceph + SharedBlock	<ul style="list-style-type: none"> • A cluster can have one Ceph and one SharedBlock primary storage attached.

Primary Storage	Cluster
	<ul style="list-style-type: none"> • A cluster can have one Ceph and multiple SharedBlock primary storages attached. <ul style="list-style-type: none"> • When you attach multiple LocalStorage primary storages to a cluster, partition the corresponding URLs on the hosts before you add hosts and primary storages, and make sure that each LocalStorage is deployed on an exclusive logical volume or physical disk. • A primary storage can be accessed by all hosts in the cluster to which the primary storage belongs. • If a primary storage cannot be accessed by hosts in the cluster due to network typology changes in the data center, you can detach the primary storage from the cluster.

2. Cluster | L2 Network

- A cluster can have one or more L2 networks attached. Also, an L2 network can be attached to one or more clusters.
- A cluster can have a VXLAN pool attached. The VNIs in the VXLAN pool can be used to create different VXLAN networks.
- One NIC can be used to create only one NoVlan network.
- For VLAN networks, different VLAN IDs represent different L2 networks.
- If hosts in a cluster no longer exist in the layer 2 broadcast domain of an L2 network due to network typology changes in the data center, you can detach the L2 network from the cluster.

Cluster | Backup Storage

No direct dependency exists between a cluster and a backup storage. A backup storage can provide services for multiple clusters.

The following table lists the relationship between primary storages (PS) and backup storages (BS).

Table 5-2: Relationship Between PS and BS

PS/BS	ImageStore	SFTP	Ceph
LocalStorage	○	○	✗
NFS	○	○	✗
SMP	○	○	✗

Ceph	○	✗	○
SharedBlock	○	✗	✗

- When primary storages are LocalStorage, NFS, or SMP, the default type for backup storages is ImageStore.
- When primary storages are NFS or SMP, you can manually mount the corresponding shared directories to the local directories of the corresponding backup storages. In this regard, both primary storages and backup storages can use the network shared storage.
- When primary storages are Ceph, you can use the primary storages in the same Ceph cluster as backup storages. You can also use the ImageStore primary storages as backup storages.
- When primary storages are SharedBlock, the default type for backup storages is ImageStore.
- When primary storages are AliyunNAS, the default type for backup storages is ImageStore.
- When primary storages are AliyunEBS, the default type for backup storages is AliyunEBS.

5.2.2.2 Inventory

Properties

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			0.6
name	The name. For more information, see Resource Property .			0.6
description	The description. For more information, see Resource Property .	Yes		0.6
hypervisorType	The hypervisor type. For more information, see Cluster Hypervisor Type .		• KVM	0.6
state	The state. For more information,		• Enabled	0.6

Name	Description	Optional	Valid Value	Starting Version
	see Resource Property .		• Disabled	
zoneUuid	The UUID of the zone to which the cluster belongs. For more information, see Zone .			0.6
createDate	The creation date. For more information, see Resource Property .			0.6
lastOpDate	The last operation date. For more information, see Resource Property .			0.6
type	The reserved field .			0.6
userTags	The user tags. For more information, see CreateUserTag .	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		0.6

Sample

```
{
  "inventories": {
    {
      "createDate": "Oct 30, 2017 1:50:00 PM",
      "description": "",
      "hypervisorType": "KVM",
      "lastOpDate": "Oct 30, 2017 1:50:00 PM",
      "name": "Cluster-1",
      "state": "Enabled",
      "type": "zstack",
      "uuid": "5c3699713b1c43219de14df7545f24d0",
      "version": "0.6"
    }
  }
}
```

```

        "zoneUuid": "e59b71e99d8a4ea1952b578388b8cd1d"
    }
}
```

Hypervisor Type

Hypervisor type indicates what kind of hypervisor (operating system) is installed on hosts in a cluster.

State

A cluster has the following two states: Enabled and Disabled, which is similar to [Zone](#). When you change the state of a cluster, the change operation will be cascaded to all hosts in the cluster. For example, if you disable a cluster, you will also disable all hosts in the cluster.

5.2.2.3 Operations

5.2.2.3.1 CreateCluster

Creates a cluster. For example,

```
CreateCluster name=cluster1 hypervisorType=KVM zoneUuid=1b830f5bd1
cb469b821b4b77babfdd6f
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
zoneUuid	The parent zone UUID.			0.6
name	The resource name. For more information, see Resource Property .			0.6
resourceUuid	The resource UUID. For more information, see CreateUserTag .	Yes		0.6
description	The resource description. For more information, see Resource Property .	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
hypervisorType	The hypervisor type. For more information, see Cluster Hypervisor Type .	Yes	<ul style="list-style-type: none"> KVM Simulator 	0.6
type	The reserved field for internal use.	Yes	<ul style="list-style-type: none"> zstack 	4.0.0
architecture		Yes	<ul style="list-style-type: none"> x86_64 aarch64 mips64el 	4.0.0
tagUuids	The tag UUIDs.			4.0.0
userTags	The user tags. For more information, see CreateUser Tag . The resource type is ClusterVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is ClusterVO.	Yes		0.6
timeout		Yes		

5.2.2.3.2 DeleteCluster

Deletes a cluster. For example,

```
DeleteCluster uuid=c1bd173d5cd84f0e9e7c47195ae27ec6
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The cluster UUID.			0.6
deleteMode	The delete mode. For more	Yes	<ul style="list-style-type: none"> Permissive 	0.6

Name	Description	Optional	Valid Value	Starting Version
	information, see DeleteResources .		• Enforcing	
userTags	The user tags. For more information, see CreateUser Tag . The resource type is ClusterVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is ClusterVO.	Yes		0.6
timeout		Yes		

5.2.2.3.3 QueryCluster

Queries a cluster. For example,

```
QueryCluster hypervisorType=KVM
```

```
QueryCluster primaryStorage.availableCapacity>=100000000
```

Primitive Fields of Query

See [Cluster Inventory](#).

Nested and Expanded Fields of Query

Field	Inventory	Description	Starting Version
zone	Zone Inventory	The parent zone.	0.6
host	Host Inventory	The host that belongs to the cluster.	0.6
vmlInstance	VM Instance Inventory	The VM instance that belongs to the cluster.	0.6
l2Network	L2 Network Inventory	The L2 network that is attached to the cluster.	0.6

Field	Inventory	Description	Starting Version
l2VlanNetwork	<i>I2VlanNetwork Inventory</i>	The L2 network that is attached to the cluster. This L2 network uses VLAN to create layer 2 broadcast domains.	0.6
primaryStorage	<i>Primary Storage Inventory</i>	The primary storage that is attached to the cluster.	0.6

5.2.2.3.4 UpdateCluster

Updates a cluster. For example,

```
UpdateCluster uuid=26aad17353dd4de0ac7bc5540d76da23 name=test
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The cluster UUID.			0.6
name	The resource name. For more information, see Resource Property .	Yes		0.6
description	The resource description. For more information, see Resource Property .	Yes		0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is ClusterVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSyst	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
	emTag. The resource type is ClusterVO.			
timeout		Yes		

5.2.2.3.5 ChangeClusterState

Changes the state of a cluster. For example,

```
ChangeClusterState uuid=26aad17353dd4de0ac7bc5540d76da23 stateEvent=enable
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The cluster UUID.			0.6
stateEvent	The state event.	Yes	<ul style="list-style-type: none"> • enable • disable 	0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is ClusterVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is ClusterVO.	Yes		0.6
timeout		Yes		

5.2.2.3.6 UpdateClusterOS

Updates the operating system of hosts in a cluster. For example,

```
UpdateClusterOS uuid=fb498a6086ea43449f33d5bbb9daa73e
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The cluster UUID.			0.6
excludePackages	The packages not to be upgraded.	Yes		3.7.0
updatePackages	The packages to be upgraded.	Yes		3.7.0
releaseVersion	The release version of the operating system.	Yes		3.7.0
resourceUuid		Yes		3.7.0
tagUuids	The tag UUID list.	Yes		3.7.0
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is ClusterVO.	Yes		0.6
userTags	The user tags. For more information, see CreateUserTag . The resource type is ClusterVO.	Yes		0.6
timeout		Yes		

5.2.2.4 Tags

User Tags

You can create a user tag on a cluster by using `resourceType=ClusterVO`. For example,

```
CreateUserTag resourceType=ClusterVO resourceUuid=80a979b9e0234564a22a
4cca8c1dff43 tag=secureCluster
```

System Tags

Reserved Capacity

Tag	Description	Example	Starting Version
<code>host::reservedMemory::{capacity}</code>	See Host Capacity Reservation .	<code>host::reservedMemory::1G</code>	0.6

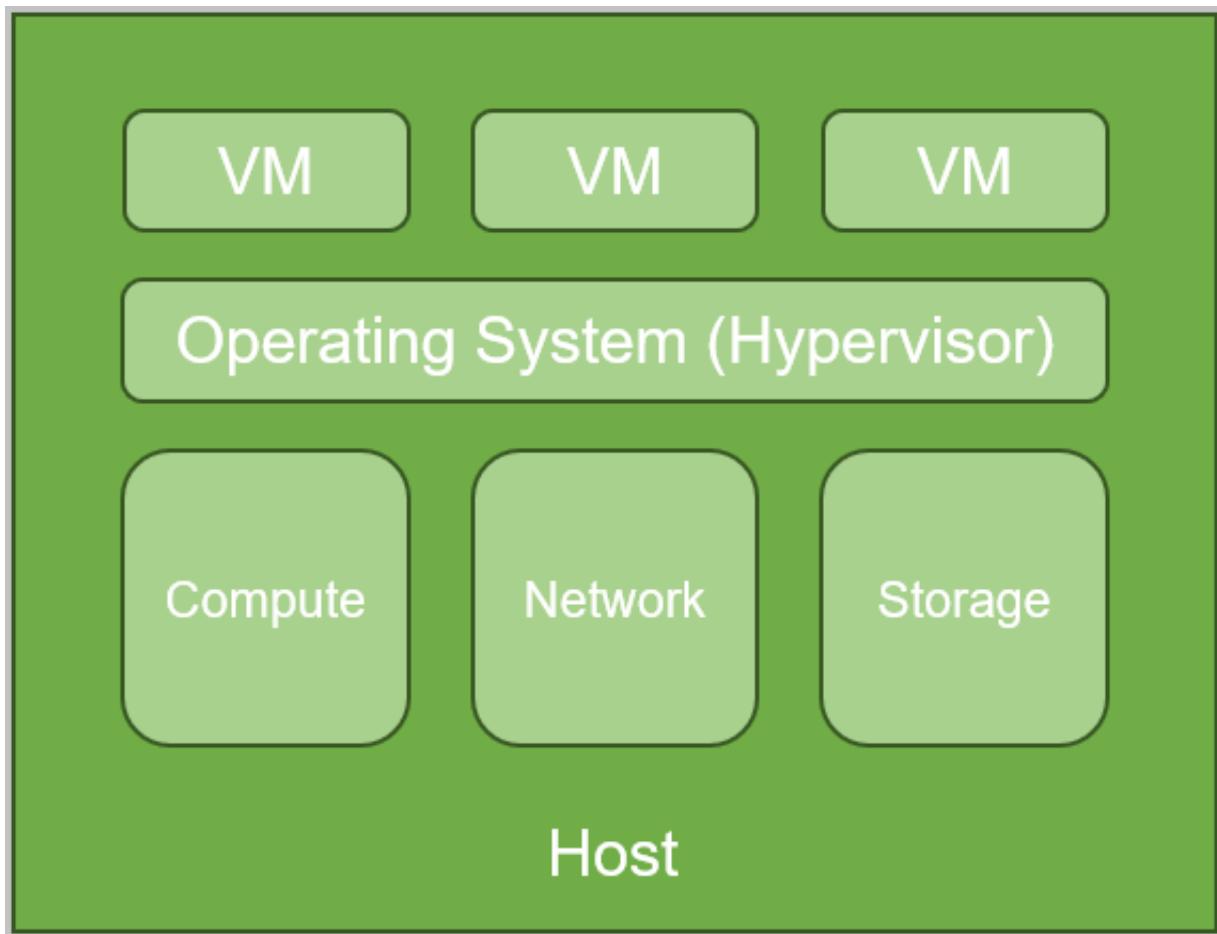
5.2.3 Host

5.2.3.1 Overview

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

- Hosts are core assets in ZStack Cloud. VM instances run on hosts.

As shown in [Figure 5-6: Host](#).

Figure 5-6: Host

5.2.3.2 Inventory

Host Inventory

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			0.6
name	The name. For more information, see Resource Property .			0.6
description	The description. For more information,	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
	see Resource Property .			
zoneUuid	The zone UUID. For more information, see Zone .			0.6
clusterUuid	The parent cluster UUID. For more information, see Cluster .			0.6
managementIp	The management IP address. For more information, see Management IP .			0.6
hypervisorType	The hypervisor type. For more information, see Cluster Hypervisor Type .			0.6
state	The state. For more information, see State .		<ul style="list-style-type: none"> • Enabled • Disabled • PreMaintenance • Maintenance 	0.6
status	The status. For more information, see Status .		<ul style="list-style-type: none"> • Connecting • Connected • Disconnected 	0.6
createDate	The creation date. For more information, see Resource Property .			0.6
lastOpDate	The last operation date. For more information,			0.6

Name	Description	Optional	Valid Value	Starting Version
	see Resource Property .			
userTags	The user tags. For more information, see CreateUserTag .	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		0.6
cpuNum	The number of vCPUs. For more information, see CPU Capacity .			0.6
cpuSockets				0.6
availableCpuCapacity				0.6
availableMemoryCapacity				0.6
totalCpuCapacity				0.6
totalMemoryCapacity				0.6

Sample

```
{
  "inventories": {
    "availableCpuCapacity": 37,
    "availableMemoryCapacity": 4965064704,
    "clusterUuid": "967a353c2893409dab9312cf3033a98c",
    "cpuNum": 4,
    "cpuSockets": 1,
    "createDate": "Oct 30, 2017 3:02:06 PM",
    "description": "",
    "hypervisorType": "KVM",
    "lastOpDate": "Oct 31, 2017 10:41:19 AM",
    "managementIp": "10.0.146.122",
    "name": "Host-1",
    "sshPort": 22,
    "state": "Enabled",
    "status": "Connected",
    "totalCpuCapacity": 40,
    "totalMemoryCapacity": 8186290176,
  }
}
```

```

        "username": "root",
        "uuid": "a4049fd68e1b487f8f91786d17ad37e1",
        "zoneUuid": "e59b71e99d8a4ea1952b578388b8cd1d"
    }
}

```

Host Network Bonding Inventory

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			3.9.0
hostUuid	The host UUID.			3.9.0
bondingName	The bond name.			3.9.0
mode	The bond mode.			3.9.0
xmitHashPolicy	The hash policy.			3.9.0
miiStatus	The MII status.			3.9.0
mac	The MAC address.			3.9.0
ipAddresses	The IP address.			3.9.0
miimon	The MII monitoring interval.			3.9.0
allSlavesActive				3.9.0
groupBy	Groups rows into subgroups based on values of columns or expressions. This parameter is equivalent to the Group By clause in MySQL, such as groupBy=type.	Yes		3.9.0
createDate	The creation date. For more information, see Resource Property .			3.9.0

Name	Description	Optional	Valid Value	Starting Version
lastOpDate	The last operation date. For more information, see Resource Property .			3.9.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.9.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.9.0

Sample

```
{
  "inventories": [
    {
      "uuid": "2e2226e18e853f20a5791684a1b644c8",
      "hostUuid": "903696c585a639bb8049713b98d93437",
      "bondingName": "bond0",
      "mode": "active-backup 1",
      "xmitHashPolicy": "layer2 0",
      "miiStatus": "up",
      "mac": "ac:1f:6b:93:6c:8c",
      "ipAddresses": [
        "172.20.0.116/16"
      ],
      "miimon": 100.0,
      "allSlavesActive": true,
      "createDate": "Nov 14, 2017 10:20:57 PM",
      "lastOpDate": "Nov 14, 2017 10:20:57 PM",
      "slaves": [
        {
          "uuid": "17a40aa475cf322494ea82e09066892e",
          "hostUuid": "903696c585a639bb8049713b98d93437",
          "bondingUuid": "2e2226e18e853f20a5791684a1b644c8",
          "interfaceName": "en0",
          "interfaceType": "bondingSlave",
          "speed": 1000.0,
          "slaveActive": true,
          "carrierActive": true,
          "mac": "ac:1f:6b:93:6c:8c",
          "createDate": "Nov 14, 2017 10:20:57 PM",
          "lastOpDate": "Nov 14, 2017 10:20:57 PM"
        },
        {
          "uuid": "c3716c87b9173ccb8315e7d7f3645bc4",
          "hostUuid": "903696c585a639bb8049713b98d93437",
        }
      ]
    }
  ]
}
```

```

        "bondingUuid": "2e2226e18e853f20a5791684a1b644c8",
        "interfaceName": "eno2",
        "interfaceType": "bondingSlave",
        "speed": 1000.0,
        "slaveActive": false,
        "carrierActive": false,
        "mac": "ac:1f:6b:93:6c:8c",
        "createDate": "Nov 14, 2017 10:20:57 PM",
        "lastOpDate": "Nov 14, 2017 10:20:57 PM"
    }
]
}
}
}

```

Host Network Interface Inventory

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			3.9.0
hostUuid	The host UUID.			3.9.0
bondingUuid	The bond UUID.			3.9.0
interfaceName	The interface name.			3.9.0
interfaceType	The interface type. Options : nomaster, bridgeSlave, and bondSlave.			3.9.0
speed	The interface speed.			3.9.0
slaveActive	The bond link status.			3.9.0
carrierActive	The physical link status.			3.9.0
ipAddresses	The IP address.			3.9.0
mac	The MAC address.			3.9.0
pciDeviceAddress	The PCI address of the interface.			3.9.0

Name	Description	Optional	Valid Value	Starting Version
groupBy	Groups rows into subgroups based on values of columns or expressions. This parameter is equivalent to the Group By clause in MySQL, such as groupBy=type.	Yes		3.9.0
createDate	The creation date. For more information, see Resource Property .			3.9.0
lastOpDate	The last operation date. For more information, see Resource Property .			3.9.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.9.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.9.0

Sample

```
{
  "inventories": [
    {
      "uuid": "310ca8ce7010363ca7ac83d37373238f",
      "hostUuid": "7f8d05522f01397e97f60d84f5ffa2b9",
      "bondingUuid": "6fbe88605eed35ba95399687585be3d1",
      "interfaceName": "en0l",
      "interfaceType": "bondingSlave",
      "speed": 1000.0,
      "slaveActive": true,
      "carrierActive": true,
      "mac": "98:03:9b:00:ea:f1",
      "parent": "bond0"
    }
  ]
}
```

```

    "createDate": "Nov 14, 2017 10:20:57 PM",
    "lastOpDate": "Nov 14, 2017 10:20:57 PM"
},
{
    "uuid": "3213802883d13c72b54c084233c4de2a",
    "hostUuid": "7f8d05522f01397e97f60d84f5ffa2b9",
    "bondingUuid": "6fbe88605eed35ba95399687585be3d1",
    "interfaceName": "eno2",
    "interfaceType": "bondingSlave",
    "speed": 1000.0,
    "slaveActive": false,
    "carrierActive": false,
    "mac": "98:03:9b:00:ea:f1",
    "createDate": "Nov 14, 2017 10:20:57 PM",
    "lastOpDate": "Nov 14, 2017 10:20:57 PM"
},
{
    "uuid": "3015b6b0c74d316699ebe09dc60e1001",
    "hostUuid": "7f8d05522f01397e97f60d84f5ffa2b9",
    "interfaceName": "ens2f0",
    "interfaceType": "noMaster",
    "speed": 1000.0,
    "slaveActive": true,
    "carrierActive": true,
    "ipAddresses": [
        "169.254.0.115/24"
    ],
    "mac": "98:03:9b:00:ea:f2",
    "createDate": "Nov 14, 2017 10:20:57 PM",
    "lastOpDate": "Nov 14, 2017 10:20:57 PM"
},
{
    "uuid": "e3b513e177a1313a93b32b290643f849",
    "hostUuid": "7f8d05522f01397e97f60d84f5ffa2b9",
    "interfaceName": "ens2f1",
    "interfaceType": "bridgeSlave",
    "speed": 1000.0,
    "slaveActive": false,
    "carrierActive": false,
    "mac": "98:03:9b:00:ea:f3",
    "createDate": "Nov 14, 2017 10:20:57 PM",
    "lastOpDate": "Nov 14, 2017 10:20:57 PM"
}
]
}

```

Management IP

ZStack Cloud management nodes use management IP addresses to reach the operating systems (hypervisors) of hosts. Whether the management IP addresses will be used or not depends on the hypervisor types.

- For example, in VMware, the official method to access an ESXi host is to use the vCenter server. In this regard, the management IP address will not be used.
- However, in KVM, ZStack Cloud uses a management IP address to deploy an agent to the Linux operating system.

Management Network

A management network is used to manage and control the corresponding physical resources, such as a host, backup storage, and primary storage, of whose resources can be reached by using an IP address.

- ZStack Cloud management nodes need to send commands to hosts and other appliances through the management networks. In this regard, the Linux servers that run ZStack Cloud management nodes must be able to access management networks.
- Management networks will be used when it comes to appliance VMs. For the current ZStack Cloud version, the appliance VMs are vRouters or VPC vRouters.

State

A host has the following three states:

- Enabled

Indicates that VM instances can be created and started on, or migrated to the host.

- Disabled:

Indicates that VM instances cannot be created or started on, or migrated to the host.

- Maintenance:

Indicates that the host is in maintenance mode.

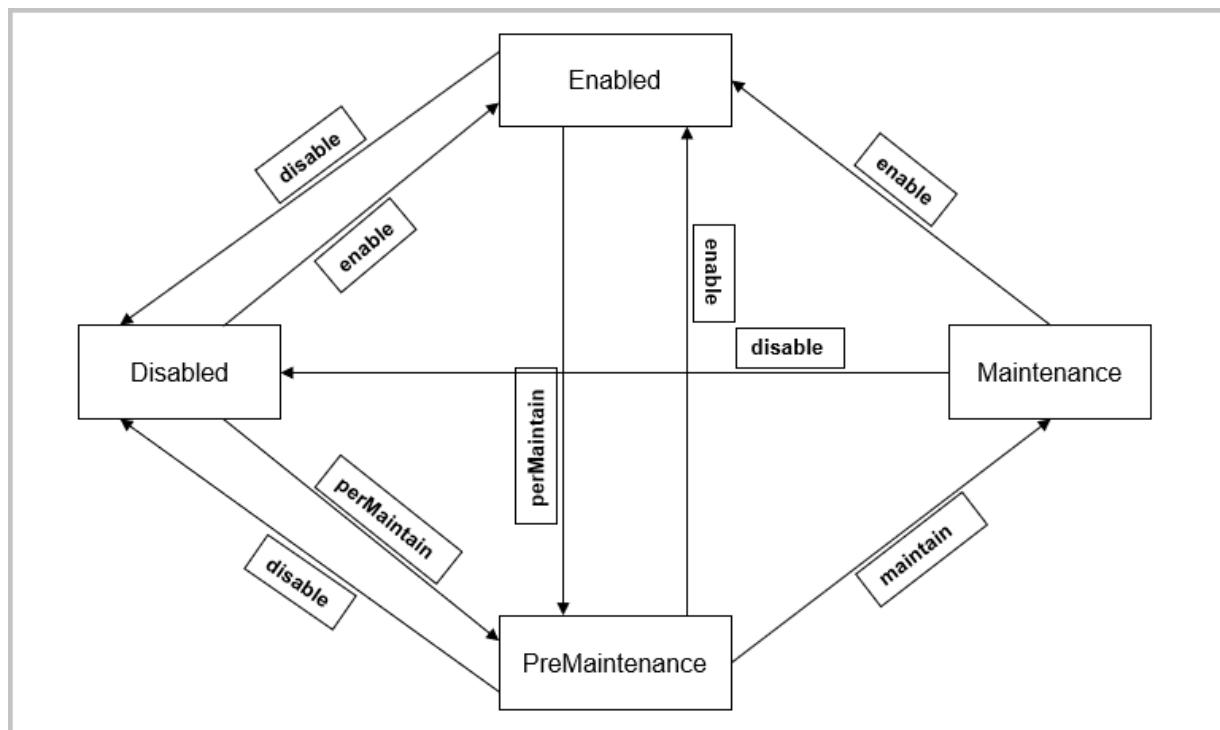


Note:

PreMaintenance:

Indicates that a host is entering maintenance mode, as shown in [Maintenance Mode](#).

The state transition diagram of a host is shown in [Host State Transition Diagram](#).

Figure 5-7: Host State Transition Diagram

Maintenance Mode

You can place a host in maintenance mode when you carry out some maintenance jobs, such as the installation of more memories. When a host is in maintenance mode, neither API operations nor ZStack Cloud internal tasks can be performed on the host. That is, tasks such as starting VM instances (API), stopping VM instances (API), and mounting primary storages (internal) cannot be performed on the host. ZStack defines maintenance mode into two states: PreMaintenance and Maintenance. The sequence that a host enters maintenance mode is as follows:

1. The state of a host is changed to PreMaintenance. At this stage, ZStack Cloud will attempt to migrate all VM instances running on the host to other appropriate hosts. If the migration fails, ZStack Cloud will stop those VM instances.
2. After all VM instances are migrated successfully or stopped, ZStack Cloud will change the state of the host to Maintenance. Then, you can perform maintenance jobs on the host.

After the maintenance jobs are completed, you can take a host out of Maintenance mode by placing it to Enabled or Disabled state.

Status

The status of a host indicates the command channel status between a host and a management node. In ZStack Cloud, a command channel is the method that a ZStack Cloud management node

communicates with and notifies a host to perform related operations. The following examples are about the command channel:

- In KVM, command channels are HTTP connections between ZStack Cloud management nodes and Python agents running on hosts.
- In VMware, command channels are connections between vCenter servers and ESXi hosts.

A host has the following three statuses:

- Connecting:

Indicates that a ZStack Cloud management node is trying to establish a command channel between the node itself and the host. At this stage, you cannot perform any operation on the host.

- Connected:

Indicates that the command channel between a ZStack Cloud management node and the host is successfully established. At this stage, you can perform operations on the host. Only in this status, a host can be used to start or create VM instances.

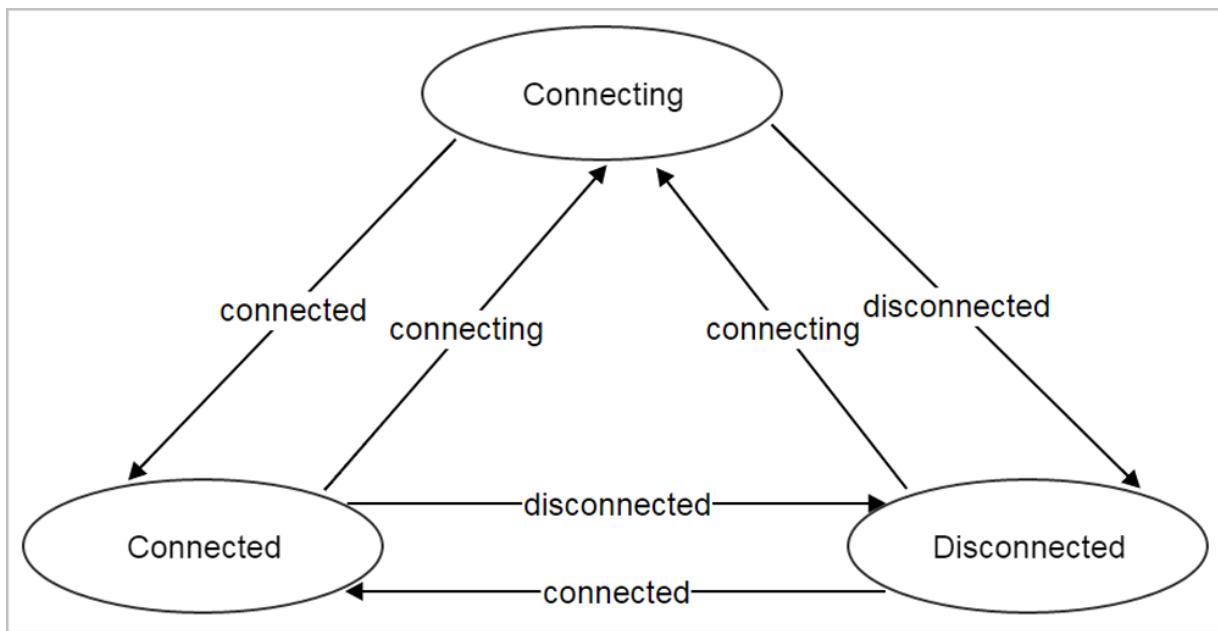
- Disconnected:

Indicates that the command channel between a ZStack Cloud management node and the host is lost. At this stage, you cannot perform any operation on the host.

When a ZStack Cloud management node starts, a command channel to a host will be established.

- At this stage, the status of the host is Connecting.
- After the command channel is successfully established, the status of the host will be changed to Connected.
- If ZStack Cloud management node fails to establish the command channel, or the command channel is lost at a period of time, the status of the host to which the command channel connects will be changed to Disconnected.
- ZStack Cloud management nodes will periodically send ping commands to hosts to check the health status of command channels. Once a host fails to respond, or a ping command times out, the status of the host will be changed to Disconnected.

The status transition diagram of a host is shown in [Diagram for Host Connection Status Transition](#).

Figure 5-8: Host Status Transition Diagram

State and Status

The states have no direct relation to the statuses. States represent your decisions on a host, while statuses represent the communication condition of a host.

5.2.3.3 Operations

5.2.3.3.1 QueryHost

Queries a host. For example,

```
QueryHost managementIp=192.168.0.100
```

```
QueryHost vmInstance.vmNics.ip=10.21.100.2
```

Primitive Fields of Query

See [Host Inventory](#).

Nested and Expanded Fields of Query

Field	Inventory	Description	Starting Version
zone	Zone Inventory	The zone.	0.6
cluster	Cluster Inventory	The parent cluster.	0.6
vmlinstance	VM Instance Inventory	The VM instances that run on the host.	0.6

5.2.3.3.2 UpdateHost

Updates a host, such as changing the host name, description, and tags. For example,

```
UpdateHost name=test uuid=5e0f90f7e44e471c96cf878f30301b42
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The host UUID.			0.6
name	The resource name. For more information, see Resource Property .	Yes		0.6
description	The resource description. For more information, see Resource Property .	Yes		0.6
managementIp		Yes		0.6
userTags	The user tags. For more information, see CreateUserTag . The resource type is HostVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is HostVO.	Yes		0.6
timeout		Yes		

5.2.3.3.3 ChangeHostState

Changes the state of a host. For example,

```
ChangeHostState stateEvent=maintain uuid=2893ce85c43d4a3a8d78f414da39966e
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The host UUID.			0.6
stateEvent	The state event. For more information, see State .		<ul style="list-style-type: none"> • enable • disable • maintain 	0.6
userTags	The user tags. For more information, see CreateUserTag . The resource type is HostVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is HostVO.	Yes		0.6
timeout		Yes		

5.2.3.3.4 ReconnectHost

Re-establishes the command channel between a ZStack Cloud management node and a host. For example,

```
ReconnectHost uuid=2893ce85c43d4a3a8d78f414da39966e
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The host UUID.			0.6
userTags	The user tags. For more	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
	information, see CreateUserTag . The resource type is HostVO.			
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is HostVO.	Yes		0.6
timeout		Yes		

5.2.3.3.5 DeleteHost

Deletes a host. For example,

```
DeleteHost uuid=2893ce85c43d4a3a8d78f414da39966e
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The host UUID.			0.6
deleteMode	The delete mode. For more information, see DeleteResources .	Yes	<ul style="list-style-type: none"> • Permissive • Enforcing 	0.6
userTags	The user tags. For more information, see CreateUserTag . The resource type is HostVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
	resource type is HostVO.			
timeout		Yes		

5.2.3.3.6 GetHostAllocatorStrategies

Obtains the host allocator strategy. Sample response:

```
{
    "hostAllocatorStrategies": [
        "DefaultHostAllocatorStrategy",
        "LeastVmPreferredHostAllocatorStrategy"
    ]
}
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
userTags	The user tags. For more information, see CreateUserTag . The resource type is HostVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is HostVO.	Yes		0.6
timeout		Yes		

5.2.3.3.7 GetHypervisorTypes

Obtains the hypervisor type of a VM instance. Sample response:

```
{
    "hypervisorTypes": [
        "KVM",
        "ESX"
    ]
}
```

{}

Parameters

Name	Description	Optional	Valid Value	Starting Version
userTags	The user tags. For more information, see CreateUserTag . The resource type is HostVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is HostVO.	Yes		0.6
timeout		Yes		

5.2.3.3.8 UpdateKVMHost

Updates information about a KVM host. For example,

```
UpdateKVMHost name=test uuid=5e0f90f7e44e471c96cf878f30301b42
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
username	The username.	Yes		0.6
password	The password.	Yes		0.6
sshPort	The SSH port No.	Yes		0.6
uuid	The host UUID.			0.6
name	The resource name.	Yes		0.6
description	The detailed description of the resource.	Yes		0.6
managementIp	The IP address of the management node.	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
userTags	The user tags. For more information, see CreateUserTag . The resource type is HostVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is HostVO.	Yes		0.6
timeout		Yes		

5.2.3.3.9 AddKVMHost

Adds a KVM host. For example,

```
AddKVMHost username=root clusterUuid=2379a0d00ae242df91189f6d7d9e23e3
name=test
managementIp=10.0.225.39 password=password sshPort=22
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
username	The SSH username.			0.6
password	The SSH password.			0.6
sshPort	The SSH port No.	Yes		0.6
name	The resource name.			0.6
description	The detailed description of the resource.	Yes		0.6
managementIp	The IP address of the management node.			0.6

Name	Description	Optional	Valid Value	Starting Version
clusterUuid	The cluster UUID.			0.6
resourceUuid	The resource UUID.	Yes		0.6
userTags	The user tags. For more information, see CreateUserTag . The resource type is HostVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is HostVO.	Yes		0.6
timeout		Yes		



Note:

- When you create a KVM host in ZStack Cloud, you can disable EPT by adding the **disable EPT** option to **SystemTags**.
 - Format of the **disable EPT** option: `pageTableExtensionDisabled`
 - Example: `pageTableExtensionDisabled`

5.2.3.3.10 KvmRunShell

Runs a shell command on a KVM host. For example,

```
KvmRunShell hostUuids=5e0f90f7e44e471c96cf878f30301b42 script=ls
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
hostUuids	The UUID of the target host.			0.6
script	The script.			0.6

Name	Description	Optional	Valid Value	Starting Version
userTags	The user tags. For more information, see CreateUserTag . The resource type is HostVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is HostVO.	Yes		0.6
timeout		Yes		

5.2.3.3.11 AddKVMHostFromConfigFile

Adds a host by importing files. For example,

```
AddKVMHostFromConfigFile hostInfo=5ZCN56ewKihuYW1lKSznroDku4soZG
VzY3JpcHRpb24pLOmbhue+pCooy2x1c3Rlc1v1awQpLOeJqeeQhuacuklQKiht
YW5hz2vtZW50SXBoKSzmiavmj4/niannkIbmnlPjT01NVeiuvue9rihJT01NVSksU1N
I56uv5Y+jKihzc2hQb3J0KSzn1KjmiLf1ki0qKHvzZXJuYW1lKSzlr4bnoIEqKHBhc3N
3b3JkKQosLGFiZDIwMmJmYmM2MTQ1NDNhMjNiNDM3NGYzNGJ1YzM1LDE3Mi4yMC4xOTguM
jMyLCwscm9vdCxwYXNzd29yZAosLDkyN2NkNmRmZmZiYTQzMTI4Yzk1MDY0MTFhZjAyMmQ
zLDE3Mi4yMC4xOTcuMjQ3LCwscm9vdCxwYXNzd29yZAo=
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
hostInfo	The host information encoded in Base64 format.			3.1.0
resourceUuid		Yes		3.1.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.1.0
systemTags	The system tags. For more information, see	Yes		3.1.0

Name	Description	Optional	Valid Value	Starting Version
	CreateSystemTag .			
timeout		Yes		3.1.0

5.2.3.3.12 CheckKVMHostConfigFile

Checks the configuration file syntax of a host. For example,

```
CheckKVMHostConfigFile hostInfo=5ZCN56ewKihuYW11KSznroDku4soZG
VzY3JpcHRpb24pLOmbhue+pCooy2xlc3RlclV1aWQpLOeJqeeQhuacuklQKiht
YW5hz2VtZW50SXbzsZmiamvj4/niannkIbmnlPjT01NVEiuvue9rihJT01NVSkSu1N
I56uv5Y+jKihzc2hQb3U0KSzn1KjmiLf1kI0qKHVzzXJuYW11KSzlr4bnoIEqKHBhc3N
3b3JkQosLGFiZDIwMmJmYmM2MTQ1NDNhMjNiNDM3NGYzNGJ1YzM1LDE3Mi4yMC4xOTguM
jMyLCwscm9vdCxwYXNzd29yZAosLDkyN2NkNmRmZmZiYTQzMTI4Yzk1MDY0MTFhZjAyMmQ
zLDE3Mi4yMC4xOTcuMjQ3LCwscm9vdCxwYXNzd29yZAo=
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
hostInfo	The host information encoded in Base64 format.			3.1.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		
timeout		Yes		

5.2.3.13 GetHostNetworkFacts

Obtains the network information about a host. For example,

```
GetHostNetworkFacts hostUuid=e336fa8ef9283fe4a4d746957284379a
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
hostUuid	The host UUID.			3.5.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.5.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.5.0
timeout		Yes		

5.2.3.14 QueryHostNetworkBonding

Queries the network bonding information about a host. For example,

```
QueryHostNetworkBonding hostUuid=b86c9016b4f24953a9edefb53ca0678c
```

Primitive Fields of Query

See [Host Network Bonding Inventory](#).

Nested and Expanded Fields of Query

Field	Inventory	Description	Starting Version
slaves	slaves Inventory	The slaves information about the host.	3.9.0

5.2.3.3.15 QueryHostNetworkInterface

Queries the interface information about a host. For example,

```
QueryHostNetworkInterface hostUuid=b86c9016b4f24953a9edefb53ca0678c
```

Primitive Fields of Query

See [Host Network Interface Inventory](#).

Nested and Expanded Fields of Query

Field	Inventory	Description	Starting Version
bonding	bonding Inventory	The bond information about the host interface.	3.9.0

5.2.3.3.16 GetHostNUMATopology

Obtains the pNUMA topology of a host. For example,

```
GetHostNUMATopology uuid=a761ac08ca483af4a81d9ed3d9930ef4
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The host UUID.			4.3.12
userTags	The user tags. For more information, see CreateUserTag .	Yes		4.3.12
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		4.3.12
timeout		Yes		4.3.12

5.2.3.17 GetHostResourceAllocation

Obtains the vNUMA topologies of VM instance on a host. For example,

```
GetHostResourceAllocation uuid=a761ac08ca483af4a81d9ed3d9930ef4
strategy=continuous scene=normal vcpu=4
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The host UUID.			4.3.12
strategy	The resource allocation policy.			4.3.12
scene	The scene type.			4.3.12
vcpu	The number of vCPUs that need to be allocated to a VM instance.			4.3.12
userTags	The user tags. For more information, see CreateUserTag .	Yes		4.3.12
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		4.3.12
timeout		Yes		4.3.12

5.2.3.4 Tags

User Tags

You can create a user tag on a host by using `resourceType=HostVO`. For example,

```
CreateUserTag tag=largeMemoryHost resourceUuid=0a9f95a659444848846b
5118e15bff32 resourceType=HostVO
```

System Tags

Host Capacity Reservation

You can use system tags to reserve a portion of memory on hosts for system software.

ZStack provides various system tags and global settings to realize fine-grained memory reservation policies.

- Hypervisor Global Level

If you do not have settings with other levels, you can apply the global level :ref:`kvm.reservedMemory` to all KVM hosts.

- Zone Level

For information about the zone level, see [zone host::reservedMemory](#). If you do not have settings of other levels, you can apply the zone level to all hosts in the zone. This value will override the global level.

- Cluster Level

For information about the cluster level, see [cluster host::reservedMemory](#). If you do not have settings of other levels, you can apply the cluster level to all hosts in the cluster. This value will override the zone level and global level.

- Host Level

Tag	Description	Example	Starting Version
<code>reservedMemory:: {capacity}</code>	The reserved memory on the host.	<code>reservedMemory:: 1G</code>	0.6

The host level can override all the above levels.

For example, assume that you have three KVM hosts, namely **zone->cluster1->{host1, host2, host3}**:

- By default, the memory reservation for the three hosts is controlled by the global setting :ref:`kvm.reservedMemory` with the default value 512M.
- If you create a system tag `host::reservedMemory::1G` on **zone1**, the memory reservation of all the three hosts will be changed to 1G.
- If you create a system tag `host::reservedMemory::2G` on **cluster1**, the memory reservation of all the three hosts will be changed to 2G.
- If you create a system tag `reservedMemory::3G` on **host1**, the memory reservation on **host1** will be changed to 3G, but still 2G on both **host2** and **host3**.

Host Metadata Information

Tag	Description	Example	Starting Version
capability: liveSnapshot	If this tag exists, the hypervisor of the host will support live volume snapshot.	capability: liveSnapshot	0.6
os:::distribution :::{distribution}	The operating system provider of the host.	os:::distribution ::Ubuntu	0.6
os:::release:::{ release}	The operating system release version of the host.	os:::release::: trusty	0.6
os:::version:::{ version}	The operating system version of the host.	os:::version:::14. 04	0.6
hostCpuModelName :::{hostCpuMod elName}	The CPU model of the host.	hostCpuModelName :::Intel(R) Core (TM) i7-4790 CPU @ 3.60GHz	3.1.0
systemProductName :::{systemProd uctName}	The server model.	systemProductName :::ProLiant DL388 Gen9	3.1.0
cpuGHz ::{cpuGHz}	The CPU clock speed of the host. Unit: GHz.  Note: Round 2 decimal places for this tag.	cpuGHz :: 2.20	3.1.0



Note:

Statements on the following three system tags: hostCpuModelName :: {hostCpuModelName}, hostCpuModelName :: {hostCpuModelName}, and cpuGHz :: {cpuGHz}.

- These three system tags belong to the HostVO. You can obtain these tags by using the original API QuerySystemTag. In addition, you can obtain specified system tags by using the fuzzy search ~=.
- Cluster and KVM Host have defined the following two system tags: clusterCpuModelName :: {clusterCpuModelName} and cpuModelName :: {cpuModelName} (such as cpuModelName :: Broadwell) to be used by libvirt in migration scenario or others. Exercise

caution that both the system tags are different from `hostCpuModelName::{hostCpuModelName}`.

KVM Host Metadata Information

Tag	Example	Example	Starting Version
<code>qemu-img::version::{version}</code>	The qemu-img version. .	<code>qemu-img::version::2.0.0</code>	0.6
<code>libvirt::version::{version}</code>	The libvirt version.	<code>libvirt::version::1.2.2</code>	0.6
<code>hvm::{flag}</code>	The host hardware virtualization flag. <ul style="list-style-type: none">• vmx: the Intel CPU.• svm: the AMD CPU .	<code>hvm::vmx</code>	0.6
<code>cpumodelName::{cpumodelName}</code>	The CPU model of the host.	<code>cpumodelName::Broadwell</code>	0.6

5.2.3.5 PCI Device

5.2.3.5.1 Overview

ZStack Cloud allows you to attach a PCI device to a VM instance. For the current version, ZStack Cloud supports two methods, including GPU pass-through and virtual GPU (vGPU), both of which can be used to attach VM instances.

- ZStack Cloud supports the physical GPU passthrough feature. Specifically, physical GPUs can pass through entirely all its peripheral devices (GPU graphics cards, GPU sound cards, and other small devices) as a **group** to VM instances, thus allowing the VM instances to obtain the powerful GPU parallel computing of hosts. This feature is applied to high performance computing (HPC) scenarios in fields of 3D rendering, high definition decoder, and highly intensive computing, such as machine learning, medical imaging, data analysis for petroleum exploitations, and Bitcoin mining.

ZStack Cloud supports the following physical GPU specifications.

NVIDIA	AMD
<ul style="list-style-type: none"> • Tesla T4 • Tesla M10/M60 • Tesla P100/P40/P6/P4 	<ul style="list-style-type: none"> • FirePro S7150 • FirePro S7150X2

NVIDIA	AMD
<ul style="list-style-type: none"> • Tesla V100 • RTX 6000/8000 • ... 	

**Note:**

ZStack Cloud supports multiple passthrough GPU specifications. Here, we only display a common set of the GPU specifications. For more information about GPU specifications, see [NVIDIA Virtual GPU Software Documentation](#).

- ZStack Cloud supports the vGPU feature. Through the GPU virtualization technology, physical GPUs will be segmented to more fine-grained vGPUs, which will become vGPU resource pools. You can create lightweight vGPU VM instances by using vGPU specifications to achieve more flexible, scalable resource deployments, higher resource utilization, and lower cost. This feature is applied to the lightweight GPU computing scenarios in fields of cloud gaming, VDI, VR/AR, AI inference, and machine learning pedagogy.

ZStack Cloud supports the following vGPU (segmented by physical GPU virtualization technology) specifications.

NVIDIA	AMD
<ul style="list-style-type: none"> • Tesla T4 • Tesla M10/M60 • Tesla P100/P40/P6/P4 • Tesla V100 • RTX 6000/8000 • ... 	<ul style="list-style-type: none"> • FirePro S7150 • FirePro S7150X2

**Note:**

NVIDIA GPU supports multiple virtualization segmentation models. We only display a common set of GPU specifications. For more information about GPU models, see [NVIDIA Virtual GPU Software Documentation](#).

5.2.3.5.2 Inventory

PCI Device Inventory

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			2.1
name	The name. For more information, see Resource Property .			2.1
description	The description. For more information, see Resource Property .	Yes		2.1
hostUuid	The host UUID.			2.1
parentUuid	The physical PCI device UUID.			3.5.0
vmlInstanceUuid	The VM instance UUID.			2.1
pciSpecUuid	The PCI device specification UUID.			3.5.0
vendorId	The vendor ID.			2.1
deviceid	The device ID.			2.1
subvendorId	The sub-vendor ID.			2.1
subdeviceid	The sub-device ID.			2.1
pciDeviceAddress	The PCI device address.			2.1
type	The type.			2.1
state				2.1
status	The status.			2.1

Name	Description	Optional	Valid Value	Starting Version
virtStatus				3.5.0
metaData				2.1
matchedPci DeviceOfferingRef				2.1
mdevSpecRefs				3.5.0
groupBy	Groups rows into subgroups based on values of columns or expressions. This field is equivalent to the Group By clause in MySQL, such as groupBy =type.	Yes		2.1
createDate	The creation date. For more information, see Resource Property .			2.1
lastOpDate	The last operation date. For more information, see Resource Property .			2.1
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.1
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.1

PCI Device Offering Inventory

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			2.1
name	The name. For more information, see Resource Property .			2.1
description	The description. For more information, see Resource Property .	Yes		2.1
groupBy	Groups rows into subgroups based on values of columns or expressions. This field is equivalent to the Group By clause in MySQL, such as groupBy =type.	Yes		2.1
createDate	The creation date. For more information, see Resource Property .			2.1
lastOpDate	The last operation date. For more information, see Resource Property .			2.1
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.1

Name	Description	Optional	Valid Value	Starting Version
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.1

PCI Device and PCI Device Offering Reference Inventory

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			2.1
description	The description. For more information, see Resource Property .	Yes		2.1
hostUuid	The host UUID.			2.1
vmlInstanceUuid	The VM instance UUID.			2.1
vendorId				2.1
deviceID				2.1
subVendorId				2.1
subDeviceID				2.1
pciDeviceAddress	The PCI device address.			2.1
status				2.1
state				2.1
type	The type.			2.1
metaData				2.1
matchedPciDeviceOfferingRef				2.1

Name	Description	Optional	Valid Value	Starting Version
groupBy	Groups rows into subgroups based on values of columns or expressions. This field is equivalent to the Group By clause in MySQL, such as <code>groupBy =type</code> .	Yes		2.1
createDate	The creation date. For more information, see Resource Property .			2.1
lastOpDate	The last operation date. For more information, see Resource Property .			2.1
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.1
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.1

PCI Device Specification Inventory

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			3.5.0
name	The name. For more information,			3.5.0

Name	Description	Optional	Valid Value	Starting Version
	see Resource Property .			
description	The description. For more information, see Resource Property .	Yes		3.5.0
vendorId	The vendor ID.			3.5.0
deviceID	The device ID.			3.5.0
subVendorID	The sub-vendor ID.			3.5.0
subDeviceID	The sub-device ID.			3.5.0
ramSize	The RAM size.			3.5.0
maxPartNum	The maximum number of virtual functions.			3.5.0
isVirtual	Whether the device is a virtual device.			3.5.0
romVersion	The ROM version.			3.5.0
romMd5sum	The ROM MD5 checksum.			3.5.0
type	The type.		<ul style="list-style-type: none"> • GPU_Video_Controller • GPU_Audio_Controller • GPU_3D_Controller • Moxa_Device • Generic 	3.5.0
state	The state.		<ul style="list-style-type: none"> • Enabled • Disabled 	3.5.0

Name	Description	Optional	Valid Value	Starting Version
groupBy	Groups rows into subgroups based on values of columns or expressions. This field is equivalent to the Group By clause in MySQL, such as <code>groupBy =type</code> .	Yes		3.5.0
createDate	The creation date. For more information, see Resource Property .			3.5.0
lastOpDate	The last operation date. For more information, see Resource Property .			3.5.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.5.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.5.0

Sample

```
{
  "inventories": [
    {
      "uuid": "4e583459b0bb4a8085f2acf4040ab802",
      "name": "MSI_GTX1060",
      "description": "NVIDIA Corporation, GP106 [GeForce GTX 1060 6GB], a1, VGA compatible controller",
      "vendorId": "10de",
      "deviceId": "1c03",
      "subvendorId": "1462",
      "subdeviceId": "3283",
      "type": "GPU_Video_Controller",
    }
  ]
}
```

```

        "state": "Enabled",
        "romVersion": "86.06.0E.00.28",
        "createDate": "Nov 14, 2017 10:20:57 PM",
        "lastOpDate": "Nov 14, 2017 10:20:57 PM"
    }
]
}

```

VM Instance and PCI Device Specification Reference Inventory

Name	Description	Optional	Valid Value	Starting Version
vmlInstanceUuid	The VM instance UUID.			3.5.0
pciSpecUuid	The PCI device specification UUID.			3.5.0
pciDeviceNumber	The number of PCI devices to be attached to the VM instance . Note that these devices must conform to the PCI device specification. Default value: 1.			3.5.0
groupBy	Groups rows into subgroups based on values of columns or expressions. This field is equivalent to the Group By clause in MySQL , such as groupBy =type.	Yes		3.5.0
createDate	The creation date. For more information, see Resource Property .			3.5.0
lastOpDate	The last operation date. For more			3.5.0

Name	Description	Optional	Valid Value	Starting Version
	information, see Resource Property .			
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.5.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.5.0

Sample

```
{
  "inventories": [
    {
      "vmInstanceId": "c40d04f99f7647f2bf145aa6e3d463ff",
      "pciSpecUuid": "9afda707d3b14838adaa48d4295f3d5f",
      "pciDeviceNumber": 1.0,
      "createDate": "Nov 14, 2017 10:20:57 PM",
      "lastOpDate": "Nov 14, 2017 10:20:57 PM"
    }
  ]
}
```

MDEV Device Specification Inventory

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			3.5.0
name	The name. For more information, see Resource Property .			3.5.0
description	The description. For more information, see Resource Property .	Yes		3.5.0

Name	Description	Optional	Valid Value	Starting Version
specification	The specification details.			3.5.0
type	The type.		<ul style="list-style-type: none"> GPU_Video_Controller 	3.5.0
state	The state.		<ul style="list-style-type: none"> Enabled Disabled 	3.5.0
groupBy	Groups rows into subgroups based on values of columns or expressions. This field is equivalent to the Group By clause in MySQL, such as <code>groupBy =type</code> .	Yes		3.5.0
createDate	The creation date. For more information, see Resource Property .			3.5.0
lastOpDate	The last operation date. For more information, see Resource Property .			3.5.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.5.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.5.0

Sample

```
{
  "inventories": [
    {
      "uuid": "18ebda01fb874e7db54ccd3a6712e92d",
      "name": "GRID_M60-2A",
      "specification": "{ Max Resolution\u003d1920*1080, GRID License \u003dGRID-Virtual-Apps,3.0, Instance Number\u003d4, Display Heads \u003d4, Vendor\u003dNVIDIA, Frame Rate Limit\u003d60FPS, Name\u003dGRID_M60-2A, RAM\u003d2048MB}",
      "type": "GPU_Video_Controller",
      "state": "Enabled",
      "createDate": "Nov 14, 2017 10:20:57 PM",
      "lastOpDate": "Nov 14, 2017 10:20:57 PM"
    }
  ]
}
```

MDEV Device Inventory

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			3.5.0
name	The name. For more information, see Resource Property .			3.5.0
description	The description. For more information, see Resource Property .	Yes		3.5.0
parentUuid	The physical PCI device UUID.			3.5.0
hostUuid	The host UUID.			3.5.0
vmInstanceId	The VM instance UUID.			3.5.0
mdevSpecUuid	The UUID of the MDEV device specification.			3.5.0
type	The type.		• GPU_Video_Controller	3.5.0

Name	Description	Optional	Valid Value	Starting Version
state	The state.		<ul style="list-style-type: none"> Enabled Disabled 	3.5.0
status			<ul style="list-style-type: none"> Active Attached 	3.5.0
groupBy	Groups rows into subgroups based on values of columns or expressions. This field is equivalent to the Group By clause in MySQL, such as <code>groupBy =type</code> .	Yes		3.5.0
createDate	The creation date. For more information, see Resource Property .			3.5.0
lastOpDate	The last operation date. For more information, see Resource Property .			3.5.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.5.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.5.0

Sample

```
{
  "inventories": [
    {
      "uuid": "597624b580d1458f82671b0ef77cf6a4",
      "name": "Inventory A"
    }
  ]
}
```

```

        "name": "GRID M60-2A",
        "parentUuid": "90c171f07b21452b87b6d5ee58f4d687",
        "hostUuid": "b440c9393fc644cc8394d789ea1e18e1",
        "mdevSpecUuid": "91b07312092741f18a382942a92f1373",
        "type": "GPU_Video_Controller",
        "state": "Enabled",
        "status": "Active",
        "createDate": "Nov 14, 2017 10:20:57 PM",
        "lastOpDate": "Nov 14, 2017 10:20:57 PM"
    }
]
}

```

VM Instance and MDEV Device Specification Reference Inventory

Name	Description	Optional	Valid Value	Starting Version
vmlInstanceUuid	The VM instance UUID.			3.5.0
mdevSpecUuid	The UUID of the MDEV device specification.			3.5.0
mdevDevice Number	The number of MDEV devices to be attached to the VM instance . Note that these devices must conform to the MDEV device specification. Default value: 1.			3.5.0
groupBy	Groups rows into subgroups based on values of columns or expressions. This field is equivalent to the Group By clause in MySQL , such as groupBy =type.	Yes		3.5.0
createDate	The creation date. For more information,			3.5.0

Name	Description	Optional	Valid Value	Starting Version
	see Resource Property .			
lastOpDate	The last operation date. For more information, see Resource Property .			3.5.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.5.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.5.0

Sample

```
{
  "inventories": [
    {
      "vmInstanceUuid": "56bfe280b3c84fe2abf1281a7050aabe",
      "mdevSpecUuid": "461d734e25824e4e9516c4798fa27068",
      "mdevDeviceNumber": 1.0,
      "createDate": "Nov 14, 2017 10:20:57 PM",
      "lastOpDate": "Nov 14, 2017 10:20:57 PM"
    }
  ]
}
```

5.2.3.5.3 Operations

5.2.3.5.3.1 QueryPciDevice

Queries a PCI device. For example,

```
QueryPciDevice
```

Primitive Fields of Query

See [PCI Device Inventory](#).

Nested and Expanded Fields of Query

Field	Inventory	Description	Starting Version
host	<i>Host Inventory</i>	The host to which the PCI device belongs.	3.4.0
matchedPciDeviceOffering	<i>PCI Device Offering Inventory</i>	The PCI device offering.	3.4.0
matchedPciDeviceOfferingRef	<i>PCI Device Offering Inventory</i>	The PCI device offering list.	3.4.0
vmlInstance	<i>VM Inventory</i>	The VM instance to which the PCI device is attached.	3.4.0

5.2.3.5.3.2 UpdatePciDevice

Updates a PCI device. For example,

```
UpdatePciDevice uuid=47c749c4520c3c5ba2ddcb6bf725cc40 state=Enabled
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			2.1
state		Yes	<ul style="list-style-type: none"> • Enabled • Disabled 	2.1
description	The detailed description of the resource.	Yes		2.1
metaData		Yes		2.1
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.1
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.1

Name	Description	Optional	Valid Value	Starting Version
timeout		Yes		

5.2.3.5.3.3 DeletePciDevice

Deletes a PCI device. For example,

```
DeletePciDevice uuid=e48a9a18b86946af89ad991945942f6c
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			
deleteMode		Yes		
userTags	The user tags. For more information, see CreateUserTag .	Yes		
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		
timeout		Yes		

5.2.3.5.3.4 GetPciDeviceCandidatesForAttachingVm

Obtains a PCI device list. For example,

```
GetPciDeviceCandidatesForAttachingVm vmInstanceUuid=99bc47cf68e340a1b0a85c874637ec7b
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
vmInstanceUuid	The VM instance UUID.			2.1
types		Yes		2.1
userTags	The user tags. For more	Yes		2.1

Name	Description	Optional	Valid Value	Starting Version
	information, see CreateUserTag			
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.1
timeout		Yes		

5.2.3.5.3.5 GetPciDeviceCandidatesForNewCreateVm

Obtains PCI devices that can be attached. For example,

```
GetPciDeviceCandidatesForNewCreateVm
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
hostUuid	The host UUID.	Yes		2.4
clusterUuids		Yes		2.4
types		Yes		2.4
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.4
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.4
timeout		Yes		

5.2.3.5.3.6 AttachPciDeviceToVm

Attaches a PCI device to a VM instance. For example,

```
AttachPciDeviceToVm pciDeviceUuid=b17bee8ff0814edc9661a65b281d2d78
vmInstanceUuid=4d0454694e264b2cafaa2adfd3e48602
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
pciDeviceUuid	The PCI device UUID.			2.1
vmInstanceUuid	The VM instance UUID.			2.1
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.1
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.1
timeout		Yes		

5.2.3.5.3.7 DetachPciDeviceFromVm

Detaches a PCI device from a VM instance. For example,

```
DetachPciDeviceFromVm pciDeviceUuid=056dbc6f8170409a953c120a16a87d18
vmInstanceUuid=3b1256e08a6544f4abe7de5b9ea81970
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
pciDeviceUuid	The PCI device UUID.			2.1
vmInstanceUuid	The VM instance UUID.			2.1
userTags	The user tags. For more	Yes		2.1

Name	Description	Optional	Valid Value	Starting Version
	information, see CreateUserTag .			
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.1
timeout		Yes		

5.2.3.5.3.8 CreatePciDeviceOffering

Creates a PCI device offering. For example,

```
CreatePciDeviceOffering vendorId=10de deviceId=0e0f
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
name	The resource name.	Yes		2.1
description	The detailed description of the resource.	Yes		2.1
type		Yes		2.1
vendorId	The vendor ID.			2.1
deviceId	The device ID.			2.1
subvendorId	The sub-vendor ID.	Yes		2.1
subdeviceId	The sub-device ID.	Yes		2.1
resourceUuid		Yes		2.1
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.1
systemTags	The system tags. For more information, see	Yes		2.1

Name	Description	Optional	Valid Value	Starting Version
	CreateSystemTag .			
timeout		Yes		

5.2.3.5.3.9 DeletePciDeviceOffering

Deletes a PCI device offering. For example,

```
DeletePciDeviceOffering uuid=900f2eefdec630c68313eb025123375d
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			2.1
deleteMode	The delete mode.	Yes		2.1
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.1
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.1
timeout		Yes		

5.2.3.5.3.10 QueryPciDeviceOffering

Queries a PCI device offering. For example,

```
QueryPciDeviceOffering
```

Primitive Fields of Query

See [PCI Device Offering Inventory](#).

Nested and Expanded Fields of Query

Field	Inventory	Description	Starting Version
attachedInstanceOfferingRef	Instance Offering Inventory	The attached instance offering list.	2.1
attachedInstanceOfferings	Instance Offering Inventory	The attached instance offering.	2.1
matchedPciDevice	<i>PCI Device Inventory</i>	The matched PCI device.	2.1
matchedPciDevices	<i>PCI Device Inventory</i>	The matched PCI device.	2.1

5.2.3.5.3.11 QueryPciDevicePciDeviceOffering

Queries a matched PCI device offering. For example,

```
QueryPciDevicePciDeviceOffering
```

Primitive Fields of Query

See [PCI Device and PCI Device Offering Reference Inventory](#).

Nested and Expanded Fields of Query

Field	Inventory	Description	Starting Version
pciDevice	<i>PCI Device Inventory</i>	The matched PCI device.	2.1
pciDeviceOffering	<i>PCI Device Offering Inventory</i>	The matched PCI offering.	2.1

5.2.3.5.3.12 GetHostIommuStatus

Obtains the host IOMMU status. For example,

```
GetHostIommuStatus uuid=5dd20f6d5e414a15a8923f349758b5ff
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			2.1
userTags	The user tags. For more	Yes		2.1

Name	Description	Optional	Valid Value	Starting Version
	information, see CreateUserTag .			
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.1
timeout		Yes		

5.2.3.5.3.13 UpdateHostIommuState

Updates the host IOMMU state. For example,

```
UpdateHostIommuState uuid=b86c9016b4f24953a9edefb53ca0678c state=Enabled
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			2.1
state			<ul style="list-style-type: none"> • Enabled • Disabled 	2.1
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.1
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.1
timeout		Yes		

5.2.3.5.3.14 GetHostIommuState

Obtains the host IOMMU state. For example,

```
GetHostIommuState uuid=637890e6fd754515a256c9c105d5c1c7
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			2.1
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.1
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.1
timeout		Yes		

5.2.3.5.3.15 AddPciDeviceSpecToVmInstance

Adds a PCI device specification to a VM instance. For example,

```
AddPciDeviceSpecToVmInstance pciSpecUuid=f9e3605232d343d99bca  
77ba13c1ca34 vmInstanceId=ed0836204dbd496bb9cfa25f091d9d4a
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
pciSpecUuid	The PCI device specification UUID.			3.5.0
vmInstanceId	The VM instance UUID.			3.5.0
pciDeviceNumber		Yes		3.5.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.5.0

Name	Description	Optional	Valid Value	Starting Version
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.5.0
timeout		Yes		

5.2.3.5.3.16 RemovePciDeviceSpecFromVmInstance

Removes a PCI device specification from a VM instance. For example,

```
RemovePciDeviceSpecFromVmInstance pciSpecUuid=f9e3605232d343d99bca
77ba13c1ca34 vmInstanceUuid=ed0836204dbd496bb9cfa25f091d9d4a
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
pciSpecUuid	The PCI device specification UUID.			3.5.0
vmInstanceUuid	The VM instance UUID.			3.5.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.5.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.5.0
timeout		Yes		

5.2.3.5.3.17 UpdatePciDeviceSpec

Updates a PCI device specification. For example,

```
UpdatePciDeviceSpec uuid=ff483f5d5bf14587ac2d46a565b0f28f state=Disabled
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			3.5.0
name	The resource name.	Yes		3.5.0
description	The detailed description of the resource.	Yes		3.5.0
romContent	The ROM content encoded in Base64 format.	Yes		3.5.0
romVersion	The ROM version.	Yes		3.5.0
abandonSpecRom	Whether to delete the existing ROM.	Yes		3.5.0
state	The state of the PCI device specification.	Yes	<ul style="list-style-type: none"> • Enabled • Disabled 	3.5.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.5.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.5.0
timeout		Yes		

5.2.3.5.3.18 GetPciDeviceSpecCandidates

Obtains a list of candidate PCI device specifications. For example,

```
GetPciDeviceSpecCandidates hostUuid=87aceed20b6a46fbb4e45b74a514af9
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
clusterUuids	The cluster UUID.	Yes		3.5.0
hostUuid	The host UUID.	Yes		3.5.0
vmInstanceUuid	The VM instance UUID.	Yes		3.5.0
vmInstanceUuids	The VM instance UUID list.	Yes		3.6.1
types	The device type.	Yes		3.5.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.5.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.5.0
timeout		Yes		

5.2.3.5.3.19 QueryPciDeviceSpec

Queries a PCI device specification. For example,

```
QueryPciDeviceSpec
```

Primitive Fields of Query

See [PCI Device Specification Inventory](#).

5.2.3.5.3.20 QueryVmInstancePciDeviceSpecRef

Queries the reference between a VM instance and a PCI device specification. For example,

```
QueryVmInstancePciDeviceSpecRef
```

Primitive Fields of Query

See [VM Instance and PCI Device Specification Reference Inventory](#).

Nested and Expanded Fields of Query

Field	Inventory	Description	Starting Version
pciSpec	PCI Specification Inventory	The PCI device specification.	3.5.0
vmlInstance	VM Instance Inventory	The VM instance associated with the PCI device specification.	3.5.0

5.2.3.5.3.21 GenerateSriovPciDevices

Segments a PCI device that supports SR-IOV. For example,

```
GenerateSriovPciDevices pciDeviceUuid=ce07829a08273d129f3b9d11cdf830b9  
virtPartNum=4.0
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
pciDeviceUuid	The PCI device UUID.			3.5.0
virtPartNum	The number of virtual functions.			3.5.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.5.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.5.0

Name	Description	Optional	Valid Value	Starting Version
timeout		Yes		

5.2.3.5.3.22 UngenerateSriovPciDevices

Restores a PCI device that supports SR-IOV. For example,

```
UngenerateSriovPciDevices pciDeviceUuid=ce07829a08273d129f3b9d11cdf830b9
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
pciDeviceUuid	The PCI device UUID.			3.5.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.5.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.5.0
timeout		Yes		

5.2.3.5.3.23 GenerateMdevDevices

Segments a PCI device that supports VFIO_MDEV. For example,

```
GenerateMdevDevices pciDeviceUuid=b5b60d1bc9353c948c635a500a044c97mdevSpecUuid=013f5f259daa3e119ec79496ed2f5697
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
pciDeviceUuid	The PCI device UUID.			3.5.0
mdevSpecUuid	The UUID of the MDEV device specification.			3.5.0

Name	Description	Optional	Valid Value	Starting Version
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.5.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.5.0
timeout		Yes		

5.2.3.5.3.24 UngenerateMdevDevices

Restores a PCI device that supports VFIO_MDEV. For example,

```
UngenerateMdevDevices pciDeviceUuid=772a0f2d8aaa3626964e080122a48c25
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
pciDeviceUuid	The UUID of the PCI device from which the MDEV device is generated.			3.5.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.5.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.5.0
timeout		Yes		

5.2.3.5.3.25 QueryMdevDeviceSpec

Queries an MDEV device that is segmented from a PCI device. For example,

```
QueryMdevDeviceSpec
```

Primitive Fields of Query

See [MDEV Device Specification Inventory](#).

5.2.3.5.3.26 AttachMdevDeviceToVm

Attaches an MDEV device, which is segmented from a PCI device, to a VM instance. For example,

```
AttachMdevDeviceToVm mdevDeviceUuid=072b847576c34b419a29b16f62198e09
vmInstanceUuid=e4108c6e45303e3bbd9743093127b894
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
mdevDeviceUuid	The MDEV device UUID.			3.5.0
vmInstanceUuid	The VM instance UUID.			3.5.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.5.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.5.0
timeout		Yes		

5.2.3.5.3.27 DetachMdevDeviceFromVm

Detaches an MDEV device, which is segmented from a PCI device, from a VM instance. For example,

```
DetachMdevDeviceFromVm mdevDeviceUuid=4c2897ae50b8370489aa2e0caa96d370
vmInstanceUuid=16aefaf196d5535f6836ec25d301ee3aa
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
mdevDeviceUuid	The MDEV device UUID.			3.5.0
vmInstanceUuid	The VM instance UUID.			3.5.0
deleteMode	The delete mode. Options : Permissive Enforcing. Default mode: Permissive.	Yes		3.5.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.5.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.5.0
timeout		Yes		

5.2.3.5.3.28 UpdateMdevDevice

Updates the MDEV device that is segmented from a PCI device. For example,

```
UpdateMdevDevice uuid=d026caddef774497aaaf494d032fc8d61 state=Disabled
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			3.5.0
name	The resource name.	Yes		3.5.0
description	The detailed description of the resource.	Yes		3.5.0
state	The state of the MDEV device.	Yes	<ul style="list-style-type: none"> • Enabled • Disabled 	3.5.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.5.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.5.0
timeout		Yes		

5.2.3.5.3.29 GetMdevDeviceCandidates

Obtains the available MDEV devices. For example,

```
GetMdevDeviceCandidates hostUuid=f1c21432e12245e78ee05324bb0886b4
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
clusterUuids	The cluster UUID.	Yes		3.5.0
hostUuid	The host UUID.	Yes		3.5.0

Name	Description	Optional	Valid Value	Starting Version
vmlInstanceUuid	The VM instance UUID.	Yes		3.5.0
types	The device types.	Yes		3.5.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.5.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.5.0
timeout		Yes		

5.2.3.5.3.30 QueryMdevDevice

Queries the MDEV device that is segmented from a PCI device. For example,

```
QueryMdevDevice
```

Primitive Fields of Query

See [MDEV Device Inventory](#).

Nested and Expanded Fields of Query

Field	Inventory	Description	Starting Version
host	Host Inventory	The host to which the MDEV device belongs.	3.5.0
mdevDeviceSpec	MDEV Device Specification Inventory	The MDEV device specification.	3.5.0
parent	Parent Inventory	The parent device.	3.5.0
vmlInstance	VM Instance Inventory	The VM instance to which the MDEV device is attached.	3.5.0

5.2.3.5.3.31 AddMdevDeviceSpecToVmInstance

Adds an MDEV device specification to a VM instance. For example,

```
AddMdevDeviceSpecToVmInstance mdevSpecUuid=aa2e5e2cd0e749fab48e
d045117ed70b vmInstanceId=e2af8f869eff49d2a3d6f86cadc27090
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
mdevSpecUuid	The UUID of the MDEV device specification.			3.5.0
vmInstanceId	The VM instance UUID.			3.5.0
mdevDeviceNumber		Yes		3.5.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.5.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.5.0
timeout		Yes		

5.2.3.5.3.32 RemoveMdevDeviceSpecFromVmInstance

Removes an MDEV device specification from a VM instance. For example,

```
RemoveMdevDeviceSpecFromVmInstance mdevSpecUuid=195f9b240d4a3f8b9946
950694745fff vmInstanceId=76ce5da88e383ee983955f3a24aea5cf
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
mdevSpecUuid	The UUID of the MDEV device specification.			3.5.0

Name	Description	Optional	Valid Value	Starting Version
vmlInstanceUuid	The VM instance UUID.			3.5.0
deleteMode	The delete mode. Options : Permissive Enforcing. Default mode: Permissive.	Yes		3.5.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.5.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.5.0
timeout		Yes		

5.2.3.5.3.33 UpdateMdevDeviceSpec

Updates an MDEV device specification. For example,

```
UpdateMdevDeviceSpec uuid=7cb7791f5c334fa699670765199e47ae state=Enabled
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			3.5.0
name	The resource name.	Yes		3.5.0
description	The detailed description of the resource.	Yes		3.5.0
state	The specification state.	Yes	<ul style="list-style-type: none"> • Enabled • Disabled 	3.5.0

Name	Description	Optional	Valid Value	Starting Version
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.5.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.5.0
timeout		Yes		

5.2.3.5.3.34 GetMdevDeviceSpecCandidates

Obtains an MDEV device specification. For example,

```
GetMdevDeviceSpecCandidates hostUuid=319897b485313c7a96b0af986b91baea
```

Parameters

Name	Description	Description	Valid Value	Starting Version
clusterUuids	The cluster UUID.	Yes		3.5.0
hostUuid	The host UUID.	Yes		3.5.0
vmInstanceUuid	The VM instance UUID.	Yes		3.5.0
vmInstanceUuids	The VM instance UUID list.	Yes		3.6.1
types	The device types.	Yes		3.5.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.5.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.5.0
timeout		Yes		

5.2.3.5.3.35 QueryVmInstanceMdevDeviceSpecRef

Queries the reference between a VM instance and an MDEV device specification. For example,

```
QueryVmInstanceMdevDeviceSpecRef
```

Primitive Fields of Query

See [VM Instance and MDEV Device Specification Reference Inventory](#).

Nested and Expanded Fields of Query

Field	Inventory	Description	Starting Version
mdevSpec	MDEV Specification Inventory	The MDEV device specification.	3.5.0
vmlInstance	VM Instance Inventory	The VM instance associated with the MDEV device specification.	3.5.0

5.2.3.5.4 Tags

You can create a tag on a PCI device offering by using `resourceType=PciDeviceOfferingVO`. For example,

```
CreateUserTag resourceType=PciDeviceOfferingVO tag=PciDeviceOffering \
resourceUuid=043ef942ef97460bba5c9381bb7a7455
```

5.2.3.6 USB Redirection

5.2.3.6.1 Overview

ZStack Cloud allows you to redirect a USB device to a VM instance. For example, when you need to use the VDI feature, you can redirect the USB device from the VDI client to the VDI VM instance.

5.2.3.6.2 Operations

5.2.3.6.2.1 GetVmUsbRedirect

Obtains the USB redirection switch status of a VM instance. For example,

```
GetVmUsbRedirect uuid=bb5fd18e914f4bfd88032edd0ee7b975
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			2.1
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.1
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.1
timeout		Yes		

5.2.3.6.2.2 SetVmUsbRedirect

Sets the USB redirection switch status of a VM instance. For example,

```
SetVmUsbRedirect uuid=8c14cf1dd17642c19622c924d065bb00 enable=true
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			2.1
enable	If true, the USB redirection switch is enabled, or vice versa.		<ul style="list-style-type: none"> • True • False 	2.1
userTags	The user tags. For more	Yes		2.1

Name	Description	Optional	Valid Value	Starting Version
	information, see CreateUserTag .			
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.1
timeout		Yes		

5.2.3.7 USB Pass-through

5.2.3.7.1 Overview

ZStack Cloud provides the USB passthrough feature, which means that a USB device on a host can be directly passed through to a VM instance. A USB passthrough has the following two modes:

- Direct passthrough: Assume that a USB device is attached to a VM instance on a host. When you migrate this VM instance, you need to detach this USB device.
- Transmission passthrough: Assume that a USB device is attached to a VM instance in a cluster where the host of the VM instance is running. When you migrate this VM instance, you do not need to detach this USB device.

5.2.3.7.2 Inventory

USB Device Inventory

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			2.2
name	The name. For more information, see Resource Property .			2.2
description	The description. For more information,	Yes		2.2

Name	Description	Optional	Valid Value	Starting Version
	see Resource Property .			
hostUuid	The host UUID.			2.2
vmlInstanceUuid	The VM instance UUID.			2.2
busNum	The bus No.			2.2
devNum	The device No.			2.2
idVendor	The vendor ID.			2.2
idProduct	The product ID.			2.2
iManufacturer	The manufacturer .			2.2
iProduct	The product type.			2.2
iSerial	The serial No.			2.2
usbVersion	The USB version.			2.2
attachType	The attaching type.			3.5.0
state	The state.			2.2
groupBy	Groups rows into subgroups based on values of columns or expressions. This field is equivalent to the Group By clause in MySQL , such as groupBy =type.	Yes		2.2
createDate	The creation date. For more information, see Resource Property .			2.2
lastOpDate	The last operation date. For more information,			2.2

Name	Description	Optional	Valid Value	Starting Version
	see Resource Property .			
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.2
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.2

Sample

```
{
  "inventory": {
    "uuid": "dc782167a4853525848fd04bf606d072",
    "name": "usb",
    "hostUuid": "dea6020aae7b3244be45eee6ae1d4d0f",
    "vmInstanceUuid": "33471e0ae8a33b3b8b0f295eff6e4db4",
    "state": "Enabled",
    "busNum": "001",
    "devNum": "001",
    "idVendor": "0781",
    "idProduct": "5591",
    "iManufacturer": "SanDisk",
    "iProduct": "Ultra USB 3.0",
    "iSerial": "000000000001",
    "usbVersion": "3.0",
    "attachType": "PassThrough"
  }
}
```

5.2.3.7.3 Operations

5.2.3.7.3.1 AttachUsbDeviceToVm

Attaches a USB device to a VM instance. For example,

```
AttachUsbDeviceToVm usbDeviceUuid=09d68ab1c91442c4bdb9f5b59079e9ac
vmInstanceUuid=4889075483754968bab966ba3294747a
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
usbDeviceUuid	The USB device UUID.			2.2

Name	Description	Optional	Valid Value	Starting Version
vmlInstanceUuid	The VM instance UUID.			2.2
attachType	The attaching type.	Yes	<ul style="list-style-type: none"> PassThrough Redirect 	3.5.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.2
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.2
timeout		Yes		

5.2.3.7.3.2 DetachUsbDeviceFromVm

Detaches a USB device from a VM instance. For example,

```
DetachUsbDeviceFromVm usbDeviceUuid=5256c889e9f0489e8fd12b66d176fb7d
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
usbDeviceUuid	The USB device UUID.			2.2
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.2
systemTags	The user tags. For more information, see CreateSystemTag .	Yes		2.2
timeout		Yes		

5.2.3.7.3.3 GetUsbDeviceCandidatesForAttachingVm

Obtains a list of USB devices that can be passed through to a VM instance. For example,

```
GetUsbDeviceCandidatesForAttachingVm vmInstanceUuid=ccc9b37a79  
154f4c9bc422798dc6e293
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
vmlInstanceUuid	The VM instance UUID.			2.2
attachType	The attaching type.		<ul style="list-style-type: none"> PassThrough Redirect 	3.5.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.2
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.2
timeout		Yes		

5.2.3.7.3.4 QueryUsbDevice

Queries a USB device. For example,

```
QueryUsbDevice
```

Primitive Fields of Query

See [USB Device Inventory](#).

Nested and Expanded Fields of Query

Field	Inventory	Description	Starting Version
host	Host Inventory	The host to which the PCI device belongs.	2.2
vmlInstance	VM Inventory	The VM instance to which the PCI device is attached.	2.2

5.2.3.7.3.5 UpdateUsbDevice

Updates a USB device. For example,

```
UpdateUsbDevice uuid=USB state=Enabled
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			2.2
name	The resource name.	Yes		2.2
description	The detailed description of the resource.	Yes		2.2
state	The USB device state.	Yes	<ul style="list-style-type: none"> • Enabled • Disabled 	2.2
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.2
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.2
timeout		Yes		

5.2.3.8 SR-IOV

5.2.3.8.1 Overview

Single-root input/output virtualization (SR-IOV) is a PCI device virtualization specification that can divide a physical function (PF) into multiple virtual functions (VFs). These VFs share a PCI Express (PCIe).

For example, you can assign a VF NIC to a VM instance without considering the virtualization layer. Compared with traditional virtualization solutions, SR-IOV has the following advantages:

- Shorten the data transmission path, improving the I/O performance of VM instances.

- Reduce the consumption of host CPU resources, avoiding packet loss even a host has huge CPU load.

5.2.3.8.2 Operations

5.2.3.8.2.1 IsVfNicAvailableInL3Network

Checks whether a VF NIC is available on an L3 network. For example,

```
IsVfNicAvailableInL3Network l3NetworkUuid=443e156ec6883356974f
97f803187310 hostUuid=037404d26b033e9d9fe0d3e7e4bbbaa8b
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
l3NetworkUuid	The L3 network UUID.			3.9.0
hostUuid	The host UUID.			3.9.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.9.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.9.0
timeout		Yes		

5.2.3.8.2.2 ChangeVmNicType

Change the VM NIC type. For example,

```
ChangeVmNicType vmNicUuid=ba83aa15baf33e792267c428465b1e5 vmNicType=
VNIC
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
vmNicUuid	The VM NIC UUID.			3.9.0
vmNicType	The VM NIC type.		• VNIC	3.9.0

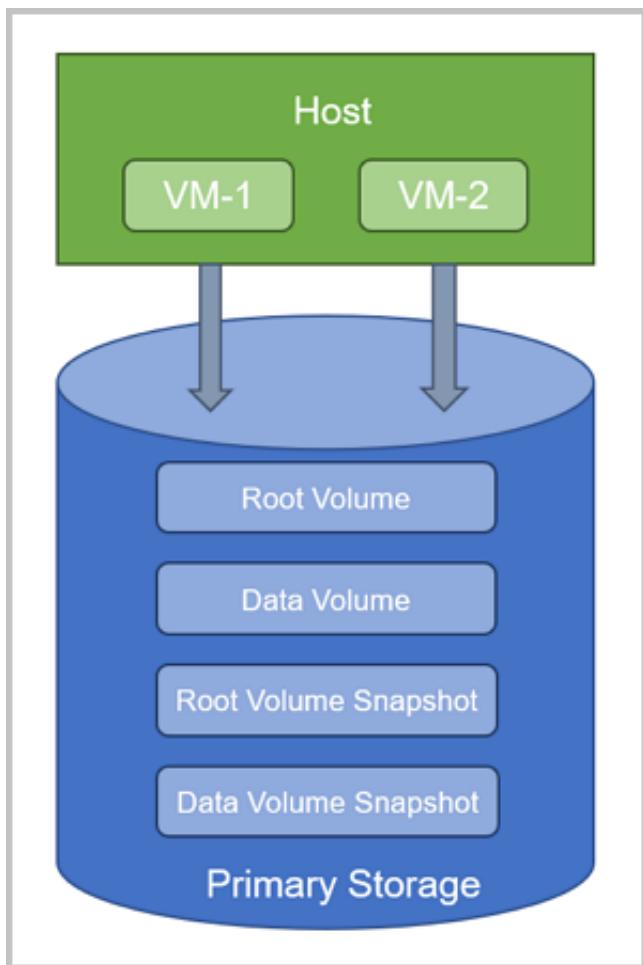
Name	Description	Optional	Valid Value	Starting Version
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.9.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.9.0
timeout		Yes		

5.2.4 Primary Storage

5.2.4.1 Overview

A primary storage is a storage server used to store disk files, such as root volumes, data volumes, root volume snapshots, data volume snapshots, and image caches, for VM instances.

As shown in [Primary Storage](#).

Figure 5-9: Primary Storage

A primary storage can either be a local storage or a shared storage.

- **Local Storage:** Use the hard disks of a host to store disk files.
- **Network Shared Storage:** Support NFS, Shared Mount Point, Ceph, and Shared Block.
 - NFS is a network file system storage.
 - Shared Mount Point supports network shared storages provided by commonly used distributed file systems such as MooseFS, GlusterFS, OCFS2, and GFS2.
 - Ceph uses distributed block storages.
 - Shared Block uses shared block storages.

5.2.4.2 Inventory

Properties

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			0.6
name	The name. For more information, see Resource Property .			0.6
description	The description. For more information, see Resource Property .	Yes		0.6
zoneUuid	The parent zone UUID.			0.6
totalCapacity	The total disk capacity. Unit: byte.			0.6
availableCapacity	The available disk capacity. Unit: byte.			0.6
url	The URL. For more information, see URL .			0.6
type	The primary storage type.		<ul style="list-style-type: none"> • SharedMountPoint • XSky • Ceph • NFS • ZSES • VCenter • LocalStorage 	0.6

Name	Description	Optional	Valid Value	Starting Version
state	The state. For more information, see State .		<ul style="list-style-type: none"> Enabled Disabled 	0.6
status	The status. For more information, see Status .		<ul style="list-style-type: none"> Connecting Connected Disconnected 	0.6
attachedClusterUuids	The UUIDs of clusters to which the primary storage is attached.			0.6
createDate	The creation date. For more information, see Resource Property .			0.6
lastOpDate	The last operation date. For more information, see Resource Property .			0.6

Sample

```
{
  "inventories": {
    "attachedClusterUuids": [
      "967a353c2893409dab9312cf3033a98c"
    ],
    "availableCapacity": 152897413120,
    "availablePhysicalCapacity": 186166145024,
    "createDate": "Oct 30, 2017 3:05:29 PM",
    "description": "",
    "lastOpDate": "Oct 31, 2017 10:41:26 AM",
    "mountPath": "/Cloud_ps",
    "name": "LS-1",
    "state": "Enabled",
    "status": "Connected",
    "systemUsedCapacity": 9330311168,
    "totalCapacity": 205177397248,
    "totalPhysicalCapacity": 205177397248,
    "type": "LocalStorage",
    "url": "/Cloud_ps",
    "uuid": "037bd212f7a1488da4f94360ccfaf6ab",
    "zoneUuid": "e59b71e99d8a4ea1952b578388b8cd1d"
  }
}
```

{}

Table 5-3: Shared Block Primary Storage Inventory

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			2.3.2
name	The name. For more information, see Resource Property .			2.3.2
description	The description. For more information, see Resource Property .	Yes		2.3.2
zoneUuid	The zone UUID.			2.3.2
url	The reserved field .			2.3.2
totalCapacity	The total disk capacity. Unit: byte.			2.3.2
availableCapacity	The available capacity. Unit: byte.			2.3.2
totalPhysicalCapacity	The total physical capacity.			2.3.2
availablePhysicalCapacity	The available physical capacity.			2.3.2
systemUsedCapacity	The system used capacity.			2.3.2
type	The primary storage type.		• sharedblock	2.3.2
state	The state. For more information, see State .			2.3.2

Name	Description	Optional	Valid Value	Starting Version
status	The status. For more information, see Status .			2.3.2
mountPath	The reserved field.			2.3.2
attachedClusterUuids	The attached clusters.			2.3.2
sharedBlocks				2.3.2
sharedBlockGroupType				2.3.2
createDate	The creation date. For more information, see Resource Property .			2.3.2
lastOpDate	The last operation date. For more information, see Resource Property .			2.3.2
groupBy	Groups rows into subgroups based on values of columns or expressions. This field is equivalent to the Group By clause in MySQL, such as <code>groupBy =type</code> .	Yes		2.3.2
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.3.2
systemTags	The system tags. For more information, see	Yes		2.3.2

Name	Description	Optional	Valid Value	Starting Version
	CreateSystemTag.			

Sample:

```
{
    "inventories": [
        {
            "attachedClusterUuids": [
                "4fe9c130224c4e59b0e8f3c5154c2cf6"
            ],
            "availableCapacity": 401458101248,
            "availablePhysicalCapacity": 400363094016,
            "createDate": "Jul 19, 2018 7:59:08 PM",
            "description": "",
            "lastOpDate": "Jul 19, 2018 8:01:37 PM",
            "mountPath": "SharedBlock",
            "name": "ps2-cluster3",
            "sharedBlockGroupType": "LvmVolumeGroupBasic",
            "sharedBlocks": [
                {
                    "createDate": "Jul 19, 2018 7:59:08 PM",
                    "diskUuid": "scsi-360014056cc00bd98c3740eeb9955af2c",
                    "lastOpDate": "Jul 19, 2018 7:59:08 PM",
                    "name": "disk-scsi-360014056cc00bd98c3740eeb9955af2c",
                    "sharedBlockGroupUuid": "17edb2c2f5b841069d043a28758434f6",
                    "state": "Enabled",
                    "status": "Connected",
                    "type": "LvmLogicalVolumeBasic",
                    "uuid": "37ce4c4747914c01919f5474d1c7edfe"
                },
                {
                    "state": "Enabled",
                    "status": "Connected",
                    "totalCapacity": 639883018240,
                    "totalPhysicalCapacity": 639883018240,
                    "type": "SharedBlock",
                    "url": "sharedblock://ec6a1dbaf6d645a182e1f0e393eb0761",
                    "uuid": "ec6a1dbaf6d645a182e1f0e393eb0761",
                    "zoneUuid": "ddad0dc2c4bd4ffbb53147ea3dbf15c3"
                }
            ],
            "success": true
        }
    ]
}
```

Table 5-4: Shared Block Primary Storage and Host Reference Inventory

Name	Description	Optional	Valid Value	Starting Version
primaryStorageUuid	The primary storage UUID.			2.3.2

Name	Description	Optional	Valid Value	Starting Version
hostUuid	The host UUID.			2.3.2
hostId	The host ID.			2.3.2
status	The status. For more information, see Status .		<ul style="list-style-type: none"> • Connecting • Connected • Disconnected 	2.3.2
createDate	The creation date. For more information, see Resource Property .			2.3.2
lastOpDate	The last operation date. For more information, see Resource Property .			2.3.2
groupBy	Groups rows into subgroups based on values of columns or expressions. This field is equivalent to the Group By clause in MySQL, such as <code>groupBy =type</code> .	Yes		2.3.2
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.3.2
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.3.2

Sample:

```
{
  "inventories": [
```

```
{
    "createDate": "Jul 19, 2018 7:59:09 PM",
    "hostId": 85,
    "hostUuid": "18fb1cf9713a4a50baf95fbaf37bfba6",
    "lastOpDate": "Jul 19, 2018 7:59:09 PM",
    "primaryStorageUuid": "17edb2c2f5b841069d043a28758434f6",
    "status": "Connected"
}
],
"success": true
}
```

Table 5-5: Shared Block Inventory

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			2.3.2
name	The name. For more information, see Resource Property .			2.3.2
description	The description. For more information, see Resource Property .	Yes		2.3.2
sharedBlockGroupUuid	The LUN group UUID.			2.3.2
diskUuid	The unique identifier of the disk. For example, UUID, WWN, and WWID.			2.3.2
type	The primary storage type.		• sharedblock	2.3.2
state	The state. For more information, see State .			2.3.2
status	The status. For more information, see Status .			2.3.2

Name	Description	Optional	Valid Value	Starting Version
createDate	The creation date. For more information, see Resource Property .			2.3.2
lastOpDate	The last operation date. For more information, see Resource Property .			2.3.2
groupBy	Groups rows into subgroups based on values of columns or expressions. This field is equivalent to the Group By clause in MySQL, such as groupBy =type.	Yes		2.3.2
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.3.2
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.3.2

Sample:

```
{
  "inventories": [
    {
      "createDate": "Jul 17, 2018 8:50:14 PM",
      "diskUuid": "lvm-pv-uuid-h6Zlks-feeq-Jonz-eXLw-tys0-NPXn-
6B6jfs",
      "lastOpDate": "Jul 17, 2018 8:50:14 PM",
      "name": "disk-lvm-pv-uuid-h6Zlks-feeq-Jonz-eXLw-tys0-NPXn-
6B6jfs",
      "sharedBlockGroupUuid": "ec6a1dbaf6d645a182e1f0e393eb0761
",
      "state": "Enabled",
    }
  ]
}
```

```

        "status": "Connected",
        "type": "LvmLogicalVolumeBasic",
        "uuid": "08dad40070054309b00d2174a1476675"
    },
],
"success": true
}

```

Capacity

ZStack Cloud monitors disk capacities of primary storages to select one suitable primary storage for creating volumes. Different primary storage plugins may report different disk capacities.

- For primary storages that support over-provisioning, the reported capacity will be larger than the actual capacity.
- For primary storages that do not support over-provisioning, the reported capacity may be smaller than or equal to the actual capacity.

NFS Capacity

NFS does not support over-provisioning. Therefore, the NFS capacity is calculated by volumes' virtual sizes according to the following formulas:

```
totalCapacity = NFS's total capacity
availableCapacity = totalCapacity - sum (volumes' virtual sizes)
```

Simply put, a volume's virtual size is the size when a volume is fully filled. For example, when you create a volume with 1 GB capacity, its actual size may be 10 MB due to the thin-provisioning technology before the volume is fully filled.

URL

A URL is a string that contains information needed by primary storage to control storage systems. Although its name is URL, the exact format of the string is up to primary storage types and is not necessary to strictly follow the URL convention. This gives flexibilities to plugins to encode information that may not be able to fit in the URL format.

NFS URL

For an NFS primary storage, the URL is encoded as follows:

```
nfs server ip/dns:/absolute path to directory
```

For example,

```
192.168.0.220:/storage/nfs/
```

State

A primary storage has the following two states:

- Enabled

Indicates that volumes can be created.

- Disabled

Indicates that volumes cannot be created.

Status

Similar to host status, primary storage status reflects the status of command channels between ZStack Cloud management nodes and primary storages. Command channels are the ways ZStack Cloud management nodes communicate with storage systems represented by primary storage. Different primary storage types can have different command channels. For example, a command channel can be HTTP connections among ZStack Cloud management nodes and primary storage agents or communication methods provided by storage SDKs.

A primacy storage has the following three statuses:

- Connecting:

Indicates that a ZStack Cloud management node is trying to establish a command channel between the node itself and a primary storage. At this stage, you cannot perform any operation on the primary storage.

- Connected:

Indicates that the command channel between a ZStack Cloud management node and a primary storage is established successfully. At this stage, you can perform related operations on the primary storage.

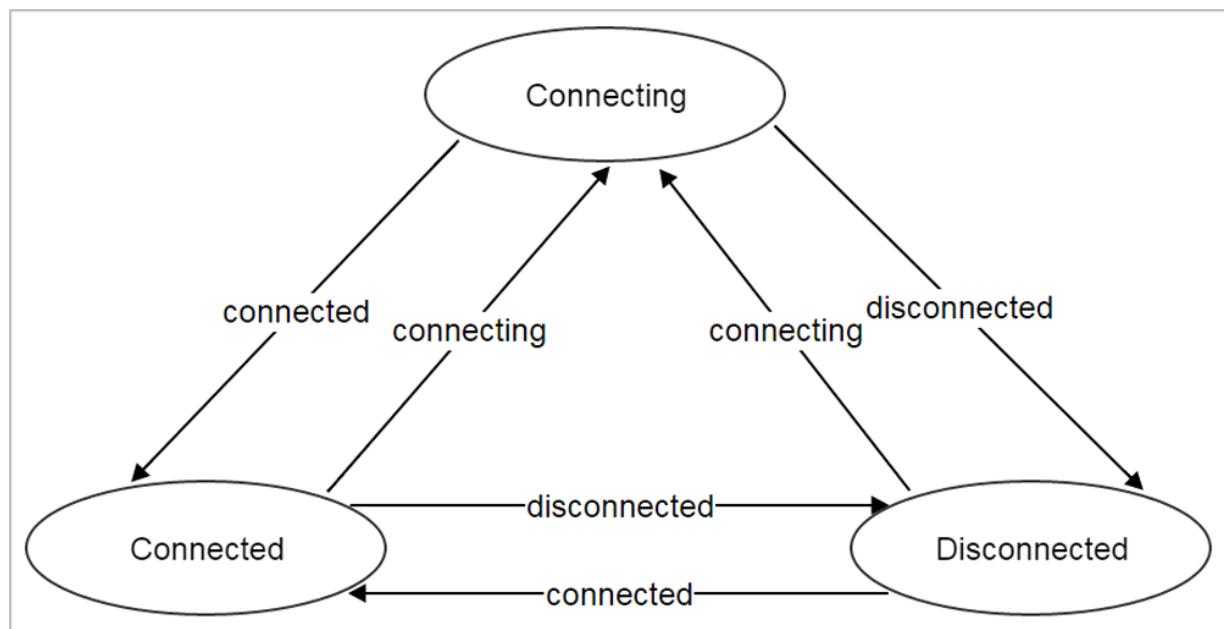
- Disconnected:

Indicates that the command channel between a ZStack Cloud management node and a primary storage is lost. At this stage, you cannot perform any operation on the primary storage.

When a ZStack Cloud management node starts, the management node will try to establish command channels to primary storages. When the management node is running, it will periodically send ping commands to the primary storages to check the health status of command channels. Once a primary storage fails to respond, or a ping command times out, the status of the primary storage will be changed to Disconnected.

The status transition diagram of a primary storage is shown in [Status Transition Diagram of Primary Storage](#).

Figure 5-10: Status Transition Diagram of Primary Storage



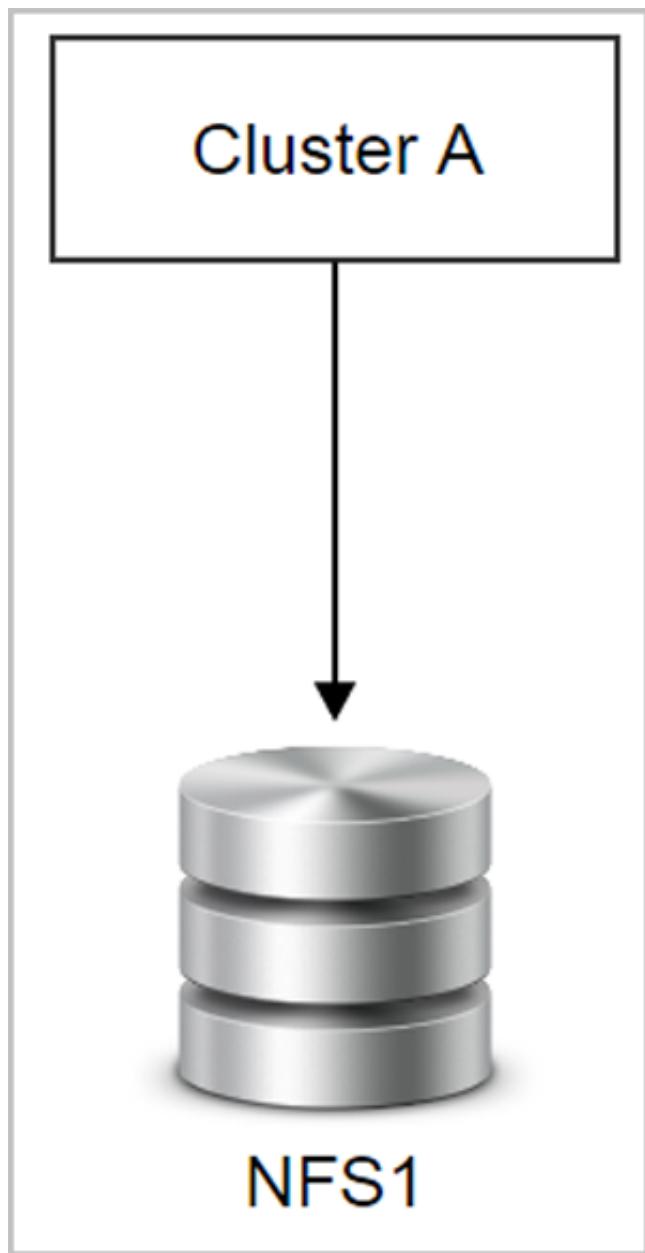
State

The states have no direct relation to the statuses. States represent your decisions on a primary storage, while statuses represent the communication condition of a primary storage.

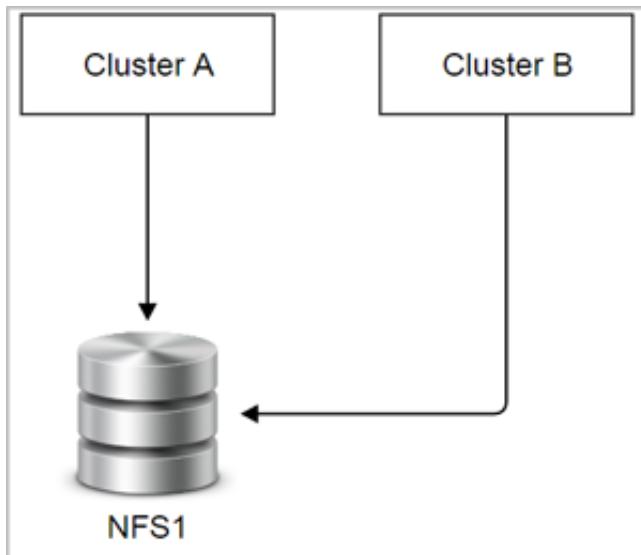
Attaching Cluster

Attaching clusters is to associate primary storage to sibling clusters. This provides a flexible method to maintain relations between hosts and storage systems in a real data center. For example, assume that a cluster (cluster A) is attached to an NFS primary storage (NFS1), as shown in [Attach a Cluster to NFS Primary Storage](#).

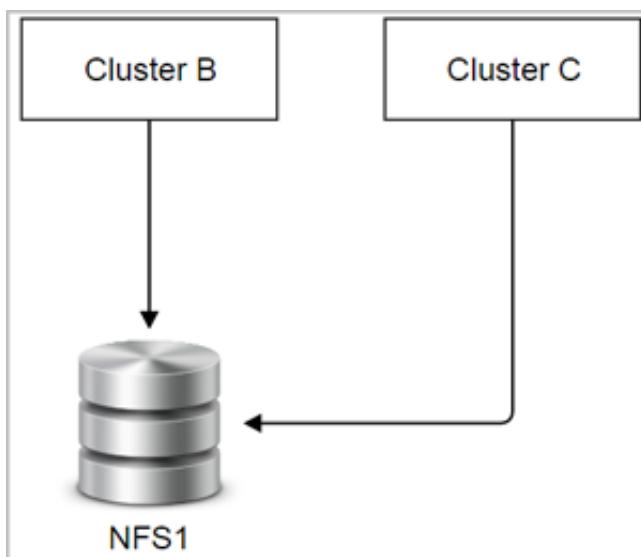
Figure 5-11: Attach a Cluster to NFS Primary Storage



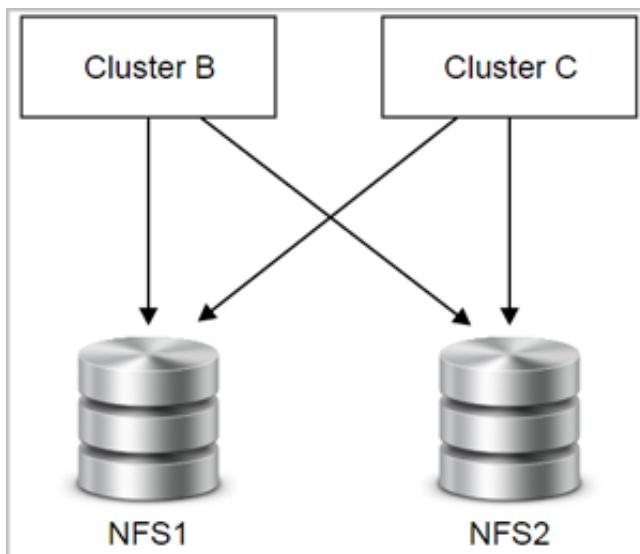
After a period of time, Cluster A is running out of memory, but NFS1 still has sufficient disk spaces. So you decide to create another cluster (Cluster B) and then attach NFS1 to Cluster B, as shown in [Attach Multiple Clusters to NFS Primary Storage](#).

Figure 5-12: Attach Multiple Clusters to NFS Primary Storage

After another period of time, the hardware of Cluster A becomes outdated, and you decide to stop using Cluster A. Then, you attach a new, stronger cluster (Cluster C) to NFS1, and set all VM instances in Cluster A to maintenance mode. In this regard, all VM instances that are running in Cluster A will be migrated to Cluster B or Cluster C. Finally, you detach NFS1 from Cluster A, and then delete Cluster A. Now, the data center is shown in [Migrated Data Center](#).

Figure 5-13: Migrated Data Center

Finally, NFS1 is running out of capacity, you add another NFS primary storage (NFS2), and attach it to both Cluster B and Cluster C, as shown in [Attach Multiple Clusters to Multiple NFS Primary Storages](#).

Figure 5-14: Attach Multiple Clusters to Multiple NFS Primary Storages

5.2.4.3 Operations

5.2.4.3.1 DeletePrimaryStorage

Deletes a primary storage. For example,

```
DeletePrimaryStorage uuid=1b830f5bd1cb469b821b4b77babfdd6f
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The primary storage UUID.			0.6
deleteMode	The delete mode. For more information, see DeleteResources .	Yes	<ul style="list-style-type: none"> Permissive Enforcing 	0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is PrimaryStorageVO.	Yes		0.6
systemTags	The system tags. For more	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
	information, see CreateSystemTag . The resource type is PrimaryStorageVO.			
timeout		Yes		

5.2.4.3.2 QueryPrimaryStorage

Queries a primary storage. For example,

```
QueryPrimaryStorage uuid=037bd212f7a1488da4f94360ccfaf6ab
```

```
QueryPrimaryStorage zone.cluster.uuid=967a353c2893409dab9312cf3033a98c
```

Primitive Fields of Query

See [Primary Storage Inventory](#).

Nested and Expanded Fields of Query

Field	Inventory	Description	Starting Version
zone	Zone Inventory	The zone.	0.6
cluster	Cluster Inventory	The parent cluster.	0.6
volume	Volume Inventory	The volumes in the primary storage.	0.6
volumeSnapshot	Volume Snapshot Inventory	The volume snapshots in the primary storage.	0.6

5.2.4.3.3 AttachPrimaryStorageToCluster

Attaches a primary storage to a cluster. For example,

```
AttachPrimaryStorageToCluster clusterUuid=c1bd173d5cd84f0e9e7c
47195ae27ec6
primaryStorageUuid=1b830f5bd1cb469b821b4b77babfdd6f
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
primaryStorageUuid	The primary storage UUID.			0.6

Name	Description	Optional	Valid Value	Starting Version
clusterUuid	The cluster UUID.			0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is PrimaryStorageVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is PrimaryStorageVO.	Yes		0.6
timeout		Yes		

5.2.4.3.4 DetachPrimaryStorageFromCluster

Detaches a primary storage from a cluster. For example,

```
DetachPrimaryStorageFromCluster clusterUuid=c1bd173d5cd84f0e9e7c
47195ae27ec6
primaryStorageUuid=1b830f5bd1cb469b821b4b77babfdd6f
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
primaryStorageUuid	The primary storage UUID.			0.6
clusterUuid	The cluster UUID.			0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is PrimaryStorageVO.	Yes		0.6
systemTags	The system tags. For more	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
	information, see CreateSystemTag . The resource type is PrimaryStorageVO.			
timeout		Yes		

5.2.4.3.5 ReconnectPrimaryStorage

Reconnects a primary storage. For example,

```
ReconnectPrimaryStorage uuid=8b2e6f64e2404e48a07269487af2f587
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The primary storage UUID.			0.6
userTags	The user tags. For more information, see CreateUserTag . The resource type is PrimaryStorageVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is PrimaryStorageVO.	Yes		0.6
timeout		Yes		

5.2.4.3.6 GetPrimaryStorageCapacity

Obtains the primary storage capacity. For example,

```
GetPrimaryStorageCapacity primaryStorageUuids=8b2e6f64e2404e48a072  
69487af2f587
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
zoneUuids	The zone UUID list.	Yes		0.6
clusterUuids	The cluster UUID list.	Yes		
primaryStorageUuids	The primary storage UUID list. Make sure that at least one of zoneUuids, clusterUuids, and primaryStorageUuids is specified. Or, set <code>all</code> to true.	Yes		0.6
all	If <code>primaryStorageUuids</code> is null, this parameter is set true, which means that all primary storages in the system are queried.	Yes		0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is PrimaryStorageVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSyst	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
	emTag . The resource type is PrimaryStorageVO.			
timeout		Yes		

5.2.4.3.7 SyncPrimaryStorageCapacity

Synchronizes the primary storage capacity. For example,

```
SyncPrimaryStorageCapacity primaryStorageUuid=8b2e6f64e2404e48a072
69487af2f587
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
primaryStorageUuid	The primary storage UUID.			0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is PrimaryStorageVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is PrimaryStorageVO.	Yes		0.6
timeout		Yes		

5.2.4.3.8 ChangePrimaryStorageState

Changes the state of a primary storage. For example,

```
ChangePrimaryStorageState uuid=f4749896bdb34265b07af28cf0fed978
stateEvent=disable
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The primary storage UUID.			0.6
stateEvent	The target state of the primary storage.		<ul style="list-style-type: none"> • enable • disable • maintain • deleting 	0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is PrimaryStorageVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is PrimaryStorageVO.	Yes		0.6
timeout		Yes		

5.2.4.3.9 UpdatePrimaryStorage

Updates information about a primary storage. For example,

```
UpdatePrimaryStorage uuid=f4749896bdb34265b07af28cf0fed978 name=newtest
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The primary storage UUID.			0.6
name	The new name of the primary storage.	Yes		0.6
description	The detailed description of the primary storage.	Yes		0.6
url	The new URL of the primary storage.	Yes		0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is PrimaryStorageVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is PrimaryStorageVO.	Yes		0.6
timeout		Yes		

5.2.4.3.10 CleanUpImageCacheOnPrimaryStorage

Cleans up the image caches on a primary storage. For example,

```
CleanUpImageCacheOnPrimaryStorage uuid=f4749896bdb34265b07af28cf0fed9
78
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The primary storage UUID.			0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is PrimaryStorageVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is PrimaryStorageVO.	Yes		0.6
timeout		Yes		

5.2.4.3.11 GetPrimaryStorageAllocatorStrategies

Obtains the primary storage allocator strategies. Sample response:

```
{
    "primaryStorageAllocatorStrategies": [
        "DefaultPrimaryStorageAllocationStrategy",
        "LocalPrimaryStorageStrategy"
    ],
    "success": true
}
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
userTags	The user tags. For more	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
	information, see CreateUser Tag . The resource type is PrimaryStorageVO.			
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is PrimaryStorageVO.	Yes		0.6
timeout		Yes		

5.2.4.3.12 GetPrimaryStorageTypes

Obtains the primary storage types. Sample response:

```
{
    "primaryStorageTypes": [
        "SharedMountPoint",
        "XSky",
        "Ceph",
        "NFS",
        "ZSES",
        "VCenter",
        "LocalStorage"
    ],
    "success": true
}
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
userTags	The user tags. For more information, see CreateUser Tag . The resource type is PrimaryStorageVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
	emTag . The resource type is PrimaryStorageVO.			
timeout		Yes		

5.2.4.3.13 GetPrimaryStorageCandidatesForVolumeMigration

Obtains the candidate primary storages for volume migration. For example,

```
GetPrimaryStorageCandidatesForVolumeMigration volumeUuid=3f44c2e199ed4e80bb017d99746bc3fb
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
volumeUuid	The volume UUID.			2.2
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.2
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.2
timeout		Yes		

5.2.4.3.14 GetHostCandidatesForVmMigration

Retrieves available hosts for cross-storage migration. For example,

```
GetHostCandidatesForVmMigration vmInstanceUuid=3f44c2e199ed4e80bb017d99746bc3fb dstPrimaryStorageUuid=cc8db724e1b334568026ca38d5c27b0f
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
vmlInstanceUuid	The VM UUID.			4.0.0

Name	Description	Optional	Valid Value	Starting Version
dstPrimaryStorageUuid	The destination primary storage UUID.			4.0.0
limit	The maximum number of hosts returned.	Yes		4.0.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		4.0.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		4.0.0
timeout		Yes		

5.2.4.3.15 PrimaryStorageMigrateVolume

Migrates a volume across primary storages. For example,

```
PrimaryStorageMigrateVolume volumeUuid=3f44c2e199ed4e80bb017d99746bc3
fb
dstPrimaryStorageUuid=5549ea153b04437e81f64bf0cdaf89ae
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
volumeUuid	The volume UUID.			2.2
dstPrimaryStorageUuid	The UUID of the destination primary storage.			2.2
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.2
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.2

Name	Description	Optional	Valid Value	Starting Version
	CreateSystemTag .			
timeout		Yes		

5.2.4.3.16 PrimaryStorageMigrateVm

Migrates a VM instance across primary storages. For example,

```
PrimaryStorageMigrateVm vmInstanceUuid=f996fc96fb92465291c3e856487d65
eb dstPrimaryStorageUuid=90a52c30f99a463bb7699c0cf7c5d7b5
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
vmlInstanceUuid	The VM instance UUID.			3.1.0
dstPrimaryStorageUuid	The UUID of the destination primary storage.			3.1.0
withDataVolumes	Migrates the VM instance with its data volumes.	Yes		3.1.0
withSnapshots	Migrates the VM instance with its snapshots.	Yes		3.1.0
dstHostUuid		Yes		4.0.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.1.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.1.0
timeout		Yes		

5.2.4.3.17 GetPrimaryStorageCandidatesForVmMigration

Obtains the candidate primary storages for VM instance migration. For example,

```
GetPrimaryStorageCandidatesForVmMigration vmInstanceUuid=f1ebddcafcbf4defac3acf8492b2f8b3
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
vmlInstanceUuid	The VM instance UUID.			3.1.0
withDataVolumes		Yes		3.7.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.1.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.1.0
timeout		Yes		

5.2.4.3.18 GetPrimaryStorageLicenseInfo

Obtains the license information about a primary storage. For example,

```
GetPrimaryStorageLicenseInfo uuid=9b624d6e4ca53a4aa10bfcc341281d0ef
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The primary storage UUID.			3.6.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.6.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.6.0

Name	Description	Optional	Valid Value	Starting Version
	CreateSystemTag .			
timeout		Yes		

5.2.4.3.19 Local Storage

5.2.4.3.19.1 AddLocalPrimaryStorage

Adds local storage as the primary storage. For example,

```
AddLocalPrimaryStorage url="/Cloud_ps_test" name=PS1 zoneUuid=
61092e77aedd41f0b8857b40652e5b1e
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
url	The URL of the local storage.			0.6
name	The name of the local storage.			0.6
description	The detailed description of the local storage.	Yes		0.6
type	The primary storage type: LocalStorage.	Yes		0.6
zoneUuid	The zone UUID.			0.6
resourceUuid	The resource UUID.	Yes		0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is PrimaryStorageVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSyst	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
	emTag . The resource type is PrimaryStorageVO.			
timeout		Yes		

5.2.4.3.19.2 QueryLocalStorageResourceRef

Queries the resource reference of a local storage. For example,

```
QueryLocalStorageResourceRef primaryStorageUuid=037bd212f7a1488da4f9
4360ccfaf6ab
```

```
QueryLocalStorageResourceRef image.uuid=e5b9040e6395346d96de25a93a07f6
5f
```

Primitive Fields of Query

See Local Storage Inventory.

Nested and Expanded Fields of Query

Field	Inventory	Description	Starting Version
image	<i>Image Inventory</i>		0.6
snapshot	Snapshot Inventory		0.6
volume	<i>Volume Inventory</i>	The volumes in the local storage.	0.6

5.2.4.3.19.3 LocalStorageMigrateVolume

Migrates the volumes that are stored on a local storage. For example,

```
LocalStorageMigrateVolume volumeUuid=30b1f7abb7884b80bbdacaf0fd1c7fe9
destHostUuid=5e0f90f7e44e471c96cf878f30301b42
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
volumeUuid	The volume UUID.			0.6
destHostUuid	The UUID of the destination host.			0.6
userTags	The user tags. For more	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
	information, see CreateUser Tag . The resource type is PrimaryStorageVO.			
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is PrimaryStorageVO.	Yes		0.6
timeout		Yes		

5.2.4.3.19.4 GetLocalStorageHostDiskCapacity

Obtains the local storage capacity of a host. For example,

```
GetLocalStorageHostDiskCapacity hostUuid=5e0f90f7e44e471c96cf
878f30301b42
primaryStorageUuid=c52a6fa9968345f8a1c09da6cb62d966
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
hostUuid	The host UUID.	Yes		0.6
primaryStorageUuid	The primary storage UUID.			0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is PrimaryStorageVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
	resource type is PrimaryStorageVO.			
timeout		Yes		

5.2.4.3.19.5 LocalStorageGetVolumeMigratableHosts

Obtains the hosts that are available for migrating volumes stored on the local storage. For example,

```
LocalStorageGetVolumeMigratableHosts volumeUuid=30b1f7abb7884b80bbda
caf0fd1c7fe9
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
volumeUuid	The volume UUID.			0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is PrimaryStorageVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is PrimaryStorageVO.	Yes		0.6
timeout		Yes		

5.2.4.3.20 NFS Primary Storage

5.2.4.3.20.1 AddNfsPrimaryStorage

Adds an NFS primary storage. For example,

```
AddNfsPrimaryStorage name=nfs1 zoneUuid=1b830f5bd1cb469b821b4b77babfdd
6f
```

```
url=192.168.0.220:/storage/nfs
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
url	The public URL of NFS. Format: nfs-host:/path/to/export.			0.6
name	The name of the NFS primary storage.			0.6
description	The detailed description of the NFS primary storage.	Yes		0.6
type	The primary storage type: NFS.	Yes		0.6
zoneUuid	The zone UUID.			0.6
resourceUuid	The resource UUID.	Yes		0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is PrimaryStorageVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is PrimaryStorageVO.	Yes		0.6
timeout		Yes		

5.2.4.3.21 Shared Mount Point Primary Storage

5.2.4.3.21.1 AddSharedMountPointPrimaryStorage

Adds a Shared Mount Point primary storage. For example,

```
AddSharedMountPointPrimaryStorage name=smp-ps url=/mnt/nfs zoneUuid=bd73a3d1e6784d49897be5ae785305d8
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
url	The local URL of the Shared Mount Point primary storage.			0.6
name	The name of the Shared Mount Point primary storage.			0.6
description	The detailed description of the Shared Mount Point primary storage.	Yes		0.6
type	The primary storage type: Shared Mount Point.	Yes		0.6
zoneUuid	The zone UUID.			0.6
resourceUuid	The resource UUID.	Yes		0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is PrimaryStorageVO.	Yes		0.6
systemTags	The system tags. For more information, see	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
	CreateSystemTag . The resource type is PrimaryStorageVO.			
timeout		Yes		

5.2.4.3.22 Ceph Primary Storage

5.2.4.3.22.1 AddCephPrimaryStorage

Adds a Ceph primary storage. For example,

```
AddCephPrimaryStorage name=ceph2 zoneUuid=bd73a3d1e6784d49897be5ae785305d8
monUrls=root:password@10.0.41.162:22/6789
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
monUrls	The URL list of the Ceph monitor daemon (Ceph mon).			0.6
rootVolume PoolName	The name of the Ceph pool that is available for root volumes.	Yes		0.6
dataVolume PoolName	The name of the Ceph pool that is available for data volumes.	Yes		0.6
imageCache PoolName	The name of the Ceph pool that is available for image caches.	Yes		0.6
url	The reserved field .			0.6
name	The name of the Ceph primary storage.			0.6

Name	Description	Optional	Valid Value	Starting Version
description	The detailed description of the Ceph primary storage.	Yes		0.6
type	The primary storage type: Ceph.	Yes		0.6
zoneUuid	The zone UUID.			0.6
resourceUuid	The resource UUID.	Yes		0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is PrimaryStorageVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is PrimaryStorageVO.	Yes		0.6
timeout		Yes		

5.2.4.3.22.2 QueryCephPrimaryStorage

Queries a Ceph primary storage. For example,

```
QueryCephPrimaryStorage uuid=985ea2eaedf04937ba59ccc2112b636e
```

```
QueryCephPrimaryStorage cluster.uuid=b993791c88f74c27943b4be6715ce219
```

Primitive Fields of Query

See Ceph Primary Storage Inventory.

Nested and Expanded Fields of Query

Field	Inventory	Description	Starting Version
cluster	<i>Cluster Inventory</i>	The cluster to which the Ceph primary storage belongs.	0.6
mons			0.6
pools			0.6
zone	<i>Zone Inventory</i>	The zone to which the Ceph primary storage belongs.	0.6
volume	<i>Volume Inventory</i>	The volumes in the Ceph primary storage.	0.6
volumeSnapshot	Volume Snapshot Inventory		0.6

5.2.4.3.22.3 AddMonToCephPrimaryStorage

Adds a monitor daemon (Ceph mon) to a Ceph primary storage. For example,

```
AddMonToCephPrimaryStorage uuid=5021c135ad6f422a9a3298871e516cd5
monUrls=root:password@10.0.41.162:22
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID of the Ceph primary storage.			0.6
monUrls	The URL list of the Ceph mon.			0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is PrimaryStorageVO.	Yes		0.6
systemTags	The system tags. For more information, see	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
	CreateSystemTag . The resource type is PrimaryStorageVO.			
timeout		Yes		

5.2.4.3.22.4 RemoveMonFromCephPrimaryStorage

Removes the monitor daemon (Ceph mon) from a Ceph primary storage. For example,

```
RemoveMonFromCephPrimaryStorage uuid=5021c135ad6f422a9a3298871e516cd5
monHostnames=10.0.41.162
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID of the Ceph primary storage.			0.6
monHostnames	The hostname list of the Ceph mon.			0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is PrimaryStorageVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is PrimaryStorageVO.	Yes		0.6
timeout		Yes		

5.2.4.3.22.5 UpdateCephPrimaryStorageMon

Updates the monitor daemon (Ceph mon) of a Ceph primary storage. For example,

```
UpdateCephPrimaryStorageMon monUuid=1229015ddaba4b74aff663877e37ec75
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
monUuid	The Ceph mon UUID.			0.6
hostname	The new hostname of the Ceph mon.	Yes		0.6
sshUsername	The SSH username of the Ceph mon.	Yes		0.6
sshPassword	The SSH password of the Ceph mon.	Yes		0.6
sshPort	The SSH port of the Ceph mon.	Yes		0.6
monPort	The new port of the Ceph mon.	Yes		0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is PrimaryStorageVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is PrimaryStorageVO.	Yes		0.6
timeout		Yes		

5.2.4.3.22.6 AddCephPrimaryStoragePool

Adds a Ceph primary storage pool. For example,

```
AddCephPrimaryStoragePool poolName=pool1 primaryStorageUuid=ee00abea8e
9d4878b50887c92496a12d \
isCreate=true
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
primaryStorageUuid	The UUID of the Ceph primary storage.			0.6
description	The detailed description of the resource.	Yes		0.6
resourceUuid		Yes		0.6
poolName	The name of the Ceph primary storage pool.			0.6
aliasName	The alias of the Ceph primary storage pool.	Yes		0.6
isCreate	Creates an extension pool . If the added Ceph primary storage pool does not exist, you must create an extension pool.	Yes		0.6
type	The type of the Ceph primary storage pool.			3.1.1
userTags	The user tags. For more information, see CreateUserTag .	Yes		0.6
systemTags	The system tags. For more	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
	information, see CreateSystemTag .			
timeout		Yes		

5.2.4.3.22.7 DeleteCephPrimaryStoragePool

Deletes a Ceph primary storage pool. For example,

```
DeleteCephPrimaryStoragePool uuid=495b6fd1d9a454a8350e0fef721addc
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID of the Ceph primary storage.			0.6
userTags	The user tags. For more information, see CreateUserTag .	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		0.6
timeout		Yes		

5.2.4.3.22.8 QueryCephPrimaryStoragePool

Queries a Ceph primary storage pool. For example,

```
QueryCephPrimaryStoragePool poolName=pool1
```

Primitive Fields of Query

See Ceph Primary Storage Pool Inventory.

5.2.4.3.22.9 UpdateCephPrimaryStoragePool

Updates a Ceph primary storage pool. For example,

```
UpdateCephPrimaryStoragePool uuid=e32dcd14d7514e23a4b21731110dc305
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID of the Ceph primary storage pool.			0.6
description	The detailed description of the resource.	Yes		0.6
aliasName	The alias of the Ceph primary storage pool.	Yes		0.6
userTags	The user tags. For more information, see CreateUserTag .	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		0.6
timeout		Yes		

5.2.4.3.23 Shared Block Primary Storage

5.2.4.3.23.1 AddSharedBlockGroupPrimaryStorage

Adds a SharedBlock primary storage. For example,

```
AddSharedBlockGroupPrimaryStorage name=test zoneUuid=a8e220606e  
8a4db88bd95702d9d1dd07 diskUuids=8a4db88bd95702d9d1dd07a8e220606e
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
diskUuids	The unique identifier of the			2.3.2

Name	Description	Optional	Valid Value	Starting Version
	disk. For example , UUID, WWN, and WWID.			
name	The resource name.			2.3.2
description	The detailed description of the resource.	Yes		2.3.2
type	The primary storage type: SharedBlock.	Yes		2.3.2
url	The reserved field .			2.3.2
zoneUuid	The zone UUID.			2.3.2
resourceUuid		Yes		2.3.2
userTags	The user tags. For more information, see CreateUser Tag . The resource type is PrimaryStorageVO.	Yes		2.3.2
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is PrimaryStorageVO.	Yes		2.3.2
timeout		Yes		



Note:

- When you add a Shared Block primary storage in ZStack Cloud, you can specify the default volume provisioning strategy by adding the **primaryStorageVolumeProvisioningStrategy** option to **SystemTags**.

- Format of the **primaryStorageVolumeProvisioningStrategy** option: `primaryStorageVolumeProvisioningStrategy::ThinProvisioning`, `primaryStorageVolumeProvisioningStrategy::ThickProvisioning`
- Example: `primaryStorageVolumeProvisioningStrategy::ThinProvisioning`, `primaryStorageVolumeProvisioningStrategy::ThickProvisioning`

5.2.4.3.23.2 QuerySharedBlockGroupPrimaryStorageHostRef

Queries the reference between a Shared Block primary storage and the host to which the primary storage belongs. For example,

```
QuerySharedBlockGroupPrimaryStorageHostRef
```

Primitive Fields of Query

See [Shared Block Primary Storage and Host Reference Inventory](#).

Nested and Expanded Fields of Query

Field	Inventory	Description	Starting Version
host	Host Inventory	The host to which the Shared Block primary storage belongs.	2.3.2
sharedBlockGroup	Shared Block Primary Storage Inventory	The Shared Block primary storage.	2.3.2

5.2.4.3.23.3 QuerySharedBlockGroupPrimaryStorage

Queries a Shared Block primary storage. For example,

```
QuerySharedBlockGroupPrimaryStorage
```

Primitive Fields of Query

See [Shared Block Primary Storage Inventory](#)

Nested and Expanded Fields of Query

Field	Inventory	Description	Starting Version
cluster	Cluster Inventory	The parent cluster.	2.3.2
sharedBlocks	Shared Block Inventory		2.3.2

Field	Inventory	Description	Starting Version
volume	Volume Inventory	The volumes in the Shared Block primary storage.	2.3.2
volumeSnapshot	Volume Snapshot Inventory	The volume snapshots in the Shared Block primary storage.	2.3.2
zone	Zone Inventory	The zone to which the Shared Block primary storage belongs.	2.3.2

5.2.4.3.23.4 AddSharedBlockToSharedBlockGroup

Adds a LUN to a Shared Block primary storage. For example,

```
AddSharedBlockToSharedBlockGroup diskUuid=8a4db88bd95702d9d1dd
07a8e220606e uuid=a8e220606e8a4db88bd95702d9d1dd07
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
diskUuid	The unique identifier of the disk. For example , UUID, WWN, and WWID.			2.3.2
uuid	The UUID of the Shared Block primary storage.			2.3.2
userTags	The user tags. For more information, see CreateUser Tag . The resource type is PrimaryStorageVO.	Yes		2.3.2
systemTags	The system tags. For more information, see CreateSystemTag . The	Yes		2.3.2

Name	Description	Optional	Valid Value	Starting Version
	resource type is PrimaryStorageVO.			
timeout		Yes		

5.2.4.3.23.5 GetSharedBlockCandidate

Obtains the candidate LUNs. For example,

```
GetSharedBlockCandidate clusterUuid=a8e220606e8a4db88bd95702d9d1dd07
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
clusterUuid	The cluster UUID.			2.6.0
userTags	The user tags. For more information, see CreateUser Tag . The resource type is PrimaryStorageVO.	Yes		2.6.0
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is PrimaryStorageVO.	Yes		2.6.0
timeout		Yes		

5.2.4.3.23.6 RefreshSharedblockDeviceCapacity

Refreshes the capacity of a LUN. For example,

```
RefreshSharedblockDeviceCapacity sharedBlockGroupUuid=8a4db88bd95702d9d1dd07a8e220606e
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid		Yes		2.6.0

Name	Description	Optional	Valid Value	Starting Version
sharedBloc kGroupUuid				2.6.0
userTags	The user tags. For more information, see CreateUser Tag . The resource type is PrimaryStorageVO.	Yes		2.6.0
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is PrimaryStorageVO.	Yes		2.6.0
timeout		Yes		

5.2.4.3.23.7 QuerySharedBlock

Queries a LUN. For example,

```
QuerySharedBlock
```

Primitive Fields of Query

See [Shared Block Inventory](#).

Nested and Expanded Fields of Query

Field	Inventory	Description	Starting Version
sharedBlockGroup	Shared Block Primary Storage Inventory	The Shared Block primary storage.	2.3.2

5.2.4.4 Tags

You can create a user tag on a primary storage by using `resourceType=PrimaryStorageVO`.

For example,

```
CreateUserTag resourceType=PrimaryStorageVO tag=SSD \
```

```
resourceUuid=e084dc809fec4092ab0eff797d9529d5
```

System Tags

Storing Volume Snapshots

Tag	Description	Example	Starting Version
capability:snapshot	If a primary storage has such a tag, the primary storage can store volume snapshots.	capability:snapshot	0.6

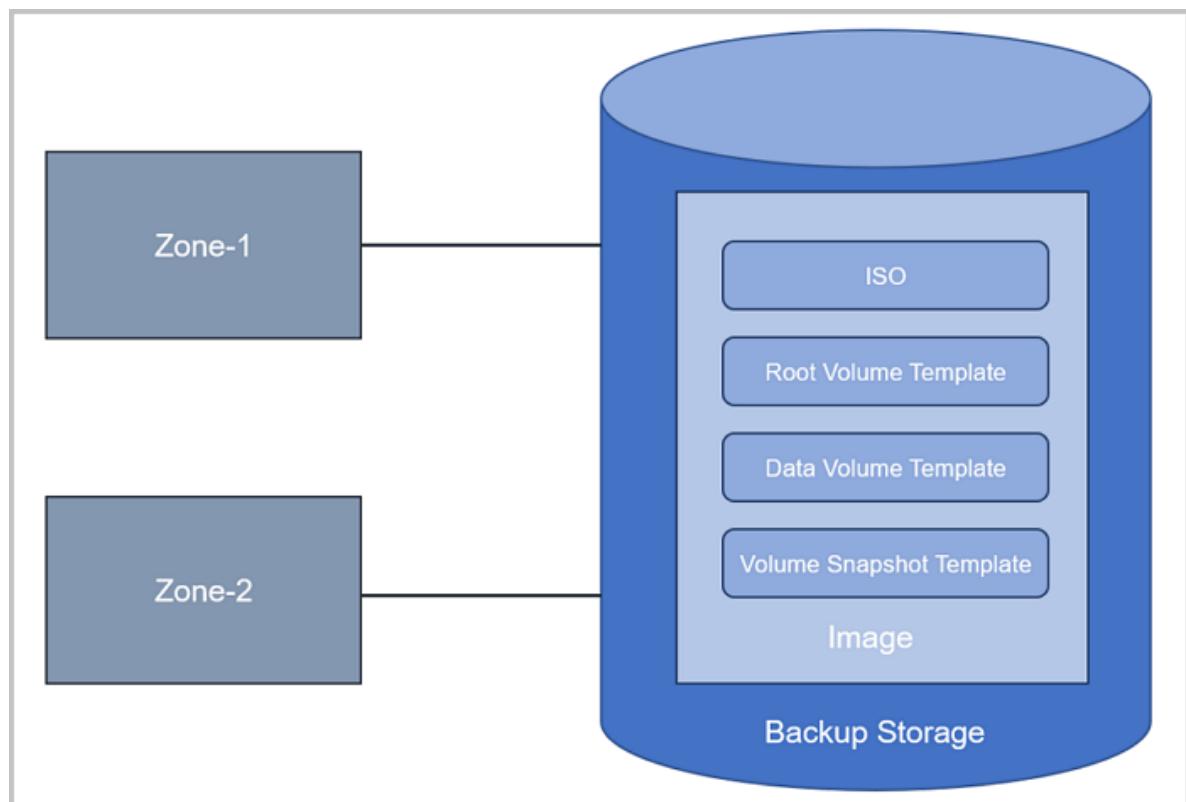
5.2.5 Backup Storage

5.2.5.1 Overview

A backup storage is one or more servers that store VM image templates, including ISO image files

- A backup storage must be attached to a zone before the resources in the zone can access it. Note that you can share images across multiple zones by using the backup storage.

Figure 5-15: Backup Storage



- To better manage backup storages and zones, the UI specifies that one backup storage can only correspond to one zone. In the UI, when you add a backup storage, the backup storage will be attached to the current zone by default. When you delete a zone, the backup storage attached to the zone will also be deleted.

Backup Storage Type

The Cloud supports the following types of backup storage:

1. ImageStore

- Stores image files by means of image slices and supports incremental storage.
- Allows you to create snapshots and images when VM instances are running or stopped.
- Allows you to clone VM instances without data volumes when these VM instances are running, paused, or stopped.
- Allows you to clone VM instances with data volumes when these VM instances are running, paused, or stopped, and with storage types of LocalStorage, NFS, SharedMountPoint (SMP), Ceph, or SharedBlock.
- Supports image synchronization across ImageStore backup storages on the same management node.
- Allows you to obtain the existing image files under the URL path in the backup storage.

2. Ceph

- Stores image files by means of Ceph distributed block storages.
- Allows you to create snapshots and images when VM instances are running or stopped.
- Allows you to clone VM instances without data volumes when these VM instances are running, paused, or stopped.
- Allows you to clone VM instances with data volumes when these VM instances are running, paused, or stopped, and with the storage type of Ceph.
- Allows you to export images on the UI or backup storages.
 - You can export images, copy exported image URLs, and download exported images on the UI.
 - You can also export images on a backup storage.

For example, assume that the image path you use is `ceph://bak-t-c9923f9821bf45498fdf9cd9a1749943/61ece0adc7244b0cbd12dafbc5494f0c`.

Then, run the following command on the backup storage:

```
rbd export -p bak-t-c9923f9821bf45498fdf9cd9a1749943 --image
61ece0adc7244b0cbd12dafbc5494f0c --path /root/export-test.image

# bak-t-c9923f9821bf45498fdf9cd9a1749943 is the name of the
pool where the image resides.
# 61ece0adc7244b0cbd12dafbc5494f0c is the name of the image.
# /root/export-test.image is the name of the exported file.
```

3. AliyunEBS

- Stores image by means of object storages.
- Allows you to create snapshots and images when VM instances are running or stopped.
- Allows you to clone VM instances without data volumes when these VM instances are running, paused, or stopped.
- Does not allow you to clone VM instances with data volumes.
- Allows you to export images on backup storages. For more information, contact the official technical support.

Backup Storage | Primary Storage

The following table lists the relationship between primary storages (PS) and backup storages (BS).

Table 5-6: Relationship Between PS and BS

PS/BS	ImageStore	SFTP	Ceph
LocalStorage	○	○	✗
NFS	○	○	✗
SMP	○	○	✗
Ceph	○	✗	○
SharedBlock	○	✗	✗

- When primary storages are LocalStorage, NFS, or SMP, the default type for backup storages is ImageStore.
- When primary storages are NFS or SMP, you can manually mount the corresponding shared directories to the local directories of the corresponding backup storages. In this regard, both primary storages and backup storages can use the network shared storage.
- When primary storages are Ceph, you can use the primary storages in the same Ceph cluster as backup storages. You can also use the ImageStore primary storages as backup storages.

- When primary storages are SharedBlock, the default type for backup storages is ImageStore.
- When primary storages are AliyunNAS, the default type for backup storages is ImageStore.
- When primary storages are AliyunEBS, the default type for backup storages is AliyunEBS.

5.2.5.2 Inventory

Backup Storage Inventory

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			0.6
name	The name. For more information, see Resource Property .			0.6
description	The description. For more information, see Resource Property .	Yes		0.6
url	The URL. For more information, see URL .			0.6
totalCapacity	The total disk capacity. Unit: byte. For more information, see Capacity .			0.6
availableCapacity	The available disk capacity. Unit: byte. For more information, see Capacity .			0.6
type	The backup dotage type.		<ul style="list-style-type: none"> • Ceph • ImageStore • BackupStorage • VCenter 	0.6

Name	Description	Optional	Valid Value	Starting Version
			• SftpBackup Storage	
state	The state. For more information, see State .		• Enabled • Disabled	0.6
status	The status. For more information, see Status .		• Connecting • Connected • Disconnected	0.6
attachedZoneUuids	The UUIDs of zones to which the backup storage is attached.			0.6
createDate	The creation date. For more information, see Resource Property .			0.6
lastOpDate	The last operation date. For more information, see Resource Property .			0.6

Sample

```
{
  "inventories": {
    "attachedClusterUuids": [
      "967a353c2893409dab9312cf3033a98c"
    ],
    "availableCapacity": 163634831360,
    "availablePhysicalCapacity": 186066427904,
    "createDate": "Oct 30, 2017 3:05:29 PM",
    "description": "",
    "lastOpDate": "Oct 31, 2017 10:41:26 AM",
    "mountPath": "/Cloud_ps",
    "name": "LS-1",
    "state": "Enabled",
    "status": "Connected",
    "systemUsedCapacity": 9330311168,
    "totalCapacity": 205177397248,
    "totalPhysicalCapacity": 205177397248,
    "type": "LocalStorage",
    "url": "/Cloud_ps",
  }
}
```

```

        "uuid": "037bd212f7a1488da4f94360ccfaf6ab",
        "zoneUuid": "e59b71e99d8a4ea1952b578388b8cd1d"
    }
}

```

Image Replication Group Inventory

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			3.5.0
name	The name. For more information, see Resource Property .			3.5.0
description	The description. For more information, see Resource Property .	Yes		3.5.0
state	The state.		<ul style="list-style-type: none"> Enabled Disabled 	3.5.0
backupStorageRefs	The backup storage group list.			3.5.0
groupBy	Groups rows into subgroups based on values of columns or expressions. This field is equivalent to the Group By clause in MySQL, such as <code>groupBy =type</code> .	Yes		3.5.0
createDate	The create date. For more information, see Resource Property .			3.5.0

Name	Description	Optional	Valid Value	Starting Version
lastOpDate	The last operation date. For more information, see Resource Property .			3.5.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.5.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.5.0

Sample

```
{
  "inventories": [
    {
      "uuid": "31cbc4dad8da3ca6a6e3df5c1d5f233e",
      "name": "test"
    }
  ]
}
```

URL

A URL is a string that contains information needed by backup storage to control storage systems. Although its name is URL, the exact format of the string is up to backup storage types and is not necessary to strictly follow the URL convention. This gives flexibilities to plugins to encode information that may not be able to fit in the URL format.

SFTP Backup Storage URL

For an SFTP back storage (also known as backup storage), the URL is an absolute path of a directory in a file system, such as `/storage/sftp`.

Capacity

ZStack Cloud monitors disk capacities of backup storages to select one suitable backup storage for creating volumes. Different backup storage plugins may report different disk capacities. The capacity of a backup storage is calculated according to the following formulas:

```
totalCapacity = backup storage's total capacity  
availableCapacity = totalCapacity - sum (images' actual sizes)
```

State

A backup storage has the following two states:

- Enabled:

Indicates that images can be registered, backed up, and downloaded.

- Disabled:

Indicates that images cannot be registered, backed up, or downloaded. Especially, if an image is only stored on a disabled backup storage, and if the image is not downloaded to image caches of primary storage, this image cannot be used to create VM instances.

Status

The status of a backup storage reflects the command channel status between a ZStack Cloud management node and a backup storage.

- Connecting:

Indicates that a ZStack Cloud management node is trying to establish a command channel between the node itself and a backup storage. At this stage, you cannot perform any operation on the backup storage.

- Connected:

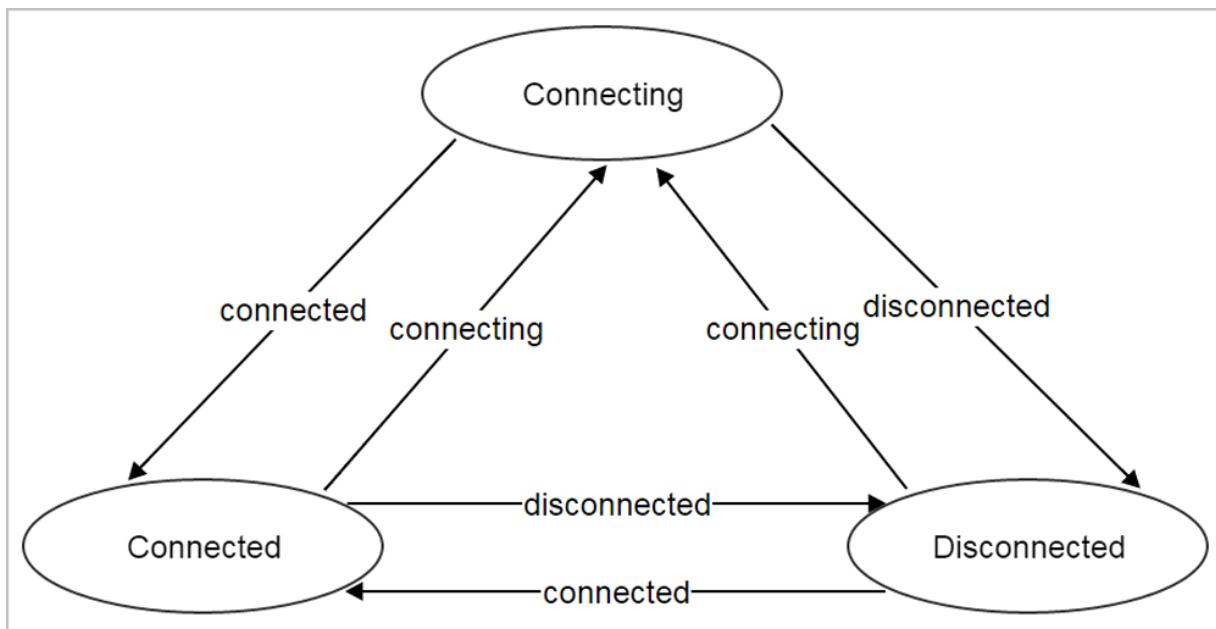
Indicates that the command channel between a ZStack Cloud management node and a backup storage is established successfully. At this stage, you can perform related operations on the backup storage.

- Disconnected:

Indicates that the command channel between a ZStack Cloud management node and a backup storage is lost. At this stage, you cannot perform any operation on the backup storage.

When a ZStack Cloud management node starts, the management node will try to establish command channels to backup storages. When the management node is running, it will periodically send ping commands to the backup storages to check the health status of command channels. Once a backup storage fails to respond, or a ping command times out, the status of the backup storage will be changed to Disconnected.

The status transition diagram of a backup storage is shown in [Status Transition Diagram of Backup Storage](#).

Figure 5-16: Status Transition Diagram of Backup Storage

5.2.5.3 Operations

5.2.5.3.1 DeleteBackupStorage

Deletes a backup storage. For example,

```
DeleteBackupStorage uuid=1613b627cb2e4ffcb30e7e59935064be
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The backup storage UUID.			0.6
deleteMode	The delete mode. For more information, see DeleteResources .	Yes	<ul style="list-style-type: none"> Permissive Enforcing 	0.6
userTags	The user tags. For more information, see CreateUserTag . The resource type is BackupStorageVO.	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is BackupStorageVO.	Yes		0.6
timeout		Yes		

5.2.5.3.2 QueryBackupStorage

Queries a backup storage. For example,

```
QueryBackupStorage uuid=ae840e03a0044b759b0a8c09a141a46b
```

```
QueryBackupStorage zone.primaryStorage.uuid=037bd212f7a1488da4f9
4360ccfaf6ab
```

Primitive Fields of Query

See [Backup Storage Inventory](#).

Nested and Expanded Fields of Query

Field	Inventory	Description	Starting Version
image	Image Inventory	The images contained in the backup storage.	0.6
zone	Zone Inventory	The zone to which the backup storage belongs.	0.6
volumeSnapshot	Volume Snapshot Inventory		0.6

5.2.5.3.3 ReconnectBackupStorage

Reconnects a backup storage. For example,

```
ReconnectBackupStorage uuid=ab3d53288bd14e6eba6ea56324b66a3f
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The backup storage UUID.			0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is BackupStorageVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is BackupStorageVO.	Yes		0.6
timeout		Yes		

5.2.5.3.4 ChangeBackupStorageState

Changes the state of a backup storage. For example,

```
ChangeBackupStorageState uuid=ab3d53288bd14e6eba6ea56324b66a3f
stateEvent=disable
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The backup storage UUID.			0.6
stateEvent	The target state of the backup storage.		<ul style="list-style-type: none"> • enable • disable 	0.6

Name	Description	Optional	Valid Value	Starting Version
userTags	The user tags. For more information, see CreateUser Tag . The resource type is BackupStorageVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is BackupStorageVO.	Yes		0.6
timeout		Yes		

5.2.5.3.5 GetBackupStorageCapacity

Obtains the backup storage capacity. For example,

```
GetBackupStorageCapacity backupStorageUuids=ab3d53288bd14e6eba6ea56324b66a3f
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
zoneUuids	The zone UUID list.	Yes		0.6
backupStorageUuids	The backup storage UUID list. Make sure that at least one of zoneUuids and backupStorageUuids is specified. Or, set all to true.	Yes		0.6
all	If backupStorageUuids is null, this parameter is set true, which means that all	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
	backup storages in the system are queried.			
userTags	The user tags. For more information, see CreateUser Tag . The resource type is BackupStorageVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is BackupStorageVO.	Yes		0.6
timeout		Yes		

5.2.5.3.6 GetBackupStorageTypes

Obtains the backup storage types. Sample response:

```
{
    "backupStorageTypes": [
        "Ceph",
        "ImageStoreBackupStorage",
        "VCenter",
        "SftpBackupStorage"
    ],
    "success": true
}
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
userTags	The user tags. For more information, see CreateUser Tag . The resource type is BackupStorageVO.	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is BackupStorageVO.	Yes		0.6
timeout		Yes		

5.2.5.3.7 UpdateBackupStorage

Updates information about a backup storage. For example,

```
UpdateBackupStorage uuid=ab3d53288bd14e6eba6ea56324b66a3f name=test
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The backup storage UUID.			0.6
name	The new name of the backup storage.	Yes		0.6
description	The detailed description of the backup storage.	Yes		0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is BackupStorageVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is BackupStorageVO.	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
timeout		Yes		

5.2.5.3.8 ExportImageFromBackupStorage

Exports an image from a backup storage. For example,

```
ExportImageFromBackupStorage backupStorageUuid=ab3d53288bd14e6eba6ea56324b66a3f
imageUuid=889ac0b0d8b758e99e35dc38d017c25c
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
backupStorageUuid	The backup storage UUID.			1.7
imageUuid	The image UUID.			1.7
exportFormat	The format for storing the exported image.	Yes		3.9.0
userTags	The user tags. For more information, see CreateUser Tag . The resource type is BackupStorageVO.	Yes		1.7
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is BackupStorageVO.	Yes		1.7
timeout		Yes		

5.2.5.3.9 DeleteExportedImageFromBackupStorage

Deletes an exported image from a backup storage. For example,

```
DeleteExportedImageFromBackupStorage backupStorageUuid=ab3d53288bd14e6eba6ea56324b66a3f
```

```
imageUuid=889ac0b0d8b758e99e35dc38d017c25c
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
backupStorageUuid	The backup storage UUID.			1.7
imageUuid	The image UUID.			1.7
userTags	The user tags. For more information, see CreateUser Tag . The resource type is BackupStorageVO.	Yes		1.7
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is BackupStorageVO.	Yes		1.7
timeout		Yes		

5.2.5.3.10 AttachBackupStorageToZone

Attaches a backup storage to a zone. For example,

```
AttachBackupStorageToZone backupStorageUuid=d086c30f33914c98a6078269bab7bc8f
zoneUuid=d086c30f33914c98a6078269bab7bc8f
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
backupStorageUuid	The backup storage UUID.			0.6
zoneUuid	The zone UUID.			0.6
userTags	The user tags. For more information, see CreateUser Tag	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
	Tag . The resource type is BackupStorageVO.			
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is BackupStorageVO.	Yes		0.6
timeout		Yes		

5.2.5.3.11 DetachBackupStorageFromZone

Detaches a backup storage from a zone. For example,

```
DetachBackupStorageFromZone backupStorageUuid=d086c30f33914c98a6078269bab7bc8f
zoneUuid=d086c30f33914c98a6078269bab7bc8f
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
backupStorageUuid	The backup storage UUID.			0.6
zoneUuid	The zone UUID.			0.6
userTags	The user tags. For more information, see CreateUserTag . The resource type is BackupStorageVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is BackupStorageVO.	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
timeout		Yes		

5.2.5.3.12 BackupStorageMigrateImage

Migrates an image across backup storages. For example,

```
BackupStorageMigrateImage imageUuid=6391e504d07a4086927c2968ff6a710d
srcBackupStorageUuid=cd8dfecb67a94d168ccdf4de72578780 dstBackupS
torageUuid=55ef2e4c99334e79b00f1968b4af1595
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
imageUuid	The image UUID.			2.2
srcBackupS torageUuid	The UUID of the source backup storage.			2.2
dstBackupS torageUuid	The UUID of the destination backup storage.			2.2
userTags	The user tags. For more information, see CreateUser Tag . The resource type is BackupStorageVO.	Yes		2.2
systemTags	The system tags. For more information, see CreateSyst emTag . The resource type is BackupStorageVO.	Yes		2.2
timeout		Yes		

5.2.5.3.13 GetBackupStorageCandidatesForImageMigration

Obtains the candidate backup storages for image migration. For example,

```
GetBackupStorageCandidatesForImageMigration srcBackupStorageUuid=
cd8dfecb67a94d168ccdf4de72578780
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
srcBackupStorageUuid	The UUID of the source backup storage where the image is located.			2.2
userTags	The user tags. For more information, see CreateUser Tag . The resource type is BackupStorageVO.	Yes		2.2
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is BackupStorageVO.	Yes		2.2
timeout		Yes		

5.2.5.3.14 ImageStore Backup Storage

5.2.5.3.14.1 AddImageStoreBackupStorage

Adds an ImageStore backup storage. For example,

```
AddImageStoreBackupStorage hostname="10.0.33.123" username=admin name=
imagestore
```

```
url="/data/imagestore" password=password importImages=false
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
hostname	The hostname of the ImageStore backup storage.			1.6
username	The SSH username of the ImageStore backup storage.			1.6
password	The SSH password of the ImageStore backup storage.			1.6
sshPort	The SSH port of the ImageStore backup storage.	Yes		1.6
url	The path for storing local data in ImageStore.			1.6
name	The ImageStore name.			1.6
description	The detailed description of ImageStore.	Yes		1.6
type	The backup storage type: ImageStore BackupStorage.	Yes		1.6
importImages	Whether to import images.	Yes		1.9
resourceUuid	The resource UUID.	Yes		1.6
userTags	The user tags. For more information, see CreateUserTag . The resource type is ImageStoreBackupStorageVO.	Yes		1.6
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		1.6

Name	Description	Optional	Valid Value	Starting Version
	The resource type is ImageStoreBackupStorageVO.			
timeout		Yes		

**Note:**

- When you add an ImageStore backup storage in ZStack Cloud, you can specify the method to mount the storage path of the ImageStore backup storage by adding the **fsInfo** option to **SystemTags**.
 - Format of the **fsInfo** option: `fsInfo::type::$TYPE::url::$URL::options::$OPTIONS`
 - Example: `fsInfo::type::nfs::url::172.32.1.119:/nas/nfs2::options::nolock,vers=3,rsize=32768,wsize=32768`

5.2.5.3.14.2 QueryBackupStorage

Queries an ImageStore backup storage. For example,

```
QueryBackupStorage uuid=ae840e03a0044b759b0a8c09a141a46b
```

```
QueryBackupStorage zone.primaryStorage.uuid=037bd212f7a1488da4f94360ccfaf6ab
```

Primitive Fields of Query

See [Backup Storage Inventory](#).

Nested and Expanded Fields of Query

Field	Inventory	Description	Starting Version
image	Image Inventory	The images contained in the ImageStore backup storage.	0.6
zone	Zone Inventory	The zone to which the ImageStore backup storage belongs.	0.6
volumeSnapshot	Volume Snapshot Inventory		0.6

5.2.5.3.14.3 UpdateImageStoreBackupStorage

Updates information about an ImageStore backup storage. For example,

```
UpdateImageStoreBackupStorage uuid=ab3d53288bd14e6eba6ea56324b66a3f
name=test-ls
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
hostname	The hostname of the ImageStore backup storage.	Yes		1.6
username	The SSH username of the ImageStore backup storage.	Yes		1.6
password	The SSH password of the ImageStore backup storage.	Yes		1.6
sshPort	The SSH port of the ImageStore backup storage.	Yes		1.6
uuid	The UUID of the ImageStore backup storage.			1.6
name	The new name of the ImageStore backup storage.	Yes		1.6
description	The detailed description of the ImageStore backup storage.	Yes		1.6
userTags	The user tags. For more information, see CreateUserTag . The resource type is ImageStoreBackupStorageVO.	Yes		1.6
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		1.6

Name	Description	Optional	Valid Value	Starting Version
	The resource type is ImageStoreBackupStorageVO.			
timeout		Yes		

5.2.5.3.14.4 ReconnectImageStoreBackupStorage

Reconnects an ImageStore backup storage. For example,

```
ReconnectImageStoreBackupStorage uuid=af6686a6642f41f4a9a3587abc5a96dc
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID of the ImageStore backup storage.			1.6
userTags	The user tags. For more information, see CreateUserTag . The resource type is ImageStoreBackupStorageVO.	Yes		1.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is ImageStoreBackupStorageVO.	Yes		1.6
timeout		Yes		

5.2.5.3.14.5 ReclaimSpaceFromImageStore

Reclaims disk space from an ImageStore backup storage. For example,

```
ReclaimSpaceFromImageStore uuid=af6686a6642f41f4a9a3587abc5a96dc
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID of the ImageStore backup storage.			1.1

Name	Description	Optional	Valid Value	Starting Version
userTags	The user tags. For more information, see CreateUserTag . The resource type is ImageStoreBackupStorageVO.	Yes		1.1
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is ImageStoreBackupStorageVO.	Yes		1.1
timeout		Yes		

5.2.5.3.15 Ceph Backup Storage

5.2.5.3.15.1 AddCephBackupStorage

Adds a Ceph backup storage. For example,

```
AddCephBackupStorage name=ceph2_bs monUrls=root:password@10.0.41.162:22
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
monUrls	The URLs of the Ceph monitor daemon (Ceph mon).			0.6
poolName	The name of the Ceph pool for storing images.	Yes		0.6
url	The reserved field for internal use.			0.6
name	The new name of the Ceph backup storage.			0.6
description	The detailed description of the Ceph backup storage.	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
type	The backup storage type: Ceph.	Yes		0.6
importImages	Whether to import images.	Yes		1.9
resourceUuid	The resource UUID.	Yes		0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is CephBackupStorageVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is CephBackupStorageVO.	Yes		0.6
timeout		Yes		

5.2.5.15.2 QueryCephBackupStorage

Queries a Ceph backup storage. For example,

```
QueryCephBackupStorage uuid=d655f6a3df09471da0102da605618646
```

```
QueryCephBackupStorage mons.hostname=10.0.41.162
```

Primitive Fields of Query

See [Backup Storage Inventory](#).

Nested and Expanded Fields of Query

Field	Inventory	Description	Starting Version
zone	Zone Inventory	The zone to which the Ceph backup storage belongs.	0.6

Field	Inventory	Description	Starting Version
image	<i>Image Inventory</i>	The images contained in the Ceph backup storage.	0.6
mons			0.6
volumeSnapshot	Volume Snapshot Inventory		0.6

5.2.5.3.15.3 UpdateCephBackupStorageMon

Updates the monitor daemon (Ceph mon) of a Ceph backup storage. For example,

```
UpdateCephBackupStorageMon monUuid=66480dbf545e4f5098866feb7657ca11
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
monUuid	The Ceph mon UUID.			0.6
hostname	The new hostname of the Ceph mon.	Yes		0.6
sshUsername	The SSH username of the Ceph mon.	Yes		0.6
sshPassword	The SSH password of the Ceph mon.	Yes		0.6
sshPort	The SSH port of the Ceph mon.	Yes		0.6
monPort	The port of the Ceph mon.	Yes		0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is CephBackupStorageVO.	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is CephBackupStorageVO.	Yes		0.6
timeout		Yes		

5.2.5.3.15.4 AddMonToCephBackupStorage

Adds a monitor daemon (Ceph mon) to a Ceph backup storage. For example,

```
AddMonToCephBackupStorage uuid=d655f6a3df09471da0102da605618646
monUrls=root:password@10.0.41.162:22
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID of the Ceph backup storage.			0.6
monHostnames	The hostnames of the Ceph mon.			0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is CephBackupStorageVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is CephBackupStorageVO.	Yes		0.6
timeout		Yes		

5.2.5.3.15.5 RemoveMonFromCephBackupStorage

Removes the monitor daemon (Ceph mon) from a Ceph backup storage. For example,

```
RemoveMonFromCephBackupStorage uuid=d655f6a3df09471da0102da605618646
monHostnames=10.0.41.162
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID of the Ceph backup storage.			0.6
monHostnames	The hostnames of the Ceph mon.			0.6
userTags	The user tags. For more information, see CreateUserTag . The resource type is CephBackupStorageVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is CephBackupStorageVO.	Yes		0.6
timeout		Yes		

5.2.5.4 Tags

You can create a user tag on a backup storage by using `resourceType=BackupStorageVO`.

For example,

```
CreateUserTag tag=lab1 resourceType=BackupStorageVO \
resourceUuid=2906471068802c501773d3ee55b7766e
```

5.2.6 SAN Storage

5.2.6.1 Overview

ZStack Cloud can connect to the SAN storage, including the iSCSI server and the FC storage.

iSCSI Server

ZStack Cloud allows you to add iSCSI servers. You can automatically log in to iSCSI servers without making any configuration on each host. In addition, ZStack Cloud can automatically detect online and discover disks, and initiate automatic configuration for the iSCSI servers in a convenient way. The iSCSI disks that are correctly detected can be used as follows:

- iSCSI disks can be passed through directly to VM instances.
- iSCSI disks can be added as Shared Block primary storages by means of shared blocks.

FC Storage

ZStack Cloud supports the FC storage pass-through, automatically detects online and discovers the preconfigured FC storages, and directly displays the details of FC storages. The FC storages that are correctly detected can be used as follows:

- The block devices of FC storages can be passed through directly to VM instances.
- The block devices of FC storages can be added as Shared Block primary storages by means of shared blocks.

5.2.6.2 Inventory

iSCSI Server Inventory

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			3.0.0
name	The name. For more information, see Resource Property .			3.0.0
ip	The IP address.	Yes		3.0.0
port	The port.			3.0.0
chapUserName	The CHAP user name.			3.0.0
chapUserPassword	The CHAP password.			3.0.0
state	The state.			3.0.0

Name	Description	Optional	Valid Value	Starting Version
iscsiTargets				3.0.0
iscsiClusterRefs	The cluster to which the iSCSI server belongs.			3.0.0
groupBy	Groups rows into subgroups based on values of columns or expressions. This field is equivalent to the Group By clause in MySQL, such as <code>groupBy =type</code> .	Yes		3.0.0
createDate	The creation date. For more information, see Resource Property .			3.0.0
lastOpDate	The last operation date. For more information, see Resource Property .			3.0.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.0.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.0.0

Sample

```
{
  "inventories": [
    {
      "createDate": "Sep 7, 2018 10:57:05 AM",
      "ip": "192.168.1.2",
      "tags": [
        "tag1"
      ]
    }
  ]
}
```

```

    "iscsiClusterRefs": [],
    "iscsiTargets": [],
    "lastOpDate": "Sep 7, 2018 2:16:26 PM",
    "name": "iscsi-11",
    "port": 3260,
    "state": "Enabled",
    "uuid": "28ffe53fc5b4af9bcf0e53a02a739e8"
  },
  {
    "createDate": "Sep 7, 2018 2:26:27 PM",
    "ip": "172.20.196.239",
    "iscsiClusterRefs": [],
    "iscsiTargets": [
      {
        "createDate": "Sep 7, 2018 2:28:20 PM",
        "iqn": "iqn.2018-06.org.disk1",
        "iscsiLuns": [
          {
            "createDate": "Sep 7, 2018 2:28:20 PM",
            "hctl": "3:0:0:0",
            "iscsiTargetUuid": "14a6100d78d942bd8929cc268975f102",
            "lastOpDate": "Sep 7, 2018 2:28:20 PM",
            "model": "blkvdb",
            "path": "ip-172.20.196.239:3260-iscsi-iqn.2018-06.org.disk1-lun-0",
            "serial": "6001405f169fb0109a946489a5cbb813",
            "size": 322122547200,
            "type": "disk",
            "uuid": "f423330a423649d9b07fe4d86a65d582",
            "vendor": "LIO-ORG",
            "wwid": "lvm-pv-uuid-FkDvRu-meu7-RH2K-69zA-C8kU-tEnW-uWPDnv",
            "wwn": "0x6001405f169fb010"
          }
        ],
        "lastOpDate": "Sep 7, 2018 2:28:20 PM",
        "uuid": "14a6100d78d942bd8929cc268975f102"
      }
    ],
    "lastOpDate": "Sep 7, 2018 2:26:27 PM",
    "name": "iscsi-0",
    "port": 3260,
    "state": "Enabled",
    "uuid": "ca5819d1c31341e7b61d08a94f769503"
  ],
  "success": true
}

```

iSCSI LUN Inventory

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information,			3.0.0

Name	Description	Optional	Valid Value	Starting Version
	see Resource Property .			
iscsiTargetUuid	The iSCSI target UUID.			3.0.0
wwid	The device WWID.	Yes		3.0.0
vendor	The device vendor.			3.0.0
model	The device model.			3.0.0
wwn	The device WWN.			3.0.0
serial	The device serial No.			3.0.0
hctl	The SCSI device HCTL.			3.0.0
type	The device type.			3.0.0
path	The device path.			3.0.0
size	The device size.			3.0.0
groupBy	Groups rows into subgroups based on values of columns or expressions. This field is equivalent to the Group By clause in MySQL, such as <code>groupBy =type</code> .	Yes		3.0.0
createDate	The creation date. For more information, see Resource Property .			3.0.0
lastOpDate	The last operation date. For more			3.0.0

Name	Description	Optional	Valid Value	Starting Version
	information, see Resource Property .			
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.0.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.0.0

Sample

```
{
  "inventories": [
    {
      "createDate": "Sep 7, 2018 2:28:20 PM",
      "hctl": "3:0:0:0",
      "iscsiTargetUuid": "14a6100d78d942bd8929cc268975f102",
      "lastOpDate": "Sep 7, 2018 2:28:20 PM",
      "model": "blkvdb",
      "path": "ip-172.20.196.239:3260-iscsi-iqn.2018-06.org.
disk1-lun-0",
      "serial": "6001405f169fb0109a946489a5cbb813",
      "size": 322122547200,
      "type": "disk",
      "uuid": "f423330a423649d9b07fe4d86a65d582",
      "vendor": "LIO-ORG",
      "wwid": "lvm-pv-uuid-FkDvRu-meu7-RH2K-69zA-C8kU-tEnW-
uWPDnv",
      "wwn": "0x6001405f169fb010"
    }
  ],
  "success": true
}
```

Fiber Channel Storage Inventory

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			3.1.0
wwnn	The device WWNN.			3.1.0

Name	Description	Optional	Valid Value	Starting Version
fiberChannelLuns				3.1.0
name	The name. For more information, see Resource Property .			3.1.0
state	The state.			3.1.0
groupBy	Groups rows into subgroups based on values of columns or expressions. This field is equivalent to the Group By clause in MySQL, such as groupBy =type.	Yes		3.1.0
createDate	The creation date. For more information, see Resource Property .			3.1.0
lastOpDate	The last operation date. For more information, see Resource Property .			3.1.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.1.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.1.0

Sample

```
{
  "inventories": [
```

```
{
  "createDate": "Oct 30, 2018 1:27:38 PM",
  "fiberChannelLuns": [
    {
      "createDate": "Oct 30, 2018 1:27:38 PM",
      "fiberChannelStorageUuid": "360338582fef4454bebd
c76e8974ceb7",
      "lastOpDate": "Oct 30, 2018 1:27:38 PM",
      "model": "MD32xx",
      "name": "fc-lun-36b083fe000daf018000094d05bd78d4f
",
      "path": "pci-0000:05:00.0-fc-0x2022b083fedaf018-
lun-6",
      "scsiLunHostRefs": [
        {
          "createDate": "Oct 30, 2018 1:41:46 PM",
          "hostUuid": "349bcc9f66204e5fb46
6ae42261ddf5",
          "lastOpDate": "Oct 30, 2018 1:41:46 PM",
          "scsiLunUuid": "994ddaaad4fe34f14b7bd
4153b931fac5"
        },
        {
          "createDate": "Oct 30, 2018 1:27:38 PM",
          "hostUuid": "d03ea736cc534c7b8605
d864ea24deae",
          "lastOpDate": "Oct 30, 2018 1:27:38 PM",
          "scsiLunUuid": "994ddaaad4fe34f14b7bd
4153b931fac5"
        }
      ],
      "scsiLunVmInstanceRefs": [
        {
          "attachMultipath": true,
          "createDate": "Oct 30, 2018 4:33:44 PM",
          "deviceId": 1,
          "lastOpDate": "Oct 30, 2018 4:33:44 PM",
          "scsiLunUuid": "994ddaaad4fe34f14b7bd
4153b931fac5",
          "vmInstanceUuid": "00905b289c3c464294d0
06810270c658"
        }
      ],
      "serial": "6b083fe000daf018000094d05bd78d4f",
      "size": 107374182400,
      "type": "mpath",
      "uuid": "994ddaaad4fe34f14b7bd4153b931fac5",
      "vendor": "DELL",
      "wwid": "36b083fe000daf018000094d05bd78d4f",
      "wwn": "0x6b083fe000daf018"
    },
    {
      "createDate": "Oct 30, 2018 1:27:38 PM",
      "fiberChannelStorageUuid": "360338582fef4454bebd
c76e8974ceb7",
      "lastOpDate": "Oct 30, 2018 1:27:38 PM",
      "model": "MD32xx",
      "name": "fc-lun-36f01faf000d5c3e700008c655bd792a8
",
      "path": "pci-0000:05:00.0-fc-0x2022b083fedaf018-
lun-5",
      "scsiLunHostRefs": [

```

```
{
    "createDate": "Oct 30, 2018 1:27:38 PM",
    "hostUuid": "d03ea736cc534c7b8605
d864ea24deae",
    "lastOpDate": "Oct 30, 2018 1:27:38 PM",
    "scsiLunUuid": "4e75b3a57cc44c27bd27
be9bbe3378d8"
},
{
    "createDate": "Oct 30, 2018 1:41:46 PM",
    "hostUuid": "349bcc9f66204e5fb46
6ae42261dddf5",
    "lastOpDate": "Oct 30, 2018 1:41:46 PM",
    "scsiLunUuid": "4e75b3a57cc44c27bd27
be9bbe3378d8"
},
],
"scsiLunVmInstanceRefs": [],
"serial": "6f01faf000d5c3e700008c655bd792a8",
"size": 107374182400,
"type": "mpath",
"uuid": "4e75b3a57cc44c27bd27be9bbe3378d8",
"vendor": "DELL",
"wwid": "36f01faf000d5c3e700008c655bd792a8",
"wwn": "0x6f01faf000d5c3e7"
},
{
    "createDate": "Oct 30, 2018 1:27:38 PM",
    "fiberChannelStorageUuid": "360338582fef4454bebdc76e8974ceb7",
    "lastOpDate": "Oct 30, 2018 1:27:38 PM",
    "model": "MD32xx",
    "name": "fc-lun-36b083fe000daf018000094ca5bd78cb2",
    "path": "pci-0000:05:00.0-fc-0x2022b083fedaf018-
lun-0",
    "scsiLunHostRefs": [
        {
            "createDate": "Oct 30, 2018 1:27:38 PM",
            "hostUuid": "d03ea736cc534c7b8605
d864ea24deae",
            "lastOpDate": "Oct 30, 2018 1:27:38 PM",
            "scsiLunUuid": "efcd656ffcaf4ad18fc2
1f9b310b79a7"
        },
        {
            "createDate": "Oct 30, 2018 1:41:46 PM",
            "hostUuid": "349bcc9f66204e5fb46
6ae42261dddf5",
            "lastOpDate": "Oct 30, 2018 1:41:46 PM",
            "scsiLunUuid": "efcd656ffcaf4ad18fc2
1f9b310b79a7"
        }
    ],
"scsiLunVmInstanceRefs": [],
"serial": "6b083fe000daf018000094ca5bd78cb2",
"size": 536870912000,
"type": "mpath",
"uuid": "efcd656ffcaf4ad18fc21f9b310b79a7",
"vendor": "DELL",
"wwid": "36b083fe000daf018000094ca5bd78cb2",
"wwn": "0x6b083fe000daf018"
}
```

```

        },
        {
            "createDate": "Oct 30, 2018 5:14:37 PM",
            "fiberChannelStorageUuid": "360338582fef4454bebd
c76e8974ceb7",
            "lastOpDate": "Oct 30, 2018 5:14:37 PM",
            "model": "MD32xx",
            "name": "fc-lun-36f01faf000d5c3e700008c5f5bd78864
",
            "path": "pci-0000:05:00.1-fc-0x2033b083fedaf018-
lun-71",
            "scsiLunHostRefs": [
                {
                    "createDate": "Oct 30, 2018 5:14:37 PM",
                    "hostUuid": "349bcc9f66204e5fb46
6ae42261dddf5",
                    "lastOpDate": "Oct 30, 2018 5:14:37 PM",
                    "scsiLunUuid": "ddf2215d9d5747b891cf
ee71cab09e71"
                }
            ],
            "scsiLunVmInstanceRefs": [],
            "serial": "6f01faf000d5c3e700008c5f5bd78864",
            "size": 10995116277760,
            "type": "mpath",
            "uuid": "ddf2215d9d5747b891cf71cab09e71",
            "vendor": "DELL",
            "wwid": "36f01faf000d5c3e700008c5f5bd78864",
            "wwn": "0x6f01faf000d5c3e7"
        },
        {
            "createDate": "Oct 30, 2018 1:27:38 PM",
            "fiberChannelStorageUuid": "360338582fef4454bebd
c76e8974ceb7",
            "lastOpDate": "Oct 30, 2018 1:27:38 PM",
            "model": "MD32xx",
            "name": "fc-lun-36b083fe000daf018000094ce5bd78d1f
",
            "path": "pci-0000:05:00.0-fc-0x2022b083fedaf018-
lun-4",
            "scsiLunHostRefs": [
                {
                    "createDate": "Oct 30, 2018 1:41:46 PM",
                    "hostUuid": "349bcc9f66204e5fb46
6ae42261dddf5",
                    "lastOpDate": "Oct 30, 2018 1:41:46 PM",
                    "scsiLunUuid": "137b5e7d6af34930bd5c
ea31abff71fe"
                }
            ],
            "scsiLunVmInstanceRefs": [],
            "serial": "6b083fe000daf018000094ce5bd78d1f",
            "size": 107374182400,
            "type": "mpath",
            "uuid": "137b5e7d6af34930bd5c
ea31abff71fe"
        }
    ],
    "scsiLunVmInstanceRefs": [],
    "serial": "6b083fe000daf018000094ce5bd78d1f",
    "size": 107374182400,
    "type": "mpath",

```

```

        "uuid": "137b5e7d6af34930bd5cea31abff71fe",
        "vendor": "DELL",
        "wwid": "36b083fe000daf018000094ce5bd78d1f",
        "wwn": "0x6b083fe000daf018"
    },
    {
        "createDate": "Oct 30, 2018 1:27:38 PM",
        "fiberChannelStorageUuid": "360338582fef4454bebd
c76e8974ceb7",
        "lastOpDate": "Oct 30, 2018 1:27:38 PM",
        "model": "MD32xx",
        "name": "fc-lun-36b083fe000daf018000094cc5bd78cf5
",
        "path": "pci-0000:05:00.0-fc-0x2022b083fedaf018-
lun-2",
        "scsiLunHostRefs": [
            {
                "createDate": "Oct 30, 2018 1:41:46 PM",
                "hostUuid": "349bcc9f66204e5fbc46
6ae42261ddf5",
                "lastOpDate": "Oct 30, 2018 1:41:46 PM",
                "scsiLunUuid": "9217164a150542b9887b
5df6448c42f3"
            },
            {
                "createDate": "Oct 30, 2018 1:27:38 PM",
                "hostUuid": "d03ea736cc534c7b8605
d864ea24deae",
                "lastOpDate": "Oct 30, 2018 1:27:38 PM",
                "scsiLunUuid": "9217164a150542b9887b
5df6448c42f3"
            }
        ],
        "scsiLunVmInstanceRefs": [],
        "serial": "6b083fe000daf018000094cc5bd78cf5",
        "size": 107374182400,
        "type": "mpath",
        "uuid": "9217164a150542b9887b5df6448c42f3",
        "vendor": "DELL",
        "wwid": "36b083fe000daf018000094cc5bd78cf5",
        "wwn": "0x6b083fe000daf018"
    },
    {
        "createDate": "Oct 30, 2018 5:14:37 PM",
        "fiberChannelStorageUuid": "360338582fef4454bebd
c76e8974ceb7",
        "lastOpDate": "Oct 30, 2018 5:14:37 PM",
        "model": "MD32xx",
        "name": "fc-lun-36b083fe000daf018000093115bd0662b
",
        "path": "pci-0000:05:00.1-fc-0x2033b083fedaf018-
lun-30",
        "scsiLunHostRefs": [
            {
                "createDate": "Oct 30, 2018 5:14:37 PM",
                "hostUuid": "349bcc9f66204e5fbc46
6ae42261ddf5",
                "lastOpDate": "Oct 30, 2018 5:14:37 PM",
                "scsiLunUuid": "8154341bea594933866d
703bfed2515c"
            }
        ]
    }
]

```

```

        "scsiLunVmInstanceRefs": [],
        "serial": "6b083fe000daf018000093115bd0662b",
        "size": 1099511627776,
        "type": "mpath",
        "uuid": "8154341bea594933866d703bfed2515c",
        "vendor": "DELL",
        "wwid": "36b083fe000daf018000093115bd0662b",
        "wwn": "0x6b083fe000daf018"
    },
    {
        "createDate": "Oct 30, 2018 1:27:38 PM",
        "fiberChannelStorageUuid": "360338582fef4454bebd
c76e8974ceb7",
        "lastOpDate": "Oct 30, 2018 1:27:38 PM",
        "model": "MD32xx",
        "name": "fc-lun-36f01faf000d5c3e700008c615bd7924a
",
        "path": "pci-0000:05:00.0-fc-0x2022b083fedaf018-
lun-1",
        "scsiLunHostRefs": [
            {
                "createDate": "Oct 30, 2018 1:41:46 PM",
                "hostUuid": "349bcc9f66204e5fb46
6ae42261ddf5",
                "lastOpDate": "Oct 30, 2018 1:41:46 PM",
                "scsiLunUuid": "8a28ce7536724f88a17f
73ea200ad8a5"
            },
            {
                "createDate": "Oct 30, 2018 1:27:38 PM",
                "hostUuid": "d03ea736cc534c7b8605
d864ea24deae",
                "lastOpDate": "Oct 30, 2018 1:27:38 PM",
                "scsiLunUuid": "8a28ce7536724f88a17f
73ea200ad8a5"
            }
        ],
        "scsiLunVmInstanceRefs": [],
        "serial": "6f01faf000d5c3e700008c615bd7924a",
        "size": 536870912000,
        "type": "mpath",
        "uuid": "8a28ce7536724f88a17f73ea200ad8a5",
        "vendor": "DELL",
        "wwid": "36f01faf000d5c3e700008c615bd7924a",
        "wwn": "0x6f01faf000d5c3e7"
    },
    {
        "createDate": "Oct 30, 2018 1:27:38 PM",
        "fiberChannelStorageUuid": "360338582fef4454bebd
c76e8974ceb7",
        "lastOpDate": "Oct 30, 2018 1:27:38 PM",
        "model": "MD32xx",
        "name": "fc-lun-36f01faf000d5c3e700008c635bd79280
",
        "path": "pci-0000:05:00.0-fc-0x2022b083fedaf018-
lun-3",
        "scsiLunHostRefs": [
            {
                "createDate": "Oct 30, 2018 1:41:46 PM",
                "hostUuid": "349bcc9f66204e5fb46
6ae42261ddf5",
                "lastOpDate": "Oct 30, 2018 1:41:46 PM",
            }
        ]
    }
]

```

```

        "scsiLunUuid": "68fe12895449439eab9c
9e12544d571f"
    },
{
    "createDate": "Oct 30, 2018 1:27:38 PM",
    "hostUuid": "d03ea736cc534c7b8605
d864ea24deae",
    "lastOpDate": "Oct 30, 2018 1:27:38 PM",
    "scsiLunUuid": "68fe12895449439eab9c
9e12544d571f"
}
],
"scsiLunVmInstanceRefs": [],
"serial": "6f01faf000d5c3e700008c635bd79280",
"size": 107374182400,
"type": "mpath",
"uuid": "68fe12895449439eab9c9e12544d571f",
"vendor": "DELL",
"wwid": "36f01faf000d5c3e700008c635bd79280",
"wwn": "0x6f01faf000d5c3e7"
}
],
"lastOpDate": "Oct 30, 2018 1:27:38 PM",
"name": "fc-san-0x2002b083fedaf018",
"state": "Enabled",
"uuid": "360338582fef4454bebdc76e8974ceb7",
"wwnn": "0x2002b083fedaf018"
}
],
"success": true
}

```

SCSI LUN Inventory

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			3.2.0
name	The name. For more information, see Resource Property .			3.2.0
wwid	The disk WWID.			3.2.0
vendor	The disk vendor.			3.2.0
model	The disk model.			3.2.0
wwn	The disk WWN.			3.2.0
serial	The disk serial No.			3.2.0

Name	Description	Optional	Valid Value	Starting Version
type	The disk type.			3.2.0
path	The disk path.			3.2.0
state	The disk state.			3.2.0
size	The disk size.			3.2.0
scsiLunHostRefs	The hosts that have SCSI LUN.			3.2.0
scsiLunVmInstanceRefs	The VM instances to which the SCSI LUN is attached.			3.2.0
groupBy	Groups rows into subgroups based on values of columns or expressions. This field is equivalent to the Group By clause in MySQL, such as <code>groupBy =type</code> .	Yes		3.2.0
createDate	The creation date. For more information, see Resource Property .			3.2.0
lastOpDate	The last operation date. For more information, see Resource Property .			3.2.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.2.0
systemTags	The system tags. For more information, see	Yes		3.2.0

Name	Description	Optional	Valid Value	Starting Version
	CreateSystemTag			

Sample

```
{
    "inventories": [
        {
            "createDate": "Sep 7, 2018 10:57:05 AM",
            "ip": "192.168.1.2",
            "iscsiClusterRefs": [],
            "iscsiTargets": [],
            "lastOpDate": "Sep 7, 2018 2:16:26 PM",
            "name": "iscsi-11",
            "port": 3260,
            "state": "Enabled",
            "uuid": "28ffe53fca5b4af9bcf0e53a02a739e8"
        },
        {
            "createDate": "Sep 7, 2018 2:26:27 PM",
            "ip": "172.20.196.239",
            "iscsiClusterRefs": [],
            "iscsiTargets": [
                {
                    "createDate": "Sep 7, 2018 2:28:20 PM",
                    "iqn": "iqn.2018-06.org.disk1",
                    "iscsiLuns": [
                        {
                            "createDate": "Sep 7, 2018 2:28:20 PM",
                            "hctl": "3:0:0:0",
                            "iscsiTargetUuid": "14a6100d78d942bd8929cc268975f102",
                            "lastOpDate": "Sep 7, 2018 2:28:20 PM",
                            "model": "blkvdb",
                            "path": "ip-172.20.196.239:3260-iscsi-iqn.2018-06.org.disk1-lun-0",
                            "serial": "6001405f169fb0109a946489a5cbb813",
                            "size": 322122547200,
                            "type": "disk",
                            "uuid": "f423330a423649d9b07fe4d86a65d582",
                            "vendor": "LIO-ORG",
                            "wwid": "lvm-pv-uuid-FkDvRu-meu7-RH2K-69zA-C8kU-tEnW-uWPDnv",
                            "wwn": "0x6001405f169fb010"
                        }
                    ],
                    "lastOpDate": "Sep 7, 2018 2:28:20 PM",
                    "uuid": "14a6100d78d942bd8929cc268975f102"
                }
            ],
            "lastOpDate": "Sep 7, 2018 2:26:27 PM",
            "name": "iscsi-0",
            "port": 3260,
            "state": "Enabled",
            "uuid": "ca5819d1c31341e7b61d08a94f769503"
        }
    ]
}
```

```
],
  "success": true
}
```

5.2.6.3 Operations

5.2.6.3.1 QueryScsiLun

Queries an iSCSI LUN and an FC LUN. For example,

```
QueryScsiLun name=fc-lun-36b083fe000daf018000022905ba35d8f
```

Primitive Fields of Query

See [SCSI LUN Inventory](#).

Nested and Expanded Fields of Query

Field	Inventory	Description	Starting Version
scsiLunHostRefs	SCSI LUN Host Reference Inventory	The hosts that have SCSI LUN attached.	3.2.0
scsiLunVmInstanceRefs	SCSI LUN VM Instance Ref Inventory	The VM instances that have SCSI LUN attached.	3.2.0

5.2.6.3.2 DetachScsiLunFromHost

Detaches a LUN from a host. For example,

```
DetachScsiLunFromHost uuid=dce542427a3a3d1fa13324c9f67352cb
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The SCSI LUN UUID.			4.2.0
hostUuid	The host UUID.	Yes		4.2.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		4.2.0
systemTags	The system tags. For more information, see	Yes		4.2.0

Name	Description	Optional	Valid Value	Starting Version
	CreateSystemTag .			
timeout		Yes		

5.2.6.3.3 iSCSI Server

5.2.6.3.3.1 AddIscsiServer

Adds an iSCSI server. For example,

```
AddIscsiServer name=iSCSIServer ip=192.168.1.1
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
name	The resource name.			3.0.0
ip	The IP address.			3.0.0
port	The port. Default port: 3260.			3.0.0
chapUserName	The CHAP user name, which is default to an empty string.	Yes		3.0.0
chapUserPassword	The CHAP password, which is default to an empty string.	Yes		3.0.0
resourceUuid		Yes		3.0.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.0.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.0.0
timeout		Yes		

5.2.6.3.3.2 DeleteIscsiServer

Deletes an iSCSI server. For example,

```
DeleteIscsiServer uuid=632e6c9d5959443594cf2f03ed3e59f0
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The iSCSI server UUID.			3.0.0
deleteMode				3.0.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.0.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.0.0
timeout		Yes		

5.2.6.3.3.3 QueryIscsiServer

Queries an iSCSI server. For example,

```
QueryIscsiServer ip=192.168.1.2
```

Primitive Fields of Query

See [iSCSI Server Inventory](#).

Nested and Expanded Fields of Query

Field	Inventory	Description	Starting Version
iscsiTarget	iSCSI Target Inventory		3.0.0
iscsiCluster	iSCSI Cluster Inventory	The cluster to which the iSCSI server belongs.	3.0.0

5.2.6.3.3.4 RefreshIscsiServer

Refreshes an iSCSI server. For example,

```
RefreshIscsiServer uuid=28ffe53fca5b4af9bcf0e53a02a739e8
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			3.0.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.0.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.0.0
timeout		Yes		

5.2.6.3.3.5 UpdateIscsiServer

Updates the configurations of an iSCSI server. For example,

```
UpdateIscsiServer uuid=28ffe53fca5b4af9bcf0e53a02a739e8 name=iscsi-11
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			3.0.0
name	The resource name.	Yes		3.0.0
chapUserName	The CHAP user name.	Yes		3.0.0
chapUserPassword	The CHAP password.	Yes		3.0.0
state	The state.	Yes	<ul style="list-style-type: none"> • Enabled • Disabled 	3.0.0

Name	Description	Optional	Valid Value	Starting Version
resourceUuid		Yes		3.0.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.0.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.0.0
timeout		Yes		

5.2.6.3.3.6 AttachIscsiServerToCluster

Attaches an iSCSI server to a cluster. For example,

```
AttachIscsiServerToCluster uuid=ca5819d1c31341e7b61d08a94f769503
clusterUuid=eac4264df1724538aa0631bf646d69d8
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The iSCSI server UUID.			3.0.0
clusterUuid	The cluster UUID.			3.0.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.0.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.0.0
timeout		Yes		

5.2.6.3.3.7 DetachIscsiServerFromCluster

Detaches an iSCSI server from a cluster. For example,

```
DetachIscsiServerFromCluster uuid=ca5819d1c31341e7b61d08a94f769503
clusterUuid=eac4264df1724538aa0631bf646d69d8
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The iSCSI server UUID.			3.0.0
clusterUuid	The cluster UUID.			3.0.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.0.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.0.0
timeout		Yes		

5.2.6.3.3.8 QueryIscsiLun

Queries an iSCSI LUN. For example,

```
QueryIscsiLun uuid=f423330a423649d9b07fe4d86a65d582
```

Primitive Fields of Query

See [iSCSI LUN Inventory](#).

Nested and Expanded Fields of Query

Field	Inventory	Description	Starting Version
iscsiTarget	iSCSI Target Inventory		3.0.0

5.2.6.3.4 FC Storage

5.2.6.3.4.1 QueryFiberChannelStorage

Queries an FC SAN storage. For example,

```
QueryFiberChannelStorage uuid=ba3cb22ad8f14043ade6d07eb2a4bb8c
```

Primitive Fields of Query

See [Fiber Channel Storage Inventory](#).

Nested and Expanded Fields of Query

Field	Inventory	Description	Starting Version
iscsiTarget	iSCSI Target Inventory		3.1.0
iscsiCluster	iSCSI Cluster Inventory	The cluster to which the iSCSI server belongs.	3.1.0

5.2.6.3.4.2 RefreshFiberChannelStorage

Refreshes an FC SAN storage. For example,

```
RefreshFiberChannelStorage zoneUuid=b88a7824538142f9b9b6e012ef46029f
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The FC SAN storage UUID.	Yes		3.1.0
zoneUuid	The zone UUID.			3.1.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.1.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.1.0
timeout		Yes		

5.2.6.3.4.3 UpdateScsiLun

Updates an SCSI LUN. For example,

```
UpdateScsiLun uuid=137b5e7d6af34930bd5cea31abff71fe
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			3.1.0
name	The resource name.	Yes		3.1.0
state	The state.	Yes	<ul style="list-style-type: none"> Enabled Disabled 	3.1.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.1.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.1.0
timeout		Yes		

5.2.6.3.4.4 AttachScsiLunToVmInstance

Attaches an SCSI LUN to a VM instance. For example,

```
AttachScsiLunToVmInstance uuid=137b5e7d6af34930bd5cea31abff71fe
vmInstanceUuid=da85d8325067411cb20afa94e477e6c2
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The SCSI LUN UUID.			3.1.0
vmInstanceUuid	The VM instance UUID.			3.1.0

Name	Description	Optional	Valid Value	Starting Version
disableMultiPathAttach	Whether to turn off the switch for automatically attaching multi-path devices.	Yes		3.1.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.1.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.1.0
timeout		Yes		

5.2.6.3.4.5 DetachScsiLunFromVmInstance

Detaches an SCSI LUN from a VM instance. For example,

```
DetachScsiLunFromVmInstance uuid=137b5e7d6af34930bd5cea31abff71fe
vmInstanceUuid=da85d8325067411cb20afa94e477e6c2
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			3.1.0
vmInstanceUuid	The VM instance UUID.			3.1.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.1.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.1.0

Name	Description	Optional	Valid Value	Starting Version
timeout		Yes		

5.2.6.3.4.6 CheckScsiLunClusterStatus

Checks the connection status between an SCSI LUN and the attached cluster. For example,

```
CheckScsiLunClusterStatus clusterUuid=3d279bbb771b4adf99d1ed04afcc956e
    uuid=9217164a150542b9887b5df6448c42f3
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			3.1.0
clusterUuid	The cluster UUID.			3.1.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.1.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.1.0
timeout		Yes		

5.2.6.3.4.7 GetScsiLunCandidatesForAttachingVm

Obtains an SCSI LUN that can be attached by a VM instance. For example,

```
GetScsiLunCandidatesForAttachingVm uuid=00905b289c3c464294d006810270c6
    58
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
vmlInstanceUuid	The VM instance UUID.			3.1.0
userTags	The user tags. For more	Yes		

Name	Description	Optional	Valid Value	Starting Version
	information, see CreateUserTag .			
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		
timeout		Yes		

5.2.6.4 Tags

You can create a user tag on an iSCSI server by using `resourceType=IscsiServerVO`. For example,

```
CreateUserTag resourceType=IscsiServerVO tag=golden-ResourceStack
resourceUuid=ca5819d1c31341e7b61d08a94f769503
```

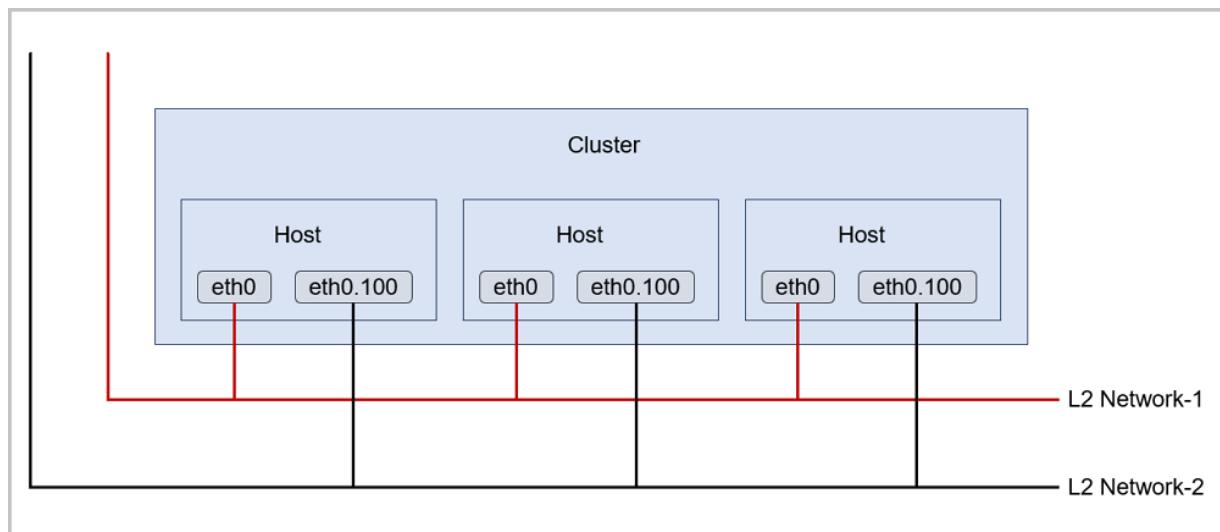
5.3 Network Resource

5.3.1 L2 Network

5.3.1.1 Overview

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.

- VLAN, VXLAN, or SDN can be used as an L2 network and can provide layer 2 isolation.
- An L2 network is used to provide layer 2 isolation for an L3 network, as shown in [L2 Network](#).

Figure 5-17: L2 Network

Four Major Types of L2 Network

An L2 network supports mainly four types.

1. L2NoVlanNetwork

L2NoVlanNetwork indicates that VLAN settings are not used for connecting the corresponding host.

- If you set VLAN for a switch port, make sure that the switch port is in Access mode.
- If you do not set VLAN for the switch port, do not make any operation.
- If you create an L2 network, note that a bridge will be created according to the network device that you have entered.

2. L2VlanNetwork

L2VlanNetwork indicates that VLAN settings are used for connecting the corresponding host.

- The switch port connected by the host must be in Trunk mode.
- The virtual LAN can be divided logically. Notice that it can support 1-4094 subnets.
- If you create an L2 network, notice that a VLAN device will be created according to the network device that you have entered. In addition, a bridge will be created according to the VLAN device.

3. VxlanNetwork

VxlanNetwork indicates that the VXLAN network is created by using the VNI specialized by VxlanNetworkPool of the **Software SDN** type.

- VxlanNetwork is created according to VxlanNetworkPool of the **Software SDN** type.
- Each VxlanNetwork corresponds to a VNI specialized by VxlanNetworkPool of the **Software SDN** type.
- VxlanNetwork can be used for creating an L3 network.

4. HardwareVxlanNetwork

HardwareVxlanNetwork indicates that the VXLAN network is created by using the VNI specialized by VxlanNetworkPool of the **Hardware SDN** type.

- HardwareVxlanNetwork is created according to VxlanNetworkPool of the **Hardware SDN** type.
- Each HardwareVxlanNetwork corresponds to a VNI specialized by VxlanNetworkPool of the **Hardware SDN** type.
- HardwareVxlanNetwork can be used for creating an L3 network.



Note:

- When you add NoVlanNetWork or VlanNetwork, enter the NIC name.
- In CentOS 7, the NIC name in the ethX format will be changed after the system reboots. In addition, the NIC sequence will also be randomly changed. We recommend that you change the NIC name of each compute node (especially for VM instances with multiple NICs) to a non -ethX format, such as em01.

Relationship Between L2 Network and Cluster/L3 Network/VM Instance

The relationship between L2 network and cluster/L3 network/VM instance is as follows:

- If you attached an L2 network to a cluster whereas the L2 network was not attached to a host, you could not add the host to the cluster.
- If you did not attach an L2 network to a cluster and the L2 network was not attached to a host, you could not attach the L2 network to the cluster.
- If you attached an L2 network to a host whereas the corresponding L2 network devices were inconsistently connected to other hosts in a cluster, note that the VM instance IP that you created would not work normally.
- You can use one L2 network to create multiple child L3 networks. If you select the HarewareVx lanNetwork L2 network to create a private network, you can only create a flat network and corresponding network services. vRouter network cannot be created by using the HarewareVx lanNetwork L2 network.

- If you delete an L2 network, notice that the corresponding L3 network will also be deleted, and that the VM NIC in the L3 network will be deleted as well.
- If you delete an L2 network, you will also delete the vRouter, VPC vRouter, and vRouter offering in the L2 network.
- If you delete the corresponding L2 network of a public network, notice that all network services of the corresponding router will be deleted, including the vRouter, VPC vRouter, vRouter offering, virtual IP, elastic IP, port forwarding, load balancing, IPsec tunnel, and Netflow.
- You can create multiple VxlanNetworks by using a VXLAN Pool of the **Software SDN** type. These VxlanNetworks can be applied to the flat network, vRouter network, or VPC network respectively.
- VM instances in VxlanNetwork cannot be accessed through the Internet. To access these VM instances through the Internet, use an elastic IP or port forwarding.
- You can also create multiple HardwareVxlanNetworks by using a VXLAN Pool of the **Hardware SDN** type. These HardwareVxlanNetworks can currently be applied to flat networks.

5.3.1.2 Inventory

Properties

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			0.6
name	The name. For more information, see Resource Property .			0.6
description	The description. For more information, see Resource Property .	Yes		0.6
zoneUuid	The UUID of the parent zone. For more information, see Zone .			0.6
physicalInterface	The physical interface. For more information, see Physical Interface .			0.6
type	The L2 network type.		• L2NoVlanNetwork	0.6

Name	Description	Optional	Valid Value	Starting Version
			<ul style="list-style-type: none"> L2VlanNetwork VxlanNetworkPool VxlanNetwork 	
attachedClusterUuids	The clusters to which the L2 network is attached. For more information, see Attach Cluster .			0.6
createDate	The creation date. For more information, see Resource Property .			0.6
lastOpDate	The last operation date. For more information, see Resource Property .			0.6

Sample

```
{
  "inventories": [
    {
      "attachedClusterUuids": [
        "553c2fd2a67b4b89a6240541959b861f"
      ],
      "createDate": "Mar 10, 2018 2:35:14 PM",
      "description": "",
      "lastOpDate": "Mar 10, 2018 2:35:14 PM",
      "name": "L2Network-1",
      "physicalInterface": "eth0",
      "type": "L2NoVlanNetwork",
      "uuid": "dde9685e3ba944bea8c643fe64200750",
      "zoneUuid": "fa18454182eb41749797f824c00cfccf"
    }
  ],
  "success": true
}
```

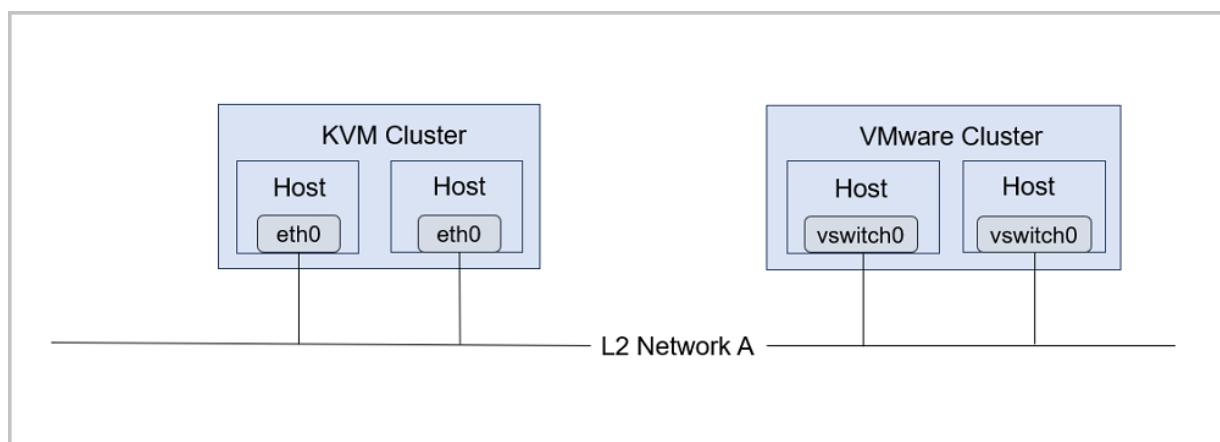
Physical Interface

A physical interface is a string, such as eth0. The string contains information about the related L2 network in the data center. Normally, different types of the L2 network and different types of hypervisors have different physical interfaces. This is because the hypervisors use their own

notations to describe L2 networks, and an L2 network can be simultaneously attached to multiple clusters of different hypervisor types.

Assume that a data center has an L2 network (L2 Network A). L2 Network A can be used across two clusters: the KVM cluster and the VMware cluster. In the KVM cluster, L2 Network A is realized by an Ethernet device in Linux operating system. In this example, assume that each KVM instance can connect to L2 Network A by using eth0. In the VMware cluster, L2 Network A is realized by vSwitch. In this example, assume that the VMware cluster can connect to L2 Network A by using vswitch0. In this regard, the entire topology can be shown as [L2 Network Topology](#).

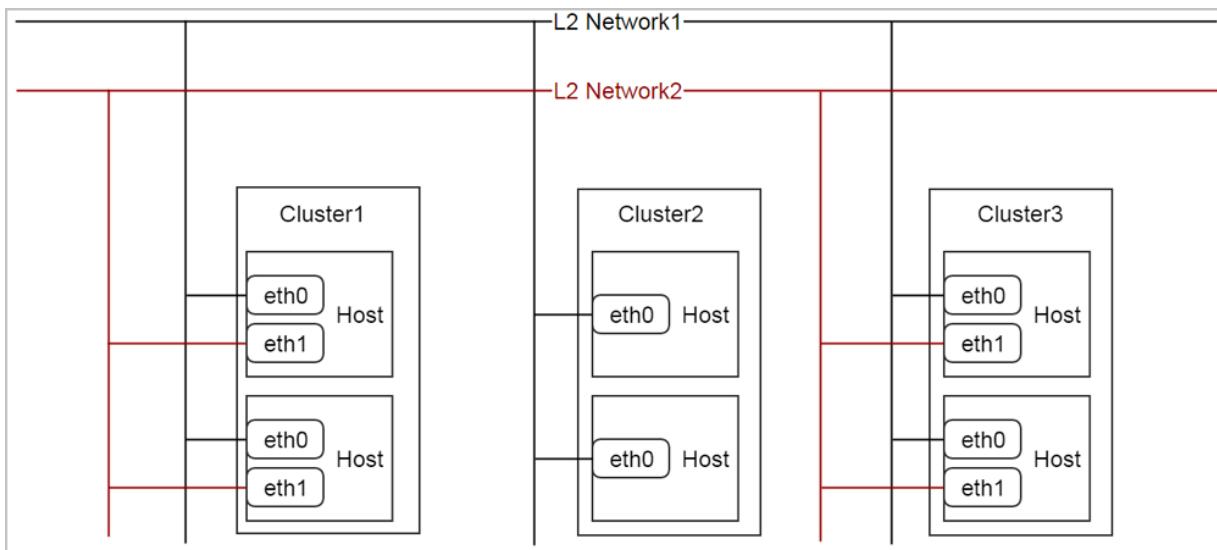
Figure 5-18: L2 Network Topology



Many operations seemingly applied to zones and clusters are actually delegated to hosts. Here, when L2 Network A is attached to the KVM cluster and the VMware cluster, ZStack Cloud must understand how the hypervisor in these clusters use the notations to describe the L2 network. That is, eth0 on the KVM host represents the L2 network, while vswitch0 on the VMware host also represents the L2 network. Therefore, the name of a physical interface can also reflect different hypervisors.

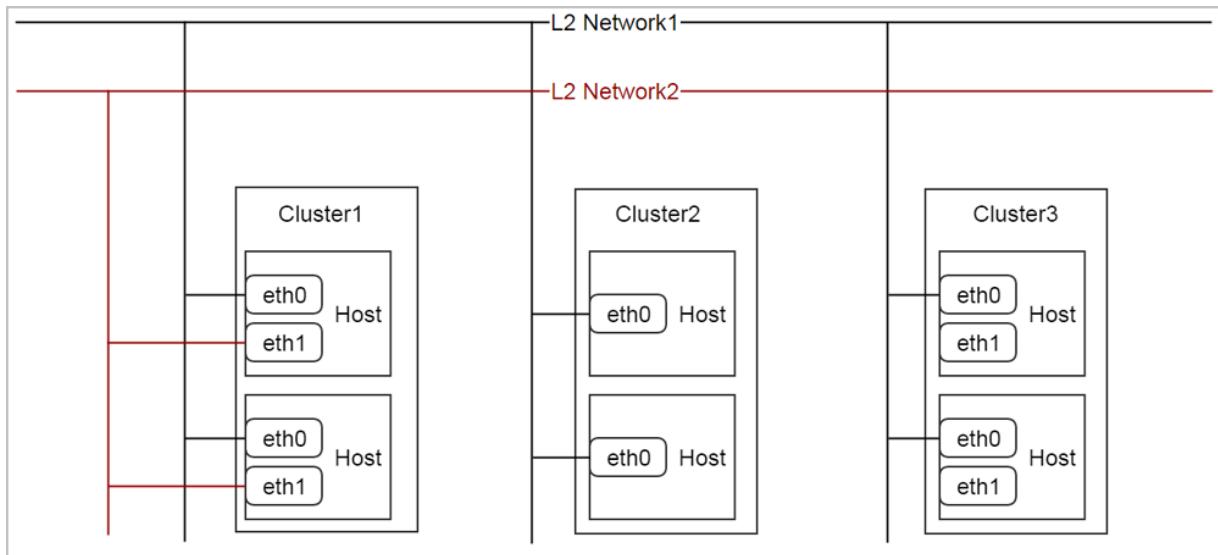
Attach Cluster

Attaching a cluster is to associate an L2 network with the sibling clusters in the same zone. Attaching a cluster provides a flexible solution to maintain the relation between hosts and L2 networks in a data center, as shown in [Attach Cluster](#).

Figure 5-19: Attach Cluster

Assume that the network topology in your data center is as the above. The eth0s of the hosts in all clusters are on the same L2 network (L2 Network1), while eth1s of the hosts in Cluster1 and Cluster3 are on another L2 network (L2 Network2). To describe this topology in ZStack Cloud, you can attach L2 Network1 to all the three clusters, and attach only L2 Network2 to Cluster1 and Cluster3.

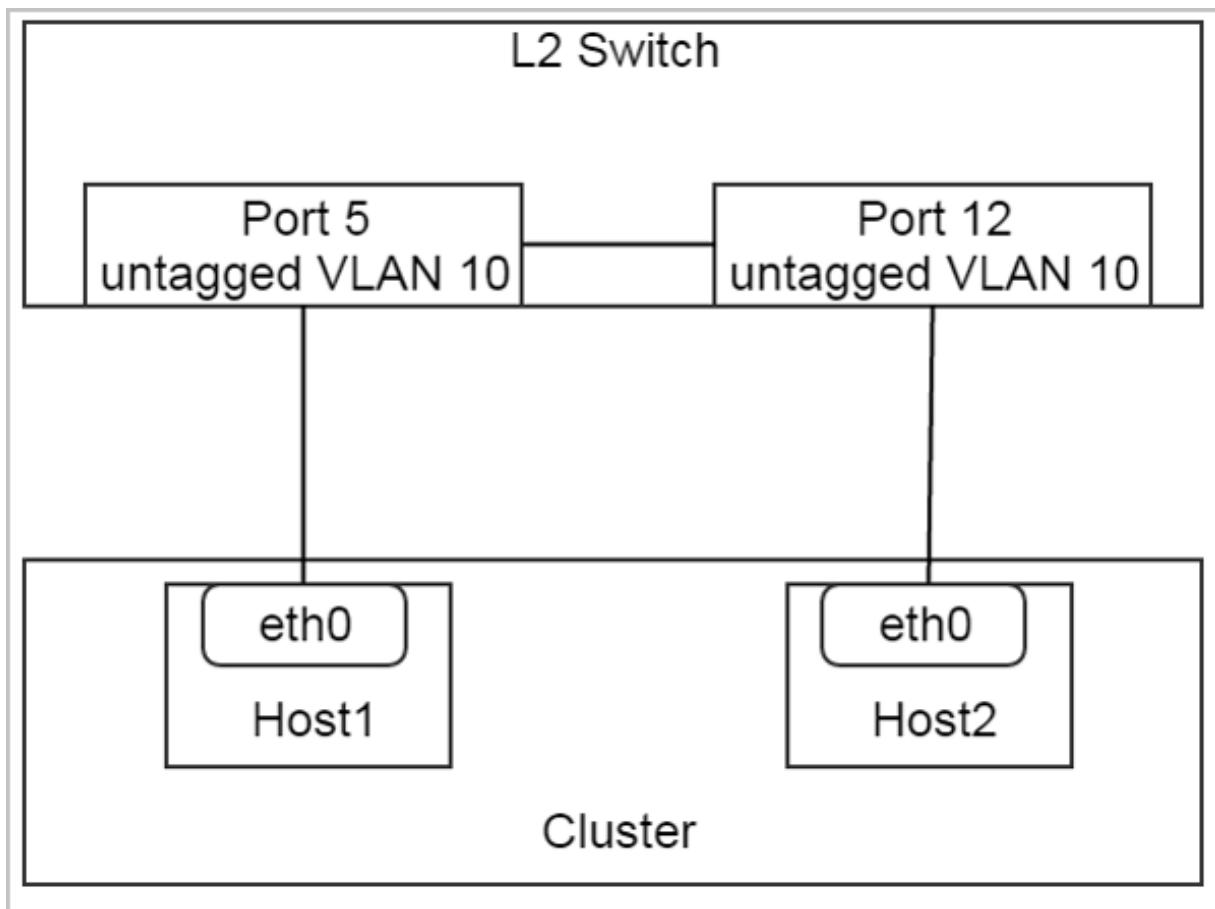
Several months later, due to some business needs, you can make some modifications to the network topology. You need to unplug the Ethernet cables connected by eth1s of the hosts in Cluster3 from the rack switch. Then, you will no longer connect Cluster3 with L2 Network2. You can detach L2 Network2 from Cluster3, and notify ZStack Cloud of the network topology change, as shown in [Modify the Attached Cluster](#).

Figure 5-20: Modify the Attached Cluster

L2NoVlanNetwork

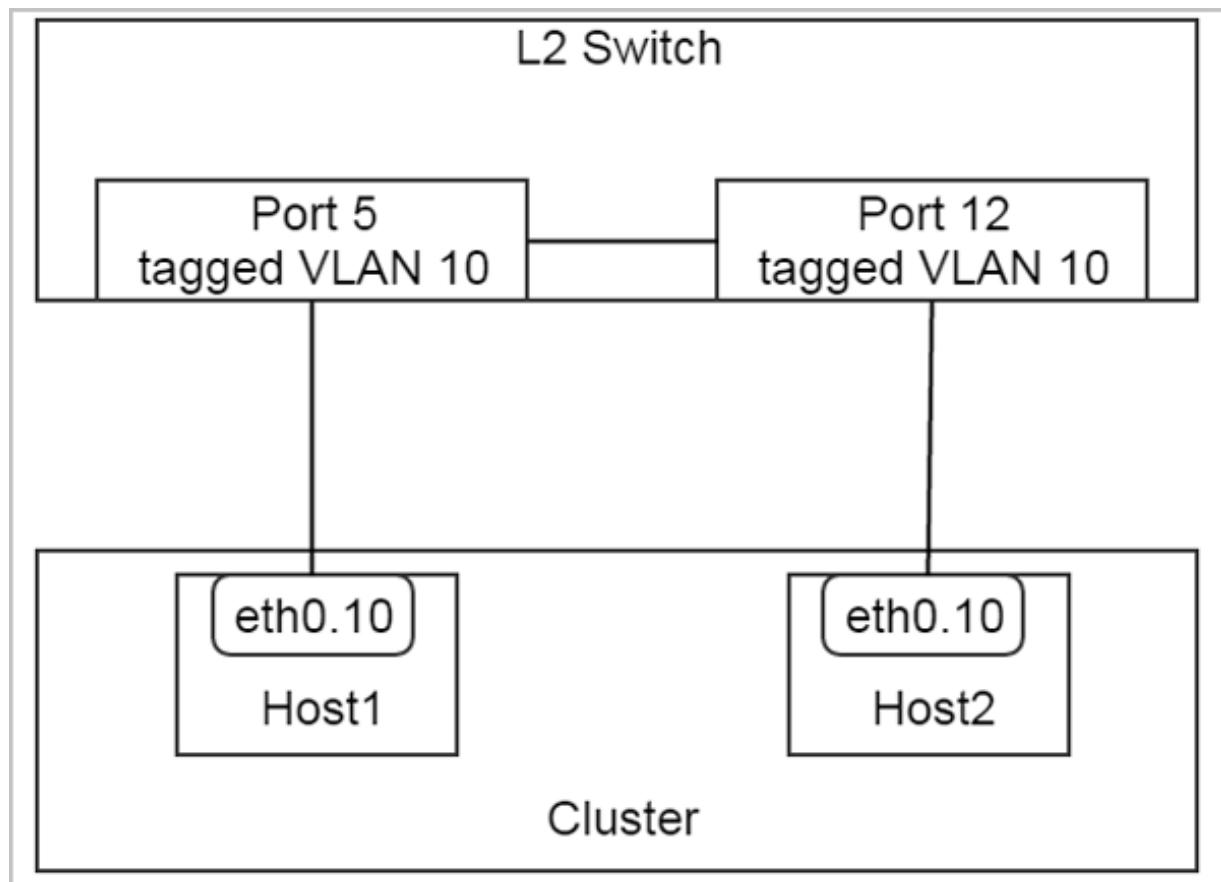
L2NoVlanNetwork is a basic type of L2 network. NoVlan in L2NoVlanNetwork does not mean that you cannot use the VLAN technology. Contrarily, it simply means that ZStack Cloud will not take the initiative to use VLAN to create a layer 2 broadcast domain. The following two topologies can help you better understand the L2NoVlanNetwork.

As shown in [Configuration of L2NoVlanNetwork 1](#).

Figure 5-21: Configuration of L2NoVlanNetwork 1

In the figure above, both Port 5 and Port 12 in L2 Switch are untagged with VLAN 10 (access port with VLAN 10 in Cisco term), and connect to eth0 on Host1 and Host2 respectively. This is an effective configuration for L2NoVlanNetwork. You can use `physicalInterface = eth0` to create an L2NoVlanNetwork, and attach it to Cluster.

As shown in [Configuration of L2NoVlanNetwork 2](#).

Figure 5-22: Configuration of L2NoVlanNetwork 2

In the figure above, both Port 5 and Port 12 in L2 Switch are tagged with VLAN 10 (trunk port with VLAN 10 in Cisco term), and connect to eth0.10 (a pre-created VLAN device) on Host1 and Host2 respectively. This is also an effective configuration for L2NoVlanNetwork. You can use `physicalInterface = eth0.10` to create an L2NoVlanNetwork, and attach it to Cluster.

That is, one L2NoVlanNetwork corresponds to a pre-created layer 2 broadcast domain. ZStack Cloud will not create any new broadcast domain for an L2NoVlanNetwork.

L2NoVlanNetwork KVM Specifications

When you attach an L2NoVlanNetwork to a KVM cluster, the `physicalInterface` must be the Ethernet device name in a Linux operating system, such as `eth0`, `eth0.10`, and `em1`. When you create a bridge in ZStack Cloud by running the `brctl` command, note that the `physicalInterface` will be used as the device name. The pseudo codes are as follows:

```
Assuming physicalInterface = eth0
brctl create br_eth0
```

```
brctl addif br_eth0 eth0
```

L2NoVlanNetwork Inventory Sample

```
{
    "inventories": [
        {
            "attachedClusterUuids": [
                "967a353c2893409dab9312cf3033a98c"
            ],
            "createDate": "Oct 30, 2017 1:53:20 PM",
            "description": "",
            "lastOpDate": "Oct 30, 2017 1:53:20 PM",
            "name": "L2NoVlan",
            "physicalInterface": "eth0",
            "type": "L2NoVlanNetwork",
            "uuid": "5f0391e0c7ed45dba5ee5ed9c638f146",
            "zoneUuid": "e59b71e99d8a4ea1952b578388b8cd1d"
        }
    ],
    "success": true
}
```

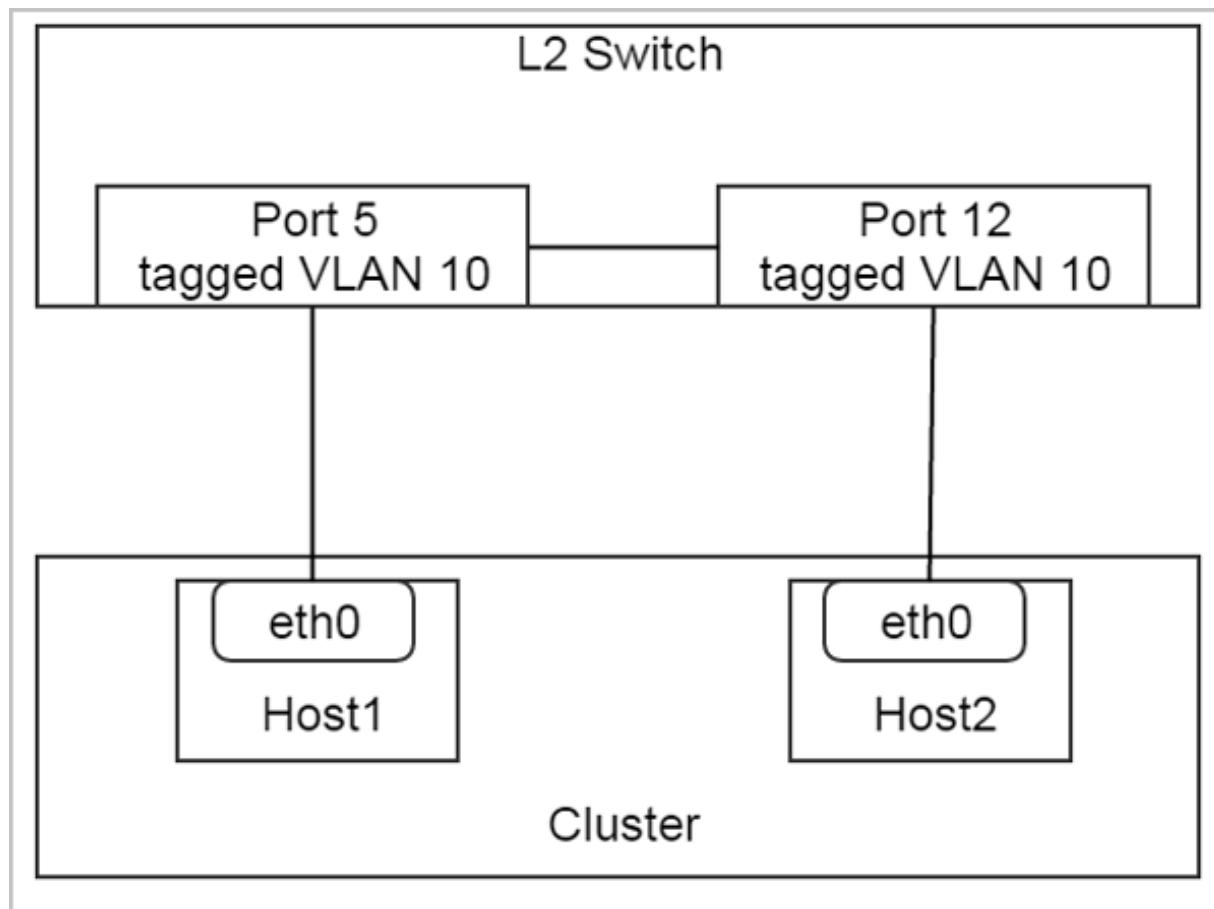
L2VlanNetwork

L2VlanNetwork is an L2 network that ZStack Cloud will actively create a layer 2 broadcast domain by using VLAN. According to the different hypervisor types in a cluster, ZStack Cloud will use different methods to create layer 2 broadcast domains for L2 networks. Compared with [I2Network inventory](#), an L2VlanNetwork has the following additional property.

Name	Description	Optional	Valid Value	Starting Version
vlan	The VLAN ID for creating a layer 2 broadcast domain.		[0, 4095]	0.6

When you attach an L2VlanNetwork to a cluster, note that ZStack Cloud will create a VLAN device on the host in the cluster. To make this operation take effect, make sure that the switch port to which the Ethernet device specified by physicalInterface connects has a VLAN tag.

As shown in [Configuration of L2VlanNetwork](#).

Figure 5-23: Configuration of L2VlanNetwork

In the figure above, both Port 5 and Port 12 of L2 Switch are tagged with VLAN 10. You can use `physicalInterface = eth0` and `vlan = 10` to create an L2VlanNetwork, and attach it to Cluster.

L2VlanNetwork KVM Specifications

When you attach L2VlanNetwork to a KVM cluster, note that ZStack Cloud will create a VLAN device and a bridge on all hosts in a cluster. The pseudo codes are as follows:

```
Assuming physicalInterface = eth0, vlan = 10
vconfig add eth0 10
brctl create br_eth0_10
brctl addif br_eth0_10 eth0.10
```

L2VlanNetwork Inventory Sample

```
{
  "inventories": [
    {
      "attachedClusterUuids": [],
      "createDate": "Oct 30, 2017 1:41:19 PM",
      "lastOpDate": null,
      "lastOpStatus": null,
      "name": "L2VlanNetwork-10"
    }
  ]
}
```

```

    "description": "",
    "lastOpDate": "Oct 30, 2017 1:41:19 PM",
    "name": "L2Vlan",
    "physicalInterface": "eth0",
    "type": "L2VlanNetwork",
    "uuid": "ae97ba4adcb7404690344dde407b429c",
    "vlan": 2222,
    "zoneUuid": "e59b71e99d8a4ea1952b578388b8cd1d"
}
],
"success": true
}

```

SDN Controller Inventory

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			3.7.0
name	The name. For more information, see Resource Property .			3.7.0
description	The description. For more information, see Resource Property .	Yes		3.7.0
ip				3.7.0
password	The password.			3.7.0
username				3.7.0
vendorType				3.7.0
vniRanges				3.7.0
vxlanPools				3.7.0
groupBy	Groups rows into subgroups based on values of columns or expressions. This field is equivalent to the Group By clause in MySQL	Yes		3.7.0

Name	Description	Optional	Valid Value	Starting Version
	, such as groupBy =type.			
createDate	The creation date. For more information, see Resource Property .			3.7.0
lastOpDate	The last operation date. For more information, see Resource Property .			3.7.0
userTags	The user tags. The For more information, see CreateUserTag .	Yes		3.7.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.7.0

Sample

```
{
    "inventories": [
        {
            "createDate": "Oct 23, 2019 3:17:40 PM",
            "ip": "172.20.12.165",
            "lastOpDate": "Oct 23, 2019 3:17:40 PM",
            "name": "gtt",
            "password": "Password",
            "username": "shixin",
            "uuid": "5ce966372dde4169865474b88973a9d8",
            "vendorType": "H3C VCFC",
            "vniRanges": [
                {
                    "endVni": 3000,
                    "startVni": 3000
                },
                {
                    "endVni": 2009,
                    "startVni": 10
                }
            ],
            "vxlanPools": [
                {
                    "attachedCidrs": {}
                }
            ]
        }
    ]
}
```

```

        "attachedClusterUuids": [
            "f34570997a594344ad698280305ala9a"
        ],
        "attachedVniRanges": [
            {
                "createDate": "Oct 23, 2019 3:17:52 PM",
                "endVni": 29,
                "l2NetworkUuid": "0b03b34eb79b46d99d2c
0aa074bc2385",
                "lastOpDate": "Oct 23, 2019 3:17:52 PM",
                "name": "gtt",
                "startVni": 23,
                "uuid": "3691fb6e4d194eb39d9c49dc3c780816"
            }
        ],
        "attachedVtepRefs": [],
        "attachedVxlanNetworkRefs": [],
        "createDate": "Oct 23, 2019 3:17:52 PM",
        "description": "",
        "lastOpDate": "Oct 23, 2019 3:17:52 PM",
        "name": "gtt",
        "physicalInterface": "eth0",
        "sdnControllerUuid": "5ce966372dde41698654
74b88973a9d8",
        "type": "hardware-vxlan-pool",
        "uuid": "0b03b34eb79b46d99d2c0aa074bc2385",
        "zoneUuid": "182bd537a902404a94f6412d285d277e"
    }
],
"success": true
}

```

5.3.1.3 Operations

5.3.1.3.1 CreateL2VxlanNetworkPool

Creates a VXLAN pool. For example,

```
CreateL2VxlanNetworkPool name=testvxlan zoneUuid=8abab36040884e6fbec0
5fa70c5ef873 \
physicalInterface=eth0
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
name	The VXLAN pool name.			0.6
description	The detailed description of the VXLAN pool.	Yes		0.6
zoneUuid	The zone UUID.			0.6

Name	Description	Optional	Valid Value	Starting Version
physicalInterface	The physical interface.			0.6
type	The type.	Yes		0.6
resourceUuid	The resource UUID. If specified, the image will use the specified value as the UUID.	Yes		0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is L2NetworkVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is L2NetworkVO.	Yes		0.6
timeout		Yes		

5.3.1.3.2 QueryL2VxlanNetworkPool

Queries a VXLAN pool. For example,

```
QueryL2VxlanNetworkPool uuid=064a634df0b742e89d088655454ce63d
```

```
QueryL2VxlanNetworkPool zone.uuid=8abab36040884e6fbec05fa70c5ef873
```

Primitive Fields of Query

See L2 VxlanNetworkPool Inventory.

Nested and Expanded Fields of Query

Field	Inventory	Description	Starting Version
attachedVniRanges	Attached VNI Range Inventory		0.6
attachedVtepRefs	Attached VTEP Reference Inventory		0.6
attachedVxlanNetworkRefs	Attached VxlanNetwork Reference Inventory		0.6
cluster	<i>Cluster Inventory</i>	All clusters to which the L2 network is attached.	0.6
l2VxlanNetwork	L2VxlanNetwork Inventory		0.6
l3Network	<i>L3 Network Inventory</i>	The L3 network that belongs to the L2 network.	0.6
vniRange	VNI Range Inventory		0.6
vtep	VTEP Inventory	The VXLAN tunnel endpoint.	0.6
zone	<i>Zone Inventory</i>	The parent zone.	0.6

5.3.1.3.3 CreateL2VxlanNetwork

Creates a VXLAN network. For example,

```
CreateL2VxlanNetwork name=L2VXLAN zoneUuid=e59b71e99d8a4ea1952b
578388b8cd1d \
physicalInterface=eth0 poolUuid=1cac60dd6f124861aa99d85f51a9b4fe
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
name	The common L2 network name.			0.6
description	The detailed description of the common L2 network.	Yes		0.6
zoneUuid	The zone UUID.			0.6

Name	Description	Optional	Valid Value	Starting Version
physicalInterface	The physical interface.			0.6
poolUuid	The VXLAN pool UUID.			0.6
vni	The VXLAN network ID.	Yes		0.6
type	The type.	Yes		0.6
resourceUuid	The resource UUID. If specified , the image will use the specified value as the UUID.	Yes		0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is L2NetworkVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is L2NetworkVO.	Yes		0.6
timeout		Yes		

5.3.1.3.4 QueryL2VxlanNetwork

Queries a VXLAN network. For example,

```
QueryL2VxlanNetwork uuid=6e287827ec1f4927a90637e7c96ca92e
```

```
QueryL2VxlanNetwork zone.uuid=e59b71e99d8a4ea1952b578388b8cd1d
```

Primitive Fields of Query

See L2 VxlanNetwork Inventory.

Nested and Expanded Fields of Query

Field	Inventory	Description	Starting Version
cluster	Cluster Inventory .	All clusters to which the L2 network is attached.	0.6
l3Network	L3 Network Inventory .	The L3 network that belongs to the L2 network.	0.6
vxlanPool	VXLAN Pool Inventory	The VXLAN pool of the L2 network.	0.6
zone	Zone Inventory .	The parent zone.	0.6

5.3.1.3.5 CreateL2NoVlanNetwork

Creates a common L2 network. For example,

```
CreateL2NoVlanNetwork name=management-network physicalInterface=eth0 \
zoneUuid=9a94e647a9f64bb392afcdc5396cc1e4
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
name	The common L2 network name.			0.6
description	The detailed description of the common L2 network.	Yes		0.6
zoneUuid	The zone UUID.			0.6
physicalInterface	The physical interface.			0.6
type	The type.	Yes		0.6
resourceUuid	The resource UUID. If specified , the image will use the specified value as the UUID.	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
userTags	The user tags. For more information, see CreateUserTag . The resource type is L2NetworkVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is L2NetworkVO.	Yes		0.6
timeout		Yes		



Note:

- When you create a normal L2 network in ZStack Cloud, you can enable SR-IOV by adding the **enableSRIOV** option to **SystemTags**.
 - Format of the **enableSRIOV** option: enableSRIOV
 - Example: enableSRIOV.

5.3.1.3.6 CreateL2VlanNetwork

Creates an L2 VLAN network. For example,

```
CreateL2VlanNetwork name=testvlan zoneUuid=8abab36040884e6fbec0
5fa70c5ef873 \
physicalInterface=eth0 vlan=2637
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
vlan				0.6
name	The L2 VLAN network name.			0.6
description	The detailed description of the	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
	L2 VLAN network.			
zoneUuid	The zone UUID.			0.6
physicalInterface	The physical interface.			0.6
type		Yes		0.6
resourceUuid	The resource UUID.	Yes		0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is L2NetworkVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is L2NetworkVO.	Yes		0.6
timeout		Yes		



Note:

- When you create an L2 VLAN network in ZStack Cloud, you can enable SR-IOV by adding the **enableSRIOV** option to **SystemTags**.
 - Format of the **enableSRIOV** option: enableSRIOV
 - Example: enableSRIOV

5.3.1.3.7 QueryL2VlanNetwork

Queries an L2 VLAN network. For example,

```
QueryL2VlanNetwork physicalInterface=eth0
```

```
QueryL2VlanNetwork zone.cluster.zoneUuid=8abab36040884e6fbec0
5fa70c5ef873
```

Primitive Fields of Query

See L2 VLAN Network Inventory.

Nested and Expanded Fields of Query

Field	Inventory	Description	Starting Version
I3Network	L3 Network Inventory	The L3 network that belongs to the L2 network.	0.6
cluster	Cluster Inventory	All clusters to which the L2 network is attached.	0.6
zone	Zone Inventory	The parent zone.	0.6

5.3.1.3.8 DeleteL2Network

Deletes an L2 network. For example,

```
DeleteL2Network uuid=a5535531eb7346ce89cf7e643ad1ef8
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The L2 network UUID.			0.6
deleteMode	The delete mode. For more information, see Delete Resources .	Yes	<ul style="list-style-type: none"> Permissive Enforcing 	0.6
userTags	The user tags. For more information, see CreateUser	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
	Tag . The resource type is L2NetworkVO.			
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is L2NetworkVO.	Yes		0.6
timeout		Yes		

5.3.1.3.9 QueryL2Network

Queries an L2 network. For example,

```
QueryL2Network physicalInterface=eth0
```

```
QueryL2Network l3Network.ipRanges.startIp=192.168.0.2
```

Primitive Fields of Query

See [L2 Network Inventory](#).

Nested and Expanded Fields of Query

Field	Inventory	Description	Starting Version
I3Network	L3 Network Inventory	The L3 network that belongs to the L2 network.	0.6
cluster	Cluster Inventory	All clusters to which the L2 network is attached.	0.6
zone	Zone Inventory	The parent zone.	0.6

5.3.1.3.10 UpdateL2Network

Updates an L2 network. For example,

```
UpdateL2Network uuid=cc42d175ed9649558af69b8a0b824b9a
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The L2 network UUID.			0.6
name	The common L2 network name.	Yes		0.6
description	The detailed description of the common L2 network.	Yes		0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is L2NetworkVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is L2NetworkVO.	Yes		0.6
timeout		Yes		

5.3.1.3.11 GetL2NetworkTypes

Obtains an L2 network type. Sample response:

```
{
  "l2NetworkTypes": [
    "VxlanNetworkPool",
    "VxlanNetwork",
    "L2NoVlanNetwork",
    "L2VlanNetwork"
  ]
}
```

{}

Parameters

Name	Description	Optional	Valid Value	Starting Version
userTags	The user tags. For more information, see CreateUser Tag . The resource type is L2NetworkVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is L2NetworkVO.	Yes		0.6
timeout		Yes		

5.3.1.3.12 AttachL2NetworkToCluster

Attaches an L2 network to a cluster. For example,

```
AttachL2NetworkToCluster clusterUuid=2379a0d00ae242df91189f6d7d9e23e3
\l2NetworkUuid=cc42d175ed9649558af69b8a0b824b9a
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
l2NetworkUuid	The L2 network UUID.			0.6
clusterUuid	The cluster UUID.			0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is L2NetworkVO.	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is L2NetworkVO.	Yes		0.6
timeout		Yes		

5.3.1.3.13 DetachL2NetworkFromCluster

Detaches an L2 network from a cluster. For example,

```
DetachL2NetworkFromCluster clusterUuid=2379a0d00ae242df91189f6d7d9e23
e3 \
l2NetworkUuid=cc42d175ed9649558af69b8a0b824b9a
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
l2NetworkUuid	The L2 network UUID.			0.6
clusterUuid	The cluster UUID.			0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is L2NetworkVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is L2NetworkVO.	Yes		0.6
timeout		Yes		

5.3.1.3.14 CreateVniRange

Creates a VNI range. For example,

```
CreateVniRange name=vni startVni=8034 endVni=9322 l2NetworkUuid=
1cac60dd6f124861aa99d85f51a9b4fe
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
name	The VNI range name.			0.6
description	The detailed description of the VNI range.	Yes		0.6
startVni				0.6
endVni				0.6
l2NetworkUuid	The VXLAN pool UUID.			0.6
resourceUuid	The resource UUID. If specified , the image will use the specified value as the UUID.	Yes		0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is L2NetworkVO.	Yes		0.6
systemTags	The user tags. For more information, see CreateSystemTag . The resource type is L2NetworkVO.	Yes		0.6
timeout		Yes		

5.3.1.3.15 QueryVniRange

Queries a VNI range. For example,

```
QueryVniRange uuid=d0b6064810d945c582448fed6cb98d54
```

```
QueryVniRange vxlanPool.uuid=1cac60dd6f124861aa99d85f51a9b4fe
```

Primitive Fields of Query

See VNI Range Inventory.

Nested and Expanded Fields of Query

Field	Inventory	Description	Starting Version
vxlanPool	VXLAN Pool Inventory		0.6

5.3.1.3.16 DeleteVniRange

Deletes a VNI range. For example,

```
DeleteVniRange uuid=d0b6064810d945c582448fed6cb98d54
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The VNI range UUID.			0.6
deleteMode	The delete mode. For more information, see Delete Resources .	Yes	<ul style="list-style-type: none"> Permissive Enforcing 	0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is L2NetworkVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSyst	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
	<i>emTag</i> . The resource type is L2NetworkVO.			
timeout		Yes		

5.3.1.3.17 UpdateVniRange

Updates a VNI range. For example,

```
UpdateVniRange uuid=d0b6064810d945c582448fed6cb98d54
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The VNI range UUID.			3.3.0
name		Yes		3.3.0
userTags	The user tags. For more information, see CreateUser Tag . The resource type is L2NetworkVO.	Yes		3.3.0
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is L2NetworkVO.	Yes		3.3.0
timeout		Yes		

5.3.1.3.18 Hardware SDN Controller

5.3.1.3.18.1 AddSdnController

Adds an SDN controller. For example,

```
AddSdnController vendorType=vendor name=sdn-1 ip=192.168.1.1 userName=
admin password=password
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
vendorType				3.7.0
name	The resource name.			3.7.0
description	The detailed description of the resource.	Yes		3.7.0
ip				3.7.0
userName				3.7.0
password				3.7.0
resourceUuid		Yes		3.7.0
tagUuids	The tag UUID list.	Yes		3.7.0
userTags	The user tags. For information, see CreateUser Tag .	Yes		3.7.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.7.0
timeout		Yes		



Note:

- When you add an SDN controller in ZStack Cloud, you can create an H3C SDN controller by adding the **H3C_VDS_UUID** option to **SystemTags**. The SystemTag is passed by using the **vdsUuid** parameter.

- Format of the **H3C_VDS_UUID** option: vdsUuid::{ %s }
- Example: vdsUuid::1234-5678
- Associated resource: SdnControllerVO.class

5.3.1.3.18.2 QuerySdnController

Queries an SDN controller. For example,

```
QuerySdnController
```

Primitive Fields of Query

See [SDN Controller Inventory](#).

Nested and Expanded Fields of Query

Field	Inventory	Description	Starting Version
vxlanPool	VLAN Pool Inventory	The VXLAN pool of the L2 network.	3.7.0

5.3.1.3.18.3 RemoveSdnController

Removes an SDN controller. For example,

```
RemoveSdnController uuid=237901c5097b38c480315569a1ac7567
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			3.7.0
deleteMode		Yes		3.7.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.7.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.7.0
timeout		Yes		

5.3.1.3.18.4 UpdateSdnController

Updates an SDN controller. For example,

```
UpdateSdnController uuid=722428da8bac30d2b75daa2f6cd34e9d
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			3.7.0
name	The resource name.	Yes		3.7.0
description	The detailed description of the resource.	Yes		3.7.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.7.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.7.0
timeout		Yes		

5.3.1.4 Tags

You can create a user tag on an L2 network by using `resourceType=L2NetworkVO`. For example,

```
CreateUserTag resourceType=L2NetworkVO tag=publicL2 \
resourceUuid=cff4be8694174b0fb831a9fe53b1d62b
```

5.3.2 L3 Network

5.3.2.1 Overview

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

- An IP range includes the start IP address, end IP address, netmask, and gateway. For example, specify the IP range from 172.20.12.2 to 172.20.12.255, set the netmask to 255.255.0.0, and set the gateway to 172.20.0.1. In addition, you can use a CIDR to specify an IP range, such as 192.168.1.0/24.
- DNS provides DNS resolution services used for configuring VM networks.

Public Network

Generally, a public network is a type of network wherein anyone has access and through it can directly connect to the Internet. Due to a fact that the public network is a logical concept, you can also customize the public network when you cannot access the Internet. In addition, the public network can provide the network service in a vRouter network and a VPC network.

- The public network can be used in the flat network environment to create VM instances.
- The public network can be used in the vRouter network environment to create vRouters.
- The public network can be used in the VPC network environment to create VPC vRouters.

System Network

A system network is a specific network used by a management node.

- The system network can be used as a management network to deploy and set related resources, such as a host, primary storage, backup storage, and vRouter.
- The system network can be used as a migration network to migrate VM instances.
- Assume that your network resources are insufficient, and that you cannot use a management network separately. Then, the public network will act as the management network.
- An independent system network can be used in a specific manner, such as managing the vRouter network.
- The system network cannot be used to create regular VM instances.

Private Network

A private network is known as a business network or an access network. Generally, VM instances use the private network. The private network is specified as the network used by VM instances, and supports three network architecture models: flat network, vRouter network, and VPC network.

Specific Network Scenarios

- Management Network

A management network is a type of a system network, which can be used for managing and controlling the corresponding physical resources.

- For example, when you access a host, a backup storage, a primary storage, and other resources that require an IP address, use the management network.
- When you create vRouters or VPC vRouters, you need an IP address that can be interconnected between management networks in vRouters or VPC vRouters. With this IP address, you can deploy an agent and obtain messages returned by the agent.
- Storage Network

A storage network is the network specified by the shared storage. You can use the storage network to check the health state of a VM instance. We recommend that you plan for an independent storage network in advance to avoid potential risks.

- VDI Network

When you create clusters, you can specify CIDR for the VDI network. In the VDI scenario, the network traffics generated by the protocol communication between server side and client side use the VDI network. If you do not make any configuration to the VDI network, notice that the management network will be used by default.

- Migration Network

When you create clusters, you can specify CIDR for the migration network, which can be used for VM migrations. If you do not make any configuration to the migration network, notice that the management network will be used for VM migrations.

- Image Synchronization Network

An image synchronization network is the network that images can be synchronized among backup storages with the ImageStore type in the same management node.

- If you have deployed an independent network for synchronizing images, you can specify CIDR for the image synchronization network.
 - If you do not make any configuration to the image synchronization network, the management network will be used by default.
 - If you set both source image store and target image store as the image synchronization network, only the target image store can take effect.
- Data Network

A data network is the network where data can transfer between a compute node and a backup storage.

- If you use an independent data network, you can avoid network congestion, and improve the data transfer rate.
- If you do not make any configuration to the data network, the management network will be used by default.
- Backup Network

ZStack Cloud provides backup services, which are add-on licensed features. A backup network is the network where you can back up your local VM instances, volumes, or databases to the local backup storage. Also, the backup network is the network where you can restore the local backup data from the local backup storage.

- If you deploy an independent network for local backups, you can specify CIDR for the backup network.
- If you use an independent network, you can avoid network congestion and improve the data transfer rate.
- If you do not make any configuration to the backup network, note that the management network will be used for local backup by default.

**Note:**

Backup Service is a separate feature module. To use this feature, purchase both the Base License and the Plus License of Backup Service. The Plus License cannot be used independently.

- Traffic Network

A traffic network is the specified network of a port mirroring, which can be used to mirror the network traffic in the NIC to remote access. In addition, the traffic network cannot act as other networks, and cannot be used to create VM instances.

Notice

- When you create VM instances, you can specify multiple networks. That is, you can specify multiple flat networks, vRouter networks, VPC networks, or a combination of flat networks, vRouter networks, and VPC networks.
- We support multi-layer networks. In addition, the L2 networks of multi-layer networks can intercommunicate. Therefore, you need to pay a special attention to avoid the conflict of IP address spaces.

- You can create multiple L3 networks by using an L2 network. If the L2 network is the `HarewareVxlanNetwork` type, the private network that you created can only support the flat network and other corresponding network services rather than vRouter network.

5.3.2.2 Inventory

Properties

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			0.6
name	The name. For more information, see Resource Property .			0.6
description	The description. For more information, see Resource Property .	Yes		0.6
zoneUuid	The zone UUID. For more information, see Zone .			0.6
l2NetworkUuid	The parent L2 network UUID. For more information, see L2 Network .			0.6
state	The state. For more information, see State .		<ul style="list-style-type: none"> • Enabled • Disabled 	0.6
dnsDomain	The DNS domain. For more information, see Domain .	Yes		0.6
ipRanges	The IP ranges. For more			0.6

Name	Description	Optional	Valid Value	Starting Version
	information, see IP Range .			
dns	The DNS. For more information, see L3 Network DNS .			0.6
networkServices	The network services. For more information, see L3 Network Service Reference .			0.6
type	The L3 network type.		<ul style="list-style-type: none"> L3BasicNetwork 	0.6
createDate	The creation date. For more information, see Resource Property .			0.6
lastOpDate	The last operation date. For more information, see Resource Property .			0.6

Sample

```
{
  "inventories": [
    {
      "category": "Private",
      "createDate": "Nov 2, 2017 1:21:40 PM",
      "dns": [
        "223.5.5.5"
      ],
      "ipRanges": [
        {
          "createDate": "Nov 2, 2017 1:21:41 PM",
          "endIp": "10.141.74.100",
          "gateway": "10.141.0.1",
          "l3NetworkUuid": "a0190782ed35439b92959844c96a7323"
        },
        {
          "lastOpDate": "Nov 2, 2017 1:21:41 PM",
          "name": "l3-bp",
          "netmask": "255.255.0.0",
        }
      ]
    }
  ]
}
```

```

        "networkCidr": "10.141.0.1/16",
        "startIp": "10.141.74.1",
        "uuid": "954f7884656e48a395a022935569b65d"
    }
],
"l2NetworkUuid": "8f6a39152a72439b9ece210154de0339",
"lastOpDate": "Nov 2, 2017 1:21:40 PM",
"name": "l3-bp",
"networkServices": [
{
    "l3NetworkUuid": "a0190782ed35439b92959844c96a7323
",
        "networkServiceProviderUuid": "a903477ad6
7746e8a4f773c5e28b5884",
        "networkServiceType": "SecurityGroup"
},
{
    "l3NetworkUuid": "a0190782ed35439b92959844c96a7323
",
        "networkServiceProviderUuid": "a963ab4a76
384a4ab3b88fb39ef627fc",
        "networkServiceType": "Eip"
},
{
    "l3NetworkUuid": "a0190782ed35439b92959844c96a7323
",
        "networkServiceProviderUuid": "a963ab4a76
384a4ab3b88fb39ef627fc",
        "networkServiceType": "DHCP"
},
{
    "l3NetworkUuid": "a0190782ed35439b92959844c96a7323
",
        "networkServiceProviderUuid": "a963ab4a76
384a4ab3b88fb39ef627fc",
        "networkServiceType": "Userdata"
}
],
"state": "Enabled",
"system": false,
"type": "L3BasicNetwork",
"uuid": "a0190782ed35439b92959844c96a7323",
"zoneUuid": "e59b71e99d8a4ea1952b578388b8cd1d"
}
],
"success": true
}

```

State

An L3 network has two available states.

- Enabled:

Indicates that new VM instances can be created.

- Disabled:

Indicates that new VM instances cannot be created.

DNS Domain

A DNS domain is used to expand hostnames of VM instances on the L3 network to Full Qualified Domain Names (FQDNs). For example, if the hostname of a VM instance is vm1 and the DNS domain of the L3 network is zstack.org, the final hostname of the VM instance will be expanded to vm1.zstack.org.

IP Range

The current ZStack version supports only IPv4 IP range.

Inventory

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			0.6
name	The name. For more information, see Resource Property .			0.6
description	The description. For more information, see Resource Property .	Yes		0.6
startIp	The start IP address in the IP range.			0.6
endIp	The end IP address in the IP range.			0.6
netmask	The netmask.			0.6
gateway	The subnet gateway.			0.6
createDate	The creation date. For more information, see Resource Property .			0.6

Name	Description	Optional	Valid Value	Starting Version
lastOpDate	The last operation date. For more information, see Resource Property .			0.6

Sample

```
{
    "inventories": [
        {
            "createDate": "Oct 30, 2017 3:59:06 PM",
            "endIp": "10.141.250.100",
            "gateway": "10.141.0.1",
            "l3NetworkUuid": "54bc8bea439a49dc82acbe302da05c66",
            "lastOpDate": "Oct 30, 2017 3:59:06 PM",
            "name": "L3-Flat",
            "netmask": "255.255.0.0",
            "networkCidr": "10.141.0.1/16",
            "startIp": "10.141.250.1",
            "uuid": "f0b8e83e4dc646c69c7f9a0ff53b6367"
        }
    ],
    "success": true
}
```

DNS

An L3 network can have one or more DNS take effect when the DNS network service is enabled.

L2 Network and L3 Network

Similar to a layer 2 broadcast domain that can contain multiple subnets, you can create multiple L3 networks on the same L2 network. However, these L3 networks are not isolated from each other, and can be listened, which might be a potential risk.

L3 Network Service Reference

Network service reference denotes the network services enabled on the L3 network and their service providers.

Inventory

Name	Description	Optional	Valid Value	Starting Version
l3NetworkUuid	The L3 network UUID.			0.6

Name	Description	Optional	Valid Value	Starting Version
networkServiceProviderUuid	The UUID of the network service provider.			0.6
networkServiceType	The network service type.		<ul style="list-style-type: none"> • DHCP • DNS • SNAT • PortForwarding • EIP • SecurityGroup • Userdata • LoadBalancer • IPsec • CentralizedDDNS • VRouterRoute • VipQos 	0.6

Sample

```
{
    "inventories": [
        {
            "l3NetworkUuid": "cdb7f3151c50453ba0e8c89356e250f6",
            "networkServiceProviderUuid": "a903477ad67746e8a4f773c5e28b5884",
            "networkServiceType": "SecurityGroup"
        },
        {
            "l3NetworkUuid": "cdb7f3151c50453ba0e8c89356e250f6",
            "networkServiceProviderUuid": "a963ab4a76384a4ab3b88fb39ef627fc",
            "networkServiceType": "Userdata"
        },
        {
            "l3NetworkUuid": "cdb7f3151c50453ba0e8c89356e250f6",
            "networkServiceProviderUuid": "a963ab4a76384a4ab3b88fb39ef627fc",
            "networkServiceType": "DHCP"
        }
    ],
    "success": true
}
```

{}

Address Pool Inventory

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			3.9.0
name	The name. For more information, see Resource Property .			3.9.0
description	The description. For more information, see Resource Property .			3.9.0
l3NetworkUuid	The L3 network UUID.			3.9.0
startIp	The start IP address.			3.9.0
endIp	The end IP address.			3.9.0
netmask	The netmask.			3.9.0
gateway	The gateway.			3.9.0
networkCidr	The network CIDR.			3.9.0
ipVersion	The IP version.			3.9.0
addressMode	The allocation mode of the IPv6 address.			3.9.0
prefixLen	The length of the netmask.			3.9.0
ipRangeType	The IP range type .		<ul style="list-style-type: none"> • Normal • AddressPool 	3.9.0
groupBy	Groups rows into subgroups	Yes		3.9.0

Name	Description	Optional	Valid Value	Starting Version
	based on values of columns or expressions. This field is equivalent to the Group By clause in MySQL, such as <code>groupBy =type</code> .			
createDate	The creation date. For more information, see Resource Property			3.9.0
lastOpDate	The last operation date. For more information, see Resource Property			3.9.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.9.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.9.0

Sample

```
{
  "inventories": [
    {
      "l3NetworkUuid": "81ce7828f3f63c0ea8a69dd9139bdaa0",
      "name": "Test-IPRange",
      "networkCidr": "192.168.10.0/24",
      "ipRangeType": "AddressPool"
    }
  ]
}
```

{}

5.3.2.3 Operations

5.3.2.3.1 CreateL3Network

Creates an L3 network. For example,

```
CreateL3Network name=L3Network l2NetworkUuid=21fd3d1876594b79bab0
f2f1dfad03c dnsDomain="site.net"
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
name	The L3 network name.			0.6
description	The detailed description of the L3 network.	Yes		0.6
type	The L3 network type.	Yes		0.6
l2NetworkUuid	The L2 network UUID.			0.6
system	Whether the L3 network can be applied to appliance VM instances.	Yes		0.6
dnsDomain	The DNS domain.	Yes		0.6
resourceUuid	The resource UUID. If specified, the L3 network will use the specified value as the UUID.	Yes		0.6
category	The network type, which must be used with the system tags. If system is set to true, the category	Yes	<ul style="list-style-type: none"> • Public • Private • System 	2.2

Name	Description	Optional	Valid Value	Starting Version
	can be set to Public or Private.			
userTags	The user tags. For more information, see CreateUser Tag . The resource type is L3NetworkVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is L3NetworkVO.	Yes		0.6
timeout		Yes		



Note:

- When you create an L3 network in ZStack Cloud, you can specify the port mirroring network by adding the **mirrorNetwork** option to **SystemTags**.
 - Format of the **mirrorNetwork** option: `mirrorNetwork::{L3NetworkVOUuid}`
 - Example: `mirrorNetwork::1c707a63817b4f29b1235fa1f76c0ccc`

5.3.2.3.2 DeleteL3Network

Deletes an L3 network. For example,

```
DeleteL3Network uuid=18874dbd1f0c4e8abd399776ae914401
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The L3 network UUID.			0.6
deleteMode	The delete mode. For more information,	Yes	<ul style="list-style-type: none"> Permissive Enforcing 	0.6

Name	Description	Optional	Valid Value	Starting Version
	see Delete Resources .			
userTags	The user tags. For more information, see CreateUser Tag . The resource type is L3NetworkVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is L3NetworkVO.	Yes		0.6
timeout		Yes		

5.3.2.3.3 QueryL3Network

Queries an L3 network. For example,

```
QueryL3Network uuid=9082f45fce9c46f19b2ab5ff117511d6
```

```
QueryL3Network vmNic.l3NetworkUuid=9082f45fce9c46f19b2ab5ff117511d6
```

Primitive Fields of Query

See [L3 Network Inventory](#).

Nested and Expanded Fields of Query

Field	Inventory	Description	Starting Version
l2Network	L2 Network Inventory	The L2 network to which the L3 network belongs.	0.6
ipRanges	IP Range Inventory		0.6
zone	Zone Inventory	The parent zone.	0.6
networkServices	Network Service Inventory		0.6

Field	Inventory	Description	Starting Version
serviceProvider	Service Provider Inventory		0.6
vmNic	VM NIC Inventory		0.6
hostRoute	Host Route Inventory		2.3

5.3.2.3.4 UpdateL3Network

Updates an L3 network. For example,

```
UpdateL3Network name=test_L3Network uuid=3dbf30420a4b4da8bcd6
9f99df7fb631
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The L3 network UUID.			0.6
name	The L3 network name.	Yes		0.6
description	The detailed description of the L3 network.	Yes		0.6
system	Whether the L3 network can be applied to appliance VM instances.	Yes		0.6
dnsDomain	The DNS domain	Yes		2.6.0
category	The network type, which must be used with the system tags. If <code>system</code> is set to true, the category can be set to Public or Private.	Yes	<ul style="list-style-type: none"> • Public • Private • System 	2.2
userTags	The user tags. For more information, see	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
	CreateUser Tag . The resource type is L3NetworkVO.			
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is L3NetworkVO.	Yes		0.6
timeout		Yes		

5.3.2.3.5 GetL3NetworkTypes

Obtains L3 network types. Sample response:

```
{
    "l3NetworkTypes": [
        "L3BasicNetwork",
        "L3VpcNetwork"
    ]
}
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
userTags	The user tags. For more information, see CreateUser Tag . The resource type is L3NetworkVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is L3NetworkVO.	Yes		0.6
timeout		Yes		

5.3.2.3.6 ChangeL3NetworkState

Changes the L3 network state. For example,

```
ChangeL3NetworkState uuid=3dbf30420a4b4da8bcd69f99df7fb631 stateEvent=disable
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The L3 network UUID.			0.6
stateEvent	The state.		<ul style="list-style-type: none"> Enable Disable 	0.6
userTags	The user tags. For more information, see CreateUserTag . The resource type is L3NetworkVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is L3NetworkVO.	Yes		0.6
timeout		Yes		

5.3.2.3.7 GetL3NetworkDhcpIpAddress

Obtains the DHCP IP address of an L3 network. For example,

```
GetL3NetworkDhcpIpAddress l3NetworkUuid=aa6ec2f40b93413aa843ee5d76ddf73e
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
l3NetworkUuid	The L3 network UUID.			0.6

Name	Description	Optional	Valid Value	Starting Version
userTags	The user tags. For more information, see CreateUser Tag . The resource type is L3NetworkVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is L3NetworkVO.	Yes		0.6
timeout		Yes		

5.3.2.3.8 RemoveDnsFromL3Network

Removes a DNS address from an L3 network. For example,

```
RemoveDnsFromL3Network l3NetworkUuid=3dbf30420a4b4da8bcd69f99df7fb631
dns=114.114.114.114
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
l3NetworkUuid	The L3 network UUID.			0.6
dns	The DNS address.			0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is L3NetworkVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
	emTag . The resource type is L3NetworkVO.			
timeout		Yes		

5.3.2.3.9 AddDnsToL3Network

Adds a DNS address to an L3 network. For example,

```
AddDnsToL3Network l3NetworkUuid=3dbf30420a4b4da8bcd69f99df7fb631 dns=
114.114.114.114
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
l3NetworkUuid	The L3 network UUID.			0.6
dns	The DNS address .			0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is L3NetworkVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is L3NetworkVO.	Yes		0.6
timeout		Yes		

5.3.2.3.10 AddHostRouteToL3Network

Adds a host route to an L3 network. For example,

```
AddHostRouteToL3Network l3NetworkUuid=7dfdf976ef1334fba5c3b475104011b2
nexthop=192.168.1.254 prefix=169.254.169.254/32
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
l3NetworkUuid	The L3 network UUID.			0.6
nexthop				2.3
prefix				2.3
userTags	The user tags. For more information, see CreateUser Tag . The resource type is L3NetworkVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is L3NetworkVO.	Yes		0.6
timeout		Yes		

5.3.2.3.11 RemoveHostRouteFromL3Network

Removes a host route from an L3 network. For example,

```
RemoveHostRouteFromL3Network l3NetworkUuid=7dfdf976ef1334fba5c3
b475104011b2 prefix=169.254.169.254/32
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
l3NetworkUuid	The L3 network UUID.			0.6

Name	Description	Optional	Valid Value	Starting Version
prefix				2.3
userTags	The user tags. For more information, see CreateUser Tag . The resource type is L3NetworkVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is L3NetworkVO.	Yes		0.6
timeout		Yes		

5.3.2.3.12 GetFreeIp

Obtains a free IP address. For example,

```
GetFreeIp l3NetworkUuid=aa6ec2f40b93413aa843ee5d76ddf73e
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
l3NetworkUuid	The L3 network UUID. Make sure that at least one of l3NetworkUuid and ipRangeUuid is not null.	Yes		0.6
ipRangeUuid	The IP range UUID. Make sure that at least one of l3NetworkUuid and ipRangeUuid is not null.	Yes		0.6
start	The start value.	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
ipRangeType	The IP range type. .	Yes	<ul style="list-style-type: none"> Normal AddressPool 	3.9.0
ipVersion	The IP version.	Yes	<ul style="list-style-type: none"> 4 6 	3.10.0
limit	The count limit.	Yes		0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is L3NetworkVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is L3NetworkVO.	Yes		0.6
timeout		Yes		

5.3.2.3.13 CheckIpAvailability

Checks the IP availability. For example,

```
CheckIpAvailability ip=10.128.11.3 l3NetworkUuid=aa6ec2f40b93413aa843
ee5d76ddf73e
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
l3NetworkUuid	The L3 network UUID.	Yes		0.6
ip	The IP address.	Yes		0.6
userTags	The user tags. For more information, see CreateUser Tag . The	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
	resource type is L3NetworkVO.			
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is L3NetworkVO.	Yes		0.6
timeout		Yes		

5.3.2.3.14 GetIpAddressCapacity

Obtains the IP address capacity. For example,

```
GetIpAddressCapacity ipRangeUuids=e6d4de6fe69a42b28363ffbc7b4a186f
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
zoneUuids	The zone UUID.	Yes		0.6
l3NetworkUuids	The L3 network UUID.	Yes		0.6
ipRangeUuids	The IP range UUID. Make sure that at least one of rangefinders, L3NetworkUuids, and zoneUuids is not null.	Yes		0.6
all	Global settings.	Yes		0.6
userTags	The user tags. For more information, see CreateUserTag . The resource type is L3NetworkVO.	Yes		0.6
systemTags	The system tags. For more	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
	information, see CreateSystemTag . The resource type is L3NetworkVO.			
timeout		Yes		

5.3.2.3.15 AddIpRange

Adds an IP range. For example,

```
AddIpRange name=L3Network-1 l3NetworkUuid=ba076991c0f740be84ab
7e9646dcfd56
startIp=10.128.33.10 endIp=10.128.33.20 netmask=255.0.0.0 gateway=10.0
.0.1
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
name	The L3 network name.			0.6
description	The detailed description of the L3 network.	Yes		0.6
l3NetworkUuid	The L3 network UUID.			0.6
startIp	The start IP address.			0.6
endIp	The end IP address.			0.6
gateway	The gateway.			0.6
ipRangeType	The IP range type .	Yes	<ul style="list-style-type: none"> • Normal • AddressPool 	3.9.0
netmask	The netmask.			0.6
resourceUuid	The resource UUID. If specified , the L3 network will use the	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
	specified value as UUID.			
userTags	The user tags. For more information, see CreateUser Tag . The resource type is L3NetworkVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is L3NetworkVO.	Yes		0.6
timeout		Yes		



Note:

- When you add an IP range in ZStack Cloud, you can specify the DHCP server address by adding the **DhcpServer** option to **SystemTags**.
 - Format of the **DhcpServer** option: flatNetwork::DhcpServer:::{%s}:::ipUuid:::{%s}
 - Example: flatNetwork::DhcpServer::192.168.1.100:::ipUuid:::null

5.3.2.3.16 DeleteIpRange

Deletes an IP range. For example,

```
DeleteIpRange uuid=32556158a15b421db215d1d4b0e846a6
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID of the IP range.			0.6
deleteMode	The delete mode. For more	Yes	<ul style="list-style-type: none"> Permissive 	0.6

Name	Description	Optional	Valid Value	Starting Version
	information, see Delete Resources .		• Enforcing	
userTags	The user tags. For more information, see CreateUser Tag . The resource type is L3NetworkVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is L3NetworkVO.	Yes		0.6
timeout		Yes		

5.3.2.3.17 QueryIpRange

Queries an IP range. For example,

```
QueryIpRange uuid=bcdb86a63cef415c843ab02e9534a21b
```

```
QueryIpRange l3Network.l2NetworkUuid=96a3915e8c1a4fb6a7e14078e61b69b0
```

Primitive Fields of Query

See IP Range Inventory.

Nested and Expanded Fields of Query

Field	Inventory	Description	Starting Version
l3Network	L3 Network Inventory	The L3 network to which the IP range belongs.	0.6

5.3.2.3.18 UpdateIpRange

Updates an IP range. For example,

```
UpdateIpRange uuid=b121aa49504749c39e541c434dff7303
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The L3 network UUID.			0.6
name	The L3 network name.	Yes		0.6
description	The detailed description of the L3 network.	Yes		0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is L3NetworkVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is L3NetworkVO.	Yes		0.6
timeout		Yes		

5.3.2.3.19 AddIpRangeByNetworkCidr

Adds an IP range by specifying a network CIDR. For example,

```
AddIpRangeByNetworkCidr name=L3Network-1 l3NetworkUuid=ba076991cf0f740be84ab7e9646dcfd56 \
```

```
networkCidr=10.128.33.1/24
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
name	The L3 network name.			0.6
description	The detailed description of the L3 network.	Yes		0.6
l3NetworkUuid	The L3 network UUID.			0.6
networkCidr	The network CIDR.			0.6
gateway	The gateway.	Yes		3.7.0
ipRangeType	The IP range type .	Yes	<ul style="list-style-type: none"> • Normal • AddressPool 	3.9.0
resourceUuid	The resource UUID. If specified , the L3 network will use the specified value as UUID.	Yes		0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is L3NetworkVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is L3NetworkVO.	Yes		0.6
timeout		Yes		

**Note:**

- When you add an IP range by specifying a network CIDR in ZStack Cloud, you can specify the DHCP server address by adding the **affinityGroup** option to **SystemTags**.
 - Format of the **affinityGroup** option: flatNetwork::DhcpServer::{ %s }::ipUuid:::{ %s }
 - Example: flatNetwork::DhcpServer::192.168.1.100::ipUuid::null

5.3.2.3.20 GetL3NetworkMtu

Obtains the maximum transmission unit (MTU) value of an L3 network. For example,

```
GetL3NetworkMtu l3NetworkUuid=87ce2c1d551f4fadb2f364d18af465a1
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
l3NetworkUuid	The L3 network UUID.			2.1
userTags	The user tags. For more information, see CreateUser Tag . The resource type is L3NetworkVO.	Yes		2.1
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is L3NetworkVO.	Yes		2.1
timeout		Yes		

5.3.2.3.21 SetL3NetworkMtu

Sets the MTU value for an L3 network. For example,

```
SetL3NetworkMtu l3NetworkUuid=87ce2c1d551f4fadbf364d18af465a1 mtu=1500
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
l3NetworkUuid	The L3 network UUID.			2.1
mtu				2.1
userTags	The user tags. For more information, see CreateUser Tag . The resource type is L3NetworkVO.	Yes		2.1
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is L3NetworkVO.	Yes		2.1
timeout		Yes		

5.3.2.3.22 GetL3NetworkRouterInterfaceIp

Obtains a router interface IP address in an L3 network. For example,

```
GetL3NetworkRouterInterfaceIp l3NetworkUuid=87ce2c1d551f4fadbf364d18af465a1
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
l3NetworkUuid	The L3 network UUID.			2.1
userTags	The user tags. For more	Yes		2.1

Name	Description	Optional	Valid Value	Starting Version
	information, see CreateUser Tag . The resource type is L3NetworkVO.			
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is L3NetworkVO.	Yes		2.1
timeout		Yes		

5.3.2.3.23 SetL3NetworkRouterInterfaceIp

Sets a router interface IP address in an L3 network. For example,

```
SetL3NetworkRouterInterfaceIp l3NetworkUuid=87ce2c1d551f4fadbf2f3
64d18af465a1 routerInterfaceIp=192.168.180.1
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
l3NetworkUuid	The L3 network UUID.			2.1
routerInterfaceIp				2.1
userTags	The user tags. For more information, see CreateUser Tag . The resource type is L3NetworkVO.	Yes		2.1
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is L3NetworkVO.	Yes		2.1

Name	Description	Optional	Valid Value	Starting Version
timeout		Yes		

5.3.2.3.24 AddIpv6Range

Adds an IPv6 range. For example,

```
AddIpv6Range l3NetworkUuid=8bea912e333a440fb61d81c0c7670b52 name=L3-
ipv6 startIp=234e:0:4567::2 endIp=234e:0:4567:0:ffff:ffff:ffff:ffff
gateway=234e:0:4567::1 prefixLen=64 addressMode=Stateful-DHCP
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
l3NetworkUuid	The L3 network UUID.			3.1.0
name	The L3 network name.			3.1.0
description	The detailed description of the L3 network.	Yes		3.1.0
startIp	The start IP address.			3.1.0
endIp	The end IP address.			3.1.0
gateway	The gateway.			3.1.0
prefixLen	The prefix length.			3.1.0
addressMode	The allocation mode of the IPv6 address.		<ul style="list-style-type: none"> • SLAAC • Stateful-DHCP • Stateless-DHCP 	3.1.0
resourceUuid	The resource UUID. If specified, the L3 network will use the specified value as UUID.	Yes		3.1.0
userTags	The user tags. For more	Yes		3.1.0

Name	Description	Optional	Valid Value	Starting Version
	information, see CreateUserTag .			
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.1.0
timeout		Yes		

**Note:**

- When you add an IPv6 range in ZStack Cloud, you can specify the DHCP server address by adding the **affinityGroup** option to **SystemTags**.
 - Format of the **affinityGroup** option: `flatNetwork::DhcpServer::{ %s }::ipUuid::{ %s }`
 - Example: `flatNetwork::DhcpServer::192.168.1.100::ipUuid::null`

5.3.2.3.25 AddIpv6RangeByNetworkCidr

Adds an IPv6 range by specifying a network CIDR. For example,

```
AddIpv6RangeByNetworkCidr l3NetworkUuid=8bea912e333a440fb61d81c0c7670b
52 name=L3-ipv6 networkCidr=234e:0:4567::/64 addressMode=Stateful-DHCP
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
name	The L3 network name.			3.1.0
description	The detailed description of the L3 network.	Yes		3.1.0
l3NetworkUuid	The L3 network UUID.			3.1.0
networkCidr	The network CIDR.			3.1.0

Name	Description	Optional	Valid Value	Starting Version
addressMode	The allocation mode of the IPv6 address.		<ul style="list-style-type: none"> • SLAAC • Stateful-DHCP • Stateless-DHCP 	3.1.0
resourceUuid	The resource UUID. If specified, the L3 network will use the specified value as UUID.	Yes		3.1.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.1.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.1.0
timeout		Yes		



Note:

- When you add an IPv6 range by specifying a network CIDR in ZStack Cloud, you can specify the DHCP server address by adding the **affinityGroup** option to **SystemTags**.
 - Format of the **affinityGroup** option: flatNetwork::DhcpServer::{ %s }::ipUuid::{ %s }
 - Example: flatNetwork::DhcpServer::192.168.1.100::ipUuid::null

5.3.2.3.26 QueryIpAddress

Queries an IP address. For example,

```
QueryIpAddress uuid=c0af96be01703fab84495059d3188230
```

Primitive Fields of Query

See IP Address Inventory.

Nested And Expanded Fields of Query

Field	Inventory	Description	Starting Version
I3Network	L3 Network Inventory	The L3 network to which the IP range belongs.	3.1.0
vmNic	VM NIC Inventory		0.6

5.3.2.3.27 GetL3NetworkIpStatistic

Obtains the IP address statistics of an L3 network. For example,

```
GetL3NetworkIpStatistic l3NetworkUuid=9bdd769f3e603f65bd368512ebe8b998
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
I3NetworkUuid	The L3 network UUID.			3.7.0
resourceType	The resource type.	Yes	<ul style="list-style-type: none"> • All • Vip • VM 	3.7.0
ip	The specified IP address.	Yes		3.7.0
sortBy	The sort method.	Yes	<ul style="list-style-type: none"> • Ip • CreateDate 	3.7.0
sortDirection	The sort direction.	Yes	<ul style="list-style-type: none"> • asc • desc 	3.7.0
start	The location where the statistics starts.	Yes		3.7.0
limit	The count of the statistics.	Yes		3.7.0
replyWithCount	Whether to return both the statistics result and count.	Yes		3.7.0
userTags	The user tags. For more	Yes		3.7.0

Name	Description	Optional	Valid Value	Starting Version
	information, see CreateUserTag .			
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.7.0
timeout		Yes		

5.3.2.3.28 QueryAddressPool

Queries an IP address pool. For example,

```
QueryAddressPool uuid=b86c9016b4f24953a9edefb53ca0678c
```

Primitive Fields of Query

See [Address Pool Inventory](#).

Nested and Expanded Fields of Query

Field	Inventory	Description	Starting Version
I3Network	L3 Network Inventory	The public networks related to the IP address pool.	3.9.0

5.3.2.4 Tags

L3 Network Tag

You can create a user tag on an L3 network by using `resourceType=L3NetworkVO`. For example,

```
CreateUserTag resourceType=L3NetworkVO tag=web-tier-l3 \
resourceUuid=f6be73fa384a419986fc6d1b92f95be9
```

IP Range Tag

You can create a user tag on an IP range by using `resourceType=IpRangeVO`. For example,

```
CreateUserTag resourceType=IpRangeVO tag=web-tier-IP \
```

```
resourceUuid=8191d946954940428b7d003166fa641e
```

IP Address Tag

You can create a user tag on an IP address by using `resourceType=IpAddressVO`. For example,

```
CreateUserTag resourceType=IpAddressVO tag=web-tier-IPAddress \
resourceUuid=c0af96be01703fab84495059d3188230
```

5.3.3 Route Resource

5.3.3.1 Overview

A virtual router network (vRouter network) mainly uses custom Linux VM instances as route devices. The vRouter VM instances provide many network services, such as DHCP, DNS, SNAT, vRouter table, elastic IP (EIP), port forwarding, load balancing, IPsec tunnel, and security group.

A vRouter network mainly includes a vRouter image, vRouter offering, and vRouter.

- vRouter image: Encapsulates many network services, and is used only to create vRouters.
- vRouter offering: Defines the resources used by a vRouter, including the CPU, memory, vRouter image, public network, and management network.
- vRouter: Acts as a custom Linux VM instance and provides network services such as DHCP, DNS, SNAT, route table, EIP, port forwarding, load balancing, IPsec tunnel, and security group.

vRouter Network Topology

A vRouter VM instance mainly includes the following three basic networks:

- Public network

Provides virtual IPs for user VM instances that use EIP, port forwarding, load balancing, and IPsec tunnel. Generally, the public network must be accessible to the Internet.

- Management network

Manages and controls the corresponding physical resources, such as a host, backup storage, and primary storage, of whose resources can be reached by using an IP address.

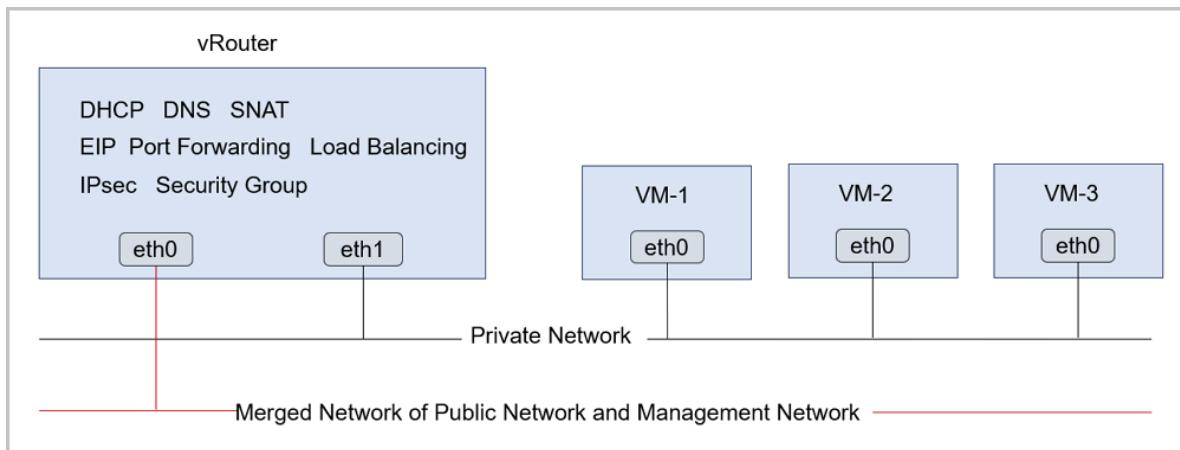
- Private network

Also known as the business network or the access network and is the internal network used by VM instances.

Here is the deployment mode of the vRouter network.

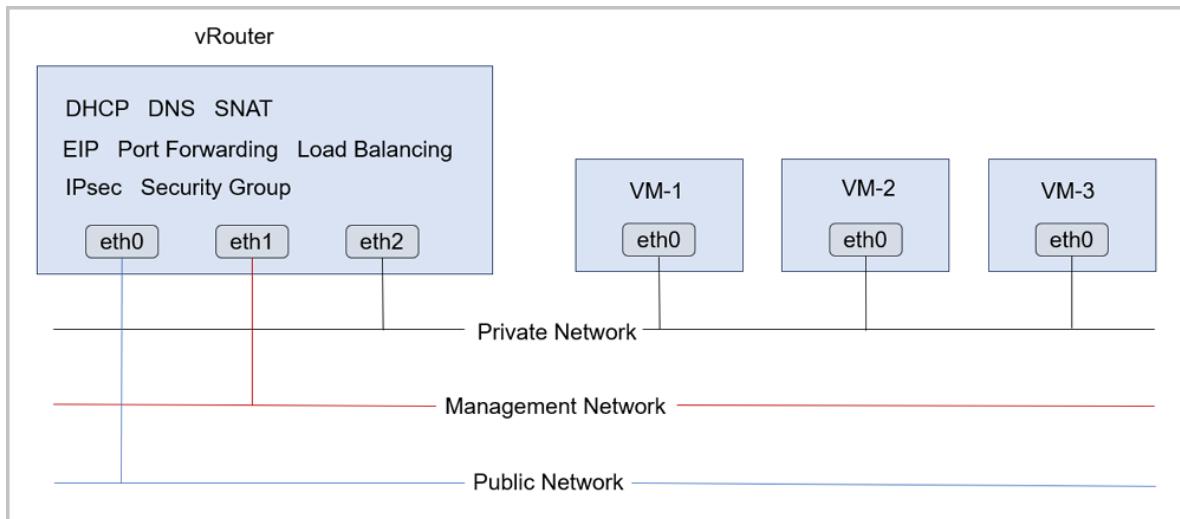
- You can combine the public network and the management network, while deploying the private network independently, as shown in [Deployment Mode-1](#).

Figure 5-24: Deployment Mode-1



- You can deploy the public network, management network, and private network separately, as shown in [Deployment Mode-2](#).

Figure 5-25: Deployment Mode-2



vRouter Network Service

The vRouter VM instances provide a collection of network services, including the DHCP, DNS, SNAT, route table, EIP, port forwarding, load balancing, IPsec tunnel, and security group.

- DHCP
 - In a vRouter, the DHCP service is provided by the flat network by default.
- DNS

- A vRouter can act as a DNS server to provide the DNS service.
- The DNS address in a vRouter VM instance is the vRouter IP address. Note that the DNS address that you set is forwarded by the vRouter.
- SNAT
 - A vRouter can act as a router to translate the source network address for VM instances.
 - VM instances can directly access the Internet by using SNAT.
- We will introduce the vRouter table, security group, EIP, port forwarding, load balancing, and IPsec in specific sections.

5.3.3.2 Inventory

Properties

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			0.6
name	The name. For more information, see Resource Property .			0.6
description	The description. For more information, see Resource Property .	Yes		0.6
agentPort				0.6
allocatorStrategy	The allocator strategy.		<ul style="list-style-type: none"> • DefaultHostAllocatorStrategy • LastHostPreferredAllocatorStrategy • LeastVmPreferredHostAllocatorStrategy 	0.6

Name	Description	Optional	Valid Value	Starting Version
			<ul style="list-style-type: none"> • MinimumCPUUsageHostAllocationStrategy • MinimumMemoryUsageHostAllocatorStrategy • MaxInstancesPerHostHostAllocatorStrategy 	
applianceVmType	The type of special VM instance.			0.6
clusterUuid	The cluster UUID.			0.6
zoneUuid	The zone UUID.			0.6
cpuNum	The CPU count.			0.6
cpuSpeed				0.6
defaultL3NetworkUuid	The default L3 network UUID.			0.6
defaultRouteL3NetworkUuid	The UUID of the L3 network that provides default routing in a vRouter VM instance.			0.6
hostUuid	The host UUID.			0.6
lastHostUuid	The UUID of the host where the vRouter VM instance was located last time.			0.6
imageUuid	The image UUID.			0.6
rootVolumeUuid	The root volume UUID.			0.6

Name	Description	Optional	Valid Value	Starting Version
instanceOfferingUuid	The instance offering UUID.			0.6
managementNetworkUuid	The management network UUID.			0.6
publicNetworkUuid	The public network UUID.			0.6
memorySize	The memory size.			0.6
hypervisorType	The hypervisor type.			0.6
platform				0.6
state	The state.		<ul style="list-style-type: none"> • Enabled • Disabled 	0.6
status	The status.			0.6
groupBy				
createDate	The creation date. For more information, see Resource Property .			0.6
lastOpDate	The last operation date. For more information, see Resource Property .			0.6
type	The type.		<ul style="list-style-type: none"> • UserVm • ApplianceVm 	0.6

Sample

```
{
  "inventories": [
    {
      "agentPort": 7272,
      "allVolumes": [
        {
          "actualSize": 293641216,
          "createDate": "Nov 10, 2017 2:59:57 PM",
          "description": "Root volume for VM[uuid:f90177b78a3d4f399f32bf84af32afde]",
          "id": "3d4f399f32bf84af32afde"
        }
      ]
    }
  ]
}
```

```

        "deviceId": 0,
        "format": "qcow2",
        "installPath": "/Cloud_ps_nxs/rootVolumes/acct-
36c27e8ff05c4780bf6d2fa65700f22e/vol-47401aeef0b54ec\
f90b831f2e250c098/47401aeef0b54ecf90b831f2e250c098.qcow2",
        "isShareable": false,
        "lastOpDate": "Nov 10, 2017 2:59:57 PM",
        "name": "ROOT-for-vrouter.13.L3-vRouter-2.e293d6",
        "primaryStorageUuid": "cae8726c90784ba0946f
852952731268",
        "rootImageUuid": "ef614d2e1db7536a8fb8260a05074ae4
",
        "size": 8589934592,
        "state": "Enabled",
        "status": "Ready",
        "type": "Root",
        "uuid": "47401aeef0b54ecf90b831f2e250c098",
        "vmInstanceUuid": "f90177b78a3d4f399f32bf84af32af
de"
    }
],
"allocatorStrategy": "LeastVmPreferredHostAllocators
trategy",
"applianceVmType": "vrouter",
"clusterUuid": "967a353c2893409dab9312cf3033a98c",
"cpuNum": 1,
"cpuSpeed": 0,
"createDate": "Nov 10, 2017 2:59:57 PM",
"defaultRouteL3NetworkUuid": "cdb7f3151c50453ba0e8
c89356e250f6",
"hostUuid": "aec5230c3eee40e4998bec50a1c2eae8",
"hypervisorType": "KVM",
"imageUuid": "ef614d2e1db7536a8fb8260a05074ae4",
"instanceOfferingUuid": "fa550cb9bdcc4fd397ae37f9ddf4c390
",
"lastHostUuid": "aec5230c3eee40e4998bec50a1c2eae8",
"lastOpDate": "Nov 16, 2017 11:07:30 AM",
"managementNetworkUuid": "cdb7f3151c50453ba0e8c89356e250f6
",
"memorySize": 1073741824,
"name": "vrouter.13.L3-vRouter-2.e293d6",
"platform": "Linux",
"publicNetworkUuid": "cdb7f3151c50453ba0e8c89356e250f6",
"rootVolumeUuid": "47401aeef0b54ecf90b831f2e250c098",
"state": "Running",
"status": "Connected",
"type": "ApplianceVm",
"uuid": "f90177b78a3d4f399f32bf84af32afde",
"vmNics": [
{
    "createDate": "Nov 10, 2017 2:59:57 PM",
    "deviceId": 1,
    "gateway": "192.168.23.1",
    "ip": "192.168.23.1",
    "l3NetworkUuid": "e293d67b0e4a4b438f15b768cacb6eaf
",
    "lastOpDate": "Nov 10, 2017 2:59:57 PM",
    "mac": "fa:63:dd:7a:56:01",
    "metaData": "4",
    "netmask": "255.255.255.0",
    "uuid": "281f9ac039c44bb18337217543e551ea",
}
]
}
]
}
]
```

```

        "vmInstanceUuid": "f90177b78a3d4f399f32bf84af32af
de"
    },
{
    "createDate": "Nov 10, 2017 2:59:57 PM",
    "deviceId": 0,
    "gateway": "10.0.0.1",
    "ip": "10.141.26.16",
    "l3NetworkUuid": "cdb7f3151c50453ba0e8c89356e250f6
",
    "lastOpDate": "Nov 10, 2017 2:59:57 PM",
    "mac": "fa:31:50:c4:d3:00",
    "metaData": "3",
    "netmask": "255.0.0.0",
    "uuid": "402dc6bf37734753be3661be3d120652",
    "vmInstanceUuid": "f90177b78a3d4f399f32bf84af32af
de"
}
],
"zoneUuid": "e59b71e99d8a4ea1952b578388b8cd1d"
},
],
"success": true
}

```

5.3.3.3 Operations

5.3.3.3.1 QueryVirtualRouterVm

Queries a vRouter VM instance. For example,

```
QueryVirtualRouterVm uuid=efb08e965ba4414fa7320e968178d442
```

```
QueryVirtualRouterVm host.uuid=1fc14d00738e468f9aeb791516e97c6a
```

Primitive Fields of Query

See Appliance VM Inventory.

Nested and Expanded Fields of Query

Field	Inventory	Description	Starting Version
vmNics	VM NIC Inventory	The NICs of the vRouter VM instance.	0.6
allVolumes	Volume Inventory	The volumes of the vRouter VM instance.	0.6
host	Host Inventory	The host on which the vRouter VM instance is running.	0.6

Field	Inventory	Description	Starting Version
cluster	<i>Cluster Inventory</i>	The cluster to which the vRouter VM instance is attached.	0.6
image	<i>Image Inventory</i>	The image used for creating the vRouter VM instance.	0.6
zone	<i>Zone Inventory</i>	The zone to which the vRouter VM instance belongs.	0.6
rootVolume	<i>Volume Inventory</i>	The root volume of the vRouter VM instance.	0.6
virtualRouterOffering	vRouter Offering Inventory	The vRouter offering of the vRouter VM instance.	0.6
eip	EIP Inventory	The EIP that the vRouter VM instance serves.	0.6
vip	VIP Inventory	The VIP that the vRouter VM instance serves.	0.6
portForwarding	Port Forwarding rule Inventory	The port forwarding that the vRouter VM instance serves.	0.6
loadBalancer	Load Balancer Inventory	The load balancing that the vRouter VM instance serves.	0.6

5.3.3.3.2 ReconnectVirtualRouter

Reconnects a vRouter VM instance. For example,

```
ReconnectVirtualRouter vmInstanceId=698c538be5414ac7b04b19f4daa29f74
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
vmInstanceId	The UUID of the vRouter VM instance.			0.6

Name	Description	Optional	Valid Value	Starting Version
userTags	The user tags. For more information, see CreateUserTag . The Resource type is VirtualRouterVmVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The Resource type is VirtualRouterVmVO.	Yes		0.6
timeout		Yes		

5.3.3.3 CreateVirtualRouterOffering

Creates a vRouter offering. For example,

```
CreateVirtualRouterOffering name=VROffering zoneUuid=fad9475e37
4a471e8e95eca6177f7075 \
cpuNum=1 memorySize=1073741824 imageUuid=fd59830722741bf49d25
398f34723cb8 \
managementNetworkUuid=10a60c0bc05b418c9f9f3d86ba65280a
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
managementNetworkUuid	The management L3 network UUID.			0.6
zoneUuid	The zone UUID.			0.6
imageUuid	The image UUID.			0.6
publicNetworkUuid	The public L3 network UUID.	Yes		0.6
isDefault	The default offering: vRouter.	Yes		0.6
name	The resource name.			0.6

Name	Description	Optional	Valid Value	Starting Version
description	The detailed description of the resource.	Yes		0.6
cpuNum	The CPU count.			0.6
memorySize	The memory size.			0.6
allocatorStrategy	The allocator strategy.	Yes	<ul style="list-style-type: none"> • DefaultHostAllocatorStrategy • LastHostPreferredAllLocatorStrategy • LeastVmPreferredHostAllocatorStrategy • MinimumCPUUsageHostAllocatorStrategy • MinimumMemoryUsageHostAllocatorStrategy • MaxInstancePerHostHostAllocatorStrategy • DesignatedHostAllocatorStrategy 	0.6
sortKey	The sort key.	Yes		0.6
type	The type.	Yes	<ul style="list-style-type: none"> • UserVm • ApplianceVm 	0.6
resourceUuid	The resource UUID.	Yes		0.6
userTags	The user tags. For more	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
	information, see CreateUserTag . The resource type is VirtualRouterOfferingVO.			
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is VirtualRouterOfferingVO.	Yes		0.6
timeout		Yes		

5.3.3.3.4 QueryVirtualRouterOffering

Queries a vRouter offering. For example,

```
QueryVirtualRouterOffering imageUuid=f354eb04fb7b3732a9a9de825d68eb5c
```

```
QueryVirtualRouterOffering managementL3Network.uuid=a3b2fce8f82b4422a575220a35d6ebbd
```

Primitive Fields of Query

See Virtual Router Offering Inventory.

Nested and Expanded Fields of Query

Field	Inventory	Description	Starting Version
image	Image Inventory	The image contained in the offering.	0.6
managementL3Network	L3 Network Inventory	The management L3 network contained in the offering.	0.6
publicL3Network	L3 Network Inventory	The public L3 network contained in the offering.	0.6
zone	Zone Inventory	The zone to which the offering belongs.	0.6

5.3.3.5 UpdateVirtualRouterOffering

Updates a vRouter offering. For example,

```
UpdateVirtualRouterOffering uuid=d8f2a1a9eb6146848943e78f7cca6a43
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
isDefault	The default offering: vRouter.	Yes		0.6
imageUuid	The image UUID.	Yes		0.6
uuid	The resource UUID.			0.6
name	The resource name.	Yes		0.6
description	The detailed description of the resource.	Yes		0.6
allocatorStrategy		Yes	<ul style="list-style-type: none"> • DefaultHostAllocatorStrategy • LastHostPreferredAllLocatorStrategy • LeastVmPreferredHostAllocatorStrategy • MinimumCPUUsageHostAllocatorStrategy • MinimumMemoryUsageHostAllocatorStrategy • MaxInstancePerHostHostAllocatorStrategy 	2.3

Name	Description	Optional	Valid Value	Starting Version
userTags	The user tags. For more information, see CreateUser Tag . The resource type is VirtualRouterOfferingVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is VirtualRouterOfferingVO.	Yes		0.6
timeout				

5.3.3.6 QueryApplianceVm

Queries an appliance VM. For example,

```
QueryApplianceVm uuid=efb08e965ba4414fa7320e968178d442
```

```
QueryApplianceVm vmNics.vmInstanceId=efb08e965ba4414fa7320e968178d442
```

Primitive Fields of Query

See Appliance VM Inventory.

Nested and Expanded Fields of Query

Field	Inventory	Description	Starting Version
vmNics	VM NIC Inventory	The NICs of the appliance VM.	0.6
allVolumes	Volume Inventory	The volumes of the appliance VM.	0.6
host	Host Inventory	The host on which the appliance VM is running.	0.6

Field	Inventory	Description	Starting Version
cluster	<i>Cluster Inventory</i>	The cluster to which the appliance VM is attached.	0.6
image	<i>Image Inventory</i>	The image used for creating the appliance VM.	0.6
zone	<i>Zone Inventory</i>	The zone to which the appliance VM belongs.	0.6
rootVolume	<i>Volume Inventory</i>	The root volume of the appliance VM.	0.6
virtualRouterOffering	vRouter Offering Inventory	The vRouter offering of the appliance VM.	0.6
eip	EIP Inventory	The EIP that the appliance VM serves.	0.6
vip	VIP Inventory	The VIP that the appliance VM serves.	0.6
portForwarding	Port Forwarding Rule Inventory	The port forwarding that the appliance VM serves.	0.6

5.3.3.3.7 GetAttachablePublicL3ForVRouter

Obtains a public network and a system network that can be attached by a vRouter VM instance.

Note that the address conflict in the networks will be automatically resolved. For example,

```
GetAttachablePublicL3ForVRouter vmInstanceUuid=698c538be5414ac7b04b  
19f4daa29f74
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
vmInstanceUuid	The UUID of the vRouter VM instance.			2.2
userTags	The user tags. For more information, see CreateUser Tag . The	Yes		2.2

Name	Description	Optional	Valid Value	Starting Version
	Resource type is VirtualRouterVmVO.			
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is VirtualRouterVmVO.	Yes		2.2
timeout		Yes		

5.3.3.3.8 vRouter Route Table Inventory

5.3.3.3.8.1 CreateVRouterRouteTable

Creates a vRouter route table. For example,

```
CreateVRouterRouteTable name=VRouterRouteTable1
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
name	The resource name.			2.1
description	The detail description of the resource.	Yes		2.1
resourceUuid	The resource UUID.	Yes		2.1
userTags	The user tags. For more information, see CreateUserTag . The resource type is VirtualRouterVRouterRouteTableRefVO.	Yes		2.1
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is VirtualRouterVRouterRouteTableRefVO.	Yes		2.1
timeout		Yes		

5.3.3.8.2 DeleteVRouterRouteTable

Deletes a vRouter route table. For example,

```
DeleteVRouterRouteTable uuid=c62422b8f644482ea930b84e3200ead9
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID of the vRouter route table.			2.1
deleteMode	The delete mode. For more information, see Delete Resources .	Yes	<ul style="list-style-type: none"> Permissive Enforcing 	2.1
userTags	The user tags. For more information, see CreateUser Tag . The resource type is VirtualRouterVRouterRouteTableRefVO.	Yes		2.1
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is VirtualRouterVRouterRouteTableRefVO.	Yes		2.1
timeout		Yes		

5.3.3.8.3 QueryVRouterRouteTable

Queries a vRouter route table. For example,

```
QueryVRouterRouteTable uuid=a15ee6c9eba744308f5c32b6f93069fb
```

```
QueryVRouterRouteTable attachedRouterRef.virtualRouterVmUuid=efb08e965ba4414fa7320e968178d442
```

Primitive Fields of Query

See vRouter Route Table Inventory.

Nested and Expanded Fields of Query

Field	Inventory	Description	Starting Version
attachedRouterRef	Attached Router Reference Inventory		
attachedRouterRefs	Attached Router References Inventory		
routeEntries	Router Entries Inventory		

5.3.3.8.4 GetVRouterRouteTable

Obtains a real-time vRouter route table. For example,

```
GetVRouterRouteTable virtualRouterVmUuid=698c538be5414ac7b04b19f4daa29f74
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
virtualRouterVmUuid	The vRouter VM instance UUID.			2.1
userTags	The user tags. For more information, see CreateUserTag . The resource type is VirtualRouterVRouterRouteTableRefVO.	Yes		2.1
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.1

Name	Description	Optional	Valid Value	Starting Version
	The resource type is VirtualRouterVRouterRouteTableRefVO.			
timeout		Yes		

5.3.3.3.8.5 AddVRouterRouteEntry

Adds a vRouter route entry. For example,

```
AddVRouterRouteEntry routeTableUuid=315d780fe5ea495394d59db9a2177b19
destination=192.168.19.0/24
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
description	The detailed description of the resource.	Yes		2.1
type	The type. You can add two types of routes: static route and black hole route. The system will automatically determine the type by judging whether to enter the next IP address.	Yes	<ul style="list-style-type: none"> • UserStatic • UserBlackhole 	2.1
routeTableUuid	The UUID of the vRouter route table.			2.1
destination	The destination network address, in CIDR format . If you enter a non-standard CIDR, note that the system will automatically transform it to the standard CIDR format.			2.1
target	The next IP address, which can be accessed directly by the vRouter VM instance. If the	Yes		2.1

Name	Description	Optional	Valid Value	Starting Version
	IP address cannot be accessed directly, the route recursion will be triggered.			
distance	The route priority. Due to the minimum route rule , if you have many route rules to match IP address , note that the minimum number of route rules will be prioritized to do the match according to the priority sequence of the route rules.			2.1
resourceUuid	The resource UUID.	Yes		2.1
userTags	The user tags. For more information, see CreateUserTag . The resource type is VirtualRouterVRouterRouteTableRefVO.	Yes		2.1
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is VirtualRouterVRouterRouteTableRefVO.	Yes		2.1
timeout		Yes		

5.3.3.8.6 DeleteVRouterRouteEntry

Deletes a vRouter route entry. For example,

```
DeleteVRouterRouteEntry uuid=92b15177f2a84ec39c962613e926c247 \
```

```
routeTableUuid=315d780fe5ea495394d59db9a2177b19
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID of the vRouter route entry.			2.1
routeTableUuid	The UUID of the vRouter route table.			2.1
deleteMode	The delete mode. For more information, see Delete Resources .	Yes	<ul style="list-style-type: none"> • Permissive • Enforcing 	2.1
userTags	The user tags. For more information, see CreateUser Tag . The resource type is VirtualRouterVRouterRouteTableRefVO.	Yes		2.1
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is VirtualRouterVRouterRouteTableRefVO.	Yes		2.1
timeout		Yes		

5.3.3.8.7 QueryVRouterRouteEntry

Queries a vRouter route entry. For example,

```
QueryVRouterRouteEntry uuid=3a9783d1da514c7983c56040bf6b04f2
```

```
QueryVRouterRouteEntry vrouterRouteTable.uuid=a15ee6c9eba744308f5c  
32b6f93069fb
```

Primitive Fields of Query

See vRouter Route Entry Inventory.

Nested and Expanded Fields of Query

Field	Inventory	Description	Starting Version
vrouterRouteTable	vRouter Route Table Inventory	The vRouter router table of the router entry.	2.1

5.3.3.8.8 AttachVRouterRouteTableToVRouter

Attaches a vRouter route table to a vRouter VM instance. For example,

```
AttachVRouterRouteTableToVRouter virtualRouterVmUuid=698c538be5  
414ac7b04b19f4daa29f74 \  
routeTableUuid=315d780fe5ea495394d59db9a2177b19
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
routeTableUuid	The UUID of the vRouter route table.			2.1
virtualRouterVmUuid	The UUID of the vRouter VM instance.			2.1
userTags	The user tags. For more information, see CreateUserTag . The resource type is VirtualRouterVRouterRouteTableRefVO.	Yes		2.1
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.1

Name	Description	Optional	Valid Value	Starting Version
	The resource type is VirtualRouterVRouterRouteTableRefVO.			
timeout		Yes		

5.3.3.3.8.9 DetachVRouterRouteTableFromVRouter

Detaches a vRouter route table from a vRouter VM instance. For example,

```
DetachVRouterRouteTableFromVRouter virtualRouterVmUuid=698c538be5
414ac7b04b19f4daa29f74 \
routeTableUuid=315d780fe5ea495394d59db9a2177b19
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
routeTableUuid	The UUID of the vRouter router table.			2.1
virtualRouterVmUuid	The UUID of the vRouter VM instance.			2.1
userTags	The user tags. For more information, see CreateUserTag . The resource type is VirtualRouterVRouterRouteTableRefVO.	Yes		2.1
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is VirtualRouterVRouterRouteTableRefVO.	Yes		2.1
timeout		Yes		

5.3.3.8.10 QueryVirtualRouterVRouterRouteTableRef

Queries the reference between a vRouter VM instance and a vRouter route table. For example,

```
QueryVirtualRouterVRouterRouteTableRef routeTableUuid=a15ee6c9eb
a744308f5c32b6f93069fb
```

```
QueryVirtualRouterVRouterRouteTableRef vrouterRouteTable.uuid=
a15ee6c9eba744308f5c32b6f93069fb
```

Primitive Fields of Query

See Inventory of Reference Between Virtual Router and vRouter Route Table.

Nested and Expanded Fields of Query

Field	Inventory	Description	Starting Version
vrouterRouteTable	vRouter Route Table Inventory		2.1
virtualRouterVm	vRouter VM Inventory		2.1

5.3.3.4 Tags

System Tags

Parallel Command Level

You can limit the maximum number of commands that can be executed in parallel in a vRouter VM instance.

Tag	Description	Example	Starting Version
commandsParallelismDegree::{parallelismDegree}	The maximum number of commands that can be executed in parallel in a vRouter VM instance.	commandsParallelismDegree::100	0.6

You can create a system tag on a vRouter offering or a vRouter VM instance. If you create the tag on a vRouter offering, note that the vRouter VM instances you created from the offering will inherit the system tag.

- On a vRouter offering, you can create a system tag by using `resourceType=InstanceOfferingVO`.

- On a vRouter VM instance, you can create a system tag by using `resourceType=VmInstanceVO`.

Guest L3 Network

You can attach a vRouter offering to a guest L3 network to specify which vRouter offering to use when creating a vRouter VM instance on the guest L3 network.

For example,

```
CreateSystemTag resourceType=InstanceOfferingVO resourceUuid=
YOUR_VR_OFFERING_UUID \
tag=guestL3Network::YOUR_L3_NETWORK_UUID
```

5.3.4 VPC

5.3.4.1 Overview

Virtual Private Cloud (VPC) is a custom network environment that consists of VPC vRouters and VPC networks. With VPC, enterprise users can build a logically isolated private cloud.

VPC vRouter and VPC Network

VPC consists of VPC vRouter and VPC network.

1. VPC vRouter: a vRouter that is created based on a vRouter offering. A VPC vRouter has two types of network: public network and management network.
 - VPC vRouters are the core of VPC. A VPC vRouter can be created by specifying a vRouter offering.
 - To create a vRouter offering, create the required public network, management network, and vRouter image in advance.
 - A VPC vRouter can be attached to or detached from VPC networks or other public networks
 - The public network and the management network that are defined by a vRouter offering cannot be detached.
 - The same vRouter offering can be used to create multiple VPC vRouters. These VPC vRouters share both the public IP range and the management IP range defined by the same vRouter offering.
 - The public network is the default network used to provide network services.
 - VPC vRouters have higher resource priorities than VM instances. When the host workload rates are extremely high, and then resources contend with each other, the resource

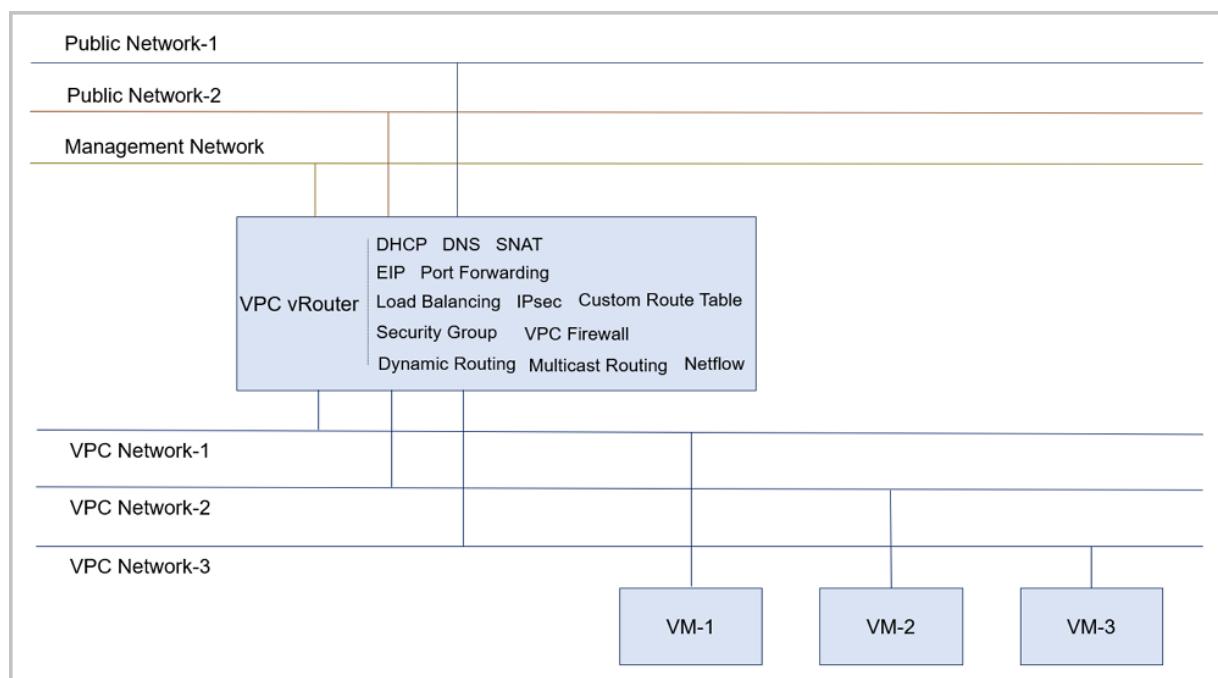
priority sequence from low to high is as follows: VM instances with **Normal** priorities < VM instances with **High** priorities < VPC vRouters. For example, when CPU resources contend with each other on hosts, VPC vRouters have higher CPU resource grabbing capability.

2. VPC network: a private network that can be attached to a VPC vRouter.

- You need to create an L2 network before you can create an L3 VPC network.
- When you create a VPC network, you can specify a vRouter. Or you can attach a vRouter to the VPC network after you create the VPC network.
- If your VM instances use a VPC network, you cannot detach the VPC network from the VPC vRouter.
- The newly created IP range must not overlap any IP range in the VPC vRouter.

The VPC network topology is shown in [VPC Network Topology](#).

Figure 5-26: VPC Network Topology



HA Group of VPC vRouter

High availability (HA) group: You can deploy two VPC vRouters according to the active-backup policy. When the active VPC vRouter is abnormal, the backup VPC vRouter will automatically take over to work properly, thus ensuring your business continuity.



Note:

The VPC vRouters in an HA group will be only displayed on the details page of the HA group, but will not be displayed independently in the vRouter table.

VPC Features

VPC has the following feature benefits:

- Flexible network configuration: Different VPC networks can be flexibly attached to the VPC vRouters. You can customize an independent IP range and an independent gateway for each VPC network. VPC vRouters allow you to attach or detach gateways, and also to dynamically configure your route tables and route entries.
- Secure and reliable isolation: Different VPC networks in different VPCs are logically isolated. That is, the VPC networks support VLAN and VXLAN for logical layer 2 isolation, and different VPCs of different accounts will not affect each other.
- Multi-subnet interconnection: Multiple VPC networks under the same VPC can communicate privately and securely with one another.
- Network traffic optimization: VPC supports distributed route features, indicating that VPC can optimize the east-west network traffic, and reduce the network latency effectively.
- VPC vRouter HA: In a VPC vRouter HA group, you can deploy two VPC vRouters according to the active-standby policy. When the active VPC vRouter is abnormal, the standby VPC vRouter will automatically take over to work properly, thus ensuring your business continuity.

VPC Network Service

The VPC network, which acts as a private network, provides a group of network services by using VPC vRouters.

- DHCP: By default, the VPC network provides distributed DHCP services by using the flat network service module.
- DNS: A VPC vRouter can act as a DNS server to provide DNS services. The DNS address in a VPC vRouter VM instance is the IP address of the VPC vRouter. Note that the DNS address that you set is forwarded by the VPC vRouter.
- SNAT: A VPC vRouter can provide the source network address translation (SNAT) services for VM instances. Then, the VM instances can directly access the Internet by using SNAT.
- Route table: Through the route table, you can manage and customize routes.
- Security group: The security group service is provided by the security group network service module. You can configure and manage firewalls for VM instances by using iptables.

- Elastic IP address (EIP): You can bind an EIP to a VPC network. Then, the public network can interconnect with the private network of the VM instance.
- Port forwarding: The port forwarding service allows a public IP address to interconnect with the private IP address of a VM instance. To be more specific, you can create port forwarding rules to allow external networks to reach specific ports of your VM instances.
- Load balancing: The load balancing service distributes your inbound traffics from a public IP address to a group of backend VM instances. Then, this service will automatically check and isolate the VM instances that are unavailable.
- IPsec tunnel: The IPsec tunnel can be used to achieve interconnection between different virtual private networks (VPNs).
- Dynamic routing: The VPC vRouter supports the Open Shortest Path First (OSPF) routing protocol, which is used to distribute routing information within a single autonomous system.
- Multicast routing: The VPC vRouter forwards the multicast information sent by the multicast source to VM instances, achieving one-to-multi-point communication in the transmission side and receiving side.
- VPC firewall: The VPC firewall filters the south-north traffic on the VPC vRouter ports, effectively protecting the VPC communication security and VPC vRouter security.
- Netflow: The Netflow service monitors and analyzes the inbound and outbound traffics of the VPC vRouter NICs. Currently, the following two types of data-flow output format are supported: Netflow V5 and Netflow V9.

5.3.4.2 Inventory

Properties

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			2.3
name	The name. For more information, see Resource Property .			2.3
description	The description. For more information,	Yes		2.3

Name	Description	Optional	Valid Value	Starting Version
	see Resource Property .			
agentPort				2.3
allocatorStrategy	The allocator strategy.		<ul style="list-style-type: none"> • DefaultHostAllocatorStrategy • LastVmPreferredHostAllocatorStrategy • LeastVmPreferredHostAllocatorStrategy • MinimumCPUUsageHostAllocatorStrategy • MinimumMemoryUsageHostAllocatorStrategy • MaxInstancePerHostHostAllocatorStrategy • DesignatedHostAllocatorStrategy 	2.3
applianceVmType	The type of special VM instance.			2.3
clusterUuid	The cluster UUID.			2.3
zoneUuid	The zone UUID.			2.3
cpuNum	The CPU count.			2.3
cpuSpeed				2.3
defaultL3NetworkUuid	The default L3 network UUID.			2.3

Name	Description	Optional	Valid Value	Starting Version
defaultRouteL3NetworkUuid	The UUID of the L3 network that provides default routing in a vRouter VM instance.			2.3
hostUuid	The host UUID.			2.3
lastHostUuid	The UUID of the host where the vRouter VM instance was located last time.			2.3
imageUuid	The image UUID.			2.3
rootVolumeUuid	The root volume UUID.			2.3
instanceOfferingUuid	The instance offering UUID.			2.3
managementNetworkUuid	The management network UUID.			2.3
publicNetworkUuid	The public network UUID.			2.3
memorySize	The memory size.			2.3
hypervisorType	The hypervisor type.			2.3
platform				2.3
state	The state.		<ul style="list-style-type: none"> • Running • Stopped 	2.3
status	The status.			2.3
groupBy				
createDate	The creation date. For more information, see Resource Property .			2.3

Name	Description	Optional	Valid Value	Starting Version
lastOpDate	The last operation date. For more information, see Resource Property .			2.3
type	The type.			2.3

Sample

```
{
    "inventories": [
        {
            "agentPort": 7272,
            "allVolumes": [
                {
                    "actualSize": 308124672,
                    "createDate": "Jan 29, 2018 2:50:36 PM",
                    "description": "Root volume for VM[uuid:21fb8cf769804830b397b5ae1491f527]",
                    "deviceId": 0,
                    "format": "qcow2",
                    "installPath": "/Cloud_ps_1/rootVolumes/acct-36c27e8ff05c4780bf6d2fa65700f22e/vol-f01fd90b7d6248f9b106d6beb6910459/f01fd90b7d6248f9b106d6beb6910459.qcow2",
                    "isShareable": false,
                    "lastOpDate": "Jan 29, 2018 2:50:37 PM",
                    "name": "ROOT-for-TestVPC",
                    "primaryStorageUuid": "c81fe76a96c74568bbc3f7d46ac67e22",
                    "rootImageUuid": "f54bc778326842d8be3b6bd6a10ddf57",
                    "size": 8589934592,
                    "state": "Enabled",
                    "status": "Ready",
                    "type": "Root",
                    "uuid": "f01fd90b7d6248f9b106d6beb6910459",
                    "vmInstanceUuid": "21fb8cf769804830b397b5ae1491f527"
                }
            ],
            "allocatorStrategy": "LeastVmPreferredHostAllocatorsStrategy",
            "applianceVmType": "vpcvrouter",
            "clusterUuid": "03e75816a0da42f998e2102d8286c27e",
            "cpuNum": 1,
            "cpuSpeed": 0,
            "createDate": "Jan 29, 2018 2:50:36 PM",
            "defaultL3NetworkUuid": "3533e0dc01d4e2aa8697048e152c5d8",
            "defaultRouteL3NetworkUuid": "ac057539be3840b7ba62c26d88028d74",
            "description": "vpc vrouter",
            "hostUuid": "faa187eff2a24db087f7c999c6990dd5",
            "hypervisorType": "KVM",
            "imageUuid": "f54bc778326842d8be3b6bd6a10ddf57",
            "memorySize": 2048
        }
    ]
}
```

```

        "instanceOfferingUuid": "bea67a0669434d23ba4da7bf73f07255
",
        "lastHostUuid": "faa187eff2a24db087f7c999c6990dd5",
        "lastOpDate": "Jan 30, 2018 10:12:42 AM",
        "managementNetworkUuid": "ac057539be3840b7ba62c26d88028d74
",
        "memorySize": 1073741824,
        "name": "TestVPC",
        "platform": "Linux",
        "publicNetworkUuid": "ac057539be3840b7ba62c26d88028d74",
        "rootVolumeUuid": "f01fd90b7d6248f9b106d6beb6910459",
        "state": "Running",
        "status": "Connected",
        "type": "ApplianceVm",
        "uuid": "21fb8cf769804830b397b5ae1491f527",
        "virtualRouterVips": [
            "ff59daff8b6b4873b3f6dd9f100c753a"
],
        "vmNics": [
            {
                "createDate": "Jan 29, 2018 2:50:37 PM",
                "deviceId": 0,
                "gateway": "10.0.0.1",
                "ip": "10.128.22.161",
                "l3NetworkUuid": "ac057539be3840b7ba62c26d88028d74
",
                "lastOpDate": "Jan 29, 2018 2:50:37 PM",
                "mac": "fa:34:d5:44:3c:00",
                "metaData": "3",
                "netmask": "255.0.0.0",
                "uuid": "2886bdb03c324fee04ac556cee9fe14",
                "vmInstanceUuid": "21fb8cf769804830b397b5ae1491f5
27"
            },
            {
                "createDate": "Jan 29, 2018 4:05:30 PM",
                "deviceId": 1,
                "gateway": "192.168.29.1",
                "ip": "192.168.29.1",
                "l3NetworkUuid": "3533e0dc01d4e2aa8697048e152c5d8
",
                "lastOpDate": "Jan 29, 2018 4:05:30 PM",
                "mac": "fa:34:0c:67:11:01",
                "metaData": "4",
                "netmask": "255.255.255.0",
                "uuid": "748a1699b40044829d3cef7ec1c1b448",
                "vmInstanceUuid": "21fb8cf769804830b397b5ae1491f5
27"
            }
        ],
        "zoneUuid": "96e7b45997f0419789d9f187500a3540"
    },
    "success": true

```

```
}
```

VPC HA Group Inventory

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			3.5.1
description	The description. For more information, see Resource Property .			3.5.1
name	The name. For more information, see Resource Property .			3.5.1
createDate	The creation date. For more information, see Resource Property .			3.5.1
lastOpDate	The last operation date. For more information, see Resource Property .			3.5.1
groupBy				3.5.1
systemTags				3.5.1
userTags				3.5.1

Sample

```
{
  "inventories": [
    {
      "createDate": "Jul 15, 2019 4:30:58 PM",
      "description": "",
      "lastOpDate": "Jul 15, 2019 4:30:58 PM",
      "monitors": [
        {
          "createDate": "Jul 15, 2019 4:30:58 PM",
          "id": 2,

```

```

        "lastOpDate": "Jul 15, 2019 4:30:58 PM",
        "monitorIp": "172.24.0.1",
        "vpcHaRouterUuid": "6ca37f92c7474c1b82a6d354819da9
12"
    }
],
"name": "vhg",
"services": [
{
    "createDate": "Jul 15, 2019 4:30:58 PM",
    "id": 22,
    "lastOpDate": "Jul 15, 2019 4:30:58 PM",
    "networkServiceName": "PortForwardingRuleVO",
    "networkServiceUuid": "4ef05744e52a499daeb4
f54b86d4c652",
    "vpcHaRouterUuid": "6ca37f92c7474c1b82a6d354819da9
12"
},
{
    "createDate": "Jul 15, 2019 4:40:23 PM",
    "id": 24,
    "lastOpDate": "Jul 15, 2019 4:40:23 PM",
    "networkServiceName": "VipVO",
    "networkServiceUuid": "432d38b6e32241aabbe63
e904c4c559dd",
    "vpcHaRouterUuid": "6ca37f92c7474c1b82a6d354819da9
12"
},
{
    "createDate": "Jul 15, 2019 4:40:25 PM",
    "id": 25,
    "lastOpDate": "Jul 15, 2019 4:40:25 PM",
    "networkServiceName": "EipVO",
    "networkServiceUuid": "9b8d2747168f47d188be
973702af4e9d",
    "vpcHaRouterUuid": "6ca37f92c7474c1b82a6d354819da9
12"
},
{
    "createDate": "Jul 15, 2019 4:30:58 PM",
    "id": 21,
    "lastOpDate": "Jul 15, 2019 4:30:58 PM",
    "networkServiceName": "VipVO",
    "networkServiceUuid": "eea29b936a754cc7ae57
9bb9bd9ebc25",
    "vpcHaRouterUuid": "6ca37f92c7474c1b82a6d354819da9
12"
},
{
    "createDate": "Jul 15, 2019 4:58:05 PM",
    "id": 26,
    "lastOpDate": "Jul 15, 2019 4:58:05 PM",
    "networkServiceName": "VipVO",
    "networkServiceUuid": "e7d36f743b8545e39ee9
494051f3c159",
    "vpcHaRouterUuid": "6ca37f92c7474c1b82a6d354819da9
12"
},
{
    "createDate": "Jul 15, 2019 4:30:58 PM",
    "id": 23,
    "lastOpDate": "Jul 15, 2019 4:30:58 PM",

```

```

        "networkServiceName": "VpcRouterDnsVO",
        "networkServiceUuid": "223.5.5.5",
        "vpcHaRouterUuid": "6ca37f92c7474c1b82a6d354819da9
12"
    },
{
    "createDate": "Jul 15, 2019 4:30:58 PM",
    "id": 19,
    "lastOpDate": "Jul 15, 2019 4:30:58 PM",
    "networkServiceName": "L3NetworkVO",
    "networkServiceUuid": "15ed3ffa436d4c729ff8
ae1d4a9003f0",
    "vpcHaRouterUuid": "6ca37f92c7474c1b82a6d354819da9
12"
},
{
    "createDate": "Jul 15, 2019 4:30:58 PM",
    "id": 20,
    "lastOpDate": "Jul 15, 2019 4:30:58 PM",
    "networkServiceName": "VipVO",
    "networkServiceUuid": "e3c68f02ef6f43848e9c
15ffb03f8ec3",
    "vpcHaRouterUuid": "6ca37f92c7474c1b82a6d354819da9
12"
},
{
    "createDate": "Jul 15, 2019 4:58:10 PM",
    "id": 27,
    "lastOpDate": "Jul 15, 2019 4:58:10 PM",
    "networkServiceName": "LoadBalancerVO",
    "networkServiceUuid": "82ad4a36c71c4f14ab35
369142dcc18a",
    "vpcHaRouterUuid": "6ca37f92c7474c1b82a6d354819da9
12"
},
],
"usedIps": [
    {
        "createDate": "Jul 15, 2019 4:30:58 PM",
        "id": 2,
        "ip": "172.24.3.249",
        "l3NetworkUuid": "5e928354551743dc83c922386ff0a667
",
        "lastOpDate": "Jul 15, 2019 4:30:58 PM",
        "netmask": "255.255.0.0",
        "vipUuid": "eea29b936a754cc7ae579bb9bd9ebc25",
        "vpcHaRouterUuid": "6ca37f92c7474c1b82a6d354819da9
12"
    }
],
"uuid": "6ca37f92c7474c1b82a6d354819da912",
"vrRefs": [
    {
        "uuid": "49ea6a808c4e43748ebe89f4b97542b4",
        "vpcHaRouterUuid": "6ca37f92c7474c1b82a6d354819da9
12"
    }
],
"uuid": "e272a6a9c3144fc4aa776f2303584d18",
"vpcHaRouterUuid": "6ca37f92c7474c1b82a6d354819da9
12"
}

```

```

        ]
    }
],
"success": true
}

```

5.3.4.3 Operations

5.3.4.3.1 CreateVpcVRouter

Creates a VPC vRouter. For example,

```
CreateVpcVRouter name=TestVPC virtualRouterOfferingUuid=bea67a0669
434d23ba4da7bf73f07255
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
name	The VPC vRouter name.			2.3
virtualRouterOfferingUuid	The vRouter offering.			2.3
description	The detailed description of the VPC vRouter.	Yes		2.3
resourceUuid	The resource UUID. If specified , the VPC will use the specified value as UUID.	Yes		2.3
userTags	The user tag. For more information, see CreateUser Tag . The resource type is VirtualRouterVmVO.	Yes		2.3
systemTags	The system tag. For more information, see CreateSystemTag . The resource type is VirtualRouterVmVO.	Yes		2.3

Name	Description	Optional	Valid Value	Starting Version
timeout		Yes		

**Note:**

- When you create a VPC vRouter in ZStack Cloud, the cloud records whether the VPC vRouter is added to an HA group. Note that you can add the **haUuid** option to **SystemTags**.
 - Format of the **haUuid** option: `haUuid::HA_GROUP_UUID`
 - Example: `haUuid::e2af8f869eff49d2a3d6f86cadcc27090`
- When you create a VPC vRouter in ZStack Cloud, you can specify a public IP by adding the **staticVip** option to **SystemTags**.
 - Format of the **staticVip** option: `staticVip::L3UUID::IP`. Here, `L3UUID` is the L3 public network UUID in the vRouter offering, and `IP` is the public IP address that you specified.
 - Example: `staticVip::4ed5cce4f55a43aca8e61ebbc0c3985d::172.20.1.1`

5.3.4.3.2 QueryVpcRouter

Queries a VPC vRouter.

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.	Yes		2.3
name	The resource name.	Yes		2.3
description	The detailed description of the resource.	Yes		2.3
dns		Yes		2.3
clusterUuid	The cluster UUID.	Yes		2.3
defaultL3NetworkUuid		Yes		2.3
defaultRouteL3NetworkUuid		Yes		2.3
hostUuid	The host UUID.	Yes		2.3

Name	Description	Optional	Valid Value	Starting Version
imageUuid	The image UUID.	Yes		2.3
lastHostUuid		Yes		2.3
zoneUuid	The zone UUID.	Yes		2.3
rootVolumeUuid		Yes		2.3
publicNetworkUuid		Yes		2.3
managementNetworkUuid		Yes		2.3
instanceOfferingUuid		Yes		2.3
agentPort		Yes		2.3
allVolumes		Yes		2.3
platform		Yes		2.3
memorySize		Yes		2.3
allocatorStrategy		Yes	<ul style="list-style-type: none"> • DefaultHostAllocatorStrategy • LastHostPreferredLocatorStrategy • LeastVmPreferredHostAllocatorStrategy • MinimumCPUUsageHostAllocatorStrategy • MinimumMemoryUsageHostAllocatorStrategy • MaxInstancePerHostHostAllocatorStrategy 	2.3

Name	Description	Optional	Valid Value	Starting Version
			• Designated HostAllocatorStrategy	
applianceVmType		Yes		2.3
cpuSpeed		Yes		2.3
cpuNum		Yes		2.3
hypervisorType		Yes		2.3
virtualRouterVips		Yes		2.3
vmNics		Yes		2.3
createDate	The creation date.	Yes		2.3
lastOpDate	The last operation date.	Yes		2.3
type		Yes		2.3
state		Yes		2.3
status		Yes		2.3
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.3
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.3
timeout		Yes		

5.3.4.3.3 GetAttachableVpcL3Network

Obtains the L3 networks that can be attached by a VPC vRouter. For example,

```
GetAttachableVpcL3Network uuid=21fb8cf769804830b397b5ae1491f527
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The VPC vRouter UUID.			2.3
userTags	The user tags. For more information, see CreateUser Tag . The resource type is VirtualRouterVmVO.	Yes		2.3
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is VirtualRouterVmVO.	Yes		2.3
timeout		Yes		

5.3.4.3.4 GetVpcVRouterDistributedRoutingConnections

Obtains the real-time traffic state of a VPC vRouter. For example,

```
GetVpcVRouterDistributedRoutingConnections uuid=ae813073d37347098fd6d52b83bfbc2
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The VPC vRouter UUID. To obtain the real-time traffic state of a VPC vRouter			2.3

Name	Description	Optional	Valid Value	Starting Version
	, enable the distributed router.			
userTags	The user tags. For more information, see CreateUser Tag . The resource type is VirtualRouterVmVO.	Yes		2.3
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is VirtualRouterVmVO.	Yes		2.3
timeout		Yes		

5.3.4.3.5 GetVpcVRouterDistributedRoutingEnabled

Checks whether a distributed router is enabled. For example,

```
GetVpcVRouterDistributedRoutingEnabled uuid=ae813073d37347098fd6
d52b83bfbc2
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The VPC vRouter UUID.			2.3
userTags	The user tags. For more information, see CreateUser Tag . The resource type is VirtualRouterVmVO.	Yes		2.3
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.3

Name	Description	Optional	Valid Value	Starting Version
	emTag. The resource type is VirtualRouterVmVO.			
timeout		Yes		

5.3.4.3.6 SetVpcVRouterDistributedRoutingEnabled

Enables a distributed routing switch. For example,

```
SetVpcVRouterDistributedRoutingEnabled uuid=ae813073d37347098fd6
d52b83bfbc2 \
stateEvent=enable
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The VPC vRouter UUID.			2.3
stateEvent	The resource state.		<ul style="list-style-type: none"> Enable Disable 	2.3
userTags	The user tags. For more information, see CreateUser Tag . The resource type is VirtualRouterVmVO.	Yes		2.3
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is VirtualRouterVmVO.	Yes		2.3
timeout		Yes		

5.3.4.3.7 AddDnsToVpcRouter

Adds a DNS to a VPC vRouter. For example,

```
AddDnsToVpcRouter dns=1.1.1.1 uuid=ae813073d37347098fd6d52b83bfbc2d2
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The VPC vRouter UUID.			2.3
dns				2.3
resourceUuid		Yes		2.3
userTags	The user tags. For more information, see CreateUser Tag . The resource type is VirtualRouterVmVO.	Yes		2.3
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is VirtualRouterVmVO.	Yes		2.3
timeout		Yes		

5.3.4.3.8 RemoveDnsFromVpcRouter

Removes a DNS from a VPC vRouter. For example,

```
RemoveDnsFromVpcRouter dns=1.1.1.1 uuid=ae813073d37347098fd6d52b83bfbc2d2
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid				2.3
dns				2.3

Name	Description	Optional	Valid Value	Starting Version
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.3
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.3
timeout		Yes		

5.3.4.3.9 GetVpcVRouterNetworkServiceState

Obtains the network service state of a VPC vRouter. For example,

```
GetVpcVRouterNetworkServiceState uuid=bea67a0669434d23ba4da7bf73f07255
networkService=SNAT
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			3.4.0
networkService	The network service provided by the vRouter.	Yes	• SNAT	3.4.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.4.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.4.0
timeout		Yes		



Note:

- When you obtain the network service state of a VPC vRouter in ZStack Cloud, you can disable the SNAT service of the VPC vRouter by adding the **disabledService** option to **SystemTags**.
 - Format of the **disabledService** option: disabledService::SNAT
 - Example: disabledService::SNAT
 - If the **SystemTag** of the VPC vRouter does not contain the `resourceType::VirtualRouterVmVO` flag, the SNAT service of the VPC vRouter is enabled. Otherwise, if the **SystemTag** contains the `resourceType::VirtualRouterVmVO` flag, the SNAT service is disabled.

5.3.4.3.10 SetVpcVRouterNetworkServiceState

Sets the network service of a VPC vRouter. For example,

```
SetVpcVRouterNetworkServiceState uuid=bea67a0669434d23ba4da7bf73f07255
networkService=SNAT state=enable
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			3.4.0
networkService	The network service provided by the vRouter.	Yes	• SNAT	3.4.0
state	The service state.	Yes	• Enable • Disable	3.4.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.4.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.4.0
timeout		Yes		



Note:

- When you obtain the network service state of a VPC vRouter in ZStack Cloud, you can disable the SNAT service of the VPC vRouter by adding the **disabledService** option to **SystemTags**.
 - Format of the **disabledService** option: disabledService::SNAT
 - Example: disabledService::SNAT
 - If the **SystemTag** of the VPC vRouter does not contain the `resourceType::VirtualRouterVmVO` flag, the SNAT service of the VPC vRouter is enabled. Otherwise, if the **SystemTag** contains the `resourceType::VirtualRouterVmVO` flag, the SNAT service is disabled.

5.3.4.3.11 ChangeVpcHaGroupMonitorIps

Changes a monitor IP address in an HA group. For example,

```
ChangeVpcHaGroupMonitorIps uuid=85ba2342e37930f6a0cdd056565654cd
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			3.5.1
monitorIps		Yes		3.5.1
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.5.1
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.5.1
timeout		Yes		

5.3.4.3.12 CreateVpcHaGroup

Creates an HA group. For example,

```
CreateVpcHaGroup uuid=d32cd856d4603754aa30d8fe60ea07a4
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
name	The resource name.			3.5.1
description	The detailed description of the resource.	Yes		3.5.1
monitorIps		Yes		3.5.1
resourceUuid		Yes		3.5.1
tagUuids	The tag UUID list.	Yes		3.5.1
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.5.1
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.5.1
timeout		Yes		

5.3.4.3.13 DeleteVpcHaGroup

Deletes an HA group. For example,

```
DeleteVpcHaGroup uuid=b86c9016b4f24953a9edefb53ca0678c
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			3.5.1
deleteMode		Yes		3.5.1

Name	Description	Optional	Valid Value	Starting Version
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.5.1
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.5.1
timeout		Yes		

5.3.4.3.14 UpdateVpcHaGroup

Updates an HA group. For example,

```
UpdateVpcHaGroup uuid=5ddaa8fa444c3b0a8e9187d87eb026f6
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			3.5.1
name	The resource name.	Yes		3.5.1
description	The detailed description of the resource.	Yes		3.5.1
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.5.1
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.5.1
timeout		Yes		

5.3.4.3.15 QueryVpcHaGroup

Queries an HA group. For example,

```
QueryVpcHaGroup
```

Primitive Fields of Query

See [VPC HA Group Inventory](#).

Nested and Expanded Fields of Query

Field	Inventory	Description	Starting Version
monitors	Monitors	The monitor IP address list.	3.5.1
services	Services	The UUID of the network service that is associated with the HA group.	3.5.1
usedIps	Used IP Addresses	The public IP address of the HA group.	3.5.1
vrRefs	vRouter References	The UUID of the VPC vRouter that joins the HA group.	3.5.1

5.3.4.3.16 UpdateVirtualRouter

Updates a virtual router. For example,

```
UpdateVirtualRouter vmInstanceId=142981c8c8243113b52db453575fb03f
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
vmInstanceId	The resource UUID.			3.9.0
defaultRouteL3NetworkUuid		Yes		3.9.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.9.0

Name	Description	Optional	Valid Value	Starting Version
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.9.0
timeout		Yes		

5.3.4.3.17 GetRouteTableVpcVRouterCandidate

Retrieves available VPC vRouters for a router table.

```
GetRouteTableVpcVRouterCandidate uuid=142981c8c8243113b52db453575fb03f
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
userTags	The user tags. For more information, see CreateUserTag .	Yes		4.2.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		4.2.0
timeout		Yes		

5.3.4.4 Tags

VPC Network Tags

You can create a user tag on a VPC network by using `resourceType=L3NetworkVO`. For example,

```
CreateUserTag resourceType=L3NetworkVO tag=web-vpc-l3 \
resourceUuid=3533e0dcd01d4e2aa8697048e152c5d8
```

VPC vRouter Tags

You can create a user tag on a VPC vRouter by using `resourceType=VirtualRouterVmVO`. For example,

```
CreateUserTag resourceType=VirtualRouterVmVO tag=web-vpc-vrouter \
```

```
resourceUuid=ae813073d37347098fd6d52b83bfbc2
```

5.3.5 OSPF

5.3.5.1 Overview

Open Shortest Path First (OSPF): An OSPF is an interior gateway protocol of link states and is used to distribute routing information within a single autonomous system (AS). An OSPF is widely used in a data center network and a campus network.

5.3.5.2 Inventory

vRouter OSPF Area Inventory

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			3.4.0
areaid	The area ID.			3.4.0
authentication				3.4.0
keyId	The key ID when the authentication mode is MD5 checksum.			3.4.0
password	The password when the authentication mode is plaintext.			3.4.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.4.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.4.0
groupBy				3.4.0

Name	Description	Optional	Valid Value	Starting Version
createDate	The creation date. For more information, see Resource Property .			3.4.0
lastOpDate	The last operation date. For more information, see Resource Property .			3.4.0
type	The type.			3.4.0

vRouter OSPF Network Inventory

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			3.4.0
L3NetworkUuid	The L3 network UUID of the VM instance. For more information, see L3 Network .			3.4.0
routerAreaUuid	The router area UUID.			3.4.0
vRouterUuid	The router UUID.			3.4.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.4.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.4.0
groupBy				3.4.0

Name	Description	Optional	Valid Value	Starting Version
createDate	The creation date. For more information, see Resource Property .			3.4.0
lastOpDate	The last operation date. For more information, see Resource Property .			3.4.0

5.3.5.3 Operations

5.3.5.3.1 CreateVRouterOspfArea

Creates a router OSPF area resource. For example,

```
CreateVRouterOspfArea areaId=1
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
areaid	The area ID.			3.4.0
areaAuth	The authentication mode of the OSPF area.	Yes		3.4.0
areaType	The area type.	Yes		3.4.0
password	The password when the authentication mode is plaintext.	Yes		3.4.0
keyId	The key ID when the authentication mode is MD5 checksum.	Yes		3.4.0
resourceUuid	The area resource UUID.	Yes		3.4.0
tagUuids	The tag UUID list.	Yes		3.4.0

Name	Description	Optional	Valid Value	Starting Version
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.4.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.4.0
timeout		Yes		

5.3.5.3.2 DeleteVRouterOspfArea

Deletes a router OSPF area. For example,

```
DeleteVRouterOspfArea uuid=8c7d2c714e1231549dd2a66a3f140ae5
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			3.4.0
deleteMode		Yes		3.4.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.4.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.4.0
timeout		Yes		

5.3.5.3.3 GetVRouterOspfNeighbor

Obtains the neighboring information about the OSPF. For example,

```
GetVRouterOspfNeighbor vRouterUuid=dfb6151287b632599becfc5716b8c374
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
vRouterUuid	The router UUID.			3.4.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.4.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.4.0
timeout		Yes		

5.3.5.3.4 QueryVRouterOspfArea

Queries information about a router OSPF area. For example,

```
QueryVRouterOspfArea
```

Primitive Fields of Query

See [vRouter OSPF Area Inventory](#).

5.3.5.3.5 GetVRouterRouterId

Obtains a router ID. For example,

```
GetVRouterRouterId vRouterUuid=9b8b08cd553c3fd1ba4efc3e6c98512d
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
vRouterUuid	The router UUID.			3.4.0
userTags	The user tags. For more	Yes		3.4.0

Name	Description	Optional	Valid Value	Starting Version
	information, see CreateUserTag .			
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.4.0
timeout		Yes		


Note:

- When you obtain a router ID in ZStack Cloud, you can obtain the routerID of the router in OSPF by adding the **routeProtocolRouterId** option to **SystemTags**.
 - Format of the **routeProtocolRouterId** option: `routeProtocolRouterId::xxxx`
 - Example: `routeProtocolRouterId::1.1.1.1`

5.3.5.3.6 SetVRouterRouterId

Sets a router ID. For example,

```
SetVRouterRouterId vRouterUuid=9b8b08cd553c3fd1ba4efc3e6c98512d
routerId=10.10.10.1
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
vRouterUuid	The router UUID.			3.4.0
routerId	The router ID in IP address format .			3.4.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.4.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.4.0

Name	Description	Optional	Valid Value	Starting Version
timeout		Yes		

**Note:**

- When you set a router ID in ZStack Cloud, you can use the routerID of the router in OSPF by adding the **routeProtocolRouterId** option to **SystemTags**.
 - Format of the **routeProtocolRouterId** option: `routeProtocolRouterId::xxxx`
 - Example: `routeProtocolRouterId::1.1.1.1`

5.3.5.3.7 AddVRouterNetworksToOspfArea

Adds a network to an OSPF area. For example,

```
AddVRouterNetworksToOspfArea routerAreaUuid=d397110ba793345797e3
3bc6ed3db65f vRouterUuid=b02959e102353bfd9fd14a149fa20565 l3NetworkU
uids=202258e4c4893f85a6b5baa7b8b55bb0
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
routerAreaUuid	The router area UUID.			3.4.0
vRouterUuid	The VPC vRouter UUID.			3.4.0
l3NetworkUuids	The L3 network UUID.			3.4.0
resourceUuid	The resource UUID.	Yes		3.4.0
tagUuids	The tag UUID list.	Yes		3.4.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.4.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.4.0

Name	Description	Optional	Valid Value	Starting Version
timeout		Yes		

5.3.5.3.8 RemoveVRouterNetworksFromOspfArea

Removes a network from a router area. For example,

```
RemoveVRouterNetworksFromOspfArea uuids=ad747eefbaf534d4a46822cc02fd32
9a
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuids	The UUIDs in the network area table.			3.4.0
deleteMode		Yes		3.4.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.4.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.4.0
timeout		Yes		

5.3.5.3.9 UpdateVRouterOspfArea

Updates the property of a router OSPF area. For example,

```
UpdateVRouterOspfArea uuid=b90552421b6a390fa55da5b489a53e32
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			3.4.0
areaAuth	The area authentication mode.	Yes		3.4.0

Name	Description	Optional	Valid Value	Starting Version
areaType	The area type.	Yes		3.4.0
password	The password that is used for area authentication.	Yes		3.4.0
keyId	The key ID that is used for area authentication.	Yes		3.4.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.4.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.4.0
timeout		Yes		

5.3.5.3.10 QueryVRouterOspfNetwork

Queries the network information about the area to which a router is added. For example,

```
QueryVRouterOspfNetwork
```

Primitive Fields of Query

See [vRouter OSPF Network Inventory](#).

5.3.5.4 Tags

OSPF Tags

You can create a user tag on OSPF by using `resourceType=OSPFVO`. For example,

```
CreateUserTag resourceType=OSPFVO tag=OSPF-1 \
```

```
resourceUuid=3533e0dc01d4e2aa8697048e152c5d8
```

5.3.6 Multicast Routing

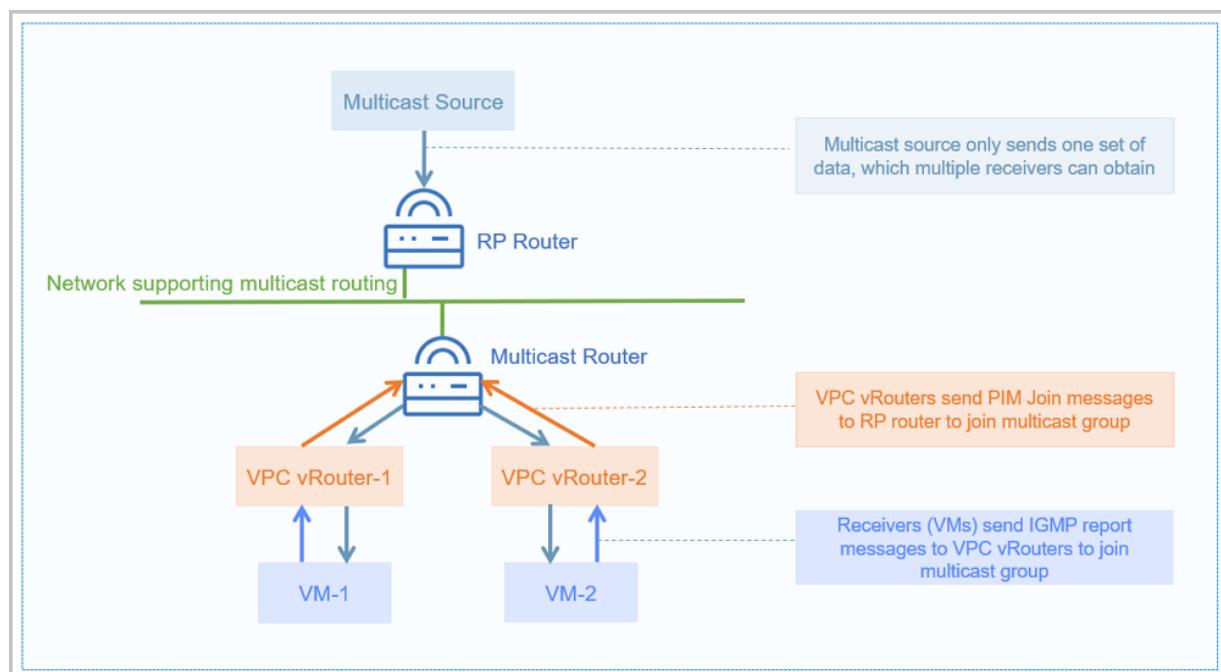
5.3.6.1 Overview

A multicast routing is a networking method for efficient distribution of one-to-many traffics. In ZStack Cloud, VPC vRouters receive multicast information sent by multicast sources and forward the information to VM instances to realize one-to-many connections on senders and receivers.

- ZStack Cloud allows you to use VM instances as the multicast information receivers, and to use VPC vRouters as multicast routers to participate in the multicast routing message exchanges.
- VPC vRouters support the PIM-SM/PIM-SSM protocol. In the PIM-SM protocol, RP routers are the key devices in the PIM-SM domain. You can either manually configure RP addresses or dynamically elect or assign RP addresses according to the BSR mechanism.

The multicast routing topology is shown in [Multicast Routing Topology](#).

Figure 5-27: Multicast Routing Topology



5.3.6.2 Inventory

Multicast Router Inventory

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			3.7.0
state				3.7.0
description	The description. For more information, see Resource Property .	Yes		3.7.0
groupBy	Groups rows into subgroups based on values of columns or expressions. This field is equivalent to the Group By clause in MySQL, such as <code>groupBy =type</code> .	Yes		3.7.0
createDate	The creation date. For more information, see Resource Property .			3.7.0
lastOpDate	The last operation date. For more information, see Resource Property .			3.7.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.7.0
systemTags	The system tags. For more	Yes		3.7.0

Name	Description	Optional	Valid Value	Starting Version
	information, see CreateSystemTag .			

Sample

```
{
    "inventories": [],
    "success": true
}
```

5.3.6.3 Operations

5.3.6.3.1 CreateMulticastRouter

Creates a multicast router. For example,

```
CreateMulticastRouter vpcRouterVmUuid=974c38ae483737c3b4ded18de56773b6
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
vpcRouterVmUuid				3.7.0
description	The detailed description of the resource.	Yes		3.7.0
resourceUuid		Yes		3.7.0
tagUuids	The tag UUID list.	Yes		3.7.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.7.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.7.0
timeout		Yes		

5.3.6.3.2 DeleteMulticastRouter

Deletes a multicast router. For example,

```
DeleteMulticastRouter uuid=cce17d3b823933a8b0694af5159fed4d
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			3.7.0
deleteMode		Yes		3.7.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.7.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.7.0
timeout		Yes		

5.3.6.3.3 QueryMulticastRouter

Queries a multicast router. For example,

```
QueryMulticastRouter
```

Primitive Fields of Query

See [Multicast Router Inventory](#).

Nested and Expanded Fields of Query

Field	Inventory	Description	Starting Version
rpGroups	RP Group Inventory	The RP group of the multicast router.	3.7.0
vpcVrs	VPC vRouters Inventory	The VPC vRouter associated with the multicast router.	3.7.0

5.3.6.3.4 ChangeMulticastRouterState

Changes the state of a multicast router. For example,

```
ChangeMulticastRouterState uuid=0cbf995f538b3aed855e3e50ea38eb0c
stateEvent=enable
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			3.7.0
stateEvent			<ul style="list-style-type: none"> Enable Disable 	3.7.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.7.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.7.0
timeout		Yes		

5.3.6.3.5 GetVpcMulticastRoute

Obtains a list of multicast routes. For example,

```
GetVpcMulticastRoute uuid=a880287e652d3137a9f7349dc7f65a49
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			3.7.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.7.0
systemTags	The system tags. For more	Yes		3.7.0

Name	Description	Optional	Valid Value	Starting Version
	information, see CreateSystemTag .			
timeout		Yes		

5.3.6.3.6 AddRendezvousPointToMulticastRouter

Adds a static rendezvous point (RP) address to a multicast router. For example,

```
AddRendezvousPointToMulticastRouter uuid=9127988e024a3a87865e
fcd1381d8fd4 rpAddress=1.2.3.4 groupAddress=239.0.0.1/32
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			3.7.0
rpAddress				3.7.0
groupAddress				3.7.0
resourceUuid		Yes		3.7.0
tagUuids	The tag UUID list.	Yes		3.7.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.7.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.7.0
timeout		Yes		

5.3.6.3.7 RemoveRendezvousPointFromMulticastRouter

Removes a static rendezvous point (RP) address from a multicast router. For example,

```
RemoveRendezvousPointFromMulticastRouter uuid=b0efeaec578931d49c6c
8b457287e1db rpAddress=1.2.3.4 groupAddress=239.1.1.1/32
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			3.7.0
rpAddress				3.7.0
groupAddress				3.7.0
deleteMode		Yes		3.7.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.7.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.7.0
timeout		Yes		

5.3.6.4 Tags

Multicast Router Tags

You can create a user tag on a multicast router by using `resourceType=MulticastRouterVO`. For example,

```
CreateUserTag resourceType=MulticastRouterVO tag=MulticastRouter-user
\ resourceUuid=3533e0dc01d4e2aa8697048e152c5d8
```

5.3.7 Policy Routing

5.3.7.1 Overview

A policy routing is a network technique used to make routing decisions based on policy route rule sets. You can match packets between a destination port and a source port, or match a destination

h IP address with the source IP address by configuring a group of policy route rules. You can also configure route tables and route entries to send your business data packets to destination addresses according to the specified route paths.

5.3.7.2 Inventory

Policy Route Rule Set Inventory

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			3.6.0
name	The name. For more information, see Resource Property .			3.6.0
description	The description. For more information, see Resource Property .	Yes		3.6.0
rules	The policy route rule.			3.6.0
groupBy	Groups rows into subgroups based on values of columns or expressions. This field is equivalent to the Group By clause in MySQL, such as <code>groupBy =type</code> .	Yes		3.6.0
createDate	The creation date. For more information, see Resource Property .			3.6.0
lastOpDate	The last operation date. For more			3.6.0

Name	Description	Optional	Valid Value	Starting Version
	information, see Resource Property .			
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.6.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.6.0

Sample

```
{
  "inventories": [
    {
      "name": "name",
      "description": "example-des",
      "rules": [
        {
          "uuid": "2e05ab3c36323487baea2414005817ee",
          "ruleNumber": 1.0,
          "ruleSetUuid": "4c86543d473f3127885b3ffc8be5ec88",
          "tableUuid": "d2ad1f7ad9aa354e8da24829bbd31a05",
          "destIp": "192.168.1.1",
          "sourceIp": "10.0.0.1",
          "destPort": "22",
          "sourcePort": "80",
          "protocol": "tcp",
          "state": "enable"
        }
      ]
    }
  ]
}
```

Policy Route Rule Set and L3 Network Reference Inventory

Name	Description	Optional	Valid Value	Starting Version
id				3.6.0
l3NetworkUuid	The L3 network UUID.			3.6.0

Name	Description	Optional	Valid Value	Starting Version
ruleSetUuid	The UUID of the policy route rule set.			3.6.0
groupBy	Groups rows into subgroups based on values of columns or expressions. This field is equivalent to the Group By clause in MySQL, such as <code>groupBy =type</code> .	Yes		3.6.0
createDate	The creation date. For more information, see Resource Property .			3.6.0
lastOpDate	The last operation date. For more information, see Resource Property .			3.6.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.6.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.6.0

Sample

```
{
  "inventories": [
    {
      "id": 1.0,
      "l3NetworkUuid": "764cba1766563fd683ef1fcf76c7295c",
      "ruleSetUuid": "ddb87b28f0253810b753fc9ae62ebd31"
    }
  ]
}
```

```
}
```

Policy Route Rule Set and vRouter Reference Inventory

Name	Description	Optional	Valid Value	Starting Version
id				3.6.0
vRouterUuid	The vRouter UUID.			3.6.0
ruleSetUuid	The UUID of the policy route rule set.			3.6.0
groupBy	Groups rows into subgroups based on values of columns or expressions. This field is equivalent to the Group By clause in MySQL, such as groupBy =type.	Yes		3.6.0
createDate	The creation date. For more information, see Resource Property .			3.6.0
lastOpDate	The last operation date. For more information, see Resource Property .			3.6.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.6.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.6.0

Sample

```
{
  "inventories": [
    {
      "id": 1.0,
      "vRouterUuid": "8715faa19cb03995a864330766fdc77c",
      "ruleSetUuid": "2e27f9015ad3357996546fd51c2d808e"
    }
  ]
}
```

Policy Route Table Inventory

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			3.6.0
tableNumber	The route table No.			3.6.0
routes	The rule.			3.6.0
groupBy	Groups rows into subgroups based on values of columns or expressions. This field is equivalent to the Group By clause in MySQL, such as groupBy =type.	Yes		3.6.0
createDate	The creation date. For more information, see Resource Property .			3.6.0
lastOpDate	The last operation date. For more information, see Resource Property .			3.6.0
userTags	The user tags. For more	Yes		3.6.0

Name	Description	Optional	Valid Value	Starting Version
	information, see CreateUserTag .			
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.6.0

Samples

```
{
  "inventories": [
    {
      "uuid": "6e39025e9eb432fda488f19e7104fdf0",
      "tableNumber": 1.0,
      "description": "example-des",
      "routes": [
        {
          "tableUuid": "90f075232c383565ac3dbc09554c4152",
          "destinationCidr": "192.168.1.0/24",
          "nextHopIp": "192.168.1.1",
          "distance": 1.0
        }
      ]
    }
  ]
}
```

Policy Route Table and vRouter Reference Inventory

Name	Description	Optional	Valid Value	Starting Version
id				3.6.0
tableUuid	The policy route table UUID.			3.6.0
vRouterUuid	The vRouter UUID.			3.6.0
groupBy	Groups rows into subgroups based on values of columns or expressions. This field is equivalent to the Group By clause in MySQL	Yes		3.6.0

Name	Description	Optional	Valid Value	Starting Version
	, such as groupBy =type.			
createDate	The creation date. For more information, see Resource Property .			3.6.0
lastOpDate	The last operation date. For more information, see Resource Property .			3.6.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.6.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.6.0

Sample

```
{
  "inventories": [
    {
      "id": 1.0,
      "tableUuid": "cc3bb710f9d43cedb044213253363604",
      "vRouterUuid": "f281299552813438acc3c5a400802a78"
    }
  ]
}
```

Policy Route Table Route Entry Inventory

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			3.6.0

Name	Description	Optional	Valid Value	Starting Version
tableUuid	The policy route table UUID.			3.6.0
destinationCidr	The destination CIDR.			3.6.0
nextHopIp	The next hop IP address.			3.6.0
distance	The priority.			3.6.0
groupBy	Groups rows into subgroups based on values of columns or expressions. This field is equivalent to the Group By clause in MySQL, such as <code>groupBy =type</code> .	Yes		3.6.0
createDate	The creation date. For more information, see Resource Property .			3.6.0
lastOpDate	The last operation date. For more information, see Resource Property .			3.6.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.6.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.6.0

Sample

```
{
  "inventories": [
    {
      "tableUuid": "49bf5678360b38058ab7096715e219f4",
      "destinationCidr": "192.168.1.0/24",
      "nextHopIp": "192.168.1.1",
      "distance": 1.0
    }
  ]
}
```

Policy Route Rule Inventory

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			3.6.0
ruleNumber	The priority.			3.6.0
ruleSetUuid	The UUID of the policy route rule set.			3.6.0
tableUuid	The policy route table UUID.			3.6.0
destIp	The destination IP address.			3.6.0
sourceIp	The source IP address.			3.6.0
destPort	The destination port.			3.6.0
sourcePort	The source port.			3.6.0
groupBy	Groups rows into subgroups based on values of columns or expressions. This field is equivalent to the Group By clause in MySQL, such as <code>groupBy =type</code> .	Yes		3.6.0

Name	Description	Optional	Valid Value	Starting Version
createDate	The creation date. For more information, see Resource Property .			3.6.0
lastOpDate	The last operation date. For more information, see Resource Property .			3.6.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.6.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.6.0

Sample

```
{
  "inventories": [
    {
      "uuid": "538840755c1a36e0b79f1d04097b252e",
      "ruleNumber": 1.0,
      "ruleSetUuid": "7cb413c84b243290a7105e8c21f42b59",
      "tableUuid": "d29940b692f33c0eaf96b0193029636c",
      "destIp": "192.168.1.1",
      "sourceIp": "80",
      "destPort": "22",
      "protocol": "tcp",
      "state": "enable"
    }
  ]
}
```

{}

5.3.7.3 Operations

5.3.7.3.1 CreatePolicyRouteRuleSet

Creates a policy route rule set. For example,

```
CreatePolicyRouteRuleSet name=name vRouterUuid=74cc4fed46f633f2a618
b0e06d122377
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
name	The resource name.			3.6.0
description	The detailed description of the resource.	Yes		3.6.0
vRouterUuid	The vRouter UUID.			3.6.0
type		Yes	<ul style="list-style-type: none"> User EgressWhereComeFrom 	3.9.0
resourceUuid		Yes		3.6.0
tagUuids	The tag UUID list.	Yes		3.6.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.6.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.6.0
timeout		Yes		

5.3.7.3.2 DeletePolicyRouteRuleSet

Deletes a policy route rule set. For example,

```
DeletePolicyRouteRuleSet uuid=f430004bc0ed315c89eb7909a48d27e7
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			3.6.0
deleteMode	The delete mode.	Yes		3.6.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.6.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.6.0
timeout		Yes		

5.3.7.3.3 UpdatePolicyRouteRuleSet

Updates the property of a policy route rule set. For example,

```
UpdatePolicyRouteRuleSet uuid=e58212f4cd0c3f2f96d27dde19de1383 name= name1
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			3.6.0
name	The resource name.	Yes		3.6.0
description	The detailed description of the resource.	Yes		3.6.0
userTags	The user tags. For more	Yes		3.6.0

Name	Description	Optional	Valid Value	Starting Version
	information, see CreateUserTag .			
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.6.0
timeout		Yes		

5.3.7.3.4 QueryPolicyRouteRuleSet

Queries a policy route rule set. For example,

```
QueryPolicyRouteRuleSet
```

Primitive Fields of Query

See [Policy Route Rule Set Inventory](#).

5.3.7.3.5 QueryPolicyRouteRuleSetL3Ref

Queries the reference between a policy route rule set and a network. For example,

```
QueryPolicyRouteRuleSetL3Ref
```

Primitive Fields of Query

See [Policy Route Rule Set and L3 Network Reference Inventory](#).

5.3.7.3.6 QueryPolicyRouteRuleSetVRouterRef

Queries the reference between a policy route rule set and a single node vRouter. For example,

```
QueryPolicyRouteRuleSetVRouterRef
```

Primitive Fields of Query

See [Policy Route Rule Set and vRouter Reference Inventory](#).

5.3.7.3.7 CreatePolicyRouteRule

Creates a policy route rule. For example,

```
CreatePolicyRouteRule ruleSetUuid=ec2472bf205931318e02a2bb5356c0ee
tableUuid=b4c03beba98c3502ac53d784dd9bfe61 ruleNumber=1001.0
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
ruleSetUuid	The UUID of the policy route rule set.			3.6.0
tableUuid	The policy route table UUID.			3.6.0
ruleNumber	The rule priority.			3.6.0
destIp	The destination IP address.	Yes		3.6.0
sourceIp	The source IP address.	Yes		3.6.0
destPort	The destination port.	Yes		3.6.0
sourcePort	The source port.	Yes		3.6.0
protocol	The protocol.	Yes		3.6.0
resourceUuid		Yes		3.6.0
tagUuids	The tag UUID list.	Yes		3.6.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.6.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.6.0
timeout		Yes		

5.3.7.3.8 DeletePolicyRouteRule

Deletes a policy route rule. For example,

```
DeletePolicyRouteRule uuid=b02689c3b5513b8db2bb5f45a8c7b169
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			3.6.0
deleteMode		Yes		3.6.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.6.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.6.0
timeout		Yes		

5.3.7.3.9 CreatePolicyRouteTable

Creates a policy route table. For example,

```
CreatePolicyRouteTable vRouterUuid=efe77450940f3dfe9023f2589fdeda25
number=1.0
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
vRouterUuid	The vRouter UUID.			3.6.0
number	The table number.			3.6.0
description	The detailed description of the resource.	Yes		3.6.0
resourceUuid		Yes		3.6.0

Name	Description	Optional	Valid Value	Starting Version
tagUuids	The tag UUID list.	Yes		3.6.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.6.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.6.0
timeout		Yes		

5.3.7.3.10 DeletePolicyRouteTable

Deletes a policy route table. For example,

```
DeletePolicyRouteTable uuid=4c24bf6b15d3338ab1d66eac97eec58b
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			3.6.0
deleteMode		Yes		3.6.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.6.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.6.0
timeout		Yes		

5.3.7.3.11 QueryPolicyRouteTable

Queries a policy route table. For example,

```
QueryPolicyRouteTable
```

Primitive Fields of Query

See [Policy Route Table Inventory](#).

5.3.7.3.12 QueryPolicyRouteTableVRouterRef

Queries the reference between a policy route table and a single node vRouter. For example,

```
QueryPolicyRouteTableVRouterRef
```

Primitive Fields of Query

See [Policy Route Table and vRouter Reference Inventory](#).

5.3.7.3.13 CreatePolicyRouteTableRouteEntry

Creates a policy route. For example,

```
CreatePolicyRouteTableRouteEntry tableUuid=ef44a453884a3b93867d  
6ec0b7dd5716 destinationCidr=192.168.1.0/24 nextHopIp=192.168.1.1
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
tableUuid	The policy route table UUID.			3.6.0
destinationCidr	The destination CIDR address.			3.6.0
nextHopIp	The next hop IP address.			3.6.0
distance	The priority.	Yes		3.6.0
resourceUuid		Yes		3.6.0
tagUuids	The tag UUID list.	Yes		3.6.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.6.0

Name	Description	Optional	Valid Value	Starting Version
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.6.0
timeout		Yes		

5.3.7.3.14 DeletePolicyRouteTableRouteEntry

Deletes a route entry of a policy route. For example,

```
DeletePolicyRouteTableRouteEntry uuid=7e28a7059fb33a8bb2d7c61b7951303e
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			3.6.0
deleteMode				3.6.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.6.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.6.0
timeout		Yes		

5.3.7.3.15 QueryPolicyRouteTableRouteEntry

Queries a policy route. For example,

```
QueryPolicyRouteTableRouteEntry
```

Primitive Fields of Query

See [Policy Route Table Route Entry Inventory](#).

5.3.7.3.16 QueryPolicyRouteRule

Queries a policy route rule. For example,

```
QueryPolicyRouteRule
```

Primitive Fields of Query

See [Policy Route Rule Inventory](#).

5.3.7.3.17 AttachPolicyRouteRuleSetToL3

Attaches a policy route rule set to an L3 network. For example,

```
AttachPolicyRouteRuleSetToL3 l3Uuid=1e6eb259093e3fa2a30c837ae69d259c  
ruleSetUuid=8748b8be922938bbb430ed9cbe3e4e46
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
l3Uuid	The L3 network UUID.			3.6.0
ruleSetUuid	The UUID of the policy route rule set.			3.6.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.6.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.6.0
timeout		Yes		

5.3.7.3.18 DetachPolicyRouteRuleSetFromL3

Detaches a policy route rule set from an L3 network. For example,

```
DetachPolicyRouteRuleSetFromL3 l3Uuid=1e6eb259093e3fa2a30c837ae69d259c
ruleSetUuid=8748b8be922938bbb430ed9cbe3e4e46
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
l3Uuid	The L3 network UUID.			3.6.0
ruleSetUuid	The UUID of the policy route rule set.			3.6.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.6.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.6.0
timeout		Yes		

5.3.7.3.19 GetPolicyRouteRuleSetFromVirtualRouter

Obtains the policy route rule set from a virtual router. For example,

```
GetPolicyRouteRuleSetFromVirtualRouter vmInstanceUuid=de191bb7f4
763ce580fd7e2ed457cde8
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
vmInstanceUuid	The VM instance UUID.			3.9.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.9.0

Name	Description	Optional	Valid Value	Starting Version
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.9.0
timeout		Yes		

5.3.7.4 Tags

- You can create a user tag on a policy route rule set by using `resourceType=PolicyRouteRuleSetVO`. For example,

```
CreateUserTag resourceType=PolicyRouteRuleSetVO tag=golden-
ResourceStack
resourceUuid=74cc4fed46f633f2a618b0e06d122377
```

- You can create a user tag on a policy route rule by using `resourceType=PolicyRouteRuleVO`. For example,

```
CreateUserTag resourceType=PolicyRouteRuleVO tag=golden-ResourceSt
ack
resourceUuid=ec2472bf205931318e02a2bb5356c0ee
```

- You can create a user tag on a policy route by using `resourceType=PolicyRouteTableRouteEntryVO`. For example,

```
CreateUserTag resourceType=PolicyRouteTableRouteEntryVO tag=golden-
ResourceStack
resourceUuid=f44a453884a3b93867d6ec0b7dd5716
```

5.4 Network Service

5.4.1 Overview

ZStack Cloud provides VM instances with multiple network resources, including VPC firewall, security group, virtual IP address (VIP), elastic IP address (EIP), port forwarding, IPsec tunnel, load balancing, and flow monitoring.

ZStack Cloud supports the following three network models:

- Flat network
- vRouter network
- VPC

Network Service Module

Network Service Module provides a group of network services. Note that this module has been hidden on the UI.

Network Service Module has the following four types:

1. Virtual Router Network Service Module (Not recommended)

Provides various network services: DNS, SNAT, load balancing, port forwarding, EIP, and DHCP.

2. Flat Network Service Module (Flat Network Service Provider)

Provides the following network services:

- User Data: Customizes some parameters, such as `ssh-key` injection. By running `cloud-init`, these parameters will be loaded and injected into your VM instance when the VM instance is started.
- EIP: Is realized by distributed EIP to access private networks through public networks.
- DHCP: Is realized by distributed DHCP to dynamically obtain an IP address.



Note:

The DHCP service includes the DNS feature.

- VIP QoS: Adjusts the upstream bandwidth and downstream bandwidth, and can only be applied to EIPs.

3. vRouter Network Service Module

Provides the following network services:

- IPsec: Achieves VPN connections.
- vRouter route table: Manages custom routes.
- Centralized DNS: Is provided when the DHCP service is enabled.
- VIP QoS: Adjusts the upstream bandwidth and downstream bandwidth.
- DNS: Uses vRouters to provide the DNS service.
- SNAT: Enables VM instances to access directly the Internet.
- Load balancing: Distributes inbound traffics from a VIP to a group of backend VM instances. Then, unavailable VM instances will be detected and isolated automatically.
- Port forwarding: Forwards port traffics of specified public IP addresses to the ports of corresponding VM instances according to specified protocols.

- EIP: Uses vRouters to access private networks of VM instances through public networks.
- DHCP: Provides the centralized DHCP service.

4. Security Group Network Service Module

Provides the following network service:

- Security group: Manipulates securities of VM instance firewalls by using iptables.

Flat Network Practice

In your production environments, we recommend that you use the following combination of network services:

- Flat Network Service Module
 - User Data: Customizes some parameters, such as `ssh-key` injection. By running `cloud-init`, these parameters will be loaded and injected into your VM instance when the VM instance is started.
 - EIP: Is realized by distributed EIP can access private networks through public networks.
 - DHCP: Is realized by distributed DHCP to dynamically obtain an IP address.



Note:

The DHCP service includes the DNS feature.

- Security Group Network Service Module
 - Security group: Manipulates securities of VM instance firewalls by using iptables.

vRouter Network Practice

In your production environments, we recommend that you use the following combination of network services:

- Flat Network Service Module
 - User Data: Customizes some parameters, such as `ssh-key` injection. By running `cloud-init`, these parameters will be loaded and injected into your VM instance when the VM instance is started.
 - DHCP: DHCP allows you to dynamically obtain an IP address.
- vRouter Network Service Module
 - DNS: Uses vRouters to provide the DNS service.
 - SNAT: Allows VM instances to access directly the Internet.

- vRouter route table: Manages custom routes.
- EIP: Uses vRouters to access private networks of VM instances through public networks.
- Port forwarding: Forwards port traffics of specified public IP addresses to the ports of corresponding VM instances according to specified protocols.
- Load balancing: Distributes inbound traffics from a VIP to a set of backend VM instances. Then, unavailable VM instances will be detected and isolated automatically.
- IPsec: Achieves VPN connections.
- Security Group Network Service Module
 - Security group: Manipulates securities of VM instance firewalls by using iptables.

VPC Network Practice

In your production environments, we recommend that you use the following combination of network services:

- Flat Network Service Module
 - User Data: Customizes some parameters, such as `ssh-key` injection. By running `cloud-init`, these parameters will be loaded and injected into your VM instance when the VM instance is started.
 - DHCP: Is realized by distributed DHCP to dynamically obtain an IP address.
- vRouter Network Service Module
 - DNS: Uses VPC vRouters to provide DNS services.
 - SNAT: Allows VM instances to access directly the Internet.
 - vRouter route table: Manages custom routes.
 - EIP: Uses VPC vRouters to access private networks of VM instances through public networks.
 - Port forwarding: Forwards port traffics of specified public IP addresses to the ports of corresponding VM instances according to specified protocols.
 - Load balancing: Distributes inbound traffics from a VIP to a set of backend VM instances, and unavailable VM instances will be detected and isolated automatically.
 - IPsec: Achieves VPN connections.
- Security Group Network Service Module
 - Security group: Manipulates securities of VM instance firewalls by using iptables.

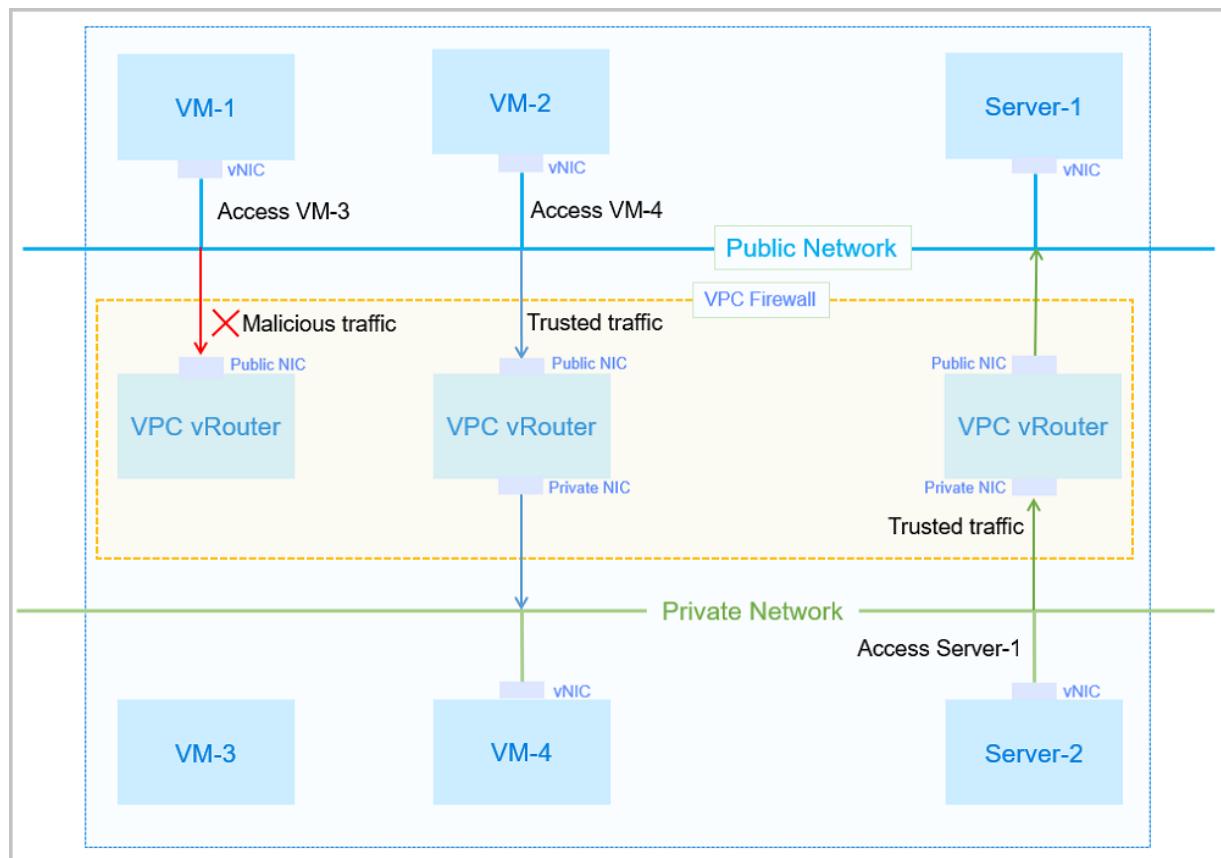
Advanced Network Services

- Dynamic routing: Uses the Open Shortest Path First (OSPF) routing protocol to distribute routing information within a single autonomous system. This service applies to VPC network scenarios.
- Multicast routing: Forwards the multicast information sent by the multicast source to VM instances, achieving one-to-multi-point communication in the transmission side and receiving side. This service applies to VPC network scenarios.
- VPC firewall: Filters the south-north traffic on the VPC vRouter ports, effectively protecting the VPC communication security and VPC vRouter security. This service applies to VPC network scenarios.
- Port mirroring: Copies and sends network traffics of VM NICs from a port to another port, and analyzes the business packets on the ports, better monitoring and managing the network data. This service applies to flat network, vRouter network, and VPC network scenarios.
- Netflow: Monitors and analyzes the inbound and outbound traffics of the VPC vRouter NICs. Currently, the following two types of data-flow output formats are supported: Netflow V5 and Netflow V9. This service applies to VPC network scenarios.

5.4.1.1 VPC Firewall

A VPC firewall manages the south-north traffics of VPC networks, and allows you to manage the access control policies by configuring rule sets and rules.

The VPC firewall topology is shown in [VPC Firewall](#).

Figure 5-28: VPC Firewall

- Assume that VM-1 attempts to access VM-3: The traffic from VM-1 will match the inbound rule set of the public NIC on the VPC vRouter. If malicious traffics are detected, the access is denied.
- Assume that VM-2 attempts to access VM-4: The traffic from VM-2 will match the inbound rule set of the public NIC on the VPC vRouter, and then will match the outbound rule set of the private NIC on the VPC vRouter. If trusted traffics are detected, the access is allowed.
- Assume that Server-2 attempts to access Server-1: The traffic from Server-2 will match the inbound rule set of the private NIC on the VPC vRouter, and then will match the outbound rule set of the public NIC on the VPC vRouter. If trusted traffics are detected, the access is allowed.

Difference between a VPC firewall and a security group: A VPC firewall manages the south-north traffic, and can be applied to the entire VPC. On the contrary, a security group mainly manages the east-west traffic, and can be applied to VM NICs. They can complement each other. The detailed differences are as follows.

Comparison	Security Group	VPC Firewall
Application scope	VM NIC	The entire VPC network

Comparison	Security Group	VPC Firewall
Deployment mode	Distributed	Centralized
Deployment location	VM instance	VPC vRouter
Configuration policy	Supports only allowed policies	Enables you to customize the accept policy, drop policy, or reject policy as needed
Priority	Takes effect according to the configuration sequence	Enables you to customize priorities
Matching rules	Source IP address, source port, and source protocol	Source IP address, source port, destination IP address, destination port, protocol, and packet status

Notice

When you use a VPC firewall, note the following:

- One VPC vRouter can be used to create only one VPC firewall.
- One NIC includes an inbound direction and an outbound direction. You can configure only one rule set for each direction.
- The control mechanism of a VPC vRouter will restrict external access to VM instances without an EIP. If you are using static routing or OSPF, note that the static routing and OSPF will not be available when the firewall with the priority 9999 is disabled. If you still want to use static routing and OSPF, add an inbound rule to the public network NIC.

When you use a rule set, note the following:

- One rule set can have up to 9999 rules attached.
- Only outbound rule sets can be created. Outbound rule sets apply to the outbound direction of the NIC.
- Exercise caution. The inbound and outbound directions of a rule set are designed for VPC vRouters.
- The inbound rule sets are created by the system by default. You can customize your rules in an inbound rule set, but you cannot delete inbound rule sets.
- The rule sets of the same outbound direction can be reused on multiple NICs.

When you use a rule, note the following:

- A rule is a part of a rule set, and cannot be reused on multiple rule sets.

- A system rule is a preconfigured rule that supports system services. The system rule has two priority ranges: 1-1000 and 4000-9999. The priority range of a custom rule is 1001-2999. The system reserved priority range is 3000-3999. Lower integers indicate higher priorities.
- System rules cannot be added, modified, or deleted.

5.4.1.2 Security Group

A security group serves as a virtual firewall for your VM instances to allow or deny incoming network traffic to, or outgoing network traffic from, multiple types of cloud resources. L3 network security controls are provided over your VM instances, and TCP, UDP, or ICMP data packets are managed for effective filtering. With the security group, you can effectively control specified VM instances on specified networks according to specified security rules.

- Flat networks, vRouter networks, and VPC support the security group service. The security group service is provided by the security group network service module. By using iptables, you can perform security controls over VM instances. This method also applies to flat networks, vRouter networks, and VPC.
- A security group is actually a distributed firewall. When you modify a rule, or when you add or delete a NIC, note that firewall rules in VM instances are updated as well.

Security group rule:

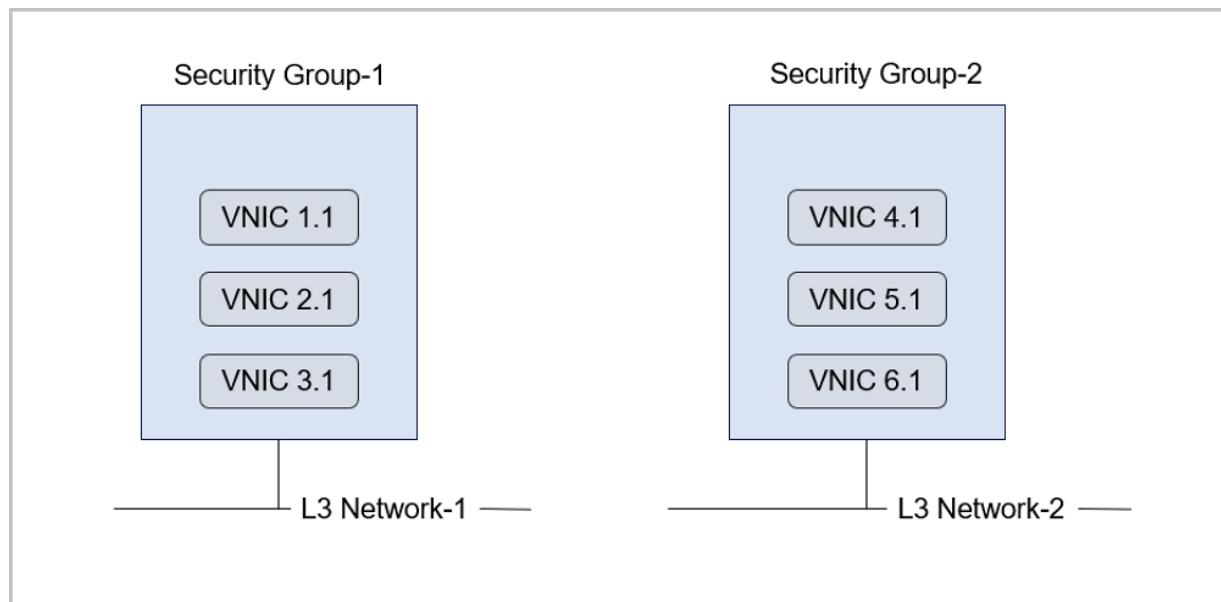
- A security group rule has the following two types of traffics according the direction of data packets:
 - Ingress: Represents inbound data packets that access a VM instance.
 - Egress: Represents outbound data packets that are sent from a VM instance.
- A security group rule supports the following protocol types:
 - ALL: Includes all protocol types, indicating that you cannot specify a port.
 - TCP: Supports ports 1-65535.
 - UDP: Supports ports 1-65535.
 - ICMP: By default, both the start port and end port are all -1, indicating that all ICMP protocols are supported.
- A security group rule can limit data sources that comes either from inside or outside of VM instances. Currently, sources can be set as source CIDR or source security group.
 - Source CIDR: Allows only the specified CIDR.
 - Source security group: Allows only the VM instances in a specified security group.

**Note:**

If you set both CIDR and the security group, note that only the intersection of them can take effect.

A security group topology is shown in [Figure 5-29: Security Group](#).

Figure 5-29: Security Group

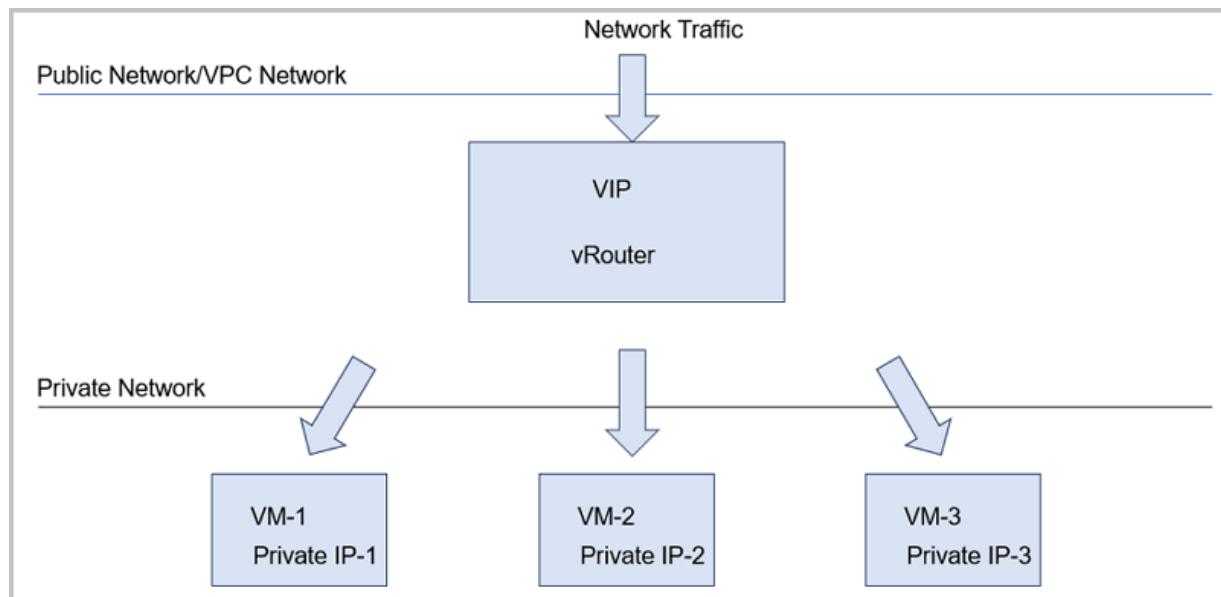


5.4.1.3 VIP

In a bridged networking environment, virtual IP addresses (VIPs) are used to provide a group of network services such as elastic IP address (EIP), port forwarding, load balancing, and IPsec tunnel. Packets will be sent to VIPs and then routed to the VM networks.

- The VIP created from a public network can be used to provide network services such as EIP and load balancing for flat networks.
- The VIP created from a public network can be used to provide network services, such as EIP, port forwarding, load balancing, and IPsec tunnel, for vRouter networks and VPC networks.
- The VIP created from a VPC network can be used to provide load balancing services for VPC networks.
- The VIP created from a flat network can be used to provide network services, such as EIP and load balancing, for flat networks.

The following is an example of providing the load balancing service by using a VIP, as shown in [Provide Load Balancing by Using VIP](#).

Figure 5-30: Provide Load Balancing by Using VIP

Definitions related to VIP:

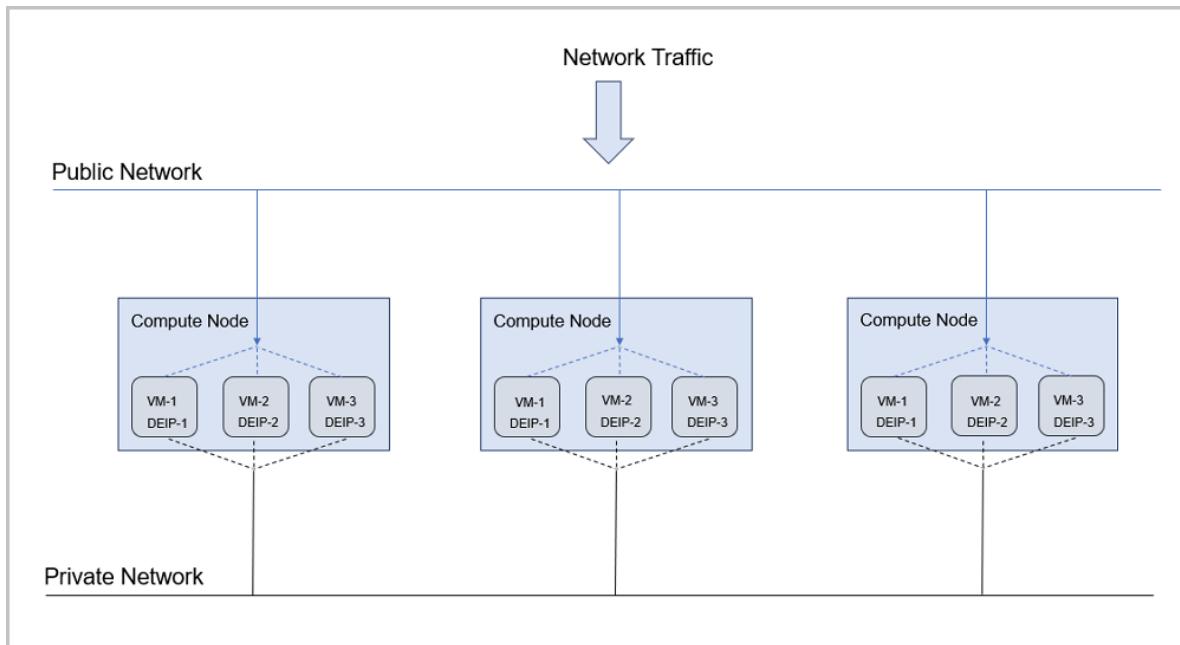
- Public VIP: The VIP created from a public network. A public VIP can be created manually, or created automatically by the Cloud after a vRouter is created.
 - A public VIP can provide network services, such as EIP and load balancing, for flat networks.
 - . A public VIP can also provide network services, such as EIP, port forwarding, load balancing, and IPsec tunnel, for vRouter networks and VPC networks.
- A public VIP can be simultaneously applied to services such as port forwarding, load balancing, and IPsec tunnel, and supports multiple instances of the same service type. Note that different types of services cannot use the same port No.
- A public VIP supports QoS, monitoring data, performance TOP 5, performance analysis, alarm, and other features.
- VPC VIP: The VIP created from a VPC network. A VPC VIP can only be created manually.
 - A private VPC VIP can provide load balancing services for VPC networks.
 - Currently, private VPC VIPs do not support QoS, monitoring data, performance TOP 5, performance analysis, and alarm features.
- Private VIP: The VIP created from a flat network. A private VIP can be created manually, or created automatically by the Cloud after a vRouter is created.
 - A private VIP provides network services, such as EIP and load balancing, for flat networks.

- A private VIP supports QoS, monitoring data, performance TOP 5, performance analysis, alarm, and other features.
- Custom VIP: The VIP manually created by a user. Public VIPs, VPC VIPs, and private VIPs can be created manually.
 - One custom public VIP is only applied to one EIP service instance.
 - Custom VIPs cannot be used across normal vRouters or VPC vRouters.
 - When you use the EIP, port forwarding, load balancing, or IPsec tunnel services, you can select **Create new IP** to create a new VIP, or you can select **Use existing IP** to provide corresponding services.
- System VIP: The VIP automatically created by the Cloud by using the L3 network attached by a vRouter (a normal vRouter or VPC vRouter) after the vRouter is successfully created. Both public VIPs and private VIPs can be created automatically by the Cloud after a vRouter is created.
 - A system VIP has a one-to-one relationship with a vRouter or VPC vRouter. Each time a vRouter attaches a public network, the Cloud will automatically create a system VIP. In addition, the system VIP is the same as the default IP address of the vRouter or VPC vRouter.
 - By default, the system VIPs created from public networks are used to provide the source network address translation service.
 - When you use the EIP, port forwarding, load balancing, or IPsec tunnel service, you can select **Use existing IP** to provide corresponding services.

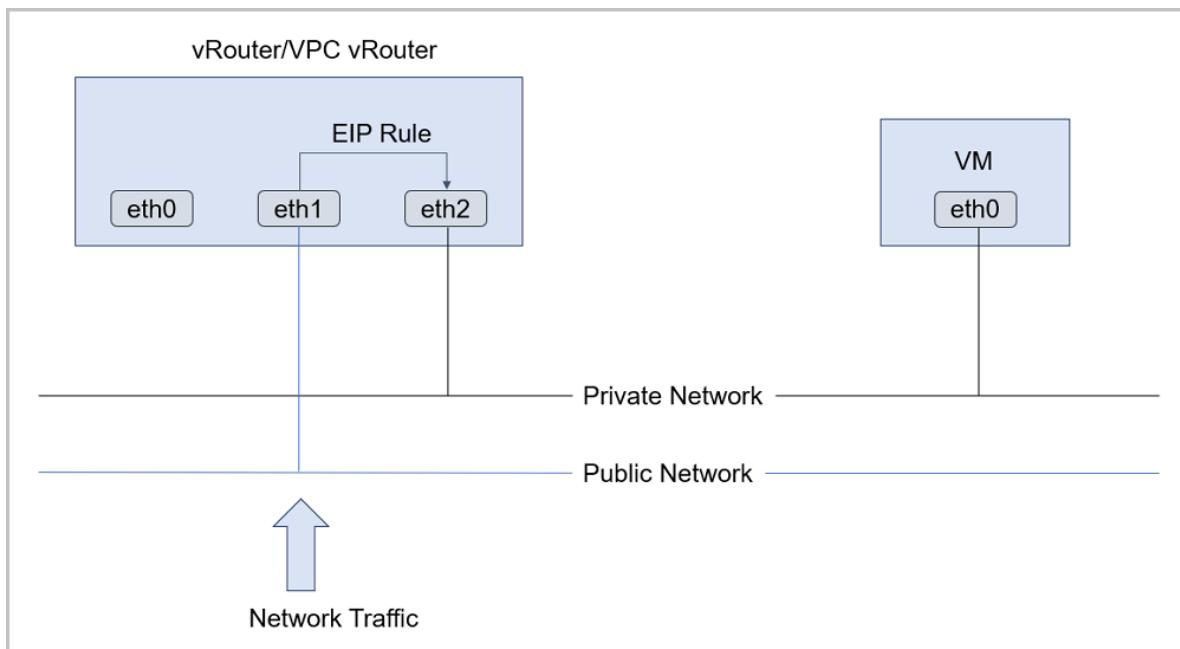
5.4.1.4 EIP

An elastic IP address (EIP) is a method to access a private network through other networks. An EIP converts the IP address of a network into the IP address of another network based on the network address translation (NAT) function.

- The following is an example of a public EIP usage scenario in flat networks, as shown in [EIP Usage Scenario in Flat Network](#).

Figure 5-31: EIP Usage Scenario in Flat Network

- Public networks can connect to the Internet through firewalls.
- Private networks (flat networks) provide IP addresses for each VM instance in each compute node. Notice that these IP addresses cannot connect to the Internet by default.
- Distributed EIP is deployed on each compute node, and can be bound to public networks or private networks separately.
- The following is an example of an EIP usage scenario in vRouter networks or VPC networks, as shown in [*EIP Usage Scenario in vRouter/VPC Network*](#).

Figure 5-32: EIP Usage Scenario in vRouter/VPC Network

Definitions related to EIP:

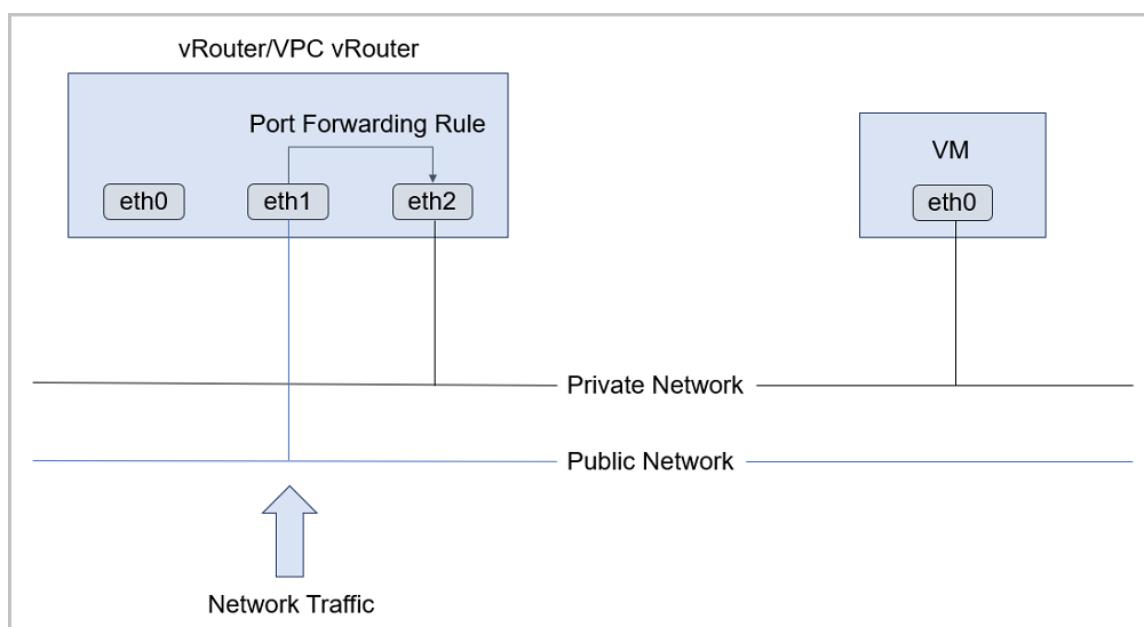
- Public EIP: The EIP service provided by a public VIP created from a public network.
 - An internal private network is an isolated network space, which cannot be directly accessed by the external network. A public EIP can directly associate the access to a public network with the VM IP of an internal private network.
 - A public EIP can be attached to or detached from a VM instance dynamically.
 - A public EIP can be attached to VM instances created from private networks, such as flat networks, vRouter networks, and VPC networks.
 - The EIP realized by distributed EIP can access flat networks through public networks.
 - vRouters or VPC vRouters can be used to access vRouter networks or VPC networks through public networks.
- Flat EIP: The EIP service provided by a flat VIP created from a flat network.
 - L3 isolations exist between flat networks of different IP ranges. Therefore, these flat networks cannot be accessed directly. A flat EIP can be used to associate the access to one flat network with the VM IP created from another flat network.
 - A flat EIP can be attached to or detached from a VM instance dynamically.
 - A flat EIP can be attached to VM instances created from other flat networks.

5.4.1.5 Port Forwarding

Port forwarding (PF) is a layer 3 forwarding service based on vRouters or VPC vRouters. It can forward the port traffics of specified public IP addresses to the ports of corresponding VM IP addresses. If your public IP addresses are insufficient, port forwarding can provide multiple external services for VM instances to save public IP resources.

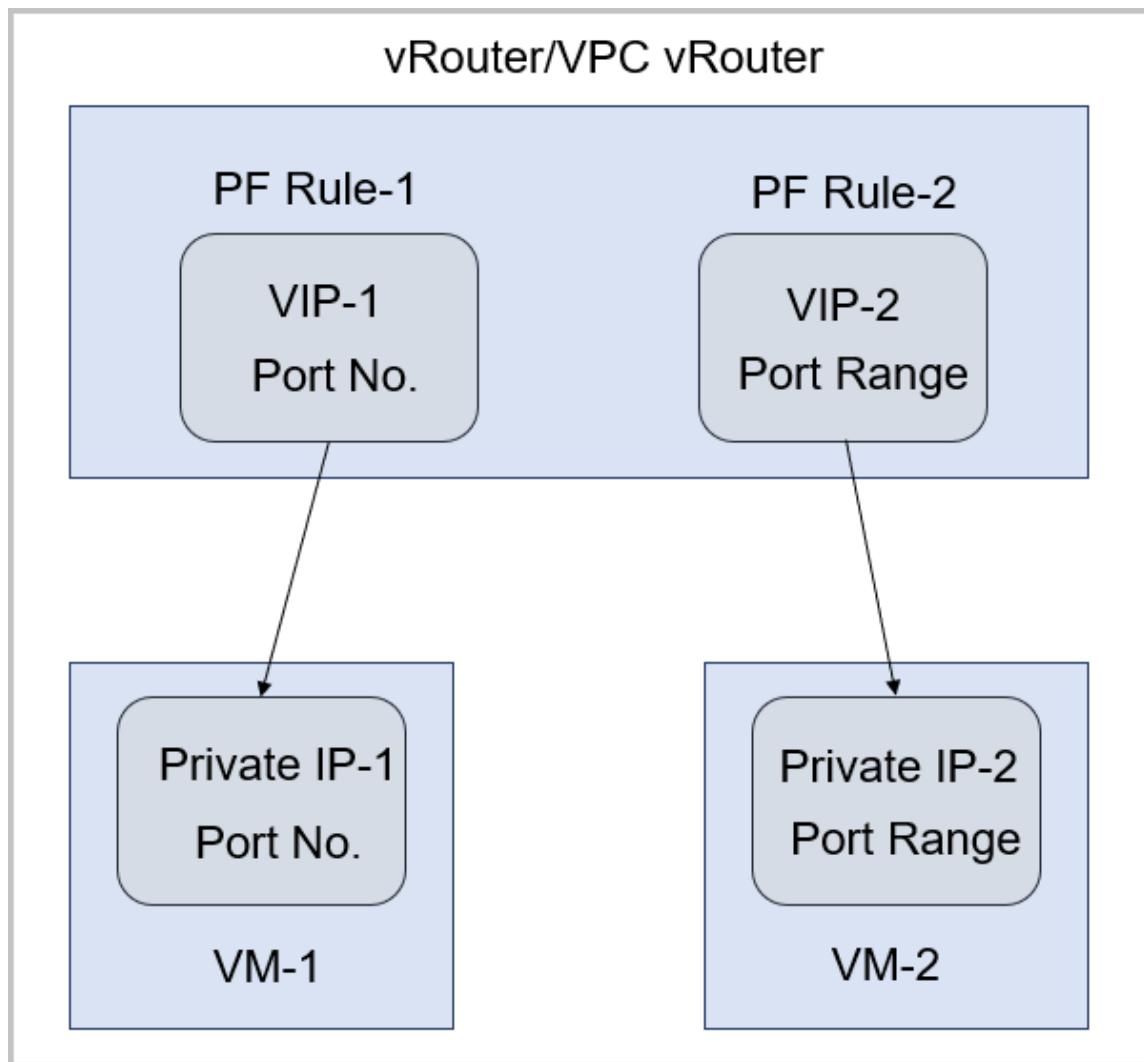
- In private networks that enable the source network address translation (SNAT) service, VM instances can access the external network, but cannot be accessed by the external network. A port forwarding rule can be used to allow the external network to access some specified ports of VM instances behind SNAT.
- An elastic port forwarding rule can be dynamically attached to or detached from VM instances.
- The port forwarding service can only be provided by vRouters or VPC vRouters.
 - A port forwarding rule can be created between public networks of a vRouter or VPC vRouter and private networks of VM instances, as shown in [Port Forwarding](#).

Figure 5-33: Port Forwarding



- The port forwarding service is provided by VIP.
 - A VIP corresponds to an available IP address in a public IP resource pool.
 - To create port forwarding by using a VIP, either create a new VIP or use an existing VIP.
 - To specify port mappings for port forwarding, choose one-to-one port mapping or range-to-range port mapping, as shown in [VIP - Port Forwarding](#).

— Figure 5-34: VIP - Port Forwarding



5.4.1.6 Load Balancing

Load balancing (LB) distributes inbound traffics from a VIP to a group of backend VM instances, and then automatically detects and isolates unavailable VM instances, whereby enhancing the service capability and availability of your businesses.

- Load balancing automatically distributes your inbound application traffics to the preconfigured backend VM instances, thereby providing highly concurrent and highly reliable access services.
- In your practice, you can adjust the VM instances in load balancing listeners to improve your service capability, which will not affect your normal business access.
- A load balancing listener supports four types of protocols: TCP, HTTP, HTTPS, and UDP.
- If the listener protocol is HTTPS, you need to bind a certificate. Note that you can upload a certificate or a certificate link.

- A load balancer allows you to flexibly configure multiple forwarding policies to achieve advanced forwarding controlling.
- Load balancing allows you to display real-time SLB business traffics and connections in monitoring data.

Definitions related to load balancing:

- Frontend network: In load balancing network services, a frontend network is used to provide VIP networks. Public networks, flat networks, and VPC networks can be used as frontend networks.
- Backend network: In load balancing network services, a backend network is used to create a private network for backend VM instances. Flat networks, vRouter networks, and VPC networks can be used as backend networks.
- Internet load balancing: A public network is used as the frontend network to provide Internet-facing load balancing services through routers (VPC vRouters or vRouters).
 - A VPC network can be used as a backend network to provide Internet load balancing services based on a VPC network. In this scenario, multiple backend networks can be used. However, these backend networks must be attached to the same VPC vRouter.
 - A vRouter network can be used as a backend network to provide Internet-facing load balancing services based on a vRouter network. In this scenario, make sure that the frontend network and the L3 network attached to the vRouter are the same.
 - A flat network can be used as a backend network to provide Internet-facing load balancing services based on a flat network. In this scenario, the frontend network and the L3 network attached to the vRouter must be the same.
- Intranet load balancing (VPC private network): A VPC network is used as the frontend network to provide intranet load balancing services through VPC vRouters.
 - A VPC network that shares the same VPC vRouter with a frontend network can be used as a backend network to provide intranet load balancing services based on VPC networks.
 - In this scenario, multiple backend networks can be used. However, these backend networks must be attached to the same VPC vRouter.
- Intranet load balancing (flat network): A flat network is used as the frontend network to provide intranet load balancing services through vRouters.
 - A frontend network can be also used as a backend network to provide intranet load balancing services based on flat networks. In this scenario, the L3 network specified in the

vRouter offering that is attached to the frontend network can be either a public network or a flat network.

- Other flat networks can be also used as a backend network to provide intranet load balancing services based on flat networks. In this scenario, the frontend network and the L3 network attached to the vRouter must be the same.



Note:

To use intranet load balancing (flat network) services, attach a vRouter offering to the flat network in advance.

5.4.1.7 IPsec Tunnel

An IPsec tunnel encrypts and authenticates IP addresses by groups to protect the network transfer data of IP protocols. It provides site-to-site VPN connections.

The following are the attributes of an IPsec tunnel:

- **IPsec connection mode**

For security reasons, we only support Main Mode and the Encapsulating Security Payload (ESP) protocol, while Aggressive Mode is not supported.

- **IPsec transfer mode**

Considering the cloud network model, we only support the site-to-site tunnel mode. The point-to-point PC mode is not supported.

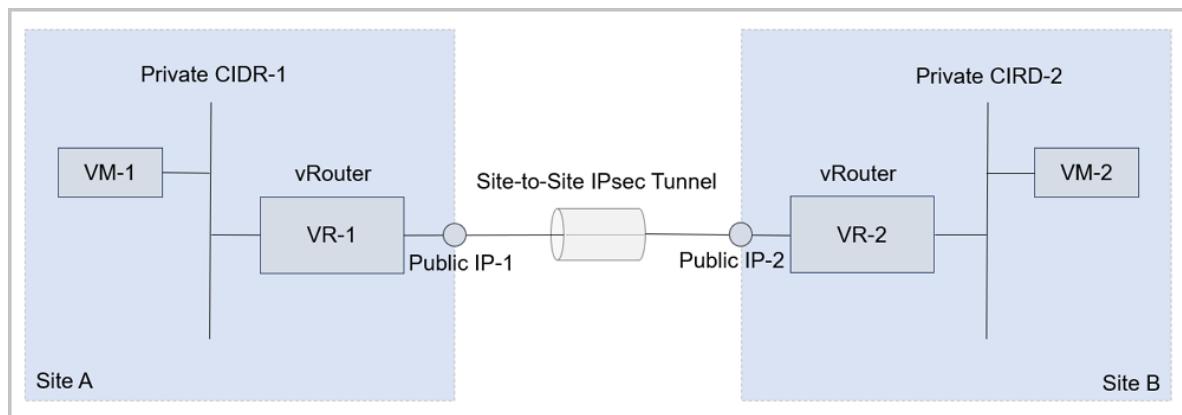
- **IPsec routing model**

We only support the IPsec routing model that is based on the source-to-destination IP range matching model. The routing forwarding mode is not supported. Notice that OSPF and BGP dynamic routing protocols are not supported.

The typical usage scenario of an IPsec tunnel in vRouter networks is as follows:

- vRouter networks can be used in two isolated ZStack CloudPrivate Cloud environments. In these two environments, the private networks of VM instances cannot be intercommunicated directly. An IPsec tunnel can be used to realize intercommunication between private networks of the VM instances, as shown in [IPsec Tunnel Usage Scenarios in vRouter Networks](#).

- **Figure 5-35: IPsec Tunnel Usage Scenarios in vRouter Networks**



5.4.2 Inventory

Flow Collector Inventory

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			3.6.0
name	The name. For more information, see Resource Property .			3.6.0
description	The description. For more information, see Resource Property .	Yes		3.6.0
flowMeterUuid				3.6.0
port	The UDP port of the flow collector.			3.6.0
server	The IP address of the flow collector.			3.6.0
groupBy	Groups rows into subgroups based on values of columns or expressions. This	Yes		3.6.0

Name	Description	Optional	Valid Value	Starting Version
	field is equivalent to the Group By clause in MySQL, such as <code>groupBy =type</code> .			
createDate	The creation date. For more information, see Resource Property .			3.6.0
lastOpDate	The last operation date. For more information, see Resource Property .			3.6.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.6.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.6.0

Sample

```
{
  "inventories": [
    {
      "uuid": "e231c750a95b301cb4b6de429fa11bbc",
      "server": "192.168.48.12",
      "port": 2055.0,
      "createDate": "Nov 14, 2017 10:20:57 PM",
      "lastOpDate": "Nov 14, 2017 10:20:57 PM"
    }
  ]
}
```

{}

Flow Meter Inventory

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			3.6.0
name	The name. For more information, see Resource Property .			3.6.0
description	The description. For more information, see Resource Property .	Yes		3.6.0
expireInterval	The expiration interval of the flow.			3.6.0
sample	The sample rate of the flow meter.			3.6.0
type	The type of the flow meter protocol.			3.6.0
version	The version of the flow meter protocol.			3.6.0
groupBy	Groups rows into subgroups based on values of columns or expressions. This field is equivalent to the Group By clause in MySQL, such as groupBy =type.	Yes		3.6.0

Name	Description	Optional	Valid Value	Starting Version
createDate	The creation date. For more information, see Resource Property .			3.6.0
lastOpDate	The last operation date. For more information, see Resource Property .			3.6.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.6.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.6.0

Sample

```
{
  "inventories": [
    {
      "uuid": "4ba598ab40a1321798fb957a9eddb77d",
      "type": "NetFlow",
      "createDate": "Nov 14, 2017 10:20:57 PM",
      "lastOpDate": "Nov 14, 2017 10:20:57 PM"
    }
  ]
}
```

vRouter Flow Meter Network Inventory

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			3.6.0
flowMeterUuid				3.6.0

Name	Description	Optional	Valid Value	Starting Version
I3NetworkUuid	The L3 network UUID.			3.6.0
vRouterUuid				3.6.0
groupBy	Groups rows into subgroups based on values of columns or expressions. This field is equivalent to the Group By clause in MySQL, such as <code>groupBy =type</code> .	Yes		3.6.0
createDate	The creation date. For more information, see Resource Property .			3.6.0
lastOpDate	The last operation date. For more information, see Resource Property .			3.6.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.6.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.6.0

Sample

```
{
  "inventories": [
    {
      "uuid": "62413232b13c3ff496876495906d9254",
      "vRouterUuid": "276b37d53794342b8b93f11ffdab0b24",
      "flowMeterUuid": "606c59dee3e0371da1b6a829c249bb79",
    }
  ]
}
```

```

        "13NetworkUuid": "7d744eec67cb385cb8f55e84056a3a50",
        "createDate": "Nov 14, 2017 10:20:57 PM",
        "lastOpDate": "Nov 14, 2017 10:20:57 PM"
    }
]
}

```

Port Mirror Inventory

Name	Description	Optional	Valid Value	Starting Version
description	The description. For more information, see Resource Property .	Yes		3.7.0
mirrorNetworkUuid	The UUID of the mirror network resource.			3.7.0
groupBy	Groups rows into subgroups based on values of columns or expressions. This field is equivalent to the Group By clause in MySQL, such as <code>groupBy =type</code> .	Yes		3.7.0
createDate	The creation date. For more information, see Resource Property .			3.7.0
lastOpDate	The last operation date. For more information, see Resource Property .			3.7.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.7.0

Name	Description	Optional	Valid Value	Starting Version
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.7.0

Sample

```
{
  "inventories": [],
  "success": true
}
```

Port Mirror Session Inventory

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			3.7.0
name	The name. For more information, see Resource Property .			3.7.0
description	The description. For more information, see Resource Property .	Yes		3.7.0
dstEndPoint	The destination endpoint of the mirror session.			3.7.0
internalId				3.7.0
portMirrorUuid	The port mirror UUID.			3.7.0
srcEndPoint	The source endpoint of the mirror session.			3.7.0
status				3.7.0

Name	Description	Optional	Valid Value	Starting Version
type				3.7.0
groupBy	Groups rows into subgroups based on values of columns or expressions. This field is equivalent to the Group By clause in MySQL, such as groupBy =type.	Yes		3.7.0
createDate	The creation date. For more information, see Resource Property .			3.7.0
lastOpDate	The last operation date. For more information, see Resource Property .			3.7.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.7.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.7.0

Sample

```
{
  "inventories": [ ],
  "success": true
```

{}

Port Mirror Network Used IP Inventory

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			3.7.0
description	The description. For more information, see Resource Property .	Yes		3.7.0
clusterUuid	The cluster UUID.			3.7.0
hostUuid	The host UUID.			3.7.0
l3NetworkUuid	The L3 network UUID.			3.7.0
usedIpInventory				3.7.0
groupBy	Groups rows into subgroups based on values of columns or expressions. This field is equivalent to the Group By clause in MySQL, such as groupBy =type.	Yes		3.7.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.7.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.7.0

Sample

```
{
  "inventories": [],
  "success": true
}
```

Network Service Provider Inventory

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			2.2
name	The name. For more information, see Resource Property .			2.2
description	The description. For more information, see Resource Property .	Yes		2.2
attachedL2NetworkUuids	The UUIDs of attached L2 networks.			2.2
networkServiceTypes	The network service types.			2.2
type				2.2
groupBy	Groups rows into subgroups based on values of columns or expressions. This field is equivalent to the Group By clause in MySQL, such as <code>groupBy =type</code> .	Yes		2.2
createDate	The creation date. For more information,			2.2

Name	Description	Optional	Valid Value	Starting Version
	see Resource Property .			
lastOpDate	The last operation date. For more information, see Resource Property .			2.2
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.2
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.2

Sample

```
{
    "inventories": [
        {
            "attachedL2NetworkUuids": [
                "06787a08456b458db2af527c23ab110c",
                "8baa26aacfb740adb1d7709a369179ef",
                "fd91d394591e4b79a2979c34abac464d",
                "32d20dc18ef74adfb033fdfbce674bbf",
                "00e1a1bea98c46d59c4c9768357d4f62"
            ],
            "createDate": "Jun 20, 2018 10:45:45 AM",
            "description": "zstack vrouter network service provider",
            "lastOpDate": "Jun 20, 2018 10:45:45 AM",
            "name": "vrouter",
            "networkServiceTypes": [
                "IPsec",
                "VRouterRoute",
                "CentralizedDNS",
                "VipQos",
                "DNS",
                "SNAT",
                "LoadBalancer",
                "PortForwarding",
                "Eip",
                "DHCP"
            ],
            "type": "vrouter", //VPC vRouter network service module
            "uuid": "1b0e0976950b4dd1a57ec93f31957b53"
        },
        {
            "attachedL2NetworkUuids": [

```

```

        "aceca791929e472890aff8f2dbf5114b",
        "06787a08456b458db2af527c23ab110c",
        "9344c9a846564ae285a8150a317c4596",
        "ba8e717610854cfab8e6a98affb1e880",
        "21ba175a6b8c4e2e9e3b0efb103c3843",
        "40f4ad9d69954d9cb3bf5dc95c67ed83",
        "8baa26aacfb740adb1d7709a369179ef",
        "fd91d394591e4b79a2979c34abac464d",
        "e6f80f6348f146a3b0d4682be87c8bab",
        "32d20dc18ef74adfb033fdfbce674bbf",
        "00e1a1bea98c46d59c4c9768357d4f62",
        "aeac2cd1a74d4274b94bda5cc1b7689e"
    ],
    "createDate": "Jun 20, 2018 10:45:45 AM",
    "description": "Flat Network Service Provider",
    "lastOpDate": "Jun 20, 2018 10:45:45 AM",
    "name": "Flat Network Service Provider",
    "networkServiceTypes": [
        "VipQos",
        "DNS",
        "HostRoute",
        "Userdata",
        "Eip",
        "DHCP"
    ],
    "type": "Flat", //Flat network service module
    "uuid": "5716a451ebe040e5b70822df8e4423d7"
},
{
    "attachedL2NetworkUuids": [
        "06787a08456b458db2af527c23ab110c",
        "8baa26aacfb740adb1d7709a369179ef",
        "fd91d394591e4b79a2979c34abac464d",
        "32d20dc18ef74adfb033fdfbce674bbf",
        "00e1a1bea98c46d59c4c9768357d4f62"
    ],
    "createDate": "Jun 20, 2018 10:45:45 AM",
    "description": "zstack security group network service
provider",
    "lastOpDate": "Jun 20, 2018 10:45:45 AM",
    "name": "SecurityGroup",
    "networkServiceTypes": [
        "SecurityGroup"
    ],
    "type": "SecurityGroup", //Security group network service
module
    "uuid": "5fad7c177d6041be9b76d5c55e742865"
},
{
    "attachedL2NetworkUuids": [
        "06787a08456b458db2af527c23ab110c",
        "8baa26aacfb740adb1d7709a369179ef",
        "fd91d394591e4b79a2979c34abac464d",
        "32d20dc18ef74adfb033fdfbce674bbf",
        "00e1a1bea98c46d59c4c9768357d4f62"
    ],
    "createDate": "Jun 20, 2018 10:45:45 AM",
    "description": "cloud virtual router network service
provider",
    "lastOpDate": "Jun 20, 2018 10:45:45 AM",
    "name": "VirtualRouter",
    "networkServiceTypes": [

```

```

        "DNS",
        "SNAT",
        "LoadBalancer",
        "PortForwarding",
        "Eip",
        "DHCP"
    ],
    "type": "VirtualRouter", //Virtual router network service
module, not recommended
    "uuid": "9c4e250086ef43a1839f0c71c42c5d47"
}
],
"success": true
}

```

5.4.2.1 VPC Firewall Inventory

VPC Firewall Inventory

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			3.6.0
name	The name. For more information, see Resource Property .			3.6.0
description	The description. For more information, see Resource Property .			3.6.0
refs	The reference between the VPC firewall rule set and the network.			3.6.0
rulesets	The VPC firewall rule set.			3.6.0
createDate	The creation date. For more information, see Resource Property .			3.6.0

Name	Description	Optional	Valid Value	Starting Version
lastOpDate	The last operation date. For more information, see Resource Property .			3.6.0
groupBy	Groups rows into subgroups based on values of columns or expressions. This field is equivalent to the Group By clause in MySQL, such as <code>groupBy =type</code> .	Yes		3.6.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.6.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.6.0

Sample

```
{
  "inventories": [
    {
      "name": "name",
      "ruleSets": [
        {
          "name": "name",
          "vpcFirewallUuid": "76cbd34de351334bbd0f51ee0653d0ab",
          "actionType": "drop",
          "description": "example-des",
          "enableDefaultLog": false,
          "isDefault": false
        }
      ],
      "refs": [
        {
          "id": 1.0,
          "ruleSetUuid": "530b17414c29330db2d788c227c50134",
          "l3Uuid": "01a959eec095396eaed841c886219eec",
          "packetsForwardType": "in",
        }
      ]
    }
  ]
}
```

```

        "createDate": "Nov 14, 2017 10:20:57 PM",
        "lastOpDate": "Nov 14, 2017 10:20:57 PM"
    },
],
"description": "example-des"
}
]
}

```

Firewall Rule Set Inventory

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			3.6.0
name	The name. For more information, see Resource Property .			3.6.0
description	The description. For more information, see Resource Property .			3.6.0
actionType	The action type.		<ul style="list-style-type: none"> • drop • reject • accept 	3.6.0
isDefault	The default value.			3.6.0
vpcFirewallUuid				3.6.0
createDate	The creation date. For more information, see Resource Property .			3.6.0
lastOpDate	The last operation date. For more information, see Resource Property .			3.6.0
groupBy	Groups rows into subgroups	Yes		3.6.0

Name	Description	Optional	Valid Value	Starting Version
	based on values of columns or expressions. This field is equivalent to the Group By clause in MySQL, such as <code>groupBy =type</code> .			
userTags	The user tags. For more information, see CreateUserTag	Yes		3.6.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.6.0

Sample

```
{
  "inventories": [
    {
      "name": "name",
      "vpcFirewallUuid": "c4a963f2391f3d7195032ed37bad0b57",
      "actionType": "drop",
      "description": "example-des",
      "enableDefaultLog": false,
      "isDefault": false
    }
  ]
}
```

Firewall Rule Set and L3 Network Reference Inventory

Name	Description	Optional	Valid Value	Starting Version
id				3.6.0
l3NetworkUuid	The L3 network UUID.			3.6.0
packetsForwardType				3.6.0
ruleSetUuid	The rule set UUID.			3.6.0

Name	Description	Optional	Valid Value	Starting Version
vpcFirewallUuid	The firewall UUID.			3.6.0
createDate	The creation date. For more information, see Resource Property .			3.6.0
lastOpDate	The last operation date. For more information, see Resource Property .			3.6.0
groupBy	Groups rows into subgroups based on values of columns or expressions. This field is equivalent to the Group By clause in MySQL, such as <code>groupBy =type</code> .	Yes		3.6.0
userTags	The user tags. For more information, see CreateUserTag	Yes		3.6.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.6.0

Sample

```
{
  "inventories": [
    {
      "id": 1.0,
      "ruleSetUuid": "f4575926f7a13c82a0d610dfac995ffa",
      "l3Uuid": "85044a1e0ccb3c859c0b024e967fb191",
      "packetsForwardType": "in",
      "createDate": "Nov 14, 2017 10:20:57 PM",
      "lastOpDate": "Nov 14, 2017 10:20:57 PM"
    }
  ]
}
```

```

        }
    ]
}

```

Firewall IP Set Template Inventory

Name	Description	Optional	Valid Value	Starting Version
name	The template name.			4.0.0
sourceValue		Yes		4.0.0
destValue		Yes		4.0.0
type				4.0.0
accountUuid	The account UUID.	Yes		4.0.0
tagUuids	The tag UUIDs.	Yes		4.0.0
userTags	The user tags. For more information, see CreateUserTag	Yes		4.0.0
systemTags	The system tags. For more information, see CreateSystemTag	Yes		4.0.0
timeout		Yes		

Sample

```

{
  "inventories": [
    {
      "name": "ipset-template",
      "sourceValue": "192.168.1.2",
      "destValue": "192.168.1.1,10.0.0.1/24",
      "type": "ip"
    }
  ]
}

```

Firewall Rule Inventory

Name	Description	Optional	Valid Value	Starting Version
name	The UUID. For more information,			3.6.0

Name	Description	Optional	Valid Value	Starting Version
	see Resource Property .			
description	The description. For more information, see Resource Property .	Yes		3.6.0
action				3.6.0
allowStates				3.6.0
destIp				3.6.0
destPort				3.6.0
icmpTypeName				3.6.0
isDefault				3.6.0
protocol				3.6.0
ruleNumber				3.6.0
ruleSetName				3.6.0
ruleSetUuid				3.6.0
sourcelp				3.6.0
sourcePort				3.6.0
state				3.6.0
tcpFlag				3.6.0
vpcFirewallUuid				3.6.0
groupBy	Groups rows into subgroups based on values of columns or expressions. This field is equivalent to the Group By clause in MySQL, such as <code>groupBy =type</code> .	Yes		3.6.0
createDate	The creation date. For more			3.6.0

Name	Description	Optional	Valid Value	Starting Version
	information, see Resource Property .			
lastOpDate	The last operation date. For more information, see Resource Property .			3.6.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.6.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		4.0.0

Sample

```
{
  "inventories": [
    {
      "action": "accept",
      "protocol": "TCP",
      "destPort": "22",
      "sourcePort": "22",
      "sourceIp": "192.168.1.2",
      "destIp": "192.168.1.1",
      "allowStates": "invalid,new",
      "tcpFlag": "SYN",
      "icmpTypeName": "echo-reply",
      "ruleNumber": 1001.0,
      "enableLog": false,
      "state": "disable",
      "isDefault": false,
      "description": "example rule des"
    }
  ]
}
```

VPC Firewall and vRouter Reference Inventory

Name	Description	Optional	Valid Value	Starting Version
vpcFirewallUuid	The firewall UUID.			3.6.0

Name	Description	Optional	Valid Value	Starting Version
id				3.6.0
vRouterUuid	The vRouter UUID.			3.6.0
groupBy	Groups rows into subgroups based on values of columns or expressions. This field is equivalent to the Group By clause in MySQL, such as groupBy =type.	Yes		3.6.0
createDate	The creation date. For more information, see Resource Property .			3.6.0
lastOpDate	The last operation date. For more information, see Resource Property .			3.6.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.6.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.6.0

Sample

```
{
  "inventories": [
    {
      "id": 1.0,
      "vpcFirewallUuid": "cd7ab20e4768316c86230f2d982ae5a5",
      "vRouterUuid": "7013faeb3b4736d1800749b1e910a845",
    }
  ]
}
```

```

        "createDate": "Nov 14, 2017 10:20:57 PM",
        "lastOpDate": "Nov 14, 2017 10:20:57 PM"
    }
]
}

```

5.4.2.2 Security Group Inventory

Properties

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			0.6
name	The name. For more information, see Resource Property .			0.6
description	The description. For more information, see Resource Property .	Yes		0.6
state	The state. For more information, see Resource Property .		<ul style="list-style-type: none"> Enabled Disabled 	0.6
rules	The rules. For more information, see Security Group Rule Inventory .			0.6
attachedL3NetworkUuids	The UUIDs of the L3 Network to which the security group is attached.			0.6
createDate	The creation date. For more information, see Resource Property .			0.6

Name	Description	Optional	Valid Value	Starting Version
lastOpDate	The last operation date. For more information, see Resource Property .			0.6

Sample

```
{
    "attachedL3NetworkUuids": [
        "0b48770e593e400c8f54e71fd4e7f514"
    ],
    "createDate": "Nov 16, 2015 1:02:22 AM",
    "lastOpDate": "Nov 16, 2015 1:02:22 AM",
    "name": "sg-in",
    "rules": [
        {
            "allowedCidr": "0.0.0.0/0",
            "createDate": "April 29, 2015 9:57:10 PM",
            "state": "Enabled",
            "endPort": 22,
            "lastOpDate": "Nov 29, 2015 9:57:10 PM",
            "protocol": "TCP",
            "securityGroupUuid": "9e0a72fe64814900baa22f78a1b9d235",
            "startPort": 22,
            "type": "Ingress",
            "uuid": "a338d11be18d4e288223597682964dc8"
        }
    ],
    "state": "Enabled",
    "uuid": "9e0a72fe64814900baa22f78a1b9d235"
}
```

Default Security Group Policy

- For an empty security group, we have default polices for inbound traffics and outbound traffics.
- For inbound traffics, the default policy is to deny, which means that all inbound traffics traveling to the NICs in this empty security group will be blocked.
- For outbound traffics, the default policy is to allow, which means that all outbound traffics coming from the NICs in this empty security group will be allowed.

To change default policies, you can change the actions for **Ingress.defaultPolicy** and **Egress.defaultPolicy** in **Global Setting**.

Security Group Rule Inventory

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			0.6
securityGroupUuid	The UUID of the parent security group.			0.6
remoteSecurityGroupUuid	The source security group, which indicates that only the VM instances specified in the security group are allowed.	Yes		0.6
type	The type. For more information, see Traffic Type .		<ul style="list-style-type: none"> Ingress Egress 	0.6
protocol	The traffic protocol type.		<ul style="list-style-type: none"> TCP UDP ICMP 	0.6
startPort	If the protocol is TCP or UDP, this parameter is the start port of the port range. If the protocol is ICMP, this parameter is ICMP type.		<ul style="list-style-type: none"> For TCP/UDP : 0 - 65535. For ICMP : use '-1' to represent all types. For more information, see ICMP type and code. 	0.6
endPort	If the protocol is TCP/UDP, this parameter is the end port of the port range. If the protocol is ICMP,		<ul style="list-style-type: none"> For TCP/UDP : 0 - 65535. For ICMP : use '-1' to represent 	0.6

Name	Description	Optional	Valid Value	Starting Version
	this parameter is ICMP type.		all types. For more information, see ICMP type and code.	
allowedCidr	The allowed CIDR. For more information, see Allowed CIDR .			0.6
state	The rule state , which is not implemented in the current version.		<ul style="list-style-type: none"> • Enabled • Disabled 	0.6
createDate	The creation date. For more information, see Resource Property .			0.6
lastOpDate	The last operation date. For more information, see Resource Property .			0.6

Sample

```
{
  "allowedCidr": "0.0.0.0/0",
  "state": "Enabled",
  "startPort": 22,
  "endPort": 22,
  "protocol": "TCP",
  "type": "Ingress",
  "createDate": "Nov 29, 2015 9:57:10 PM",
  "lastOpDate": "Nov 29, 2015 9:57:10 PM",
  "uuid": "a338d11be18d4e288223597682964dc8"
  "securityGroupUuid": "9e0a72fe64814900baa22f78a1b9d235"
}
```

Traffic Type

Traffics have two types.

- Ingress:
Inbound traffics that access a VM NIC.
- Egress:
Outbound traffics that leave from a VM NIC.

Allowed CIDR

Allowed CIDR has different meanings according to different traffic types. The format of an allowed CIDR is as follows:

```
ipv4_address/network_prefix
For example: 12.12.12.12/24
```

If the traffic type is Ingress, the allowed CIDR is a source CIDR that is allowed to access VM NICs.

The following is an example of an inbound rule:

```
startPort: 22
endPort: 22
protocol: TCP
type: Ingress
allowedCidr: 12.12.12.12/32
```

The example above indicates that only TCP traffics from the IP address (12.12.12.12) are allowed to access port 22.

If the traffic type is Egress, the allowed CIDR is a destination CIDR that is allowed to leave VM NICs. The following is an example of an outbound rule:

```
startPort: 22
endPort: 22
protocol: TCP
type: Egress
allowedCidr: 12.12.12.12/32
```

The example above indicates that only TCP traffics to port 22 of the IP address (12.12.12.12) are allowed to leave.

Note that CIDR 0.0.0.0/0 represents all IP addresses.

5.4.2.3 VIP Inventory

Properties

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information,			0.6

Name	Description	Optional	Valid Value	Starting Version
	see Resource Property .			
name	The name. For more information, see Resource Property .			0.6
description	The description. For more information, see Resource Property .	Yes		0.6
l3NetworkUuid	The UUID of the L3 network to which the VIP is allocated.			0.6
ip	The IP address of the IPv4 type.			0.6
state	The state of the VIP.		<ul style="list-style-type: none"> • Enabled • Disabled 	0.6
gateway	The gateway.			0.6
netmask	The netmask.			0.6
serviceProvider	The service provider that provides the VIP service.	Yes		0.6
peerL3NetworkUuids	The L3 private network UUID or the VPC L3 network UUID.			0.6
useFor	The usage, such as port forwarding .	Yes	<ul style="list-style-type: none"> • EIP • PortForwarding • LoadBalancer • IPsec 	0.6
createDate	The creation date. For more			0.6

Name	Description	Optional	Valid Value	Starting Version
	information, see Resource Property .			
lastOpDate	The last operation date. For more information, see Resource Property .			0.6

Sample

```
{
    "createDate": "Dec 1, 2017 8:24:43 PM",
    "description": "",
    "gateway": "10.0.0.1",
    "ip": "10.128.19.232",
    "l3NetworkUuid": "429f0e8a088b4ed688e64f42dab3c405",
    "lastOpDate": "Dec 1, 2017 8:25:00 PM",
    "name": "vip-for-lb-lb2",
    "netmask": "255.0.0.0",
    "peerL3NetworkUuids": [
        "62eeb35445144649acbbd72392cf2b40"
    ],
    "serviceProvider": "vrouter",
    "state": "Enabled",
    "useFor": "LoadBalancer",
    "uuid": "81806eb3a0034f529e80034e749b2a8a"
}
```

5.4.2.4 EIP Inventory

Properties

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			0.6
name	The name. For more information, see Resource Property .			0.6
description	The description. For more information,	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
	see Resource Property .			
vmNicUuid	The VM NIC UUID.	Yes		0.6
vipUuid	The VIP UUID.			0.6
state	The state of the EIP.		<ul style="list-style-type: none"> • Enabled • Disabled 	0.6
vipIp	The IP address of the VIP.			0.6
guestIp	The IP address of the VM NIC.	Yes		0.6
createDate	The creation date. For more information, see Resource Property .			0.6
lastOpDate	The last operation date. For more information, see Resource Property .			0.6

Sample

```
{
    "createDate": "Dec 1, 2017 4:19:28 PM",
    "description": "",
    "guestIp": "192.168.235.165",
    "lastOpDate": "Dec 1, 2017 5:10:57 PM",
    "name": "eip",
    "state": "Enabled",
    "uuid": "2d0373f98dc84dfa9bfe590ab40d3ba",
    "vipIp": "10.128.19.125",
    "vipUuid": "78cb2bf960624b678cc135c303735cf3",
    "vmNicUuid": "b1982434c6a4438a9fc1d1a3c465c210"
}
```

{}

5.4.2.5 Port Forwarding Rule Inventory

Properties

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			0.6
name	The name. For more information, see Resource Property .			0.6
description	The description. For more information, see Resource Property .	Yes		0.6
vipIp	The IP address of the VIP.			0.6
guestIp	The IP address of the VM NIC.	Yes		
vipUuid	The VIP UUID.			0.6
vipPortStart	The start port of the VIP.		1 ~ 65535	0.6
vipPortEnd	The end port of the VIP.		1 ~ 65535	0.6
privatePortStart	The start port of guest IP address.		1 ~ 65535	0.6
privatePortEnd	The end port of guest IP address.		1 ~ 65535	0.6
vmNicUuid	The VM NIC UUID.	Yes		0.6
protocolType	The protocol type of the network traffic.		<ul style="list-style-type: none"> • TCP • UDP 	0.6

Name	Description	Optional	Valid Value	Starting Version
state	The state of the rule.		<ul style="list-style-type: none"> Enabled Disabled 	0.6
allowedCidr	The source CIDR. The port forwarding rule is only applied to the traffics of the source CIDR.			0.6
createDate	The creation date. For more information, see Resource Property .			0.6
lastOpDate	The last operation date. For more information, see Resource Property .			0.6

Sample

```
{
    "allowedCidr": "0.0.0.0/0",
    "createDate": "Dec 1, 2017 7:55:35 PM",
    "description": "",
    "guestIp": "192.168.235.245",
    "lastOpDate": "Dec 1, 2017 7:55:38 PM",
    "name": "pf1",
    "privatePortEnd": 23,
    "privatePortStart": 23,
    "protocolType": "TCP",
    "state": "Enabled",
    "uuid": "474c3e0df7f64cdfbf9f921bcd4a92ab",
    "vipIp": "10.128.19.230",
    "vipPortEnd": 22,
    "vipPortStart": 22,
    "vipUuid": "0579cf3a57f84b99abbaa6c892acf873",
    "vmNicUuid": "e20efc6858ea4988950882934262b6d7"
}
```

{}

5.4.2.6 Load Balancing Inventory

Properties

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			0.6
name	The name. For more information, see Resource Property .			0.6
description	The description. For more information, see Resource Property .	Yes		0.6
state	The state, which is always Enabled.			0.6
vipUuid	The VIP UUID.			0.6
listeners	The listeners. For more information, see Listeners .			0.6

Sample

```
{
    "description": "",
    "listeners": [
        {
            "createDate": "Dec 1, 2017 8:24:44 PM",
            "instancePort": 22,
            "lastOpDate": "Dec 1, 2017 8:49:24 PM",
            "loadBalancerPort": 22,
            "loadBalancerUuid": "8a745a63e9f24e28af2d
81e156d070bf",
            "name": "lb2-listener",
            "protocol": "tcp",
            "uuid": "19a454f0c461492b8228b4ebe185d8a4",
            "vmNicRefs": [
                {
                    "createDate": "Dec 1, 2017 8:25:05 PM",
                    "id": 1,
                    "macAddress": "00:0C:29:81:E1:56",
                    "nicName": "VMnet8 adapter"
                }
            ]
        }
    ]
}
```

```

        "lastOpDate": "Dec 1, 2017 8:25:05 PM",
        "listenerUuid": "19a454f0c461492b8228
b4ebe185d8a4",
        "status": "Active",
        "vmNicUuid": "e20efc6858ea49889508
82934262b6d7"
    }
}
],
"name": "lb2",
"state": "Enabled",
"uuid": "8a745a63e9f24e28af2d81e156d070bf",
"vipUuid": "81806eb3a0034f529e80034e749b2a8a"
}

```

Listener

- A listener defines how a load balancer routes incoming traffics from a VIP port (loadBalancerPort) to a backend port (instancePort) of a VM instance. In addition, it defines a set of properties, such as the connection timeout and health check threshold.
- From your perspectives, a listener simply defined two important ports: the frontend port (loadBalancerPort) where the incoming traffics visit, and the backend port where the incoming traffics are routed.
- A load balancer can have multiple listeners. Each listener can be used to set different ports. In addition, ZStack defines a variety of properties as system tags for listeners to control listener behaviors, such as idle connection timeout, maximum connections, healthy threshold, and unhealthy threshold.

Load Balancer Listener Inventory

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			0.6
name	The name. For more information, see Resource Property .			0.6
description	The description. For more information, see Resource Property .	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
loadBalancerUuid	The load balancer UUID.		1 ~ 65336	0.6
loadBalancerPort	The frontend port where the data reaches the VIP.		1 ~ 65336	0.6
instancePort	The backend port where the data is distributed to VM instances.		<ul style="list-style-type: none"> For TCP/UDP : 0 - 65535 For ICMP: Use '-1' to represent all types. For more information, see ICMP type and code. 	0.6
protocol	The protocol. For more information, see Protocol .		<ul style="list-style-type: none"> http tcp 	0.6
vmNicRefs	The VM NIC references. For more information, see VM NIC References Inventory .			0.6
createDate	The creation date. For more information, see Resource Property .			0.6
lastOpDate	The last operation date. For more information, see Resource Property .			0.6

Sample

```
{
  "createDate": "Dec 1, 2017 8:24:44 PM",
  "instancePort": 22,
```

```

    "lastOpDate": "Dec 1, 2017 8:49:24 PM",
    "loadBalancerPort": 22,
    "loadBalancerUuid": "8a745a63e9f24e28af2d81e156d070bf",
    "name": "lb2-listener",
    "protocol": "tcp",
    "uuid": "19a454f0c461492b8228b4ebe185d8a4",
    "vmNicRefs": [
        {
            "createDate": "Dec 1, 2017 8:25:05 PM",
            "id": 1,
            "lastOpDate": "Dec 1, 2017 8:25:05 PM",
            "listenerUuid": "19a454f0c461492b8228b4ebe185d8a4"
        },
        {
            "status": "Inactive",
            "vmNicUuid": "e20efc6858ea4988950882934262b6d7"
        }
    ]
}

```

Access Control List Inventory

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			3.9.0
name	The name. For more information, see Resource Property .			3.9.0
description	The description. For more information, see Resource Property .			3.9.0
ipVersion	The IP version.			3.9.0
entries	The entries.			3.9.0
groupBy	Groups rows into subgroups based on values of columns or expressions. This field is equivalent to the Group By clause in MySQL	Yes		3.9.0

Name	Description	Optional	Valid Value	Starting Version
	, such as groupBy =type.			
createDate	The creation date. For more information, see Resource Property .			3.9.0
lastOpDate	The last operation date. For more information, see Resource Property .			3.9.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.9.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.9.0

Sample

```
{
  "inventories": [
    {
      "uuid": "0abdbd20b8173ccf89f881309b5e40d0",
      "name": "acl-group"
    }
  ]
}
```

Protocol

A protocol defines the type of data packets that a load balancer routes. Currently, two protocol modes are supported: TCP (layer 4) and HTTP (layer 7). Note that TCP is the default mode.

When the protocol is TCP, the load balancer will work in a pure TCP mode. Then, a full-duplex connection will be established between client sides and server sides. When the protocol is HTTP, connections from client sides to the load balancer and from the load balancer to server sides will be established respectively.

Backend VM NICs

You can add a new VM instance to a load balancer by adding the VM NIC to the load balancer's listener. Once the VM NIC UUID is added successfully, the load balancer will route the incoming traffics at appropriate time according the corresponding load balancing algorithm. A VM NIC can be added to different listeners of different load balancers. No matter how many listeners you have added, the VM instances where the NIC is located must have the capability to handle corresponding network requests.

The load balancer listener will add the corresponding VM instances by invoking NIC references, as shown in the following table.

Load Balancer Server Group Inventory

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID of the server group.			4.0.0
name	The name of the server group.			4.0.0
description	The detailed description of the server group.			4.0.0
loadBalancerUuid	The load balancer UUID.			4.0.0
createDate	The time when the server group was created.			4.0.0
lastOpDate	The time when the server group was last modified.			4.0.0
listenerServerGroupRefs				4.0.0
serverIps				4.0.0
vmNicRefs				4.0.0
systemTags	The user tags. For more information, see CreateUserTag .	Yes		4.0.0

Name	Description	Optional	Valid Value	Starting Version
userTags	The user tags. For more information, see CreateUserTag .	Yes		4.0.0

Sample

```
{
    "inventories": [
        {
            "createDate": "Dec 1, 2020 7:18:18 PM",
            "description": "default server group for load balancer
shared2",
            "lastOpDate": "Dec 1, 2020 7:18:18 PM",
            "listenerServerGroupRefs": [],
            "loadBalancerUuid": "a20d5ce157f24494a98288022ce69ce0",
            "name": "default-server-group-shared2",
            "serverIps": [],
            "uuid": "5501293a2c2d4ea3855dae2051a5a29f",
            "vmNicRefs": []
        },
        {
            "createDate": "Dec 1, 2020 4:11:48 PM",
            "description": "default server group for load balancer
slb1",
            "lastOpDate": "Dec 1, 2020 4:11:48 PM",
            "listenerServerGroupRefs": [],
            "loadBalancerUuid": "8d651d83ac424257abb66f766c793a7b",
            "name": "default-server-group-slb1",
            "serverIps": [],
            "uuid": "7ca8c9ad58774d698d833d79cbcd5fb5c",
            "vmNicRefs": []
        },
        {
            "createDate": "Dec 4, 2020 3:55:17 PM",
            "description": "default server group for load balancer
test-vip",
            "lastOpDate": "Dec 4, 2020 3:55:17 PM",
            "listenerServerGroupRefs": [],
            "loadBalancerUuid": "51e511c7ad5d49849509747a38a9c7dd",
            "name": "default-server-group-test-vip",
            "serverIps": [],
            "uuid": "89bc36bdf6674323844f4afe21ed5fb2",
            "vmNicRefs": []
        },
        {
            "createDate": "Dec 1, 2020 7:36:20 PM",
            "description": "default server group for load balancer
flat",
            "lastOpDate": "Dec 1, 2020 7:36:20 PM",
            "listenerServerGroupRefs": [],
            "loadBalancerUuid": "b7597d60df48459fabee0809773ddf06",
            "name": "default-server-group-flat",
            "serverIps": [],
            "uuid": "b44ccf09cca74ab188d493177570865c",
            "vmNicRefs": []
        }
    ]
}
```

```

{
    "createDate": "Dec 1, 2020 2:53:37 PM",
    "description": "default server group for load balancer
Shared",
    "lastOpDate": "Dec 1, 2020 2:53:37 PM",
    "listenerServerGroupRefs": [
        {
            "createDate": "Dec 2, 2020 11:20:00 AM",
            "id": 1,
            "lastOpDate": "Dec 2, 2020 11:20:00 AM",
            "listenerUuid": "5631ff3bb6494fc98c16f3c135e2ebe9
",
            "serverGroupUuid": "b645b7e618ff482d8738d885426b27
99"
        }
    ],
    "loadBalancerUuid": "6874bc033d4b41369a8c0216cb9b4b04",
    "name": "default-server-group-Shared",
    "serverIps": [],
    "uuid": "b645b7e618ff482d8738d885426b2799",
    "vmNicRefs": []
},
],
"success": true
}

```

Listener Server Group Refs Inventory

Name	Description	Optional	Valid Value	Starting Version
id				4.0.0
listenerUuid				4.0.0
serverGroupUuid				4.0.0
createDate	The time when the listener was created.			4.0.0
lastOpDate	The time when the listener was last modified.			4.0.0

SLB Group Inventory

Name	Type	Description	Starting Version	Type
uuid	The UUID of the SLB group.			4.0.0
name	The name of the SLB group.			4.0.0
backendType				4.0.0

Name	Type	Description	Starting Version	Type
deployType				4.0.0
slbOfferingUuid				4.0.0
description	The detailed description of the SLB group.			4.0.0
groupBy				4.0.0
createDate	The time when the SLB group was created.			4.0.0
lastOpDate	The time when the SLB group was last modified.			4.0.0
slbVms				4.0.0
lbs				4.0.0
networks				4.0.0
systemTags	The user tags. For more information, see CreateUserTag			4.0.0
userTags	The system tags. For more information, see CreateSystemTag			4.0.0

Sample

```
{
  "inventories": [
    {
      "name": "slb",
      "backendType": "vyos",
      "deployType": "direct",
      "description": "slb test"
    }
  ]
}
```

{}

SLB Offering Inventory

Name	Type	Description	Starting Version	Type
managementNetworkUuid	String	The management network UUID.	4.0.0	
zoneUuid	String	The zone UUID.	4.0.0	
imageUuid	String	The image UUID.	4.0.0	
uuid	String	The record UUID.	4.0.0	
name	String	The name of the SLB offering.	4.0.0	
description	String	The detailed description of the SLB offering.	4.0.0	
cpuNum	Integer		4.0.0	
cpuSpeed	Integer		4.0.0	
memorySize	Long		4.0.0	
type	String		4.0.0	
allocatorStrategy	String		4.0.0	
sortKey	Integer		4.0.0	
createDate	Timestamp	The time when the SLB offering was created.	4.0.0	
systemTags	The user tags. For more information, see CreateUserTag			4.0.0
userTags	The system tags. For more information, see CreateSystemTag			4.0.0

Sample

```
{
  "inventories": [
    {
      "id": "12345678901234567890123456789012"
    }
  ]
}
```

```

    "managementNetworkUuid": "fdd51745e9ee3a4cb5bca03cf021c22f",
    "zoneUuid": "305d0c8b5c5a3edd81a641911126c332",
    "imageUuid": "b2f980076c3e3e6f8e9f3d4fd22bb7fb",
    "name": "SLB-Offering",
    "cpuNum": 2.0,
    "cpuSpeed": 1.0,
    "memorySize": 1024.0,
    "type": "SLB"
  }
]
}

```

VM NIC References Inventory

Name	Description	Optional	Valid Value	Starting Version
id	The UUID of the VM NIC references.			0.6
listenerUuid	The listener UUID.			0.6
vmNicUuid	The VM NIC UUID.			0.6
status	The status. When the VM instance of the NIC is running, the status is Active. Otherwise, it is Inactive.		<ul style="list-style-type: none"> Active Inactive 	0.6
createDate	The creation date. For more information, see Resource Property .			0.6

After a VM NIC is added successfully to a load balancer listener, if you stop the VM instance, the status of vmNicRefs will be changed to Inactive. If you start the VM instance, the status of vmNicRefs will be changed to Active. If you delete the VM instance, the corresponding NIC will be removed from the load balancer listener.

5.4.2.7 IPsec Inventory

Properties

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			0.6
name	The name. For more information, see Resource Property .			0.6
description	The description. For more information, see Resource Property .	Yes		0.6
l3NetworkUuid	The L3 network UUID.			0.6
peerAddress	The destination IP address.			0.6
peerCidrs	The destination CIDR.			0.6
authMode	The authentication mode.		pskcerts	0.6
authKey	The authentication key.			0.6
vipUuid	The VIP UUID.			0.6
ikeAuthAlgorithm	The IKE authentication algorithm.		<ul style="list-style-type: none"> • md5 • sha1 • sha256 • sha384 • sha512 	0.6
ikeEncryptionAlgorithm	The IKE encryption algorithm.		<ul style="list-style-type: none"> • 3des • aes-128 • aes-192 • aes-256 	0.6

Name	Description	Optional	Valid Value	Starting Version
ikeDhGroup	The IKE perfect forward secrecy.			0.6
policyAuthAlgorithm	The ESP authentication algorithm.		<ul style="list-style-type: none"> • md5 • sha1 • sha256 • sha384 • sha512 	0.6
policyEncryoptionAlgorithm	The ESP encryption algorithm.		<ul style="list-style-type: none"> • 3des • aes-128 • aes-192 • aes-256 	0.6
pfs	The perfect forward secrecy.		<ul style="list-style-type: none"> • dh-group2 • dh-group5 • dh-group14 • dh-group15 • dh-group16 • dh-group17 • dh-group18 • dh-group19 • dh-group20 • dh-group21 • dh-group22 • dh-group23 • dh-group24 • dh-group25 • dh-group26 	0.6
policyMode	The policy mode.		<ul style="list-style-type: none"> • tunnel • transport 	0.6
transformProtocol	The transform security protocol.		<ul style="list-style-type: none"> • esp • ahah-esp 	0.6
state	The state.		<ul style="list-style-type: none"> • Enabled • Disabled 	0.6
status				0.6

Name	Description	Optional	Valid Value	Starting Version
createDate	The creation date. For more information, see Resource Property .			0.6
lastOpDate	The last operation date. For more information, see Resource Property .			0.6

Sample

```
{
    "authKey": "Test123",
    "authMode": "psk",
    "createDate": "Dec 2, 2017 1:39:56 PM",
    "description": "",
    "ikeAuthAlgorithm": "sha1",
    "ikeDhGroup": 2,
    "ikeEncryptionAlgorithm": "3des",
    "l3NetworkUuid": "62eeb35445144649acbbd72392cf2b40",
    "lastOpDate": "Dec 2, 2017 1:40:00 PM",
    "name": "IPsec1",
    "peerAddress": "172.20.235.5",
    "peerCidrs": [
        {
            "cidr": "172.20.235.1/24",
            "connectionUuid": "fee10e8ec0f41ffa1913911953df2
4c",
            "createDate": "Dec 2, 2017 1:39:56 PM",
            "lastOpDate": "Dec 2, 2017 1:39:56 PM",
            "uuid": "15babf007b7d4752ae558aadf8ab7dbc"
        }
    ],
    "pfs": "dh-group2",
    "policyAuthAlgorithm": "sha1",
    "policyEncryptionAlgorithm": "3des",
    "policyMode": "tunnel",
    "state": "Enabled",
    "status": "Ready",
    "transformProtocol": "esp",
    "uuid": "fee10e8ec0f41ffa1913911953df24c",
    "vipUuid": "ed389f95065f4e099f4c241a8c360717"
}
```

```
}
```

5.4.3 Operations

5.4.3.1 GetNetworkServiceTypes

Obtains a network service type. Sample response:

```
{
    "serviceAndProviderTypes": {
        "CentralizedDNS": [
            "3ac7627766f54d3e885614e16859b37b"
        ],
        "DHCP": [
            "3ac7627766f54d3e885614e16859b37b",
            "4cb187b732e8487e9016ec04e987f220",
            "fc2a7c1542ad497b840b0a0f8d294ac8"
        ],
        "DNS": [
            "3ac7627766f54d3e885614e16859b37b",
            "4cb187b732e8487e9016ec04e987f220"
        ],
        "Eip": [
            "3ac7627766f54d3e885614e16859b37b",
            "4cb187b732e8487e9016ec04e987f220",
            "fc2a7c1542ad497b840b0a0f8d294ac8"
        ],
        "IPsec": [
            "3ac7627766f54d3e885614e16859b37b"
        ],
        "LoadBalancer": [
            "3ac7627766f54d3e885614e16859b37b",
            "4cb187b732e8487e9016ec04e987f220"
        ],
        "PortForwarding": [
            "3ac7627766f54d3e885614e16859b37b",
            "4cb187b732e8487e9016ec04e987f220"
        ],
        "SNAT": [
            "3ac7627766f54d3e885614e16859b37b",
            "4cb187b732e8487e9016ec04e987f220"
        ],
        "SecurityGroup": [
            "alfe1b15156246df93667e7981fc9535"
        ],
        "Userdata": [
            "fc2a7c1542ad497b840b0a0f8d294ac8"
        ],
        "VRouterRoute": [
            "3ac7627766f54d3e885614e16859b37b"
        ],
        "VipQos": [
            "3ac7627766f54d3e885614e16859b37b"
        ]
    },
    "success": true
}
```

{}

Parameters

Name	Description	Optional	Valid Value	Starting Version
userTags	The user tags. For more information, see CreateUserTag . The resource type is NetworkServiceTypeVO.	Yes		2.2
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is NetworkServiceTypeVO.	Yes		2.2
timeout		Yes		

5.4.3.2 QueryNetworkServiceProvider

Queries a network service provider module. For example,

```
QueryNetworkServiceProvider name="Flat Network Service Provider"
```

Primitive Fields of Query

See [Network Service Provider Inventory](#).

5.4.3.3 QueryNetworkServiceL3NetworkRef

Queries the reference between a network service and an L3 network. For example,

```
QueryNetworkServiceL3NetworkRef l3NetworkUuid=9082f45fce9c46f19b2ab5ff117511d6
```

```
QueryNetworkServiceL3NetworkRef serviceProvider.type=Flat
```

Primitive Fields of Query

See Network Service Reference Inventory.

Nested and Expanded Fields of Query

Field	Inventory	Description	Starting Version
I3Network	L3 Network Inventory		0.6
serviceProvider	Service Provider Inventory		0.6

5.4.3.4 AttachNetworkServiceToL3Network

Attaches a network service to an L3 network. For example,

```
AttachNetworkServiceToL3Network l3NetworkUuid=e6fa7d7b49834ab2a67b
b4f5be873381 \
networkServices="{'3ac7627766f54d3e885614e16859b37b': ['DHCP', 'SNAT']}
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
I3NetworkUuid	The L3 network UUID.			0.6
networkServices	The network services.			0.6
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.2
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.2
timeout		Yes		

5.4.3.5 DetachNetworkServiceFromL3Network

Detaches a network service from an L3 network. For example,

```
DetachNetworkServiceFromL3Network l3NetworkUuid=e6fa7d7b49834ab2a67b
b4f5be873381 \
```

```
networkServices="{'3ac7627766f54d3e885614e16859b37b': ['DHCP', 'SNAT']}"
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
l3NetworkUuid	The L3 network UUID.			0.6
networkServices	The network services.			0.6
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.2
systemTags	The system. For more information, see CreateSystemTag .	Yes		2.2
timeout		Yes		

5.4.3.6 VPC Firewall

5.4.3.6.1 CreateVpcFirewall

Creates a VPC firewall. For example,

```
CreateVpcFirewall name=name vpcUuid=27e1a95342083ce4a790d4f9dcf7f9bd
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
vpcUuid	The VPC vRouter UUID.			4.0.0
description	The detailed description of the resource.	Yes		3.6.0
name	The resource name.			3.6.0
resourceUuid		Yes		3.6.0
tagUuids	The tag UUID list.	Yes		3.6.0
userTags	The user tags. For more	Yes		3.6.0

Name	Description	Optional	Valid Value	Starting Version
	information, see CreateUserTag .			
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.6.0
timeout		Yes		

5.4.3.6.2 QueryVpcFirewall

Queries a VPC firewall. For example,

```
QueryVpcFirewall vpcUuid=27e1a95342083ce4a790d4f9dcf7f9bd
```

Primitive Fields of Query

See [VPC Firewall Inventory](#).

5.4.3.6.3 UpdateVpcFirewall

Updates a VPC firewall. For example,

```
UpdateVpcFirewall uuid=27e1a95342083ce4a790d4f9dcf7f9bd
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			3.6.0
description	The detailed description of the resource.	Yes		3.6.0
name	The resource name.	Yes		3.6.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.6.0
systemTags	The system tags. For more	Yes		3.6.0

Name	Description	Optional	Valid Value	Starting Version
	information, see CreateSystemTag .			
timeout		Yes		

5.4.3.6.4 RefreshFirewall

Refreshes the firewall configuration. For example,

```
RefreshFirewall uuid=178e23cc9fdc3673b90ee258fe60395f
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			3.6.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.6.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.6.0
timeout		Yes		

5.4.3.6.5 DeleteFirewall

Deletes a firewall. For example,

```
DeleteFirewall uuid=b86c9016b4f24953a9edefb53ca0678c
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			3.6.0
deleteMode	The deletion mode.	Yes	<ul style="list-style-type: none"> • Permissive • Enforcing 	4.0.0

Name	Description	Optional	Valid Value	Starting Version
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.6.0
systemTags	The system. For more information, see CreateSystemTag .	Yes		3.6.0
timeout		Yes		

5.4.3.6.6 CreateFirewallRuleSet

Creates a firewall rule set. For example,

```
CreateFirewallRuleSet name=name vpcFirewallUuid=8a91b3fb063335a9b657  
8c251d61127f actionType=drop
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
name	The resource name.			3.6.0
vpcFirewallUuid				3.6.0
actionType			<ul style="list-style-type: none"> • drop • accept • reject 	3.6.0
description	The detailed description of the resource.	Yes		3.6.0
resourceUuid		Yes		3.6.0
tagUuids		Yes		3.6.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.6.0
systemTags	The system tags. For more information, see	Yes		3.6.0

Name	Description	Optional	Valid Value	Starting Version
	CreateSystemTag .			
timeout		Yes		

5.4.3.6.7 QueryFirewallRuleSet

Queries a firewall rule set. For example,

```
QueryFirewallRuleSet
```

Primitive Fields of Query

See [Firewall Rule Set Inventory](#).

5.4.3.6.8 UpdateFirewallRuleSet

Updates a firewall rule set. For example,

```
UpdateFirewallRuleSet uuid=b86c9016b4f24953a9edefb53ca0678c
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			3.6.0
name	The resource name.	Yes		3.6.0
description	The detailed description of the resource.	Yes		3.6.0
actionType		Yes	<ul style="list-style-type: none"> • drop • accept • reject 	3.6.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.6.0
systemTags	The system tags. For more information, see	Yes		3.6.0

Name	Description	Optional	Valid Value	Starting Version
	CreateSystemTag .			
timeout		Yes		

5.4.3.6.9 DeleteFirewallRuleSet

Deletes a firewall rule set. For example,

```
DeleteFirewallRuleSet uuid=62b6ef32f6573f01929c5020d976bd66
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			3.6.0
deleteMode	The deletion mode.	Yes	<ul style="list-style-type: none"> Permissive Enforcing 	4.0.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.6.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.6.0
timeout		Yes		

5.4.3.6.10 AttachFirewallRuleSetToL3

Attaches a firewall rule set to an L3 network. For example,

```
AttachFirewallRuleSetToL3 vpcFirewallUuid=d5a0a7ce8bdf315a8718
9bb3f1c12f98 l3Uuid=ad2bbeb82973334fa0ab243f52088fea forward=in
ruleSetUuid=91e9fed42a113c0395a81920c4179a43
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
vpcFirewallUuid				3.6.0

Name	Description	Optional	Valid Value	Starting Version
l3Uuid				3.6.0
forward			<ul style="list-style-type: none"> • in • out 	3.6.0
ruleSetUuid				3.6.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.6.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.6.0
timeout		Yes		

5.4.3.6.11 DetachFirewallRuleSetFromL3

Detaches a firewall rule set from an L3 network. For example,

```
DetachFirewallRuleSetFromL3 vpcFirewallUuid=d5a0a7ce8bdf315a8718
9bb3f1c12f98 ruleSetUuid=a54a917869733b5590053eb3f4505089 l3Uuid=
ad2bbeb82973334fa0ab243f52088fea forward=in
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
vpcFirewallUuid				3.6.0
l3Uuid	The L3 network UUID.			4.0.0
forward			<ul style="list-style-type: none"> • in • out 	3.6.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.6.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.6.0

Name	Description	Optional	Valid Value	Starting Version
	<i>CreateSystemTag.</i>			
timeout		Yes		

5.4.3.6.12 QueryFirewallRuleSetL3Ref

Queries the reference between a firewall rule set and an L3 network. For example,

```
QueryFirewallRuleSetL3Ref
```

Primitive Fields of Query

See [Firewall Rule Set and L3 Network Reference Inventory](#).

5.4.3.6.13 CreateFirewallRule

Creates a firewall rule. For example,

```
CreateFirewallRule vpcFirewallUuid=889eefa6645739f6a54cea4cf73c9f6
ruleSetUuid=b8febfb4550f3323b4e645e05516ea4a action=accept ruleNumber=
1001.0 state=disable
```

Parameters

Name	Description	Optional	Valid Value	Starting Value
vpcFirewallUuid				3.6.0
ruleSetUuid				3.6.0
action			<ul style="list-style-type: none"> • drop • accept 	3.6.0
protocol		Yes		3.6.0
destPort		Yes		3.6.0
sourcePort		Yes		3.6.0
sourcelp		Yes		3.6.0
destlp		Yes		3.6.0
allowStates		Yes		3.6.0
tcpFlag		Yes		3.6.0
icmpTypeName		Yes		3.6.0
ruleNumber				3.6.0

Name	Description	Optional	Valid Value	Starting Value
enableLog		Yes		3.6.0
state			<ul style="list-style-type: none"> • enable • disable 	3.6.0
description	The detailed description of the resource.	Yes		3.6.0
resourceUuid		Yes		3.6.0
tagUuids	The tag UUID.	Yes		3.6.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.6.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.6.0
timeout		Yes		

5.4.3.6.14 QueryFirewallRule

Queries a firewall rule. For example,

```
QueryFirewallRule
```

Primitive Fields of Query

See [Firewall IP Set Template Inventory](#).

5.4.3.6.15 UpdateFirewallRule

Updates a firewall rule. For example,

```
UpdateFirewallRule vpcFirewallUuid=07a45d49ddfb3be1b0b36a0022d69598
ruleSetUuid=ff7b94bb9f0432a4a2e411a187138ba0 uuid=b86c9016b4f24953a9ed
efb53ca0678c action=accept ruleNumber=1001.0 state=disable
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
vpcFirewallUuid				3.6.0
ruleSetUuid				3.6.0
uuid				3.6.0
action			<ul style="list-style-type: none"> • drop • reject • accept 	3.6.0
protocol		Yes		3.6.0
destPort		Yes		3.6.0
sourcePort		Yes		3.6.0
sourcelp		Yes		3.6.0
destIp		Yes		3.6.0
allowStates		Yes		3.6.0
tcpFlag		Yes		3.6.0
icmpTypeName		Yes		3.6.0
ruleNumber				3.6.0
enableLog		Yes		3.6.0
state			<ul style="list-style-type: none"> • enable • disable 	3.6.0
description	The detailed description of the resource.	Yes		3.6.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.6.0

Name	Description	Optional	Valid Value	Starting Version
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.6.0
timeout		Yes		

5.4.3.6.16 DeleteFirewallRule

Deletes a firewall rule. For example,

```
DeleteFirewallRule uuid=b86c9016b4f24953a9edefb53ca0678c
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			3.6.0
deleteMode	The deletion mode.	Yes	<ul style="list-style-type: none"> • Permissive • Enforcing 	4.0.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.6.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.6.0
timeout		Yes		

5.4.3.6.17 ChangeFirewallRuleState

Changes the state of a firewall rule. For example,

```
ChangeFirewallRuleState uuid=08e3e33431173c55a2b71a94ef8e9f2e state=disable
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			3.6.0
state			<ul style="list-style-type: none"> • enable • disable 	3.6.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.6.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.6.0
timeout		Yes		

5.4.3.6.18 CreateFirewallRuleTemplate

Creates a firewall rule template. For example,

```
CreateFirewallRuleTemplate name=template ruleNumber=13 action=accept
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
action			<ul style="list-style-type: none"> • drop • reject • accept 	4.0.0
protocol		Yes		4.0.0
name	The template name.			4.0.0
destPort		Yes		4.0.0

Name	Description	Optional	Valid Value	Starting Version
sourcePort		Yes		4.0.0
sourcelp		Yes		4.0.0
destlp		Yes		4.0.0
allowStates		Yes		4.0.0
tcpFlag		Yes		4.0.0
icmpTypeName		Yes		4.0.0
ruleNumber				4.0.0
enableLog		Yes		4.0.0
state		Yes		4.0.0
description	The detailed description of the template.	Yes		4.0.0
resourceUuid	The template UUID.	Yes		4.0.0
tagUuids	The tag UUIDs.	Yes		4.0.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		4.0.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		4.0.0
timeout		Yes		

5.4.3.6.19 DeleteFirewallRuleTemplate

Deletes a firewall rule template. For example,

```
DeleteFirewallRuleTemplate uuid=b86c9016b4f24953a9edefb53ca0678c
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The template UUID.			4.0.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		4.0.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		4.0.0
timeout		Yes		

5.4.3.6.20 UpdateFirewallRuleTemplate

Updates a firewall rule template. For example,

```
UpdateFirewallRuleTemplate uuid=b86c9016b4f24953a9edefb53ca0678c name=template action=drop
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The template UUID.			4.0.0
name	The template name.			4.0.0
action			<ul style="list-style-type: none"> • drop • reject • accept 	4.0.0
protocol		Yes		4.0.0
destPort		Yes		4.0.0

Name	Description	Optional	Valid Value	Starting Version
sourcePort		Yes		4.0.0
sourcelp		Yes		4.0.0
destlp		Yes		4.0.0
allowStates		Yes		4.0.0
tcpFlag		Yes		4.0.0
icmpTypeName		Yes		4.0.0
ruleNumber				4.0.0
enableLog		Yes		4.0.0
state		Yes		4.0.0
description	The detailed description of the template.	Yes		4.0.0
resourceUuid	The template UUID.	Yes		4.0.0
tagUuids	The tag UUIDs.	Yes		4.0.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		4.0.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		4.0.0
timeout		Yes		

5.4.3.6.21 QueryFirewallRuleTemplate

Queries firewall rule templates. For example,

```
QueryFirewallRuleTemplate
```

Primitive Fields of Query

See [Firewall IP Set Template Inventory](#).

5.4.3.6.22 QueryVpcFirewallVRouterRef

Queries the reference between a firewall and a single node router. For example,

```
QueryVpcFirewallVRouterRef
```

Primitive Fields of Query

See [VPC Firewall and vRouter Reference Inventory](#).

5.4.3.6.23 ApplyRuleSetChanges

Apply ruleset changes to VPC vRouters. For example,

```
ApplyRuleSetChanges uuid=e78b0b5ebelc33159b0faa2d88a41b21
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID of the ruleset.			4.0.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		4.0.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		4.0.0
timeout		Yes		

5.4.3.6.24 CreateFirewallIpSetTemplate

Creates a firewall IP set or port set template. For example,

```
CreateFirewallIpSetTemplate name=template type=ip
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
name	The template name.			4.0.0
sourceValue		Yes		4.0.0

Name	Description	Optional	Valid Value	Starting Version
destValue		Yes		4.0.0
type				4.0.0
resourceUuid	The template UUID.	Yes		4.0.0
tagUuids	The tag UUIDs.	Yes		4.0.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		4.0.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		4.0.0
timeout		Yes		

5.4.3.6.25 DeleteFirewallIpSetTemplate

Deletes a firewall IP set or port set template. For example,

```
DeleteFirewallIpSetTemplate uuid=b86c9016b4f24953a9edefb53ca0678c
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The template UUID.			4.0.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		4.0.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		4.0.0
timeout		Yes		

5.4.3.6.26 UpdateFirewallIpSetTemplate

Updates a firewall IP set or port set template. For example,

```
UpdateFirewallIpSetTemplate name=template ruleNumber=13 action=accept
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	String			4.0.0
name	The template name.	Yes		4.0.0
sourceValue		Yes		4.0.0
destValue		Yes		4.0.0
type				4.0.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		4.0.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		4.0.0
timeout		Yes		

5.4.3.6.27 QueryFirewallIpSetTemplate

Queries a firewall IP set or port set template. For example,

```
QueryFirewallIpSetTemplate
```

Primitive Fields of Query

See [Firewall IP Set Template Inventory](#).

5.4.3.7 Security Group

5.4.3.7.1 CreateSecurityGroup

Creates a security group. For example,

```
CreateSecurityGroup name=SecurityGroup1
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
name	The security group name.			0.6
description	The detailed description of the resource.	Yes		0.6
resourceUuid	The resource UUID.	Yes		0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is SecurityGroupVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is SecurityGroupVO.	Yes		0.6
timeout		Yes		

5.4.3.7.2 DeleteSecurityGroup

Deletes a security group. For example,

```
DeleteSecurityGroup uuid=4b6b54354448429db419cdb9ca2b17ff
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The security group UUID.			0.6
deleteMode	The delete mode. For more information, see Delete Resources .	Yes	<ul style="list-style-type: none"> Permissive Enforcing 	2.1
resourceUuid	The resource UUID.	Yes		0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is SecurityGroupVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is SecurityGroupVO.	Yes		0.6
timeout		Yes		

5.4.3.7.3 QuerySecurityGroup

Queries a security group. For example,

```
QuerySecurityGroup uuid=5a008ae4db7b4a7aa1010083f641cc80
```

```
QuerySecurityGroup rules.uuid=c6173478f10347f0be3398b9ccaed1cb
```

Primitive Fields of Query

See [Security Group Inventory](#).

Nested and Expanded Fields of Query

Field	Inventory	Description	Starting Version
l3Network	L3 Network Inventory		0.6
rules	Rules Inventory		0.6
vmNics	VM NIC Inventory		0.6

5.4.3.7.4 UpdateSecurityGroup

Updates a security group. For example,

```
UpdateSecurityGroup uuid=5a008ae4db7b4a7aa1010083f641cc80
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The security group UUID.			0.6
name	The security group name.			0.6
description	The detailed description of the security group.	Yes		0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is SecurityGroupVO.	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is SecurityGroupVO.	Yes		0.6
timeout		Yes		

5.4.3.7.5 ChangeSecurityGroupState

Changes the state of a security group. For example,

```
ChangeSecurityGroupState uuid=5a008ae4db7b4a7aa1010083f641cc80
stateEvent=enable
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The security group UUID.			0.6
stateEvent	The security group state.		<ul style="list-style-type: none"> • enable • disable 	0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is SecurityGroupVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is SecurityGroupVO.	Yes		0.6
timeout		Yes		

5.4.3.7.6 AttachSecurityGroupToL3Network

Attaches a security group to an L3 network. For example,

```
AttachSecurityGroupToL3Network securityGroupUuid=5a008ae4db7b4a7aa101
0083f641cc80 \
l3NetworkUuid=9082f45fce9c46f19b2ab5ff117511d6
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
securityGroupUuid	The security group UUID.			0.6
l3NetworkUuid	The L3 network UUID.			0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is SecurityGroupVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is SecurityGroupVO.	Yes		0.6
timeout		Yes		

5.4.3.7.7 DetachSecurityGroupFromL3Network

Detaches a security group from an L3 network. For example,

```
DetachSecurityGroupFromL3Network securityGroupUuid=5a008ae4db
7b4a7aa1010083f641cc80 \
l3NetworkUuid=9082f45fce9c46f19b2ab5ff117511d6
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
securityGroupUuid	The security group UUID.			0.6

Name	Description	Optional	Valid Value	Starting Version
I3NetworkUuid	The L3 network UUID.			0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is SecurityGroupVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is SecurityGroupVO.	Yes		0.6
timeout		Yes		

5.4.3.7.8 GetCandidateVmNicForSecurityGroup

Obtains a VM NIC inventory that can use a security group. For example,

```
GetCandidateVmNicForSecurityGroup securityGroupUuid=5a008ae4db  
7b4a7aa1010083f641cc80
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
securityGroupUuid	The security group UUID.			0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is SecurityGroupVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
	emTag. The resource type is SecurityGroupVO.			
timeout		Yes		

5.4.3.7.9 AddVmNicToSecurityGroup

Adds a VM NIC to a security group. For example,

```
AddVmNicToSecurityGroup securityGroupUuid=5a008ae4db7b4a7aa101
0083f641cc80 \
vmNicUuids=3e6a4cc2eb0941edbac7af24e2ff932f
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
securityGroupUuid	The security group UUID.			0.6
vmNicUuids	The VM NIC UUID list.			0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is SecurityGroupVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is SecurityGroupVO.	Yes		0.6
timeout		Yes		

5.4.3.7.10 DeleteVmNicFromSecurityGroup

Deletes a VM NIC from a security group. For example,

```
DeleteVmNicFromSecurityGroup securityGroupUuid=5a008ae4db7b4a7aa101
0083f641cc80 \
```

```
vmNicUuids=3e6a4cc2eb0941edbac7af24e2ff932f
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
securityGroupUuid	The security group UUID.			0.6
vmNicUuids	The VM NIC UUID list.			0.6
userTags	The user tags. For more information, see CreateUserTag . The resource type is SecurityGroupVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is SecurityGroupVO.	Yes		0.6
timeout		Yes		

5.4.3.7.11 QueryVmNicInSecurityGroup

Queries a list of VM NICs that use a security group. For example,

```
QueryVmNicInSecurityGroup securityGroupUuid=5a008ae4db7b4a7aa1010083f641cc80
```

```
QueryVmNicInSecurityGroup vmNic.uuid=3e6a4cc2eb0941edbac7af24e2ff932f
```

Primitive Fields of Query

See Security Group Inventory.

Nested and Expanded Fields of Query

Field	Inventory	Description	Starting Version
securityGroup	Security Group Inventory		0.6

Field	Inventory	Description	Starting Version
vmNic	VM NIC Inventory	The VM NICs that use the security group.	0.6

5.4.3.7.12 AddSecurityGroupRule

Adds a rule to a security group. For example,

```
AddSecurityGroupRule rules="[{ 'type':'Ingress', 'protocol':'TCP', 'startPort':'22', \ 'endPort':'22', 'allowedCidr':'0.0.0.0/0' }]" securityGroupUuid=090990371a5e4949a2a129628ba91275
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
securityGroupUuid	The security group UUID.			0.6
rules	The rules in the security group.			0.6
remoteSecurityGroupUuids	The security group that the rule takes effect.	Yes		0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is SecurityGroupVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is SecurityGroupVO.	Yes		0.6
timeout		Yes		

5.4.3.7.13 QuerySecurityGroupRule

Queries a security group rule. For example,

```
QuerySecurityGroupRule uuid=b59a266d49374b729cbcafbe2cc23f73
```

```
QuerySecurityGroupRule securityGroup.uuid=090990371a5e4949a2a1  
29628ba91275
```

Primitive Fields of Query

See [Security Group Rule Inventory](#).

Nested and Expanded Fields of Query

Field	Inventory	Description	Starting Version
securityGroup	Security Group Inventory		0.6

5.4.3.7.14 DeleteSecurityGroupRule

Deletes a security group rule. For example,

```
DeleteSecurityGroupRule ruleUuids=b59a266d49374b729cbcafbe2cc23f73
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
ruleUuids	The UUID list of the security group rule.	Yes		0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is SecurityGroupRuleVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is SecurityGroupRuleVO.	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
timeout		Yes		

5.4.3.8 VIP

5.4.3.8.1 CreateVip

Creates a VIP. For example,

```
CreateVip name=vip1 l3NetworkUuid=a3b2fce8f82b4422a575220a35d6ebbd
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
name	The VIP name.			0.6
description	The detailed description of the VIP.	Yes		0.6
l3NetworkUuid	The UUID of the L3 network that uses the VIP service.			0.6
ipRangeUuid	The IP range UUID.			3.9.0
allocatorStrategy	The allocator strategy.	Yes	<ul style="list-style-type: none"> • DefaultHostAllocatorStrategy • LastHostPreferredAllLocatorStrategy • LeastVmPreferredHostAllocatorStrategy • MinimumCPUUsageHostAllocatorStrategy • MinimumMemoryUsageHostAllocatorStrategy 	0.6

Name	Description	Optional	Valid Value	Starting Version
			stAllocato rStrategy <ul style="list-style-type: none"> • MaxInstanc ePerHostHo stAllocato rStrategy • Designated HostAllocat orStrategy 	
requiredIp	The required IP address.	Yes		0.6
resourceUuid	The resource UUID.	Yes		0.6
userTags	The user tags. For more information, see CreateUserTag . The resource type is VipVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSyst emTag . The resource type is VipVO.	Yes		0.6
timeout		Yes		

5.4.3.8.2 DeleteVip

Deletes a VIP. For example,

```
DeleteVip uuid=a9cca051d90348a7b7acdabba96865e9
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The VIP UUID.			0.6
deleteMode	The delete mode. For more	Yes	<ul style="list-style-type: none"> • Permissive 	0.6

Name	Description	Optional	Valid Value	Starting Version
	information, see Delete Resources .		• Enforcing	
userTags	The user tags. For more information, see CreateUserTag . The resource type is VipVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is VipVO.	Yes		0.6
timeout		Yes		

5.4.3.8.3 QueryVip

Queries a VIP. For example,

```
QueryVip l3NetworkUuid=a3b2fce8f82b4422a575220a35d6ebbd
```

```
QueryVip l3Network.uuid=a3b2fce8f82b4422a575220a35d6ebbd
```

Primitive Fields of Query

See [VIP Inventory](#).

Nested and Expanded Fields of Query

Field	Inventory	Description	Starting Version
l3Network	L3 Network Inventory		0.6
eip	EIP Address Inventory		0.6
loadBalancer	Load Balancer Inventory		0.6
peerL3Network	L3 Network Inventory		0.6
portForwarding	Port Forwarding Inventory		0.6

5.4.3.8.4 UpdateVip

Updates a VIP. For example,

```
UpdateVip uuid=bc6277e31a904c46a506e8031b1cef65
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The VIP UUID.			0.6
name	The VIP name.	Yes		0.6
description	The detailed description of the VIP.	Yes		0.6
userTags	The user tags. For more information, see CreateUserTag . The resourceUuid type is VipVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is VipVO.	Yes		0.6
timeout		Yes		

5.4.3.8.5 ChangeVipState

Changes the state of a VIP. For example,

```
ChangeVipState uuid=bc6277e31a904c46a506e8031b1cef65 stateEvent=disable
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The VIP UUID.			0.6
stateEvent	The state event.		<ul style="list-style-type: none"> • Enable • Disable 	0.6

Name	Description	Optional	Valid Value	Starting Version
userTags	The user tags. For more information, see CreateUserTag . The resource type is VipVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is VipVO.	Yes		0.6
timeout		Yes		

5.4.3.8.6 GetVipUsedPorts

Obtains all of the business ports of a VIP.

```
GetVipUsedPorts protocol=TCP uuid=8bf4d57854ec42dbbdcc5b1424a243d9
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The VIP UUID.			2.2
protocol	The network protocol.		<ul style="list-style-type: none"> • TCP • UDP 	2.2
userTags	The user tags. For more information, see CreateUserTag . The resource type is VipVO.	Yes		2.2
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is VipVO.	Yes		2.2

Name	Description	Optional	Valid Value	Starting Version
timeout		Yes		

5.4.3.8.7 SetVipQos

Sets a VIP QoS. For example,

```
SetVipQos uuid=0ba6619eaede41d1ab506e33f6125b34 \
outboundBandwidth=1048576 inboundBandwidth=1048576
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			2.3
port	The port.	Yes		2.3
outboundBandwidth	The outbound bandwidth.	Yes		2.3
inboundBandwidth	The inbound bandwidth. Make sure that either inboundbandwidth, or outboundbandwidth is not null.	Yes		2.3
userTags	The user tags. For more information, see CreateUserTag . The resource type is VipVO.	Yes		2.3
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is VipVO.	Yes		2.3
timeout		Yes		

5.4.3.8.8 GetVipQos

Obtains a VIP QoS. For example,

```
GetVipQos uuid=5ffea72b469549a1bcb2ce0788cccb26
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			2.3
userTags	The user tags. For more information, see CreateUserTag . The resource type is VipVO.	Yes		2.3
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is VipVO.	Yes		2.3
timeout		Yes		

5.4.3.8.9 DeleteVipQos

Deletes a VIP QoS. For example,

```
DeleteVipQos uuid=1dbb011e3fc24dba8831cc7d7cc702ce port=80
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			2.3
port	The port.	Yes		2.3
userTags	The user tags. For more information, see CreateUserTag	Yes		2.3

Name	Description	Optional	Valid Value	Starting Version
	.The resource type is VipVO.			
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is VipVO.	Yes		2.3
timeout		Yes		

**Note:**

- If you configured a port for the VIP QoS rule, you could delete the VIP QoS by using the following format:

```
DeleteVipQos uuid=xx port=xx
```

5.4.3.9 EIP

5.4.3.9.1 CreateEip

Creates an EIP. For example,

```
CreateEip name=eip1 vipUuid=3d782603854549398859e62e918f6757
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
name	The EIP name.			0.6
description	The detailed description of the EIP.	Yes		0.6
vipUuid	The VIP UUID.			0.6
vmNicUuid	The VM NIC UUID.	Yes		0.6
resourceUuid	The resource UUID.	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
userTags	The user tags. For more information, see CreateUserTag . The resource type is EipVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is EipVO.	Yes		0.6
timeout		Yes		

5.4.3.9.2 DeleteEip

Deletes an EIP. For example,

```
DeleteEip uuid=65b402f0f03443239cb5014e6859cd38
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The EIP UUID.			0.6
deleteMode	The delete mode. For more information, see Delete Resources .	Yes	<ul style="list-style-type: none"> • Permissive • Enforcing 	0.6
userTags	The user tags. For more information, see CreateUserTag . The resource type is EipVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
	emTag. The resource type is EipVO.			
timeout		Yes		

5.4.3.9.3 QueryEip

Queries an EIP. For example,

```
QueryEip uuid=83b6bba232a44038bd13f5ced9693f92
```

```
QueryEip vip.uuid=3d782603854549398859e62e918f6757
```

Primitive Fields of Query

See [EIP Inventory](#).

Nested and Expanded Fields of Query

Field	Inventory	Description	Starting Version
vmNic	VM NIC Inventory		0.6
vip	VIP Inventory		0.6

5.4.3.9.4 UpdateEip

Updates an EIP. For example,

```
UpdateEip uuid=83b6bba232a44038bd13f5ced9693f92
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The EIP UUID.			0.6
name	The EIP name.	Yes		0.6
description	The detailed description of the EIP.	Yes		0.6
userTags	The user tags. For more information, see CreateUserTag	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
	. The resource type is EipVO.			
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is EipVO.	Yes		0.6
timeout		Yes		

5.4.3.9.5 ChangeEipState

Changes the state of an EIP. For example,

```
ChangeEipState uuid=83b6bba232a44038bd13f5ced9693f92 stateEvent=enable
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The EIP UUID.			0.6
stateEvent	The state event.		<ul style="list-style-type: none"> • Enable • Disable 	0.6
userTags	The user tags. For more information, see CreateUserTag . The resource type is EipVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is EipVO.	Yes		0.6
timeout		Yes		

5.4.3.9.6 GetEipAttachableVmNics

Obtains the VM NICs to which a specified EIP can be attached. For example,

```
GetEipAttachableVmNics eipUuid=83b6bba232a44038bd13f5ced9693f92
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
eipUuid	The EIP UUID.	Yes		0.6
vipUuid	The VIP UUID. Make sure that either eipUuid or vipUuid is not null .	Yes		0.6
userTags	The user tags. For more information, see CreateUserTag . The resource type is EipVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is EipVO.	Yes		0.6
timeout		Yes		

5.4.3.9.7 AttachEip

Attaches an EIP. For example,

```
AttachEip eipUuid=83b6bba232a44038bd13f5ced9693f92 vmNicUuid=3e6a4cc2eb0941edbac7af24e2ff932f
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
eipUuid	The EIP UUID.			0.6
vmNicUuid	The VM NIC UUID.			0.6

Name	Description	Optional	Valid Value	Starting Version
userTags	The user tags. For more information, see CreateUserTag . The resource type is EipVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is EipVO.	Yes		0.6
timeout		Yes		

5.4.3.9.8 DetachEip

Detaches an EIP. For example,

```
DetachEip uuid=83b6bba232a44038bd13f5ced9693f9
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The EIP UUID.			0.6
userTags	The user tags. For more information, see CreateUserTag . The resource type is EipVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is EipVO.	Yes		0.6
timeout		Yes		

5.4.3.10 Port Forwarding

5.4.3.10.1 CreatePortForwardingRule

Creates a port forwarding rule. For example,

```
CreatePortForwardingRule name=pf1 protocolType=TCP vipUuid=818351340f
534190b37dfead4d17341c \
vipPortStart=22 privatePortStart=23 privatePortEnd=23
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
vipUuid	The VIP UUID.			0.6
vipPortStart	The VIP start port .			0.6
vipPortEnd	The VIP end port . If not specified , the value of vipPortStart will be used by default.	Yes		0.6
privatePortStart	The start port of the guest IP address (the IP address of the VM NIC). If not specified , the value of vipPortStart will be used by default.	Yes		0.6
privatePortEnd	The end port of the guest IP address (the IP address of the VM NIC). If not specified , the value of vipPortEnd will be used by default.	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
protocolType	The protocol type of the network traffic.		<ul style="list-style-type: none"> TCP UDP 	0.6
vmNicUuid	The VM NIC UUID.	Yes		0.6
allowedCidr	The source CIDR. The port forwarding rule is only applied to the traffics of the source CIDR. If not specified, 0.0.0.0/0 will be used by default.	Yes		0.6
name	The name of the port forwarding rule.			0.6
description	The detailed description of the port forwarding rule.	Yes		0.6
resourceUuid	The resource UUID.	Yes		0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is PortForwardingRuleVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is PortForwardingRuleVO.	Yes		0.6
timeout		Yes		

5.4.3.10.2 DeletePortForwardingRule

Deletes a port forwarding rule. For example,

```
DeletePortForwardingRule uuid=1855707e0a4f4894bcdfaa455d213ecb
```

Parameters

Name	Description	Optional	Valid Value	Starting Value
uuid	The UUID of the port forwarding rule.			0.6
deleteMode	The delete mode. For more information, see Delete Resources .	Yes	<ul style="list-style-type: none"> Permissive Enforcing 	0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is PortForwardingRuleVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is PortForwardingRuleVO.	Yes		0.6
timeout		Yes		

5.4.3.10.3 QueryPortForwardingRule

Queries a port forwarding rule. For example,

```
QueryPortForwardingRule uuid=8c3c4c7864c54010a09dbd77e2bfeedd
```

```
QueryPortForwardingRule vip.name=vip-for-pf1
```

Primitive Fields of Query

See [Port Forwarding Rule Inventory](#).

Nested and Expanded Fields of Query

Field	Inventory	Description	Starting Version
vmNic	VM NIC Inventory		0.6
vip	VIP Inventory		0.6

5.4.3.10.4 UpdatePortForwardingRule

Updates a port forwarding rule. For example,

```
UpdatePortForwardingRule uuid=8c3c4c7864c54010a09dbd77e2bfeed
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID of the port forwarding rule.			0.6
name	The name of the port forwarding rule.	Yes		0.6
description	The detailed description of the port forwarding rule.	Yes		0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is PortForwardingRuleVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is PortForwardingRuleVO.	Yes		0.6
timeout		Yes		

5.4.3.10.5 ChangePortForwardingRuleState

Changes the state of a port forwarding rule. For example,

```
ChangePortForwardingRuleState uuid=8c3c4c7864c54010a09dbd77e2bfeedd
stateEvent=disable
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID of the port forwarding rule.			0.6
stateEvent	The state of the port forwarding rule.		<ul style="list-style-type: none"> • Enable • Disable 	0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is PortForwardingRuleVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is PortForwardingRuleVO.	Yes		0.6
timeout		Yes		

5.4.3.10.6 GetPortForwardingAttachableVmNics

Obtains a VM NIC list. For example,

```
GetPortForwardingAttachableVmNics ruleUuid=8c3c4c7864c54010a09d  
bd77e2bfeedd
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
ruleUuid	The UUID of the port forwarding rule.			0.6
userTags	The user tags. For more information, see CreateUserTag . The resource type is PortForwardingRuleVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is PortForwardingRuleVO.	Yes		0.6
timeout		Yes		

5.4.3.10.7 AttachPortForwardingRule

Attaches a port forwarding rule to a VM NIC. For example,

```
AttachPortForwardingRule ruleUuid=8c3c4c7864c54010a09dbd77e2bfeedd \  
vmNicUuid=3e6a4cc2eb0941edbac7af24e2ff932f
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
ruleUuid	The UUID of the port forwarding rule.			0.6

Name	Description	Optional	Valid Value	Starting Version
vmNicUuid	The VM NIC UUID.			0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is PortForwardingRuleVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is PortForwardingRuleVO.	Yes		0.6
timeout		Yes		

5.4.3.10.8 DetachPortForwardingRule

Detaches a port forwarding rule from a VM NIC. For example,

```
DetachPortForwardingRule uuid=8c3c4c7864c54010a09dbd77e2bfeedd
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The port forwarding rule UUID.			0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is PortForwardingRuleVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
	CreateSystemTag . The resource type is PortForwardingRuleVO.			
timeout		Yes		

5.4.3.11 Load Balancing

5.4.3.11.1 CreateLoadBalancer

Creates a load balancer. For example,

```
CreateLoadBalancer name=LB1 vipUuid=dc0ee73ed875423aa6778fc091e3ce70
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
name	The load balancer name.			0.6
description	The detailed description of the load balancer.	Yes		0.6
vipUuid	The VIP UUID.			0.6
resourceUuid	The resource UUID.	Yes		0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is LoadBalancerVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is LoadBalancerVO.	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
timeout		Yes		

5.4.3.11.2 UpdateLoadBalancer

Updates a load balancer. For example,

```
UpdateLoadBalancer uuid=901ddf386552467298685d08949911f8
```

Parameters

Name	Description	Optional	Valid Value	Starting Value
uuid	The resource UUID.			0.6
name	The load balancer name.	Yes		0.6
description	The detailed description of the load balancer.	Yes		0.6
resourceUuid	The resource UUID.	Yes		0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is LoadBalancerVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is LoadBalancerVO.	Yes		0.6
timeout		Yes		

5.4.3.11.3 DeleteLoadBalancer

Deletes a load balancer. For example,

```
DeleteLoadBalancer uuid=18fa017f308342f5a580edcbb63dbcb3
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The load balancer UUID.			0.6
deleteMode	The delete mode. For more information, see Delete Resources .	Yes	<ul style="list-style-type: none"> Permissive Enforcing 	0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is LoadBalancerVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is LoadBalancerVO.	Yes		0.6
timeout		Yes		

5.4.3.11.4 QueryLoadBalancer

Queries a load balancer. For example,

```
QueryLoadBalancer vipUuid=dc0ee73ed875423aa6778fc091e3ce70
```

```
QueryLoadBalancer listeners.uuid=ba50b5cd2e09461e9aea80df779c425d
```

Primitive Fields of Query

See [Load Balancer Inventory](#).

Nested and Expanded Fields of Query

Field	Inventory	Description	Starting Version
loadBalancer	Load Balancer Inventory		0.6
vmNic	VM NIC Inventory		0.6
vmNicRefs	VM NIC References Inventory		0.6

5.4.3.11.5 RefreshLoadBalancer

Refreshes a load balancer. For example,

```
RefreshLoadBalancer uuid=bad56001c1f24cefa085fa9cf83f6424
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The load balancer UUID.			0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is LoadBalancerVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is LoadBalancerVO.	Yes		0.6
timeout		Yes		

5.4.3.11.6 CreateLoadBalancerListener

Creates a load balancer listener. For example,

```
CreateLoadBalancerListener name=lblistener loadBalancerUuid=bad56001c1f24cefa085fa9cf83f6424\
```

```
loadBalancerPort=22 instancePort=23
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
loadBalancerUuid	The UUID of the load balancer listener.			0.6
certificateUuid				2.3
name	The name of the load balancer listener.			0.6
description	The detailed description of the load balancer listener.	Yes		0.6
instancePort	The VM instance port.	Yes		0.6
loadBalancerPort	The load balancer port.			0.6
protocol	The protocol.	Yes	<ul style="list-style-type: none"> • tcp • http • https • udp 	0.6
resourceUuid	The resource UUID.	Yes		0.6
instancePort		Yes		3.9.0
healthCheckProtocol	The health check protocol.	Yes	<ul style="list-style-type: none"> • tcp • udp • http 	3.9.0
healthCheckMethod	The health check method.	Yes	<ul style="list-style-type: none"> • GET • HEAD 	3.9.0
healthCheckURI	The health check URI.	Yes		3.9.0
healthCheckHttpCode	The expected response code of the health code.	Yes		3.9.0

Name	Description	Optional	Valid Value	Starting Version
aclStatus	The access control status.	Yes	• enable • disable	3.9.0
aclUuids	The access control list.	Yes		3.9.0
aclType	The access control type.	Yes	• white • black	3.9.0
tagUuids	The tag UUID list.	Yes		3.9.0
userTags	The user tags. For more information, see CreateUser Tag . The resource type is LoadBalancerListenerVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type LoadBalancerListenerVO.	Yes		0.6
timeout		Yes		



Note:

- When you create a load balancer listener in ZStack Cloud, you can set seven layers of health check parameters by adding the **healthCheckParameter** option to **SystemTags**.
 - Format of the **healthCheckParameter** option: `healthCheckParameter:::{parameter}`. Here, the parameter can be `healthCheckParameter::method:uri:expect-result`.
 - Example: `healthCheckParameter::GET:/healthstatus.html:http_2xx`
- When you create a load balancer listener in ZStack Cloud, you can set the access control status of the listener by adding the **accessControlStatus** option to **SystemTags**.
 - Format of the **accessControlStatus** option: `accessControlStatus:::{status}`

— Example: `accessControlStatus::{enable}`

5.4.3.11.7 DeleteLoadBalancerListener

Deletes a load balancer listener. For example,

```
DeleteLoadBalancerListener uuid=03b7ad0224774dbab3dcfc4dbce74df4
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID of the load balancer listener.			0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is LoadBalancerListenerVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is LoadBalancerListenerVO.	Yes		0.6
timeout		Yes		

5.4.3.11.8 QueryLoadBalancerListener

Queries a load balancer listener. For example,

```
QueryLoadBalancerListener uuid=7e331a2f61ed4c65b96d521115bc9f16
```

```
QueryLoadBalancerListener loadBalancer.uuid=bad56001c1f24cefa085fa9cf83f6424
```

Primitive Fields of Query

See [Load Balancer Listener Inventory](#).

Nested and Expanded Fields of Query

Field	Inventory	Description	Starting Version
loadBalancer	<i>Load Balancer Inventory</i>		0.6
vmNic	<i>VM NIC Inventory</i>		0.6
vmNicRefs	VM NIC References Inventory		0.6

5.4.3.11.9 UpdateLoadBalancerListener

Updates a load balancer listener. For example,

```
UpdateLoadBalancerListener  uuid=897b8f83e7b44fc785023ae8b8338edd
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			0.6
name	The resource name.	Yes		0.6
description	The detailed description of the resource.	Yes		0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is LoadBalancerListenerVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is LoadBalancerListenerVO.	Yes		0.6
timeout				

5.4.3.11.10 ChangeLoadBalancerListener

Changes a parameter of a load balancer listener. For example,

```
ChangeLoadBalancerListener uuid=dc0ee73ed875423a81234fc091e3ce70
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			3.4.0
connectionIdleTimeout		Yes		3.4.0
maxConnection		Yes		3.4.0
balancerAlgorithm		Yes	<ul style="list-style-type: none"> • roundrobin • leastconn • source 	3.4.0
healthCheckTarget		Yes		3.4.0
healthyThreshold		Yes		3.4.0
unhealthyThreshold		Yes		3.4.0
healthCheckInterval		Yes		3.4.0
healthCheckProtocol	The health check protocol.	Yes	<ul style="list-style-type: none"> • tcp • udp • http 	3.9.0
healthCheckMethod	The health check method.	Yes	<ul style="list-style-type: none"> • GET • HEAD 	3.9.0
healthCheckURI	The health check URI.	Yes		3.9.0
healthCheckHttpCode	The expected response code of the health code.	Yes		3.9.0
aclStatus	The access control status.	Yes	<ul style="list-style-type: none"> • enable • disable 	3.9.0

Name	Description	Optional	Valid Value	Starting Version
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.4.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.4.0
timeout		Yes		

**Note:**

- When you change a parameter of a load balancer listener in ZStack Cloud, you can set the weight of the backend server by adding the **balancerWeight** option to **SystemTags**.
 - Format of the **balancerWeight** option: `balancerWeight:::{nicUuid}:::{weight}`. Here, weight is the weight of the backend server. Weight range: 0-100, integer. Default value: 100.
 - Example: `balancerWeight:::{ "c44007641c9040c6b2587e19b1b3e2b0" }:::{ 100 }`

5.4.3.11.11 GetCandidateVmNicsForLoadBalancer

Obtains a VM NIC for a load balancer. For example,

```
GetCandidateVmNicsForLoadBalancer listenerUuid=7e331a2f61ed4c65b96d
521115bc9f16
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
listenerUuid	The UUID of the load balancer listener.			0.6
userTags	The user tags. For more information, see CreateUserTag . The	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
	resource type is LoadBalancerListenerVO.			
systemTags	The system types. For more information, see CreateSystemTag . The resource type is LoadBalancerListenerVO.	Yes		0.6
timeout		Yes		

5.4.3.11.12 AddVmNicToLoadBalancer

Adds a VM NIC to a load balancer. For example,

```
AddVmNicToLoadBalancer listenerUuid=7e331a2f61ed4c65b96d521115bc9f16 \
vmNicUuids=93dea4f116654754ac4d40e50b3c8cad
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
vmNicUuids	The VM NIC UUID.			0.6
listenerUuid	The UUID of the load balancer listener.			0.6
userTags	The user tags. For more information, see CreateUserTag . The resource type is LoadBalancerListenerVO	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is LoadBalancerListenerVO.	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
timeout		Yes		

**Note:**

- When you add a VM NIC to a load balancer in ZStack Cloud, you can set the weight of the backend server by adding the **balancerWeight** option to **SystemTags**.
 - Format of the **balancerWeight** option: `balancerWeight:::{nicUuid}:::{weight}`. Here, weight is the weight of the backend server. Weight range: 0-100, integer. Default value: 100.
 - Example: `balancerWeight:::{ "c44007641c9040c6b2587e19b1b3e2b0" }:::{100}`

5.4.3.11.13 RemoveVmNicFromLoadBalancer

Removes a VM NIC from a load balancer. For example.

```
RemoveVmNicFromLoadBalancer listenerUuid=7e331a2f61ed4c65b96d
521115bc9f16 \
vmNicUuids=93dea4f116654754ac4d40e50b3c8cad
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
vmNicUuids	The VM NIC UUID.			0.6
listenerUuid	The UUID of the load balancer listener.			0.6
userTags	The user tags. For more information, see CreateUserTag . The resource type is LoadBalancerListenerVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
	resource type is LoadBalancerListenerVO.			
timeout		Yes		

5.4.3.11.14 CreateCertificate

Creates a certificate. For example,

```
CreateCertificate name=www.domain.com certificate=MIIDlzCCAn+
gAwIBAgIJJAPdiQszRKI/MMA0GCSqGSIb3DQEBCwUAMGiCzAJBgNVBAYTAKNOMQ8wDQYDV
QQIDAzaU1RBQ0sxCzAJBgNVBAcMAlNIMQ0wCwYDVQQKDARAu1kIMQwwCgYDVQLDANKzXY
xGDAWBgNVBAMMD2Rldi56c3Rhawhjay5pbzAeFw0xODAzMjkxMjQ5NDVaFw0xOTAzMjkxM
jQ5NDVaMGIxCzAJBgNVBAYTAKNOMQ8wDQYDVQQIDAzaU1RBQ0sxCzAJBgNVBAcMAlNIMQ0
wCwYDVQQKDARAu1kIMQwwCgYDVQLDANKzXYxGDAWBgNVBAMMD2Rldi56c3Rhawhjay5pb
zCCASIwDQYJKoZIhvcNAQEBBQADggEPADCCAQoCggEBANC3Q15Wq9IHJyUtMuB+
G17WLp3AoVoJTEHbD2xO2RQ0sp+eaOVD3Kj8TkPw+t4ZXII1cMbsJk4+DQP1ix3gnG
vlAqThxS6mA3RsUQooHwvYBI8ETePJmurDmz7HE116XTGHxj7Hp57BnLGQgoJmGqfA8zmt
K1Le/zJK6xjp16GYpfov2h5dU+h9qzv9IBNViUIeW3yn6VY47smtaPCQ5pJT35A7Gy
qFoTbAlpXca+XS2LTUnNZBgXEmG/d8JBdvvJDSZSQVtVs1k0Wx2IsroqkMgyX1EFxjZr
IlnQsGb1bEYURgM4oF2deveFjpCUZgI6MOOA6ZuVh1rJxk9XxoZ+0CAwEAAaNQ
ME4wHQYDVR0OBByEFCLaAR9gaKBopzVqzBu3pUrKm027MB8GA1UdIwQYMBaaFCCLaAR9gaK
BopzVqzBu3pUrKm027MAwGA1UdEwQFMAMBAf8wDQYJKoZIhvcNAQELBQADggEBAAuGNv9q
Zud6UEDFypuHUkGHzECKltEv+S/CgZPXcs1W8zumQjXE7IpFFFfrAsM9wf51R8dBLaId
nAn6YMuANdrH5L/1ALzhrfOwuT6hvEDWznrN7Ea7XANICBactyEpXFxg6eTuFNgWb
41IXFJmD225jn820cFVSQ05/zFfqvnAB6Rz47HV4qKJxs0ZuuAvnbAUf0++pqhxFFjd0T
eLPGCB5gNdipprPRJCBiTMFKUN+IJPj jRWcSy1FH8rAHzNUYtDtwFX4dVos+
CKPaiEurUMCxPzFlgy3VLQU99Mhn31xDt9N400FCVpLyohfkXLmU5mJGPbs/HT3gl2k+
mjt8\u003d
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
name	The resource name.			0.6
description	The detailed description of the resource.	Yes		0.6
certificate	The certificate.			2.3
resourceUuid	The resource UUID.	Yes		0.6
userTags	The user tags. For more information, see CreateUser Tag . The	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
	resource type is LoadBalancerListenerVO.			
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is LoadBalancerListenerVO.	Yes		0.6
timeout		Yes		

5.4.3.11.15 UpdateCertificate

Updates the information about a certificate. For example,

```
UpdateCertificate uuid=98c7a9b92e9c4015a66dd930f82337b8
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid				0.6
name	The resource name.	Yes		0.6
description	The detailed description of the resource.	Yes		0.6
resourceUuid	The resource UUID.	Yes		0.6
userTags	The user tags. For more information, see CreateUserTag . The resource type is LoadBalancerListenerVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
	resource type is LoadBalancerListenerVO.			
timeout		Yes		

5.4.3.11.16 DeleteCertificate

Deletes a certificate. For example,

```
DeleteCertificate uuid=b7f97d1fb45f4c8785e1b607f671651b
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid				0.6
deleteMode		Yes		0.6
resourceUuid	The resource UUID.	Yes		0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is LoadBalancerListenerVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is LoadBalancerListenerVO.	Yes		0.6
timeout		Yes		

5.4.3.11.17 QueryCertificate

Queries a certificate. For example,

```
QueryCertificate uuid=98c7a9b92e9c4015a66dd930f82337b8
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid		Yes		0.6
name	The resource name.	Yes		0.6
createDate	The creation date.	Yes		0.6
lastOpDate	The last operation date.	Yes		0.6
groupBy		Yes		0.6
description	The detailed description of the resource.	Yes		0.6
resourceUuid	The resource UUID.	Yes		0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is LoadBalancerListenerVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is LoadBalancerListenerVO.	Yes		0.6
timeout		Yes		

5.4.3.11.18 AddCertificateToLoadBalancerListener

Adds a certificate to a load balancer listener. For example,

```
AddCertificateToLoadBalancerListener listenerUuid=a0c2wva8b45f4c8785e1b607f6716013 certificateUuid=b7f97d1fb45f4c8785e1b607f671651b
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
certificateUuid				2.3
listenerUuid				0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is LoadBalancerListenerVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is LoadBalancerListenerVO.	Yes		0.6
timeout		Yes		

5.4.3.11.19 RemoveCertificateFromLoadBalancerListener

Removes a certificate from a load balancer listener. For example,

```
RemoveCertificateFromLoadBalancerListener listenerUuid=a0c2wva8b45f4c8785e1b607f6716013 certificateUuid=98c7a9b92e9c4015a66dd930f82337b8
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
certificateUuid				2.3
listenerUuid				0.6
userTags	The user tags. For more information,	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
	see CreateUserTag . The resource type is LoadBalancerListenerVO.			
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is LoadBalancerListenerVO.	Yes		0.6
timeout		Yes		

5.4.3.11.20 AddAccessControlListRedirectRule

Adds a forwarding rule to an access control list. For example,

```
AddAccessControlListRedirectRule aclUuid=bad56001c1f24cefa085
fa9cf83f6424
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
name	The resource name.	Yes		4.1.0
description	The detailed description of the resource.	Yes		4.1.0
domain	The domain name.	Yes		4.1.0
url	The URL.	Yes		4.1.0
aclUuid	The UUID of the access control list.			4.1.0
resourceUuid	The resource UUID.	Yes		4.1.0
tagUuids	The tag UUID list.	Yes		4.1.0
userTags	The user tags. For more	Yes		4.1.0

Name	Description	Optional	Valid Value	Starting Version
	information, see CreateUserTag .			
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		4.1.0
timeout		Yes		

5.4.3.11.21 ChangeAccessControlListRedirectRule

Changes the name of a forwarding rule in an access control list. For example,

```
ChangeAccessControlListRedirectRule uuid=bad56001c1fac4512a9cf83f6424
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			4.1.0
name	The name of the forwarding rule.	Yes		4.1.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		4.1.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		4.1.0
timeout		Yes		

5.4.3.11.22 ChangeAccessControlListServerGroup

Changes the backend server group associated by an access control list. For example,

```
ChangeAccessControlListServerGroup serverGroupUuids=bad56001c1
fac4512a9cf83f6424 listenerUuid=89bdb613cad93f5f881b9127986d4d1b
aclUuid=e58cd2cd6a633f999909c7e5ce448e07
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
serverGroupUuids	The UUID of the backend server group.			4.1.0
listenerUuid	The UUID of the listener.			4.1.0
aclUuid	The UUID of the access control list.			4.1.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		4.1.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		4.1.0
timeout		Yes		

5.4.3.11.23 GetLoadBalancerListenerACLEntries

Obtains the access control list entries of a load balancer listener. For example,

```
GetLoadBalancerListenerACLEntries listenerUuids=e58cd2cd6a633f999909
c7e5ce448e07
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
listenerUuids		Yes		4.1.0
type		Yes		4.1.0

Name	Description	Optional	Valid Value	Starting Version
userTags	The user tags. For more information, see CreateUserTag .	Yes		4.1.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		4.1.0
timeout		Yes		

5.4.3.11.24 CreateAccessControlList

Creates an access control list. For example,

```
CreateAccessControlList name=acl-group ipVersion=4
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
name	The resource name.			3.9.0
description	The detailed description of the resource.	Yes		3.9.0
ipVersion	The IP version.	Yes	<ul style="list-style-type: none"> • 4 • 6 	3.9.0
resourceUuid	The resource UUID.	Yes		3.9.0
tagUuids	The tag UUID list.	Yes		3.9.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.9.0
systemTags	The system tags. For more information, see	Yes		3.9.0

Name	Description	Optional	Valid Value	Starting Version
	CreateSystemTag .			
timeout		Yes		

5.4.3.11.25 DeleteAccessControlList

Deletes an access control list. For example,

```
DeleteAccessControlList uuid=f2a128d702d83f4389ad82d425b0e74e
deleteMode=Permissive
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			3.9.0
deleteMode	The delete mode. Options : Permissive Enforcing. Default mode: Permissive.	Yes		3.9.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.9.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.9.0
timeout		Yes		

5.4.3.11.26 QueryAccessControlList

Queries an access control list. For example,

```
QueryAccessControlList uuid=0abdbd20b8173ccf89f881309b5e40d0
```

Primitive Fields of Query

See [Access Control List Inventory](#).

Nested and Expanded Fields of Query

Field	Inventory	Description	Starting Version
loadBalancerListener	Load Balancer Listener Inventory	The load balancer listeners related to the access control list.	3.9.0

5.4.3.11.27 RemoveAccessControlListEntry

Removes IP entries from an access control list. For example,

```
RemoveAccessControlListEntry aclUuid=c151f0f90e143c26b6667e70ebbe5b7b
uuid=22c9d1f964b63f6abc52fed8437042a3
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
aclUuid	The UUID of the access control list. .			3.9.0
uuid	The resource UUID.			3.9.0
deleteMode	The delete mode. Options : Permissive Enforcing. Default mode: Permissive.	Yes		3.9.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.9.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.9.0
timeout		Yes		

5.4.3.11.28 AddAccessControlListEntry

Adds IP entries to an access control list. For example,

```
AddAccessControlListEntry aclUuid=101a39fc6c538a4914d0ae7fa8468a4
entries=192.168.12.1,192.168.48.0/24
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
aclUuid	The UUID of the access control list.			3.9.0
entries	The IP entries.			3.9.0
description	The detailed description of the resource.	Yes		3.9.0
resourceUuid	The resource UUID.	Yes		3.9.0
tagUuids	The tag UUID list.	Yes		3.9.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.9.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.9.0
timeout		Yes		

5.4.3.11.29 AddAccessControlListToLoadBalancer

Adds an access control list to a listener. For example,

```
AddAccessControlListToLoadBalancer aclUuids=25e10ecdb6d63b598899
c1103d2cdf46 aclType=white listenerUuid=19c1a4dcaea637da86e3ecbb6a3a5f
6e
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
aclUuids	The UUID of the access control list.			3.9.0
aclType	The access control type.		<ul style="list-style-type: none"> • white • black • redirect 	4.1.0
listenerUuid	The listener UUID.			3.9.0
serverGroupUuids	The UUID of the load balancer server group.	Yes		4.1.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.9.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.9.0
timeout		Yes		

5.4.3.11.30 RemoveAccessControlListFromLoadBalancer

Removes an access control list from a listener. For example,

```
RemoveAccessControlListFromLoadBalancer aclUuids=027bfcc0fdddf39e3be51  
badf4777c0cd listenerUuid=0299b3e26af5350c8db91930723d2065
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
aclUuids	The UUID of the access control list.			3.9.0
listenerUuid	The listener UUID.			3.9.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.9.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.9.0
timeout		Yes		

5.4.3.11.31 GetCandidateL3NetworksForLoadBalancer

Obtains the L3 networks that can be attached to a listener. For example,

```
GetCandidateL3NetworksForLoadBalancer listenerUuid=6ecc19bdec  
0139499e3abf6c51bca683
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
listenerUuid				3.9.0
limit		Yes		3.9.0
start		Yes		3.9.0
userTags	The user tags. For more	Yes		3.9.0

Name	Description	Optional	Valid Value	Starting Version
	information, see CreateUserTag .			
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.9.0
timeout		Yes		

5.4.3.11.32 CreateLoadBalancerServerGroup

Create a server group for load balancing. For example,

```
CreateLoadBalancerServerGroup name=BackendServerGroup loadBalancerUuid
=70320d7aaedf4241a426560d09d99863
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
name	The name of the server group for load balancing.			4.0.0
description	The detailed description of the server group.	Yes		4.0.0
loadBalancerUuid	The load balancer UUID.			4.0.0
resourceUuid	The UUID of the server group.	Yes		4.0.0
tagUuids	The tag UUIDs.	Yes		4.0.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		4.0.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		4.0.0

Name	Description	Optional	Valid Value	Starting Version
timeout		Yes		

5.4.3.11.33 DeleteLoadBalancerServerGroup

Deletes a server group for load balancing. For example,

```
DeleteLoadBalancerServerGroup uuid=70320d7aaedf4241a426560d09d99863
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID of the server group.			4.0.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		4.0.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		4.0.0
timeout		Yes		

5.4.3.11.34 UpdateLoadBalancerServerGroup

Updates a load balancer server group. For example,

```
UpdateLoadBalancerServerGroup uuid=bad56001c1f24cefa085fa9cf83f6424
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			4.0.0
name	The resource name.	Yes		4.0.0
description	The detailed description of the resource.	Yes		4.0.0

Name	Description	Optional	Valid Value	Starting Version
userTags	The user tags. For more information, see CreateUserTag .	Yes		4.0.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		4.0.0
timeout		Yes		

5.4.3.11.35 QueryLoadBalancerServerGroup

Queries server groups for load balancing. For example,

```
QueryLoadBalancerServerGroup uuid=70320d7aaedf4241a426560d09d99863
```

Primitive Fields of Query

See [LoadBalancerServerGroup Inventory](#).

Nested And Expanded Fields of Query

Field	Inventory	Description	Starting Version
listenerServerGroupRefs	Listener Server Group Refs Inventory .	The listener of the server group.	4.0.0

5.4.3.11.36 AddBackendServerToServerGroup

Adds a server to a server group. For example,

```
AddBackendServerToServerGroup serverGroupUuid=70320d7aaedf4241a426560d09d99863
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
serverGroupUuid	The UUID of the server group for load balancing.			4.0.0
vmNics	The NIC of the backend server.	Yes		4.0.0

Name	Description	Optional	Valid Value	Starting Version
servers	The IP address of the backend server.	Yes		4.0.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		4.0.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		4.0.0
timeout		Yes		

5.4.3.11.37 RemoveBackendServerFromServerGroup

Removes servers from a server group for load balancing. For example,

```
RemoveBackendServerFromServerGroup serverGroupUuid=70320d7aae
df4241a426560d09d99863
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
serverGroupUuid	The server group UUID.			4.0.0
vmNicUuids		Yes		4.0.0
serverIps		Yes		4.0.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		4.0.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		4.0.0
timeout		Yes		

5.4.3.11.38 AddServerGroupToLoadBalancerListener

Associates a server group for load balancing with a listener. For example,

```
AddServerGroupToLoadBalancerListener serverGroupUuid=7e331a2f61  
ed4c65b96d521115bc9f16 listenerUuid=93dea4f116654754ac4d40e50b3c8cad
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
serverGroupUuid	The UUID of the server group for load balancing.			4.0.0
listenerUuid	The UUID of the listener.			4.0.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		4.0.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		4.0.0
timeout		Yes		

5.4.3.11.39 RemoveServerGroupFromLoadBalancerListener

Disassociates a server group from a listener. For example,

```
RemoveServerGroupFromLoadBalancerListener serverGroupUuid=7e331a2f61  
ed4c65b96d521115bc9f16 listenerUuid=93dea4f116654754ac4d40e50b3c8cad
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
serverGroupUuid	The server group UUID.			4.0.0
listenerUuid	The listener UUID.			4.0.0
userTags	The user tags. For more	Yes		4.0.0

Name	Description	Optional	Valid Value	Starting Version
	information, see CreateUserTag .			
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		4.0.0
timeout		Yes		

5.4.3.11.40 ChangeLoadBalancerBackendServer

Changes backend servers in a server group for load balancing. For example,

```
ChangeLoadBalancerBackendServer serverGroupUuid=7e331a2f61ed4c65b96d
521115bc9f16
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
serverGroupUuid	The UUID of the server group for load balancing.			4.0.0
vmNics	The VM NICs.	Yes		4.0.0
servers	The IP addresses of backend servers.	Yes		4.0.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		4.0.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		4.0.0
timeout		Yes		

5.4.3.11.41 GetCandidateVmNicsForLoadBalancerServerGroup

Retrieves available NICs that can be added to a server group. For example,

```
GetCandidateVmNicsForLoadBalancerServerGroup serverGroupUuid=7e331a2f61ed4c65b96d521115bc9f16
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
serverGroupUuid	The UUID of the server group.	Yes		4.0.0
loadBalancerUuid	The load balancer UUID.	Yes		4.0.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		4.0.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		4.0.0
timeout		Yes		

5.4.3.11.42 CreateSlbGroup

Creates an SLB group. For example,

```
CreateSlbGroup name=SLBGroup slbOfferingUuid=bad56001c1f24cefa085fa9cf83f6424 frontEndL3NetworkUuid=dc0ee73ed875423aa6778fc091e3ce70
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
name	The name of the SLB group.			4.0.0
slbOfferingUuid	The UUID of the SLB offering.			4.0.0
frontEndL3NetworkUuid	The frontend L3 network UUID.			4.0.0

Name	Description	Optional	Valid Value	Starting Version
backendL3NetworkUuids	The backend L3 network UUID.	Yes		4.0.0
backendType	The backend type.	Yes	• VYOS	4.0.0
deployType	The deployment type.	Yes	• Direct	4.0.0
description	The detailed description of the SLB group.	Yes		4.0.0
resourceUuid	The UUID of the SLB group.	Yes		4.0.0
tagUuids	The tag UUIDs.	Yes		4.0.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		4.0.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		4.0.0
timeout		Yes		

5.4.3.11.43 DeleteSlbGroup

Deletes an SLB group. For example,

```
DeleteSlbGroup uuid=70320d7aaedf4241a426560d09d99863
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID of the SLB group.			4.0.0
deleteMode	The deletion mode.	Yes	• Permissive • Enforcing	4.0.0

Name	Description	Optional	Valid Value	Starting Version
userTags	The user tags. For more information, see CreateUserTag .	Yes		4.0.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		4.0.0
timeout		Yes		

5.4.3.11.44 UpdateSlbGroup

Updates an SLB group. For example,

```
UpdateSlbGroup uuid=897b8f83e7b44fc785023ae8b8338edd
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID of the SLB group.			4.0.0
name	The name of the SLB group.	Yes		4.0.0
description	The detailed description of the SLB group.	Yes		4.0.0
slbOfferingUuid	The UUID of the SLB offering.	Yes		4.0.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		4.0.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		4.0.0
timeout				

5.4.3.11.45 QuerySlbGroup

Queries SLB groups. For example,

```
QuerySlbGroup uuid=7e331a2f61ed4c65b96d521115bc9f16
```

Primitive Fields of Query

See [SlbGroup inventory](#).

5.4.3.11.46 CreateSlbOffering

Creates an SLB offering. For example,

```
CreateSlbOffering name=SLBOffering zoneUuid=bad56001c1f24cefa085
fa9cf83f6424 managementNetworkUuid=dc0ee73ed875423aa6778fc091e3ce
70 imageUuid=2aa6ae40c4954143be0ecb9a6a160b5b cpuNum=1 memorySize=
1073741824
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
zoneUuid	The zone UUID.			4.0.0
managementNetworkUuid	The management network UUID.			4.0.0
imageUuid	The image UUID.			4.0.0
name	The name of the SLB offering.			4.0.0
description	The detailed description of the SLB offering.	Yes		4.0.0
cpuNum				4.0.0
memorySize				4.0.0
allocatorStrategy		Yes		4.0.0
sortKey		Yes		4.0.0
type		Yes		4.0.0
resourceUuid	The UUID of the SLB offering.	Yes		4.0.0
tagUuids	The tag UUIDs.	Yes		4.0.0
userTags	The user tags. For more	Yes		4.0.0

Name	Description	Optional	Valid Value	Starting Version
	information, see CreateUserTag .			
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		4.0.0
timeout		Yes		

5.4.3.11.47 QuerySlbOffering

Queries SLB offerings. For example,

```
QuerySlbOffering uuid=7e331a2f61ed4c65b96d521115bc9f16
```

Primitive Fields of Query

See [SlbOffering inventory](#).

Nested And Expanded Fields of Query

Field	Inventory	Description	Starting Version
image	image inventory		4.0.0
managementL3Network	L3 network inventory		4.0.0
publicL3Network	L3 network inventory		4.0.0
vmlInstance	VM instance inventory		4.0.0
zone	zone inventory		4.0.0

5.4.3.11.48 CreateSlbInstance

Create an SLB instance. For example,

```
CreateSlbInstance name=SLBinstance slbGroupUuid=bad56001c1f24cefa085fa9cf83f6424
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
name	The name of the SLB group.			4.0.0

Name	Description	Optional	Valid Value	Starting Version
slbGroupUuid	The UUID of the SLB group.			4.0.0
description	The detailed description of the SLB group.	Yes		4.0.0
zoneUuid	The zone UUID	Yes		4.0.0
clusterUuid	The cluster UUID.	Yes		4.0.0
hostUuid	The host UUID.	Yes		4.0.0
resourceUuid	The instance UUID.	Yes		4.0.0
tagUuids	The tag UUIDs.	Yes		4.0.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		4.0.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		4.0.0
timeout		Yes		

5.4.3.12 IPsec

5.4.3.12.1 CreateIPsecConnection

Creates an IPsec connection. For example,

```
CreateIPsecConnection name=ipsec1 vipUuid=c023e287a3fa4503b259
f893aaaf2d33d \
13NetworkUuid=9082f45fce9c46f19b2ab5ff117511d6 peerAddress=10.128.19.5
peerCidrs=172.20.222.1/24 \
authKey=123456
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
name	The IPsec connection name.			0.6

Name	Description	Optional	Valid Value	Starting Version
description	The detailed description of the IPsec connection.	Yes		0.6
l3NetworkUuid	The L3 network UUID.			0.6
peerAddress	The peer IP address.			0.6
authMode	The authentication mode.	Yes	<ul style="list-style-type: none"> • psk • certs 	0.6
authKey	The authentication key.			0.6
vipUuid	The VIP UUID.			0.6
peerCidrs	The peer CIDR.			0.6
ikeAuthAlgorithm	The IKE authentication algorithm.	Yes	<ul style="list-style-type: none"> • md5 • sha1 • sha256 • sha384 • sha512 	0.6
ikeEncrypt ionAlgorithm	The IKE encryption algorithm.	Yes	<ul style="list-style-type: none"> • 3des • aes-128 • aes-192 • aes-256 	0.6
ikeDhGroup	The IKE perfect forward secrecy.	Yes		0.6
policyAuth Algorithm	The ESP authentication algorithm.	Yes	<ul style="list-style-type: none"> • md5 • sha1 • sha256 • sha384 • sha512 	0.6
policyEncr yptionAlgorithm	The ESP encryption algorithm.	Yes	<ul style="list-style-type: none"> • 3des • aes-128 • aes-192 • aes-256 	0.6

Name	Description	Optional	Valid Value	Starting Version
pfs	The perfect forward secrecy.	Yes	<ul style="list-style-type: none"> • dh-group2 • dh-group5 • dh-group14 • dh-group15 • dh-group16 • dh-group17 • dh-group18 • dh-group19 • dh-group20 • dh-group21 • dh-group22 • dh-group23 • dh-group24 • dh-group25 • dh-group26 	0.6
policyMode	The policy mode.	Yes	<ul style="list-style-type: none"> • tunnel • transport 	0.6
transformProtocol	The transform protocol.	Yes	<ul style="list-style-type: none"> • esp • ahah-esp 	0.6
resourceUuid	The resource UUID.	Yes		0.6
userTags	The user tags. For more information, see CreateUserTag .	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		0.6
timeout		Yes		

5.4.3.12.2 DeleteIPsecConnection

Deletes an IPsec connection. For example,

```
DeleteIPsecConnection uuid=05caec6ebc234b2a899f7eb362ada51b
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The IPsec connection UUID.			0.6
deleteMode	The delete mode. For more information, see Delete Resources .	Yes	<ul style="list-style-type: none"> • Permissive • Enforcing 	0.6
userTags	The user tags. For more information, see CreateUserTag .	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		0.6
timeout		Yes		

5.4.3.12.3 UpdateIPsecConnection

Updates an IPsec connection. For example,

```
UpdateIPsecConnection uuid=5a56262681154dbdab1ded93613d7666
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The IPsec connection UUID.			0.6
name	The IPsec connection name.	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
description	The detailed description of the IPsec connection.	Yes		0.6
deleteMode	The delete mode. For more information, see Delete Resources .	Yes	<ul style="list-style-type: none"> Permissive Enforcing 	0.6
userTags	The user tags. For more information, see CreateUserTag .	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		0.6
timeout		Yes		

5.4.3.12.4 QueryIPSecConnection

Queries an IPsec connection. For example,

```
QueryIPSecConnection uuid=5a56262681154dbdab1ded93613d7666
```

```
QueryIPSecConnection l3Network.uuid=cef5d1b507204c78b285d7074679818e
```

Primitive Fields of Query

See [IPsec Inventory](#).

Nested and Expanded Fields of Query

Field	Inventory	Description	Starting Version
l3Network	L3 Network Inventory		0.6
peerCidrs	Peer CIDRs Inventory	The peer CIDRs.	0.6
vip	VIP Inventory		0.6

5.4.3.12.5 ChangeIPSecConnectionState

Changes the state of an IPsec connection. For example,

```
ChangeIPSecConnectionState uuid=5a56262681154dbdab1ded93613d7666
stateEvent=disable
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The IPsec connection UUID.			2.3
stateEvent	The state event.	Yes	<ul style="list-style-type: none"> • enable • disable 	2.3
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.3
systemTags	The system. For more information, see CreateSystemTag .	Yes		2.3
timeout		Yes		

5.4.3.12.6 AttachL3NetworksToIPsecConnection

Attaches an L3 network to an IPsec connection. For example,

```
AttachL3NetworksToIPsecConnection uuid=8430a82e1293406fb10de06567af6f
1d \
l3NetworkUuids=3533e0dcd01d4e2aa8697048e152c5d8
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The IPsec connection UUID.			2.3
l3NetworkUuids	The local subnet . Make sure that network type is VPC.			2.3
resourceUuid		Yes		2.3

Name	Description	Optional	Valid Value	Starting Version
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.3
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.3
timeout		Yes		

5.4.3.12.7 DetachL3NetworksFromIPsecConnection

Detaches an L3 network from an IPsec connection. For example,

```
DetachL3NetworksFromIPsecConnection uuid=8430a82e1293406fb10d
e06567af6f1d \
l3NetworkUuids=3533e0dcd01d4e2aa8697048e152c5d8
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The IPsec connection UUID.			2.3
l3NetworkUuids	The local subnet . Make sure that network type is VPC.			2.3
resourceUuid		Yes		2.3
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.3
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.3
timeout		Yes		

5.4.3.12.8 AddRemoteCidrsToIPsecConnection

Adds a remote CIDR to an IPsec connection. For example,

```
AddRemoteCidrsToIPsecConnection uuid=8430a82e1293406fb10de06567af6f1d \
\ peerCidrs=192.168.127.1/24
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The IPsec connection UUID.			2.3
peerCidrs	The remote network CIDR UUID.			2.3
resourceUuid		Yes		2.3
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.3
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.3
timeout		Yes		

5.4.3.12.9 RemoveRemoteCidrsFromIPsecConnection

Removes a remote CIDR from an IPsec connection. For example,

```
RemoveRemoteCidrsFromIPsecConnection uuid=8430a82e1293406fb10de06567af6f1d \
\ peerCidrs=192.168.127.1/24
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The IPsec connection UUID.			2.3
peerCidrs	The remote network CIDR.			2.3

Name	Description	Optional	Valid Value	Starting Version
resourceUuid		Yes		2.3
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.3
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.3
timeout		Yes		

5.4.3.13 Netflow

5.4.3.13.1 CreateFlowCollector

Creates a flow collector for a flow meter. For example,

```
CreateFlowCollector flowMeterUuid=93adc3c5f9c03d3d9aa24cd78bf77d0f
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
name	The resource name.	Yes		3.6.0
description	The detailed description of the resource.	Yes		3.6.0
flowMeterUuid	The flow meter UUID.			3.6.0
server	The IP address of the flow collector.	Yes		3.6.0
port	The port of the flow collector.	Yes		3.6.0
resourceUuid		Yes		3.6.0
tagUuids	The tag UUID list.	Yes		3.6.0
userTags	The user tags. For more	Yes		3.6.0

Name	Description	Optional	Valid Value	Starting Version
	information, see CreateUserTag .			
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.6.0
timeout		Yes		

5.4.3.13.2 QueryFlowCollector

Queries a flow collector of a flow meter. For example,

```
QueryFlowCollector
```

Primitive Fields of Query

See [Flow Collector Inventory](#).

5.4.3.13.3 UpdateFlowCollector

Updates a flow collector. For example,

```
UpdateFlowCollector uuid=93adc3c5f9c03d3d9aa24cd78bf77d0f
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			3.6.0
server	The IP address of the flow collector.	Yes		3.6.0
port	The UDP port.	Yes		3.6.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.6.0
systemTags	The system tags. For more information, see	Yes		3.6.0

Name	Description	Optional	Valid Value	Starting Version
	CreateSystemTag .			
timeout		Yes		

5.4.3.13.4 DeleteFlowCollector

Deletes a flow collector. For example,

```
DeleteFlowCollector uuid=4a09dc60a4be305b8a6b1157eedb61bb
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			3.6.0
deleteMode		Yes		3.6.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.6.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.6.0
timeout		Yes		

5.4.3.13.5 CreateFlowMeter

Creates a flow meter. For example,

```
CreateFlowMeter type=NetFlow
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
version	The version of the flow meter protocol.	Yes	<ul style="list-style-type: none"> • V5 • V9 	3.6.0

Name	Description	Optional	Valid Value	Starting Version
type	The type of the flow meter protocol.		<ul style="list-style-type: none"> NetFlow sFlow 	3.6.0
sample	The sample rate of the flow meter.	Yes		3.6.0
generateInterval	The time interval that the flow meter sends the data packets to the flow collector.	Yes		3.6.0
name	The resource name.	Yes		3.6.0
description	The detailed description of the resource.	Yes		3.6.0
server	The IP address of the flow collector.	Yes		3.6.0
port	The UDP port of the flow collector.	Yes		3.6.0
resourceUuid		Yes		3.6.0
tagUuids	The tag UUID list.	Yes		3.6.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.6.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.6.0
timeout		Yes		



Note:

- When you create a flow meter resource in ZStack Cloud, you can specify the expiration interval of the flow by adding the **FLOW_EXPIRE_INTERVAL** option to **SystemTags**. The SystemTag is passed by using the **expireInterval** parameter.
 - Format of the **FLOW_EXPIRE_INTERVAL** option: `expireInterval::xx`. Here, the unit of xx is second.
 - Example: `expireInterval::1200`
- When you create a flow meter resource in ZStack Cloud, you can specify the timeout configuration of the flow by adding the **FLOW_ACTIVE_TIMEOUT** option to **SystemTags**. The SystemTag is passed by using the **activeTimeout** parameter.
 - Format of the **FLOW_ACTIVE_TIMEOUT** option: `activeTimeout::xx`. Here, the unit of xx is second.
 - Example: `activeTimeout::3600`

5.4.3.13.6 QueryFlowMeter

Queries a flow meter. For example,

```
QueryFlowMeter
```

Primitive Fields of Query

See [Flow Meter Inventory](#).

5.4.3.13.7 UpdateFlowMeter

Updates the information about a flow meter. For example,

```
UpdateFlowMeter uuid=40175d4f6adc33b69926219a69318de4
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			3.6.0
version	The version of the flow meter protocol.	Yes	<ul style="list-style-type: none"> • V5 • V9 	3.6.0
sample	The sample rate of the flow meter.	Yes		3.6.0

Name	Description	Optional	Valid Value	Starting Version
name	The resource name.	Yes		3.6.0
expireInterval	The expiration interval of the flow.	Yes		3.6.0
description	The detailed description of the resource.	Yes		3.6.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.6.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.6.0
timeout		Yes		

5.4.3.13.8 DeleteFlowMeter

Deletes a flow meter. For example,

```
DeleteFlowMeter uuid=3a65b90e4cbc30b9b90c6defa9d4150d
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			3.6.0
deleteMode		Yes		3.6.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.6.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.6.0

Name	Description	Optional	Valid Value	Starting Version
	CreateSystemTag .			
timeout		Yes		

5.4.3.13.9 AddVRouterNetworksToFlowMeter

Adds a VPC vRouter network to a flow meter. For example,

```
AddVRouterNetworksToFlowMeter flowMeterUuid=f01fef876e503331a4d6
b186c41ef1d1 vRouterUuid=335d1d3f24c132dba22362dbb4867c7a l3NetworkU
uid=80b4e4931a8a3760bde3d66f1c03alae
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
flowMeterUuid	The flow meter UUID.			3.6.0
vRouterUuid	The VPC vRouter UUID or VPC vRouter group UUID.			3.6.0
l3NetworkUuids	The UUID of the VPC vRouter network.			3.6.0
resourceUuid		Yes		3.6.0
tagUuids	The tag UUID list.	Yes		3.6.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.6.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.6.0
timeout		Yes		

5.4.3.13.10 QueryVRouterFlowMeterNetwork

Queries a VPC vRouter that enables a flow meter. For example,

```
QueryVRouterFlowMeterNetwork
```

Primitive Fields of Query

See [vRouter Flow Meter Network Inventory](#).

Nested and Expanded Fields of Query

Field	Inventory	Description	Starting Version
flowMeter	Flow Meter Inventory	The flow meter resource.	3.6.0
l3Network	L3 Network Inventory	The L3 network.	3.6.0
vRouter	vRouter Inventory	The vRouter.	3.6.0

5.4.3.13.11 GetVRouterFlowCounter

Obtains the statistics information about a flow meter. For example,

```
GetVRouterFlowCounter vRouterUuid=eee5bf613b913040b6609c2b07efea07
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
vRouterUuid	The vRouter UUID.			3.6.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.6.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.6.0
timeout		Yes		

5.4.3.13.12 RemoveVRouterNetworksFromFlowMeter

Removes a flow meter from a VPC vRouter network. For example,

```
RemoveVRouterNetworksFromFlowMeter uuids=aaa9d2325b073fd39a7f  
1a67b007b1ae
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuids				3.6.0
deleteMode		Yes		3.6.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.6.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.6.0
timeout		Yes		

5.4.3.13.13 GetFlowMeterRouterId

Obtains a system router ID used by a flow meter protocol. For example,

```
GetFlowMeterRouterId vRouterUuid=7ca3752b57ef3c8c89257e1eeb720b88
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
vRouterUuid	The VPC vRouter UUID.			3.6.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.6.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.6.0

Name	Description	Optional	Valid Value	Starting Version
	CreateSystemTag .			
timeout		Yes		

5.4.3.13.14 SetFlowMeterRouterId

Sets a VPC vRouter ID used by a flow meter protocol. For example,

```
SetFlowMeterRouterId vRouterUuid=0bfa81935a6c3dd1a8c68de1874e8a1d
routerId=120.0
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
vRouterUuid				3.6.0
routerId	The router ID.			3.6.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.6.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.6.0
timeout		Yes		

5.4.3.14 Port Mirroring

5.4.3.14.1 CreatePortMirror

Creates a port mirror. For example,

```
CreatePortMirror mirrorNetworkUuid=c1da6a9a815f3b17be87c19f9a43fe77
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
mirrorNetworkUuid	The mirror network UUID.			3.7.0

Name	Description	Optional	Valid Value	Starting Version
name	The resource name.	Yes		3.7.0
description	The detailed description of the resource.	Yes		3.7.0
stateEvent	The state of the flow mirror.	Yes	<ul style="list-style-type: none"> • enable • disable 	3.7.0
resourceUuid		Yes		3.7.0
tagUuids		Yes		3.7.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.7.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.7.0
timeout		Yes		

5.4.3.14.2 QueryPortMirror

Queries a port mirror. For example,

```
QueryPortMirror
```

Primitive Fields of Query

See [Port Mirror Inventory](#).

Nested and Expanded Fields of Query

Field	Inventory	Description	Starting Version
sessions	Port Mirror Session Inventory	The port mirror sessions.	3.7.0

5.4.3.14.3 UpdatePortMirror

Updates a port mirror. For example,

```
UpdatePortMirror uuid=2bafc0057bac3a6294a24a48c079c738
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			3.7.0
name	The resource name.	Yes		3.7.0
description	The detailed description of the resource.	Yes		3.7.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.7.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.7.0
timeout		Yes		

5.4.3.14.4 DeletePortMirror

Deletes a port mirror. For example,

```
DeletePortMirror uuid=b4959c6b70c836508290dce51e9a1394
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			3.7.0
deleteMode		Yes		3.7.0
userTags	The user tags. For more	Yes		3.7.0

Name	Description	Optional	Valid Value	Starting Version
	information, see CreateUserTag .			
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.7.0
timeout		Yes		

5.4.3.14.5 CreatePortMirrorSession

Creates a port mirror session. For example,

```
CreatePortMirrorSession portMirrorUuid=d848a38e94c53c9dafbb422f5e5342
37 name=session type=Ingress srcEndPoint=404d456d595a3fcf8e75
8dc864a47c2e dstEndPoint=5ffb697b680d3d76bf3c50f344d5f742
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
portMirrorUuid	The port mirror UUID.			3.7.0
name	The resource name.			3.7.0
description	The detailed description of the resource.	Yes		3.7.0
type	The session type.		<ul style="list-style-type: none"> • Ingress • Egress • Bidirection 	3.7.0
srcEndPoint	The source endpoint of the mirror session.			3.7.0
dstEndPoint	The destination endpoint of the mirror session.			3.7.0
resourceUuid		Yes		3.7.0
tagUuids	The tag UUID list.	Yes		3.7.0

Name	Description	Optional	Valid Value	Starting Version
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.7.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.7.0
timeout		Yes		

5.4.3.14.6 QueryPortMirrorSession

Queries a port mirror session. For example,

```
QueryPortMirrorSession
```

Primitive Fields of Query

See [Port Mirror Session Inventory](#).

5.4.3.14.7 ChangePortMirrorState

Changes the state of a port mirror. For example,

```
ChangePortMirrorState uuid=8752424e2b1e398a9d28fbb076cff81f stateEvent
=enable
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			3.7.0
stateEvent	The state event.		<ul style="list-style-type: none"> • enable • disable 	3.7.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.7.0
systemTags	The system tags. For more	Yes		3.7.0

Name	Description	Optional	Valid Value	Starting Version
	information, see CreateSystemTag .			
timeout		Yes		

5.4.3.14.8 DeletePortMirrorSession

Deletes a port mirror session. For example,

```
DeletePortMirrorSession uuid=3c1f4de89ffd3f83932bbd95321dbf20
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			3.7.0
deleteMode		Yes		3.7.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.7.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.7.0
timeout		Yes		

5.4.3.14.9 GetCandidateVmNicsForPortMirror

Obtains the VM NICs that can use the port mirror service in the system. For example,

```
GetCandidateVmNicsForPortMirror portMirrorUuid=35f9487b28bf3ef3995b
daa9b0c7e14c type=source
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
portMirrorUuid	The port mirror UUID.			3.7.0
type	The NIC type.		• source	3.7.0

Name	Description	Optional	Valid Value	Starting Version
			• dest	
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.7.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.7.0
timeout		Yes		

5.4.3.14.10 QueryPortMirrorNetworkUsedIp

Queries the IP address that is allocated to a port mirror network. For example,

```
QueryPortMirrorNetworkUsedIp
```

Primitive Fields of Query

See [Port Mirror Network Used IP Inventory](#).

5.4.4 Tags

VPC Firewall Tags

You can create a user tag on a VPC firewall by using `resourceType=VpcFirewallVO`. For example,

```
CreateUserTag resourceType=VpcFirewallVO tag=firewall_vpc \
resourceUuid=3533e0dcd01d4e2aa8697048e152c5d8
```

Firewall Rule Set Tags

You can create a user tag on a firewall rule set by using `resourceType=FirewallRuleSetVO`. For example,

```
CreateUserTag resourceType=FirewallRuleSetVO tag=firewall_ruleset \
```

```
resourceUuid=8a91b3fb063335a9b6578c251d61127f
```

Firewall Rule Tags

You can create a user tag on a firewall rule by using `resourceType=FirewallRuleVO`. For example,

```
CreateUserTag resourceType=FirewallRuleVO tag=firewall_rule \
resourceUuid=889eefaa6645739f6a54cea4cfcc73c9f6
```

Security Group

You can create a user tag on a security group by using `resourceType=SecurityGroupVO`. For example,

```
CreateUserTag tag=web-tier-security-group resourceType=SecurityGroupVO \
\
resourceUuid=f25a28fdb21147f8b183296550a98799
```

VIP

You can create a user tag on a VIP by using `resourceType=VipVO`. For example,

```
CreateUserTag tag=web-tier-vip resourceType=VipVO \
resourceUuid=c3206d0e29074e21984c584074c63920
```

EIP

You can create a user tag on an EIP by using `resourceType=EipVO`. For example,

```
CreateUserTag resourceType=EipVO tag=web-public-ip \
resourceUuid=29fa6c2830c441aaa388d8165b80c24c
```

Port Forwarding

You can create a user tag on a port forwarding by using `resourceType=PortForwardingRuleVO`. For example,

```
CreateUserTag resourceType=PortForwardingRuleVO tag=ssh-rule \
resourceType=e960a93b7f974690bb779808f3c12a33
```

Load Balancing

You can create a user tag on a load balancers by using `resourceType=LoadBalancerVO`. For example,

```
CreateUserTag tag=web-lb resourceUuid=0a9f95a659444848846b5118e15bff32 \
\

```

```
resourceType=LoadBalancerVO
```

You can create a user tag on a load balancer listener by using `resourceType=LoadBalancerListenerVO`. For example,

```
CreateUserTag tag=web-lb-80 resourceUuid=0a9f95a659444848846b
5118e15bff32 \
resourceType=LoadBalancerListenerVO
```

IPsec

You can create a user tag on an IPsec connection by using `resourceType=IPsecConnectionVO`. For example,

```
CreateUserTag tag=ipsec resourceUuid=681b0511a5ee488ca47845620e4d2a2c
\
resourceType=IPsecConnectionVO
```

Netflow

You can create a user tag on a Netflow collector by using `resourceType=FlowCollectorVO`. For example,

```
CreateUserTag tag=FlowCollector resourceUuid=93adc3c5f9c03d3d9aa2
4cd78bf77d0f \
resourceType=FlowCollectorVO
```

You can create a user tag on a Netflow meter by using `resourceType=FlowMeterVO`. For example.

```
CreateUserTag tag=FlowMeter resourceUuid=681b0511a5ee488ca478
45620e4d2a2c \
resourceType=FlowMeterVO
```

Port Mirror

You can create a user tag on a port mirror by using `resourceType=PortMirrorVO`. For example,

```
CreateUserTag tag=ipsec resourceUuid=681b0511a5ee488ca47845620e4d2a2c
\
resourceType=PortMirrorVO
```

Port Mirror Session

You can create a user tag on a port mirror session by using `resourceType=PortMirrorSessionVO`. For example,

```
CreateUserTag tag=ipsec resourceUuid=681b0511a5ee488ca47845620e4d2a2c
\

```

```
resourceType=PortMirrorSessionVO
```

5.5 CloudFormation

5.5.1 Overview

ZStack Cloud CloudFormation is a service that helps you simplify the cloud computing resource management and automate the deployment and O&M. With a resource stack template, you can define what cloud resources you need, the dependency between the resources, and the resource configuration. With the CloudFormation engine, CloudFormation can provide automatic batch deployment and resource configuration, as well as easy lifecycle management of cloud resources. You can also use API and SDK to integrate the automatic O&M capabilities.

The advantages of CloudFormation are as follows:

1. You only need to create a stack template or modify an existing one to define what cloud resources you need, the dependency between the resources, and the resource configuration. With the CloudFormation engine, CloudFormation will automatically complete the creation and configuration of all resources.
2. The Cloud provides sample templates and a designer to create stack templates quickly.
3. You can dynamically update a stack template based on your business needs, and then you can update the related resource stack to flexibly meet the needs of business development.
4. If you no longer need a resource stack, you can simply one-click delete it, which also deletes all of the resources in the stack.
5. You can reuse an existing stack template to quickly duplicate all stack resources without repeated configuration.
6. You can flexibly combine cloud services based on different scenarios to meet the needs of automatic maintenance.

5.5.2 Inventory

Resource Stack Inventory

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			2.5.0

Name	Description	Optional	Valid Value	Starting Version
name	The name. For more information, see Resource Property .			2.5.0
description	The description. For more information, see Resource Property .	Yes		2.5.0
version	The stack version .			2.5.0
type	The stack type . Default type: zstack.		• zstack	2.5.0
templateContent	The stack content , which is a JSON string.	Yes		2.5.0
paramContent	The parameters in the stack. The parameters are JSON strings.			2.5.0
status	The stack status.			2.5.0
reason	The reason for stack creation failure.	Yes		2.5.0
enableRollback	Whether to roll back if stack creation fails.			2.5.0
groupBy	Groups rows into subgroups based on values of columns or expressions. This field is equivalent to the Group By clause in MySQL , such as groupBy =type.	Yes		2.5.0

Name	Description	Optional	Valid Value	Starting Version
createDate	The creation date. For more information, see Resource Property .			2.5.0
lastOpDate	The last operation date. For more information, see Resource Property .			2.5.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.5.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.5.0

Sample

```
{
  "inventories": [
    {
      "createDate": "Jun 28, 2018 1:44:13 PM",
      "enableRollback": true,
      "lastOpDate": "Jun 28, 2018 1:44:22 PM",
      "name": "EIP",
      "paramContent": "{\"InstanceOfferingUuid\":\"87dd7bae500f4273a9241751d0542a65\", \"ImageUuid\":\"4f04a5e91d075a9cb72131da51eeb62b\", \"PrivateNetworkUuid\":\"f88ccf4ece2a46e793b2d55b9c07b905\", \"PublicNetworkUuid\":\"4373fceca7334974aeaac17007e17ec3\", \"RootDiskOfferingUuid\":\"aee7c2ce77754134809caa8dbea49ecf\"}",
      "status": "Created",
      "\n    } } "Ref": "VmInstance"etAtt": [{"Fn::Select": [0, {"Fn::GetAtt": ["VmInstance", "vmNics"]}]}, "uuid"]
        "type": "zstack",
        "uuid": "36ed397d1ce847fcb3faa95decce7898",
        "version": "2018-06-18"
    }
  ],
  "success": true
}
```

{}

Stack Template Inventory

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			2.5.0
name	The name. For more information, see Resource Property .			2.5.0
description	The description. For more information, see Resource Property .	Yes		2.5.0
type	The template type . Default type: zstack.		• zstack	2.5.0
version	The template version.			2.5.0
state	Whether to enable the template.			2.5.0
content	The template content, which is a JSON string.			2.5.0
groupBy	Groups rows into subgroups based on values of columns or expressions. This field is equivalent to the Group By clause in MySQL , such as groupBy =type.	Yes		2.5.0

Name	Description	Optional	Valid Value	Starting Version
createDate	The creation date. For more information, see Resource Property .			2.5.0
lastOpDate	The last operation date. For more information, see Resource Property .			2.5.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.5.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.5.0

Sample

```
{
    "inventories": [
        {
            "content": "{
                \"ZStackTemplateFormatVersion\" : \"2018-06-18\",
                \"Description\" : \"Example for create a group vm instance in zstack\",
                \"Parameters\" : {
                    \"imageUuid\" : {
                        \"Type\" : \"String\",
                        \"Description\" : \"Image Uuid, represents the image resource to startup one vm instance\ntest enter\"
                    },
                    \"instanceOfferingUuid\" : {
                        \"Type\" : \"String\",
                        \"Description\" : \"The instance offering uuid\"
                    },
                    \"l3NetworkUuid\" : {
                        \"Type\" : \"String\",
                        \"Description\" : \"The l3 network uuid\"
                    },
                    \"Resources\" : {
                        \"WebServer1\" : {
                            \"Type\" : \"ZStack::Resource::VmInstance\",
                            \"Properties\" : {
                                \"name\" : \"vm\",
                                \"description\" : \"test\ncenter\",
                                \"imageUuid\" : {
                                    \"Ref\" : \"imageUuid\"
                                },
                                \"instanceOfferingUuid\" : {
                                    \"Ref\" : \"instanceOfferingUuid\"
                                },
                                \"l3NetworkUuids\" : [
                                    {
                                        \"Ref\" : \"l3NetworkUuid\"
                                    }
                                ]
                            }
                        }
                    }
                }
            }
        }
    ]
}
```

```

bnR1bnQ6IHwKICAgICAgiEhbGxvLHdvcmxkIQpob3N0bmFtZToga292ZW4tdGVzdApkaX
NhYmxlX3Jvb3Q6IGZhBN1CmNocGFzc3dkOgogIGxpC3Q6IHwKICAgICAgiCAGcm9vdDpwYXNz
d29yZAogIGV4cGlyZTogRmFsc2UKcnVuY21kOgogLSBjdXJsIGH0dHA6Ly9zb2Z0LnZwc2
VyLm5ldC9sbmlwL2xubXAxAjQuDGfylmd6IC1vIGxubXAxAjQuDGfylmd6ICYmIHRhcib6
eGYgbG5tcDEuNC50YXiuZ3ogJiYgY2QgbG5tcDEuNCAmJiB1Y2hvICIifC4vaW5zdGFsbC
5zaCBsbmlw" ] } } }, "Outputs": { "VmInstance": { "Description": "print vm instance", "Value": { "Ref": "WebServer1" } } } },
        "createDate": "Jun 27, 2018 7:59:07 PM",
        "lastOpDate": "Jun 27, 2018 7:59:07 PM",
        "name": "userdata",
        "state": true,
        "type": "zstack",
        "uuid": "94cd225aa6c348edbfd2fb1ca7ec50f7",
        "version": "2018-06-18"
    },
    {
        \n},
        "Ref": "VmInstance"etAtt": [ { "Fn::Select": [ 0, { "Fn::GetAtt": [ "VmInstance", "vmNics" ] } ] }, "uuid" ]
    "createDate": "Jun 27, 2018 5:21:19 PM",
    "lastOpDate": "Jun 27, 2018 7:15:48 PM",
    "name": "  $EIP",
    "state": true,
    "type": "zstack",
    "uuid": "a427e49177a7426eadeef2e10b89efaf",
    "version": "2018-06-18"
}
],
"success": true
}

```

Resource Stack Event Inventory

Name	Description	Optional	Valid Value	Starting Version
id	The event ID.			2.5.0
description	The detailed description of the resource.	Yes		2.5.0
action	The event name.			2.5.0
content	The event parameters.			2.5.0
resourceName	The resource name.			2.5.0
actionStatus	The action status.			2.5.0
stackUuid	The stack UUID.			2.5.0
duration	The event duration.	Yes		2.5.0
groupBy	Groups rows into subgroups	Yes		2.5.0

Name	Description	Optional	Valid Value	Starting Version
	based on values of columns or expressions. This field is equivalent to the Group By clause in MySQL, such as <code>groupBy =type</code> .			
createDate	The creation date. For more information, see Resource Property .			2.5.0
lastOpDate	The last operation date. For more information, see Resource Property .			2.5.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.5.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.5.0

Sample

```
{
  "inventories": [
    {
      "action": "CreateVmInstanceAction",
      "actionStatus": "Start",
      "content": "{\n        \"l3NetworkUuids\": [\n            \"f88ccf4ece2a46e793b2d55b9c07b905\"\n        ],\n        \"name\": \"EIP-VM\",\n        \"instanceOfferingUuid\": \"87dd7bae500f4273a9241751d0542a65\",\n        \"imageUuid\": \"4f04a5e91d075a9cb72131da51eeb62b\",\n        \"rootDiskOfferingUuid\": \"ae7c2ce77754134809caa8dbea49ecf\"\n      },\n      \"createDate\": \"Jun 28, 2018 1:44:13 PM\",\n      \"id\": 11,\n      \"lastOpDate\": \"Jun 28, 2018 1:44:13 PM\",\n      \"resourceName\": \"VmInstance\",\n      \"stackUuid\": \"36ed397d1ce847fcb3faa95decce7898\"\n    }
  ]
}
```

```

        },
    ],
    "success": true
}

```

5.5.3 Operations

5.5.3.1 AddStackTemplate

Adds a stack template. For example,

```

AddStackTemplate name=userdata
templateContent="{
  \"ZStackTemplateFormatVersion\" : \"2018-06-18\",
  \"Description\" : \"Example for create a group vm instance in zstack\",
  \"Parameters\" : {
    \"imageUuid\" : {
      \"Type\" : \"String\",
      \"Description\" : \"Image Uuid,
      represents the image resource to startup one vm instance\ntest enter\",
      \"instanceOfferingUuid\" :
      {
        \"Type\" : \"String\",
        \"Description\" : \"The instance
        offering uuid\",
      },
      \"l3NetworkUuid\" : {
        \"Type\" : \"String\",
      },
      \"Description\" : \"The l3 network uuid\" }
    },
    \"Resources\" : {
      \"WebServer1\" : {
        \"Type\" : \"ZStack::Resource::VmInstance\",
        \"Properties\" : {
          \"name\" : \"vm\",
          \"description\" : \"test\\nenter\",
          \"imageUuid\" : {\"Ref\" : \"imageUuid\"},
          \"instanceOfferingUuid\" : {\"Ref\" : \"instanceOfferingUuid\"},
          \"l3NetworkUuids\" : [{\"Ref\" : \"l3NetworkUuid\"}],
          \"systemTags\" : [\"userdata::I2Nsb3VkBmZpZwp1c2VyczoKIC0gbmFtZTog
cm9vdAogICBzaGVsbDogL2Jpb19iYXNoCiAgIGdyb3Vwczogcm9vdAogICBzdWRvOibBj0
FMTD0oQUxMKSBOT1BBU1NXRDpBTEwnXQogICBzc2gtYXV0aG9yaXplZC1rZX1z0gogICAg
ICAgLSBzc2gtcnNhIEFBQUCFM056YUMxeWMyRUFBUQFEQVFBQkFBQUJBURmZ2dMQVRrM0
prVW5uazczT1F6b1dOdzN4UFdtb1FNVjV6bUZWekEwYVFyWHZoT00xakk3bxJiLzdKVTJT
K0t3Nm1xUFp5QVUvTwg3WEc5Smw4REh3NzJEZW1zOEVWYm8yanA5dkU1dHRmdXY0K3Rvb1
o2Sm9STVND0EdvcG1kd2RZYw3Y3o2Vk9TYzgyWkFyR3V1VUxzMzFqWEUzc1IxNk96V0tT
RzFVL1RsbXA5V0Rlamxyd1dZMctPZzA4WHBORWvJMnfkUnpvV31HMHJ5WEpDbUQrdmxCSX
ErWnVMQVRMZWZQu1uNGZOV1ROM1JmZ0Q0aVEvR2Jaa3RJK1BwZ1ppRkdMVW0zVnJwMjNJ
ckVzStdjUkszV011z2RNS1VrQmfzR05STjB1d0820XNvM31Bbi9NZTz0b1hmd2JOaC9MWE
pPRkh2RFo5bmtscWwydnA0MyByb290QDEwLjAuMTIxLje3NQp3cm10ZV9maWxlcz0KIC0g
cGF0aDogL3RtcC9aU3RhY2tfY29uZmlnCiAgIGNvbnR1bnQ6IHwKICAgICAgIEh1bGxvLH
dvcmxkIQpob3N0bmFtZToga292ZW4tdGVzdApkaXNhYmx1X3Jvb3Q6IGZhbHN1CmNocGFz
c3dkOgogIGxpc3Q6IHwKICAgICAgcm9vdDpwYXNzd29yZAogIGV4cGlyZTogRmFsc2UKcn
VuY21kOgogLSBjdXJsIGH0dHA6Ly9zb2Z0LnZwc2VyLm51dC9sbm1wL2xubXAxLjQudGFY
Lmd6IC1vIGxubXAxLjQudGFyLmd6ICYmIHRhcIB6eGYgbG5tcDEuNC50YXIuZ3ogJiYgY2
QgbG5tcDEuNCAmJiB1Y2hvICIifC4vaW5zdGFsbC5zaCBsbm1w\"]
    },
    \"Outputs\" : {
      \"VmInstance\" : {
        \"Description\" : \"print vm
instance\",
        \"Value\" : {\"Ref\" : \"WebServer1\"} }
    }
}"

```

Parameters

Name	Description	Optional	Valid Value	Starting Version
name	The resource name.			2.5.0

Name	Description	Optional	Valid Value	Starting Version
description	The detailed description of the resource.	Yes		2.5.0
type	The template type. Default type: zstack.	Yes	• zstack	2.5.0
templateContent	The template content, which is a JSON string.			2.5.0
resourceUuid	The resource UUID.	Yes		2.5.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.5.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.5.0
timeout		Yes		

5.5.3.2 DeleteStackTemplate

Deletes a stack template. For example,

```
DeleteStackTemplate uuid=a427e49177a7426eaddef2e10b89efaf
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			
deleteMode		Yes		
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.5.0

Name	Description	Optional	Valid Value	Starting Version
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.5.0
timeout		Yes		

5.5.3.3 QueryStackTemplate

Queries a stack template. For example,

```
QueryStackTemplate uuid=a427e49177a7426eadeef2e10b89efaf
```

Primitive Fields of Query

See [Stack Template Inventory](#).

5.5.3.4 UpdateStackTemplate

Updates a stack template. For example,

```
UpdateStackTemplate uuid=a427e49177a7426eadeef2e10b89efaf name=StackTemplate
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The template UUID.			2.5.0
name	The resource name.	Yes		2.5.0
description	The detailed description of the resource.	Yes		2.5.0
state	Whether the template is available.	Yes		2.5.0
templateContent	The template content, which is a JSON string.	Yes		2.5.0

Name	Description	Optional	Valid Value	Starting Version
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.5.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.5.0
timeout		Yes		

5.5.3.5 GetSupportedCloudFormationResources

Obtains resources that are supported by a stack template. For example,

```
GetSupportedCloudFormationResources
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
version	The template version No. For example, v1.	Yes	• v1	2.6.0
type	The template type . Default type: zstack.	Yes	• zstack	2.6.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.6.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.6.0
timeout		Yes		

5.5.3.6 CreateResourceStack

Creates a resource stack. For example,

```
CreateResourceStack name=stack \
parameters="{"imageUuid": "8fcfe758a7eb13118d7344a08ff790a5",
"instanceOfferingUuid": "751f662a32184933aff487f5c6e167a6", "l3NetworkUuid": "1245de5c2d28454bb63e60575ec611cb"}" \
templateUuid=3a1106e2ff91411d989025c138a16b74
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
name	The resource name.			2.5.0
description	The detailed description of the resource.	Yes		2.5.0
type	The stack type . Default type: zstack.	Yes	• zstack	2.5.0
rollback	Whether to roll back if stack creation fails.	Yes		2.5.0
templateContent	The stack content, which is a JSON string. Note: Make sure that at least one of templateContent and templateUuid is not null.	Yes		2.5.0
templateUuid	The template UUID. Note: Make sure that at least one of templateContent and templateUuid is not null.	Yes		2.5.0

Name	Description	Optional	Valid Value	Starting Version
	templateUuid is not null.			
parameters	The parameters in the stack. The parameters are JSON strings.			2.5.0
resourceUuid	The resource UUID.	Yes		2.5.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.5.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.5.0
timeout		Yes		

5.5.3.7 PreviewResourceStack

Previews a resource stack. For example,

```
PreviewResourceStack uuid=a427e49177a7426eadeef2e10b89efaf
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
type		Yes	• zstack	2.5.0
templateContent	The template content.	Yes		2.5.0
uuid	The template UUID.	Yes		2.5.0
parameters	The parameters in the template. The parameters are JSON strings.	Yes		2.5.0

Name	Description	Optional	Valid Value	Starting Version
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.5.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.5.0
timeout		Yes		

5.5.3.8 DeleteResourceStack

Deletes a resource stack. For example,

```
DeleteResourceStack uuid=36ed397d1ce847fcb3faa95decce7898
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			2.5.0
deleteMode		Yes		2.5.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.5.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.5.0
timeout		Yes		

5.5.3.9 UpdateResourceStack

Updates a resource stack. For example,

```
UpdateResourceStack uuid=f4e877381bc349a798e23b74084cd546 name=EIP
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The stack UUID.			2.5.0
name	The resource name.	Yes		2.5.0
description	The detailed description of the resource.	Yes		2.5.0
rollback	Whether to roll back if stack creation fails.	Yes		2.5.0
templateContent	The stack content , which is a JSON string.	Yes		2.5.0
parameters	The parameters in the stack. The parameters are JSON strings.	Yes		2.5.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.5.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.5.0
timeout		Yes		

5.5.3.10 QueryResourceStack

Queries a resource stack. For example,

```
QueryResourceStack uuid=f4e877381bc349a798e23b74084cd546
```

Primitive Fields of Query

See [Resource Stack Inventory](#).

5.5.3.11 GetResourceFromResourceStack

Obtains resources from a resource stack. For example,

```
GetResourceFromResourceStack uuid=36ed397d1ce847fcb3faa95decce7898
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The stack UUID.			2.5.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.5.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.5.0
timeout		Yes		

5.5.3.12 QueryEventFromResourceStack

Queries events from a resource stack. For example,

```
QueryEventFromResourceStack uuid=36ed397d1ce847fcb3faa95decce7898
```

Primitive Fields of Query

See [Resource Stack Event Inventory](#).

5.5.3.13 RestartResourceStack

Restarts a stack template. For example,

```
RestartResourceStack uuid=36ed397d1ce847fcb3faa95decce7898
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			2.5.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.5.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.5.0
timeout		Yes		

5.5.3.14 CheckStackTemplateParameters

Checks stack template parameters. For example,

```
CheckStackTemplateParameters uuid=a427e49177a7426eadeef2e10b89efaf
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
type	The template type. Default type: zstack.	Yes	• zstack	2.5.0
templateContent	The template content, which is a JSON string.	Yes		2.5.0
uuid	The template UUID.			2.5.0
userTags	The user tags. For more	Yes		2.5.0

Name	Description	Optional	Valid Value	Starting Version
	information, see CreateUserTag .			
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.5.0
timeout		Yes		

5.5.3.15 DecodeStackTemplate

Parses a stack template into a resource structure graph. For example,

```
DecodeStackTemplate uuid=59a98484f6fe43b9af1d782f725f40ac
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
type	The template type. Default type: zstack.	Yes	• zstack	3.0.0
templateContent	The template content. Note: You must specify the uuid or templateContent parameter.	Yes		3.0.0
uuid	The template UUID. Note: You must specify the uuid or templateContent parameter.	Yes		3.0.0

Name	Description	Optional	Valid Value	Starting Version
parameters	The request parameters in JSON format.	Yes		3.0.0
preparameters	The pre-rendered request parameters in JSON format.	Yes		3.9.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.0.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.0.0
timeout		Yes		

5.5.3.16 GetResourceStackFromResource

Obtains the corresponding stack of a resource. For example,

```
GetResourceStackFromResource resourceUuid=fad8b8f55961311a82b8
2a61d8b67fc5
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
resourceUuid	The resource UUID.			3.9.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.9.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.9.0

Name	Description	Optional	Valid Value	Starting Version
timeout		Yes		

5.5.3.17 GetResourceStackVmStatus

Obtains the VM port monitoring status in a stack. For example,

```
GetResourceStackVmStatus uuid=8f0e4af072913507a434a2c7a8bd1d0a
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			3.9.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.9.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.9.0
timeout		Yes		

5.5.3.18 AddResourceStackVmPortMonitor

Adds VM port monitoring to a stack. For example,

```
AddResourceStackVmPortMonitor vmInstanceUuid=29ddc109dd983b7fb74a  
7988ebbed12d port=22.0
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
stackUuid	The stack UUID.	Yes		3.9.0
vmInstanceUuid	The VM instance UUID.			3.9.0
port	The port No.			3.9.0
userTags	The user tags. For more	Yes		3.9.0

Name	Description	Optional	Valid Value	Starting Version
	information, see CreateUserTag .			
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.9.0
timeout		Yes		

5.5.3.19 DeleteResourceStackVmPortMonitor

Deletes VM port monitoring from a stack. For example,

```
DeleteResourceStackVmPortMonitor vmInstanceId=ffa8ab9746de3edcb1bc
1245eef8868d
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
stackUuid	The stack UUID.	Yes		3.9.0
vmInstanceId	The VM instance UUID.			3.9.0
port	The port No.	Yes		3.9.0
deleteMode	The delete mode.	Yes		3.9.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.9.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.9.0
timeout		Yes		

5.5.4 Tags

You can create a user tag on a resource stack by using `resourceType=ResourceStackVO`.

For example,

```
CreateUserTag resourceType=ResourceStackVO tag=golden-ResourceStack \
resourceUuid=36ed397d1ce847fcb3faa95decce7898
```

5.6 BareMetal Management (Plus)

5.6.1 Overview

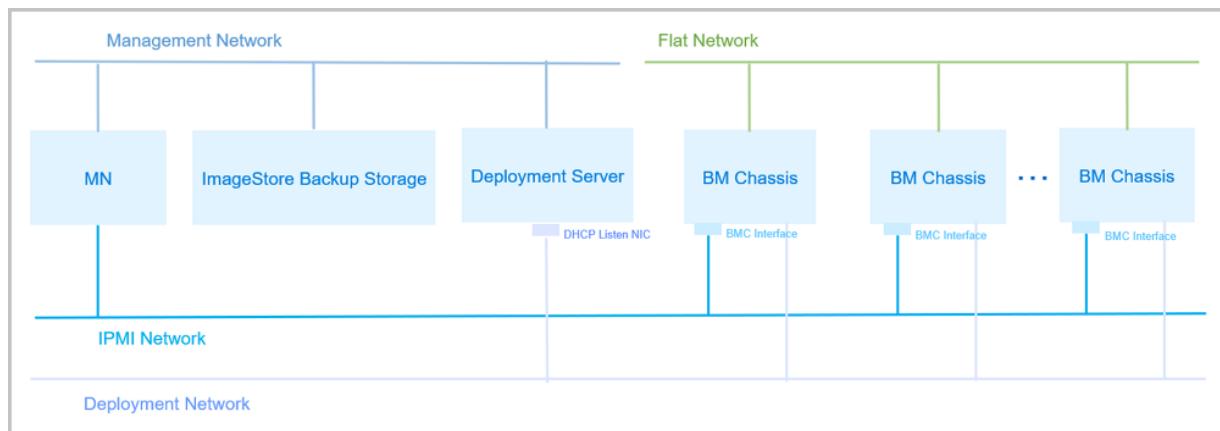
ZStack Cloud offers the BareMetal Management service that provides your applications with dedicated physical servers, ensuring the high performance and stability of your key applications.

After your servers are configured well and the related preparations are completed, you can deploy Bare Metal (BM) chassis in bulk on the UI. After the deployment succeeds, you can use these BM chassis to create BM instances. With preconfigured templates, you can achieve unattended batch installation for BM instance operating systems. In addition, you can configure a business network for BM instances and easily manage the entire lifecycle of these BM instances.

The BareMetal Management service is a separate feature module. To use this service, purchase both the Base License and the Plus License of BareMetal Management. The Plus License cannot be used independently.

Basic Workflow

How does the BareMetal Management service work? A deployment server provides two types of service: DHCP and FTP. Specifically, the deployment server can instruct multiple BM chassis to be started through a PXE NIC, and can allocate dynamic IP addresses with the DHCP service. In addition, BM chassis can download related software packages from the deployment server with the FTP service, of whose packages can be applied to the operating system installation of the BM instance, as shown in [BareMetal Management Network Topology](#).

Figure 5-36: BareMetal Management Network Topology

Key Features and Benefits

The BareMetal Management service provides the following features and benefits:

- Provides applications with dedicated physical servers to ensure the high performance and stability of your key applications.
- Deploy deployment servers independently as recommended, which can meet the requirements for the host high availability scenario of multiple management nodes. This also simplifies the network environment and helps to avoid DHCP conflicts. In addition, you can attach an independent deployment server to each BM cluster, which helps to avoid a single point of failure and improve greatly the deployment rate.
- Helps create BM chassis in bulk on the UI via either the manual creation or template file import. You can also add IPMI addresses in bulk to deploy efficiently BM clusters, which increases O&M efficiencies.
- Helps to quickly generate configuration files by using preconfigured templates to achieve unattended batch installation for BM instance operating systems.
- Enables you to customize the installation of your operating system. Supported operating systems: custom operating system of the Cloud and the mainstream Linux distributions (RHEL/CentOS, Debian/Ubuntu, and SUSE/openSUSE).
- Supports flat network. Specifically, BM instances and VM instances on the same L2 network can reach each other without routing to each other by gateways.

Typical Usage Scenarios

The BareMetal Management service can be applied to the following typical scenarios:

- High-Security and Strict Management Scenario

Financial industry, security industry, and others have rigorous standards for the business compliance and business data security. With the BareMetal Management service, they can ensure their exclusive use of resources, data isolation, strict supervision and control, and effective tracking.

- High-Performance Computing Scenario

In high-performance computing scenarios, supercomputing centers, gene sequencing companies, and other entities require high computing performance, high stability, and accurate real-time update for servers. Sometime later, business performances will be affected by the performance loss and hyper-threading brought by visualization. In this regard, to deploy BM cluster to a certain scale, meet the strict requirements for the high performance computing.

- Key Database Scenario

In some entities, some key database businesses cannot be deployed on normal VM instances, and must be loaded on the physical servers that can protect their exclusive resources, network isolation, and performances. To meet this requirements, use the BareMetal Management service that provides exclusive, high-performance physical servers for one or more appliances.

5.6.2 Inventory

BareMetal Chassis Inventory

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			2.6.0
name	The name. For more information, see Resource Property .			2.6.0
description	The description. For more information, see Resource Property .	Yes		2.6.0
zoneUuid	The zone UUID.			2.6.0
clusterUuid	The cluster UUID.			2.6.0

Name	Description	Optional	Valid Value	Starting Version
ipmiAddress	The IPMI address.			2.6.0
ipmiPort	The IPMI port.			2.6.0
ipmiUsername	The IPMI username.			2.6.0
state				2.6.0
status				2.6.0
groupBy	Groups rows into subgroups based on values of columns or expressions. This field is equivalent to the Group By clause in MySQL, such as <code>groupBy =type</code> .	Yes		2.6.0
createDate	The creation date. For more information, see Resource Property .			2.6.0
lastOpDate	The last operation date. For more information, see Resource Property .			2.6.0
userTags	The user tags. For more information, see CreateUserTag	Yes		2.6.0
systemTags	The system tags. For more information, see CreateSystemTag	Yes		2.6.0

Sample

```
{
    "inventories": [
        {
            "clusterUuid": "1e9584cd6dd64c1a96fba1bb1114948e",
            "createDate": "Jul 23, 2018 1:34:21 AM",
            "hardwareInfos": [
                {
                    "chassisUuid": "42bd9ac18f984dd683ad22a36a5b756c",
                    "content": "[ { \"name\": \"sda\", \"size\": \"278.9G\" } ]",
                    "createDate": "Jul 23, 2018 1:48:32 AM",
                    "lastOpDate": "Jul 23, 2018 1:48:32 AM",
                    "type": "disk",
                    "uuid": "b039556f2a23447ab584aafceaa3d070"
                }
            ],
            "ipmiAddress": "10.0.0.4",
            "ipmiPort": "623",
            "ipmiUsername": "root",
            "lastOpDate": "Jul 23, 2018 10:24:55 AM",
            "name": "chassis-1",
            "state": "Enabled",
            "status": "Allocated",
            "uuid": "42bd9ac18f984dd683ad22a36a5b756c",
            "zoneUuid": "c0f9490c8fa6492eba4b403f2d27958e"
        }
    ],
    "success": true
}
```

BareMetal Instance Inventory

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			2.6.0
name	The name. For more information, see Resource Property .			2.6.0
description	The description. For more information, see Resource Property .	Yes		2.6.0
zoneUuid	The zone UUID.			2.6.0
clusterUuid	The cluster UUID.			2.6.0

Name	Description	Optional	Valid Value	Starting Version
chassisUuid	The BareMetal chassis UUID.			2.6.0
imageUuid	The image UUID.			2.6.0
platform	The operating system platform.			2.6.0
state				2.6.0
status				2.6.0
groupBy	Groups rows into subgroups based on values of columns or expressions. This field is equivalent to the Group By clause in MySQL, such as <code>groupBy =type</code> .	Yes		2.6.0
createDate	The creation date. For more information, see Resource Property .			2.6.0
lastOpDate	The last operation date. For more information, see Resource Property .			2.6.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.6.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.6.0

Sample

```
{
    "inventories": [
        {
            "bmNics": [
                {
                    "baremetalInstanceId": "8b819bd452b54f91ba087ec7a9afc140",
                    "createDate": "Jul 23, 2018 10:24:56 AM",
                    "gateway": "10.0.0.99",
                    "ip": "10.147.214.60",
                    "lastOpDate": "Jul 23, 2018 10:24:56 AM",
                    "mac": "d4:ae:52:6e:d1:0c",
                    "netmask": "255.0.0.0",
                    "pxe": true,
                    "uuid": "dae5d0fa380c413d8c657a3a967d5811"
                }
            ],
            "chassisUuid": "42bd9ac18f984dd683ad22a36a5b756c",
            "clusterUuid": "1e9584cd6dd64c1a96fba1bb1114948e",
            "createDate": "Jul 23, 2018 10:24:55 AM",
            "imageUuid": "2910e37e4f9754518817e3fd52f61112",
            "lastOpDate": "Jul 25, 2018 2:54:44 PM",
            "managementIp": "10.147.214.60",
            "name": "bm-1",
            "platform": "Linux",
            "port": "22",
            "state": "Running",
            "status": "Provisioned",
            "username": "root",
            "uuid": "8b819bd452b54f91ba087ec7a9afc140",
            "zoneUuid": "c0f9490c8fa649eba4b403f2d27958e"
        }
    ],
    "success": true
}
```

PXE Server Inventory

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			3.1.0
name	The name. For more information, see Resource Property .			3.1.0
description	The description. For more information,	Yes		3.1.0

Name	Description	Optional	Valid Value	Starting Version
	see <i>Resource Property</i> .			
zoneUuid	The zone UUID.			3.1.0
hostname	The IP address of the deployment server.			3.1.0
sshUsername	The SSH username of the deployment server.			3.1.0
sshPassword	The SSH password of the deployment server.			3.1.0
sshPort	The SSH port of the deployment server.			3.1.0
storagePath	The storage path of the deployment server.			3.1.0
dhcpInterface	The DHCP listen interface that can enable the DHCP feature.			3.1.0
dhcpRangeBegin	The start IP address in the IP range allocated by DHCP.			3.1.0
dhcpRangeEnd	The end IP address in the IP range allocated by DHCP.			3.1.0
dhcpRangeNetmask	The DHCP netmask.			3.1.0
state	The state of the deployment server.			3.1.0

Name	Description	Optional	Valid Value	Starting Version
status	The status of the deployment server.			3.1.0
totalCapacity	The total capacity of the storage path.			3.1.0
availableCapacity	The available capacity of the storage path.			3.1.0
attachedClusterUuids	The UUIDs of clusters to which the deployment server is attached.			3.1.0
createDate	The creation date. For more information, see Resource Property .			3.1.0
lastOpDate	The last operation date. For more information, see Resource Property .			3.1.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.1.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.1.0

Sample

```
{
  "inventories": [
    {
      "attachedClusterUuids": [

```

```

        "cf2410b964b24fc598c85ced0d186fbc"
    ],
    "availableCapacity": 231389765632,
    "createDate": "Nov 17, 2018 11:32:42 AM",
    "dhcpInterface": "br_em2",
    "dhcpInterfaceAddress": "10.0.0.23",
    "dhcpRangeBegin": "10.0.0.1",
    "dhcpRangeEnd": "10.0.0.254",
    "dhcpRangeNetmask": "255.255.255.0",
    "hostname": "192.168.200.26",
    "lastOpDate": "Nov 17, 2018 1:45:46 PM",
    "name": "PXE-26",
    "sshPassword": "password",
    "sshPort": 22,
    "sshUsername": "root",
    "state": "Enabled",
    "status": "Connected",
    "storagePath": "/pxe_store",
    "totalCapacity": 289760350208,
    "uuid": "b56bc3496ca14410b8903b6b7c6a2c23",
    "zoneUuid": "5034aa76f41f428d968b828c2518c29e"
}
],
"success": true
}

```

BareMetal Bonding Inventory

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			3.4.0
chassisUuid	The BareMetal chassis UUID.			3.4.0
mode	The NIC bonding mode.			3.4.0
name	The name. For more information, see Resource Property .			3.4.0
opts	The NIC bonding option.			3.4.0
slaves	The Slaves MAC address where the NIC bonds to.			3.4.0
groupBy	Groups rows into subgroups	Yes		3.4.0

Name	Description	Optional	Valid Value	Starting Version
	based on values of columns or expressions. This field is equivalent to the Group By clause in MySQL, such as <code>groupBy =type</code> .			
createDate	The creation date. For more information, see Resource Property .			3.4.0
lastOpDate	The last operation date. For more information, see Resource Property .			3.4.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.4.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.4.0

Preconfiguration Template Inventory

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			3.4.0
content				3.4.0
description	The description. For more information,	Yes		3.4.0

Name	Description	Optional	Valid Value	Starting Version
	see Resource Property .			
name	The name. For more information, see Resource Property .			3.4.0
distribution	The distribution version of the operating system.			3.4.0
isPredefined				3.4.0
md5sum	The MD5 checksum value of the image.			3.4.0
state	The state.			3.4.0
type				3.4.0
groupBy	Groups rows into subgroups based on values of columns or expressions. This field is equivalent to the Group By clause in MySQL, such as <code>groupBy =type</code> .	Yes		3.4.0
createDate	The creation date. For more information, see Resource Property .			3.4.0
lastOpDate	The last operation date. For more information, see Resource Property .			3.4.0
userTags	The user tags. For more	Yes		3.4.0

Name	Description	Optional	Valid Value	Starting Version
	information, see CreateUserTag .			
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.4.0

5.6.3 Operations

5.6.3.1 BareMetal Management Operations

5.6.3.1.1 CreateBaremetalChassis

Creates a BareMetal chassis. For example,

```
CreateBaremetalChassis name=test clusterUuid=1e9584cd6dd64c1a96fb
albb114948e ipmiAddress=192.168.0.1 ipmiUsername=admin ipmiPassword=
password
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
name	The resource name.			2.6.0
description	The detailed description of the resource.	Yes		2.6.0
clusterUuid	The cluster UUID.			2.6.0
ipmiAddress	The IPMI address .			2.6.0
ipmiPort	The IPMI port.	Yes		2.6.0
ipmiUsername	The IPMI username.			2.6.0
ipmiPassword	The IPMI password.			2.6.0
resourceUuid	The resource UUID.	Yes		2.6.0

Name	Description	Optional	Valid Value	Starting Version
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.6.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.6.0
timeout		Yes		

5.6.3.1.2 DeleteBaremetalChassis

Deletes a BareMetal chassis. For example,

```
DeleteBaremetalChassis uuid=b86c9016b4f24953a9edefb53ca0678c
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			2.6.0
deleteMode	The delete mode.	Yes		2.6.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.6.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.6.0
timeout		Yes		

5.6.3.1.3 UpdateBaremetalChassis

Updates a BareMetal chassis. For example,

```
UpdateBaremetalChassis uuid=b039556f2a23447ab584aaafceaa3d070
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			2.6.0
name	The resource name.	Yes		2.6.0
description	The detailed description of the resource.	Yes		2.6.0
ipmiAddress	The IPMI address.	Yes		2.6.0
ipmiPort	The IPMI port.	Yes		2.6.0
ipmiUsername	The IPMI username.	Yes		2.6.0
ipmiPassword	The IPMI password.	Yes		2.6.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.6.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.6.0
timeout		Yes		

5.6.3.1.4 QueryBaremetalChassis

Queries a BareMetal chassis. For example,

```
QueryBaremetalChassis uuid=42bd9ac18f984dd683ad22a36a5b756c
```

Primitive Fields of Query

See [BareMetal Chassis Inventory](#).

Nested and Expanded Fields of Query

Field	Inventory	Description	Starting Version
zone	Zone Inventory	The zone to which the BareMetal chassis belongs.	2.6.0
cluster	cluster inventory	The parent cluster.	2.6.0
hardwareInfos	Hardware Information Inventory	The hardware information.	2.6.0
baremetalInstance	BareMetal Instance Inventory	The BareMetal instance to which the BareMetal chassis belongs.	2.6.0

5.6.3.1.5 BatchCreateBaremetalChassis

Creates BareMetal chassis in bulk. For example,

```
BatchCreateBaremetalChassis baremetalChassisInfo=5ZCN56ewKihuYW1lKSzn
roDku4soZGVzY3JpcHRpb24pL0mbhue+pCooY2x1c3Rlc1V1aWQpLOeJqeeQhu
acuklQKihtYW5hZ2VtZW50SX BzKSzmiavmj4/niannkIbmnlpJT01NVeiuvue9rihJT
01NVSksU1NI56uv5Y+jKihzc2hqb3J0KSzn1Kjmiflki0qKHvzZXJuYW1lKSzlr4bno
IEqKHBhc3N3b3JkKQosLGFiZDIwMmJmYmM2MTQ1NDNhMjNiNDM3NGYzNGJ1YzM1LDE3Mi4
yMC4xOTguMjMyLCwscm9vdCxwYXNzd29yZAosLDkyN2NkNmRmZmZiYTQzMj4Yzk1MDY0M
TFhZjAyMmQzLDE3Mi4yMC4xOTcuMjQ3LCwscm9vdCxwYXNzd29yZAo=
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
baremetalChassisInfo	The BareMetal chassis information encoded in Base64 format.			3.1.1
longJobName	The long job name.	Yes		3.1.1

Name	Description	Optional	Valid Value	Starting Version
longJobDescription	The long job description.	Yes		3.1.1
resourceUuid	The resource UUID.	Yes		3.1.1
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.1.1
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.1.1
timeout		Yes		

5.6.3.1.6 CheckBaremetalChassisConfigFile

Checks the validity of the configuration files that are used to create BareMetal chassis in bulk. For example,

```
CheckBaremetalChassisConfigFile baremetalChassisInfo=w/uzxioobmFt
ZSksvPK96ShkZXNjcm1wdG1vbiksvK/IuiooY2x1c3R1clV1aWQpLElQTUm12
Na3KihipcG1pQWRkcmVzcyksSVBNSbbLv9oqKG1wbWlQb3J0KSxJUE1J0807p8P7KihipcG1
pVXN1cm5hbWUpLElQTUnD3MLrKihipcG1pUGFzc3dvcnQpLnBxvTC473wyvTJ6LG4W1llc
y9Ob10qKHJ1Ym9vdCkNCjEsMSxmZWYwOWNiNDg1MGI0M2MzYmVjMzAxMWN1YTg0OTlhMSw
xMjcuMC4wLjEsNjIzMcxhZG1pbixwYXNzd29yZCxZZXMNCg\u003d\u003d
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
baremetalChassisInfo	The BareMetal chassis information encoded in Base64 format.			3.1.1
userTags	The user tags. For information, see CreateUserTag .	Yes		3.1.1
systemTags	The system tags. For information,	Yes		3.1.1

Name	Description	Optional	Valid Value	Starting Version
	see CreateSystemTag .			
timeout		Yes		

5.6.3.1.7 PowerOnBaremetalChassis

Powers on a BareMetal chassis. For example,

```
PowerOnBaremetalChassis chassisUuid=42bd9ac18f984dd683ad22a36a5b756c
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
chassisUuid	The BareMetal chassis UUID.			2.6.0
userTags	The user tags. For more information, see CreateUserTag	Yes		2.6.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.6.0
timeout		Yes		

5.6.3.1.8 PowerOffBaremetalChassis

Powers off a BareMetal chassis. For example,

```
PowerOffBaremetalChassis chassisUuid=42bd9ac18f984dd683ad22a36a5b756c
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
chassisUuid	The BareMetal chassis UUID.			2.6.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.6.0

Name	Description	Optional	Valid Value	Starting Version
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.6.0
timeout		Yes		

5.6.3.1.9 PowerResetBaremetalChassis

Restarts a BareMetal chassis. For example,

```
PowerResetBaremetalChassis chassisUuid=42bd9ac18f984dd683ad22a36a5b756c
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
chassisUuid	The BareMetal chassis UUID.			2.6.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.6.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.6.0
timeout		Yes		

5.6.3.1.10 GetBaremetalChassisPowerStatus

Obtains the power state of a BareMetal chassis. For example,

```
GetBaremetalChassisPowerStatus uuid=42bd9ac18f984dd683ad22a36a5b756c
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			2.6.0

Name	Description	Optional	Valid Value	Starting Version
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.6.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.6.0
timeout		Yes		

5.6.3.1.11 ChangeBaremetalChassisState

Changes the state of a BareMetal chassis. For example,

```
ChangeBaremetalChassisState uuid=42bd9ac18f984dd683ad22a36a5b756c
stateEvent=enable
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			2.6.0
stateEvent	The state event.		<ul style="list-style-type: none"> • Enable • Disable 	2.6.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.6.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.6.0
timeout		Yes		

5.6.3.1.12 InspectBaremetalChassis

Obtains the BareMetal chassis information. For example,

```
InspectBaremetalChassis uuid=b86c9016b4f24953a9edefb53ca0678c
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			2.6.0
userTags	The user tags. For more information, see CreateUserTag	Yes		2.6.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.6.0
timeout		Yes		

5.6.3.1.13 CreateBaremetalInstance

Creates a BareMetal instance. For example,

```
CreateBaremetalInstance name=test chassisUuid=42bd9ac18f984dd683ad
22a36a5b756c imageUuid=0f44e08d05874b98a63e187b3e8dbc08 password=
password
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
name	The resource name.			2.6.0
description	The detailed description of the resource.	Yes		2.6.0
chassisUuid	The BareMetal chassis UUID.			2.6.0
imageUuid	The image UUID.			2.6.0

Name	Description	Optional	Valid Value	Starting Version
templateUuid	The preconfiguration template UUID.	Yes		3.3.0
username	The system user.	Yes		3.3.0
password	The root password.			2.6.0
nicCfgs	The BareMetal NIC configuration.	Yes		2.6.0
bondingCfgs	The NIC bonding configuration.	Yes		3.3.0
customConfigurations	The custom configuration.	Yes		3.3.0
strategy	The creation strategy of the BareMetal instance.	Yes	<ul style="list-style-type: none"> • InstantStart • JustCreate 	2.6.0
resourceUuid	The resource UUID. If specified, the BareMetal instance will use this field value as UUID.	Yes		2.6.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.6.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.6.0
timeout		Yes		



Note:

- When you create a bare metal instance in ZStack Cloud, you can specify a static IP address for the bare metal instance by adding the **staticIp** option to **SystemTags**. The SystemTag is passed by using the **staticIp** parameter.
 - Format of the **staticIp** option: `staticIp::{:s}::{:s}`. Here, the first %s expression is an L3 network UUID while the second %s expression is the specified IP address.
 - Example: `staticIp::f00d593dff2e4bd58473388ac411ade2::192.168.0.10.`
- When you create a bare metal instance in ZStack Cloud, you can overwrite the installation of the bare metal instance by adding the **forceInstall** option to **SystemTags**. The SystemTag is passed by using the **forceInstall** parameter.
 - If the **forceInstall** does not exist, and if a partition is detected in the target disk during the system installation, the installation process will be paused to avoid overwriting the disk data.
 - If the **forceInstall** exists, and if a partition is detected in the target disk during the system installation, the partition will be automatically cleansed, and the installation will be overwritten.

5.6.3.1.14 QueryBaremetalInstance

Queries a BareMetal instance. For example,

```
QueryBaremetalInstance uuid=967a353c2893409dab9312cf3033a98c
```

Primitive Fields of Query

See [BareMetal Instance Inventory](#).

Nested and Expanded Fields of Query

Field	Inventory	Description	Starting Version
zone	Zone Inventory	The zone to which the BareMetal instance belongs.	2.6.0
cluster	Cluster Inventory	The parent cluster.	2.6.0
image	Image Inventory	The image that is used to create the BareMetal instance.	2.6.0
bmNics	BareMetal NIC Inventory	All the NICs on the host.	2.6.0

Field	Inventory	Description	Starting Version
chassis	BareMetal Chassis Inventory	The BareMetal chassis.	2.6.0

5.6.3.1.15 StartBaremetallnstance

Starts a BareMetal instance. For example,

```
StartBaremetalInstance uuid=8b819bd452b54f91ba087ec7a9afc140
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			2.6.0
pxeBoot	Whether to start the BareMetal instance by using the PXE network.	Yes		2.6.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.6.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.6.0
timeout		Yes		

5.6.3.1.16 StopBaremetallnstance

Stops a BareMetal instance. For example,

```
StopBaremetalInstance uuid=8b819bd452b54f91ba087ec7a9afc140
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			2.6.0

Name	Description	Optional	Valid Value	Starting Version
type	The method to stop the BareMetal instance.	Yes	<ul style="list-style-type: none"> Grace Cold 	2.6.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.6.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.6.0
timeout		Yes		

5.6.3.1.17 UpdateBaremetalInstance

Update a BareMetal instance. For example,

```
UpdateBaremetalInstance uuid=8b819bd452b54f91ba087ec7a9afc140
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			2.6.0
name	The resource name.	Yes		2.6.0
description	The detailed description of the resource.	Yes		2.6.0
password	The root password.	Yes		2.6.0
platform	The operating system platform.	Yes		2.6.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.6.0

Name	Description	Optional	Valid Value	Starting Version
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.6.0
timeout		Yes		

5.6.3.1.18 RebootBaremetalInstance

Reboots a BareMetal instance. For example,

```
RebootBaremetalInstance uuid=8b819bd452b54f91ba087ec7a9afc140
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			2.6.0
pxeBoot	Whether to start the BareMetal instance by using the PXE network.	Yes		2.6.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.6.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.6.0
timeout		Yes		

5.6.3.1.19 DestroyBaremetalInstance

Deletes a BareMetal instance. For example,

```
DestroyBaremetalInstance uuid=8b819bd452b54f91ba087ec7a9afc140
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			2.6.0
deleteMode	The delete mode.	Yes		2.6.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.6.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.6.0
timeout		Yes		

5.6.3.1.20 ExpungeBaremetalInstance

Completely deletes a BareMetal instance. For example,

```
ExpungeBaremetalInstance uuid=8b819bd452b54f91ba087ec7a9afc140
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			2.6.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.6.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.6.0

Name	Description	Optional	Valid Value	Starting Version
	CreateSystemTag .			
timeout		Yes		

5.6.3.1.21 RecoverBaremetalInstance

Recover a deleted BareMetal instance. For example,

```
RecoverBaremetalInstance uuid=8b819bd452b54f91ba087ec7a9afc140
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			2.6.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.6.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.6.0
timeout		Yes		

5.6.3.1.22 CreateBaremetalBonding

Create a BareMetal NIC bonding. For example,

```
CreateBaremetalBonding chassisUuid=8a3fddc82d1536ad8f695d25d84404f2
name=bond0 mode=1 slaves='["d4:ae:52:6e:d1:0d", "d4:ae:52:6e:d1:0e"]'
opts='miimon=100'
```

Parameters

Name	Description	Optional	Options Value	Starting Version
chassisUuid	The BareMetal chassis UUID.			3.3.0
name	The NIC bonding name.			3.3.0

Name	Description	Optional	Options Value	Starting Version
mode	The NIC bonding mode.			3.3.0
slaves	The Slaves MAC address of the NIC bonding.			3.3.0
opts	The NIC bonding option.	Yes		3.3.0
resourceUuid	The resource UUID.	Yes		3.3.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.3.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.3.0
timeout		Yes		

5.6.3.1.23 QueryBaremetalBonding

Queries a BareMetal NIC bonding. For example,

```
QueryBaremetalBonding chassisUuid=967a353c2893409dab9312cf3033a98c
```

Primitive Fields of Query

See [BareMetal Bonding Inventory](#).

Nested and Expanded Fields of Query

Field	Inventory	Description	Starting Version
baremetalChassis	BareMetal Chassis Inventory	The BareMetal chassis .	3.4.0

5.6.3.1.24 AddPreconfigurationTemplate

Adds a preconfiguration template. For example,

```
AddPreconfigurationTemplate name=test content=... distribution=centos-7-x86_64 type=autoyast
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
name	The resource name.			3.4.0
description	The detailed description of the resource.	Yes		3.4.0
distribution	The distribution version of the operating system.			3.4.0
type	The template type	Yes	<ul style="list-style-type: none"> • kickstart • preseed • autoyast 	3.4.0
content	The template content.			3.4.0
resourceUuid	The resource UUID.	Yes		3.4.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.4.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.4.0
timeout		Yes		

5.6.3.1.25 ChangePreconfigurationTemplateState

Changes the state of a preconfiguration template. For example,

```
ChangePreconfigurationTemplateState uuid=1bc7b68589b44d7eb906
605ceaed3e23 stateEvent=enable
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			3.4.0
stateEvent	The state event.	Yes	<ul style="list-style-type: none"> enable disable 	3.4.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.4.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.4.0
timeout		Yes		

5.6.3.1.26 DeletePreconfigurationTemplate

Deletes a preconfiguration template. For example,

```
DeletePreconfigurationTemplate uuid=5a236fbddd5e46a6ab6e634a5c8b8e68
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource name.			3.4.0
deleteMode	The delete mode.	Yes		3.4.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.4.0

Name	Description	Optional	Valid Value	Starting Version
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.4.0
timeout		Yes		

5.6.3.1.27 UpdatePreconfigurationTemplate

Updates a preconfiguration template. For example,

```
UpdatePreconfigurationTemplate uuid=fee95538b8a64831a9f29b972bcd165
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			3.4.0
name	The resource name.	Yes		3.4.0
description	The detailed description of the resource.	Yes		3.4.0
distribution	The distribution version of the operating system.	Yes		3.4.0
type	The template type	Yes	<ul style="list-style-type: none"> • kickstart • preseed • autoyast 	3.4.0
content	The template content.	Yes		3.4.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.4.0
systemTags	The system tags. For more information, see	Yes		3.4.0

Name	Description	Optional	Valid Value	Starting Version
	<i>CreateSystemTag.</i>			
timeout		Yes		

5.6.3.1.28 QueryPreconfigurationTemplate

Queries a preconfiguration template. For example,

```
QueryPreconfigurationTemplate
```

Primitive Fields of Query

See [Preconfiguration Template Inventory](#).

Nested and Expanded Fields of Query

Field	Inventory	Description	Starting Version
customParams	Custom Parameters Inventory		3.4.0

5.6.3.2 Installation Service Operations

5.6.3.2.1 CreateBaremetalPxeServer

Creates a deployment server. For example,

```
CreateBaremetalPxeServer name=pxe hostname=HOST zoneUuid=5034aa76f41f428d968b828c2518c29e dhcpInterface=br_em2 storagePath=/pxe_store sshUsername=root sshPassword=password
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
name	The resource name.			3.1.1
description	The detailed description of the resource.	Yes		3.1.1
dhcpInterface	The DHCP listen interface that can enable the DHCP feature.			3.1.1

Name	Description	Optional	Valid Value	Starting Version
dhcpRangeBegin	The start IP address in the IP range allocated by DHCP.	Yes		3.1.1
dhcpRangeEnd	The end IP address in the IP range allocated by DHCP.	Yes		3.1.1
dhcpRangeNetmask	The DHCP netmask.	Yes		3.1.1
zoneUuid	The zone UUID.			3.1.1
hostname				3.1.1
sshUsername				3.1.1
sshPassword				3.1.1
sshPort		Yes		3.1.1
storagePath	The storage path.			3.1.1
resourceUuid		Yes		3.1.1
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.1.1
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.1.1
timeout		Yes		

5.6.3.2.2 DeleteBaremetalPxeServer

Deletes a deployment server. For example,

```
DeleteBaremetalPxeServer uuid=e1886ebf4c6d40809d7367f4710b82e8
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			2.6.0
deleteMode	The delete mode.	Yes		2.6.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.6.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.6.0
timeout		Yes		

5.6.3.2.3 QueryBaremetalPxeServer

Queries a deployment server. For example,

```
QueryBaremetalPxeServer uuid=967a353c2893409dab9312cf3033a98c
```

Primitive Fields of Query

See [PXE Server Inventory](#).

Nested and Expanded Fields of Query

Field	Inventory	Description	Starting Version
zone	Zone Inventory	The zone to which the deployment server belongs.	0.6
cluster	Cluster Inventory	The cluster to which the deployment server belongs.	0.6

5.6.3.2.4 StartBaremetalPxeServer

Starts a deployment server. For example,

```
StartBaremetalPxeServer uuid=e1886ebf4c6d40809d7367f4710b82e8
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			2.6.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.6.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.6.0
timeout		Yes		

5.6.3.2.5 StopBaremetalPxeServer

Stops a deployment server. For example,

```
StopBaremetalPxeServer uuid=e1886ebf4c6d40809d7367f4710b82e8
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			2.6.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.6.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.6.0

Name	Description	Optional	Valid Value	Starting Version
timeout		Yes		

5.6.3.2.6 UpdateBaremetalPxeServer

Updates a deployment server. For example,

```
UpdateBaremetalPxeServer uuid=e1886ebf4c6d40809d7367f4710b82e8
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			2.6.0
name	The resource name.	Yes		2.6.0
description	The detailed description of the resource.	Yes		2.6.0
dhcpInterface	The DHCP listen interface that can enable the DHCP feature.	Yes		2.6.0
dhcpRangeBegin	The start IP address in the IP range allocated by DHCP.	Yes		2.6.0
dhcpRangeEnd	The end IP address in the IP range allocated by DHCP.	Yes		2.6.0
dhcpRangeNetmask	The DHCP netmask.	Yes		2.6.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.6.0
systemTags	The system tags. For more information, see	Yes		2.6.0

Name	Description	Optional	Valid Value	Starting Version
	CreateSystemTag .			
timeout		Yes		

5.6.3.2.7 ReconnectBaremetalPxeServer

Reconnects a deployment server. For example,

```
ReconnectBaremetalPxeServer uuid=6fad42263acf47d49a83f16a071e32a2
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid				3.1.1
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.1.1
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.1.1
timeout		Yes		

5.6.3.2.8 AttachBaremetalPxeServerToCluster

Attaches a deployment server to a BareMetal cluster. For example,

```
AttachBaremetalPxeServerToCluster pxeServerUuid=6fad42263acf47d49a83f16a071e32a2 clusterUuid=cf4697cad85947f9b0289d1639a4b9a8
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
pxeServerUuid	The deployment server UUID.			3.1.1
clusterUuid	The BareMetal cluster UUID.			3.1.1
userTags	The user tags. For more	Yes		3.1.1

Name	Description	Optional	Valid Value	Starting Version
	information, see CreateUserTag .			
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.1.1
timeout		Yes		

5.6.3.2.9 DetachBaremetalPxeServerFromCluster

Detaches a deployment server from a BareMetal cluster. For example,

```
DetachBaremetalPxeServerFromCluster pxeServerUuid=6fad42263acf47d49a83
f16a071e32a2 clusterUuid=cf4697cad85947f9b0289d1639a4b9a8
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
pxeServerUuid	The deployment server UUID.			3.1.1
clusterUuid	The BareMetal cluster UUID.			3.1.1
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.1.1
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.1.1
timeout		Yes		

5.6.4 Tags

- You can create a user tag on a BareMetal chassis by using `resourceType=BaremetalChassisVO`. For example,

```
CreateUserTag resourceType=BaremetalChassisVO tag=golden-ResourceSt
ack
```

```
resourceUuid=42bd9ac18f984dd683ad22a36a5b756c
```

- You can create a user tag on a BareMetal instance by using `resourceType=BaremetalInstanceVO`. For example,

```
CreateUserTag resourceType=BaremetalInstanceVO tag=golden-ResourceStack
resourceUuid=8b819bd452b54f91ba087ec7a9afc140
```

- You can create a user tag on a deployment server by using `resourceType=BaremetalPxeServerVO`. For example,

```
CreateUserTag resourceType=BaremetalPxeServerVO tag=golden-
ResourceStack
resourceUuid=e1886ebf4c6d40809d7367f4710b82e8
```

5.7 Elastic Bare Metal Management(Plus)

5.7.1 Overview

Elastic Baremetal Management provides dedicated physical servers for your applications to ensure high performance and stability. In addition, this feature allows elastic scaling. You can apply for and scale resources based on your needs. Elastic Baremetal Management integrates the benefits of hosts and VM instances. It delivers powerful and stable computing capacities of hosts and allows you to use primary storages, L3 networks, and other resources on the Cloud for your applications. This way, it avoids virtualization overheads and allows flexible use of cloud resources and physical resources, thus promoting the availability of cloud resources. You can use this feature to deploy applications for traditional non-virtualization scenarios.

- The Elastic Baremetal Management feature is provided in a separate module. Before you can use this feature, you need to purchase the Plus License of Elastic Baremetal Management, in addition to the Base License.
- A tenant can use an elastic baremetal offering shared by the admin to create an elastic baremetal instance.

Concepts

- Provision network: A provision network is a dedicated network for PXE boot and image downloads while creating elastic baremetal instances.
 - Before you can use Elastic Baremetal Management, you need to deploy an IPv4 provision network.

- Provision networks require high network performance. We recommend that you use at least 10 Gigabit NICs for your provision network.
 - You can configure a gateway for your provision network. This way, the provision network can be connected to other networks. If you do not need to connect your provision network with other networks, you do not need to configure a gateway for your provision network.
- Elastic baremetal cluster: An elastic baremetal cluster consists of elastic baremetal instances. You can manage elastic baremetal instances by managing an elastic baremetal cluster where the instances reside.
 - You must attach a provision network to an elastic baremetal cluster to provide PXE services for baremetal nodes in the cluster.
 - You can attach only one provision network to an elastic baremetal cluster. However, you can attach a provision network to multiple elastic baremetal clusters.
 - You can attach an L2 network to an elastic baremetal cluster to provide an extended L2 business network for elastic baremetal instances in the cluster. Elastic baremetal instances and VM instances that share the same L2 network with the elastic baremetal instances can access each other without using the gateway. The L2 network that you can attach to an elastic baremetal cluster can be of the VLAN or NoVLAN type.
 - Gateway node: A gateway node is a node where the ingress and egress traffic of the Cloud and elastic baremetal instances is forwarded.
 - You can attach multiple gateway nodes to an elastic baremetal cluster. However, you can attach only one gateway node to an elastic baremetal cluster.
 - A gateway node is used to take over primary storages and assign storage space for elastic baremetal instances.
 - A gateway node provides iPXE, DHCP, and other services. It is used to deliver configuration settings to elastic baremetal instances.
 - Baremetal node: A baremetal node is used to create a baremetal instance and is identified based on the BMC interface and IPMI configuration setting.
 - The management node must be connected to the IPMI network to remotely manage baremetal nodes.
 - Baremetal nodes must be configured with the BMC interface, IPMI address, port, username, and password, and be connected to the IPMI network.
 - A baremetal node can be distributed to only one elastic baremetal instance and an elastic baremetal instance can only be assigned one baremetal node.

- You can provide compute resources for elastic baremetal instances based on the baremetal node or baremetal offering.
- Elastic baremetal instance offering: An elastic baremetal offering defines the number of vCPU cores, memory size, CPU architecture, CPU model, and other configuration settings of elastic baremetal instances.
 - After you obtain the hardware information of a baremetal node on the UI, you can obtain the corresponding elastic baremetal offering. The Cloud allows you to manage baremetal nodes of the same elastic baremetal offering in a unified way.
 - You can use an elastic baremetal offering to create an elastic baremetal instance. You can also release the advanced settings of baremetal nodes to avoid resource idling.
 - You can create a pricing list for elastic baremetal instances based on elastic baremetal offerings. Then bills are generated for the elastic baremetal instances based on their usage.
- Elastic baremetal instance: An elastic baremetal instance has the same performance as physical servers and allows elastic scaling. You can apply for and scale resources based on your needs.
 - The following two startup methods are supported for elastic baremetal instances:
 - Volume: Uses a volume as the system volume of the elastic baremetal instance to install and deploy the operating system.
 - Local Disk: Uses a local disk as the system disk of the elastic baremetal instance to install and deploy the operating system.
 - The Local Disk (Non Take-Over) and Local Disk (Take-Over) methods are supported:
 - Local Disk (Non Take-Over): When you use a baremetal node to create the elastic baremetal instance, the operating system is downloaded from the Cloud and installed on the elastic baremetal instance. This method will format the local system disk.
 - Local Disk (Take-Over): When you use a baremetal node to create the elastic baremetal instance, the original operating system on the local system disk is used as the operating system of the elastic baremetal instance.
 - The following describes the resources supplied to elastic baremetal instances of different startup methods:
 - For elastic baremetal instances of both the volume startup method and local disk startup method, baremetal nodes provide compute resources and L3 networks on the Cloud are used as the business networks.

- For elastic baremetal instances of the volume startup method, SharedBlock or Ceph primary storages on the Cloud provide storage resources and the provision network provides support for PXE boot.
- For elastic baremetal instances of local disk startup method, the local disks of the instances provide storage resources. If you attach data volumes to the instances, SharedBlock or Ceph primary storages on the Cloud also provides storage resources
- We recommend that you create an elastic baremetal instance by using an image that has installed the agent. Otherwise, you cannot open the console of the elastic baremetal instance, modify the password of the instance, attach a volume to or detach a volume from the instance, or attach a network to or detach a network from the instance.
- By default, the supported BIOS mode of the image used to create an elastic baremetal instance is UEFI. To use an image whose BIOS mode is Legacy, contact the official technical support.
- You can configure business networks for elastic baremetal instances. If you attach an L2 network to the cluster where your baremetal nodes reside, elastic baremetal instances and VM instances that share the same L2 network with the elastic baremetal instances can access each other without using the gateway.
- Elastic baremetal instances of the volume startup method allow you to release the associated baremetal node upon instance power-off. If you enable this feature, when an elastic baremetal instance of the volume startup method is powered off, the associated baremetal node is automatically released and can be used by another elastic baremetal instance. This mechanism avoids resource idling.

Scenarios

- Scenarios that require high security and strict monitoring:

The financial and insurance industries have high requirements over business deployment compliance and data security. In these scenarios, you can use Baremetal Management to secure dedicated resources, data isolation, easy management, and operation-tracking. This way, you can ensure the reliability and security compliance of your key business system and data.

- High-performance computing scenarios:

In supercomputing, genome sequencing, and other high-performance computing scenarios, the requirements over the computing performance, stability, and timeliness of the server are very high. The Baremetal Management feature is fitting for these scenarios. In addition, the feature

can be used for scenarios that require high throughput or high computing performance that can accommodate changing access requests and scenarios. Virtualization and hyperthreading may compromise some performance. Deploying a reasonable number of baremetal clusters can meet the high-performance computing requirements.

- Key database scenarios:

To meet business requirements, you may not want to deploy some key databases on VM instances while want to deploy the databases on physical servers that feature dedicated resources, network isolation, and guaranteed performance. In these scenarios, you can use Baremetal Management to provide dedicated high-performance physical servers for your applications.

Considerations

When you use the Elastic Baremetal Management feature, note that:

- The server that you use as a baremetal node must have at least one PXE boot NIC used for network management. Make sure the first port of the first NIC of the server is used as the provision NIC.
- You can use x86 servers and Kunpeng and other China localized mainstream ARM servers as baremetal nodes.
- You can use x86 servers as gateway nodes. If you use an ARM server as a baremetal node, you need to add ARM repos for gateway nodes.
- Physical network environments include management network, storage network, provision network, IPMI network, and business network. The provision network requires high performance. We recommend that you configure a 10-Gigabit network.
- To avoid DHCP conflict, make sure that you do not configure an additional DHCP service.
- You can use a flat network, public network, and VPC network as a business network.
- Windows-based elastic baremetal instances only support L2 networks of the NoVLAN type.
- You need to install the agent or relevant dependency packages on the elastic baremetal image. Otherwise, some features of elastic baremetal instances cannot work as expected.
- You can use a Shared Block primary storage and Ceph Enterprise primary storage for elastic baremetal instances. Note that the version of Ceph Enterprise must be later than 4.2.0.300.
- If you use a Ceph Enterprise primary storage, you need to login to the Ceph Enterprise management node, choose **Setting > Access Token**, and obtain an access token generated

by using the admin account. Then you need to add the access token when you add a Ceph primary storage.



Figure 5-37: Obtain Access Token

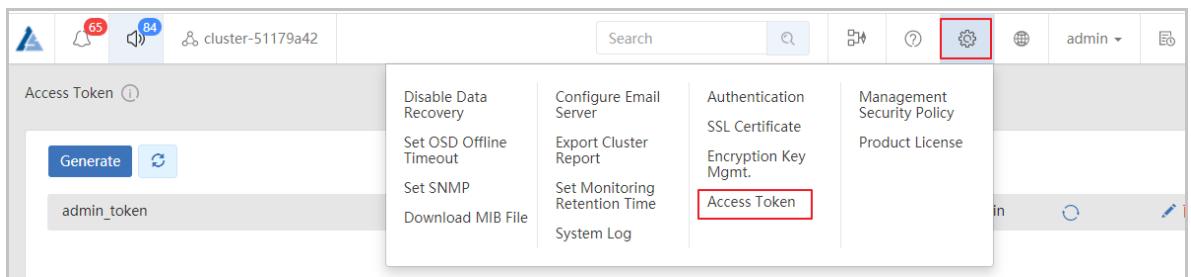


Figure 5-38: Add Ceph Enterprise Primary Storage

The screenshot shows the 'Add Primary Storage' dialog box. The 'Type' dropdown is set to 'Ceph'. Under 'Mon Node', the 'Management IP' is 172.18.157.72, 'SSH Port' is 22, 'User Name' is root, and 'Password' is masked. There is a '+ Add Mon Node' button. Below the mon node section are fields for 'Image Cache Pool' (pool-c6a26b34658749709c668ab133b8f9e4), 'Data Volume Pool' (pool-c6a26b34658749709c668ab133b8f9e4), 'Root Volume Pool' (pool-c6a26b34658749709c668ab133b8f9e4), 'Storage Network' (172.18.0.1/16), 'Ceph Enterprise Access Token' (masked), and 'Cluster' (Cluster-1). At the bottom right are 'Cancel' and 'OK' buttons.

- The following table describes the limits on the primary storage that you can attach to an elastic baremetal cluster.

Table 5-7: Relationship of Elastic Baremetal Cluster and Primary Storage

Primary Storage	Elastic Baremetal Cluster
Ceph	You can attach only one Ceph primary storage to an elastic baremetal cluster.
Shared Block	You can attach one or more Shared Block primary storage to an elastic baremetal cluster.

Primary Storage	Elastic Baremetal Cluster
Ceph + Shared Block	You can attach one Ceph primary storage (excluding Ceph Enterprise) and one or more Shared Block primary storage to an elastic baremetal cluster.

- You can install mainstream x86 operating systems (OSs) and some ARM OSs on elastic baremetal instances.

Table 5-8: Operating Systems

CPU Architecture	OS Type	OS
x86	Windows	<ul style="list-style-type: none"> • Windows 2012 • Windows 2016 • Windows 2019
	Linux	<ul style="list-style-type: none"> • CentOS 7 • CentOS 8 • Ubuntu 18LTS • Ubuntu 20LTS
ARM	Linux	<ul style="list-style-type: none"> • CentOS 7 • Kylin V10

5.7.2 Inventory

BareMetal2Chassis inventory

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID of the bare metal chassis.			4.0.0
name	The name of the bare metal chassis.			4.0.0
description	The detailed description of the bare metal chassis.			4.0.0
zoneUuid	The zone UUID.			4.0.0

Name	Description	Optional	Valid Value	Starting Version
clusterUuid	The cluster UUID.			4.0.0
chassisOfferingUuid	The chassis offering UUID.			4.0.0
type	The type of the chassis.			4.0.0
state	The state of the chassis.			4.0.0
status	The distribution state of the chassis.			4.0.0
groupBy				4.0.0
createDate	The time when the chassis was created.			4.0.0
lastOpDate	The time when the chassis was last modified.			4.0.0
chassisNics				4.0.0
chassisDisks				4.0.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		4.0.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		4.0.0

Sample

```
{
  "inventories": [
    {
      "chassisDisks": [
        {
          "chassisUuid": "8c946b89af8349b4bdadecbb4ebb717c1",
          "createDate": "Dec 3, 2020 2:32:17 PM",
          "diskSize": 2000398934016,
          "lastOpDate": "Dec 3, 2020 2:32:17 PM",
        }
      ]
    }
  ]
}
```

```

        "type": "HDD",
        "uuid": "a7013135c6b84f6097773a08a04f8180"
    },
    {
        "chassisUuid": "8c946b89af8349b4bdadecbb4ebb717c1",
        "createDate": "Dec 3, 2020 2:32:17 PM",
        "diskSize": 250059350016,
        "lastOpDate": "Dec 3, 2020 2:32:17 PM",
        "type": "SSD",
        "uuid": "cdc8f86613c247719c1ed4118b5bfb7f"
    }
],
"chassisNics": [
    {
        "chassisUuid": "8c946b89af8349b4bdadecbb4ebb717c1",
        "createDate": "Dec 3, 2020 2:32:17 PM",
        "isProvisionNic": true,
        "lastOpDate": "Dec 3, 2020 2:32:17 PM",
        "mac": "ac:1f:6b:e4:65:58",
        "speed": "1000Mb/s",
        "uuid": "dee0fbca929f4c749b54e0c78c98d858"
    },
    {
        "chassisUuid": "8c946b89af8349b4bdadecbb4ebb717c1",
        "createDate": "Dec 3, 2020 2:32:17 PM",
        "isProvisionNic": false,
        "lastOpDate": "Dec 3, 2020 2:32:17 PM",
        "mac": "ac:1f:6b:e4:65:59",
        "speed": "1000Mb/s",
        "uuid": "e00ac88d4e2846738311a3211a771e68"
    }
],
"chassisOffering": {
    "architecture": "x86_64",
    "cpuModelName": "Intel(R) Xeon(R) Silver 4208 CPU @ 2.10GHz",
    "cpuNum": 16,
    "createDate": "Dec 1, 2020 8:46:17 PM",
    "lastOpDate": "Dec 1, 2020 8:46:17 PM",
    "memorySize": 67132342272,
    "name": "Intel(R) Xeon(R) Silver 4208 CPU @ 2.10GHz",
    "state": "Enabled",
    "uuid": "9d83b93efc564a4193a7917f35956b59"
},
"chassisOfferingUuid": "9d83b93efc564a4193a7917f35956b59",
"clusterUuid": "d746f7256a734a34b9c85cc83b02e2a2",
"createDate": "Dec 1, 2020 8:35:23 PM",
"ipmiAddress": "172.19.40.11",
"ipmiPort": 623,
"ipmiUsername": "admin",
"lastOpDate": "Dec 7, 2020 7:50:37 AM",
"name": "BM",
"powerStatus": "POWER_ON",
"state": "Enabled",
"status": "Allocated",
"type": "IPMI",
"uuid": "8c946b89af8349b4bdadecbb4ebb717c1",
"zoneUuid": "9ebbd92b5264a38b3d992a45fa14818"
}
],
"success": true

```

{}

BareMetal2ChassisOffering inventory

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID of the bare metal chassis offering.			4.0.0
name	The name of the bare metal chassis offering.			4.0.0
description	The detailed description of the bare metal chassis offering.			4.0.0
groupBy				4.0.0
architecture	The CPU architecture.			4.0.0
cpuModelName	The CPU model name.			4.0.0
cpuNum	The number of CPU cores.			4.0.0
memorySize	The memory size.			4.0.0
bootMode	The boot mode.			4.0.0
state	The state of the chassis offering.			4.0.0
createDate	The time when the chassis offering was created.			4.0.0
lastOpDate	The time when the chassis offering was last modified.			4.0.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		4.0.0

Name	Description	Optional	Valid Value	Starting Version
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		4.0.0

Sample

```
{
  "inventories": [
    {
      "uuid": "f64db447a42a4673a5b2a6aa6476725e",
      "name": "BM-8C-8G",
      "description": "This is bare metal instance offering.",
      "architecture": "x86_64",
      "cpuModelName": "Intel(R) Core(TM) i7-6700K CPU @ 4.00GHz",
      "cpuNum": 8.0,
      "memorySize": 8.589934592E9,
      "bootMode": "UEFI",
      "state": "Enabled",
      "createDate": "Nov 14, 2017 10:20:57 PM",
      "lastOpDate": "Nov 14, 2017 10:20:57 PM"
    }
  ]
}
```

BareMetal2ChassisGateway Inventory

Name	Description	Optional	Valid Value	Starting Version
attachedClusterUuids	The attached cluster UUIDs.			4.0.0
username	The username of the gateway.			4.0.0
sshPort	The SSH port.			4.0.0
zoneUuid	The zone UUID.			4.0.0
name	The name of the gateway.			4.0.0
uuid	The UUID of the gateway.			4.0.0
clusterUuid	The cluster UUID.			4.0.0
description	The detailed description of the gateway.			4.0.0

Name	Description	Optional	Valid Value	Starting Version
managementIp	The IP address of the management node.			4.0.0
hypervisorType	The virtualization type.			4.0.0
state	The state of the gateway.			4.0.0
status	The connection status of the gateway.			4.0.0
totalCpuCapacity	The total processing capacity of CPU.			4.0.0
availableCpuCapacity	The available processing capacity of CPU.			4.0.0
cpuSockets				4.0.0
totalMemoryCapacity	The total memory size.			4.0.0
availableMemoryCapacity	The available memory size.			4.0.0
cpuNum	The number of CPU cores.			4.0.0
createDate	The time when the gateway was created.			4.0.0
lastOpDate	The time when the gateway was last modified.			4.0.0
provisionNic				4.0.0
userTags	The user tags. For more information, see CreateUserTag	Yes		4.0.0
systemTags	The system tags. For more	Yes		4.0.0

Name	Description	Optional	Valid Value	Starting Version
	information, see CreateSystemTag			

Sample

```
{
    "inventories": [
        {
            "attachedClusterUuids": [
                "d746f7256a734a34b9c85cc83b02e2a2"
            ],
            "availableCpuCapacity": 160,
            "availableMemoryCapacity": 66960363520,
            "clusterUuid": "d746f7256a734a34b9c85cc83b02e2a2",
            "cpuNum": 16,
            "cpu.Sockets": 1,
            "createDate": "Dec 1, 2020 11:27:52 AM",
            "hypervisorType": "baremetal2",
            "lastOpDate": "Dec 7, 2020 2:21:08 PM",
            "managementIp": "172.25.12.75",
            "name": "Gateway",
            "provisionNic": {
                "createDate": "Dec 3, 2020 8:02:51 PM",
                "interfaceName": "zsn0",
                "ip": "10.99.0.1",
                "lastOpDate": "Dec 3, 2020 8:02:51 PM",
                "netmask": "255.255.0.0",
                "networkUuid": "ed0549b43dd442dfaf03102cfb12ac44",
                "uuid": "fec68c7c6cb64f83880a6e775b9bfd4d"
            },
            "sshPort": 22,
            "state": "Enabled",
            "status": "Connected",
            "totalCpuCapacity": 160,
            "totalMemoryCapacity": 66960363520,
            "username": "root",
            "uuid": "fec68c7c6cb64f83880a6e775b9bfd4d",
            "zoneUuid": "9ebbda92b5264a38b3d992a45fa14818"
        }
    ],
    "success": true
}
```

BareMetal2Instance inventory

Name	Description	Optional	Valid Value	Starting Version
uuid	The bare metal instance UUID.			4.0.0
name	The bare metal instance name.			4.0.0

Name	Description	Optional	Valid Value	Starting Version
description	The detailed description of the bare metal instance.	Yes		4.0.0
zoneUuid	The zone UUID.			4.0.0
clusterUuid	The cluster UUID.			4.0.0
chassisUuid	The bare metal chassis UUID.			4.0.0
imageUuid	The image UUID.			4.0.0
platform	The system platform.			4.0.0
state				4.0.0
status				4.0.0
groupBy		Yes		4.0.0
createDate	The time when the bare metal instance was created.			4.0.0
lastOpDate	The time when the bare metal instance was last modified.			4.0.0
userTags	The user tags. For more information, see CreateUserTag	Yes		4.0.0
systemTags	The system tags. For more information, see CreateSystemTag	Yes		4.0.0

Sample

```
{
  "inventories": [
    {
      "allVolumes": [
        ...
      ]
    }
  ]
}
```

```

    {
        "actualSize": 43037753344,
        "createDate": "Dec 3, 2020 2:09:49 PM",
        "description": "DataVolume-37c7740bc6964b7f88dd
b6dfe437dbc1",
        "deviceId": 1,
        "diskOfferingUuid": "0ba949fc7cb64ea3a334
50b6eedc268",
        "format": "qcow2",
        "installPath": "sharedblock://b1b722a00d9740f6b262
ba16a2fd63dd/b3da61e4a1774e428fabae9b64518aa5",
        "isShareable": false,
        "lastOpDate": "Dec 4, 2020 10:19:21 AM",
        "name": "DATA-for-33",
        "primaryStorageUuid": "b1b722a00d9740f6b262
ba16a2fd63dd",
        "size": 21474836480,
        "state": "Enabled",
        "status": "Ready",
        "type": "Data",
        "uuid": "2a0f008a60bf460fb6926eea764ccdbd",
        "vmInstanceUuid": "37c7740bc6964b7f88ddb6dfe437db
c1",
        "volumeQos": "total=10485760"
    },
    {
        "actualSize": 252379660288,
        "createDate": "Dec 3, 2020 2:09:49 PM",
        "description": "Root volume for VM[uuid:37c7740bc6
964b7f88ddb6dfe437dbc1]",
        "deviceId": 0,
        "format": "qcow2",
        "installPath": "sharedblock://b1b722a00d9740f6b262
ba16a2fd63dd/476eb00220434c6bb6e04e5f92410b8c",
        "isShareable": false,
        "lastOpDate": "Dec 4, 2020 2:44:11 PM",
        "name": "ROOT-for-33",
        "primaryStorageUuid": "b1b722a00d9740f6b262
ba16a2fd63dd",
        "rootImageUuid": "3ae080d4a88d4bf796be57c4f78ad26a
",
        "size": 250059350016,
        "state": "Enabled",
        "status": "Ready",
        "type": "Root",
        "uuid": "f2492b817c294eff829d837552337b89",
        "vmInstanceUuid": "37c7740bc6964b7f88ddb6dfe437db
c1"
    }
],
"chassisUuid": "8c946b89af8349b4bdadecbb4ebb717c1",
"clusterUuid": "d746f7256a734a34b9c85cc83b02e2a2",
"cpuNum": 16,
"cpuSpeed": 0,
"createDate": "Dec 3, 2020 2:09:49 PM",
"gatewayAllocatorStrategy": "DefaultGatewayAllocato
torStrategy",
"gatewayUuid": "fec68c7c6cb64f83880a6e775b9bfd4d",
"hypervisorType": "baremetal2",
"imageUuid": "3ae080d4a88d4bf796be57c4f78ad26a",
"lastChassisUuid": "8c946b89af8349b4bdadecbb4ebb717c1",
"lastGatewayUuid": "fec68c7c6cb64f83880a6e775b9bfd4d",

```

```

    "lastOpDate": "Dec 7, 2020 2:21:51 PM",
    "memorySize": 67132342272,
    "name": "33",
    "platform": "Linux",
    "provisionNic": {
        "createDate": "Dec 3, 2020 2:11:21 PM",
        "ip": "10.99.0.2",
        "lastOpDate": "Dec 3, 2020 2:11:21 PM",
        "mac": "ac:1f:6b:e4:65:58",
        "netmask": "255.255.0.0",
        "networkUuid": "ed0549b43dd442dfaf03102cfb12ac44",
        "uuid": "37c7740bc6964b7f88ddb6dfe437dbc1"
    },
    "rootVolumeUuid": "f2492b817c294eff829d837552337b89",
    "state": "Running",
    "status": "Connected",
    "type": "baremetal2",
    "uuid": "37c7740bc6964b7f88ddb6dfe437dbc1",
    "vmCdRoms": [],
    "vmNics": [],
    "zoneUuid": "9ebbda92b5264a38b3d992a45fa14818"
}
],
"success": true
}

```

allVolumes inventory

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			4.0.0
name	The resource name.			4.0.0
description	The resource description.			4.0.0
primaryStorageUuid	The primary storage UUID.			4.0.0
vmInstanceId	The VM UUID.			4.0.0
diskOfferingUuid	The disk offering UUID.			4.0.0
rootImageUuid	The root volume image UUID.			4.0.0
installPath	The installation path of the volume on the primary storage.			4.0.0
type	The volume type.			4.0.0

Name	Description	Optional	Valid Value	Starting Version
format	The volume format.			4.0.0
size	The volume size.	Yes		4.0.0
actualSize	The actual size of the volume.			4.0.0
deviceID				4.0.0
state	The state of the volume.			4.0.0
status	The status of the volume.			4.0.0
createDate	The creation time.			4.0.0
lastOpDate	The last update time.			4.0.0
isShareable	Indicates whether the volume is sharable.			4.0.0
volumeQos	The volume QoS.			4.0.0

BareMetal2ProvisionNetwork inventory

Name	Description	Optional	Valid Value	Starting Version
uuid	The deployment network UUID.			4.0.0
zoneUuid	The zone UUID.			4.0.0
name	The deployment network name.			4.0.0
description	The detailed description of the deployment network.			4.0.0
dhcpRangeStartIp	The starting IP address that DHCP assigns to a bare metal instance.			4.0.0

Name	Description	Optional	Valid Value	Starting Version
dhcpRangeEndIp	The ending IP address that DHCP assigns to a bare metal instance.			4.0.0
dhcpRangeNetmask	The netmask of the IP range from which the DHCP server assigns an IP address to a bare metal instance.			4.0.0
dhcpRangeGateway	The gateway IP address.			4.0.0
dhcpRangeNetworkCidr	The CIDR block.			4.0.0
state	The state of the deployment network.			4.0.0
attachedClusterUuids				4.0.0
createDate	The time when the deployment network was created.			4.0.0
lastOpDate	The time when the deployment network was last modified.			4.0.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		4.0.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		4.0.0

Sample

```
{
    "inventories": [
        {
            "attachedClusterUuids": [
                "d746f7256a734a34b9c85cc83b02e2a2"
            ],
            "createDate": "Dec 1, 2020 11:03:45 AM",
            "dhcpInterface": "zsn0",
            "dhcpRangeEndIp": "10.99.255.254",
            "dhcpRangeNetmask": "255.255.0.0",
            "dhcpRangeNetworkCidr": "10.99.0.1/16",
            "dhcpRangeStartIp": "10.99.0.1",
            "lastOpDate": "Dec 1, 2020 11:03:45 AM",
            "name": "provision-net",
            "state": "Enabled",
            "uuid": "ed0549b43dd442dfaf03102cfb12ac44",
            "zoneUuid": "9ebbda92b5264a38b3d992a45fa14818"
        }
    ],
    "success": true
}
```

BareMetal2Gateway inventory

Name	Description	Optional	Valid Value	Starting Version
username	The username of the gateway.			4.0.0
password	The password of the gateway.			4.0.0
sshPort	The SSH port of the gateway.	Yes		4.0.0
name	The name of the gateway.			4.0.0
description	The detailed description of the gateway.	Yes		4.0.0
managementIp	The IP address of the management node.			4.0.0
clusterUuid	The cluster UUID.			4.0.0
resourceUuid	The UUID of the gateway.	Yes		4.0.0
tagUuids	The tag UUIDs.	Yes		4.0.0

Name	Description	Optional	Valid Value	Starting Version
userTags	The user tags. For more information, see CreateUserTag .	Yes		4.0.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		4.0.0
timeout		Yes		

Sample

```
{
    "inventories": [
        {
            "attachedClusterUuids": [
                "c12275b4a10e48f8ae922eccd8c0a879"
            ],
            "availableCpuCapacity": 160,
            "availableMemoryCapacity": 66960363520,
            "clusterUuid": "c12275b4a10e48f8ae922eccd8c0a879",
            "cpuNum": 16,
            "cpuSockets": 1,
            "createDate": "Dec 31, 2020 10:45:28 AM",
            "description": "172.25.15.81",
            "hypervisorType": "baremetal2",
            "lastOpDate": "Jan 8, 2021 11:24:06 AM",
            "managementIp": "172.25.15.81",
            "name": "172.25.15.81",
            "sshPort": 22,
            "state": "Enabled",
            "status": "Connected",
            "totalCpuCapacity": 160,
            "totalMemoryCapacity": 66960363520,
            "username": "root",
            "uuid": "cd2ac02c1aa948ecbc1f0388f3db0a83",
            "zoneUuid": "8cb18c3afe5242d68dba74d5b65590cb"
        }
    ],
    "success": true
}
```

{}

5.7.3 Operations

5.7.3.1 DeleteBareMetal2Chassis

Deletes a bare metal chassis. For example,

```
DeleteBareMetal2Chassis uuid=b86c9016b4f24953a9edefb53ca0678c
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID of the bare metal chassis.			4.0.0
deleteMode	The deletion mode.	Yes	<ul style="list-style-type: none"> Permissive Enforcing 	4.0.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		4.0.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		4.0.0
timeout		Yes		

5.7.3.2 UpdateBareMetal2Chassis

Updates a bare metal chassis. For example,

```
UpdateBareMetal2Chassis uuid=b039556f2a23447ab584aafceaa3d070
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID of the bare metal chassis.			4.0.0

Name	Description	Optional	Valid Value	Starting Version
name	The name of the bare metal chassis.	Yes		4.0.0
description	The cluster UUID.	Yes		4.0.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		4.0.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		4.0.0
timeout		Yes		

5.7.3.3 GetBareMetal2SupportedBootMode

Retrieves the supported boot modes of a bare metal instance. For example,

```
GetBareMetal2SupportedBootMode
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
userTags	The user tags. For more information, see CreateUserTag .	Yes		4.0.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		4.0.0
timeout		Yes		

5.7.3.4 QueryBareMetal2Chassis

Queries bare metal chassis. For example,

```
QueryBareMetal2Chassis uuid=42bd9ac18f984dd683ad22a36a5b756c
```

Primitive Fields of Query

See [BareMetal2Chassis inventory](#).

Nested And Expanded Fields of Query

Field	Inventory	Description	Starting Version
zone	zone inventory	The zone UUID.	4.0.0
cluster	cluster inventory	The cluster UUID.	4.0.0
chassisOffering	BareMetal2ChassisOffering inventory	The chassis offering UUID.	4.0.0

5.7.3.5 InspectBareMetal2Chassis

Obtains hardware information of bare metal chassis. For example,

```
InspectBareMetal2Chassis uuid=b039556f2a23447ab584aafceaa3d070
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID of the bare metal chassis.			4.0.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		4.0.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		4.0.0
timeout		Yes		

5.7.3.6 PowerOnBareMetal2Chassis

Powers on a bare metal chassis. For example,

```
PowerOnBareMetal2Chassis uuid=b039556f2a23447ab584aafceaa3d070
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID of the bare metal chassis.			4.0.0
bootDev	The device used to boot the chassis.	Yes	<ul style="list-style-type: none"> • disk • ipxe 	4.0.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		4.0.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		4.0.0
timeout		Yes		

5.7.3.7 PowerOffBareMetal2Chassis

Powers off a bare metal chassis. For example,

```
PowerOffBareMetal2Chassis uuid=b039556f2a23447ab584aafceaa3d070
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID of the bare metal chassis.			4.0.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		4.0.0

Name	Description	Optional	Valid Value	Starting Version
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		4.0.0
timeout		Yes		

5.7.3.8 PowerResetBareMetal2Chassis

Restarts a bare metal chassis. For example,

```
PowerResetBareMetal2Chassis uuid=b039556f2a23447ab584aafceaa3d070
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID of the bare metal chassis.			4.0.0
bootDev	The device used to boot the chassis.	Yes	<ul style="list-style-type: none"> • disk • ipxe 	4.0.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		4.0.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		4.0.0
timeout		Yes		

5.7.3.9 GetBareMetal2ChassisPowerStatus

Queries the power status of a bare metal chassis. For example,

```
GetBareMetal2ChassisPowerStatus uuid=b039556f2a23447ab584aafceaa3d070
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID of the bare metal chassis.			4.0.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		4.0.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		4.0.0
timeout		Yes		

5.7.3.10 ChangeBareMetal2ChassisState

Changes the state of a bare metal chassis. For example,

```
ChangeBareMetal2ChassisState uuid=b039556f2a23447ab584aafceaa3d070
stateEvent=enable
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID of the bare metal chassis.			4.0.0
stateEvent	The event that changes the state of the chassis.		<ul style="list-style-type: none"> • enable • disable 	4.0.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		4.0.0

Name	Description	Optional	Valid Value	Starting Version
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		4.0.0
timeout		Yes		

5.7.3.11 AddBareMetal2IpmiChassis

Adds a bare metal chassis by using IPMI. For example,

```
AddBareMetal2IpmiChassis ipmiAddress=10.0.0.5 ipmiUsername=admin
ipmiPassword=password name=baremetal clusterUuid=1e9584cd6dd64c1a96fb
a1bb1114948e
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
ipmiAddress	The IPMI address.			4.0.0
ipmiPort	The IPMI port.	Yes		4.0.0
ipmiUsername	The IPMI username.			4.0.0
ipmiPassword	The IPMI password.			4.0.0
name	The name of the bare metal chassis.			4.0.0
description	The detailed description of the bare metal chassis.	Yes		4.0.0
clusterUuid	The cluster UUID.			4.0.0
provisionType	The startup method.	Yes	<ul style="list-style-type: none"> • Remote • Local • Direct 	4.3.12
resourceUuid	The chassis UUID .	Yes		4.0.0

Name	Description	Optional	Valid Value	Starting Version
tagUuids	The tag UUIDs.	Yes		4.0.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		4.0.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		4.0.0
timeout		Yes		

5.7.3.12 BatchAddBareMetal2IpmiChassis

Adds bare metal chassis in batches by using IPMI. For example,

```
BatchAddBareMetal2IpmiChassis chassisInfo=5ZCN56ewKihuYW1lKSzn
roDku4soZGVzY3JpcHRpb24pL0mbhue+pCooY2x1c3Rlc1V1aWQpL0eJqeeQhu
acuklQKihtYW5hZ2VtZW50SXBSzmiavmj4/niannkIbmnlpJT01NVeivvue9rihJT
01NVSkS1NI56uv5Y+jKihzc2hQb3J0KSzn1Kjmlf1kI0qKHvzzXJuYW1lKSzlr4bno
IEqKHBhc3N3b3JkKQosLGF1ZDIwMmJmYmM2MTQ1NDNhMjN1NDM3NGYzNGJ1YzM1LDE3Mi4
yMC4xOTguMjMyLCwscm9vdCxwYXNzd29yZAosLDkyN2NkNmRmZmZiYTQzMTI4Yzk1MDY0M
TFhZjAyMmQzLDE3Mi4yMC4xOTcuMjQ3LCwscm9vdCxwYXNzd29yZAo=
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
chassisInfo	The Base64-encoded configuration file of bare metal chassis.			4.0.0
longJobName	The name of the long job.	Yes		4.0.0
longJobDescription	The description of the long job.	Yes		4.0.0
resourceUuid	The UUID of the long job.	Yes		4.0.0
tagUuids	The tag UUIDs.	Yes		4.0.0
userTags	The user tags. For more	Yes		4.0.0

Name	Description	Optional	Valid Value	Starting Version
	information, see CreateUserTag .			
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		4.0.0
timeout		Yes		

5.7.3.13 UpdateBareMetal2IpmiChassis

Updates a bare metal chassis. For example,

```
UpdateBareMetal2IpmiChassis uuid=1e9584cd6dd64c1a96fba1bb1114948e
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
ipmiAddress	The IPMI address.	Yes		4.0.0
ipmiPort	The IPMI port.	Yes		4.0.0
ipmiUsername	The IPMI username.	Yes		4.0.0
ipmiPassword	The IPMI password.	Yes		4.0.0
uuid	The UUID of the bare metal chassis.			4.0.0
name	The name of the bare metal chassis.	Yes		4.0.0
description	The detailed description of the bare metal chassis.	Yes		4.0.0
userTags	The user tags. For more	Yes		4.0.0

Name	Description	Optional	Valid Value	Starting Version
	information, see CreateUserTag .			
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		4.0.0
timeout		Yes		

5.7.3.14 CheckBareMetal2IpmiChassisConfigFile

Checks the configuration file of bare metal chassis. For example,

```
CheckBareMetal2IpmiChassisConfigFile chassisInfo=5ZCN56ewKihuYW1lKSzn
roDku4soZGVzY3JpcHRpb24pLombhue+pCooY2x1c3Rlc1V1aWQpLoeJqeeQhu
acuklQKihtYW5hZ2VtZW50SXBSzmiavmj4/niannkIBmnLpJT01NVeiuvue9rihJT
01NVSksU1NI56uv5Y+jKihzc2hQb3J0KSzn1KjmlLf1kI0qKHvzZXJuYW1lKSzlr4bno
IEqKHBhc3N3b3JkKQosLGFiZDIwMmJmYmM2MTQ1NDNhMjN1NDM3NGYzNGJ1Yz1MDY0M
yMC4xOTguMjMyLCwscm9vdCxwYXNzd29yZAosLDkyN2NkNmRmZmZiYTQzMTI4Yzk1MDY0M
TFhzjAyMmQzLDE3Mi4yMC4xOTcuMjQ3LCwscm9vdCxwYXNzd29yZAo=
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
chassisInfo	The Base64-encoded configuration file of bare metal chassis.			4.0.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		4.0.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		4.0.0
timeout		Yes		

5.7.3.15 CreateBareMetal2IpmiChassisHardwareInfo

Creates hardware information of bare metal chassis. For example,

```
CreateBareMetal2IpmiChassisHardwareInfo ipmiAddress=10.0.0.5 ipmiPort
=623 hardwareInfo={\u0027architecture\u0027:\u0027x86_64\u0027, \
\u0027cpuModelName\u0027:\u0027Intel i7-6700K\u0027, \u0027cpuNum\
\u0027:\u00278\u0027, \u0027memorySize\u0027:\u002733421254656\u0027, \
\u0027nics\u0027:[{\u0027nicMac\u0027:\u002740:8d:5c:f7:8d:61\u0027, \
\u0027nicSpeed\u0027:\u00271000Mbps\u0027, \u0027isProvisionNic\u0027:\u0027true\u0027}]} }
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
ipmiAddress	The IPMI address.			4.0.0
ipmiPort	The IPMI port.			4.0.0
hardwareInfo	The hardware information.			4.0.0
convertInfo	The converted information	Yes		4.3.12
userTags	The user tags. For more information, see CreateUserTag .	Yes		4.0.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		4.0.0
timeout		Yes		

5.7.3.16 UpdateBareMetal2ChassisOffering

Updates a bare metal chassis offering. For example,

```
UpdateBareMetal2ChassisOffering uuid=1e9584cd6dd64c1a96fba1bb1114948e
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID of the bare metal chassis offering.			4.0.0
name	The name of the bare metal chassis offering.	Yes		4.0.0
description	The detailed description of the bare metal chassis offering.	Yes		4.0.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		4.0.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		4.0.0
timeout		Yes		

5.7.3.17 QueryBareMetal2ChassisOffering

Queries bare metal chassis offerings. For example,

```
QueryBareMetal2ChassisOffering uuid=1e9584cd6dd64c1a96fba1bb1114948e
```

Primitive Fields of Query

See [BareMetal2ChassisOffering inventory](#).

5.7.3.18 ChangeBareMetal2ChassisOfferingState

Changes the state of a bare metal chassis offering. For example,

```
ChangeBareMetal2ChassisOfferingState uuid=1e9584cd6dd64c1a96fb
a1bb114948e stateEvent=enable
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The chassis offering UUID.			4.0.0
stateEvent	The event that changes the state of the chassis offering.		<ul style="list-style-type: none"> • enable • disable 	4.0.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		4.0.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		4.0.0
timeout		Yes		

5.7.3.19 AddBareMetal2Gateway

Adds a bare metal gateway. For example,

```
AddBareMetal2Gateway username=admin password=password name=gateway
managementIp=192.168.0.1 clusterUuid=1e9584cd6dd64c1a96fb114948e
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
username	The username of the gateway.			4.0.0
password	The password of the gateway.			4.0.0

Name	Description	Optional	Valid Value	Starting Version
sshPort	The SSH port of the gateway.	Yes		4.0.0
name	The name of the gateway.			4.0.0
description	The detailed description of the gateway.	Yes		4.0.0
managementIp	The IP address of the management node.			4.0.0
clusterUuid	The cluster UUID.			4.0.0
resourceUuid	The UUID of the gateway.	Yes		4.0.0
tagUuids	The tag UUIDs.	Yes		4.0.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		4.0.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		4.0.0
timeout		Yes		

5.7.3.20 DeleteBareMetal2Gateway

Deletes a bare metal gateway. For example,

```
DeleteBareMetal2Gateway uuid=1e9584cd6dd64c1a96fba1bb1114948e
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID of the gateway.			4.0.0
deleteMode	The deletion mode.	Yes	• Permissive	4.0.0

Name	Description	Optional	Valid Value	Starting Version
			• Enforcing	
userTags	The user tags. For more information, see CreateUserTag .	Yes		4.0.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		4.0.0
timeout		Yes		

5.7.3.21 UpdateBareMetal2Gateway

Updates a bare metal gateway. For example,

```
UpdateBareMetal2Gateway uuid=1e9584cd6dd64c1a96fba1bb1114948e
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
username	The username of the gateway.	Yes		4.0.0
password	The password of the gateway.	Yes		4.0.0
sshPort	The SSH port.	Yes		4.0.0
name	The name of the gateway.	Yes		4.0.0
description	The detailed description of the gateway.	Yes		4.0.0
managementIp	The IP address of the management node.	Yes		4.0.0
uuid	The gateway UUID.			4.0.0
userTags	The user tags. For more	Yes		4.0.0

Name	Description	Optional	Valid Value	Starting Version
	information, see CreateUserTag .			
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		4.0.0
timeout		Yes		

5.7.3.22 QueryBareMetal2Gateway

Queries bare metal gateways. For example,

```
QueryBareMetal2Gateway uuid=1e9584cd6dd64c1a96fba1bb1114948e
```

Primitive Fields of Query

See [BareMetal2ChassisGateway Inventory](#).

Nested And Expanded Fields of Query

Field	Inventory	Description	Starting Version
zone	zone inventory	The zone UUID.	4.0.0
cluster	cluster inventory	The cluster UUID.	4.0.0
vmlInstance	VM instance inventory		4.0.0

5.7.3.23 ChangeBareMetal2GatewayState

Changes the state of a bare metal gateway. For example,

```
ChangeBareMetal2GatewayState uuid=1e9584cd6dd64c1a96fba1bb1114948e
stateEvent=enable
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID of the gateway.			4.0.0
stateEvent	The event that changes the state of the chassis.			4.0.0

Name	Description	Optional	Valid Value	Starting Version
userTags	The user tags. For more information, see CreateUserTag .	Yes		4.0.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		4.0.0
timeout		Yes		

5.7.3.24 ReconnectBareMetal2Gateway

Reconnects a bare metal gateway. For example,

```
ReconnectBareMetal2Gateway uuid=1e9584cd6dd64c1a96fba1bb1114948e
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID of the gateway.			4.0.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		4.0.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		4.0.0
timeout		Yes		

5.7.3.25 GetBareMetal2GatewayAllocatorStrategies

Retrieves available allocation policies of bare metal gateways. For example,

```
GetBareMetal2GatewayAllocatorStrategies
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
userTags	The user tags. For more information, see CreateUserTag .	Yes		4.0.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		4.0.0
timeout		Yes		

5.7.3.26 AttachBareMetal2GatewayToCluster

Attach a bare metal gateway to a cluster. For example,

```
AttachBareMetal2GatewayToCluster clusterUuid=1e9584cd6dd64c1a96fb
a1bb1114948e gatewayUuid=2e7894cd6dd64alv96abg1bb1114896a
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
clusterUuid	The cluster UUID.			4.0.0
gatewayUuid	The gateway UUID.			4.0.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		4.0.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		4.0.0

Name	Description	Optional	Valid Value	Starting Version
timeout		Yes		

5.7.3.27 DetachBareMetal2GatewayFromCluster

Detaches a bare metal gateway from a cluster. For example,

```
DetachBareMetal2GatewayFromCluster clusterUuid=1e9584cd6dd64c1a96fb
a1bb1114948e gatewayUuid=2e7894cd6dd64alv96abg1bb1114896a
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
clusterUuid	The cluster UUID.			4.0.0
gatewayUuid	The gateway UUID.			4.0.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		4.0.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		4.0.0
timeout		Yes		

5.7.3.28 ChangeBareMetal2GatewayCluster

Changes the cluster of a bare metal gateway. For example,

```
ChangeBareMetal2GatewayCluster clusterUuid=1e9584cd6dd64c1a96fb
a1bb1114948e gatewayUuid=2e7894cd6dd64alv96abg1bb1114896a
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
clusterUuid	The cluster UUID.			4.0.0
gatewayUuid	The gateway UUID.			4.0.0
userTags	The user tags. For more	Yes		4.0.0

Name	Description	Optional	Valid Value	Starting Version
	information, see CreateUserTag .			
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		4.0.0
timeout		Yes		

5.7.3.29 CreateBareMetal2Instance

Creates a bare metal instance. For example,

```
CreateBareMetal2Instance name=cluster imageUuid=1e9584cd6dd64c1a96fb
a1bb1114948e
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
name	The bare metal instance name.			4.0.0
description	The detailed description of the bare metal instance.	Yes		4.0.0
zoneUuid	The zone UUID.	Yes		4.0.0
clusterUuid	The cluster UUID.	Yes		4.0.0
gatewayUuid	The gateway UUID.	Yes		4.0.0
chassisUuid	The bare metal chassis UUID.	Yes		4.0.0
chassisOfferingUuid	The chassis offering UUID.	Yes		4.0.0
imageUuid	The image UUID.		Optional	4.3.12
primaryStorageUuidForRootVolume	The UUID of the primary storage where the root volume resides.	Yes		4.0.0

Name	Description	Optional	Valid Value	Starting Version
primaryStorageUuidForDataVolume	The UUID of the primary storage where data volumes resides.	Yes		4.0.0
dataDiskOfferingUuids	The data volume offering UUID.	Yes		4.0.0
rootVolumeSystemTags	The root volume offering UUID.	Yes		4.0.0
dataVolumeSystemTags	The system tags of data volumes.	Yes		4.0.0
gatewayAllocationStrategy	The gateway allocation policy.	Yes		4.0.0
resourceUuid	The bare metal instance UUID.	Yes		4.0.0
chassisDiskUuid	The local system disk UUID.	Yes		4.3.12
tagUuids	The tag UUIDs.	Yes		4.0.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		4.0.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		4.0.0
timeout		Yes		

5.7.3.30 UpdateBareMetal2Instance

Updates a bare metal instance. For example,

```
UpdateBareMetal2Instance uuid=1e9584cd6dd64c1a96fba1bb1114948e
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The bare metal instance UUID.			4.0.0
name	The bare metal instance name.	Yes		4.0.0
description	The detailed description of the bare metal instance.	Yes		4.0.0
state	The running state of the bare metal instance.	Yes	<ul style="list-style-type: none"> • Stopped • Running 	4.0.0
chassisOfferingUuid	The chassis offering UUID.	Yes		4.0.0
defaultL3NetworkUuid	The default L3 network UUID.	Yes		4.0.0
autoReleaseChassisEvent	Specifies whether to enable auto-release of the bare metal chassis if the bare metal instance is powered off.	Yes	<ul style="list-style-type: none"> • enable • disable 	4.0.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		4.0.0
systemTags	The system tags. For more information, see	Yes		4.0.0

Name	Description	Optional	Valid Value	Starting Version
	CreateSystemTag			
timeout		Yes		

5.7.3.31 QueryBareMetal2Instance

Queries bare metal instances. For example,

```
QueryBareMetal2Instance uuid=1e9584cd6dd64c1a96fba1bb1114948e
```

Primitive Fields of Query

See [BareMetal2Instance inventory](#).

Nested And Expanded Fields of Query

Field	Inventory	Description	Starting Version
allVolumes	allVolumes inventory		4.0.0
zone	zone inventory	The zone where a bare metal instance resides.	4.0.0
cluster	cluster inventory	The cluster where a bare metal instance resides.	4.0.0
image	image inventory	The image used to create a bare metal instance.	4.0.0
chassis	BareMetal2Chassis inventory	The bare metal chassis used to create a bare metal instance.	4.0.0
chassisOffering	BareMetal2ChassisOffering inventory	The chassis offering.	4.0.0
rootVolume	volume inventory	The root volume.	4.0.0
gateway	BareMetal2Gateway inventory	The gateway.	4.0.0
host	Host Inventory	The host.	4.0.0
instanceOffering	instance offering inventory	The instance offering.	4.0.0

Field	Inventory	Description	Starting Version
vmNics	<i>VM NIC inventory</i>	The NICs of a bare metal instance.	4.0.0

5.7.3.32 ChangeBareMetal2InstancePassword

Changes the password of a bare metal instance. For example,

```
ChangeBareMetal2InstancePassword uuid=1e9584cd6dd64c1a96fba1bb1114948e
username=admin password=password
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID of the bare metal instance.			4.0.0
username	The username.			4.0.0
password	The password.			
userTags	The user tags. For more information, see CreateUserTag .	Yes		4.0.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		4.0.0
timeout		Yes		

5.7.3.33 StartBareMetal2Instance

Starts a bare metal instance. For example,

```
StartBareMetal2Instance uuid=1e9584cd6dd64c1a96fba1bb1114948e
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The bare metal instance UUID.			4.0.0

Name	Description	Optional	Valid Value	Starting Version
clusterUuid	The cluster UUID.	Yes		4.0.0
gatewayUuid	The gateway UUID.	Yes		4.0.0
chassisUuid	The bare metal chassis UUID.	Yes		4.0.0
chassisOfferingUuid	The bare metal chassis offering UUID.	Yes		4.0.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		4.0.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		4.0.0
timeout		Yes		

5.7.3.34 ReconnectBareMetal2Instance

Reconnects a bare metal instance. For example,

```
ReconnectBareMetal2Instance uuid=1e9584cd6dd64c1a96fba1bb1114948e
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The bare metal instance UUID.			4.0.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		4.0.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		4.0.0

Name	Description	Optional	Valid Value	Starting Version
timeout		Yes		

5.7.3.35 CreateBareMetal2ProvisionNetwork

Create a bare metal deployment network. For example,

```
CreateBareMetal2ProvisionNetwork name=network zoneUuid=1e9584cd6d
d64c1a96fba1bb114948e dhcpInterface=eth0 dhcpRangeStartIp=192.168.0.
10 dhcpRangeEndIp=192.168.0.100 dhcpRangeNetmask=255.255.255.0
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
name	The name of the deployment network.			4.0.0
description	The detailed description of the deployment network.	Yes		4.0.0
zoneUuid	The zone UUID.			4.0.0
dhcpInterface	The name of the DHCP NIC.			4.0.0
dhcpRangeStartIp	The starting IP address that DHCP assigns to a bare metal instance.			4.0.0
dhcpRangeEndIp	The ending IP address that DHCP assigns to a bare metal instance.			4.0.0
dhcpRangeNetmask	The netmask of the IP range from which the DHCP server assigns an IP address to a bare metal instance.			4.0.0

Name	Description	Optional	Valid Value	Starting Version
dhcpRangeGateway	The gateway IP address.	Yes		4.0.0
resourceUuid	The deployment network UUID.	Yes		4.0.0
tagUuids	The tag UUIDs.	Yes		4.0.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		4.0.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		4.0.0
timeout		Yes		

5.7.3.36 DeleteBareMetal2ProvisionNetwork

Deletes a bare metal deployment network. For example,

```
DeleteBareMetal2ProvisionNetwork uuid=1e9584cd6dd64c1a96fba1bb1114948e
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The deployment network UUID.			4.0.0
deleteMode	The deletion mode.	Yes	<ul style="list-style-type: none"> • Permissive • Enforcing 	4.0.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		4.0.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		4.0.0

Name	Description	Optional	Valid Value	Starting Version
timeout		Yes		

5.7.3.37 UpdateBareMetal2ProvisionNetwork

Updates a bare metal deployment network. For example,

```
UpdateBareMetal2ProvisionNetwork uuid=1e9584cd6dd64c1a96fba1bb1114948e
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The deployment network UUID.			4.0.0
name	The deployment network name.	Yes		4.0.0
description	The detailed description of the deployment network.	Yes		4.0.0
dhcpInterface	The name of the DHCP NIC.	Yes		4.0.0
dhcpRangeStartIp	The starting IP address that DHCP assigns to a bare metal instance.	Yes		4.0.0
dhcpRangeEndIp	The ending IP address that DHCP assigns to a bare metal instance.	Yes		4.0.0
dhcpRangeNetmask	The netmask of the IP range from which the DHCP server assigns an IP address to a bare metal instance.	Yes		4.0.0

Name	Description	Optional	Valid Value	Starting Version
dhcpRangeGateway	The gateway IP address.	Yes		4.0.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		4.0.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		4.0.0
timeout		Yes		

5.7.3.38 QueryBareMetal2ProvisionNetwork

Queries bare metal deployment networks. For example,

```
QueryBareMetal2ProvisionNetwork uuid=1e9584cd6dd64c1a96fba1bb1114948e
```

Primitive Fields of Query

See [BareMetal2ProvisionNetwork inventory](#).

Nested And Expanded Fields of Query

Field	Inventory	Description	Starting Version
zone	zone inventory	The zone where the bare metal network resides.	4.0.0
cluster	cluster inventory	The cluster where the bare metal network resides.	4.0.0

5.7.3.39 ChangeBareMetal2ProvisionNetworkState

Changes the state of a bare metal deployment network. For example,

```
ChangeBareMetal2ProvisionNetworkState uuid=1e9584cd6dd64c1a96fb
a1bb114948e stateEvent=enable
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The deployment network UUID.			4.0.0
stateEvent	The event that changes the state of the chassis.		<ul style="list-style-type: none"> enable disable 	4.0.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		4.0.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		4.0.0
timeout		Yes		

5.7.3.40 AttachBareMetal2ProvisionNetworkToCluster

Attaches a bare metal deployment network to a cluster. For example,

```
AttachBareMetal2ProvisionNetworkToCluster clusterUuid=1e9584cd6d
d64c1a96fb1bb114948e networkUuid=2a7656cd6dd64c1a96fb1bb114786a
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
clusterUuid	The cluster UUID.			4.0.0
networkUuid	The deployment network UUID.			4.0.0
userTags	The user tags. For more	Yes		4.0.0

Name	Description	Optional	Valid Value	Starting Version
	information, see CreateUserTag .			
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		4.0.0
timeout		Yes		

5.7.3.41 DetachBareMetal2ProvisionNetworkFromCluster

Detaches a bare metal deployment network from a cluster. For example,

```
DetachBareMetal2ProvisionNetworkFromCluster clusterUuid=1e9584cd6d
d64c1a96fba1bb1114948e networkUuid=2a7656cd6dd64c1a96fba1bb1114786a
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
clusterUuid	The cluster UUID.			4.0.0
networkUuid	The deployment network UUID.			4.0.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		4.0.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		4.0.0
timeout		Yes		

5.7.3.42 GetBareMetal2ProvisionNetworkIpAddressCapacity

Retrieves available IP addresses in a deployment network. For example,

```
GetBareMetal2ProvisionNetworkIpAddressCapacity networkUuids=2a7656cd6d
d64c1a96fba1bb114786a
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
networkUuids	The deployment network UUIDs.			4.0.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		4.0.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		4.0.0
timeout		Yes		

6 Platform O&M

6.1 Cloud Monitoring

6.1.1 Overview

ZWatch

ZWatch mainly provides the following features:

1. Time-series monitoring. Currently, ZWatch monitors the following two types of time-series data (metrics):
 - Resource load, such as the VM instance CPU utilization and host memory utilization.
 - Resource capacity, such as the available IP count and total count of running VM instances.Metrics (`time series data`) refers to data collected at a specified interval. Each metric is associated with a `timestamp` field.
2. Event collection. ZWatch collects predefined events in the system, such as the host disconnection and VM instance HA enabling.
3. Alarm reporting. Currently, ZWatch supports the following two types of alarms:
 - Metric alarm. For example, you can set an alarm for VM instance CPU utilization, trigger the alarm when the CPU utilization exceeds 80% for five consecutive seconds, and send alarm messages to an email address.
 - Event alarm, also known as event subscription. For example, you can subscribe to the host disconnection event and send a notification to the administrator via an email if a host is disconnected.
4. Auditing. ZWatch records all API operations for your subsequent search and query.
5. Metric customization. ZWatch allows you to call ZWatch APIs to write metrics. The metrics you wrote can be used for query and alarm setting.
6. Text template (alarm message template) customization. ZWatch allows you to customize alarm message templates as needed.

SNS

One major feature of the Simple Notification Service (SNS) is to **push messages to the endpoints that you subscribed to**. The endpoints include **email, HTTP webhook, DingTalk, and Short Message Service (SMS)**. ZWatch directly uses SNS to push alarm messages to users.

6.1.2 Basic Workflow

1. Create an SNS topic to receive alarm messages.
2. Create an email platform if you use an email endpoint. Skip this step if you use the HTTP webhook, DingTalk, or SMS endpoint.
3. Create an endpoint (email, HTTP webhook, DingTalk, or SMS) and subscribe the endpoint to the SNS topic you created in Step 1.

**Note:**

Related SNS resources mentioned above can be reused by multiple alarms.

4. Create an alarm and set **Action** to the SNS topic you created in Step 1.

6.1.3 ZWatch

The following terminology and concepts are central to your understanding and use of ZWatch:

1. Metric: a set of time-series data published to ZWatch, such as the VM CPU utilization.
2. Event: a set of discrete data published to ZWatch, such as host disconnection.

**Note:**

- A metric is a set of time-series data, such as the VM CPU utilization collected at an interval of 10 seconds.
- An event is a set of discrete data, such as the host disconnection event occurred after network disconnection.

3. Alarm: a metric alarm that can be triggered under specific condition. For example, if the CPU utilization of a particular VM instance exceeds 80% in 5 consecutive minutes, an alarm can be triggered and alarm messages can be sent to users via email.
4. Event Subscription: an alarm that is only applicable to events. For example, if the host disconnection event occurs, an event subscription can be sent to users via email.
5. Text Template: a template for formatting alarm texts when an alarm or event subscription is triggered.

6.1.3.1 Metric

6.1.3.1.1 GetAllMetricMetadata

Obtains system-defined metrics and their metadata. Metrics include system data and custom data.

For example,

```
GetAllMetricMetadata namespace=ZStack/PrimaryStorage
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
name	The name of the metric.	Yes		3.9.0
namespace	The namespace of the metric.	Yes		3.9.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.3
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.3
timeout		Yes		

Sample response:

```
[
  {
    "description": "OperatingSystemCPUSystemUtilization",
    "driver": "PrometheusDatabaseDriver",
    "labelNames": [
      "BaremetalVMUuid",
      "CPUNum"
    ],
    "name": "OperatingSystemCPUSystemUtilization",
    "namespace": "ZStack/BaremetalVM"
  },
  {
    "description": "OperatingSystemCPUUserUtilization",
    "driver": "PrometheusDatabaseDriver",
    "labelNames": [
      "BaremetalVMUuid",
      "CPUNum"
    ],
    "name": "OperatingSystemCPUUserUtilization",
  }
]
```

```

        "namespace": "ZStack/BaremetalVMM"
    }
]
```

- **namespace**: The namespace of a metric. A namespace is used to classify metrics of the same type.
- **name**: The metric name.
- **labelNames**: The label name of a metric. A label is used to filter metric data. For example, the `DataVolumeCount` label indicates the number of volumes on a primary storage. You can specify the `PrimaryStorageUuid` label to filter data so as to obtain the number of volumes on a primary storage.

6.1.3.1.2 GetMetricLabelValue

Obtains the available values of a metric label. Generally, a metric has one or more labels to describe the metric metadata. For example, in the `ZStack/Host` namespace, the `CPUIdleUtilization` metric includes `HostUuid` and `CPUNum`. These two fields are used to specify the host CPU to which the `Idle` value belongs. For example, if the system has two hosts, the `HostUuid` label might have two available values (that is, the UUID of each host).

```
GetMetricLabelValue namespace=ZStack/Host metricName=CPUIdleUtilization labelNames=CPUNum,HostUuid
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
namespace	The namespace.			2.3
metricName				2.3
labelNames	The name list of the target labels.			2.3
filterLabels	The label filter list . For example, you can set the HostUuid label to e47f7145f4cd4fcfa8e2856038ecdf3e1 to filter values specified in labelNames.	Yes		2.3
startTime	The start time.	Yes		3.9.0

Name	Description	Optional	Valid Value	Starting Version
endTime	The end time.	Yes		3.9.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.3
systemTags	The user tags. For more information, see CreateSystemTag .	Yes		2.3
timeout		Yes		

Sample response:

```
{
  "labels": [
    {
      "CPUNum": "0",
      "HostUuid": "a133cbcfd1d462c9b51d7bce6ac6b11"
    },
    {
      "CPUNum": "1",
      "HostUuid": "a133cbcfd1d462c9b51d7bce6ac6b11"
    },
    {
      "CPUNum": "2",
      "HostUuid": "a133cbcfd1d462c9b51d7bce6ac6b11"
    },
    {
      "CPUNum": "3",
      "HostUuid": "a133cbcfd1d462c9b51d7bce6ac6b11"
    },
    {
      "CPUNum": "4",
      "HostUuid": "a133cbcfd1d462c9b51d7bce6ac6b11"
    },
    {
      "CPUNum": "5",
      "HostUuid": "a133cbcfd1d462c9b51d7bce6ac6b11"
    },
    {
      "CPUNum": "6",
      "HostUuid": "a133cbcfd1d462c9b51d7bce6ac6b11"
    },
    {
      "CPUNum": "7",
      "HostUuid": "a133cbcfd1d462c9b51d7bce6ac6b11"
    }
  ],
  "success": true
}
```

```
}
```

- You can use `filterLabels` to specify the filter condition. For example, you can specify the condition to return only the available values of `CPUNum` for the host with the UUID `a133cbcfdc1d462c9b51d7bce6ac6b11`.

```
GetMetricLabelValue namespace=ZStack/Host metricName=CPUIdleUtilization labelNames=CPUNum filterLabels=HostUuid=a133cbcfdc1d462c9b51d7bce6ac6b11
```

- You can specify multiple conditions for `filterLabels` as needed.

```
GetMetricLabelValue namespace=ZStack/Host metricName=CPUIdleUtilization labelNames=CPUNum filterLabels=HostUuid=a133cbcfdc1d462c9b51d7bce6ac6b11,CPUNum=1
```

```
{
  "labels": [
    {
      "CPUNum": "1",
      "HostUuid": "a133cbcfdc1d462c9b51d7bce6ac6b11"
    }
  ],
  "success": true
}
```

6.1.3.1.3 GetMetricData

Obtains metric data. For example,

```
GetMetricData namespace=ZStack/Host metricName=NetworkAllOutBytes
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
namespace	The namespace.			2.3
metricName	The metric name.			2.3
startTime	The start time.	Yes		2.3
endTime	The end time.	Yes		2.3
period	The interval for returning data.	Yes		2.3
labels	The filter labels.	Yes		2.3
functions	The function list.	Yes		2.3
offsetAheadOfCurrentTime		Yes		2.3

Name	Description	Optional	Valid Value	Starting Version
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.3
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.3
timeout		Yes		

Sample response:

```
{
    "data": [
        {
            "labels": {
                "HostUuid": "a133cbcfd1d462c9b51d7bce6ac6b11"
            },
            "time": 1516363957,
            "value": 1678.9
        },
        {
            "labels": {
                "HostUuid": "a133cbcfd1d462c9b51d7bce6ac6b11"
            },
            "time": 1516364017,
            "value": 1920.1000000000001
        }
    ],
    "success": true
}
```

- In the preceding sample, `value` is a data value of the double type, `time` is an epoch time (in seconds), and `labels` is a label group that can be used to filter response values. The following is an example of obtaining data of the host with the UUID `a133cbcfd1d462c9b51d7bce6ac6b11`:

```
GetMetricData namespace=ZStack/Host metricName=NetworkAllOutByte
labels=HostUuid=a133cbcfd1d462c9b51d7bce6ac6b11
```

- A label supports two filter methods: `=` (equal to) and `=~` (regular expressions). You can use regular expressions to filter multiple label values. The following is an example of returning

the metric values for the hosts with UUIDs a133cbcfd1d462c9b51d7bce6ac6b11 and 506bd3b46a6543718488b5ba5850aaaa, respectively.

```
GetMetricData namespace=ZStack/Host metricName=NetworkAllOutByte
    labels=HostUuid=~a133cbcfd1d462c9b51d7bce6ac6b11|506bd3b46a
    6543718488b5ba5850aaaa
```

- You can transfer multiple labels as filter conditions. For example,

```
GetMetricData namespace=ZStack/PrimaryStorage metricName=SnapshotCo
    unt labels=PrimaryStorageUuid=b632652cc16044cdb6b4f516ed93a118,
    PrimaryStorageType=Ceph
```

- You can use `startTime` and `endTime` to specify the time range for query. For example,

```
GetMetricData namespace=ZStack/PrimaryStorage metricName=SnapshotCo
    unt labels=PrimaryStorageUuid=b632652cc16044cdb6b4f516ed93a118,
    PrimaryStorageType=Ceph startTime=1516364017 endTime=1516365000
```



Note:

Both `startTime` and `endTime` are epoch time. If you leave these two fields blank, data of the latest 1 minute will be returned by default. If you leave the `endTime` field blank, the current time will be used as the end time by default.

- You can use `period` to specify the interval for returning data.
- You can use `functions` to transfer a pair of functions for data post-processing. For example,

```
GetMetricData namespace=ZStack/PrimaryStorage metricName=SnapshotCo
    unt labels=PrimaryStorageUuid=b632652cc16044cdb6b4f516ed93a118,
    PrimaryStorageType=Ceph startTime=1516364017 endTime=1516365000
    functions=sort(by=\"value\"\\",direction=\"desc\")
```

- Here, the `sort` function is used to sort the returned `value` in descending order. If you transfer multiple functions, these functions will be executed in ascending order. For example,

```
GetMetricData namespace=ZStack/PrimaryStorage metricName=SnapshotCo
    unt labels=PrimaryStorageUuid=b632652cc16044cdb6b4f516ed93a118,
    PrimaryStorageType=Ceph startTime=1516364017 endTime=1516365000
    functions=sort(by=\"value\"\\",direction=\"desc\"),limit(limit=1)
```



Note:

In zstack-cli, you need to translate the double quotation marks ("") in a function by using backward slashes (\), and translate the commas (,) for delimiting function parameters by using double backward slashes (\ \).

- The system firstly sorts the data, and then returns the first data.

**Note:**

For more information about functions, see the Appendices.

6.1.3.1.4 PutMetricData

**Note:**

This API is irrelevant to the UI. Therefore, you do not need to consider UI design.

Saves metrics to the backend time-series database of ZStack Cloud. You can also perform operations on the metrics by using ZWatch APIs. This allows you to customize metrics as needed. For example, if you want to add MySQL to ZWatch, you can obtain the number of concurrent MySQL connections through a script, periodically call the `PutMetricData` API to import data, and then use the ZWatch alarm to monitor the maximum number of MySQL connections and send alarm messages.

```
PutMetricData namespace=MyNamespace data='[ { "metricName" : "MySQLMaxConnections" , "value":1000 , "labels":{ "ip":"10.0.0.10" } } ]'
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
namespace	The custom namespace.			2.3
data	The data.			2.3
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.3
systemTags	The user tags. For more information, see CreateSystemTag .	Yes		2.3
timeout		Yes		

The data field in `PutMetricData` can be used to obtain a data list. For example,

```
[ {
    "metricName" : "MySQLMaxConnections" ,
    "value": 1000 ,
    "labels": {
```

```

        "ip": "10.0.0.10"
    }
}

```

- metricName: The metric name.
- value: The data value, which can be an integer or a floating-point number.
- labels: The custom labels.

You can push multiple metrics under the same namespace at a time. For example,

```

[ {
    "metricName": "MySQLMaxConnections",
    "value": 1000,
    "labels": {
        "ip": "10.0.0.10"
    }
}, {
    "metricName": "MySQLMemory",
    "value": 1999999999999999,
    "labels": {
        "ip": "10.0.0.10"
    }
}]

```



Note:

The namespace and metric are automatically created when data is stored. No API is available to delete namespace and metric. The related data will be automatically deleted after its Time To Live (TTL) is exceeded.

6.1.3.2 Event

Different from metrics, events can only be defined by the system. Events are generally generated by the system under specific conditions. For example, the network interruption of a host will trigger a `HostDisconnected` event. If you subscribe to the `HostDisconnected` event, you can receive notifications, such as email notifications, in case of host disconnection.

6.1.3.2.1 GetAllEventMetadata

Obtains all system-defined events and their metadata. For example,

```
GetAllEventMetadata namespace=ZStack/VM
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
name	The name of the event.	Yes		3.9.0

Name	Description	Optional	Valid Value	Starting Version
namespace	The namespace of the event.	Yes		3.9.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		
timeout		Yes		

Sample response:

```
{
    "events": [ {
        "description": "VMStateChangedOnHost",
        "labelNames": [
            "OldState",
            "NewState",
            "SourceHostUuid",
            "DestinationHostUuid"
        ],
        "name": "VMStateChangedOnHost",
        "namespace": "ZStack/VM"
    },
    {
        "description": "VRouterDisconnected",
        "labelNames": [
            "Error"
        ],
        "name": "VRouterDisconnected",
        "namespace": "ZStack/VRouter"
    }
],
    "success": true
}
```

The metadata structure contains the following fields:

- namespace: the namespace of the event
- name: the event name
- labelNames: the names of event labels

6.1.3.2.2 GetEventData

Obtains the events that occurred in the system. For example,

```
GetEventData
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
startTime	The start time.	Yes		2.3
endTime	The end time.	Yes		2.3
limit	The maximum number of returned items.	Yes		2.3
offsetAheadOfCurrentTime	The offset (in milliseconds) between the query time and the current time. Note that the query time is earlier than the current time. For example, if you query messages collected in the last one hour, 3600000 (the offset) will be transferred to the system.	Yes		3.3.0
conditions	The filter conditions.	Yes		3.3.0
count	Whether to query the number of events.	Yes		3.3.0
endpointUuid	The endpoint UUID.	Yes		3.10.0
userTags	The user tags. For more information,	Yes		2.3

Name	Description	Optional	Valid Value	Starting Version
	see CreateUserTag .			
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.3
timeout		Yes		

The following sample response contains a set of events:

```
{
  "events": [
    {
      "emergencyLevel": "Normal",
      "labels": {
        "NewStatus": "Connecting",
        "OldStatus": "Connected"
      },
      "name": "HostStatusChanged",
      "namespace": "ZStack/Host",
      "resourceId": "184eae9058f9477a91975f549b54f59f",
      "resourceName": "Host-1",
      "time": 1510984704006
    },
    {
      "emergencyLevel": "Normal",
      "labels": {
        "NewStatus": "Disconnected",
        "OldStatus": "Connecting"
      },
      "name": "HostStatusChanged",
      "namespace": "ZStack/Host",
      "resourceId": "184eae9058f9477a91975f549b54f59f",
      "resourceName": "Host-1",
      "time": 1510984704633
    }
  ],
  "success": true
}
```

The fields in the preceding example are described as follows:

- emergencyLevel: the emergency level, including `Major`, `Info`, and `Emergent`
- name: the event name
- namespace: the namespace of the event
- resourceId: the ID of the resource where the event occurred. If the resource belongs to ZStack Cloud, the ID is the UUID of the resource.

- `resourceName`: the name of the resource where the event occurred
- `time`: the time when the event occurred

`GetEventData` supports the following fields:

- `startTime`: the start time
- `endTime`: the end time. You can obtain events that occurred in a specified time period by setting the `startTime` and `endTime` fields.
- `limit`: the number of returned events. If this field is not specified, up to 100 events will be returned by default.
- `conditions`: the filter conditions. You can use `emergencyLevel`, `name`, `namespace`, and `resourceName` as filter conditions to obtain all the emergent events related to a host. For example,

```
GetEventData conditions=namespace=ZStack/Host,emergencyLevel=Emergent
```

Filter conditions support the following two types of operators: `=` (equal to) and `=~` (regular expressions).

- `endpointUuid`: the endpoint UUID

6.1.3.2.3 UpdateEventData

Updates event data. For example,

```
UpdateEventData updateMode=All
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
<code>dataUuid</code>	The resource UUID.	Yes		3.3.0
<code>dataStartTime</code>	The start time of the target messages. Make sure that InRange is transferred to updateMode .	Yes		3.3.0
<code>dataEndTime</code>	The end time of the target messages.	Yes		3.3.0

Name	Description	Optional	Valid Value	Starting Version
	Make sure that InRange is transferred to updateMode .			
updateMode	The range of the target messages to be updated. Options: <ul style="list-style-type: none">• <code>OnlyOne</code>: updates only the specified messages.• <code>InRange</code>: updates the messages generated in a specified time range.• <code>All</code>: updates all messages.		<ul style="list-style-type: none">• OnlyOne• InRange• All	3.3.0
readStatus	The read status of the updated messages.	Yes	<ul style="list-style-type: none">• Read• Unread	3.3.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.3.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.3.0
timeout		Yes		

6.1.3.3 Alarm

You can set an alarm for metrics. When the alarm condition is reached, the alarm messages can be received via email, DingTalk, HTTP webhook, or SMS.

6.1.3.3.1 CreateAlarm

Creates an alarm for metrics. For example,

```
CreateAlarm namespace=ZStack/VM metricName=CPUAllUsedUtilization
comparisonOperator=GreaterThanOrEqualTo period=300 \
repeatInterval=600 threshold=90 actions='[{"actionUuid": "2447db65cb
46495e87b53d9afbad6936", "actionType": "sns"}]' labels='[{"key": "VMUuid
", "op": "Equal", \
"value": "1a1d7395cf74474ca52deb80c41214a1"}]' name=my-vm-alarm
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
name	The resource name.			2.3
description	The detailed description of the resource.	Yes		2.3
comparison Operator	The threshold comparison operator.		<ul style="list-style-type: none"> • GreaterThanOrEqualTo • GreaterThan • LessThan • LessThanOrEqualTo 	2.3
period	The threshold duration.			2.3
namespace	The namespace.			2.3
metricName	The metric name.			2.3
threshold	The threshold.			2.3
repeatInterval	The alarm repeat interval.			2.3
labels	The label list.	Yes		2.3
actions	The alarm action list.	Yes		2.3
resourceUuid		Yes		2.3
repeatCount	The alarm repeat count.	Yes		3.3.0
type	The alarm type.	Yes		3.3.0

Name	Description	Optional	Valid Value	Starting Version
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.3
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.3
timeout		Yes		

```
{
    "inventory": {
        "uuid": "a6bed2b7c5154371a384f0f90dcd227e",
        "name": "VM CPU Alarm",
        "comparisonOperator": "LessThanOrEqualTo",
        "period": 60.0,
        "namespace": "ZStack/VM",
        "metricName": "org.zstack.zwatch.datatype.Metric@22c0dd63",
        "threshold": 30.0,
        "repeatInterval": 1800.0,
        "repeatCount": -1.0,
        "status": "Alarm",
        "state": "Enabled",
        "createDate": "Jan 8, 2019 4:08:43 PM",
        "lastOpDate": "Jan 8, 2019 4:08:43 PM",
        "labels": [
            {
                "uuid": "c74cb057092243ea8f838a1b4caec128",
                "key": "VMUuid",
                "operator": "\u003d",
                "value": "b5defee7d82f44c692d31e9a9d9e8e7f"
            }
        ],
        "actions": [
            {
                "alarmUuid": "433a94c9da494565a28dc4736e159297",
                "actionType": "sns",
                "actionUuid": "6d5583e8210445e3963c3784d550b8c2"
            }
        ]
    }
}
```

In the sample above, you created an alarm for the `CPUAllUsedUtilization` metric (the total CPU utilization) of the VM instance with the UUID `2c6a070b97d648c080284d395cadb855`. When the threshold of the CPU utilization exceeds 90% (the `comparisonOperator`) and the threshold duration (the `period`) exceeds 300 seconds, the alarm actions will be sent to the SNS topic with the UUID `2447db65cb46495e87b53d9afbad6936`. If the CPU utilization of the VM instance

continuously exceeds 90% for 600 seconds (the repeatInterval) and the alarm actions are already sent, no repeat alarm actions will be triggered.

`CreateAlarm` includes the following fields:

- `namespace`: the namespace of the metric
- `metricName`: the metric name
- `comparisonOperator`: the threshold comparison operator, including `GreaterThanOrEqualTo` (greater than or equal to), `GreaterThan` (greater than), `LessThan` (less than), and `LessThanOrEqualTo` (less than or equal to)
- `period`: the threshold duration, in seconds.
- `repeatInterval`: the alarm repeat interval, in seconds. This field is used to repeat alarms in a specified time duration. For example, if the alarm condition is to trigger alarms when the CPU utilization exceeds 90% in 1 minute, but the CPU utilization of the VM instance continuously exceeds 90% for 10 minutes, you will receive 10 alarm messages. If you set `repeatInterval` to 10 minutes (600 seconds), you will receive only one alarm message. If you set `repeatInterval` to 5 minutes (300 seconds), you will receive two alarm messages. This helps you avoid *alarm flooding*. If you do not set the `repeatInterval` field, the default value is 30 minutes (1800 seconds). You can modify the default value by modifying `zwatch.alarm.repeatInterval` in global settings.
- `threshold`: the threshold, which is a floating-point number
- `actions`: the alarm actions, that is, the actions performed by the system when the alarm is triggered. In the current version, ZWatch can only send alarm messages to SNS topics. The structure of an alarm action is as follows:

```
{
  "actionUuid": "2447db65cb46495e87b53d9afbad6936",
  "actionType": "sns"
}
```

In the sample above, `actionUuid` is the UUID of the SNS topic. The value of `actionType` is `sns`, which is a fixed value. You can specify multiple alarm actions as needed.

- `labels`: the labels for filtering metrics. You can use labels to match specific metrics. For example, to create alarms for a specific VM instance, you need to set the `VMUuid` label.

```
{
  "key": "VMUuid",
  "operator": "Equal",
  "value": "1a1d7395cf74474ca52deb80c41214a1"
```

```
}
```

In the sample above, `key` is the label name. `operator` is the label comparison operator, which can be either `Equal` (equal to) or `Regex`(regular expressions). `value` is the label value. You can specify multiple labels as needed. You can also use `GetAllMetricMetadata` to obtain labels supported by each metric.

Alarm status:

The alarm status includes `OK`, `Alarm`, and `InsufficientData`.

- `OK`: the normal status, indicating that the alarm is not triggered by the metric data
- `Alarm`: the alert status, indicating that the alarm is triggered by the metric data
- `InsufficientData`: the data is insufficient, indicating that the metric data is insufficient

An alarm is generally in the status of `OK` or `Alarm`.

6.1.3.3.2 DeleteAlarm

Deletes an alarm. For example,

```
DeleteAlarm uuid=f8906dd1ce5d4534b4c6b58900e795ef
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			2.3
deleteMode		Yes		2.3
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.3
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.3
timeout		Yes		

6.1.3.3.3 UpdateAlarm

Updates an alarm. For example,

```
UpdateAlarm name=my-new-alarm threshold=99 uuid=f8906dd1ce5d4534b4c6
b58900e795ef
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			2.3
name	The resource name.	Yes		2.3
description	The detailed description of the resource.	Yes		2.3
comparison Operator	The threshold comparison operator.	Yes	<ul style="list-style-type: none"> • GreaterThanOrEqualTo • GreaterThan • LessThan • LessThanOrEqualTo 	2.3
period	The threshold duration.	Yes		2.3
threshold	The threshold.	Yes		2.3
repeatInterval	The alarm repeat interval.	Yes		2.3
repeatCount	The alarm repeat count.	Yes		3.3.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.3
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.3

Name	Description	Optional	Valid Value	Starting Version
timeout		Yes		

**Note:**

All the preceding fields, excluding `namespace`, `metricName`, `actions`, and `labels`, can be modified.

6.1.3.3.4 AddActionToAlarm

Adds an action to an alarm. The `actionType` and `actionUuid` fields have the same meaning as the `actions` field in `CreateAlarm`. For example,

```
AddActionToAlarm alarmUuid=f8906dd1ce5d4534b4c6b58900e795ef actionType=sns actionUuid=2c6a070b97d648c080284d395cadb855
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
alarmUuid	The alarm UUID.			2.3
actionUuid	The action UUID.			2.3
actionType	The action type.			2.3
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.3
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.3
timeout		Yes		

6.1.3.3.5 RemoveActionFromAlarm

Removes an action from an alarm. For example,

```
RemoveActionFromAlarm alarmUuid=f8906dd1ce5d4534b4c6b58900e795ef
actionUuid=f8906dd1ce5d4534b4c6b58900e795ef
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
alarmUuid	The alarm UUID.			2.3
actionUuid	The action UUID.			2.3
deleteMode		Yes		2.3
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.3
systemTags	The user tags. For more information, see CreateSystemTag .	Yes		2.3
timeout		Yes		

6.1.3.3.6 AddLabelToAlarm

Adds a label to an alarm. For example,

```
AddLabelToAlarm key=VMUUID operator=Regex value=e3206dd1ce5d4534b4c6
b58900e795ef|1a1d7395cf74474ca52deb80c41214a1 uuid=f8906dd1ce
5d4534b4c6b58900e795ef
```



Note:

Here, the `key`, `operator`, and `value` fields have the same meaning as the `labels` field in `CreateAlarm`.

Parameters

Name	Description	Optional	Valid Value	Starting Version
alarmUuid	The alarm UUID.			2.3
key	The label key.			2.3

Name	Description	Optional	Valid Value	Starting Version
value	The label value.			2.3
operator	The operator.		<ul style="list-style-type: none"> • Regex • Equal 	2.3
resourceUuid		Yes		2.3
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.3
systemTags	The user tags. For more information, see CreateSystemTag .	Yes		2.3
timeout		Yes		

6.1.3.3.7 UpdateAlarmLabel

Updates an alarm label. For example,

```
UpdateAlarmLabel key=VMUUID operator=Regex value=e3206dd1ce5d4534b4c6
b58900e795ef|1a1d7395cf74474ca52deb80c41214a1 uuid=f8906dd1ce
5d4534b4c6b58900e795ef
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			3.3.0
key	The label key.			3.3.0
value	The label value.			3.3.0
operator	The label operator.		<ul style="list-style-type: none"> • Regex • Equal 	3.3.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.3.0
systemTags	The system tags. For more	Yes		3.3.0

Name	Description	Optional	Valid Value	Starting Version
	information, see CreateSystemTag .			
timeout		Yes		3.3.0

6.1.3.3.8 RemoveLabelFromAlarm

Removes a label from an alarm. For example,

```
RemoveLabelFromAlarm uuid=f8906dd1ce5d4534b4c6b58900e795ef
```



Note:

The UUID in the example above is the label UUID.

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			2.3
deleteMode		Yes		2.3
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.3
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.3
timeout		Yes		

6.1.3.3.9 ChangeAlarmState

Changes the alarm state. For example,

```
ChangeAlarmState uuid=2447db65cb46495e87b53d9afbad6936 stateEvent=disable
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			2.3
stateEvent	The state event.		<ul style="list-style-type: none"> • enabled • disabled 	2.3
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.3
systemTags	The user tags. For more information, see CreateSystemTag .	Yes		2.3
timeout		Yes		

- stateEvent:
 - enable: enable the alarm
 - disable: disable the alarm

When the alarm is disabled, you will no longer receive an alarm message. However, the alarm status will still change accordingly.

6.1.3.3.10 QueryAlarm

Queries an alarm. For example,

```
QueryAlarm namespace=ZStack/VM metricName=~=%CPU%
```

Primitive Fields of Query

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			2.3
name	The name. For more information, see Resource Property .			2.3
description	The description. For more information, see Resource Property .	Yes		2.3
period	The threshold duration.			2.3
namespace	The namespace.			2.3
metricName	The metric name.			2.3
threshold	The threshold.			2.3
repeatInterval	The alarm repeat interval.			2.3
createDate	The creation date.			2.3
lastOpDate	The last operation date.			2.3
comparison Operator				2.3
status				2.3
labels				2.3
actions				2.3

Name	Description	Optional	Valid Value	Starting Version
groupBy	Groups rows into subgroups based on values of columns or expressions. This field is equivalent to the Group By clause in MySQL, such as <code>groupBy =type</code> .	Yes		2.3
createDate	The creation date. For more information, see Resource Property .			2.3
lastOpDate	The operation date. For more information, see Resource Property .			2.3
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.3
systemTags	The user tags. For more information, see CreateSystemTag .	Yes		2.3

Sample response:

```
{
  "inventories": [
    {
      "actions": [
        {
          "actionType": "sns",
          "actionUuid": "e7d6f5e23bb74e99a2777126078b551c",
          "alarmUuid": "b632652cc16044cdb6b4f516ed93a118"
        }
      ],
      "comparisonOperator": "GreaterThanOrEqualTo",
      "createDate": "Jun 20, 2018 10:45:45 AM",
      "groupBy": "type"
    }
  ]
}
```

```

    "labels": [
        {
            "key": "DirPath",
            "operator": "Equal",
            "uuid": "dfed592b822f46439195d7ce7728cdeb",
            "value": "/var/lib/zstack/"
        }
    ],
    "lastOpDate": "Jun 20, 2018 10:45:45 AM",
    "metricName": "ManagementServerDirUsedCapacityInPercent",
    "name": "ZStack Data Directory Capacity Alarm",
    "namespace": "ZStack/System",
    "period": 60,
    "repeatInterval": 1800,
    "state": "Enabled",
    "status": "OK",
    "threshold": 70.0,
    "uuid": "b632652cc16044cdb6b4f516ed93a118"
}
],
"success": true
}

```

Nested and Expanded Fields of Query

Field	Inventory	Description	Starting Version
actions	Action Inventory	The action status.	2.3
labels	Label Inventory	The action labels.	2.3

6.1.3.3.11 GetAlarmData

Obtains the historical messages of an alarm. For example,

```
GetAlarmData conditions=alarmUuid=~"772be6e6dba843018c71dac33555da12|36c27e8ff05c4780bf6d2fa65700f22e"
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
startTime	The start time.	Yes		2.3
endTime	The end time.	Yes		2.3
limit	The maximum number of returned messages.	Yes		2.3
conditions	The conditions to filter the results.	Yes		2.3

Name	Description	Optional	Valid Value	Starting Version
count	Whether to query the message count.	Yes		3.3.0
excludeOtherAccount	Whether to exclude messages other than the current account (only effective for SystemAdmin).	Yes		3.3.0
endpointUuid	The endpoint UUID.	Yes		3.10.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.3
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.3
timeout		Yes		

```
{
  "histories": [
    {
      "alarmUuid": "143b24a12d193c1992c4774dc3b34fda",
      "namespace": "ZStack/VM",
      "metricName": "CPUUsedUtilization",
      "accountUuid": "90aea7a1dfc93cf7bd3379254dddbdf9",
      "resourceUuid": "4e6bb5390d3938cb9ce830a4766ee4d8",
      "resourceType": "VmInstanceVO",
      "alarmStatus": "Alarm",
      "alarmName": "test-alarm",
      "threshold": 90.0,
      "labels": "Vmuuid Equal 4e6bb5390d3938cb9ce830a4766ee4d8, CPUNum Equal 2",
      "metricValue": 10.0,
      "comparisonOperator": "LessThan",
      "time": 1.510669257141E12
    }
  ]
}
```

- startTime: the start time, in milliseconds. This parameter is an epoch time.

- endTime: the end time, in milliseconds. This parameter is an epoch time. You can obtain the audit messages in a certain period of time by specifying the startTime and endTime parameters.
- limit: the maximum number of returned messages. If the limit is not specified, the default value is 100. If the limit is greater than the maximum number of returned messages, all messages are returned.
- endpointUuid: the endpoint UUID
- conditions: the filter condition array. You can specify filter conditions to return specific messages. Filter conditions are expressed in **condition operator value** format, such as `error =~ ".+ "` (note that there are no spaces on either side of the operator). Operators can be = (equal to) or =~ (regular expressions). The filter condition includes the following elements:
 - alarmUuid: the alarm UUID
 - namespace: the namespace
 - metricName: the metric name
 - accountUuid: the UUID of the account to which the alarm belongs
 - resourceUuid: the UUID of the resource associated with the alarm
 - resourceType: the type of the resource associated with the alarm
 - alarmStatus: the alarm status

The structure of the alarm historical messages contains the following fields:

- alarmUuid: the alarm UUID
- namespace: the namespace
- metricName: the metric name
- accountUuid: the UUID of the account to which the alarm belongs
- resourceUuid: the UUID of the resource associated with the alarm
- resourceType: the type of the resource associated with the alarm
- alarmStatus: the alarm status
- alarmName: the alarm name
- threshold: the alarm threshold
- period: the alarm duration
- labels: the alarm label list, which is a string expressed as "label1 = value1, lable2 = value2"
- metricValue: the metric value
- time: the time when the alarm was triggered

6.1.3.3.12 UpdateAlarmData

Updates the historical messages of an alarm. For example,

```
UpdateAlarmData updateMode=All
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
dataUuid	The resource UUID.	Yes		3.3.0
dataStartTime	The start time of the target messages. Make sure that the InRange field is transferred to updateMode.	Yes		3.3.0
dataEndTime	The end time of the target messages. Make sure that the InRange field is transferred to updateMode.	Yes		3.3.0
updateMode	<p>The range of the target messages to be updated. Options:</p> <ul style="list-style-type: none"> • OnlyOne: updates only the specified messages. • InRange: updates the messages generated in a specified time range. • All: updates all messages. 		<ul style="list-style-type: none"> • OnlyOne • InRange • All 	3.3.0

Name	Description	Optional	Valid Value	Starting Version
readStatus	The read status of the updated messages.	Yes	• Read • Unread	3.3.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.3.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.3.0
timeout		Yes		

6.1.3.4 Event Subscription

You can subscribe to events to receive notifications via email, DingTalk, HTTP webhook, or SMS when an event occurs (for example, a VM instance is unexpectedly down and restarted by HA). Event subscription is a kind of an alarm for events.

6.1.3.4.1 SubscribeEvent

Subscribes to an event. For example,

```
SubscribeEvent namespace=ZStack/Host eventName=HostStatusChanged
actions='[{"actionType": "sns", "actionUuid": "2447db65cb46495e87b5
3d9afbad6936"}]' labels='[{"key": "NewStatus", "op": "Equal", "value": "Disconnected"}]'
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
namespace	The namespace.			2.3
eventName	The event name.			2.3
actions	The event actions.	Yes		2.3
labels	The event labels.	Yes		2.3
resourceUuid		Yes		2.3
userTags	The user tags. For more	Yes		2.3

Name	Description	Optional	Valid Value	Starting Version
	information, see CreateUserTag .			
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.3
name	The resource name.	Yes		3.0.0
timeout		Yes		

```
{
    "inventory": {
        "actions": [ {
            "actionType": "sns",
            "actionUuid": "2447db65cb46495e87b53d9afbad6936",
            "subscriptionUuid": "88c064e2f0004597b0a7161fbe9bcd0c"
        }],
        "createDate": "Jan 24, 2018 1:16:38 PM",
        "eventName": "HostStatusChanged",
        "labels": [ {
            "key": "NewStatus",
            "operator": "Equal",
            "value": "Disconnected"
        }],
        "lastOpDate": "Jan 24, 2018 1:16:38 PM",
        "namespace": "ZStack/Host",
        "state": "Enabled",
        "uuid": "88c064e2f0004597b0a7161fbe9bcd0c"
    },
    "success": true
}
```

Parameters:

- namespace: the event namespace
- eventName: the event name



Note:

You can use `GetAllEventMetadata` to obtain system-defined events.

- actions: the event actions. Similar to alarm actions, you can only send notifications to SNS topics currently.

```
{
    "actionUuid": "2447db65cb46495e87b53d9afbad6936",
    "actionType": "sns"
```

```
}
```

In the sample above, `actionUuid` is the UUID of the SNS topic, and the value of `actionType` is `sns`, which is a fixed value. You can specify multiple alarm actions as needed.

- `labels`: the labels for filtering events. You can use labels to match specific events. For example, you can use the `NewStatus` label to subscribe to the event when the host status changes to `Disconnected`.

```
{
  "key": "NewStatus",
  "operator": "Equal",
  "value": "Disconnected"
}
```

The label field is the same as that used for creating an alarm.

6.1.3.4.2 UnsubscribeEvent

Unsubscribes from an event. For example,

```
UnsubscribeEvent uuid=88c064e2f0004597b0a7161fbe9bcd0c
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			2.3
deleteMode		Yes		2.3
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.3
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.3
timeout		Yes		

6.1.3.4.3 QueryEventSubscription

Queries an event subscription. For example,

```
QueryEventSubscription eventName=HostStatusChanged
```

Primitive Fields of Query

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			2.3.1
namespace	The namespace.			2.3.1
eventName	The event name.			2.3.1
state				2.3.1
actions	The action status.			2.3.1
labels	The action labels.			2.3.1
groupBy	Groups rows into subgroups based on values of columns or expressions. This field is equivalent to the Group By clause in MySQL, such as groupBy =type.	Yes		2.3.1
createDate	The creation date. For more information, see Resource Property .			2.3.1
lastOpDate	The last operation date. For more information, see Resource Property .			2.3.1
userTags	The user tags. For more	Yes		2.3.1

Name	Description	Optional	Valid Value	Starting Version
	information, see CreateUserTag .			
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.3.1

Nested and Expanded Fields of Query

Field	Inventory	Description	Starting Version
actions	Actions Inventory	The action status.	2.3
labels	Labels Inventory	The action labels.	2.3

6.1.3.4.4 UpdateEventSubscriptionLabel

Updates the label of an event subscription. For example,

```
UpdateEventSubscriptionLabel uuid=cfb859d412933a1da57ae99e2aa442ce key
=VMUuid value=27e59f9fe7ed46118a2f6b8a383ce494 operator=Equal
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The label UUID of the original event subscription.			3.9.0
key	The new name of the label.			3.9.0
value	The new value of the label.			3.9.0
operator	The new operator of the label.		<ul style="list-style-type: none"> • Regex • Equal 	3.9.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.9.0
systemTags	The system tags. For more	Yes		3.9.0

Name	Description	Optional	Valid Value	Starting Version
	information, see CreateSystemTag .			
timeout		Yes		

6.1.3.5 Text Template

When an alarm is triggered or a subscription event occurs, the SNS topic you specified before will receive the corresponding alarm messages or event messages. You can format the received messages by customizing the text template.

The default email text template is as follows:

```
The status of the alarm ${ALARM_NAME} changes to ${ALARM_CURRENT_STATUS}.

Alarm details:
UUID: ${ALARM_UUID}
Resource namespace: ${ALARM_NAMESPACE}
Trigger condition: ${ALARM_METRIC} ${ALARM_COMPARISON_OPERATOR} ${ALARM_THRESHOLD}
Trigger condition duration: ${ALARM_DURATION} seconds
Previous status: ${ALARM_PREVIOUS_STATUS}
Current value: ${ALARM_CURRENT_VALUE}
Label: ${ALARM_LABELS.join(",")}
```

If you do not modify the text template, the content in the alarm email you received is similar to the content above. Only the variables in the text template will be replaced with the corresponding alarm content. For example, \${ALARM_NAME} may be changed to *Web server CPU*. You can use the variables to customize your own alarm text templates.

Currently, you can customize a text template if you select the email or DingTalk endpoint. The text template for the HTTP webhook endpoint cannot be customized because the template uses the JSON format. The HTTP text template is as follows:

```
{
  "ALARM_UUID": "27f8791237ed45b4815be744a2b2fd8a",
  "ALARM_NAMESPACE": "ZStack/VM",
  "ALARM_LABELS": [ "VMUuidEqual126643ce4b5604b128e3f7bb3d61ef779" ],
  "ALARM_PREVIOUS_STATUS": "InsufficientData",
  "ALARM_THRESHOLD": 10.0,
  "ALARM_METRIC": "CPUUsedUtilization",
  "ALARM_DURATION": 1,
  "ALARM_CURRENT_VALUE": 101.0,
  "ALARM_COMPARISON_OPERATOR": "GreaterThan",
  "ALARM_CURRENT_STATUS": "Alarm",
  "ALARM_NAME": "alarm"
```

}

Template Variables

ZWatch provides a set of template variables for alarms and event subscriptions. These variables can be referenced by alarm text templates. When generating alarm text, ZWatch replaces these variables with the corresponding values of an alarm or event. The syntax used by the alarm text template is based on the [Groovy GString Template](#). Most users can reference the variable values by simply using \${ }.

The following are variables supported by alarms and event subscriptions, respectively:

- **Alarm variables**

- ALARM_NAME: the alarm name
- ALARM_UUID: the alarm UUID
- ALARMCOMPARISONOPERATOR: the alarm operator
- ALARM_METRIC: the alarm metric
- ALARM_NAMESPACE: the alarm namespace
- ALARM_THRESHOLD: the alarm threshold
- ALARMLABELS: *the alarm label array. You can use *\${ALARMLABELS.join(",")}* to combine the labels into a comma-separated string.*
- ALARM_DURATION: the alarm duration when a metric value exceeds the threshold
- ALARMPREVIOUSSTATUS: the alarm status before the alarm is triggered
- ALARMCURRENTSTATUS: the current status of the alarm
- ALARMCURRENTVALUE: the metric value when the alarm is triggered

- **Event subscription variables**

- EVENT_NAMESPACE: the event namespace
- EVENT_NAME: the event name
- EVENTLABELS: *the event label array. You can use *\${EVENTLABELS.join(",")}* to combine the labels into a comma-separated string.*
- EVENTEMERGENCYLEVEL: the event emergency
- EVENTRESOURCEID: the ID of the resource where the event occurred
- EVENTRESOURCENAME: the name of the resource where the event occurred

- EVENT_ERROR: If the event is related to an error, such as the network error that resulted in a host disconnection event, this field contains a string that describes the error. If no error exists, the field is an empty string expressed as “”.
- EVENT_TIME: the time when the event occurred. This variable is a string.
- PARAMEVENTSUBSCRIPTION_UUID: the UUID of the subscribed event.

6.1.3.5.1 CreateSNSTextTemplate

Creates an SNS text template. For example,

```
CreateSNSTextTemplate name=my-template defaultTemplate=true applicationPlatformType=Email template="${ALARM_NAME} The status is changed to ${ALARM_CURRENT_STATUS}"
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
name	The resource name.			2.3
description	The detailed description of the resource.	Yes		2.3
applicationPlatformType	The type of the SNS application platform.			2.3
template	The template text.			2.3
recoveryTemplate	The recovery template text, which is a string.	Yes		3.4.0
defaultTemplate	Whether to set the template as the default template.	Yes		2.3
resourceUuid		Yes		2.3
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.3
systemTags	The system tags. For more	Yes		2.3

Name	Description	Optional	Valid Value	Starting Version
	information, see CreateSystemTag .			
timeout		Yes		

```
{
    "inventory": {
        "applicationPlatformType": "Email",
        "createDate": "Jan 24, 2018 7:40:02 PM",
        "defaultTemplate": true,
        "lastOpDate": "Jan 24, 2018 7:40:02 PM",
        "name": "my-template",
        "template": "${ALARM_NAME} The status is changed to ${ALARM_CURRENT_STATUS}",
        "uuid": "0ce9954a578b4795b02ff6b737aa86df"
    },
    "success": true
}
```

- applicationPlatformType: the type of the SNS application platform, including email, HTTP webhook, DingTalk, and SMS
- defaultTemplate: whether to set the template as the default template. If set to true, ZWatch uses this template to send alarm messages to the corresponding SNS endpoint. For example , if applicationPlatformType=Email and defaultTemplate=true, all alarm messages sent via email will use this alarm template. You can use this field to create multiple templates. To use a certain template, you only need to set the defaultTemplate field of the template to true.
- template: the template text

6.1.3.5.2 DeleteSNSTextTemplate

Deletes an SNS text template. For example,

```
DeleteSNSTextTemplate uuid=36c27e8ff05c4780bf6d2fa65700f22e
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			2.3
deleteMode		Yes		2.3
userTags	The user tags. For more	Yes		2.3

Name	Description	Optional	Valid Value	Starting Version
	information, see CreateUserTag .			
systemTags	The user tags. For more information, see CreateSystemTag .	Yes		2.3
timeout		Yes		

6.1.3.5.3 UpdateSNSTextTemplate

Updates an SNS text template. For example,

```
UpdateSNSTextTemplate uuid=0ce9954a578b4795b02ff6b737aa86df defaultTemplate=false
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			2.3
name	The resource name.	Yes		2.3
description	The detailed description of the resource.	Yes		2.3
template	The template text.	Yes		2.3
recoveryTemplate	The recovery template text, which is a string.	Yes		3.4.0
defaultTemplate	Whether to set the template as the default template.	Yes		2.3
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.3

Name	Description	Optional	Valid Value	Starting Version
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.3
timeout		Yes		

6.1.3.5.4 QuerySNSTextTemplate

Queries an SNS text template. For example,

```
QuerySNSTextTemplate template~=%This is the SNS text templated to be queried.%
```

Primitive Fields of Query

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			2.3
name	The name. For more information, see Resource Property .			2.3
description	The description. For more information, see Resource Property .	Yes		2.3
applicationPlatformType	The type of the SNS application platform.			2.3
template	The template text.			2.3
defaultTemplate	Whether to set the template as the default template.			2.3
groupBy	Groups rows into subgroups	Yes		2.3

Name	Description	Optional	Valid Value	Starting Version
	based on values of columns or expressions. This field is equivalent to the Group By clause in MySQL, such as <code>groupBy =type</code> .			
createDate	The creation date. For more information, see Resource Property .			2.3
lastOpDate	The last operation date. For more information, see Resource Property .			2.3
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.3
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.3

6.1.3.5.5 CreateAliyunSmsSNSTextTemplate

Creates an Aliyun SMS SNS text template. For example,

```
CreateAliyunSmsSNSTextTemplate sign=test alarmTemplateCode=SMS_153055
065 eventTemplateCode=SMS_153055066 name=aliyunSMS applicatio
nPlatformType=AliyunSms template=Alarm ${ALARM_NAME} changes status to
${ALARM_CURRENT_STATUS}
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
sign	The SMS signature.			3.7.0

Name	Description	Optional	Valid Value	Starting Version
alarmTemplateCode	The resource alarm template code.			3.7.0
eventTemplateCode	The event alarm template code.			3.7.0
eventTemplate	The event alarm template text.	Yes		3.7.0
name	The template name.			3.7.0
description	The detailed description of the template.	Yes		3.7.0
applicationPlatformType	The type of the SNS application platform.			3.7.0
template	The resource alarm template text.			3.7.0
recoveryTemplate	The recovery template text.	Yes		3.7.0
defaultTemplate	Whether to set the template as the default template.	Yes		3.7.0
resourceUuid		Yes		3.7.0
tagUuids	The tag UUID list.	Yes		3.7.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.7.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.7.0
timeout		Yes		

6.1.3.5.6 UpdateAliyunSmsSNSTextTemplate

Updates an Aliyun SMS SNS text template. For example,

```
UpdateAliyunSmsSNSTextTemplate uuid=d7e89644ef273ca8baf451bf845553fd
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
alarmTemplateCode	The resource alarm template code.	Yes		3.7.0
sign	The SMS message signature.	Yes		3.7.0
eventTemplateCode	The event alarm template code.	Yes		3.7.0
eventTemplate	The event alarm template text.	Yes		3.7.0
uuid	The template UUID.			3.7.0
name	The template name.	Yes		3.7.0
description	The detailed description of the template.	Yes		3.7.0
template	The resource alarm template text.	Yes		3.7.0
recoveryTemplate	The recovery template text.	Yes		3.7.0
defaultTemplate	Whether to set the template as the default template.	Yes		3.7.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.7.0

Name	Description	Optional	Valid Value	Starting Version
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.7.0
timeout		Yes		

6.1.3.5.7 QueryAliyunSmsSNSTextTemplate

Queries an Aliyun SMS SNS text template. For example,

```
QueryAliyunSmsSNSTextTemplate
```

6.1.3.6 Audit

ZWatch provides the API audit feature, which allows you to view API operations on a certain resource or all resources. The following is a sample of an API audit record:

```
{
    "apiName": "org.zstack.header.vm.APICreateVmInstanceMsg",
    "duration": 3260,
    "operatorAccountUuid": "36c27e8ff05c4780bf6d2fa65700f22e",
    "requestDump": "{ \"description\": \"\", \"l3NetworkUuids\": [ \"d914360d1b2a42a68f91df0c8863f716\" ], \"dataDiskOfferingUuids\": [ ], \"name\": \"vm\", \"systemTags\": [ \"usbRedirect::false\", \"vmConsoleMode::vnc\" ], \"instanceOfferingUuid\": \"5c5720c9feba4196a9a9d3cb844a77b7\", \"strategy\": \"InstantStart\", \"imageUuid\": \"1194b7d10d3345e08b21847165f0b349\" }",
    "requestUuid": "30a3cebb29173fa7a60f4e96d397ef1d",
    "resourceType": "VmInstanceVO",
    "resourceUuid": "ec54f53da5204a63954beea0a7782804",
    "responseDump": "{ \"inventory\": { \"uuid\": \"ec54f53da5204a63954beea0a7782804\", \"name\": \"vm\", \"description\": \"\", \"zoneUuid\": \"fad25e2987a746f186896e3234469263\", \"clusterUuid\": \"6da3fd94b7c5412088e722a773f17796\", \"imageUuid\": \"1194b7d10d3345e08b21847165f0b349\", \"hostUuid\": \"9778a9bc6db84ea9847c2023f13cbc1e\", \"lastHostUuid\": \"9778a9bc6db84ea9847c2023f13cbc1e\", \"instanceOfferingUuid\": \"5c5720c9feba4196a9a9d3cb844a77b7\", \"rootVolumeUuid\": \"726f19724a3e4783801d86a7021d2be1\", \"platform\": \"Linux\", \"defaultL3NetworkUuid\": \"d914360d1b2a42a68f91df0c8863f716\", \"type\": \"UserVm\", \"hypervisorType\": \"KVM\", \"memorySize\": 1073741824, \"cpuNum\": 1, \"cpuSpeed\": 0, \"allocatorStrategy\": \"LeastVmPreferredHostAllocatorStrategy\", \"createDate\": \"Dec 21, 2017 1:14:02 PM\", \"lastOpDate\": \"Dec 21, 2017 1:14:05 PM\", \"state\": \"Running\", \"vmNics\": [ { \"uuid\": \"6ddc4064387c4f0f88d5d1e422a4f22a\", \"vmInstanceUuid\": \"ec54f53da5204a63954beea0a7782804\", \"l3NetworkUuid\": \"d914360d1b2a42a68f91df0c8863f716\", \"ip\": \"10.0.0.47\", \"mac\": \"fa:8e:06:53:90:00\", \"netmask\": \"255.255.255.0\", \"gateway\": \"10.0.0.1\", \"deviceId\": 0, \"createDate\": \"Dec 21, 2017 1:14:02 PM\", \"lastOpDate\": \"Dec 21, 2017 1:14:02 PM\" } ], \"allVolumes\": [ { \"uuid\": \"726f19724a3e4783801d86a7021d2be1\", \"name\": \"ROOT-for-vm\", \"description\": \"Root volume for VM[uuid:ec54f53da5204a63954beea0a7782804]\", \"primaryStorageUuid\": \"4966a9f63d274ad0bfc2f59367bf7459\", \"vmInstanceUuid\": \"ec54f53da5204a63954beea0a7782804\", \"rootImageUuid\": \"1194b7d10d3345e08b21847165f0b349\", \"installPath\": \"/Cloud_ps/rootVolumes/acct-36c27e8ff05c4780bf6d2fa65700f22e/vol-726f19724a\" } ] }
```

```

3e4783801d86a7021d2be1/726f19724a3e4783801d86a7021d2be1.qcow2",
  "type": "Root", "format": "qcow2", "size": 12682240, "actualSize": 7995392,
  "deviceId": 0, "state": "Enabled", "status": "Ready", "createDate": "Dec 21,
  2017 1:14:02 PM", "lastOpDate": "Dec 21, 2017 1:14:02 PM", "isShareable": false}]], "success": true},
    "responseUuid": "d6c29c03c894439983f1af06cb862a9",
    "sessionUuid": "68e54d9719ef42f0807a66eef5483bed",
    "time": 1513833245301
}

```

- apiName: the API name
- duration: the time consumed to perform the API, in milliseconds
- operatorAccountUuid: the UUID of the account that performs the API
- requestDump: the API request. Sensitive fields (such as passwords) are not contained in the request.
- responseDump: the API response
- requestUuid: the API request UUID
- resourceType: the resource type. This field does not exist if the API is not a resource-specific operation
- responseUuid: the API response UUID
- sessionUuid: the account session UUID
- time: the time when the API request is received, in milliseconds. This field is an epoch time.
- error: If an API fails to be performed, this field will contain a string that describes the error. This field will not be displayed if the API is successfully performed.

The audit feature records only operation-related APIs, including the create, modify, and delete operation. Read APIs (including all Query and Get APIs) are not recorded. If an API operation is associated with multiple resources, such as attaching primary storage to a cluster, an audit record will be generated for each resource.

6.1.3.6.1 GetAuditData

Obtains data audit records. The returned records are sorted by the `time` field in descending order.

For example,

```
GetAuditData conditions=error=~".+"
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
startTime	The start time.	Yes		2.3

Name	Description	Optional	Valid Value	Starting Version
endTime	The end time.	Yes		2.3
limit	The maximum number of returned records.	Yes		2.3
labels	The filter label list .	Yes		2.3
auditType	The audit type.	Yes	<ul style="list-style-type: none"> • Login • Resource 	3.5.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.3
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.3
timeout		Yes		

- startTime: the start time, in milliseconds. This parameter is an epoch time.
- endTime: the end time, in milliseconds. This parameter is an epoch time. You can obtain the audit records in a certain period of time by specifying the startTime and endTime parameters.
- limit: the maximum number of returned records. If the limit is not specified, the default value is 100. If the limit is greater than the maximum number of returned records, all records are returned.
- conditions: the filter condition array. You can specify filter conditions to return specific records. Filter conditions are expressed in **condition operator value** format, such as `error=~".+"` (note that there are no spaces on either side of the operator). Operators can be = (equal to) or =~ (regular expressions). The filter condition includes:
 - resourceUuid: the resource UUID
 - resourceType: the resource type
 - apiName: the API name
 - error: the error message

— operatorAccountUuid: the account UUID



Note:

You can use `error=~" . + "` to match all APIs whose `error` field is not empty. That is, `error =~" . + "` indicates to return all failed APIs, while `error = " "` indicates to return all successful APIs.

6.1.4 SNS

The Simple Notification System (SNS) is composed of three major parts: topic, application platform, and application endpoint.

- Topic: a logical access point that acts as a communication channel to receive messages. For example, ZWatch can send alarm messages to a topic, and then the topic distributes the messages to the corresponding subscribed endpoints.
- Application platform: the platform through which messages are sent to specific endpoints. For example, an email server is needed if you want to send messages to an email endpoint. The email server mentioned above is an application platform. Currently, two platforms are available: email server and system platform. The system platform is used to send messages to endpoints that do not need a platform, such as DingTalk and HTTP webhook.
- Application endpoint: the endpoint used to receive messages. Currently, the following application endpoints are available: system endpoint, email, DingTalk, HTTP application, and short message service, and Microsoft Service. Before an endpoint can receive messages from a topic, the endpoint must be subscribed to the topic.



Note:

Topic has a many-to-many relationship with endpoint. That is, a topic can be subscribed by multiple endpoints, and an endpoint can also subscribe to multiple topics.

When an external system (such as ZWatch) sends a message to a topic, the topic will find all the endpoints that subscribed to the topic, and then send the message through the platform to which the endpoints belong. Assume that you subscribed an email endpoint (an email address) to a topic. When the topic receives an alarm message, it will send an alarm email to the endpoint represented by the email address through the platform (an email server) to which the email endpoint belongs.

Basic Workflow

The basic workflow of SNS is as follows:

1. Create an SNS topic to receive alarm messages from external systems such as ZWatch.
2. Create an application platform (an email server) if you use the email endpoint.
3. Create an endpoint and subscribe the endpoint to the SNS topic you created in Step 1.

6.1.4.1 CreateSNSTopic

Creates a topic. For example,

```
CreateSNSTopic name=alarm-topic

{
    "inventory": {
        "createDate": "Jan 25, 2018 8:28:01 PM",
        "lastOpDate": "Jan 25, 2018 8:28:01 PM",
        "name": "alarm-topic",
        "state": "Enabled",
        "uuid": "e034cef9ad3d43e0b3f9c0a316a0f25a"
    },
    "success": true
}
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
name	The resource name.			2.3
description	The detailed description of the resource.	Yes		2.3
resourceUuid		Yes		2.3
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.3
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.3
timeout		Yes		

6.1.4.2 DeleteSNSTopic

Deletes a topic. After a topic is deleted, the associated endpoint will be automatically unsubscribed from the topic. For example,

```
DeleteSNSTopic uuid=e034cef9ad3d43e0b3f9c0a316a0f25a
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			2.3
deleteMode		Yes		2.3
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.3
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.3
timeout		Yes		

6.1.4.3 ChangeSNSTopicState

Enables or disables a topic. After a topic is disabled, messages sent to the topic are automatically ignored and will not be distributed to the subscribed endpoint.

```
ChangeSNSTopicState uuid=e034cef9ad3d43e0b3f9c0a316a0f25a stateEvent=disable
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			2.3
stateEvent	The state event.		<ul style="list-style-type: none"> • enable • disable 	2.3
userTags	The user tags. For more	Yes		2.3

Name	Description	Optional	Valid Value	Starting Version
	information, see CreateUserTag .			
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.3
timeout		Yes		

6.1.4.4 UpdateSNSTopic

Changes the name of a topic, or modifies the topic description. For example,

```
UpdateSNSTopic name=new-topic-name uuid=e034cef9ad3d43e0b3f9c0a316a0f25a
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			2.3
name	The resource name.	Yes		2.3
description	The detailed description of the resource.	Yes		2.3
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.3
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.3
timeout		Yes		

6.1.4.5 QuerySNSTopic

Queries a topic. For example,

```
QuerySNSTopic uuid=b86c9016b4f24953a9edefb53ca0678c
```

Primitive Fields of Query

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			2.3
name	The name. For more information, see Resource Property .			2.3
description	The description. For more information, see Resource Property .	Yes		2.3
state	The state.			2.3
groupBy	Groups rows into subgroups based on values of columns or expressions. This field is equivalent to the Group By clause in MySQL, such as <code>groupBy =type</code> .	Yes		2.3
createDate	The creation date. For more information, see Resource Property .			2.3
lastOpDate	The last operation date. For more information,			2.3

Name	Description	Optional	Valid Value	Starting Version
	see Resource Property .			
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.3
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.3

Nested and Expanded Fields of Query

Field	Inventory	Description	Starting Version
endpoints	Endpoints Inventory		2.3

6.1.4.6 CreateSNSEmailPlatform

Creates an email platform (email server). For example,

```
CreateSNSEmailPlatform name=my-sftp-server smtpServer=mail.zstack.org
smtpPort=25 username=support@cloud.io password=password
```

```
{
    "inventory": {
        "createDate": "Jan 25, 2018 8:43:32 PM",
        "lastOpDate": "Jan 25, 2018 8:43:32 PM",
        "name": "my-sftp-server",
        "smtpPort": 25,
        "smtpServer": "mail.zstack.org",
        "state": "Enabled",
        "type": "Email",
        "username": "support@cloud.io",
        "uuid": "bec03e2d93224c7381782833e8b685ca"
    },
    "success": true
}
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
smtpServer	The SMTP server address.			2.3
smtpPort	The SMTP port.			2.3

Name	Description	Optional	Valid Value	Starting Version
username	The username.			2.3
password	The password.	Yes		2.3
name	The resource name.			2.3
description	The detailed description of the resource.	Yes		2.3
resourceUuid		Yes		2.3
encryptType		Yes	<ul style="list-style-type: none"> • SSL • STARTTLS • NONE 	2.3
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.3
systemTags	The user tags. For more information, see CreateSystemTag .	Yes		2.3
timeout		Yes		



Note:

- When you add an email server, the system will automatically detect whether the username, password, email server address, email server port, and encryption type are correct. The waiting time does not exceed 5 seconds.

6.1.4.7 ValidateSNSEmailPlatform

Tests whether an email platform (email server) is available. For example,

```
ValidateSNSEmailPlatform uuid=bec03e2d93224c7381782833e8b685ca
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			2.3
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.3
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.3
timeout		Yes		

6.1.4.8 DeleteSNSApplicationPlatform

Deletes an application platform. For example,

```
DeleteSNSApplicationPlatform uuid=bec03e2d93224c7381782833e8b685ca
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			2.3
deleteMode		Yes		2.3
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.3
systemTags	The system tags. For more information, see	Yes		2.3

Name	Description	Optional	Valid Value	Starting Version
	CreateSystemTag .			
timeout		Yes		

6.1.4.9 QuerySNSEmailPlatform

Queries an email platform (email server). For example,

```
QuerySNSEmailPlatform smtpServer=mail.zstack.org
```

6.1.4.10 UpdateSNSApplicationPlatform

Updates an application platform. For example,

```
UpdateSNSApplicationPlatform uuid=b86c9016b4f24953a9edefb53ca0678c
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			2.3
name	The resource name.	Yes		2.3
description	The detailed description of the resource.	Yes		2.3
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.3
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.3
timeout		Yes		

6.1.4.11 QuerySNSApplicationPlatform

Queries an application platform. For example,

```
QuerySNSApplicationPlatform uuid=b3454k611687h23345jh24hk5
```

Primitive Fields of Query

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			2.3
name	The name. For more information, see Resource Property .			2.3
description	The description. For more information, see Resource Property .	Yes		2.3
type	The type.			2.3
groupBy	Groups rows into subgroups based on values of columns or expressions. This field is equivalent to the Group By clause in MySQL, such as <code>groupBy =type</code> .	Yes		2.3
createDate	The creation date. For more information, see Resource Property .			2.3
lastOpDate	The last operation date. For more information,			2.3

Name	Description	Optional	Valid Value	Starting Version
	see Resource Property .			
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.3
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.3

Nested and Expanded Fields of Query

Field	Inventory	Description	Starting Version
endpoints	Endpoints Inventory		2.3

6.1.4.12 ChangeSNSApplicationPlatformState

Enables or disables an application platform. After the platform is disabled, you can no longer send emails to an endpoint through this platform.

```
ChangeSNSApplicationPlatformState uuid=bec03e2d93224c7381782833e8b685
ca stateEvent=disable
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			2.3
stateEvent	The state event.		<ul style="list-style-type: none"> • enable • disable 	2.3
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.3
systemTags	The system tags. For more information, see	Yes		2.3

Name	Description	Optional	Valid Value	Starting Version
	CreateSystemTag .			
timeout		Yes		

6.1.4.13 CreateSNSEmailEndpoint

Creates an email endpoint. For example,

```
CreateSNSEmailEndpoint name=operator email=operator@zstack.org
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
email	The email address.			2.3.0
emails		Yes		3.7.0
name	The resource name.			2.3.0
description	The detailed description of the resource.	Yes		2.3.0
platformUuid	The application platform UUID.	Yes		2.3.0
resourceUuid		Yes		2.3.0
tagUuids	The tag UUID list.	Yes		3.7.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.3
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.3
timeout		Yes		

```
{
    "inventory": {
        "createDate": "Jan 25, 2018 8:57:14 PM",
        "id": "4a5a2a2a-2a2a-4a5a-a2a2-a2a2a2a2a2a",
        "type": "SNSEmail"
    }
}
```

```

        "email": "operator@zstack.org",
        "lastOpDate": "Jan 25, 2018 8:57:14 PM",
        "name": "operator",
        "platformUuid": "bec03e2d93224c7381782833e8b685ca",
        "state": "Enabled",
        "type": "Email",
        "uuid": "b03b125230b0406ea198919954ae3928"
    },
    "success": true
}

```

- email: the email address to receive the email
- platformUuid: the email server UUID

6.1.4.14 QuerySNSEmailEndpoint

Queries an email endpoint. For example,

```
QuerySNSEmailEndpoint email~=%@zstack.org"
```

6.1.4.15 CreateSNSHttpEndpoint

Creates an HTTP webhook endpoint. For example,

```
CreateSNSHttpEndpoint name=http url=http://localhost:8080/webhook-url
username=url-username password=url-password
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
url	The HTTP webhook URL.			2.3
username	The username of the URL.	Yes		2.3
password	The password of the URL.	Yes		2.3
name	The resource name.			2.3
description	The detailed description of the resource.	Yes		2.3
resourceUuid		Yes		2.3
platformUuid		Yes		2.3
userTags	The user tags. For more	Yes		2.3

Name	Description	Optional	Valid Value	Starting Version
	information, see CreateUserTag .			
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.3
timeout		Yes		

```
{
    "inventory": {
        "createDate": "Jan 25, 2018 9:01:30 PM",
        "lastOpDate": "Jan 25, 2018 9:01:30 PM",
        "name": "http",
        "platformUuid": "02d24b9b0a7f4ee1846f15cda248ceb7",
        "state": "Enabled",
        "type": "HTTP",
        "url": "http://localhost:8080/webhook-url",
        "username": "url-username",
        "uuid": "d9d8186eed245e0b18ec8deef185fb7"
    },
    "success": true
}
```

- url: the HTTP webhook URL
- username: Optional. The username of the URL. This parameter uses the basic authentication mode of HTTP.
- password: Optional. The password of the URL. This parameter uses the basic authentication mode of HTTP.

6.1.4.16 QuerySNSHttpEndpoint

Queries an HTTP webhook endpoint. For example,

```
QuerySNSHttpEndpoint url~=http%
```

6.1.4.17 CreateNSNDingTalkEndpoint

Creates a DingTalk endpoint, which is a DingTalk robot. For example,

```
CreateNSNDingTalkEndpoint name=dingding url=https://oapi.dingtalk.com/robot/send?access_token=128f268950234c6c2f065fe88be6cc26d780e9d9
```

```
863d63eae12be831605345 atPersonPhoneNumbers=+86-12900010002,+86-13977889933
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
url	The webhook URL of the DingTalk robot.			2.3
atAll	Whether to notify all (@All) members in a DingTalk group.	Yes		2.3
atPersonPhoneNumberNumbers	The phone number of the group member to be notified (the @ member).	Yes		2.3
name	The resource name.			2.3
description	The detailed description of the resource.	Yes		2.3
resourceUuid		Yes		2.3
platformUuid		Yes		2.3
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.3
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.3
timeout		Yes		

```
{
  "inventory": {
    "atAll": false,
    "atPersonPhoneNumbers": [
      "+86-12900010002",
      "+86-13977889933"
    ]
  }
}
```

```

        ],
        "createDate": "Jan 25, 2018 9:11:00 PM",
        "lastOpDate": "Jan 25, 2018 9:11:00 PM",
        "name": "dingding",
        "platformUuid": "02d24b9b0a7f4ee1846f15cda248ceb7",
        "state": "Enabled",
        "type": "DingTalk",
        "url": "https://oapi.dingtalk.com/robot/send?access_token=128f268950234c6c2f065fe88be6cc26d780e9d9863d63eae12be831605345",
        "uuid": "2663ecb5356a4fbef6cde202b2e6eaf1"
    },
    "success": true
}

```

- url: the webhook URL of the DingTalk robot
- atAll: If set to `true`, all members in the DingTalk group will be notified after a message is sent through DingTalk, and the `atPersonPhoneNumbers` parameter will be ignored.
- atPersonPhoneNumbers: the phone number of the group member to be notified (the `@member`). DingTalk is registered with a phone number, through which you can notify (@) members in a target DingTalk group.



Note:

DingTalk displays phone numbers with country calling codes. You can check a complete phone number, such as +86-18977550789, by clicking the profile icon in DingTalk.

6.1.4.18 AddSNSDingTalkAtPerson

Adds the phone number of a user to be notified (@) to a DingTalk endpoint. For example,

```
AddSNSDingTalkAtPerson endpointUuid=2663ecb5356a4fbef6cde202b2e6eaf1
phoneNumber=+86-18977550789
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
phoneNumber	The phone number of the DingTalk user. (Users register DingTalk with their phone numbers.)			2.3
endpointUuid	The UUID of the DingTalk endpoint.			2.3

Name	Description	Optional	Valid Value	Starting Version
resourceUuid		Yes		2.3
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.3
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.3
timeout		Yes		

6.1.4.19 RemoveSNSDingTalkAtPerson

Removes the phone number of a user to be notified (@) from a DingTalk endpoint. For example,

```
RemoveSNSDingTalkAtPerson endpointUuid=2663ecb5356a4fbebe6cde202b2e6ea
f1 phoneNumber=1897755078
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
endpointUuid	The UUID of the DingTalk endpoint.			2.3
phoneNumber	The phone number of the user to be removed.			2.3
deleteMode				2.3
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.3
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.3

Name	Description	Optional	Valid Value	Starting Version
timeout		Yes		

6.1.4.20 QuerySNSDingTalkEndpoint

Queries a DingTalk endpoint. For example,

```
QuerySNSDingTalkEndpoint atAll=false
```

6.1.4.21 DeleteSNSApplicationEndpoint

Deletes an application endpoint, including email, DingTalk, HTTP webhook, and SMS. For example,

```
DeleteSNSApplicationEndpoint uuid=2663ecb5356a4fbef6cde202b2e6eaf1
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			2.3
deleteMode		Yes		2.3
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.3
systemTags	The user tags. For more information, see CreateSystemTag .	Yes		2.3
timeout		Yes		

6.1.4.22 UpdateSNSApplicationEndpoint

Changes the name of an application endpoint, or modifies the endpoint description. If you want to update specific fields (such as `url` and `email`) of the endpoint, the endpoint will be deleted and then rebuilt. For example,

```
UpdateSNSApplicationEndpoint uuid=2663ecb5356a4fbebe6cde202b2e6eaf1
name=my-endpoint
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			2.3
name	The resource name.	Yes		2.3
description	The detailed description of the resource.	Yes		2.3
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.3
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.3
timeout		Yes		

6.1.4.23 QuerySNSApplicationEndpoint

Queries an application endpoint. For example,

```
QuerySNSApplicationEndpoint
```

6.1.4.24 ChangeSNSApplicationEndpointState

Changes the state of an application endpoint. For example,

```
ChangeSNSApplicationEndpointState uuid=b86c9016b4f24953a9edefb53ca067
8c stateEvent=enable
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			2.3
stateEvent	The state event.		<ul style="list-style-type: none"> • enable • disable 	2.3
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.3
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.3
timeout		Yes		

6.1.4.25 CreateSNSAliyunSmsEndpoint

Creates an Aliyun SMS endpoint. For example,

```
CreateSNSAliyunSmsEndpoint accessKeyUuid=4eb00e2bf95bp5s505e6
eccd647d9k35 name=AliyunSms
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
accessKeyUuid	The UUID of Aliyun access key.			3.7.0
receivers	The SMS message receiver.	Yes		3.7.0
name	The endpoint name.			3.7.0
description	The detailed description of the endpoint.	Yes		3.7.0
platformUuid		Yes		3.7.0
resourceUuid		Yes		3.7.0
tagUuids	The tag UUID list.	Yes		3.7.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.7.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.7.0
timeout		Yes		

6.1.4.26 ValidateSNSAliyunSmsEndpoint

Validates an Aliyun SMS endpoint. For example,

```
ValidateSNSAliyunSmsEndpoint uuid=56304854f10730adac30a81c1e8e8de4
phoneNumbers=13456788765
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The endpoint UUID.			3.7.0
phoneNumbers	The phone number of the validation SMS message receiver.			3.7.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.7.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.7.0
timeout		Yes		

6.1.4.27 AddSNSSmsReceiver

Adds an SMS message receiver. For example,

```
AddSNSSmsReceiver phoneNumber=18912345678 endpointUuid=e0a8e9de43
774027a486f3a47fa0b46c type=AliyunSms
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
phoneNumber	The phone number to receive SMS messages.			3.7.0
endpointUuid	The UUID of the SMS endpoint.			3.7.0

Name	Description	Optional	Valid Value	Starting Version
type	The type of the SMS endpoint.		• AliyunSms	3.7.0
description	The description of the SMS message receiver. .	Yes		3.7.0
resourceUuid		Yes		3.7.0
tagUuids	The tag UUID list.	Yes		3.7.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.7.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.7.0
timeout		Yes		

6.1.4.28 RemoveSNSSmsReceiver

Removes an SMS message receiver. For example,

```
RemoveSNSSmsReceiver endpointUuid=196b91815e983d1397cb336a4fc9d054
phoneNumber=18812345678
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
endpointUuid	The UUID of the SMS endpoint.			3.7.0
phoneNumber	The phone number to receive SMS messages.			3.7.0
deleteMode		Yes		3.7.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.7.0

Name	Description	Optional	Valid Value	Starting Version
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.7.0
timeout		Yes		

6.1.4.29 QuerySNSSmsEndpoint

Queries an SMS endpoint. For example,

```
QuerySNSSmsEndpoint
```

Primitive Fields of Query

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			3.7.0
name	The name. For more information, see Resource Property .			3.7.0
description	The description. For more information, see Resource Property .	Yes		3.7.0
type				3.7.0
platformUuid				3.7.0
groupBy	Groups rows into subgroups based on values of columns or expressions. This field is equivalent to the Group By clause in MySQL.	Yes		3.7.0

Name	Description	Optional	Valid Value	Starting Version
	, such as groupBy =type.			
createDate	The creation date. For more information, see Resource Property .			3.7.0
lastOpDate	The last operation date. For more information, see Resource Property .			3.7.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.7.0

Nested and Expanded Fields of Query

Field	Inventory	Description	Starting Version
platform			3.7.0
receivers			3.7.0
topics	Primitive Fields of Query		3.7.0

6.1.4.30 AddEmailAddressToSNSEmailEndpoint

Adds an email address to an email endpoint. For example,

```
AddEmailAddressToSNSEmailEndpoint emailAddress=example@cloud.io
endpointUuid=74220bbf0d8b3c6b943a294c2679ca69
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
emailAddress	The email address.			3.7.0
endpointUuid	The endpoint UUID.			3.7.0

Name	Description	Optional	Valid Value	Starting Version
resourceUuid		Yes		3.7.0
tagUuids	The tag UUID list.	Yes		3.7.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.7.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.7.0
timeout		Yes		

6.1.4.31 UpdateEmailAddressOfSNSEmailEndpoint

Updates the email address of an email endpoint. For example,

```
UpdateEmailAddressOfSNSEmailEndpoint emailAddressUuid=cb2b3d85e0da3a299c52c23510ba15dd endpointUuid=f305528eb6773a73beac3f94f79d3017
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
emailAddressUuid	The email address UUID.			3.7.0
endpointUuid	The endpoint UUID.			3.7.0
emailAddress	The address of the new email.	Yes		3.7.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.7.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.7.0
timeout		Yes		

6.1.4.32 DeleteEmailAddressOfSNSEmailEndpoint

Deletes the email address of an email endpoint. For example,

```
DeleteEmailAddressOfSNSEmailEndpoint emailAddressUuid=c9d1789432
133840862986db31a8e3fb endpointUuid=7671c40279e23d1cba927a5726957fc
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
emailAddressUuid				3.7.0
endpointUuid				3.7.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.7.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.7.0
timeout		Yes		

6.1.4.33 QuerySNSEmailAddress

Queries the email address of an email endpoint. For example,

```
QuerySNSEmailAddress emailAddress=test@cloud.io
```

Primitive Fields of Query

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			3.7.0
emailAddress				3.7.0
endpointUuid				3.7.0
groupBy	Groups rows into subgroups based on values	Yes		3.7.0

Name	Description	Optional	Valid Value	Starting Version
	of columns or expressions. This field is equivalent to the Group By clause in MySQL, such as <code>groupBy =type</code> .			
createDate	The creation date. For more information, see Resource Property .			3.7.0
lastOpDate	The last operation date. For more information, see Resource Property .			3.7.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.7.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.7.0

Sample response:

```
{
  "inventories": [
    {
      "uuid": "102431efdb133a70b7e04347de22e396",
      "emailAddress": "test@cloud.io",
      "endpointUuid": "4ff65a1d7762348495dd0c4da110d7cd",
      "createDate": "Oct 9, 2019 10:45:40 AM",
      "lastOpDate": "Nov 14, 2017 10:20:57 PM"
    }
  ]
}
```

{}

6.1.4.34 CreateSNSMicrosoftTeamsEndpoint

Creates a Microsoft Teams endpoint. For example,

```
CreateSNSMicrosoftTeamsEndpoint url=http://teams-robot-url name=example
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
url	The connector URL.			3.10.0
name	The resource name. For more information, see Resource Property .			3.10.0
description	The detailed description of the resource. For more information, see Resource Property .	Yes		3.10.0
platformUuid	The platform UUID.	Yes		3.10.0
resourceUuid	The resource UUID.	Yes		3.10.0
tagUuids	The tag UUID list.	Yes		3.10.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.10.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.10.0
timeout		Yes		

6.1.4.35 QuerySNSMicrosoftTeamsEndpoint

Queries a Microsoft Teams endpoint. For example,

```
QuerySNSMicrosoftTeamsEndpoint uuid=e18d0fd90b513f71889d4c2dd38879bf
```

Primitive Fields of Query

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID. For more information, see Resource Property .	Yes		3.10.0
createDate	The creation date. For more information, see Resource Property .	Yes		3.10.0
description	The detailed description of the resource. For more information, see Resource Property .	Yes		3.10.0
groupBy	Groups rows into subgroups based on values of columns or expressions. This field is equivalent to the Group By clause in MySQL, such as groupBy =type.	Yes		3.10.0
lastOpDate	The last operation date. For more information, see Resource Property .	Yes		3.10.0
name	The resource name. For more	Yes		3.10.0

Name	Description	Optional	Valid Value	Starting Version
	information, see Resource Property .			
platformUuid	The platform UUID.	Yes		3.10.0
state	The state.	Yes		3.10.0
type	The type.	Yes		3.10.0
url	The connector URL.	Yes		3.10.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.10.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.10.0

Nested And Expanded Fields of Query

Field	Inventory	Description	Starting Version
platform	The platform inventory.		3.10.0
topics	The topics. For more information, see Primitive Fields of Query .		3.10.0

6.1.4.36 SubscribeSNSTopic

Subscribes an endpoint to a topic. After subscription, messages sent to the topic will be automatically sent to the endpoint. For example,

```
SubscribeSNSTopic endpointUuid=b03b125230b0406ea198919954ae3928
topicUuid=e034cef9ad3d43e0b3f9c0a316a0f25a
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
topicUuid	The topic UUID.			2.3
endpointUuid	The endpoint UUID.			2.3
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.3
systemTags	The user tags. For more information, see CreateSystemTag .	Yes		2.3
timeout		Yes		

6.1.4.37 QuerySNSTopicSubscriber

Queries a topic subscriber. That is, checks which endpoints are subscribed to a topic. For example,

```
QuerySNSTopicSubscriber topicUuid=71efab26b4f84a62b001ec9b222efe47
```

Primitive Fields of Query

Name	Description	Optional	Valid Value	Starting Version
topicUuid	The topic UUID.			2.3.1
endpointUuid	The endpoint UUID.			2.3.1
groupBy	Groups rows into subgroups based on values of columns or	Yes		2.3.1

Name	Description	Optional	Valid Value	Starting Version
	expressions. This field is equivalent to the Group By clause in MySQL , such as groupBy =type.			
createDate	The creation date. For more information, see Resource Property .			2.3.1
lastOpDate	The last operation date. For more information, see Resource Property .			2.3.1
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.3.1
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.3.1

Nested and Expanded Fields of Query

Field	Inventory	Description	Starting Version
endpoints	Endpoints Inventory		2.3.1
topics	Topics Inventory		2.3.1

6.1.4.38 UnsubscribeSNSTopic

Unsubscribes an endpoint from a topic. For example,

```
UnsubscribeSNSTopic endpointUuid=b03b125230b0406ea198919954ae3928
topicUuid=e034cef9ad3d43e0b3f9c0a316a0f25a
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
topicUuid	The topic UUID.			2.3
endpointUuid	The endpoint UUID.			2.3
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.3
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.3
timeout		Yes		

6.1.4.39 System Topic

SNS has some built-in system topics. Some predefined messages are sent to the system topics.

You can subscribe to these topics to obtain information of interest.



Note:

- System topics cannot be deleted or changed. UUIDs of system topics are predefined constant values.
- System topics can be hard coded.

6.1.4.39.1 System Alarm Topic

```
QuerySNSTopic name=system-alarm
```

```
{
    "inventories": [
        {
            "createDate": "Jan 10, 2018 12:11:09 AM",
```

```

        "description": "topic for reporting system defined alarms
",
        "lastOpDate": "Jan 10, 2018 12:11:09 AM",
        "name": "system-alarm",
        "state": "Enabled",
        "uuid": "e7d6f5e23bb74e99a2777126078b551c"
    }
],
"success": true
}

```

Alarms predefined by ZWatch send alarm messages to system alarm topics. You can use a system alarm topic as a custom alarm topic.

Use System HTTP Endpoint to Receive Messages from System Alarm Topics

An internal system (usually the UI) needs a way to receive messages from system alarm topics. You can use a system HTTP endpoint to act as the way mentioned above by configuring the following fields in zstack.properties:

```

sns.systemTopic.endpoints.http.url = The HTTP URL to receive POST
messages.
sns.systemTopic.endpoints.http.url.username = Optional. The username
of the HTTP request.
sns.systemTopic.endpoints.http.url.password = Optional. The password
of the HTTP request.

```

If you need to set the username or password, both fields need to be set at the same time.

Otherwise, the setting will not take effect. The HTTP endpoint can receive messages no matter the system alarm topic is enabled or disabled.



Note:

You can use the `zstack-configure` command to configure the fields mentioned above.

6.1.4.39.2 API Topic

```
QuerySNSTopic name=system-alarm
```

```
{
    "inventories": [
        {
            "createDate": "Jan 10, 2018 12:11:09 AM",
            "description": "the topic to publish API requests and
responses",
            "lastOpDate": "Jan 10, 2018 12:11:09 AM",
            "name": "api",
            "state": "Enabled",
            "uuid": "7bfa0eb8555b3528ace936edfd1d74f1"
        }
    ],
    "success": true
}
```

}

ZStack will send **all** API requests and responses to an API topic. You can subscribe to this topic to obtain API call status. The API topic can only be subscribed by HTTP endpoints. The messages received by an HTTP endpoint is the API text in JSON format.



Note:

The API requests received by an API topic are bare requests. If the `password` field is included in a request (such as the API request for adding a host), this field will also be sent to an endpoint. For security reasons, API topics can only be subscribed by endpoints created by the administrator. The administrator must use API topics only for internal integration or debugging.

6.1.5 Appendices

6.1.5.1 Function



Note:

In CLI, the double quotation marks ("") in a function must be translated by using backward slashes (\), and the commas (,) for delimiting function parameters must be translated by using double backward slashes (\ \).

Method for calling a function:

```
Function name(Parameter1="String", Parameter2=number)
```

For example, `sort(by="value",direction="desc")`. Currently, the following functions are supported:

- **`sort(by="value|time",direction="asc|desc")`**: the sort function
 - by: the field according to which the contents are sorted. This field can be either value or time
 - direction: the sort direction, including asc (ascending order) and desc (descending order).
- **`limit(limit=number greater than zero)`**: returns only the data count specified by `limit`. If the total data count is smaller than the limit, all data will be returned.
 - limit: the number of data returned. This field must be an integer that is greater than 0.
- **`sum()`**: adds all numbers in a specified range and returns the result



Note:

The returned data contains only one `value` field. Both the `time` and `labels` fields are ignored.

- **average(groupBy="label name to group by")**

Groups data according to the label specified by the `groupBy` parameter and calculates the average value. For example,

```
average(groupBy="VMUuid")
```

The labels in the returned data only have the `label` field specified by `groupBy`.

- **top(num=number of top to return)**

Returns a number (N) of data with the largest value.

- **low(num=number of low to return)**

Returns a number (N) of data with the smallest value.

6.1.5.2 All Metric Metadata

You can use `GetAllMetricMetadata` to obtain system-defined metrics and their metadata.

Take version 3.9.0 as an example.

```
{
  "metrics": [
    {
      "description": "OperatingSystemCPUSystemUtilization",
      "driver": "PrometheusDatabaseDriver",
      "labelNames": [
        "BaremetalVMUuid",
        "CPUNum"
      ],
      "name": "OperatingSystemCPUSystemUtilization",
      "namespace": "ZStack/BaremetalVM"
    },
    {
      "description": "OperatingSystemCPUUserUtilization",
      "driver": "PrometheusDatabaseDriver",
      "labelNames": [
        "BaremetalVMUuid",
        "CPUNum"
      ],
      "name": "OperatingSystemCPUUserUtilization",
      "namespace": "ZStack/BaremetalVM"
    },
    {
      "description": "OperatingSystemCPUWaitUtilization",
      "driver": "PrometheusDatabaseDriver",
      "labelNames": [
        "BaremetalVMUuid",
        "CPUNum"
      ],
      "name": "OperatingSystemCPUWaitUtilization",
      "namespace": "ZStack/BaremetalVM"
    }
  ]
}
```

```

        },
        {
            "description": "OperatingSystemCPUIdleUtilization",
            "driver": "PrometheusDatabaseDriver",
            "labelNames": [
                "BaremetalVMUuid",
                "CPUNum"
            ],
            "name": "OperatingSystemCPUIdleUtilization",
            "namespace": "ZStack/BaremetalVM"
        },
        {
            "description": "OperatingSystemCPUUsedUtilization",
            "driver": "PrometheusDatabaseDriver",
            "labelNames": [
                "BaremetalVMUuid",
                "CPUNum"
            ],
            "name": "OperatingSystemCPUUsedUtilization",
            "namespace": "ZStack/BaremetalVM"
        },
        {
            "description": "OperatingSystemCPAAverageSystemUtilization"
        },
        {
            "driver": "PrometheusDatabaseDriver",
            "labelNames": [
                "BaremetalVMUuid"
            ],
            "name": "OperatingSystemCPAAverageSystemUtilization",
            "namespace": "ZStack/BaremetalVM"
        },
        {
            "description": "OperatingSystemCPAAverageUserUtilization",
            "driver": "PrometheusDatabaseDriver",
            "labelNames": [
                "BaremetalVMUuid"
            ],
            "name": "OperatingSystemCPAAverageUserUtilization",
            "namespace": "ZStack/BaremetalVM"
        },
        {
            "description": "OperatingSystemCPAAverageWaitUtilization",
            "driver": "PrometheusDatabaseDriver",
            "labelNames": [
                "BaremetalVMUuid"
            ],
            "name": "OperatingSystemCPAAverageWaitUtilization",
            "namespace": "ZStack/BaremetalVM"
        },
        {
            "description": "OperatingSystemCPAAverageIdleUtilization",
            "driver": "PrometheusDatabaseDriver",
            "labelNames": [
                "BaremetalVMUuid"
            ],
            "name": "OperatingSystemCPAAverageIdleUtilization",
            "namespace": "ZStack/BaremetalVM"
        },
        {
            "description": "OperatingSystemCPAAverageUsedUtilization",
            "driver": "PrometheusDatabaseDriver",
            "labelNames": [

```

```

        "BaremetalVMMUuid"
    ],
    "name": "OperatingSystemCPUAverageUsedUtilization",
    "namespace": "ZStack/BaremetalVM"
},
{
    "description": "DiskAllFreeCapacityInBytes",
    "driver": "PrometheusDatabaseDriver",
    "labelNames": [
        "BaremetalVMMUuid"
    ],
    "name": "DiskAllFreeCapacityInBytes",
    "namespace": "ZStack/BaremetalVM"
},
{
    "description": "DiskAllFreeCapacityInPercent",
    "driver": "PrometheusDatabaseDriver",
    "labelNames": [
        "BaremetalVMMUuid"
    ],
    "name": "DiskAllFreeCapacityInPercent",
    "namespace": "ZStack/BaremetalVM"
},
{
    "description": "DiskAllUsedCapacityInBytes",
    "driver": "PrometheusDatabaseDriver",
    "labelNames": [
        "BaremetalVMMUuid"
    ],
    "name": "DiskAllUsedCapacityInBytes",
    "namespace": "ZStack/BaremetalVM"
},
{
    "description": "DiskAllUsedCapacityInPercent",
    "driver": "PrometheusDatabaseDriver",
    "labelNames": [
        "BaremetalVMMUuid"
    ],
    "name": "DiskAllUsedCapacityInPercent",
    "namespace": "ZStack/BaremetalVM"
},
{
    "description": "DiskFreeCapacityInBytes",
    "driver": "PrometheusDatabaseDriver",
    "labelNames": [
        "BaremetalVMMUuid",
        "DiskDeviceLetter",
        "MountPoint",
        "FSType"
    ],
    "name": "DiskFreeCapacityInBytes",
    "namespace": "ZStack/BaremetalVM"
},
{
    "description": "DiskFreeCapacityInPercent",
    "driver": "PrometheusDatabaseDriver",
    "labelNames": [
        "BaremetalVMMUuid",
        "DiskDeviceLetter",
        "MountPoint",
        "FSType"
    ],
    "name": "DiskFreeCapacityInPercent"
}
]

```

```

        "name": "DiskFreeCapacityInPercent",
        "namespace": "ZStack/BaremetalVM"
    },
    {
        "description": "DiskUsedCapacityInBytes",
        "driver": "PrometheusDatabaseDriver",
        "labelNames": [
            "BaremetalVMMUuid",
            "DiskDeviceLetter",
            "MountPoint",
            "FSType"
        ],
        "name": "DiskUsedCapacityInBytes",
        "namespace": "ZStack/BaremetalVM"
    },
    {
        "description": "DiskUsedCapacityInPercent",
        "driver": "PrometheusDatabaseDriver",
        "labelNames": [
            "BaremetalVMMUuid",
            "DiskDeviceLetter",
            "MountPoint",
            "FSType"
        ],
        "name": "DiskUsedCapacityInPercent",
        "namespace": "ZStack/BaremetalVM"
    },
    {
        "description": "DiskTotalCapacityInBytes",
        "driver": "PrometheusDatabaseDriver",
        "labelNames": [
            "BaremetalVMMUuid",
            "DiskDeviceLetter",
            "MountPoint",
            "FSType"
        ],
        "name": "DiskTotalCapacityInBytes",
        "namespace": "ZStack/BaremetalVM"
    },
    {
        "description": "DiskReadBytesPerSecond",
        "driver": "PrometheusDatabaseDriver",
        "labelNames": [
            "BaremetalVMMUuid",
            "DiskDeviceLetter",
            "MountPoint",
            "FSType"
        ],
        "name": "DiskReadBytesPerSecond",
        "namespace": "ZStack/BaremetalVM"
    },
    {
        "description": "DiskReadRequestPerSecond",
        "driver": "PrometheusDatabaseDriver",
        "labelNames": [
            "BaremetalVMMUuid",
            "DiskDeviceLetter",
            "MountPoint",
            "FSType"
        ],
        "name": "DiskReadRequestPerSecond",
        "namespace": "ZStack/BaremetalVM"
    }

```

```

},
{
  "description": "DiskWriteBytesPerSecond",
  "driver": "PrometheusDatabaseDriver",
  "labelNames": [
    "BaremetalVMUuid",
    "DiskDeviceLetter",
    "MountPoint",
    "FSType"
  ],
  "name": "DiskWriteBytesPerSecond",
  "namespace": "ZStack/BaremetalVM"
},
{
  "description": "DiskWriteRequestPerSecond",
  "driver": "PrometheusDatabaseDriver",
  "labelNames": [
    "BaremetalVMUuid",
    "DiskDeviceLetter",
    "MountPoint",
    "FSType"
  ],
  "name": "DiskWriteRequestPerSecond",
  "namespace": "ZStack/BaremetalVM"
},
{
  "description": "OperatingSystemNetworkInBytes",
  "driver": "PrometheusDatabaseDriver",
  "labelNames": [
    "BaremetalVMUuid",
    "NetworkDeviceLetter"
  ],
  "name": "OperatingSystemNetworkInBytes",
  "namespace": "ZStack/BaremetalVM"
},
{
  "description": "OperatingSystemNetworkAllInBytes",
  "driver": "PrometheusDatabaseDriver",
  "labelNames": [
    "BaremetalVMUuid"
  ],
  "name": "OperatingSystemNetworkAllInBytes",
  "namespace": "ZStack/BaremetalVM"
},
{
  "description": "OperatingSystemNetworkInPackets",
  "driver": "PrometheusDatabaseDriver",
  "labelNames": [
    "BaremetalVMUuid",
    "NetworkDeviceLetter"
  ],
  "name": "OperatingSystemNetworkInPackets",
  "namespace": "ZStack/BaremetalVM"
},
{
  "description": "OperatingSystemNetworkAllInPackets",
  "driver": "PrometheusDatabaseDriver",
  "labelNames": [
    "BaremetalVMUuid"
  ],
  "name": "OperatingSystemNetworkAllInPackets",
  "namespace": "ZStack/BaremetalVM"
}

```

```

},
{
  "description": "OperatingSystemNetworkInErrors",
  "driver": "PrometheusDatabaseDriver",
  "labelNames": [
    "BaremetalVMUuid",
    "NetworkDeviceLetter"
  ],
  "name": "OperatingSystemNetworkInErrors",
  "namespace": "ZStack/BaremetalVM"
},
{
  "description": "OperatingSystemNetworkAllInErrors",
  "driver": "PrometheusDatabaseDriver",
  "labelNames": [
    "BaremetalVMUuid"
  ],
  "name": "OperatingSystemNetworkAllInErrors",
  "namespace": "ZStack/BaremetalVM"
},
{
  "description": "OperatingSystemNetworkOutBytes",
  "driver": "PrometheusDatabaseDriver",
  "labelNames": [
    "BaremetalVMUuid",
    "NetworkDeviceLetter"
  ],
  "name": "OperatingSystemNetworkOutBytes",
  "namespace": "ZStack/BaremetalVM"
},
{
  "description": "OperatingSystemNetworkAllOutBytes",
  "driver": "PrometheusDatabaseDriver",
  "labelNames": [
    "BaremetalVMUuid"
  ],
  "name": "OperatingSystemNetworkAllOutBytes",
  "namespace": "ZStack/BaremetalVM"
},
{
  "description": "OperatingSystemNetworkOutPackets",
  "driver": "PrometheusDatabaseDriver",
  "labelNames": [
    "BaremetalVMUuid",
    "NetworkDeviceLetter"
  ],
  "name": "OperatingSystemNetworkOutPackets",
  "namespace": "ZStack/BaremetalVM"
},
{
  "description": "OperatingSystemNetworkAllOutPackets",
  "driver": "PrometheusDatabaseDriver",
  "labelNames": [
    "BaremetalVMUuid"
  ],
  "name": "OperatingSystemNetworkAllOutPackets",
  "namespace": "ZStack/BaremetalVM"
},
{
  "description": "OperatingSystemNetworkOutErrors",
  "driver": "PrometheusDatabaseDriver",
  "labelNames": [

```

```

        "BaremetalVMMUuid",
        "NetworkDeviceLetter"
    ],
    "name": "OperatingSystemNetworkOutErrors",
    "namespace": "ZStack/BaremetalVM"
},
{
    "description": "OperatingSystemNetworkAllOutErrors",
    "driver": "PrometheusDatabaseDriver",
    "labelNames": [
        "BaremetalVMMUuid"
    ],
    "name": "OperatingSystemNetworkAllOutErrors",
    "namespace": "ZStack/BaremetalVM"
},
{
    "description": "OperatingSystemMemoryTotalBytes",
    "driver": "PrometheusDatabaseDriver",
    "labelNames": [
        "BaremetalVMMUuid"
    ],
    "name": "OperatingSystemMemoryTotalBytes",
    "namespace": "ZStack/BaremetalVM"
},
{
    "description": "OperatingSystemMemoryFreeBytes",
    "driver": "PrometheusDatabaseDriver",
    "labelNames": [
        "BaremetalVMMUuid"
    ],
    "name": "OperatingSystemMemoryFreeBytes",
    "namespace": "ZStack/BaremetalVM"
},
{
    "description": "OperatingSystemMemoryUsedBytes",
    "driver": "PrometheusDatabaseDriver",
    "labelNames": [
        "BaremetalVMMUuid"
    ],
    "name": "OperatingSystemMemoryUsedBytes",
    "namespace": "ZStack/BaremetalVM"
},
{
    "description": "OperatingSystemMemoryAvailableBytes",
    "driver": "PrometheusDatabaseDriver",
    "labelNames": [
        "BaremetalVMMUuid"
    ],
    "name": "OperatingSystemMemoryAvailableBytes",
    "namespace": "ZStack/BaremetalVM"
},
{
    "description": "OperatingSystemMemoryFreePercent",
    "driver": "PrometheusDatabaseDriver",
    "labelNames": [
        "BaremetalVMMUuid"
    ],
    "name": "OperatingSystemMemoryFreePercent",
    "namespace": "ZStack/BaremetalVM"
},
{
    "description": "OperatingSystemMemoryUsedPercent",

```

```

    "driver": "PrometheusDatabaseDriver",
    "labelNames": [
        "BaremetalVMMUuid"
    ],
    "name": "OperatingSystemMemoryUsedPercent",
    "namespace": "ZStack/BaremetalVM"
},
{
    "description": "TotalAvailableCapacityInBytes",
    "driver": "PrometheusDatabaseDriver",
    "labelNames": [],
    "name": "TotalAvailableCapacityInBytes",
    "namespace": "ZStack/BackupStorage"
},
{
    "description": "TotalAvailableCapacityInPercent",
    "driver": "PrometheusDatabaseDriver",
    "labelNames": [],
    "name": "TotalAvailableCapacityInPercent",
    "namespace": "ZStack/BackupStorage"
},
{
    "description": "AvailableCapacityInBytes",
    "driver": "PrometheusDatabaseDriver",
    "labelNames": [
        "BackupStorageUuid",
        "BackupStorageType"
    ],
    "name": "AvailableCapacityInBytes",
    "namespace": "ZStack/BackupStorage"
},
{
    "description": "AvailableCapacityInPercent",
    "driver": "PrometheusDatabaseDriver",
    "labelNames": [
        "BackupStorageUuid",
        "BackupStorageType"
    ],
    "name": "AvailableCapacityInPercent",
    "namespace": "ZStack/BackupStorage"
},
{
    "description": "TotalUsedCapacityInBytes",
    "driver": "PrometheusDatabaseDriver",
    "labelNames": [],
    "name": "TotalUsedCapacityInBytes",
    "namespace": "ZStack/BackupStorage"
},
{
    "description": "TotalUsedCapacityInPercent",
    "driver": "PrometheusDatabaseDriver",
    "labelNames": [],
    "name": "TotalUsedCapacityInPercent",
    "namespace": "ZStack/BackupStorage"
},
{
    "description": "UsedCapacityInBytes",
    "driver": "PrometheusDatabaseDriver",
    "labelNames": [
        "BackupStorageUuid",
        "BackupStorageType"
    ],
    "

```

```

        "name": "UsedCapacityInBytes",
        "namespace": "ZStack/BackupStorage"
    },
    {
        "description": "UsedCapacityInPercent",
        "driver": "PrometheusDatabaseDriver",
        "labelNames": [
            "BackupStorageUuid",
            "BackupStorageType"
        ],
        "name": "UsedCapacityInPercent",
        "namespace": "ZStack/BackupStorage"
    },
    {
        "description": "TotalLockedCapacityInBytes",
        "driver": "PrometheusDatabaseDriver",
        "labelNames": [],
        "name": "TotalLockedCapacityInBytes",
        "namespace": "ZStack/BackupStorage"
    },
    {
        "description": "TotalLockedCapacityInPercent",
        "driver": "PrometheusDatabaseDriver",
        "labelNames": [],
        "name": "TotalLockedCapacityInPercent",
        "namespace": "ZStack/BackupStorage"
    },
    {
        "description": "NetworkInBytes",
        "driver": "PrometheusDatabaseDriver",
        "labelNames": [
            "BackupStorageUuid",
            "NetworkDeviceLetter"
        ],
        "name": "NetworkInBytes",
        "namespace": "ZStack/BackupStorage"
    },
    {
        "description": "NetworkAllInBytes",
        "driver": "PrometheusDatabaseDriver",
        "labelNames": [
            "BackupStorageUuid"
        ],
        "name": "NetworkAllInBytes",
        "namespace": "ZStack/BackupStorage"
    },
    {
        "description": "NetworkInPackets",
        "driver": "PrometheusDatabaseDriver",
        "labelNames": [
            "BackupStorageUuid",
            "NetworkDeviceLetter"
        ],
        "name": "NetworkInPackets",
        "namespace": "ZStack/BackupStorage"
    },
    {
        "description": "NetworkAllInPackets",
        "driver": "PrometheusDatabaseDriver",
        "labelNames": [
            "BackupStorageUuid"
        ],
        "name": "NetworkAllInPackets",
        "namespace": "ZStack/BackupStorage"
    }
]

```

```

        "name": "NetworkAllInPackets",
        "namespace": "ZStack/BackupStorage"
    },
    {
        "description": "NetworkInErrors",
        "driver": "PrometheusDatabaseDriver",
        "labelNames": [
            "BackupStorageUuid",
            "NetworkDeviceLetter"
        ],
        "name": "NetworkInErrors",
        "namespace": "ZStack/BackupStorage"
    },
    {
        "description": "NetworkAllInErrors",
        "driver": "PrometheusDatabaseDriver",
        "labelNames": [
            "BackupStorageUuid"
        ],
        "name": "NetworkAllInErrors",
        "namespace": "ZStack/BackupStorage"
    },
    {
        "description": "NetworkOutBytes",
        "driver": "PrometheusDatabaseDriver",
        "labelNames": [
            "BackupStorageUuid",
            "NetworkDeviceLetter"
        ],
        "name": "NetworkOutBytes",
        "namespace": "ZStack/BackupStorage"
    },
    {
        "description": "NetworkAllOutBytes",
        "driver": "PrometheusDatabaseDriver",
        "labelNames": [
            "BackupStorageUuid"
        ],
        "name": "NetworkAllOutBytes",
        "namespace": "ZStack/BackupStorage"
    },
    {
        "description": "NetworkOutPackets",
        "driver": "PrometheusDatabaseDriver",
        "labelNames": [
            "BackupStorageUuid",
            "NetworkDeviceLetter"
        ],
        "name": "NetworkOutPackets",
        "namespace": "ZStack/BackupStorage"
    },
    {
        "description": "NetworkAllOutPackets",
        "driver": "PrometheusDatabaseDriver",
        "labelNames": [
            "BackupStorageUuid"
        ],
        "name": "NetworkAllOutPackets",
        "namespace": "ZStack/BackupStorage"
    },
    {
        "description": "NetworkOutErrors",
        "

```

```

"driver": "PrometheusDatabaseDriver",
"labelNames": [
    "BackupStorageUuid",
    "NetworkDeviceLetter"
],
"name": "NetworkOutErrors",
"namespace": "ZStack/BackupStorage"
},
{
"description": "NetworkAllOutErrors",
"driver": "PrometheusDatabaseDriver",
"labelNames": [
    "BackupStorageUuid"
],
"name": "NetworkAllOutErrors",
"namespace": "ZStack/BackupStorage"
},
{
"description": "VmCPUUsageMHZ",
"driver": "PrometheusDatabaseDriver",
"labelNames": [
    "VMIdd"
],
"name": "VmCPUUsage",
"namespace": "ZStack/VCenter"
},
{
"description": "VmCPUUsageMHZ",
"driver": "PrometheusDatabaseDriver",
"labelNames": [
    "VMIdd",
    "CPUNum"
],
"name": "VmCPUUsageMHZ",
"namespace": "ZStack/VCenter"
},
{
"description": "VmCPUIdle",
"driver": "PrometheusDatabaseDriver",
"labelNames": [
    "VMIdd",
    "CPUNum"
],
"name": "VmCPUIdle",
"namespace": "ZStack/VCenter"
},
{
"description": "VmCPUUsed",
"driver": "PrometheusDatabaseDriver",
"labelNames": [
    "VMIdd",
    "CPUNum"
],
"name": "VmCPUUsed",
"namespace": "ZStack/VCenter"
},
{
"description": "VmMemoryUsage",
"driver": "PrometheusDatabaseDriver",
"labelNames": [
    "VMIdd"
],

```

```

        "name": "VmMemoryUsage",
        "namespace": "ZStack/VCenter"
    },
    {
        "description": "VmMemoryGranted",
        "driver": "PrometheusDatabaseDriver",
        "labelNames": [
            "Vmuuid"
        ],
        "name": "VmMemoryGranted",
        "namespace": "ZStack/VCenter"
    },
    {
        "description": "VmMemoryActive",
        "driver": "PrometheusDatabaseDriver",
        "labelNames": [
            "Vmuuid"
        ],
        "name": "VmMemoryActive",
        "namespace": "ZStack/VCenter"
    },
    {
        "description": "VmMemoryVmMemCtl",
        "driver": "PrometheusDatabaseDriver",
        "labelNames": [
            "Vmuuid"
        ],
        "name": "VmMemoryVmMemCtl",
        "namespace": "ZStack/VCenter"
    },
    {
        "description": "VmMemoryConsumed",
        "driver": "PrometheusDatabaseDriver",
        "labelNames": [
            "Vmuuid"
        ],
        "name": "VmMemoryConsumed",
        "namespace": "ZStack/VCenter"
    },
    {
        "description": "VmMemoryEntitlement",
        "driver": "PrometheusDatabaseDriver",
        "labelNames": [
            "Vmuuid"
        ],
        "name": "VmMemoryEntitlement",
        "namespace": "ZStack/VCenter"
    },
    {
        "description": "VmDiskUsage",
        "driver": "PrometheusDatabaseDriver",
        "labelNames": [
            "Vmuuid",
            "DiskDeviceLetter"
        ],
        "name": "VmDiskUsage",
        "namespace": "ZStack/VCenter"
    },
    {
        "description": "VmDiskRead",
        "driver": "PrometheusDatabaseDriver",
        "labelNames": [

```

```

        "VMMoid",
        "DiskDeviceLetter"
    ],
    "name": "VmDiskRead",
    "namespace": "ZStack/VCenter"
},
{
    "description": "VmDiskWrite",
    "driver": "PrometheusDatabaseDriver",
    "labelNames": [
        "VMMoid",
        "DiskDeviceLetter"
    ],
    "name": "VmDiskWrite",
    "namespace": "ZStack/VCenter"
},
{
    "description": "VmDiskMaxTotalLatency",
    "driver": "PrometheusDatabaseDriver",
    "labelNames": [
        "VMMoid",
        "DiskDeviceLetter"
    ],
    "name": "VmDiskMaxTotalLatency",
    "namespace": "ZStack/VCenter"
},
{
    "description": "VmVirtualDiskNumberReadAveraged",
    "driver": "PrometheusDatabaseDriver",
    "labelNames": [
        "VMMoid",
        "DiskDeviceLetter"
    ],
    "name": "VmVirtualDiskNumberReadAveraged",
    "namespace": "ZStack/VCenter"
},
{
    "description": "VmVirtualDiskNumberWriteAveraged",
    "driver": "PrometheusDatabaseDriver",
    "labelNames": [
        "VMMoid",
        "DiskDeviceLetter"
    ],
    "name": "VmVirtualDiskNumberWriteAveraged",
    "namespace": "ZStack/VCenter"
},
{
    "description": "VmVirtualDiskRead",
    "driver": "PrometheusDatabaseDriver",
    "labelNames": [
        "VMMoid",
        "DiskDeviceLetter"
    ],
    "name": "VmVirtualDiskRead",
    "namespace": "ZStack/VCenter"
},
{
    "description": "VmVirtualDiskWrite",
    "driver": "PrometheusDatabaseDriver",
    "labelNames": [
        "VMMoid",
        "DiskDeviceLetter"
    ]
}

```

```

        ],
        "name": "VmVirtualDiskWrite",
        "namespace": "ZStack/VCenter"
    },
    {
        "description": "VmVirtualDiskTotalReadLatency",
        "driver": "PrometheusDatabaseDriver",
        "labelNames": [
            "Vmuuid",
            "DiskDeviceLetter"
        ],
        "name": "VmVirtualDiskTotalReadLatency",
        "namespace": "ZStack/VCenter"
    },
    {
        "description": "VmVirtualDiskTotalWriteLatency",
        "driver": "PrometheusDatabaseDriver",
        "labelNames": [
            "Vmuuid",
            "DiskDeviceLetter"
        ],
        "name": "VmVirtualDiskTotalWriteLatency",
        "namespace": "ZStack/VCenter"
    },
    {
        "description": "VmNetworkUsage",
        "driver": "PrometheusDatabaseDriver",
        "labelNames": [
            "Vmuuid",
            "NetworkDeviceLetter"
        ],
        "name": "VmNetworkUsage",
        "namespace": "ZStack/VCenter"
    },
    {
        "description": "VmNetworkPacketRx",
        "driver": "PrometheusDatabaseDriver",
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    "FSType"
],
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},
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    "FSType"
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  "namespace": "ZStack/Host"
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{
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    "labelNames": [
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        "VolumeGroupName"
    ],
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    "namespace": "ZStack/Host"
},
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    "driver": "PrometheusDatabaseDriver",
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        "HostUuid",
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        "DiskGroup"
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    "namespace": "ZStack/Host"
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        "SlotNumber",
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    "labelNames": [
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        "PowerSupplyId"
    ],
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    "namespace": "ZStack/Host"
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    "driver": "PrometheusDatabaseDriver",
    "labelNames": [
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    ],
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    "namespace": "ZStack/Host"
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    "driver": "PrometheusDatabaseDriver",
    "labelNames": [
        "HostUuid",
        "InterfaceName",
        "InterfaceSpeed"
    ],
    "name": "PhysicalNetworkInterface",
    "namespace": "ZStack/Host"
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    "description": "DiskXfsFragInPercent",
    "driver": "PrometheusDatabaseDriver",
    "labelNames": [
        "HostUuid"
    ]
}

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        "namespace": "ZStack/Host"
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{
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            "HypervisorType"
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]

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},
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},
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  ],
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},
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  "namespace": "ZStack/Host"
},
{
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  "namespace": "ZStack/Host"
},
{
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  "namespace": "ZStack/Host"
},
{
  "description": "V2VUsedCapacityInPercent",
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    "namespace": "ZStack/Host"
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    "driver": "PrometheusDatabaseDriver",
    "labelNames": [
        "VipUUID"
    ],
    "name": "VIPInBoundTrafficInBytes",
    "namespace": "ZStack/VIP"
},
{
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    "driver": "PrometheusDatabaseDriver",
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    ],
    "name": "VIPInBoundTrafficInPackages",
    "namespace": "ZStack/VIP"
},
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    ],
    "name": "VIPOutBoundTrafficInBytes",
    "namespace": "ZStack/VIP"
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{
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    "driver": "PrometheusDatabaseDriver",
    "labelNames": [
        "VipUUID"
    ],
    "name": "VIPOutBoundTrafficInPackages",
    "namespace": "ZStack/VIP"
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    "labelNames": [],
    "name": "TotalCapacityInBytes",
    "namespace": "ZStack/PrimaryStorage"
},
{
    "description": "TotalAvailableCapacityInBytes",
    "driver": "PrometheusDatabaseDriver",
    "labelNames": [],
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    "namespace": "ZStack/PrimaryStorage"
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    "PrimaryStorageType"
  ],
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  ],
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    ],
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        "PrimaryStorageType"
    ],
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    "namespace": "ZStack/PrimaryStorage"
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    "labelNames": [
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        "PrimaryStorageType"
    ],
    "name": "UsedPhysicalCapacityInPercent",
    "namespace": "ZStack/PrimaryStorage"
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{
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    "driver": "PrometheusDatabaseDriver",
    "labelNames": [
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        "PrimaryStorageType"
    ]
}

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        ],
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            "PrimaryStorageType"
        ],
        "name": "DataVolumeCount",
        "namespace": "ZStack/PrimaryStorage"
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        "description": "SnapshotCount",
        "driver": "PrometheusDatabaseDriver",
        "labelNames": [
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            "PrimaryStorageType"
        ],
        "name": "SnapshotCount",
        "namespace": "ZStack/PrimaryStorage"
    },
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        "driver": "PrometheusDatabaseDriver",
        "labelNames": [
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        ],
        "name": "TimeNeededToSyncDB",
        "namespace": "ZStack/MN"
    },
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        "driver": "PrometheusDatabaseDriver",
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        "name": "DbFencerIpReachable",
        "namespace": "ZStack/MN"
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        "driver": "PrometheusDatabaseDriver",
        "labelNames": [
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        "name": "MNProgressLasts",
        "namespace": "ZStack/MN"
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    {
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        "driver": "PrometheusDatabaseDriver",
        "labelNames": [
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        ],
        "name": "MNProgressSocketNum",
        "namespace": "ZStack/MN"
    },
    {
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        "driver": "PrometheusDatabaseDriver",
        "labelNames": [
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        ],
        "name": "MNProgressGCStatus",
        "namespace": "ZStack/MN"
    }
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"name": "MNProgressGCStatus",
"namespace": "ZStack/MN"
},
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"description": "MNProgressExpends",
"driver": "PrometheusDatabaseDriver",
"labelNames": [
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],
"name": "MNProgressExpends",
"namespace": "ZStack/MN"
},
{
"description": "MNProgressMsgNum",
"driver": "PrometheusDatabaseDriver",
"labelNames": [
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    "type"
],
"name": "MNProgressMsgNum",
"namespace": "ZStack/MN"
},
{
"description": "MNThreadPoolStatus",
"driver": "PrometheusDatabaseDriver",
"labelNames": [
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],
"name": "MNThreadPoolStatus",
"namespace": "ZStack/MN"
},
{
"description": "MNQueueStatus",
"driver": "PrometheusDatabaseDriver",
"labelNames": [
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    "type"
],
"name": "MNQueueStatus",
"namespace": "ZStack/MN"
},
{
"description": "MysqlLasts",
"driver": "PrometheusDatabaseDriver",
"labelNames": [
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],
"name": "MysqlLasts",
"namespace": "ZStack/MN"
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{
"description": "MysqlProgressExpends",
"driver": "PrometheusDatabaseDriver",
"labelNames": [
    "ManagementNodeIP",

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        "type"
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    "namespace": "ZStack/MN"
},
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    "driver": "PrometheusDatabaseDriver",
    "labelNames": [
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    "name": "MysqlSlowQuery",
    "namespace": "ZStack/MN"
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{
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    "driver": "PrometheusDatabaseDriver",
    "labelNames": [
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        "db",
        "type"
    ],
    "name": "MysqlProcessLists",
    "namespace": "ZStack/MN"
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{
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    "driver": "PrometheusDatabaseDriver",
    "labelNames": [
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        "db",
        "type"
    ],
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    "namespace": "ZStack/MN"
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    "driver": "PrometheusDatabaseDriver",
    "labelNames": [
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        "type"
    ],
    "name": "MysqlQuerys",
    "namespace": "ZStack/MN"
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    "driver": "PrometheusDatabaseDriver",
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        "type"
    ],
    "name": "MysqlTransactions",
    "namespace": "ZStack/MN"
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{
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    "driver": "PrometheusDatabaseDriver",
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        "table"
    ]
}
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        ],
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        "name": "MysqlQueryCache",
        "namespace": "ZStack/MN"
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        "driver": "PrometheusDatabaseDriver",
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            "type"
        ],
        "name": "MysqlDbError",
        "namespace": "ZStack/MN"
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            "type"
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        "name": "ErrorCodes",
        "namespace": "ZStack/MN"
    },
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        "driver": "PrometheusDatabaseDriver",
        "labelNames": [
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        "name": "PrometheusLasts",
        "namespace": "ZStack/Prometheus"
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        "labelNames": [
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        "name": "PrometheusSocketNum",
        "namespace": "ZStack/Prometheus"
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        "driver": "PrometheusDatabaseDriver",
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            "type"
        ],
        "name": "PrometheusExpends",
        "namespace": "ZStack/Prometheus"
    },
}

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{
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    "name": "PrometheusDiskSpace",
    "namespace": "ZStack/Prometheus"
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    "driver": "PrometheusDatabaseDriver",
    "labelNames": [
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        "target",
        "type"
    ],
    "name": "PrometheusQueries",
    "namespace": "ZStack/Prometheus"
},
{
    "description": "PrometheusDeltaQueries",
    "driver": "PrometheusDatabaseDriver",
    "labelNames": [
        "ip",
        "target",
        "type"
    ],
    "name": "PrometheusDeltaQueries",
    "namespace": "ZStack/Prometheus"
},
{
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    "driver": "PrometheusDatabaseDriver",
    "labelNames": [
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    ],
    "name": "InfluxdbLasts",
    "namespace": "ZStack/Prometheus"
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    "driver": "PrometheusDatabaseDriver",
    "labelNames": [
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    ],
    "name": "InfluxdbSocketNum",
    "namespace": "ZStack/Prometheus"
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    "driver": "PrometheusDatabaseDriver",
    "labelNames": [
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        "type"
    ],
    "name": "InfluxdbExpends",
    "namespace": "ZStack/Prometheus"
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{
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    "
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],
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    "table",
    "type"
],
"name": "InfluxdbQueries",
"namespace": "ZStack/Prometheus"
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"description": "InfluxdbDeltaQueries",
"driver": "PrometheusDatabaseDriver",
"labelNames": [
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    "table",
    "type"
],
"name": "InfluxdbDeltaQueries",
"namespace": "ZStack/Prometheus"
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{
"description": "TotalImageCount",
"driver": "MysqlDatabaseDriver",
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{
"description": "ReadyImageCount",
"driver": "MysqlDatabaseDriver",
"labelNames": [],
"name": "ReadyImageCount",
"namespace": "ZStack/Image"
},
{
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"driver": "MysqlDatabaseDriver",
"labelNames": [],
"name": "ReadyImageInPercent",
"namespace": "ZStack/Image"
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"description": "RootVolumeTemplateCount",
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"namespace": "ZStack/Image"
},
{
"description": "RootVolumeTemplateInPercent",
"driver": "MysqlDatabaseDriver",
"labelNames": []
}

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        "labelNames": [],
        "name": "DataVolumeTemplateInPercent",
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        "driver": "MysqlDatabaseDriver",
        "labelNames": [],
        "name": "ISOCount",
        "namespace": "ZStack/Image"
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    "DiskDeviceLetter",

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    ],
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    "namespace": "ZStack/VM"
},
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    "labelNames": [
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    ],
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    "namespace": "ZStack/VM"
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    "labelNames": [
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    "name": "CPUOccupiedByVm",
    "namespace": "ZStack/VM"
},
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    "labelNames": [
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    "name": "MemoryOccupiedByVm",
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    "namespace": "ZStack/VM"
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    "labelNames": [],
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    "namespace": "ZStack/VM"
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    "driver": "PrometheusDatabaseDriver",
    "labelNames": [],
    "name": "TotalAvailableIPCount",
    "namespace": "ZStack/L3Network"
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  "namespace": "ZStack/L3Network"
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},
{
  "description": "TotalUsedIPInPercent",
  "driver": "PrometheusDatabaseDriver",
  "labelNames": [],
  "name": "TotalUsedIPInPercent",
  "namespace": "ZStack/L3Network"
},
{
  "description": "TotalLockedIPCount",
  "driver": "PrometheusDatabaseDriver",
  "labelNames": [],
  "name": "TotalLockedIPCount",
  "namespace": "ZStack/L3Network"
},
{
  "description": "TotalLockedIPInPercent",
  "driver": "PrometheusDatabaseDriver",
  "labelNames": [],
  "name": "TotalLockedIPInPercent",
  "namespace": "ZStack/L3Network"
},
{
  "description": "AvailableIPCount",
  "driver": "PrometheusDatabaseDriver",
  "labelNames": [
    "L3NetworkUuid",
    "L3NetworkType"
  ],
  "name": "AvailableIPCount",
  "namespace": "ZStack/L3Network"
},
{
  "description": "AvailableIPInPercent",
  "driver": "PrometheusDatabaseDriver",
  "labelNames": [
    "L3NetworkUuid",
    "L3NetworkType"
  ],
  "name": "AvailableIPInPercent",
  "namespace": "ZStack/L3Network"
},
{
  "description": "UsedIPCount",
  "driver": "PrometheusDatabaseDriver",
  "labelNames": [
    "L3NetworkUuid",
    "L3NetworkType"
  ],
  "name": "UsedIPCount"
},
```

```

        "name": "UsedIPCount",
        "namespace": "ZStack/L3Network"
    },
    {
        "description": "UsedIPInPercent",
        "driver": "PrometheusDatabaseDriver",
        "labelNames": [
            "L3NetworkUuid",
            "L3NetworkType"
        ],
        "name": "UsedIPInPercent",
        "namespace": "ZStack/L3Network"
    },
    {
        "description": "TotalVolumeCount",
        "driver": "PrometheusDatabaseDriver",
        "labelNames": [],
        "name": "TotalVolumeCount",
        "namespace": "ZStack/Volume"
    },
    {
        "description": "RootVolumeCount",
        "driver": "PrometheusDatabaseDriver",
        "labelNames": [],
        "name": "RootVolumeCount",
        "namespace": "ZStack/Volume"
    },
    {
        "description": "RootVolumeInPercent",
        "driver": "PrometheusDatabaseDriver",
        "labelNames": [],
        "name": "RootVolumeInPercent",
        "namespace": "ZStack/Volume"
    },
    {
        "description": "DataVolumeCount",
        "driver": "PrometheusDatabaseDriver",
        "labelNames": [],
        "name": "DataVolumeCount",
        "namespace": "ZStack/Volume"
    },
    {
        "description": "DataVolumeInPercent",
        "driver": "PrometheusDatabaseDriver",
        "labelNames": [],
        "name": "DataVolumeInPercent",
        "namespace": "ZStack/Volume"
    },
    {
        "description": "ReadyDataVolumeCount",
        "driver": "PrometheusDatabaseDriver",
        "labelNames": [],
        "name": "ReadyDataVolumeCount",
        "namespace": "ZStack/Volume"
    },
    {
        "description": "ReadyDataVolumeInPercent",
        "driver": "PrometheusDatabaseDriver",
        "labelNames": [],
        "name": "ReadyDataVolumeInPercent",
        "namespace": "ZStack/Volume"
    }
,
```

```
{
  "description": "TotalVolumeSnapshotCount",
  "driver": "PrometheusDatabaseDriver",
  "labelNames": [],
  "name": "TotalVolumeSnapshotCount",
  "namespace": "ZStack/Volume"
},
{
  "description": "RootVolumeSnapshotCount",
  "driver": "PrometheusDatabaseDriver",
  "labelNames": [],
  "name": "RootVolumeSnapshotCount",
  "namespace": "ZStack/Volume"
},
{
  "description": "RootVolumeSnapshotInPercent",
  "driver": "PrometheusDatabaseDriver",
  "labelNames": [],
  "name": "RootVolumeSnapshotInPercent",
  "namespace": "ZStack/Volume"
},
{
  "description": "DataVolumeSnapshotCount",
  "driver": "PrometheusDatabaseDriver",
  "labelNames": [],
  "name": "DataVolumeSnapshotCount",
  "namespace": "ZStack/Volume"
},
{
  "description": "DataVolumeSnapshotInPercent",
  "driver": "PrometheusDatabaseDriver",
  "labelNames": [],
  "name": "DataVolumeSnapshotInPercent",
  "namespace": "ZStack/Volume"
},
{
  "description": "VolumeActualSizeInPercent",
  "driver": "PrometheusDatabaseDriver",
  "labelNames": [
    "VolumeUuid"
  ],
  "name": "VolumeActualSizeInPercent",
  "namespace": "ZStack/Volume"
},
{
  "description": "VolumeXfsFragCount",
  "driver": "PrometheusDatabaseDriver",
  "labelNames": [
    "VolumeUuid"
  ],
  "name": "VolumeXfsFragCount",
  "namespace": "ZStack/Volume"
},
{
  "description": "LicenseEnabledDays",
  "driver": "PrometheusDatabaseDriver",
  "labelNames": [
    "UUID",
    "ResourceType"
  ],
  "name": "LicenseEnabledDays",
  "namespace": "ZStack/License"
}
```

```

},
{
  "description": "LoadBalancerBackendStatus",
  "driver": "PrometheusDatabaseDriver",
  "labelNames": [
    "ListenerUuid",
    "NicIpAddress"
  ],
  "name": "LoadBalancerBackendStatus",
  "namespace": "ZStack/LoadBalancer"
},
{
  "description": "LoadBalancerBackendSessionNumber",
  "driver": "PrometheusDatabaseDriver",
  "labelNames": [
    "ListenerUuid",
    "NicIpAddress"
  ],
  "name": "LoadBalancerBackendSessionNumber",
  "namespace": "ZStack/LoadBalancer"
},
{
  "description": "LoadBalancerBackendTrafficInBytes",
  "driver": "PrometheusDatabaseDriver",
  "labelNames": [
    "ListenerUuid",
    "NicIpAddress"
  ],
  "name": "LoadBalancerBackendTrafficInBytes",
  "namespace": "ZStack/LoadBalancer"
},
{
  "description": "LoadBalancerBackendTrafficOutBytes",
  "driver": "PrometheusDatabaseDriver",
  "labelNames": [
    "ListenerUuid",
    "NicIpAddress"
  ],
  "name": "LoadBalancerBackendTrafficOutBytes",
  "namespace": "ZStack/LoadBalancer"
},
{
  "description": "LoadBalancerStatus",
  "driver": "PrometheusDatabaseDriver",
  "labelNames": [
    "ListenerUuid"
  ],
  "name": "LoadBalancerStatus",
  "namespace": "ZStack/LoadBalancer"
},
{
  "description": "LoadBalancerSessionNumber",
  "driver": "PrometheusDatabaseDriver",
  "labelNames": [
    "ListenerUuid"
  ],
  "name": "LoadBalancerSessionNumber",
  "namespace": "ZStack/LoadBalancer"
},
{
  "description": "LoadBalancerTrafficInBytes",
  "driver": "PrometheusDatabaseDriver",

```

```

    "labelNames": [
        "ListenerUuid"
    ],
    "name": "LoadBalancerTrafficInBytes",
    "namespace": "ZStack/LoadBalancer"
},
{
    "description": "LoadBalancerTrafficOutBytes",
    "driver": "PrometheusDatabaseDriver",
    "labelNames": [
        "ListenerUuid"
    ],
    "name": "LoadBalancerTrafficOutBytes",
    "namespace": "ZStack/LoadBalancer"
},
{
    "description": "LoadBalancerSessionUsage",
    "driver": "PrometheusDatabaseDriver",
    "labelNames": [
        "ListenerUuid"
    ],
    "name": "LoadBalancerSessionUsage",
    "namespace": "ZStack/LoadBalancer"
},
{
    "description": "LoadBalancerRefusedSessionNumber",
    "driver": "PrometheusDatabaseDriver",
    "labelNames": [
        "ListenerUuid"
    ],
    "name": "LoadBalancerRefusedSessionNumber",
    "namespace": "ZStack/LoadBalancer"
},
{
    "description": "LoadBalancerConcurrentSessionNumber",
    "driver": "PrometheusDatabaseDriver",
    "labelNames": [
        "ListenerUuid"
    ],
    "name": "LoadBalancerConcurrentSessionNumber",
    "namespace": "ZStack/LoadBalancer"
},
{
    "description": "LoadBalancerNewSessionNumber",
    "driver": "PrometheusDatabaseDriver",
    "labelNames": [
        "ListenerUuid"
    ],
    "name": "LoadBalancerNewSessionNumber",
    "namespace": "ZStack/LoadBalancer"
},
{
    "description": "LoadBalancerTotalSessionNumber",
    "driver": "PrometheusDatabaseDriver",
    "labelNames": [
        "ListenerUuid"
    ],
    "name": "LoadBalancerTotalSessionNumber",
    "namespace": "ZStack/LoadBalancer"
},
{
    "description": "LoadBalancerBackendRefusedSessionNumber",

```

```

    "driver": "PrometheusDatabaseDriver",
    "labelNames": [
        "ListenerUuid",
        "NicIpAddress"
    ],
    "name": "LoadBalancerBackendRefusedSessionNumber",
    "namespace": "ZStack/LoadBalancer"
},
{
    "description": "LoadBalancerBackendConcurrentSessionNumber"
},
{
    "driver": "PrometheusDatabaseDriver",
    "labelNames": [
        "ListenerUuid",
        "NicIpAddress"
    ],
    "name": "LoadBalancerBackendConcurrentSessionNumber",
    "namespace": "ZStack/LoadBalancer"
},
{
    "description": "LoadBalancerBackendNewSessionNumber",
    "driver": "PrometheusDatabaseDriver",
    "labelNames": [
        "ListenerUuid",
        "NicIpAddress"
    ],
    "name": "LoadBalancerBackendNewSessionNumber",
    "namespace": "ZStack/LoadBalancer"
},
{
    "description": "LoadBalancerBackendTotalSessionNumber",
    "driver": "PrometheusDatabaseDriver",
    "labelNames": [
        "ListenerUuid",
        "NicIpAddress"
    ],
    "name": "LoadBalancerBackendTotalSessionNumber",
    "namespace": "ZStack/LoadBalancer"
}
],
"success": true
}

```

6.1.5.3 All Event Metadata

You can use `GetAllEventMetadata` to obtain all system-defined events and their metadata.

Take version 3.9.0 as an example.

```

{
    "events": [
        {
            "description": "BackupStorageDisconnected",
            "labelNames": [
                "Error"
            ],
            "name": "BackupStorageDisconnected",
            "namespace": "ZStack/BackupStorage"
        },
        {
            "description": "BackupStorageConnected",

```

```

        "labelNames": [
            "OldStatus",
            "NewStatus"
        ],
        "name": "BackupStorageConnected",
        "namespace": "ZStack/BackupStorage"
    },
    {
        "description": "SendSmsFailed",
        "labelNames": [
            "PhoneNumber",
            "ErrCode",
            "ErrMsg"
        ],
        "name": "SendSmsFailed",
        "namespace": "ZStack/SNS"
    },
    {
        "description": "VCenterHostWrongDateTime",
        "labelNames": [
            "TimeDifferenceInHour"
        ],
        "name": "VCenterHostWrongDateTime",
        "namespace": "ZStack/VCenter"
    },
    {
        "description": "VCenterResourceEvent",
        "labelNames": [
            "Description",
            "Severity",
            "Time",
            "Target",
            "User"
        ],
        "name": "VCenterResourceEvent",
        "namespace": "ZStack/VCenter"
    },
    {
        "description": "VolumeSnapshotScheduler",
        "labelNames": [
            "VMSchedulerName",
            "VMSchedulerExecutedResult",
            "isSuccess"
        ],
        "name": "VolumeSnapshotScheduler",
        "namespace": "ZStack/Scheduler"
    },
    {
        "description": "VolumeBackupScheduler",
        "labelNames": [
            "VMSchedulerName",
            "VMSchedulerExecutedResult",
            "isSuccess"
        ],
        "name": "VolumeBackupScheduler",
        "namespace": "ZStack/Scheduler"
    },
    {
        "description": "VMStartScheduler",
        "labelNames": [
            "VMSchedulerName",
            "VMSchedulerExecutedResult",
            "isSuccess"
        ],
        "name": "VMStartScheduler",
        "namespace": "ZStack/Scheduler"
    }
]

```

```

        "isSuccess"
    ],
    "name": "VMStartScheduler",
    "namespace": "ZStack/Scheduler"
},
{
    "description": "VMStopScheduler",
    "labelNames": [
        "VMSchedulerName",
        "VMSchedulerExecutedResult",
        "isSuccess"
    ],
    "name": "VMStopScheduler",
    "namespace": "ZStack/Scheduler"
},
{
    "description": "VMRebootScheduler",
    "labelNames": [
        "VMSchedulerName",
        "VMSchedulerExecutedResult",
        "isSuccess"
    ],
    "name": "VMRebootScheduler",
    "namespace": "ZStack/Scheduler"
},
{
    "description": "DatabaseBackupScheduler",
    "labelNames": [
        "DatabaseSchedulerName",
        "DatabaseSchedulerExecutedResult",
        "isSuccess"
    ],
    "name": "DatabaseBackupScheduler",
    "namespace": "ZStack/Scheduler"
},
{
    "description": "SchedulerJobGroup",
    "labelNames": [
        "SchedulerJobGroupName",
        "TotalExecutionJobCount",
        "FailedExecutionJobCount",
        "SchedulerJobGroupErrors"
    ],
    "name": "SchedulerJobGroup",
    "namespace": "ZStack/Scheduler"
},
{
    "description": "HostStatusChanged",
    "labelNames": [
        "OldStatus",
        "NewStatus"
    ],
    "name": "HostStatusChanged",
    "namespace": "ZStack/Host"
},
{
    "description": "HostUnknownVMDetected",
    "labelNames": [
        "UnknownVMIIdentity"
    ],
    "name": "HostUnknownVMDetected",
    "namespace": "ZStack/Host"
}

```

```

},
{
  "description": "HostVMOperateErrorDetected",
  "labelNames": [
    "VmUuidsString",
    "ErrorVMOperation",
    "Details"
  ],
  "name": "HostVMOperateErrorDetected",
  "namespace": "ZStack/Host"
},
{
  "description": "HostDisconnected",
  "labelNames": [
    "Error"
  ],
  "name": "HostDisconnected",
  "namespace": "ZStack/Host"
},
{
  "description": "HostCheckAlive",
  "labelNames": [
    "CheckProcess",
    "Details"
  ],
  "name": "HostCheckAlive",
  "namespace": "ZStack/Host"
},
{
  "description": "VMHAHostSelfFencerTriggered",
  "labelNames": [
    "PrimaryStorageUuid",
    "VmUuidsString",
    "Reason"
  ],
  "name": "VMHAHostSelfFencerTriggered",
  "namespace": "ZStack/Host"
},
{
  "description": "FaultMountPointOnHost",
  "labelNames": [
    "FaultMountPoint"
  ],
  "name": "FaultMountPointOnHost",
  "namespace": "ZStack/Host"
},
{
  "description": "HostConnected",
  "labelNames": [
    "OldStatus",
    "NewStatus"
  ],
  "name": "HostConnected",
  "namespace": "ZStack/Host"
},
{
  "description": "YunshanNSPInforEvents",
  "labelNames": [
    "RequestContent",
    "Results",
    "Details"
  ],

```

```
        "name": "YunshanNSPIInforEvents",
        "namespace": "ZStack/SDN"
    },
    {
        "description": "PrimaryStorageDisconnected",
        "labelNames": [
            "Error"
        ],
        "name": "PrimaryStorageDisconnected",
        "namespace": "ZStack/PrimaryStorage"
    },
    {
        "description": "PrimaryStorageConnected",
        "labelNames": [
            "OldStatus",
            "NewStatus"
        ],
        "name": "PrimaryStorageConnected",
        "namespace": "ZStack/PrimaryStorage"
    },
    {
        "description": "PrimaryStorageHostDisconnected",
        "labelNames": [
            "Error",
            "HostUuid"
        ],
        "name": "PrimaryStorageHostDisconnected",
        "namespace": "ZStack/PrimaryStorage"
    },
    {
        "description": "SessionForceLogout",
        "labelNames": [
            "accountUuid",
            "userUuid"
        ],
        "name": "SessionForceLogout",
        "namespace": "ZStack/Identity"
    },
    {
        "description": "ManagementNodeLeft",
        "labelNames": [
            "ManagementNodeIP"
        ],
        "name": "ManagementNodeLeft",
        "namespace": "ZStack/MN"
    },
    {
        "description": "ManagementNodeJoin",
        "labelNames": [
            "ManagementNodeIP"
        ],
        "name": "ManagementNodeJoin",
        "namespace": "ZStack/MN"
    },
    {
        "description": "ManagementNodeTemporalRegression",
        "labelNames": [
            "ManagementNodeIP"
        ],
        "name": "ManagementNodeTemporalRegression",
        "namespace": "ZStack/MN"
    }
},
```

```
{
  "description": "VMHAProcess",
  "labelNames": [
    "HAProcess",
    "HADetails"
  ],
  "name": "VMHAProcess",
  "namespace": "ZStack/VM"
},
{
  "description": "VMStateChangedOnHost",
  "labelNames": [
    "OldState",
    "NewState"
  ],
  "name": "VMStateChanged",
  "namespace": "ZStack/VM"
},
{
  "description": "VMHASTarted",
  "labelNames": [
    "DestinationHostUuid"
  ],
  "name": "VMHASTarted",
  "namespace": "ZStack/VM"
},
{
  "description": "VMStateChangedOnHost",
  "labelNames": [
    "OldState",
    "NewState",
    "SourceHostUuid",
    "DestinationHostUuid"
  ],
  "name": "VMStateChangedOnHost",
  "namespace": "ZStack/VM"
},
{
  "description": "VMStateInShutdown",
  "labelNames": [
    "Error"
  ],
  "name": "VMStateInShutdown",
  "namespace": "ZStack/VM"
},
{
  "description": "VRouterDisconnected",
  "labelNames": [
    "Error"
  ],
  "name": "VRouterDisconnected",
  "namespace": "ZStack/VRouter"
},
{
  "description": "VRouterConnected",
  "labelNames": [
    "OldStatus",
    "NewStatus"
  ],
  "name": "VRouterConnected",
  "namespace": "ZStack/VRouter"
},
```

```
{
    "description": "VRouterUnhealthy",
    "labelNames": [
        "Error"
    ],
    "name": "VRouterUnhealthy",
    "namespace": "ZStack/VRouter"
},
{
    "description": "VRouterHealthy",
    "labelNames": [
        "NewStatus"
    ],
    "name": "VRouterHealthy",
    "namespace": "ZStack/VRouter"
}
],
"success": true
}
```

- **VMHAStarted (The VM instance is started in HA mode in the other host)**

— DestinationHostUuid: The UUID of the host in which the VM instance is started in HA mode.

- **VMStateChangedOnHost (The state of VM instance in host is changed.)**

— OldState: The old state, such as Started and Stopped.

— NewState: The new state.

— SourceHostUuid: The UUID of the source host.

— DestinationHostUuid: The UUID of the destination host.



Note:

The SourceHostUuid and DestinationHostUuid might be the same.

- **VRouterDisconnected (The vRouter is disconnected.)**

— Error: The string that describes why the disconnection occurs.

- **BackupStorageDisconnected (The backup storage is disconnected.)**

— Error: The string that describes why the disconnection occurs.

- **HostStatusChanged (The host state is changed.)**

— OldStatus: The old status.

— NewStatus: The new status.



Note:

The status change caused by a user operation, such as performing a reconnection, will not trigger this event.

- **HostUnknownVMDetected (Unknown VM instance is detected in host.)**
 - UnknownVMIIdentity: The ID of the unknown VM instance. (You can view the VM instance ID by running the `virsh list` command.)
- **HostDisconnected (The host is disconnected.)**
 - Error: The string that describes why the disconnection occurs.
- **PrimaryStorageDisconnected (The primary storage is disconnected.)**
 - Error: The string that describes why the disconnection occurs.

6.1.5.4 External Components

ZWatch relies on two external components: Prometheus and InfluxDB. Prometheus stores time-series monitoring data (metrics), and InfluxDB stores event-related (such as audit data).

- **Prometheus memory usage**

You can control the memory usage of Prometheus by configuring `Prometheus.heapSize` in `zstack.properties`. The default value of `Prometheus.heapSize` is AUTO, which means that the memory is selected by the system. You can set `Prometheus.heapSize` to 512 MB, 1 GB, or a certain number of bytes (without the capacity modifier such as m, g, and t). Prometheus requires a minimum of 512 MB of memory. A value smaller than 512 MB might cause the management node to fail to start.

If `Prometheus.heapSize=AUTO`, the management node selects a memory value based on the physical memory size. The selection algorithm is as follows:

```
long total = Number of physical memory bytes
if (total <= SizeUnit.GIGABYTE.toByte(6)) {
    return SizeUnit.MEGABYTE.toByte(512);
} else if (total <= SizeUnit.GIGABYTE.toByte(8)) {
    return SizeUnit.GIGABYTE.toByte(1);
} else if (total <= SizeUnit.GIGABYTE.toByte(16)) {
    return SizeUnit.GIGABYTE.toByte(3);
} else if (total <= SizeUnit.GIGABYTE.toByte(32)) {
    return SizeUnit.GIGABYTE.toByte(6);
} else {
    return SizeUnit.GIGABYTE.toByte(8);
}
```



Note:

`Prometheus.heapSize` only controls the relative value of the memory used by Prometheus, not the absolute value. The memory used by Prometheus can be up to 1.5 times the value of `Prometheus.heapSize`.

- **Data retention period of Prometheus**

You can set the maximum retention period of monitoring data by configuring `Prometheus.retention` in `zstack.properties`. The default value is one year.

```
Prometheus.retention=8760h0m0s
```

- **Memory usage and data retention period of InfluxDB**

InfluxDB temporarily has no memory control parameters. The data is currently set to never be deleted, that is, data stored in InfluxDB will not be deleted by default.



Note:

The total amount of event data recorded by InfluxDB is small. Only API operations (change operations) and special events (such as host disconnection) will generate influxDB data.

6.1.6 Capacity Management

6.1.6.1 Operations

6.1.6.1.1 GetManagementNodeDirCapacity

Obtains the capacity of a management node directory. For example,

```
GetManagementNodeDirCapacity managementNodeUuids=33a2f11d59aa321aa4acfa78afe8f35a,6bf0aca356a13cf787d87ceeb8fcba7f
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
managementNodeUuids	The management node UUID.	Yes		3.9.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.9.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.9.0
timeout		Yes		

6.2 Backup Management

6.2.1 Backup Service (Plus)

6.2.1.1 Overview

Backup management integrates multiple disaster recovery technologies such as incremental backup and full backup that are suitable for multiple business scenarios. You can implement local backup and remote backup based on your business needs.

Backup Service is a separate feature module. To use this service, purchase both the Base License and the Plus License of Backup Service. The Plus License cannot be used independently.

Typical Backup Scenarios

Backup Service can be applied to the following three typical scenarios: local backup, remote backup, and Public Cloud backup.



Note:

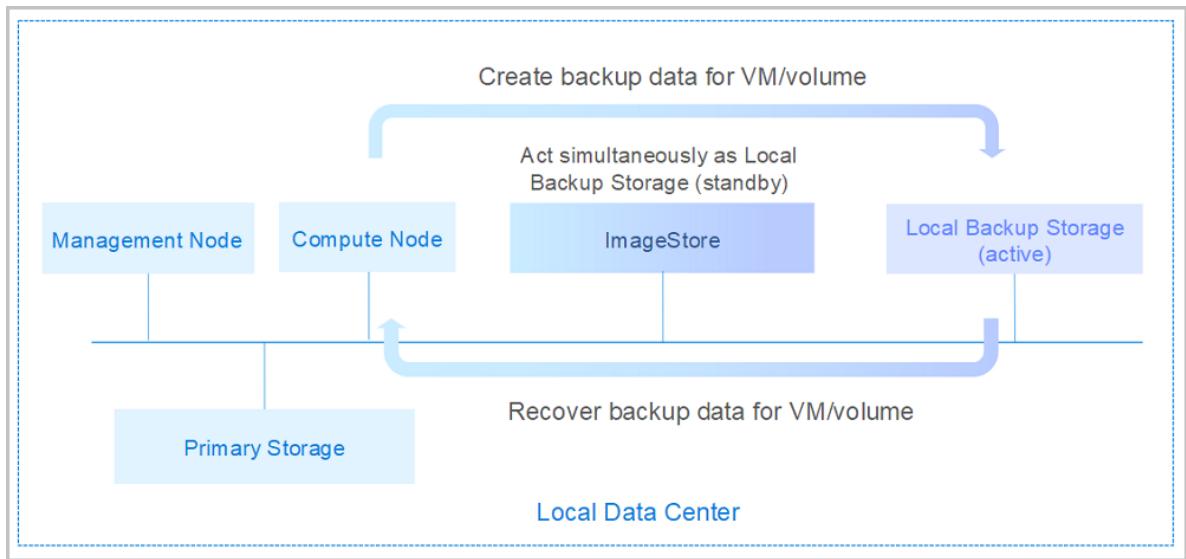
If you have the Enterprise Management Plus license at the same time, the project members (project managers, project admins, and general project members) can perform local backup for VM instances and volumes in the project.

- **Local Backup**

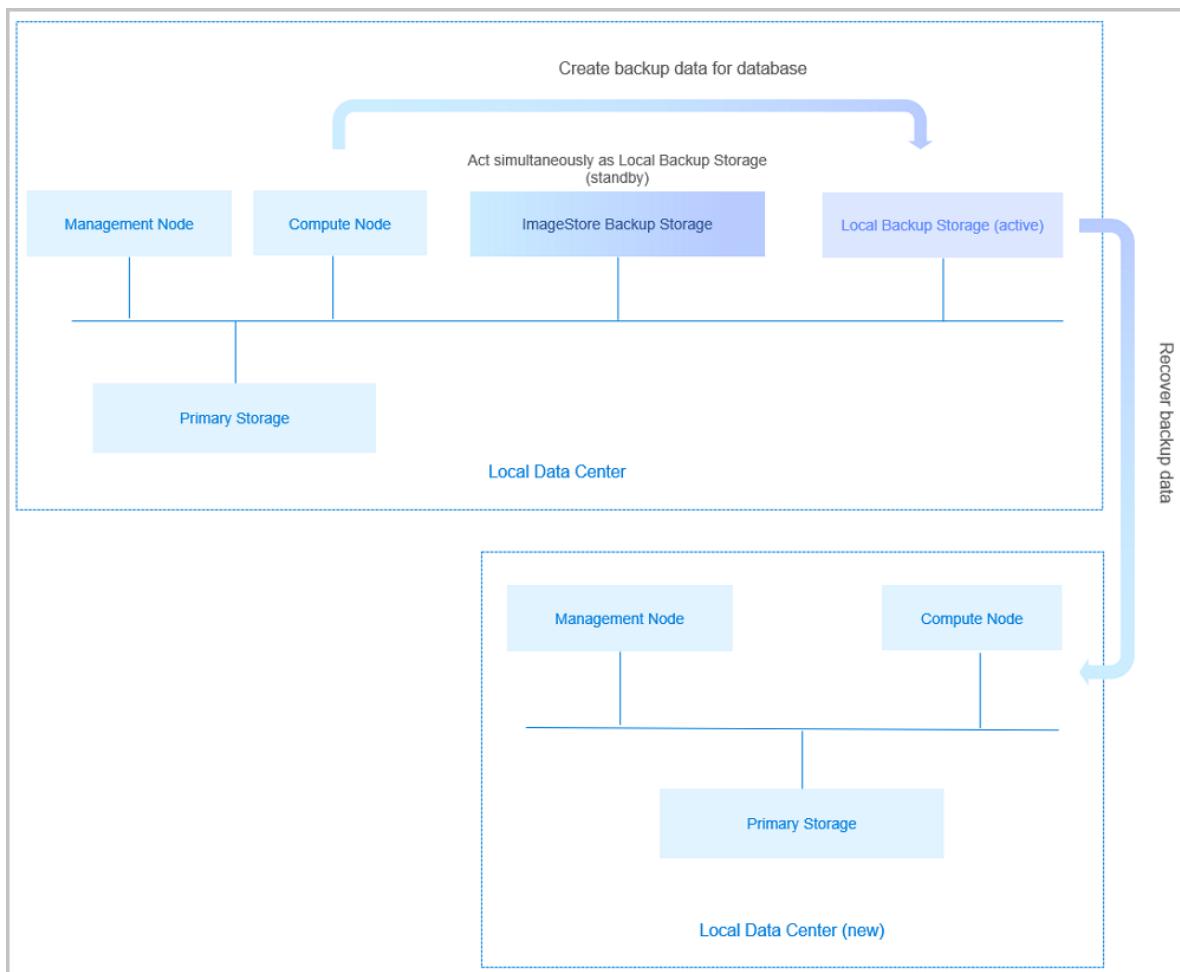
A local ImageStore backup storage can act as the **Local Backup Storage** to store scheduled backup data of the local VM instances, volumes, and management node databases.

Meanwhile, the seamless switchover between the master local backup storage and the standby local backup storage is supported, which effectively ensures your business continuity.

If your local data is mistakenly deleted, or data in the local primary storage is damaged, you can recover the backup data from the local backup storage, as shown in [Local Backup Scenario-1](#)

Figure 6-1: Local Backup Scenario-1

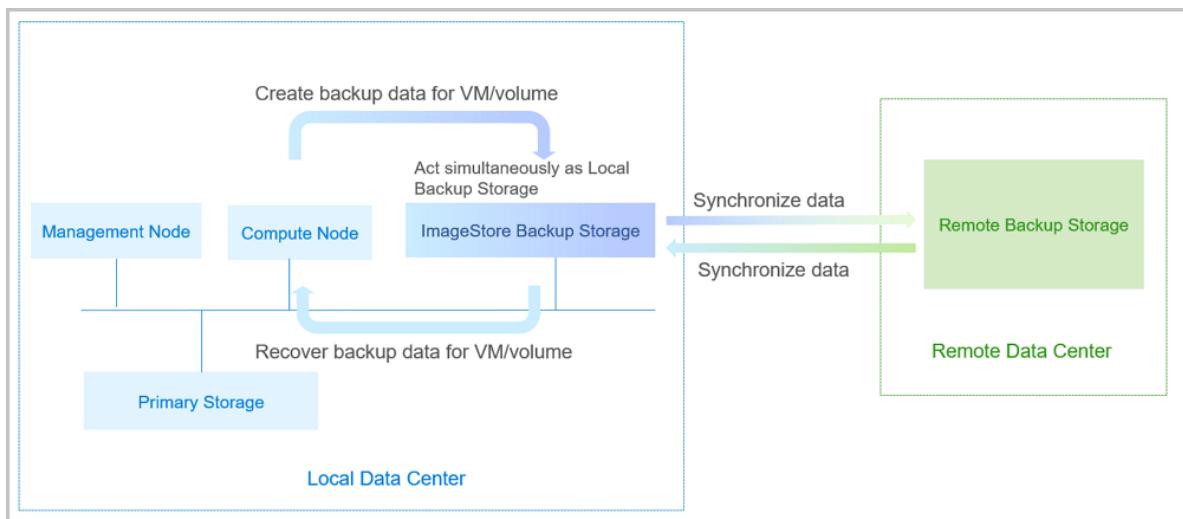
If you encounter a disaster in your local data center, you can rely totally on your local backup storage to rebuild your data center and recover your business, as shown in [Local Backup Scenario-2](#).

Figure 6-2: Local Backup Scenario-2

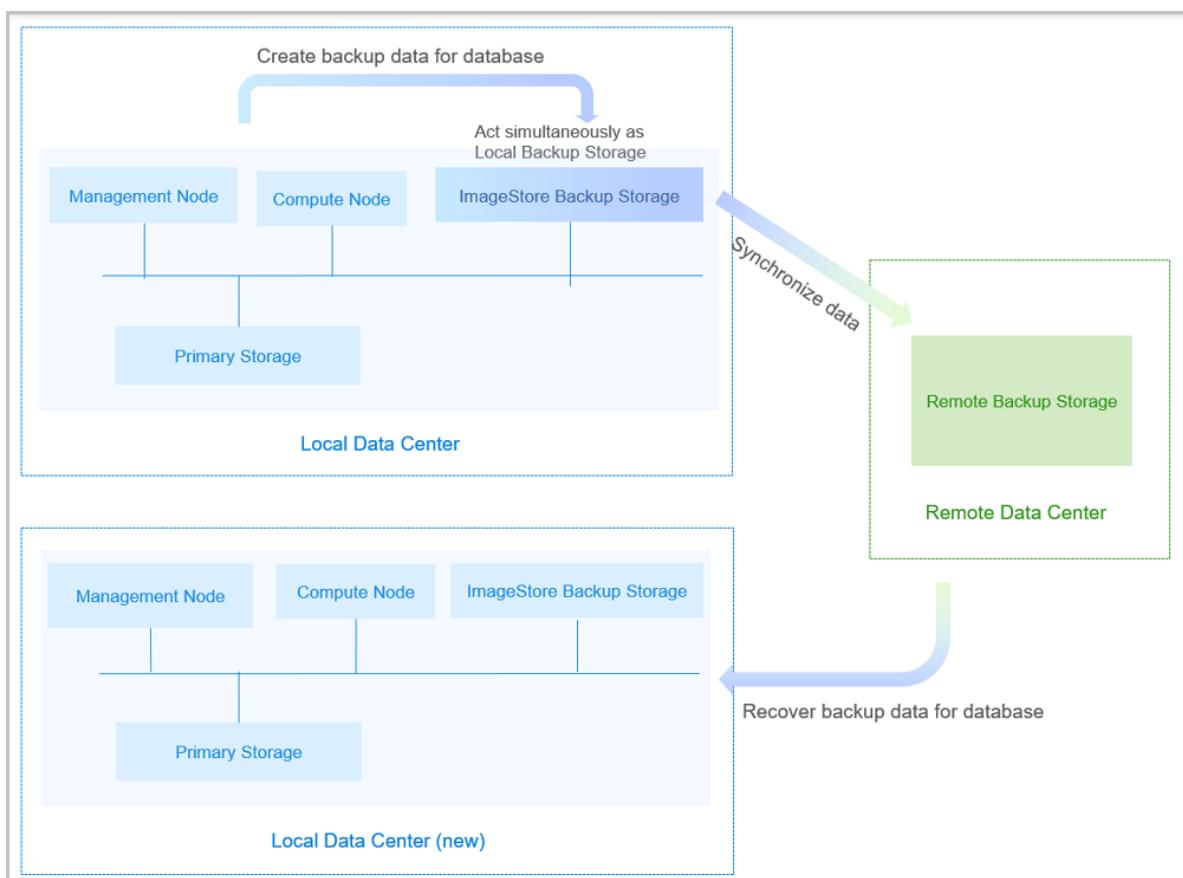
- **Remote Backup**

A storage server in a remote data center can act as the **Remote Backup Storage** to store the scheduled backup data of the local VM instances, volumes, and databases. The backup data needs to be synchronized to the remote backup storage from the local backup storage.

If your local data is mistakenly deleted, or data in the local primary storage is damaged, you can recover the backup data from the remote backup storage, as shown in [Remote Backup Scenario-1](#).

Figure 6-3: Remote Backup Scenario-1

If you encounter a disaster in your data center, you can rely totally on your remote backup storage to rebuild your data center and recover your business, as shown in [Remote Backup Scenario-2](#).

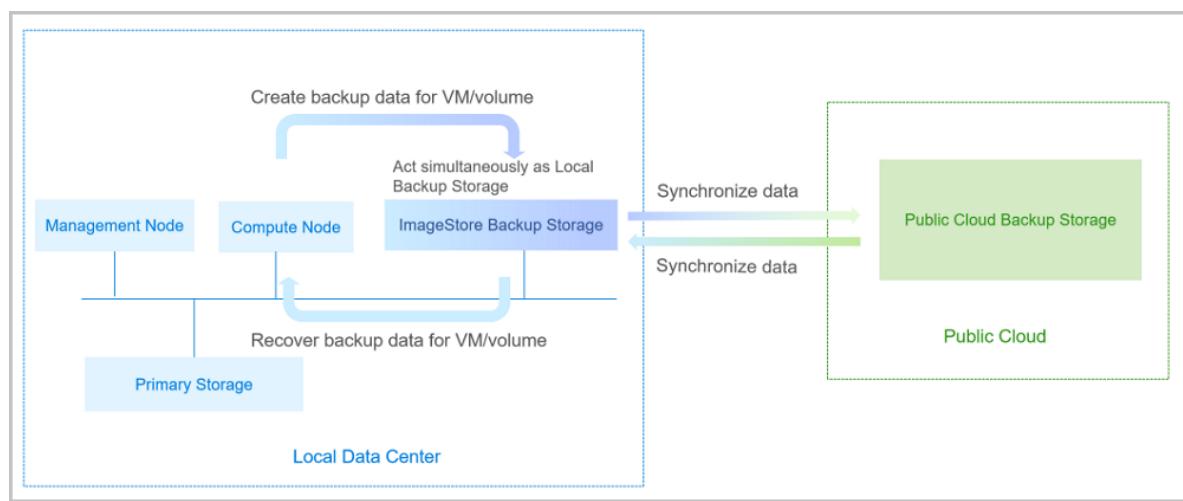
Figure 6-4: Remote Backup Scenario-2

- **Public Cloud Backup**

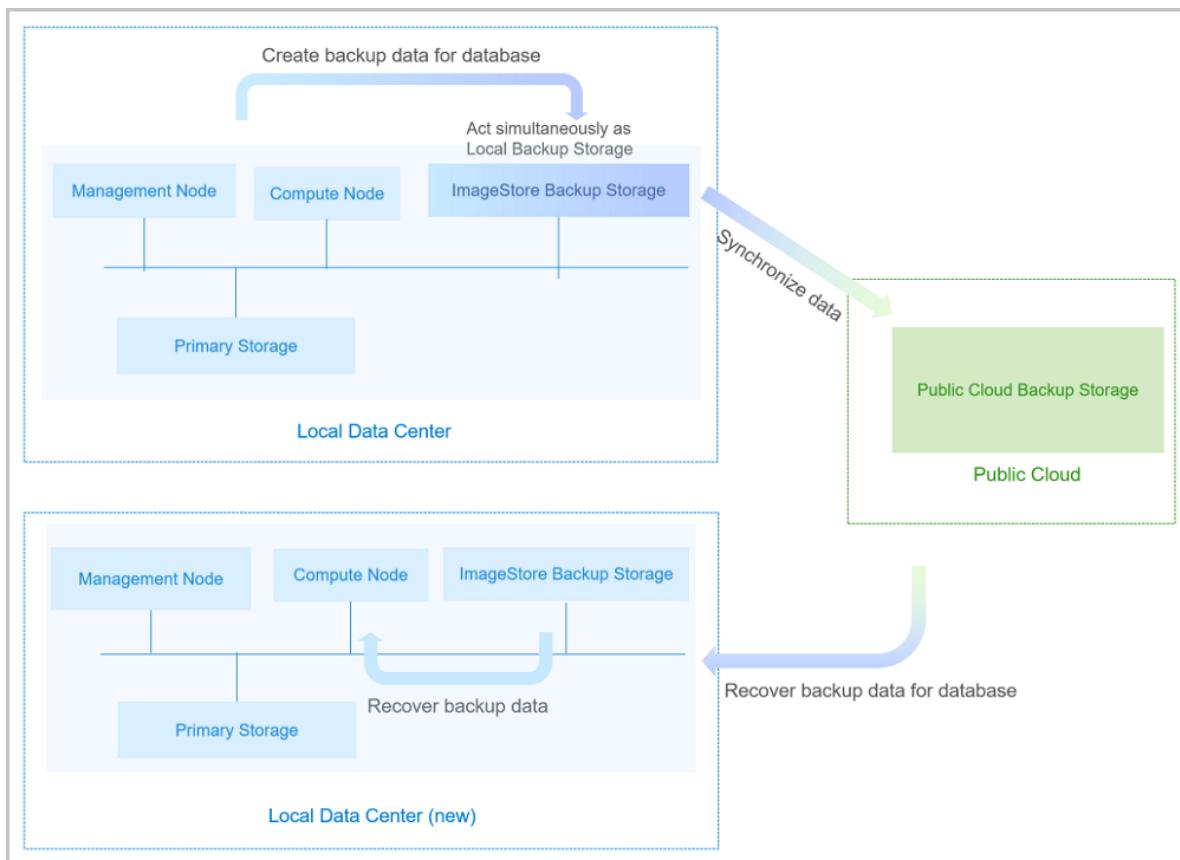
The storage server in the Public Cloud can act as the **Public Cloud Backup Storage** to store the scheduled backup data of the local VM instances, volumes, and databases. The backup data can be synchronized to the Public Cloud backup storage from the local backup storage.

If your local data is mistakenly deleted, or data in the local primary storage is damaged, you can recover the backup data from the Public Cloud backup storage, as shown in [*Public Cloud Backup Scenario-1*](#).

Figure 6-5: Public Cloud Backup Scenario-1



If you encounter a disaster in your data center, you can rely totally on your Public Cloud backup storage to rebuild your data center and recover your business, as shown in [*Public Cloud Backup Scenario-2*](#).

Figure 6-6: Public Cloud Backup Scenario-2

6.2.1.2 Inventory

Volume Backup Inventory

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			2.6.0
name	The name. For more information, see Resource Property .			2.6.0
description	The description. For more information, see Resource Property .	Yes		2.6.0

Name	Description	Optional	Valid Value	Starting Version
volumeUuid	The volume UUID.			2.6.0
type	The volume type.			2.6.0
state	The state of the volume backup.			2.6.0
status	The status of the volume backup.			2.6.0
size	The size of the current volume backup.			2.6.0
metadata	The related metadata of the volume backup.			2.6.0
backupStorageRefs	The references of the backup storage installation path.			2.6.0
groupBy	Groups rows into subgroups based on values of columns or expressions. This field is equivalent to the Group By clause in MySQL, such as <code>groupBy =type</code> .	Yes		2.6.0
createDate	The creation date. For more information, see Resource Property .			2.6.0
lastOpDate	The last operation date. For more information, see Resource Property .			2.6.0

Name	Description	Optional	Valid Value	Starting Version
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.6.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.6.0

Sample

```
{
    "inventories": [
        {
            "backupStorageRefs": [
                {
                    "backupStorageUuid": "7ea14cf51c847b8a1ae
84e8a49ef933",
                    "createDate": "Jul 25, 2018 4:55:41 PM",
                    "installPath": "zstore://1e3d8590456041b88644
54abac599132/eeb95535aa1669438e7ce1f8db4d90a104627c3f",
                    "lastOpDate": "Jul 25, 2018 4:55:41 PM",
                    "status": "Ready",
                    "volumeBackupUuid": "17aca6d09c0e4181a23a
c7c70eb4ab9a"
                }
            ],
            "createDate": "Jul 25, 2018 4:55:37 PM",
            "lastOpDate": "Jul 25, 2018 4:55:37 PM",
            "metadata": "{\"type\": \"Root\", \"name\": \"ROOT-for-333\", \"description\": \"Root volume for VM[uuid:7c3c2f94a39d4642916aa99657472e3]\", \"vmName\": \"333\", \"vmDescription\": \"\", \"vmInstanceUuid\": \"7c3c2f94a39d4642916aa99657472e3\", \"platform\": \"Linux\", \"clusterUuid\": \"8ad9ebf4b7a043499751269b67fceac\", \"primaryStorageUuid\": \"79d056d0aeaf437398f612b8a1bfff89f\", \"cpuNum\": 1, \"memorySize\": 536870912, \"instanceOfferingUuid\": \"01f2228c7e1c4d0d9aa7db056320f94e\", \"defaultL3NetworkUuid\": \"2341d7e6ef4544708cea0d4e9f6cda13\", \"vmNics\": [{ \"uuid\": \"e7e57aafb2a7410aa5f47cb881566def\", \"vmInstanceUuid\": \"7c3c2f94a39d4642916aa99657472e3\", \"usedIpUuid\": \"6a4383edb66232c0b1e34c9d0178450c\", \"l3NetworkUuid\": \"2341d7e6ef4544708cea0d4e9f6cda13\", \"ip\": \"172.20.118.6\", \"mac\": \"fa:c2:f9:87:13:00\", \"netmask\": \"255.255.0.0\", \"gateway\": \"172.20.0.1\", \"internalName\": \"vnic34.0\", \"deviceId\": 0, \"createDate\": \"Jul 25, 2018 12:37:21 PM\", \"lastOpDate\": \"Jul 25, 2018 12:37:21 PM\" } ] }",
            "name": "2",
            "size": 32374784,
            "state": "Enabled",
            "status": "Ready",
            "type": "Root",
            "uuid": "17aca6d09c0e4181a23ac7c70eb4ab9a",
            "volumeUuid": "0e4feel74e6e4d04b3dc00f4bfc761f5"
        }
    ],
    "createDate": "Jul 25, 2018 4:55:51 PM",
}
```

```

        "lastOpDate": "Jul 25, 2018 4:55:51 PM",
        "metadata": "{\"type\": \"Root\", \"name\": \"ROOT-for-333\", \"description\": \"Root volume for VM[uuid:7c3c2f94a39d46429166aa99657472e3]\", \"vmName\": \"333\", \"vmDescription\": \"\", \"vmInstanceUuid\": \"7c3c2f94a39d46429166aa99657472e3\", \"platform\": \"Linux\", \"clusterUuid\": \"8ad9ebf4b7a043499751269b67fceac\", \"primaryStorageUuid\": \"79d056d0aeaf437398f612b8a1bfff89f\", \"cpuNum\": 1, \"memorySize\": 536870912, \"instanceOfferingUuid\": \"01f2228c7e1c4d0d9aa7db056320f94e\", \"defaultL3NetworkUuid\": \"2341d7e6ef4544708cea0d4e9f6cd13\", \"vmNics\": [{\"uuid\": \"e7e57aaafb2a7410aa5f47cb881566def\", \"vmInstanceUuid\": \"7c3c2f94a39d46429166aa99657472e3\", \"usedIpUuid\": \"6a4383edb66232c0b1e34c9d0178450c\", \"l3NetworkUuid\": \"2341d7e6ef4544708cea0d4e9f6cd13\", \"ip\": \"172.20.118.6\", \"mac\": \"fa:c2:f9:87:13:00\", \"netmask\": \"255.255.0.0\", \"gateway\": \"172.20.0.1\", \"internalName\": \"vnic34.0\", \"deviceId\": 0, \"createDate\": \"Jul 25, 2018 12:37:21 PM\", \"lastOpDate\": \"Jul 25, 2018 12:37:21 PM\"}]}},\n        \"name\": \"3\",\n        \"size\": 32374784,\n        \"state\": \"Enabled\",\n        \"status\": \"Ready\",\n        \"type\": \"Root\",\n        \"uuid\": \"fe6f225fafdd4c8eaf840a136b6e587f\",\n        \"volumeUuid\": \"0e4fee174e6e4d04b3dc00f4bfc761f5\"\n    }\n],\n    \"success\": true\n}
}

```

Database Backup Inventory

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			3.0.0
name	The name. For more information, see Resource Property .			3.0.0
description	The description. For more information, see Resource Property .	Yes		3.0.0
state	The state of the database backup.			3.0.0
status	The status of the database backup.			3.0.0

Name	Description	Optional	Valid Value	Starting Version
size	The size of the current database backup.			3.0.0
metadata	The related metadata of the database backup.			3.0.0
groupBy	Groups rows into subgroups based on values of columns or expressions. This field is equivalent to the Group By clause in MySQL, such as groupBy =type.	Yes		3.0.0
createDate	The creation date. For more information, see Resource Property .			3.0.0
lastOpDate	The last operation date. For more information, see Resource Property .			3.0.0
userTags	The user tags. The user tags. For more information, see CreateUserTag .	Yes		3.0.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.0.0

Sample

{

```

    "inventories": [
        {
            "backupStorageRefs": [
                {
                    "backupStorageUuid": "dca2ed03807a4b2c9705
ba9dcfefe2ff",
                    "createDate": "Sep 19, 2018 2:42:04 PM",
                    "databaseBackupUuid": "eed88906f8a145929d87
3fbe4f542264",
                    "installPath": "zstore://zsbak/8f8b91526b
95a9d1157a99eee4de7b7b03446519",
                    "lastOpDate": "Sep 19, 2018 4:13:29 PM",
                    "status": "Ready"
                }
            ],
            "createDate": "Sep 19, 2018 2:42:02 PM",
            "lastOpDate": "Sep 19, 2018 2:42:02 PM",
            "metadata": "{\"name\":\"tast1\", \"version\":\"3.0.0\", \"createdTim
e\":\"Sep 19, 2018 2:42:03 PM\", \"md5\":\"6f3415a3a4c56c56f51ffd95f286fb7b
\"}",
            "name": "tast1",
            "size": 376991,
            "state": "Enabled",
            "status": "Ready",
            "uuid": "eed88906f8a145929d873fbe4f542264"
        }
    ],
    "success": true
}

```

Scheduler Job History Inventory

Name	Description	Optional	Valid Value	Starting Version
executeTime	The execution time.			3.5.0
id				3.5.0
requestDump	The job request.			3.5.0
resultDump	The job result.			3.5.0
schedulerJ obGroupUuid	The UUID of the scheduled job group.			3.5.0
schedulerJobUuid	The scheduled job UUID.			3.5.0
success				3.5.0
targetReso urceUuid	The target resource UUID.			3.5.0
triggerUuid	The trigger UUID.			3.5.0

Name	Description	Optional	Valid Value	Starting Version
groupBy	Groups rows into subgroups based on values of columns or expressions. This field is equivalent to the Group By clause in MySQL, such as <code>groupBy =type</code> .	Yes		3.5.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.5.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.5.0

Scheduler Job Group Inventory

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			3.4.0
name	The name. For more information, see Resource Property .			3.4.0
description	The description. For more information, see Resource Property .	Yes		3.4.0
state	The state of the scheduled job group.	Yes		3.4.0

Name	Description	Optional	Valid Value	Starting Version
jobData	The job data.	Yes		3.4.0
triggersUuid	The trigger UUID.	Yes		3.4.0
createDate	The creation date. For more information, see Resource Property .			3.4.0
lastOpDate	The last operation date. For more information, see Resource Property .			3.4.0
groupBy	Groups rows into subgroups based on values of columns or expressions. This field is equivalent to the Group By clause in MySQL, such as groupBy =type.	Yes		3.4.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.4.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.4.0

Sample

```
{
  "inventories": [
    {
      "uuid": "03dd26d45bb43bb094f3fdec29d78829",
      "name": "test",
      "createDate": "Nov 14, 2017 10:20:57 PM",
      "lastOpDate": "Nov 14, 2017 10:20:57 PM"
    }
  ]
}
```

```
}
```

6.2.1.3 Operations

6.2.1.3.1 CreateVolumeBackup

Creates a volume backup. For example,

```
CreateVolumeBackup name=test volumeUuid=c675eb9b802b42248739c5a2a4330e
e7 backupStorageUuid=3feb163a6a694a7f92b9636c4836e9fe
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
volumeUuid	The volume UUID.			2.6.0
backupStorageUuid	The backup storage UUID.			2.6.0
name	The resource name.			2.6.0
description	The detailed description of the resource.	Yes		2.6.0
volumeReadBandwidth	The volume read bandwidth.	Yes		3.1.0
volumeWriteBandwidth	The volume write bandwidth.	Yes		3.1.0
networkReadBandwidth	The network read bandwidth.	Yes		3.1.0
networkWriteBandwidth	The network write bandwidth.	Yes		3.1.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.6.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.6.0

Name	Description	Optional	Valid Value	Starting Version
timeout		Yes		

**Note:**

- When you create a volume backup in ZStack Cloud, the data of the volume in a host will be backed up to an ImageStore backup storage. Note that the data exchange in this process will use the backup network. You can add the **backupnetwork** option to **SystemTags**.
 - Format of the **backupnetwork** option: `backup::network::cidr::CIDR`
 - Example: `backup::network::cidr::10.0.0.0/8`
- When you create a volume backup in ZStack Cloud, you can specify how to back up the volume data to the backup storage by adding the **fsInfo** option to **SystemTags**.
 - Format of the **fsInfo** option: `fsInfo::type::$TYPE::url::$URL::options::$OPTIONS`
 - Example: `fsInfo::type::nfs::url::172.32.1.119:/nas/nfs2::options::nolock,vers=3,rsize=32768,wszie=32768`
- When you create a volume backup in ZStack Cloud, you can configure the concurrency level for the volume backup by adding the **volumeLiveBackup** option to **SystemTags**.
 - Format of the **volumeLiveBackup** option: `volumeLiveBackup::parallelismDegree:::$NUMBER`
 - Example: `volumeLiveBackup::parallelismDegree:::1`

6.2.1.3.2 DeleteVolumeBackup

Deletes a volume backup. For example,

```
DeleteVolumeBackup uuid=c675eb9b802b42248739c5a2a4330ee7
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			2.6.0
backupStorageUuids	The backup storage UUID list.	Yes		2.6.0
deleteMode	The delete mode.	Yes		2.6.0

Name	Description	Optional	Valid Value	Starting Version
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.6.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.6.0
timeout		Yes		

6.2.1.3.3 QueryVolumeBackup

Queries a volume backup record. For example,

```
QueryVolumeBackup Uuid=c675eb9b802b42248739c5a2a4330ee7
```

Primitive Fields of Query

See [Volume Backup Inventory](#).

Nested and Expanded Fields of Query

Field	Inventory	Description	Starting Version
backupStorage	Backup Storage Inventory	The backup storage to which the volume backup belongs.	2.6.0
backupStorageRefs	Backup Storage Reference	The reference that is used to query the installation path of the backup storage.	2.6.0

6.2.1.3.4 CreateDataVolumeTemplateFromVolumeBackup

Creates a data volume image from a volume backup. For example,

```
CreateDataVolumeTemplateFromVolumeBackup name=test backupUuid
=fe6f225fafdd4c8eaf840a136b6e587f backupStorageUuid=c675eb9b80
2b42248739c5a2a4330ee7
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
backupUuid	The volume backup UUID.			2.6.0
backupStorageUuid	The backup storage UUID.			2.6.0
name	The resource name.			2.6.0
description	The detailed description of the resource.	Yes		2.6.0
guestOsType	The guest operating system type.	Yes		2.6.0
platform	The guest operating system platform.	Yes	<ul style="list-style-type: none"> • Linux • Windows • Other • Paravirtualization • WindowsVirtio 	2.6.0
architecture		Yes		4.0.0
tagUuids	The tag UUIDs.	Yes		4.0.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.6.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.6.0

Name	Description	Optional	Valid Value	Starting Version
timeout		Yes		

6.2.1.3.5 CreateRootVolumeTemplateFromVolumeBackup

Creates a root volume image from a volume backup. For example,

```
CreateRootVolumeTemplateFromVolumeBackup name=test backupUuid
=fe6f225fafdd4c8eaf840a136b6e587f backupStorageUuid=c675eb9b80
2b42248739c5a2a4330ee7
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
backupUuid	The volume backup UUID.			2.6.0
backupStorageUuid	The backup storage UUID.			2.6.0
name	The resource name.			2.6.0
description	The detailed description of the resource.	Yes		2.6.0
guestOsType	The guest operating system type.	Yes		2.6.0
platform	The guest operating system platform.	Yes	<ul style="list-style-type: none"> • Linux • Windows • Other • Paravirtualization • WindowsVirtio 	2.6.0
architecture		Yes	<ul style="list-style-type: none"> • x86_64 • aarch64 • mips64el 	4.0.0
tagUuids	The tag UUIDs.	Yes		4.0.0
userTags	The user tags. For more	Yes		2.6.0

Name	Description	Optional	Valid Value	Starting Version
	information, see CreateUserTag .			
systemTags	The system. For more information, see CreateSystemTag .	Yes		2.6.0
timeout		Yes		

6.2.1.3.6 SyncVolumeBackup

Synchronizes a volume backup. For example,

```
SyncVolumeBackup imageStoreUuid=dfa5adc643d34dc88b78153deb918dd8
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
imageStoreUuid	The ImageStore UUID.			3.5.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.5.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.5.0
timeout		Yes		

6.2.1.3.7 RevertVolumeFromVolumeBackup

Removes a volume from a volume backup. For example,

```
RevertVolumeFromVolumeBackup uuid=8a996d1416ed44ccb183e24f46c34206
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The volume backup UUID.			2.6.0

Name	Description	Optional	Valid Value	Starting Version
backupStorageUuid	The backup storage UUID.	Yes		2.6.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.6.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.6.0
timeout		Yes		

6.2.1.3.8 RecoverBackupFromImageStoreBackupStorage

Recover a volume backup from a ImageStore backup storage. For example,

```
RecoverBackupFromImageStoreBackupStorage uuid=8a996d1416ed44ccb183
e24f46c34206 srcBackupStorageUuid=c675eb9b802b42248739c5a2a4330ee7
dstBackupStorageUuid=c675eb9b802b42248739c5a2a4330ee7
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The volume backup UUID.			2.6.0
srcBackupStorageUuid	The UUID of the source backup storage.			2.6.0
dstBackupStorageUuid	The UUID of the destination backup storage UUID.			2.6.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.6.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.6.0

Name	Description	Optional	Valid Value	Starting Version
	CreateSystemTag .			
timeout		Yes		

6.2.1.3.9 SyncBackupFromImageStoreBackupStorage

Synchronizes a volume backup to a backup storage. For example,

```
SyncBackupFromImageStoreBackupStorage uuid=8a996d1416ed44ccb183
e24f46c34206 srcBackupStorageUuid=c675eb9b802b42248739c5a2a4330ee7
dstBackupStorageUuid=c675eb9b802b42248739c5a2a4330ee7
```

Parameters

Name	Description	Optional	Valid Value	Starting Value
uuid	The volume backup UUID.			2.6.0
srcBackupStorageUuid	The UUID of the source backup storage.			2.6.0
dstBackupStorageUuid	The UUID of the destination backup storage UUID.			2.6.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.6.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.6.0
timeout		Yes		

6.2.1.3.10 CreateVmBackup

Creates a VM backup. For example,

```
CreateVmBackup rootVolumeUuid=ae62268e5ba7491face04a44103e3188
backupStorageUuid=dca2ed03807a4b2c9705ba9dcfefe2ff name=VmBackup
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
rootVolumeUuid	The root volume UUID.			3.0.0
backupStorageUuid	The backup storage UUID.			3.0.0
name	The resource name.			3.0.0
description	The detailed description of the resource.	Yes		3.0.0
resourceUuid		Yes		3.0.0
volumeReadBandwidth	The volume read bandwidth.	Yes		3.1.0
volumeWriteBandwidth	The volume write bandwidth.	Yes		3.1.0
networkReadBandwidth	The network read bandwidth.	Yes		3.1.0
networkWriteBandwidth	The network write bandwidth.	Yes		3.1.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.0.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.0.0
timeout		Yes		

**Note:**

- When you create a VM backup in ZStack Cloud, the data of the VM instance in a host will be backed up to an ImageStore backup storage. The data exchange in this process will use the backup network. Note that you can add the **backupnetwork** option to **SystemTags**.
 - Format of the **backupnetwork** option: `backup::network::cidr::CIDR`
 - Example: `backup::network::cidr::10.0.0.0/8`
- When you create a VM backup in ZStack Cloud, you can specify how to back up the VM instance data to the backup storage by adding the **fsInfo** option to **SystemTags**.
 - Format of the **fsInfo** option: `fsInfo::type::$TYPE::url::$URL::options::$OPTIONS`
 - Example: `fsInfo::type::nfs::url::172.32.1.119:/nas/nfs2::options::noLOCK,vers=3,rsize=32768,wsize=32768`
- When you create a VM backup in ZStack Cloud, you can configure the concurrency level for the VM backup by adding the **volumeLiveBackup** option to **SystemTags**.
 - Format of the **volumeLiveBackup** option: `volumeLiveBackup::parallelismDegree:::$NUMBER`
 - Example: `volumeLiveBackup::parallelismDegree:::1`

6.2.1.3.11 SyncVmBackup

Synchronizes a VM backup. For example,

```
SyncVmBackup imageStoreUuid=dfa5adc643d34dc88b78153deb918dd8
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
imageStoreUuid	The backup storage UUID.			3.5.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.5.0
systemTags	The system tags. For more information, see	Yes		3.5.0

Name	Description	Optional	Valid Value	Starting Version
	CreateSystemTag .			
timeout		Yes		

6.2.1.3.12 DeleteVmBackup

Deletes a VM backup. For example,

```
DeleteVmBackup groupUuid=c6c4e6532117404b88b34d6a92f9916a
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
groupUuid	The backup group UUID.			3.0.0
backupStorageUuids	The backup storage UUID list.	Yes		3.0.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.0.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.0.0
timeout		Yes		

6.2.1.3.13 CreateVmFromVmBackup

Creates a VM instance from a VM backup. For example,

```
CreateVmFromVmBackup name=VM-test groupUuid=6408192a514a45b59bd695cb3440435f
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
name	The resource name.			

Name	Description	Optional	Valid Value	Starting Version
groupUuid	The UUID of the VM backup group.			
backupStorageUuid	The backup storage UUID.	Yes		
instanceOfferingUuid	The instance offering UUID.			
l3NetworkUuids	The L3 network UUID list.			
type	The VM instance type.	Yes		
zoneUuid	The zone UUID.	Yes		
clusterUuid	The cluster UUID.	Yes		
hostUuid	The host UUID.	Yes		
primaryStorageUuidForRootVolume	The UUID of the root volume primary storage.	Yes		
primaryStorageUuidForDataVolume	The UUID of the data volume primary storage.	Yes		
description	The detailed description of the resource.	Yes		
rootVolumeSystemTags	The system tags of the root volume.	Yes		
dataVolumeSystemTags	The system tags of the data volume.	Yes		
defaultL3NetworkUuid	The UUID of the default L3 network.	Yes		
resourceUuid		Yes		
userTags	The user tags. For more	Yes		

Name	Description	Optional	Valid Value	Starting Version
	information, see CreateUserTag .			
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		
timeout		Yes		


Note:

- When you create a VM instance from a VM backup, you can specify the volume provisioning strategy by adding the **volumeProvisioningStrategy** option to **SystemTags**. The SystemTag is passed by using the **rootVolumeSystemTags** parameter.
- Format of the **volumeProvisioningStrategy** option: `volumeProvisioningStrategy::ThinProvisioning`, `volumeProvisioningStrategy::ThickProvisioning`
- Example: `volumeProvisioningStrategy::ThinProvisioning`, `volumeProvisioningStrategy::ThickProvisioning`

6.2.1.3.14 RevertVmFromVmBackup

Reverts a VM instance from a VM backup. For example,

```
RevertVmFromVmBackup groupUuid=6408192a514a45b59bd695cb3440435f
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
groupUuid	The backup group UUID.			3.0.0
backupStorageUuid	The backup storage UUID.	Yes		3.0.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.0.0
systemTags	The system tags. For more	Yes		3.0.0

Name	Description	Optional	Valid Value	Starting Version
	information, see CreateSystemTag .			
timeout		Yes		

6.2.1.3.15 RecoverVmBackupFromImageStoreBackupStorage

Recover a VM backup from a standby ImageStore backup storage. For example,

```
RecoverVmBackupFromImageStoreBackupStorage groupUuid=6408192a51
4a45b59bd695cb3440435f srcBackupStorageUuid=dca2ed03807a4b2c9705
ba9dcfefe2ff dstBackupStorageUuid=dca2ed03807a4b2c9705ba9dcfefe2ff
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
groupUuid	The backup group UUID.			3.0.0
srcBackupStorageUuid	The UUID of the local backup storage.			3.0.0
dstBackupStorageUuid	The UUID of the standby backup storage.			3.0.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.0.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.0.0
timeout		Yes		

6.2.1.3.16 SyncVmBackupFromImageStoreBackupStorage

Synchronizes a VM backup to a standby ImageStore backup storage. For example,

```
SyncVmBackupFromImageStoreBackupStorage groupUuid=6408192a514a45b59bd6
95cb3440435f srcBackupStorageUuid=dca2ed03807a4b2c9705ba9dcfe2ff
dstBackupStorageUuid=dca2ed03807a4b2c9705ba9dcfe2ff
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
groupUuid	The backup group UUID.			3.0.0
srcBackupStorageUuid	The UUID of the local backup storage.			3.0.0
dstBackupStorageUuid	The UUID of the standby backup storage.			3.0.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.0.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.0.0
timeout		Yes		

6.2.1.3.17 CreateDatabaseBackup

Creates a database backup. For example,

```
CreateDatabaseBackup name=database1 backupStorageUuid=dca2ed0380
7a4b2c9705ba9dcfe2ff
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
name	The resource name.			3.0.0

Name	Description	Optional	Valid Value	Starting Version
backupStorageUuid	The backup storage UUID.			3.0.0
description	The detailed description of the resource.	Yes		3.0.0
resourceUuid		Yes		3.0.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.0.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.0.0
timeout		Yes		

6.2.1.3.18 DeleteDatabaseBackup

Deletes a database backup. For example,

```
DeleteDatabaseBackup uuid=d7bb0605999d4d8983e841810b846f57
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			3.0.0
backupStorageUuids	The backup storage UUID list.	Yes		3.0.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.0.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.0.0

Name	Description	Optional	Valid Value	Starting Version
timeout		Yes		

6.2.1.3.19 QueryDatabaseBackup

Queries a database backup. For example,

```
QueryDatabaseBackup
```

Primitive Fields of Query

See [Database Backup Inventory](#).

Nested and Expanded Fields of Query

Field	Inventory	Description	Starting Version
backupStorage	Backup Storage Inventory	The backup storage to which the database backup belongs.	3.0.0
backupStorageRefs	Backup Storage Reference	The reference that is used to query the installation path of the backup storage.	3.0.0

6.2.1.3.20 SyncDatabaseBackup

Synchronizes a database backup. For example,

```
SyncDatabaseBackup imageStoreUuid=f8f76255778e4c8cbf33eb861e51e690
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
imageStoreUuid	The backup storage UUID.			3.2.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.2.0
systemTags	The system tags. For more information, see	Yes		3.2.0

Name	Description	Optional	Valid Value	Starting Version
	CreateSystemTag .			
timeout		Yes		

6.2.1.3.21 RecoverDatabaseFromBackup

Recover a database from a database backup. For example,

```
RecoverDatabaseFromBackup mysqlRootPassword=cloud.mysql.password
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.	Yes		3.0.0
backupStorageUrl	The backup storage URL.	Yes		3.0.0
backupInstallPath	The installation path of the database backup.	Yes		3.0.0
mysqlRootPassword	The root password of the MySQL database.			3.0.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.0.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.0.0
timeout		Yes		

6.2.1.3.22 ExportDatabaseBackupFromBackupStorage

Exports a database backup from a backup storage. For example,

```
ExportDatabaseBackupFromBackupStorage databaseBackupUuid=eed88906f8
a145929d873fbe4f542264 backupStorageUuid=dca2ed03807a4b2c9705
ba9dcfe2ff
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
backupStorageUuid	The backup storage UUID.			3.0.0
databaseBackupUuid	The database backup UUID.			3.0.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.0.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.0.0
timeout		Yes		

6.2.1.3.23 GetDatabaseBackupFromImageStore

Obtains information about a database backup from a backup storage. For example,

```
GetDatabaseBackupFromImageStore url=/Cloud_bs
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
url	The backup storage URL.			3.0.0
registryPort	The access port of the backup storage.	Yes		3.0.0
userTags	The user tags. For more	Yes		3.0.0

Name	Description	Optional	Valid Value	Starting Version
	information, see CreateUserTag .			
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.0.0
timeout		Yes		

6.2.1.3.24 DeleteExportedDatabaseBackupFromBackupStorage

Deletes an exported database backup from a backup storage. For example,

```
DeleteExportedDatabaseBackupFromBackupStorage backupStorageUuid
=dca2ed03807a4b2c9705ba9dcfe2ff databaseBackupUuid=eed88906f8
a145929d873fbe4f542264
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
backupStorageUuid	The backup storage UUID.			3.0.0
databaseBackupUuid	The database backup UUID.			3.0.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.0.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.0.0
timeout		Yes		

6.2.1.3.25 SyncDatabaseBackupFromImageStoreBackupStorage

Synchronizes a database backup to a standby backup storage. For example,

```
SyncDatabaseBackupFromImageStoreBackupStorage srcBackupStorageUuid=eed88906f8a145929d873fbe4f542264 uuid=eed88906f8a145929d873fbe4f542264 dstBackupStorageUuid=eed88906f8a145929d873fbe4f542264
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			3.0.0
srcBackupStorageUuid				3.0.0
dstBackupStorageUuid				3.0.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.0.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.0.0
timeout		Yes		

6.2.1.3.26 AddSchedulerJobGroupToSchedulerTrigger

Adds a scheduled job group to a scheduler trigger. For example,

```
AddSchedulerJobGroupToSchedulerTrigger schedulerJobGroupUuid=ec8d2952f8f13747bbbf24f93585a63d schedulerTriggerUuid=4b5bc56b58623324afe0a57951a96064
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
schedulerJobGroupUuid	The UUID of the scheduled job group.			3.4.0

Name	Description	Optional	Valid Value	Starting Version
schedulerTriggerUuid	The scheduler trigger UUID.			3.4.0
triggerNow	Whether the trigger works immediately.	Yes		3.4.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.4.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.4.0
timeout		Yes		

6.2.1.3.27 RemoveSchedulerJobGroupFromSchedulerTrigger

Removes a scheduled job group from a scheduler trigger. For example,

```
RemoveSchedulerJobGroupFromSchedulerTrigger schedulerJobGroupUuid
=ec8d2952f8f13747bbbf24f93585a63d schedulerTriggerUuid=4b5bc56b58
623324afe0a57951a96064
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
schedulerJobGroupUuid	The UUID of the scheduled job group.			3.4.0
schedulerTriggerUuid	The scheduler trigger UUID.			3.4.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.4.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.4.0

Name	Description	Optional	Valid Value	Starting Version
	CreateSystemTag .			
timeout		Yes		

6.2.1.3.28 RunSchedulerTrigger

Runs a scheduler trigger. For example,

```
RunSchedulerTrigger uuid=8cd63a3dc09e49f0a99512f5f75a249c
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The scheduler UUID.			3.5.0
jobUuids	The job UUID of the optional trigger.	Yes		3.5.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.5.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.5.0
timeout		Yes		

6.2.1.3.29 CreateSchedulerJobGroup

Creates a scheduled job group. For example,

```
CreateSchedulerJobGroup name=test type=startVm
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
name	The resource name.			3.4.0

Name	Description	Optional	Valid Value	Starting Version
description	The detailed description of the resource.	Yes		3.4.0
type	The scheduled job type.	Yes	<ul style="list-style-type: none"> • startVm • stopVm • rebootVm • volumeSnap shot • volumeBackup • vmBackup • databaseBackup • runAutoSchedulingGroup • addIAM2ProjectLoginExpired • cancelIAM2ProjectLoginExpired 	4.3.0
parameters	The parameters of the scheduled job group.	Yes		3.4.0
resourceUuid	The resource UUID.	Yes		3.4.0
tagUuids	The tag UUID list.	Yes		3.4.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.4.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.4.0
timeout		Yes		

6.2.1.3.30 DeleteSchedulerJobGroup

Deletes a scheduled job group. For example,

```
DeleteSchedulerJobGroup uuid=dca2ed03807a4b2c9705ba9dcfefe2ff
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The scheduled job group UUID.			3.4.0
deleteMode	The delete mode.	Yes		3.4.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.4.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.4.0
timeout		Yes		

6.2.1.3.31 UpdateSchedulerJobGroup

Updates a scheduled job group. For example,

```
UpdateSchedulerJobGroup uuid=dca2ed03807a4b2c9705ba9dcfefe2ff
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The scheduled job group UUID.			3.4.0
name	The resource name.	Yes		3.4.0
description	The detailed description of the resource.	Yes		3.4.0
state	The state.	Yes	<ul style="list-style-type: none"> • Enable • Disable 	3.4.0

Name	Description	Optional	Valid Value	Starting Version
parameters	The parameters of the scheduled job group.	Yes		3.4.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.4.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.4.0
timeout		Yes		

6.2.1.3.32 QuerySchedulerJobGroup

Queries a scheduled job group. For example,

```
QuerySchedulerJobGroup
```

Primitive Fields of Query

See [Scheduler Job Group Inventory](#).

Nested and Expanded Fields of Query

Field	Inventory	Description	Starting Version
trigger	Trigger Inventory	The trigger to which a scheduled job is added.	3.4.0

6.2.1.3.33 AddSchedulerJobsToSchedulerJobGroup

Adds a scheduled job to a scheduled job group. For example,

```
AddSchedulerJobsToSchedulerJobGroup schedulerJobGroupUuid=c6c4e65321
17404b88b34d6a92f9916a schedulerJobUuids=8b2e6f64e2404e48a072
69487af2f587
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
schedulerJobGroupUuid	The UUID of the scheduled job group.			3.4.0
schedulerJobUuids	The scheduled job UUID.			3.4.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.4.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.4.0
timeout		Yes		

6.2.1.3.34 RemoveSchedulerJobsFromSchedulerJobGroup

Removes a scheduled job from a scheduled job group. For example,

```
RemoveSchedulerJobsFromSchedulerJobGroup schedulerJobGroupUuid
=c6c4e6532117404b88b34d6a92f9916a schedulerJobUuids=8b2e6f64e2
404e48a07269487af2f587
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
schedulerJobGroupUuid	The UUID of the scheduled job group.			3.4.0
schedulerJobUuids	The scheduled job UUID.			3.4.0

Name	Description	Optional	Valid Value	Starting Version
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.4.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.4.0
timeout		Yes		

6.2.1.3.35 QuerySchedulerJobHistory

Queries a scheduled job record. For example,

```
QuerySchedulerJobHistory
```

Primitive Fields of Query

See [Scheduler Job History Inventory](#).

6.2.1.3.36 GetSchedulerExecutionReport

Obtains the execution report of a scheduled job. For example,

```
GetSchedulerExecutionReport startTime=1.5856704E12 intervalTimeUnit=
Month range=4.0 schedulerJobTypes=vmBackup
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
startTime	The start time of the report.			3.9.0
intervalTimeUnit	The unit of the interval.		<ul style="list-style-type: none"> • Hour • Month 	3.9.0
range	The time range of the report.			3.9.0
schedulerJobTypes	The type of the scheduled job.			3.9.0
userTags	The user tags. For more	Yes		3.9.0

Name	Description	Optional	Valid Value	Starting Version
	information, see CreateUserTag .			
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.9.0
timeout		Yes		

6.2.1.4 Tags

You can create a user tag on an image by using `resourceType=ImageVO`. For example,

```
CreateUserTag resourceType=ImageVO tag=golden-ResourceStack
resourceUuid=8a996d1416ed44ccb183e24f46c34206
```

6.3 Job Scheduling

6.3.1 Overview

The schedulers and scheduled jobs are completely decoupled. You can create different scheduled jobs and schedulers with different rules as needed. You can also add a scheduled job to, or remove it from a scheduler. The operations on schedulers and scheduled jobs will be completely audited.

6.3.2 Inventory

Properties

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			2.1
description	The detailed description of the resource.	Yes		2.1
name	The resource name.			2.1
state	The state.		• Enabled	2.1

Name	Description	Optional	Valid Value	Starting Version
			• Disabled	
targetResourceUuid	The UUID of the target resource.			2.1
createDate	The creation date. For more information, see Resource Property .			2.1
lastOpDate	The last operation date. For more information, see Resource Property .			2.1

Sample

```
{
  "inventories": [],
  "success": true
}
```

6.3.3 Operations

6.3.3.1 CreateSchedulerJob

Creates a scheduled job. For example,

```
CreateSchedulerJob name=SchedulerJob1 targetResourceUuid=d672c98c9ea5416a83d15696f324368c \
type=startVm
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
name	The resource name.			2.1
description	The detailed description of the resource.	Yes		2.1
targetResourceUuid	The UUID of the target resource.			2.1

Name	Description	Optional	Valid Value	Starting Version
type	The scheduled job type.		<ul style="list-style-type: none"> • startVm • stopVm • rebootVm • volumeSnapshot • runAutoScalingGroup • addIAM2ProjectLoginExpired • cancelIAM2ProjectLoginExpired 	4.3.0
parameters		Yes		2.1
resourceUuid		Yes		2.1
userTags	The user tags. For more information, see CreateUserTag . The resource type is SchedulerJobVO.	Yes		2.1
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is SchedulerJobVO.	Yes		2.1
timeout		Yes		

6.3.3.2 DeleteSchedulerJob

Deletes a scheduled job. For example,

```
DeleteSchedulerJob uuid=94b1126b2cc44b5ea0e1d31026e24c9f
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			2.1
deleteMode	The delete mode. For more information, see Delete Resources .	Yes	<ul style="list-style-type: none"> Permissive Enforcing 	2.1
userTags	The user tags. For more information, see CreateUser Tag . The resource type is SchedulerJobVO.	Yes		2.1
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is SchedulerJobVO.	Yes		2.1
timeout		Yes		

6.3.3.3 QuerySchedulerJob

Queries a scheduled job. For example,

```
QuerySchedulerJob uuid=04f512aa6cc3495bab23e677da4c9510
```

```
QuerySchedulerJob trigger.uuid=d82d4ca2d4da407ebc5410e85d5dd256
```

Primitive Fields of Query

See Scheduler Job Inventory.

Nested and Expanded Fields of Query

Field	Inventory	Description	Starting Version
trigger	Trigger Inventory		2.1

6.3.3.4 UpdateSchedulerJob

Updates a scheduled job. For example,

```
UpdateSchedulerJob uuid=4ad3c66621924055a3db06917ed0d902
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			2.1
name	The resource name.	Yes		2.1
description	The detailed description of the resource.	Yes		2.1
userTags	The user tags. For more information, see CreateUser Tag . The resource type is SchedulerJobVO.	Yes		2.1
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is SchedulerJobVO.	Yes		2.1
timeout		Yes		

6.3.3.5 CreateSchedulerTrigger

Creates a scheduler. For example,

```
CreateSchedulerTrigger name=trigger schedulerType=simple startTime=1510329600 \
```

```
schedulerInterval=3600
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
name	The resource name.			2.1
description	The detailed description of the resource.	Yes		2.1
schedulerInterval		Yes		2.1
repeatCount		Yes		2.1
startTime	The start time, which must be a Unix time.	Yes		2.1
schedulerType			<ul style="list-style-type: none"> • simple • cron 	2.1
cron		Yes		2.1
resourceUuid		Yes		2.1
userTags	The user tags. For more information, see CreateUser Tag . The resource type is SchedulerTriggerVO.	Yes		2.1
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is SchedulerTriggerVO.	Yes		2.1
timeout		Yes		

6.3.3.6 DeleteSchedulerTrigger

Deletes a scheduler. For example,

```
DeleteSchedulerTrigger uuid=36cb56cbc7b946dbb4294dcf726db975
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			2.1
deleteMode	The delete mode. For more information, see Delete Resources .	Yes	<ul style="list-style-type: none"> Permissive Enforcing 	2.1
userTags	The user tags. For more information, see CreateUser Tag . The resource type is SchedulerTriggerVO.	Yes		2.1
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is SchedulerTriggerVO.	Yes		2.1
timeout		Yes		

6.3.3.7 QuerySchedulerTrigger

Queries a scheduler. For example,

```
QuerySchedulerTrigger uuid=8a87a66ea1344ba2b918f49136505dbb
```

```
QuerySchedulerTrigger job.uuid=fd347b4c3f144380bca9c0c5cdf7697d
```

Primitive Fields of Query

See Scheduler Trigger Inventory.

Nested and Expanded Fields of Query

Field	Inventory	Description	Starting Version
job	Job Inventory		2.1

6.3.3.8 UpdateSchedulerTrigger

Updates a scheduler. For example,

```
UpdateSchedulerTrigger uuid=26a64811252b446ab97bd1559c27a630
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			2.1
name	The resource name.	Yes		2.1
description	The detailed description of the resource.	Yes		2.1
userTags	The user tags. For more information, see CreateUser Tag . The resource type is SchedulerTriggerVO.	Yes		2.1
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is SchedulerTriggerVO.	Yes		2.1
timeout		Yes		

6.3.3.9 AddSchedulerJobToSchedulerTrigger

Adds a scheduled job to a scheduler. For example,

```
AddSchedulerJobToSchedulerTrigger schedulerJobUuid=de40b48a63c04ec283f75dfed817b628 \
```

```
schedulerTriggerUuid=3a5de588a82f4f7d96658e87baa3ef6f
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
schedulerJobUuid				2.1
schedulerTriggerUuid				2.1
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.1
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.1
timeout		Yes		

6.3.3.10 RemoveSchedulerJobFromSchedulerTrigger

Removes a scheduled job from a scheduler. For example,

```
RemoveSchedulerJobFromSchedulerTrigger schedulerJobUuid=de40b48a63
c04ec283f75dfed817b628 \
schedulerTriggerUuid=3a5de588a82f4f7d96658e87baa3ef6f
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
schedulerJobUuid				2.1
schedulerTriggerUuid				2.1
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.1
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.1

Name	Description	Optional	Valid Value	Starting Version
timeout		Yes		

6.3.3.11 ChangeSchedulerState

Changes the state of a scheduled job. For example,

```
ChangeSchedulerState uuid=d8601cf2081c4715a33e2d994e2f16d8 stateEvent=disable
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid				2.1
stateEvent			<ul style="list-style-type: none"> • enable • disable 	2.1
userTags	The user tags. For more information, see CreateUserTag . The resource type is SchedulerTriggerVO.	Yes		2.1
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is SchedulerTriggerVO.	Yes		2.1
timeout		Yes		

6.3.3.12 GetNoTriggerSchedulerJobs

Obtains the scheduled jobs that are not added to a scheduler. For example,

```
ChangeSchedulerState uuid=d8601cf2081c4715a33e2d994e2f16d8 stateEvent=disable
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
name				2.3.2
description		Yes		2.3.2
accessPointUuid		Yes		2.3.2
dataCenterUuid				2.3.2
vRouterUuid				2.3.2
resourceUuid		Yes		2.3.2
routerType			<ul style="list-style-type: none"> • VBR • VRouter 	2.3.2
spec		Yes		2.3.2
userTags	The user tags. For more information, see CreateUser Tag . The resource type is SchedulerTriggerVO.	Yes		2.1
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is SchedulerTriggerVO.	Yes		2.1
timeout		Yes		

6.3.4 Tags

You can create a user tag on a scheduler by using `CreateUserTag resourceType=SchedulerJobVO`. For example,

```
CreateUserTag resourceType=SchedulerJobVO tag=Test1 \
resourceUuid=3214e0dc01d4e2aa8407968e1ccreatee51d58
```

6.4 Migration Service (Plus)

6.4.1 Overview

ZStack Cloud provides the Migration Service, allowing you to migrate VM systems and data from other virtualization platforms to the current cloud. Currently, with the Migration Service, you can:

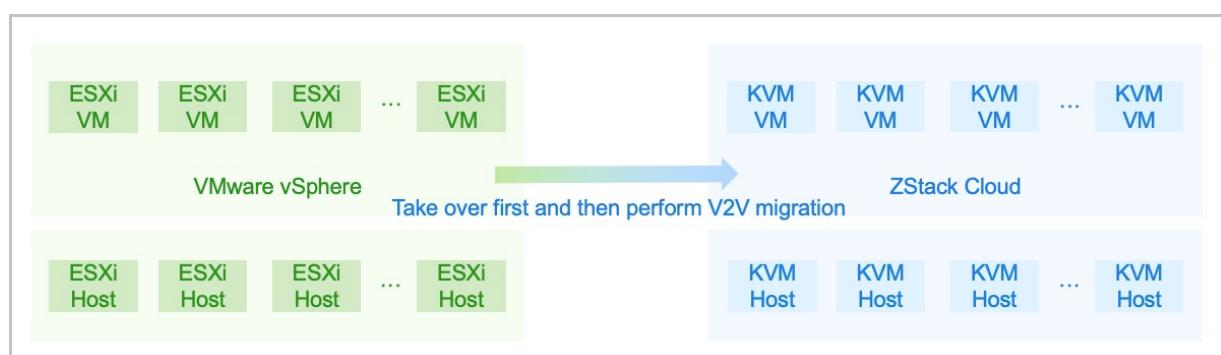
- Migrate VM instances from the vCenter that you took over to the current cloud. The supported vCenter versions include 5.0, 5.1, 5.5, 6.0, 6.5, 6.7, and 7.0. Note that the version of the vCenter server must be consistent with that of the ESXi host.
- Migrate VM instances from a KVM cloud platform to the current cloud.

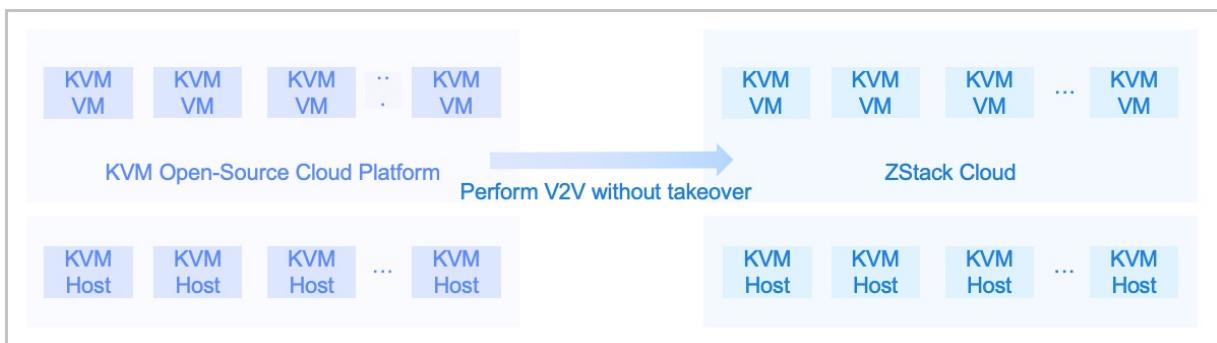


Note:

If you took over vCenter 7.0, to ensure that the VM console can open properly, we recommend that you download the trusted root CA certificate when you log into vCenter.

Figure 6-7: V2V Migration





The Migration Service is a separate feature module. To use this feature, you need to purchase both the Base License and the Plus License of the Migration Service. The Plus License cannot be used independently.

Advantages of the Migration Service are as follows:

- Allows you to perform one-click V2V migrations for VM instances in bulk.
- Allows you to add a conversion host and create a V2V job and lets the Cloud do the rest.
- Allows you to configure an independent migration network and a network QoS for a conversion host to control transmission bottlenecks and improve migration efficiencies.
- Allows you to customize configurations for destination VM instances when you create a V2V job.
- Monitors and manages the entire migration process in the visualized, well-designed UI.

6.4.2 Inventory

V2V Conversion Host Inventory

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			3.0.1
name	The name. For more information, see Resource Property .			3.0.1
description	The description. For more information, see Resource Property .	Yes		3.0.1

Name	Description	Optional	Valid Value	Starting Version
hostUuid	The host UUID.			3.0.1
type	The volume type.			3.0.1
state	The state of the volume backup.			3.0.1
storagePath	The image storage path of the V2V migration.			3.0.1
groupBy	Groups rows into subgroups based on values of columns or expressions. This field is equivalent to the Group By clause in MySQL, such as <code>groupBy =type</code> .	Yes		3.0.1
createDate	The creation date. For more information, see Resource Property .			3.0.1
lastOpDate	The last operation date. For more information, see Resource Property .			3.0.1
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.0.1
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.0.1

Sample

```
{
    "inventories": [
        {
            "createDate": "Sep 21, 2018 9:51:05 AM",
            "description": "",
            "hostUuid": "a039266264964f239196a15bec178a56",
            "lastOpDate": "Sep 21, 2018 9:51:05 AM",
            "name": "10.0.69.145",
            "state": "Enabled",
            "storagePath": "/tmp/cloud",
            "type": "VMWARE",
            "uuid": "d8281e94496947ff978e8157f04f6699"
        }
    ],
    "success": true
}
```

6.4.3 Operations

6.4.3.1 AddV2VConversionHost

Adds a V2V conversion host. For example,

```
AddV2VConversionHost name=test-V2V storagePath=/tmp/cloud hostUuid=a039266264964f239196a15bec178a56 type=VMWARE
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
name	The resource name.			3.0.1
type	The type of the V2V conversion host.		• VMWARE	3.0.1
hostUuid	The host UUID.			3.0.1
description	The detailed description of the resource.	Yes		3.0.1
storagePath	The image storage path of the V2V migration.			3.0.1
resourceUuid	The resource UUID.	Yes		3.0.1

Name	Description	Optional	Valid Value	Starting Version
tagUuids	The tag UUID list.	Yes		3.4.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.0.1
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.0.1
timeout		Yes		



Note:

- When you add a V2V conversion host in ZStack Cloud, you can specify the CIDR for the V2V migration network by adding the **networkcidr** option to **SystemTags**. The SystemTag is passed by using the **networkcidr** parameter.
 - Format of the **networkcidr** option: `conversion::network::cidr::{netcidr}`
 - Example: `conversion::network::cidr::{10.0.0.1/24}`.

6.4.3.2 ChangeV2VConversionHostState

Changes the state of a V2V conversion host. For example,

```
ChangeV2VConversionHostState uuid=c4e1a78bba0646a88d6f878eb247aa6a
stateEvent=disable
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			3.0.1
stateEvent	The state event.	Yes	<ul style="list-style-type: none"> Enable Disable 	3.0.1
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.0.1

Name	Description	Optional	Valid Value	Starting Version
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.0.1
timeout		Yes		

6.4.3.3 ConvertVmFromForeignHypervisor

Performs V2V migration. For example,

```
ConvertVmFromForeignHypervisor name=test-centos7.2 url=vmware://28ff91d347d14dc9896fb4a58ea8269b cpuNum=1 memorySize=1 primaryStorageUuid=f96ec2cbac524501b313c35cd279d317 l3NetworkUuids=0d05980697ec4b96b4ab6f69ab2b74c6 conversionHostUuid=8b1791d1f3634b43a74cda9c83027b6b
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
url	The source VM instance URL.			3.0.1
name	The resource name.			3.0.1
description	The detailed description of the resource.	Yes		3.0.1
conversionHostUuid	The V2V conversion host UUID.	Yes Note: This parameter is required when migrations are performed from VMware to ZStack Cloud.		3.0.1
cpuNum	The CPU count.			3.0.1
memorySize	The memory size.			3.0.1
zoneUuid	The zone UUID.	Yes		3.0.1
clusterUuid	The cluster UUID.	Yes		3.0.1

Name	Description	Optional	Valid Value	Starting Version
hostUuid	The host UUID.	Yes		3.0.1
primaryStorageUuid	The primary storage UUID.			3.0.1
l3NetworkUuids	The L3 network UUID list.			3.0.1
defaultL3NetworkUuid	The UUID of the default L3 network.	Yes		3.0.1
platform	The platform.	Yes	<ul style="list-style-type: none"> • Linux • Windows • WindowsVirtio • Paravirtualization • Other 	3.0.1
type	The VM instance type.	Yes	<ul style="list-style-type: none"> • UserVm • ApplianceVm 	3.0.1
strategy	The V2V migration strategy, which determines whether the target VM instance will be started immediately after migration.	Yes	<ul style="list-style-type: none"> • InstantStart • JustConvert 	3.0.1
longJobName	The migration job name.	Yes		3.0.1
longJobDescription	The migration job description.	Yes		3.0.1
resourceUuid	The resource UUID of the V2V migration job.	Yes		3.0.1
convertStrategy		Yes		3.6.0

Name	Description	Optional	Valid Value	Starting Version
sshPrivKey	The private key that is used to verify SSH login.	Yes		3.6.0
pauseVm	Whether to pause the VM instance before migration.	Yes		3.6.0
volumeFilters	The volume filter information.	Yes		3.6.0
tagUuids	The tag UUID list.	Yes		3.6.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.0.1
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.0.1
timeout		Yes		

6.4.3.4 DeleteV2VConversionHost

Deletes a V2V conversion host. For example,

```
DeleteV2VConversionHost uuid=c4e1a78bba0646a88d6f878eb247aa6a
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			3.0.1
deleteMode	The delete mode.	Yes		3.0.1
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.0.1
systemTags	The system tags. For more	Yes		3.0.1

Name	Description	Optional	Valid Value	Starting Version
	information, see CreateSystemTag .			
timeout		Yes		

6.4.3.5 QueryV2VConversionHost

Queries a V2V conversion host. For example,

```
QueryV2VConversionHost Uuid=8b1791d1f3634b43a74cda9c83027b6b
```

Primitive Fields of Query

See [V2V Conversion Host Inventory](#).

Nested and Expanded Fields of Query

Field	Inventory	Description	Starting Version
host	Host Inventory	The host.	3.0.1

6.4.3.6 UpdateV2VConversionHost

Updates a V2V conversion host. For example,

```
UpdateV2VConversionHost uuid=d8281e94496947ff978e8157f04f6699
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			3.0.1
name	The resource name.	Yes		3.0.1
description	The detailed description of the resource.	Yes		3.0.1
storagePath	The image storage path of the V2V migration .	Yes		3.0.1
userTags	The user tags. For more	Yes		3.0.1

Name	Description	Optional	Valid Value	Starting Version
	information, see CreateUserTag .			
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.0.1
timeout		Yes		

6.4.4 Tags

- You can create a user tag on a V2V conversion service by using `resourceType=LongJobVO`. For example,

```
CreateUserTag resourceType=LongJobVO tag=golden-ResourceStack
resourceUuid=3539de80967e44af99cd62ff5d53da30
```

- You can create a user tag for a V2V conversion host by using `resourceType=V2VConversionHostVO`. For example,

```
CreateUserTag resourceType=V2VConversionHostVO tag=golden-ResourceStack
resourceUuid=8b1791d1f3634b43a74cda9c83027b6b
```

System Tags

You can configure the downstream bandwidth and the upstream bandwidth of a V2V conversion host.



Note:

Before you create a SystemTag, make sure that the SystemTag does not exist by using `QuerySystemTag` to avoid the multiple occurrences of the same SystemTag on a same resource.

- You can configure the downstream bandwidth of a V2V conversion host by using **CreateSystemTag**. Note that the downstream bandwidth will limit the download speed from the source vCenter primary storage to the V2V conversion host. For example,

```
CreateSystemTag resourceUuid=8b1791d1f3634b43a74cda9c83027b6b
resourceType=V2VConversionHostVO tag=networkInboundBandwidth::10000
```

- You can configure the upstream bandwidth of a V2V conversion host by using **CreateSystemTag**. Note that the upstream bandwidth will limit the upload speed from the V2V conversion host to the target primary storage. For example,

```
CreateSystemTag resourceUuid=8b1791d1f3634b43a74cda9c83027b6b
resourceType=V2VConversionHostVO tag=networkOutboundBandwidth::10000
```

- You can update bandwidth limits by using **UpdateSystemTag**. For example,

```
UpdateSystemTag resourceUuid=8b1791d1f3634b43a74cda9c83027b6b
resourceType=V2VConversionHostVO tag=networkInboundBandwidth::20000
```

- You can read bandwidth limits by using **QuerySystemTag**. For example,

```
QuerySystemTag resourceUuid=8b1791d1f3634b43a74cda9c83027b6b
resourceType=V2VConversionHostVO tag=networkInboundBandwidth::10000
```

- You can delete bandwidth limits by using **DeleteTag**. For example,

```
DeleteTag uuid=13500acdbac6434f8584686649ec6dc9
```

6.5 Tag Management

6.5.1 Overview

ZStack Cloud provides two types of tags to help users and plugins organize resources, introduce extra resource properties, and instruct ZStack Cloud to perform specific business logic.

User Tags

1. You can create user tags on all the resources that you have, which is especially useful when you aggregate a set of similar resources.

For example, you can create a **web** tag on VM instances that act as web servers.

1.

```
CreateUserTag resourceType=VmInstanceVO \
resourceUuid=613af3fe005914c1643a15c36fd578c6 tag=web
```

```
CreateUserTag resourceType=VmInstanceVO \
resourceUuid=5eb55c39db015c1782c7d814900a9609 tag=web
```

```
CreateUserTag resourceType=VmInstanceVO \
```

```
resourceUuid=0cd1ef8c9b9e0ba82e0cc9cc17226a26 tag=web
```

2. Then, you can retrieve these VM instances by using Query API with tags <query with tags>.

```
QueryVmInstance __userTag__=web
```

When you create a VM instance, you can also set multiple user tags and separate these tags by using a comma (,).

1. CreateVmInstance instanceOfferingUuid=1cf417bfd0e94175aea9
2131f1000011 \
imageUuid=ee14c7c8cc46309d821c51bbae3adb70 13NetworkUuids=
ac5c7e736f1b499bbd0c12763b30051d \
name=tesd2 userTags=capability::liveSnapshot,os::centos::7.4
2. For example, you can set the capacity (40G), OS version (CentOS7.4), password (123456), and usage scenario (Apache) on these tags. These settings have no special relation to ::.

```
CreateVmInstance instanceOfferingUuid=1cf417bfd0e94175aea9  
2131f1000011 \  
imageUuid=ee14c7c8cc46309d821c51bbae3adb70 13NetworkUuids=  
ac5c7e736f1b499bbd0c12763b30051d name=tesd2 \  
userTags=capability:40G,OS:CentOS7.4,password:123456,usage:Apache
```

2. You can also integrate user tags with system tags to change the business logic of the cloud.

For example, you might want all VM instances that work as web servers to create their root volumes on a special primary storage that provides better IO performance by SSD.

To do so, you can follow the steps below:

1. Create a user tag **forWebTierVM** on a primary storage.

```
CreateUserTag tag=forWebTierVM resourceType=PrimaryStorageVO \  
resourceUuid=6572ce44c3f6422d8063b0fb262cbc62
```

2. Create a system tag on an instance offering.

```
CreateSystemTag tag=primaryStorage::allocator::userTag::forWebTier  
VM \  
resourceType=InstanceOfferingVO resourceUuid=8f69ef6c2c444cdf8c01  
9fa0969d56a5
```

3. Then, when you create a VM instance with the instance offering **UUID: 8f69ef6c2c444cdf8c019fa0969d56a5**, ZStack Cloud will make sure that the root volume of the VM instance will be created on only the primary storage with the user tag **forWebTierVM** and UUID **6572ce44c3f6422d8063b0fb262cbc62**.

System Tags

System tags have wider usage than user tags. You can use system tags to instruct ZStack Cloud to do some specific business logic, like the examples in the section above.

1. Inherent System Tags

Plugins, which extend the functionality of ZStack Cloud, can use system tags to introduce additional resource properties, or to record metadata that tightly bind to resources.

For example, you might want to perform online migrations or online snapshots on KVM instances.

ZStack Cloud needs to know the libvirt version and QEMU version of the KVM instances, which are all meta data. ZStack Cloud records these data as system tags of VM instances.

- For example, you can view the system tags of a KVM VM instance by running the following command:

```
QuerySystemTag fields=tag resourceUuid=d07066c4de02404a948772e131139eb4
```

- d07066c4de02404a948772e131139eb4** is the UUID for the KVM instance. The query result is as follows:

```
{
    "inventories": [
        {
            "tag": "capability:liveSnapshot"
        },
        {
            "tag": "qemu-img::version::2.0.0"
        },
        {
            "tag": "os::version::14.04"
        },
        {
            "tag": "libvirt::version::1.2.2"
        },
        {
            "tag": "os::release::trusty"
        },
        {
            "tag": "os::distribution::Ubuntu"
        }
    ],
    "success": true
}
```

This kind of system tags are called inherent system tags, which can be only created by ZStack Cloud services and plugins, and cannot be deleted by using the DeleteTag API.

2. Non-inherent System Tags

To add new features, plugins usually need to add new properties to a resource. Although a plugin cannot add a new column by changing the database schema of a resource, the plugin can create new properties as system tags of a resource.

For example, when you create a VM instance, you can bind a hostname that can be accessed by the Internet to an L3 network of the VM instance.

1. CreateVmInstance name=testTag systemTags=hostname::web-server-1 \
 13NetworkUuids=6572ce44c3f6422d8063b0fb262cbc62 \
 instanceOfferingUuid=04b5419ca3134885be90a48e372d3895 \
 imageUuid=f1205825ec405cd3f2d259730d47d1d8
2. This hostname is implemented by a system tag.
3. If you view the VM Instance Inventory in the VM Instance topic, you will find no property called **hostname**.
4. However, you can find the hostname from the system tags of the VM instance.

```
QuerySystemTag fields=tag uuid resourceUuid=76e119bf9e16461aaf3d
1b47c645c7b7
```

```
{
  "inventories": [
    {
      "tag": "hostname::web-server-1",
      "uuid": "596070a6276746edbf0f54ef721f654e"
    }
  ],
  "success": true
}
```

This kind of system tags are non-inherent. You can them by using the DeleteTag API.

For example, if you want to change the hostname of a VM instance mentioned above to **web-server-nginx**, you can:

1. DeleteTag uuid=596070a6276746edbf0f54ef721f654e
2. CreateSystemTag resourceType=VmInstanceVO tag=hostname::web-server-nginx \
 resourceUuid=76e119bf9e16461aaf3d1b47c645c7b7
3. After the VM instance is stopped and restarted, the guest operating system will receive the new hostname as **web-server-nginx**.

Name Convention

Each user tag and each system tag can only have 2048 characters at most.

- A user tag does not have any enforced name convention. We recommend that you use readable, meaningful strings.
- A system tag, as defined by ZStack Cloud service and plugins, follows the format that uses `:` `:` as a delimiter.

Resource Type

When you create a tag, you must specify the resource type that the tag is associated with.

The following table lists the resource types supported in this version.

Resource Type
AccessControlRuleVO
AccessKeyVO
AccountResourceRefVO
AccountVO
AddingNewInstanceRuleVO
AffinityGroupUsageVO
AffinityGroupVO
AlarmActionVO
AlarmLabelVO
AlarmVO
AlertVO
AliyunDiskVO
AliyunEbsBackupStorageVO
AliyunEbsPrimaryStorageVO
AliyunNasAccessGroupVO
AliyunNasAccessRuleVO
AliyunNasFileSystemVO
AliyunNasMountTargetVO
AliyunNasMountVolumeRefVO
AliyunNasPrimaryStorageFileSystemRefVO
AliyunNasPrimaryStorageMountPointVO
AliyunPanguPartitionVO

Resource Type
AliyunProxyVSwitchVO
AliyunProxyVpcVO
AliyunRouterInterfaceVO
AliyunSmsSNSTextTemplateVO
AliyunSnapshotVO
ApplianceVmFirewallRuleVO
ApplianceVmVO
ArchiveTicketStatusHistoryVO
ArchiveTicketVO
AsyncRestVO
AutoScalingGroupActivityVO
AutoScalingGroupInstanceVO
AutoScalingGroupVO
AutoScalingRuleAlarmTriggerVO
AutoScalingRuleTriggerVO
AutoScalingRuleVO
AutoScalingTemplateGroupRefVO
AutoScalingTemplateVO
AutoScalingVmTemplateVO
AvailableInstanceTypesVO
BackupStorageEO
BackupStorageVO
BackupStorageZoneRefVO
BaremetalBondingVO
BaremetalChassisVO
BaremetalHardwareInfoVO
BaremetalImageCacheVO
BaremetalInstanceSequenceNumberVO
BaremetalInstanceVO

Resource Type
BaremetalNicVO
BaremetalPxeServerClusterRefVO
BaremetalPxeServerVO
BaremetalVlanNicVO
BareMetal2ChassisVO
BareMetal2ChassisNicVO
BareMetal2ChassisDiskVO
BareMetal2ChassisOfferingVO
BareMetal2InstanceVO
BareMetal2GatewayVO
BareMetal2ProvisionNetworkVO
BillingResourceLabelVO
BillingVO
BuildApplicationVO
CaptchaVO
CephBackupStorageMonVO
CephBackupStorageVO
CephCapacityVO
CephPrimaryStorageMonVO
CephPrimaryStoragePoolVO
CephPrimaryStorageVO
CertificateVO
CloudFormationStackEventVO
CloudFormationStackResourceRefVO
ClusterEO
ClusterVO
ConnectionAccessPointVO
ConnectionRelationShipVO
ConsoleProxyAgentVO

Resource Type
ConsoleProxyVO
CustomPreconfigurationVO
DataCenterVO
DataVolumeBillingVO
DataVolumeUsageExtensionVO
DataVolumeUsageHistoryVO
DataVolumeUsageVO
DatabaseBackupStorageRefVO
DatabaseBackupVO
DeleteVO
DiskOfferingEO
DiskOfferingVO
ESXHostVO
EcsImageUsageVO
EcsImageVO
EcsInstanceVO
EcsSecurityGroupRuleVO
EcsSecurityGroupVO
EcsVSwitchVO
EcsVpcVO
EipVO
ElaborationVO
EmailMediaVO
EmailTriggerActionVO
EventSubscriptionActionVO
EventSubscriptionLabelVO
EventSubscriptionVO
FiberChannelLunVO
FiberChannelStorageVO

Resource Type
FlowCollectorVO
FlowMeterVO
FlowRouterVO
GarbageCollectorVO
GlobalConfigTemplateVO
GlobalConfigVO
GuestToolsVO
HardwareL2VxlanNetworkPoolVO
HistoricalPasswordVO
HostCapacityVO
HostEO
HostTagVO
HostVO
HybridAccountVO
HybridConnectionRefVO
HybridEipAddressVO
IAM2GroupVirtualIDRefVO
IAM2OrganizationAttributeVO
IAM2OrganizationProjectRefVO
IAM2OrganizationVO
IAM2ProjectAccountRefVO
IAM2ProjectAttributeVO
IAM2ProjectTemplateVO
IAM2ProjectVO
IAM2ProjectVirtualIDRefVO
IAM2TicketFlowCollectionVO
IAM2TicketFlowVO
IAM2VirtualIDAttributeVO
IAM2VirtualIDGroupAttributeVO

Resource Type
IAM2VirtualIDGroupRefVO
IAM2VirtualIDGroupRoleRefVO
IAM2VirtualIDGroupVO
IAM2VirtualIDOrganizationRefVO
IAM2VirtualIDRoleRefVO
IAM2VirtualIDVO
IPsecConnectionVO
IPsecL3NetworkRefVO
IPsecPeerCidrVO
IdentityZoneVO
ImageBackupStorageRefVO
ImageCacheShadowVO
ImageCacheVO
ImageCacheVolumeRefVO
ImageEO
ImageOpsJournalVO
ImageReplicationGroupBackupStorageRefVO
ImageReplicationGroupVO
ImageReplicationHistoryVO
ImageStoreBackupStorageVO
ImageVO
InsertVO
InstallPathRecycleVO
InstanceOfferingEO
InstanceOfferingVO
IpRangeEO
IpRangeVO
IscsiFileSystemBackendPrimaryStorageVO
IscsiloVO

Resource Type
IscsiLunVO
IscsiServerClusterRefVO
IscsiServerVO
IscsiTargetVO
JobQueueEntryVO
JobQueueVO
JsonLabelVO
KVMHostVO
KeyValueBinaryVO
KeyValueVO
L2NetworkClusterRefVO
L2NetworkEO
L2NetworkVO
L2VlanNetworkVO
L3NetworkDnsVO
L3NetworkEO
L3NetworkHostRouteVO
L3NetworkVO
LdapAccountRefVO
LdapResourceRefVO
LdapServerVO
LoadBalancerListenerCertificateRefVO
LoadBalancerListenerVO
LoadBalancerListenerVmNicRefVO
LoadBalancerVO
LocalStorageHostRefVO
LocalStorageResourceRefVO
LogVO
LoginAttemptsVO

Resource Type
LongJobVO
ManagementNodeContextVO
ManagementNodeVO
MdevDeviceSpecVO
MdevDeviceVO
MediaVO
MiniStorageHostRefVO
MiniStorageResourceReplicationVO
MiniStorageVO
MirrorNetworkUsedIpVO
MonitorTriggerActionRefVO
MonitorTriggerActionVO
MonitorTriggerVO
MulticastRouterRendezvousPointVO
MulticastRouterVO
MulticastRouterVpcVRouterRefVO
NasFileSystemVO
NasMountTargetVO
NetworkRouterAreaRefVO
NetworkRouterFlowMeterRefVO
NetworkServiceL3NetworkRefVO
NetworkServiceProviderL2NetworkRefVO
NetworkServiceProviderVO
NetworkServiceTypeVO
NotificationSubscriptionVO
OssBucketDomainVO
OssBucketVO
OssUploadPartsVO
PciDeviceBillingVO

Resource Type
PciDeviceMdevSpecRefVO
PciDeviceOfferingInstanceOfferingRefVO
PciDeviceOfferingVO
PciDevicePciDeviceOfferingRefVO
PciDeviceSpecVO
PciDeviceUsageHistoryVO
PciDeviceUsageVO
PciDeviceVO
PhysicalDriveSmartSelfTestHistoryVO
PolicyRouteRuleSetL3RefVO
PolicyRouteRuleSetVO
PolicyRouteRuleSetVRouterRefVO
PolicyRouteRuleVO
PolicyRouteTableRouteEntryVO
PolicyRouteTableVO
PolicyRouteTableVRouterRefVO
PolicyVO
PortForwardingRuleVO
PortMirrorSessionMirrorNetworkRefVO
PortMirrorSessionSequenceNumberVO
PortMirrorSessionVO
PortMirrorVO
PreconfigurationTemplateVO
PricePciDeviceOfferingRefVO
PriceVO
PrimaryStorageCapacityVO
PrimaryStorageClusterRefVO
PrimaryStorageEO
PrimaryStorageHostRefVO

Resource Type
PrimaryStorageVO
PubIpVipBandwidthInBillingVO
PubIpVipBandwidthOutBillingVO
PubIpVipBandwidthUsageHistoryVO
PubIpVipBandwidthUsageVO
PubIpVmNicBandwidthInBillingVO
PubIpVmNicBandwidthOutBillingVO
PubIpVmNicBandwidthUsageVO
QuartzJdbcJobVO
QuotaVO
RaidControllerVO
RaidPhysicalDriveVO
RemovalInstanceRuleVO
ResourceConfigVO
ResourceStackVO
ResourceUsageVO
ResourceVO
RoleAccountRefVO
RolePolicyRefVO
RolePolicyStatementVO
RoleUserGroupRefVO
RoleUserRefVO
RoleVO
RootVolumeBillingVO
RootVolumeUsageExtensionVO
RootVolumeUsageVO
RouterAreaVO
SNSApplicationEndpointVO
SNSApplicationPlatformVO

Resource Type
SNSDingTalkAtPersonVO
SNSDingTalkEndpointVO
SNSEmailAddressVO
SNSEmailEndpointVO
SNSEmailPlatformVO
SNSHttpEndpointVO
SNSSmsEndpointVO
SNSSmsReceiverVO
SNSSubscriberVO
SNSTextTemplateVO
SNSTopicVO
SchedulerJobGroupJobRefVO
SchedulerJobGroupSchedulerTriggerRefVO
SchedulerJobGroupVO
SchedulerJobHistoryVO
SchedulerJobSchedulerTriggerRefVO
SchedulerJobVO
SchedulerTriggerVO
SchedulerVO
ScsiLunHostRefVO
ScsiLunVO
ScsiLunVmInstanceRefVO
SdnControllerVO
SecurityGroupFailureHostVO
SecurityGroupL3NetworkRefVO
SecurityGroupRuleVO
SecurityGroupSequenceNumberVO
SecurityGroupVO
SessionVO

Resource Type
SftpBackupStorageVO
ShareableVolumeVmInstanceRefVO
SharedBlockGroupPrimaryStorageHostRefVO
SharedBlockGroupVO
SharedBlockVO
SharedResourceVO
SimulatorHostVO
SnapShotUsageVO
StackTemplateVO
SystemRoleVO
SystemTagVO
TagPatternVO
TaskProgressVO
TemplateConfigVO
TemplateCustomParamVO
TicketFlowCollectionVO
TicketFlowVO
TicketStatusHistoryVO
TicketTypeTicketFlowCollectionRefVO
TicketTypeVO
TicketVO
TwoFactorAuthenticationSecretVO
UpdateVO
UsbDeviceVO
UsedIpVO
UserGroupPolicyRefVO
UserGroupUserRefVO
UserGroupVO
UserPolicyRefVO

Resource Type
UserTagVO
UserVO
V2VConversionCacheVO
V2VConversionHostVO
VCenterBackupStorageVO
VCenterClusterVO
VCenterDatacenterVO
VCenterPrimaryStorageVO
VCenterResourcePoolUsageVO
VCenterResourcePoolVO
VCenterVO
VRouterRouteEntryVO
VRouterRouteTableVO
VipNetworkServicesRefVO
VipPeerL3NetworkRefVO
VipQosVO
VipVO
VirtualBorderRouterVO
VirtualRouterBootstrapIsoVO
VirtualRouterEipRefVO
VirtualRouterLoadBalancerRefVO
VirtualRouterOfferingVO
VirtualRouterPortForwardingRuleRefVO
VirtualRouterVRouterRouteTableRefVO
VirtualRouterVipVO
VirtualRouterVmVO
VmCPUBillingVO
VmCdRomVO
VmInstanceEO

Resource Type
VmInstanceMdevDeviceSpecRefVO
VmInstanceMdevSpecDeviceRefVO
VmInstancePciDeviceSpecRefVO
VmInstancePciSpecDeviceRefVO
VmInstanceSequenceNumberVO
VmInstanceVO
VmMemoryBillingVO
VmNicSecurityGroupRefVO
VmNicVO
VmPriorityConfigVO
VmUsageVO
VniRangeVO
VolumeBackupHistoryVO
VolumeBackupStorageRefVO
VolumeBackupVO
VolumeEO
VolumeSnapshotBackupStorageRefVO
VolumeSnapshotEO
VolumeSnapshotGroupRefVO
VolumeSnapshotGroupVO
VolumeSnapshotTreeEO
VolumeSnapshotTreeVO
VolumeSnapshotVO
VolumeVO
VpcFirewallRuleSetL3RefVO
VpcFirewallRuleSetVO
VpcFirewallRuleVO
VpcFirewallVO
VpcFirewallVRouterRefVO

Resource Type
VpcHaGroupApplianceVmRefVO
VpcHaGroupMonitorIpVO
VpcHaGroupNetworkServiceRefVO
VpcHaGroupVO
VpcHaGroupVipRefVO
VpcRouterDnsVO
VpcRouterVmVO
VpcUserVpnGatewayVO
VpcVirtualRouteEntryVO
VpcVirtualRouterVO
VpcVpnConnectionVO
VpcVpnGatewayVO
VpcVpnIkeConfigVO
VpcVpnIpSecConfigVO
VtepVO
VxlanNetworkPoolVO
VxlanNetworkVO
WebhookVO
WorkFlowChainVO
WorkFlowVO
XDragonHostVO
ZoneEO
ZoneVO

In the corresponding **Tags** topic of each resource, we will explain what resource types to use when you create tags.

6.5.2 Inventory

System Tag Inventory

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			0.6
createDate	The creation date. For more information, see Resource Property .			0.6
lastOpDate	The last operation date. For more information, see Resource Property .			0.6
resourceUuid	The resource UUID.			0.6
resourceType	The resource type.			0.6
tag	The tag string.			0.6
type	The reserved field .			0.6
groupBy	Groups rows into subgroups based on values of columns or expressions. This field is equivalent to the Group By clause in MySQL , such as groupBy =type.	Yes		1.9
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
userTags	The user tags. For more information, see CreateUserTag .	Yes		0.6

Tag Inventory

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			3.2.0
createDate	The creation date. For more information, see Resource Property .			3.2.0
lastOpDate	The last operation date. For more information, see Resource Property .			3.2.0
value				3.2.0
description	The detailed description of the resource.			3.2.0
color				3.2.0
type	The reserved field .			3.2.0
groupBy	Groups rows into subgroups based on values of columns or expressions. This field is equivalent to the Group By clause in MySQL	Yes		3.2.0

Name	Description	Optional	Valid Value	Starting Version
	, such as groupBy =type.			
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.2.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.2.0

Sample

```
{
  "inventories": [
    {
      "uuid": "f7ac675964d0386b89d8df713f68aee0",
      "name": "SSD",
      "value": "SSD",
      "description": "SSD volume",
      "color": "#FFFFFF",
      "type": "simple",
      "createDate": "Nov 14, 2017 10:20:57 PM",
      "lastOpDate": "Nov 14, 2017 10:20:57 PM"
    }
  ]
}
```

User Tag Inventory

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Structure .			0.6
createDate	The creation date. For more information, see Resource Structure .			0.6
lastOpDate	The last operation date. For more information,			0.6

Name	Description	Optional	Valid Value	Starting Version
	see Resource Structure .			
resourceUuid	The resource UUID. If specified , the system will not allocate randomly a UUID to the resource.			0.6
resourceType	The resource type, which must be specified when you create a tag.			0.6
tag	The tag string.			0.6
type	The reserved field for internal use.			0.6
groupBy	Groups rows into subgroups based on values of columns or expressions. This field is equivalent to the Group By clause in MySQL , such as groupBy =type.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		0.6
userTags	The user tags. For more information, see CreateUserTag .	Yes		0.6

Sample

```
{
  "inventories": [
    {
      "uuid": "ae4f2dd05a513e1e8d350d448c2071a9",
      "resourceType": "DiskOfferingVO",
    }
  ]
}
```

```

        "tag": "for-large-DB",
        "type": "User",
        "createDate": "Nov 14, 2017 10:20:57 PM",
        "lastOpDate": "Nov 14, 2017 10:20:57 PM"
    }
]
}

```

6.5.3 Operations

6.5.3.1 CreateSystemTag

Creates a system tag. For example,

```
CreateSystemTag resourceType=HostVO resourceUuid=e604949bf86e4aef8194
56b52ddc336f \
tag=reservedMemory::1G
```

Parameters

Name	Description	Optional	Options Value	Starting Version
resourceType	The resource type, which must be specified when you create a tag.			0.6
resourceUuid	The resource UUID. If specified, the system will not allocate randomly a UUID to the resource.			0.6
tag	The tag string.			0.6
userTags	The user tags. For more information, see CreateUserTag .	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		0.6
timeout		Yes		



Note:

- When you create a system tag in ZStack Cloud, you can specify whether to automatically uninstall the physical PCI device allocated from the device specifications when the VM instance is shut down. You can also delete or change the configurations of existing VM instances. Note that you can add the **autoReleaseSpecReleatedPhysicalPciDevice** option to **SystemTags**.
 - Format of the **autoReleaseSpecReleatedPhysicalPciDevice** option: `autoReleaseSpecReleatedPhysicalPciDevice`
 - Example: `autoReleaseSpecReleatedPhysicalPciDevice`
- When you create a system tag in ZStack Cloud, you can specify whether to automatically uninstall the virtual PCI device allocated from the device specifications when the VM instance is shut down. You can also delete or change the configurations of existing VM instances. Note that you can add the **autoReleaseSpecReleatedVirtualPciDevice** option to **SystemTags**.
 - Format of the **autoReleaseSpecReleatedVirtualPciDevice** option: `autoReleaseSpecReleatedVirtualPciDevice`
 - Example: `autoReleaseSpecReleatedVirtualPciDevice`
- You create system tags in ZStack Cloud to identify VM instances or VPC vRouters for which high availability policy is enabled or disabled. You can specify the **resourceBindings** option when you create **SystemTags**.
 - Format: `resourceBindings::Cluster:clusterUuid`
 - Example: `resourceBindings::Cluster:2sdasf231jvznsdak`
- You create system tags in ZStack Cloud to identify and filter the images of HA load balancers or VPC vRouters. You can specify the **applianceType** option when you create **SystemTags**.
 - Format: `applianceType::type`
 - Example: `applianceType::slb`
- You create system tags in ZStack Cloud to identify HA load balancers. You can specify the **SlbGroupUuid** option when you create **SystemTags**.
 - Format: `SlbGroupUuid::uuid`
 - Example: `SlbGroupUuid::12345678`
- When you add a system tag on ZStack Cloud, you can specify a custom parameter to the **boot.ipxe** file by adding **extraBootParams** to the **SystemTags** option.
 - Format: `extraBootParams::{custom parameter}`
 - Example: `extraBootParams::{acpi=noirq noapic}`

6.5.3.2 QuerySystemTag

Queries a system tag. For example,

```
QuerySystemTag resourceUuid=e604949bf86e4aef819456b52ddc336f
```

Primitive Fields of Query

See [System Tag Inventory](#).

6.5.3.3 UpdateSystemTag

Updates a system tag.

For example, you can update system reserved memory as follows:

```
UpdateSystemTag uuid=66c647cc74ab46d3a01d938ecdf27ca tag=reservedMemory::1G
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			0.6
tag	The tag string.			0.6
userTags	The user tags. For more information, see CreateUserTag .	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		0.6
timeout		Yes		

6.5.3.4 CreateUserTag

Creates a user tag. For example,

```
CreateUserTag resourceType=DiskOfferingVO resourceUuid=e76952fb94cb4cc2a33fc97bd26e51cc \
```

```
tag=for-large-DB
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
resourceType	The resource type, which must be specified when you create a tag.			0.6
resourceUuid	The resource UUID. If specified, the system will not allocate randomly a UUID to the resource.			0.6
tag	The tag string.			0.6
userTags	The user tags. For more information, see CreateUserTag .	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		0.6
timeout		Yes		

6.5.3.5 QueryUserTag

Queries a user tag. For example,

```
QueryUserTag resourceUuid=e76952fb94cb4cc2a33fc97bd26e51cc
```

Primitive Fields of Query

See [User Tag Inventory](#).

6.5.3.6 DeleteTag

Deletes a tag, including the system tag, user tag, and resource tag. For example,

```
DeleteTag uuid=f7a13f786e6442d1839c5b565b233ed7
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			0.6
deleteMode	The delete mode. For more information, see Delete Resources .	Yes	<ul style="list-style-type: none"> • Permissive • Enforcing 	0.6
userTags	The user tags. For more information, see CreateUserTag .	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		0.6
timeout		Yes		



Note:

- When you delete a tag in ZStack Cloud, you can specify whether to automatically uninstall the physical PCI device allocated from the device specifications when the VM instance is shut down. You can also delete or change the configurations of existing VM instances. Note that you can add the **autoReleaseSpecReleatedPhysicalPciDevice** option to **SystemTags**.
 - Format of the **autoReleaseSpecReleatedPhysicalPciDevice** option: `autoReleaseSpecReleatedPhysicalPciDevice`
 - Example: `autoReleaseSpecReleatedPhysicalPciDevice`
- When you delete a tag in ZStack Cloud, you can specify whether to automatically uninstall the virtual PCI device allocated from the device specifications when the VM instance is shut down.

You can also delete or change the configurations of existing VM instances. Note that you can add the **autoReleaseSpecReleatedVirtualPciDevice** option to **SystemTags**.

- Format of the **autoReleaseSpecReleatedVirtualPciDevice** option: `autoReleas
eSpecReleatedVirtualPciDevice`
- Example: `autoReleaseSpecReleatedVirtualPciDevice`

6.5.3.7 CreateTag

Creates a resource tag. For example,

```
CreateTag name=vmtag value=vmtag
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
name	The resource name.			3.2.0
value	The tag value.			3.2.0
description	The detailed description of the resource.	Yes		3.2.0
color	The tag color.	Yes		3.2.0
type	The tag type.	Yes	<ul style="list-style-type: none"> • simple • withToken 	3.2.0
resourceUuid		Yes		3.2.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.2.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.2.0
timeout		Yes		

6.5.3.8 QueryTag

Queries a resource tag. For example,

```
QueryTag
```

Primitive Fields of Query

See [Tag Inventory](#).

Nested and Expanded Fields of Query

Field	Inventory	Description	Starting Version
tag	User Tag Inventory		3.2.0

6.5.3.9 UpdateTag

Updates a resource tag. For example,

```
UpdateTag uuid=8715c9f38a7545398b447ed09e15a053
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			3.2.0
name	The resource name.	Yes		3.2.0
value	The tag value.	Yes		3.2.0
description	The detailed description of the resource.	Yes		3.2.0
color	The tag color.	Yes		3.2.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.2.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.2.0

Name	Description	Optional	Valid Value	Starting Version
timeout		Yes		

6.5.3.10 AttachTagToResources

Attaches a tag to a resource. For example,

```
AttachTagToResources tagUuid=8715c9f38a7545398b447ed09e15a053
resourceUuids=8a1286923c774be3ae2c565a93456b5f
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
tagUuid	The tag UUID.			3.2.0
resourceUuids	The resource UUID list.			3.2.0
tokens	The key and the value stored by tag.	Yes		3.2.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.2.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.2.0
timeout		Yes		

6.5.3.11 DetachTagFromResources

Detaches a tag from a resource. For example,

```
DetachTagFromResources tagUuid=8715c9f38a7545398b447ed09e15a053
resourceUuids=8a1286923c774be3ae2c565a93456b5f
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
tagUuid	The tag UUID.			3.2.0

Name	Description	Optional	Valid Value	Starting Version
resourceUuids	The resource UUID list.			3.2.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.2.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.2.0
timeout		Yes		

7 Operations Management

7.1 Enterprise Management (Plus)

7.1.1 Overview

Enterprise Management mainly provides enterprise users with organization structure management and project-based resource access control, ticket management, and independent zone management. Enterprise Management is a separate feature module. To use this feature, purchase both the Base License and the Plus License of Enterprise Management. The Plus License cannot be used independently.

Enterprise Management Account System

The following are the related definitions:

- **Admin**

A super administrator who owns all permissions. Usually, IT system administrators obtain the permissions.

- **User**

A virtual ID, simply a natural person who is the most basic unit in Enterprise Management. A user has multiple attributes, such as a platform admin, project admin, and head of a department.

- **Local User**

A user that is created in the Cloud. A local user can be added to an organization, added to a project, bound with a role.

- **3rd Party User**

A user that is synchronized to the Cloud through 3rd party authentication. A 3rd party user can be added to an organization, added to a project, and bound with a role.

- **Platform User**

A user that is not added to a project yet, including platform admin and the regular platform member.

- **Platform Admin**

A user that has the platform admin role attached. A platform admin who has been allocated a specified zone or all zones manages the data center of the allocated zone or zones.

- **Head of Department**

A user that is responsible for managing departments in an organizational structure. A head of a department has the permission to check department bills.

- **Project Member**

A user who has joined a project, including project admin, project operator, and normal project member.

- **Project Admin**

A user that has the project admin role attached. A project admin is responsible for managing users in a project, and has the highest permission in a project.

- **Project Operator**

A user that has the project operator role attached. A project operator assists project admins to manage projects. One or more project members in the same project can be specified to act as project operators.

- **Member Group**

A virtual ID group that has a group of project members. You can organize project members in groups for better management, and perform permission control by member group.

- **Organization**

The basic unit of an organizational structure in Enterprise Management. You can create an organization or synchronize an organization through 3rd party authentication. An organization can be divided into a top-level department and a normal department. The top-level department is the first-level department in the organization, and can have multi-level subsidiary departments.

- **Project**

The task that related members will be specified to accomplish specified targets with a specified time, resource, and budget. Enterprise Management organizes resources based on projects and allows you to create an independent resource pool for a specific project.

- **Role**

A collection of permissions. You can grant permissions to a user by attaching a role to the user, so that the user can operate on the related resources by calling related APIs.

- **System Role**

A special role preconfigured by the Cloud. As the Cloud upgrades, the permission contents of a system role will be updated, and new permissions will be added automatically. The system role cannot be configured manually.

- **Custom Role**

A custom role that you created in the Cloud. Similar to the system role, the permission contents of a custom role will be updated as the Cloud upgrades. Notice that you need to manually configure the additional permissions after the upgrade.

- **Quota**

A measurement standard that determines the total quantity of resources for a project. A quota mainly includes the VM instance count, CPU count, memory capacity, maximum number of data volumes, and maximum capacity of all volumes.

- **Project Collection Policy**

When you create a project, specify a project collection policy. The project collection policy includes the unlimited collection, specified time collection, and specified spending collection.

- **Unlimited Collection**

After you create a project, resources within the project will be in the enabled state by default

- **Specified Time Collection**

- When the expiration date for a project is less than 14 days, the smart operation assistant will prompt you for **The license will be expired** after a project member logs in to the Cloud.

- After the project expired, resources within the project will be collected according to the specified policy. The policy includes disabling login, stopping resources, and deleting projects.

- **Specified Spending Collection**

When the project spending reaches the maximum limit, resources within the project will be collected according to the specified policy. The policy includes disabling login, stopping resources, and deleting projects.

7.1.2 Inventory

Organization Inventory

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			2.4.0
name	The name. For more information, see Resource Property .			2.4.0
description	The description. For more information, see Resource Property .	Yes		2.4.0
parentUuid				2.4.0
state	The state.			2.4.0
type	The type.			2.4.0
attributes	The attributes.			2.4.0
groupBy	Groups rows into subgroups based on values of columns or expressions. This field is equivalent to the Group By clause in MySQL, such as <code>groupBy =type</code> .	Yes		2.4.0
createDate	The creation date. For more information, see Resource Property .			2.4.0
lastOpDate	The last operation date. For more information,			2.4.0

Name	Description	Optional	Valid Value	Starting Version
	see Resource Property .			
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.4.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.4.0

Sample

```
{
    "inventories": [
        {
            "attributes": [
                {
                    "name": "__OrganizationSupervisor__",
                    "type": "Customized",
                    "uuid": "eb9b254570734144957dba93750e4b74",
                    "value": "3f3403ce21024f32a2232c2234ab5ccf"
                }
            ],
            "createDate": "Nov 16, 2018 7:46:25 PM",
            "description": "",
            "lastOpDate": "Nov 16, 2018 7:46:25 PM",
            "name": "æ€éš",
            "parentUuid": "fa67401a46d049979e7600d78cbf052c",
            "state": "Enabled",
            "uuid": "ff84eb5cf6694485947578b2b958ad1d"
        }
    ],
    "success": true
}
```

Virtual ID Inventory

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			2.4.0
name	The name. For more information,			2.4.0

Name	Description	Optional	Valid Value	Starting Version
	see Resource Property .			
description	The description. For more information, see Resource Property .	Yes		2.4.0
state	The state.			2.4.0
attributes	The attributes.			2.4.0
groupBy	Groups rows into subgroups based on values of columns or expressions. This field is equivalent to the Group By clause in MySQL, such as <code>groupBy =type</code> .	Yes		2.4.0
createDate	The creation date. For more information, see Resource Property .			2.4.0
lastOpDate	The last operation date. For more information, see Resource Property .			2.4.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.4.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.4.0

Sample

```
{
    "inventories": [
        {
            "attributes": [
                {
                    "name": "__ProjectAdmin__",
                    "type": "Customized",
                    "uuid": "2367ac4b3d094baba554c73d81c1a6a7",
                    "value": "62518af359ac43918619b5ef66c6ae1d"
                },
                {
                    "name": "mail",
                    "type": "Customized",
                    "uuid": "019a39d15d854159933db38fe3a3aa44",
                    "value": "tom@cloud.com"
                },
                {
                    "name": "identifier",
                    "type": "Customized",
                    "uuid": "97152d67f1d1443c841bea5521dcd703",
                    "value": "012"
                },
                {
                    "name": "fullname",
                    "type": "Customized",
                    "uuid": "f1c3b0bf87064a098f90abee4ab15d1c",
                    "value": "æ±€¢§"
                },
                {
                    "name": "phone",
                    "type": "Customized",
                    "uuid": "7674856cd8e04ae6bed46af72c4cf42",
                    "value": "+86-18356498646"
                }
            ],
            "createDate": "Nov 16, 2018 7:27:38 PM",
            "description": "",
            "lastOpDate": "Nov 16, 2018 7:27:38 PM",
            "name": "Tom",
            "state": "Enabled",
            "uuid": "c216e48b8ff0414290e31f4ac863f57f"
        }
    ],
    "success": true
}
```

Project Inventory

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			2.4.0

Name	Description	Optional	Valid Value	Starting Version
name	The name. For more information, see Resource Property .			2.4.0
description	The description. For more information, see Resource Property .	Yes		2.4.0
linkedAccountUuid	The UUID of the associated account.			2.4.0
state	The state.			2.4.0
attributes	The attributes.			2.4.0
groupBy	Groups rows into subgroups based on values of columns or expressions. This field is equivalent to the Group By clause in MySQL, such as <code>groupBy =type</code> .	Yes		2.4.0
createDate	The creation date. For more information, see Resource Property .			2.4.0
lastOpDate	The last operation date. For more information, see Resource Property .			2.4.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.4.0

Name	Description	Optional	Valid Value	Starting Version
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.4.0

Sample

```
{
  "inventories": [
    {
      "attributes": [
        {
          "name": "__ProjectRelatedZone__",
          "type": "Customized",
          "uuid": "a14c5c41781547ddae0c2dd29cef2b14",
          "value": "c782f9e5bda544c4ac59dadfc8cf64a2"
        }
      ],
      "createDate": "Nov 16, 2018 8:15:55 PM",
      "description": "",
      "lastOpDate": "Nov 16, 2018 8:15:55 PM",
      "linkedAccountUuid": "9bcdab9afac9464f8d79e8807c9e8c67",
      "name": "     -B",
      "state": "Enabled",
      "uuid": "62518af359ac43918619b5ef66c6ae1d"
    },
    {
      "attributes": [
        {
          "name": "__ProjectRelatedZone__",
          "type": "Customized",
          "uuid": "063a62a0cb5c41258e49198518741437",
          "value": "c782f9e5bda544c4ac59dadfc8cf64a2"
        }
      ],
      "createDate": "Nov 16, 2018 8:12:22 PM",
      "description": "",
      "lastOpDate": "Nov 16, 2018 8:12:22 PM",
      "linkedAccountUuid": "f4560180ef0a433781fc2bbf2cafe5dd",
      "name": "     -A",
      "state": "Enabled",
      "uuid": "8b20bfb6e65d40f38e45633130calae"
    }
  ],
  "success": true
}
```

Virtual ID Group Inventory

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information,			2.4.0

Name	Description	Optional	Valid Value	Starting Version
	see Resource Property .			
name	The name. For more information, see Resource Property .			2.4.0
description	The description. For more information, see Resource Property .	Yes		2.4.0
projectUuid	The project UUID.			2.4.0
state	The state.			2.4.0
attributes	The attributes.			2.4.0
groupBy	Groups rows into subgroups based on values of columns or expressions. This field is equivalent to the Group By clause in MySQL, such as <code>groupBy =type</code> .	Yes		2.4.0
createDate	The creation date. For more information, see Resource Property .			2.4.0
lastOpDate	The last operation date. For more information, see Resource Property .			2.4.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.4.0

Name	Description	Optional	Valid Value	Starting Version
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.4.0

Sample

```
{
    "inventories": [
        {
            "attributes": [],
            "createDate": "Jan 11, 2019 8:53:34 PM",
            "description": "",
            "lastOpDate": "Jan 11, 2019 8:53:34 PM",
            "name": "1",
            "projectUuid": "62518af359ac43918619b5ef66c6ae1d",
            "state": "Enabled",
            "uuid": "530adb2a3ce84d75a500a77b2ab2ebe6"
        }
    ],
    "success": true
}
```

Role Inventory

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			2.4.0
name	The name. For more information, see Resource Property .			2.4.0
description	The description. For more information, see Resource Property .	Yes		2.4.0
groupBy	Groups rows into subgroups based on values of columns or expressions. This	Yes		2.4.0

Name	Description	Optional	Valid Value	Starting Version
	field is equivalent to the Group By clause in MySQL, such as <code>groupBy =type</code> .			
policies	The permission policy.			2.4.0
state	The state.			2.4.0
statements	The permission statements.			2.4.0
type	The type.			2.4.0
createDate	The creation date. For more information, see Resource Property .			2.4.0
lastOpDate	The last operation date. For more information, see Resource Property .			2.4.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.4.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.4.0

Sample

```
{
  "inventories": [
    {
      "createDate": "Sep 24, 2019 9:32:11 AM",
      "lastOpDate": "Sep 24, 2019 9:32:11 AM",
      "name": "predefined: ticket",
      "policies": [],
      "state": "Enabled",
      "tags": []
    }
  ]
}
```

```

"statements": [
    {
        "createDate": "Sep 24, 2019 9:32:11 AM",
        "lastOpDate": "Sep 24, 2019 9:32:11 AM",
        "statement": {
            "actions": [
                "org.zstack.ticket.api.**"
            ],
            "effect": "Allow",
            "name": "ticket"
        },
        "uuid": "c851fa6b4f4446eca0dacec9d1648cab"
    }
],
"type": "Predefined",
"uuid": "0666bf6c056d4982b33cb0bbc033ab3d"
},
{
    "createDate": "Sep 24, 2019 9:32:11 AM",
    "lastOpDate": "Sep 24, 2019 9:32:11 AM",
    "name": "predefined: configuration",
    "policies": [],
    "state": "Enabled",
    "statements": [
        {
            "createDate": "Sep 24, 2019 9:32:11 AM",
            "lastOpDate": "Sep 24, 2019 9:32:11 AM",
            "statement": {
                "actions": [
                    "org.zstack.header.configuration.
APIQueryDiskOfferingMsg",
                    "org.zstack.header.configuration.
APIQueryInstanceOfferingMsg"
                ],
                "effect": "Allow",
                "name": "configuration"
            },
            "uuid": "3e970bda67c64cb4bab842d167ac34ba"
        }
    ],
    "type": "Predefined",
    "uuid": "067c4dc358e847aba47903ca4fb1c41c"
}
],
"success": true
}

```

Ticket Inventory

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			3.0.0
name	The name. For more information,			3.0.0

Name	Description	Optional	Valid Value	Starting Version
	see Resource Property .			
description	The description. For more information, see Resource Property .	Yes		3.0.0
accountSystemType	The account system type.			3.0.0
ticketTypeUuid	The ticket type UUID.			3.6.0
accountSystemContext	The account system context.			3.0.0
currentFlowUuid	The custom flow UUID.			3.0.0
flowCollectionUuid	The approval process UUID.			3.0.0
status	The status.			3.0.0
request	The ticket request .			3.0.0
groupBy	Groups rows into subgroups based on values of columns or expressions. This field is equivalent to the Group By clause in MySQL , such as groupBy =type.	Yes		3.0.0
createDate	The creation date. For more information, see Resource Property .			3.0.0
lastOpDate	The last operation date. For more			3.0.0

Name	Description	Optional	Valid Value	Starting Version
	information, see Resource Property .			
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.0.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.0.0

Sample

```
{
    "inventories": [
        {
            "accountSystemContext": {
                "projectUuid": "8b20bfb6e65d40f38e45633130calaeec",
                "virtualIDUuid": "9d1fbe7b8d1c4b69b4c1d2b3dea621b3"
            },
            "accountSystemType": "iam2",
            "createDate": "Jan 11, 2019 8:54:44 PM",
            "description": "",
            "flowCollectionUuid": "f6820f86b5d246ae8684b37d959f0f08",
            "lastOpDate": "Jan 11, 2019 8:54:44 PM",
            "name": "1",
            "request": [
                {
                    "apiBody": {
                        "defaultL3NetworkUuid": "fd4eca3d6d5d4d30afea94a1be6d48da",
                        "hypervisorType": "KVM",
                        "imageUuid": "ccddc92afcc5155d9b7add10a0cd2b68",
                        "instanceOfferingUuid": "212a84a3c5324d8b880def26bbbcf31f",
                        "l3NetworkUuids": [
                            "fd4eca3d6d5d4d30afea94a1be6d48da"
                        ],
                        "name": "1",
                        "systemTags": [
                            "vmConsoleMode::vnc"
                        ]
                    },
                    "apiName": "org.zstack.header.vm.APICreateVmInstanceMsg",
                    "executeTimes": 1,
                    "requestName": "1"
                }
            ],
            "status": "Pending",
        }
    ]
}
```

```

        "uuid": "b70d5669ce5c454ca41f2f10e600b299"
    }
],
"success": true
}

```

Ticket Flow Collection Inventory

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			3.0.0
name	The name. For more information, see Resource Property .			3.0.0
description	The description. For more information, see Resource Property .	Yes		3.0.0
state	The state.			3.0.0
status	The status.			3.0.0
isDefault	The default deployment personnel.			3.0.0
flows	The flows.			3.0.0
groupBy	Groups rows into subgroups based on values of columns or expressions. This field is equivalent to the Group By clause in MySQL, such as <code>groupBy =type</code> .	Yes		3.0.0
createDate	The creation date. For more information,			3.0.0

Name	Description	Optional	Valid Value	Starting Version
	see Resource Property .			
lastOpDate	The last operation date. For more information, see Resource Property .			3.0.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.0.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.0.0

Sample

```
{
    "inventories": [
        {
            "createDate": "Nov 16, 2018 8:19:36 PM",
            "description": "",
            "flows": [
                {
                    "collectionUuid": "f6820f86b5d246ae8684b37d959f0f
08",
                    "createDate": "Nov 16, 2018 8:19:36 PM",
                    "flowContext": "{\"approverUuid\":\"a5ce19c477
5546a1876badf97cb7beb7\", \"approverTitle\":\"NormalMember\"}",
                    "flowContextType": "iam2",
                    "lastOpDate": "Nov 16, 2018 8:19:36 PM",
                    "name": "äžçşŞćżAæč",
                    "uuid": "8d9de6fa4e7646ad9093511814ecf4d7"
                },
                {
                    "collectionUuid": "f6820f86b5d246ae8684b37d959f0f
08",
                    "createDate": "Nov 16, 2018 8:19:36 PM",
                    "flowContext": "{\"approverUuid\":\"36c27e8ff0
5c4780bf6d2fa65700f22e\", \"approverTitle\":\"SystemAdmin\"}",
                    "flowContextType": "iam2",
                    "lastOpDate": "Nov 16, 2018 8:19:36 PM",
                    "name": "éšçœČçŽè",
                    "parentFlowUuid": "dc84e50a1ffb4e728dd898ea92fb30
09",
                    "uuid": "46476b45eae7457b914730df441f955d"
                }
            ]
        }
    ]
}
```

```

        "collectionUuid": "f6820f86b5d246ae8684b37d959f0f
08",
        "createDate": "Nov 16, 2018 8:19:36 PM",
        "flowContext": "{\"approverUuid\":\"3a6b9cb738
ac4b6086fddd2f2a571693\", \"approverTitle\":\"NormalMember\"}",
        "flowContextType": "iam2",
        "lastOpDate": "Nov 16, 2018 8:19:36 PM",
        "name": "éAččèŽèŽLäss",
        "parentFlowUuid": "8d9de6fa4e7646ad9093511814ecf4
d7",
        "uuid": "dc84e50a1ffb4e728dd898ea92fb3009"
    }
],
"isDefault": false,
"lastOpDate": "Nov 16, 2018 8:19:36 PM",
"name": "ćžAæčæ"çš-A",
"projectUuid": "8b20bfb6e65d40f38e45633130calae",
"state": "Enabled",
"status": "Valid",
"uuid": "f6820f86b5d246ae8684b37d959f0f08"
}
],
"success": true
}

```

Ticket Flow Inventory

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			3.0.0
name	The name. For more information, see Resource Property .			3.0.0
description	The description. For more information, see Resource Property .	Yes		3.0.0
parentFlowUuid	The parent flow UUID.			3.0.0
flowContext	The flow context.			3.0.0
flowContextType	The flow context type.			3.0.0
collectionUuid	The flow collection UUID.			3.0.0

Name	Description	Optional	Valid Value	Starting Version
groupBy	Groups rows into subgroups based on values of columns or expressions. This field is equivalent to the Group By clause in MySQL, such as <code>groupBy =type</code> .	Yes		3.0.0
createDate	The creation date. For more information, see Resource Property .			3.0.0
lastOpDate	The last operation date. For more information, see Resource Property .			3.0.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.0.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.0.0

Sample

```
{
  "inventories": [
    {
      "approverUuid": "36c27e8ff05c4780bf6d2fa65700f22e",
      "collectionUuid": "f6820f86b5d246ae8684b37d959f0f08",
      "createDate": "Nov 16, 2018 8:19:36 PM",
      "flowContext": "{ \"approverUuid\": \"36c27e8ff05c4780bf6d2fa65700f22e\", \"approverTitle\": \"SystemAdmin\" }",
      "flowContextType": "iam2",
      "lastOpDate": "Nov 16, 2018 8:19:36 PM",
      "name": "éšçœČçŽè",
      "parentFlowUuid": "dc84e50a1ffb4e728dd898ea92fb3009",
    }
  ]
}
```

```

        "uuid": "46476b45eae7457b914730df441f955d",
        "valid": true
    },
    {
        "approverUuid": "a5ce19c4775546a1876badf97cb7beb7",
        "collectionUuid": "f6820f86b5d246ae8684b37d959f0f08",
        "createDate": "Nov 16, 2018 8:19:36 PM",
        "flowContext": "{ \"approverUuid\": \"a5ce19c4775546a1876b  
adf97cb7beb7\", \"approverTitle\": \"NormalMember\" }",
        "flowContextType": "iam2",
        "lastOpDate": "Nov 16, 2018 8:19:36 PM",
        "name": "äżćśśczAæč",
        "uuid": "8d9de6fa4e7646ad9093511814ecf4d7",
        "valid": true
    },
    {
        "approverUuid": "3a6b9cb738ac4b6086fd882f2a571693",
        "collectionUuid": "f6820f86b5d246ae8684b37d959f0f08",
        "createDate": "Nov 16, 2018 8:19:36 PM",
        "flowContext": "{ \"approverUuid\": \"3a6b9cb738ac4b6086fd  
dd2f2a571693\", \"approverTitle\": \"NormalMember\" }",
        "flowContextType": "iam2",
        "lastOpDate": "Nov 16, 2018 8:19:36 PM",
        "name": "éAččèŽeŽläss",
        "parentFlowUuid": "8d9de6fa4e7646ad9093511814ecf4d7",
        "uuid": "dc84e50a1ffb4e728dd898ea92fb3009",
        "valid": true
    }
],
"success": true
}

```

IAM2 LDAP Binding Inventory

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			3.4.0
ldapUid	The AD/LDAP entry UID.			3.4.0
ldapServerUuid	The AD/LDAP server UUID.			3.4.0
resourceUuid	The resource UUID.			3.4.0
groupBy	Groups rows into subgroups based on values of columns or expressions. This field is equivalent	Yes		3.4.0

Name	Description	Optional	Valid Value	Starting Version
	to the Group By clause in MySQL , such as groupBy =type.			
createDate	The creation date. For more information, see Resource Property .			3.4.0
lastOpDate	The last operation date. For more information, see Resource Property .			3.4.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.4.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.4.0

Sample

```
{
  "inventories": [
    {
      "uuid": "5e66b22cb6d33a87802d12b4ee280f64",
      "ldapUid": "ou\u003dEmployee,uid\u003dtest",
      "ldapServerUuid": "03f1ff7e314232ebbb365c7fc62878f3",
      "virtualIDUuid": "3946f8a48c6d320fbddd0e6c0c30c281"
    }
  ]
}
```

Ticket Type Inventory

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information,			3.6.0

Name	Description	Optional	Valid Value	Starting Version
	see Resource Property .			
name	The name. For more information, see Resource Property .			3.6.0
description	The description. For more information, see Resource Property .	Yes		3.6.0
type				3.6.0
requests				
groupBy	Groups rows into subgroups based on values of columns or expressions. This field is equivalent to the Group By clause in MySQL, such as <code>groupBy =type</code> .	Yes		3.6.0
createDate	The creation date. For more information, see Resource Property .			3.6.0
lastOpDate	The last operation date. For more information, see Resource Property .			3.6.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.6.0

Name	Description	Optional	Valid Value	Starting Version
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.6.0

Sample

```
{
  "inventories": [
    {
      "uuid": "3b933e9aaaf2d49b9a3dcf0c92867790f",
      "name": "CREATE_VM_INSTANCE_TICKET_TYPE",
      "adminOnly": false,
      "createDate": "Jul 18, 2019 4:09:46 PM",
      "lastOpDate": "Jul 18, 2019 4:09:46 PM"
    }
  ]
}
```

IAM2 Organization and Project Reference Inventory

Name	Description	Optional	Valid Value	Starting Version
projectUuid	The project UUID.			3.6.0
organizationUuid	The organization UUID.			3.6.0
groupBy	Groups rows into subgroups based on values of columns or expressions. This field is equivalent to the Group By clause in MySQL, such as <code>groupBy =type</code> .	Yes		3.6.0
createDate	The creation date. For more information, see Resource Property .			3.6.0
lastOpDate	The last operation date. For more			3.6.0

Name	Description	Optional	Valid Value	Starting Version
	information, see Resource Property .			
userTags	The user tags. For more information, see CreateUserTag	Yes		3.6.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.6.0

Sample

```
{
  "inventories": [
    {
      "id": 1.0,
      "projectUuid": "29db1d979502319da9ecacb37168e0c6",
      "organizationUuid": "cd0af78809683f72b02a3fe8da0f1db0",
      "createDate": "Nov 14, 2017 10:20:57 PM",
      "lastOpDate": "Nov 14, 2017 10:20:57 PM"
    }
  ]
}
```

IAM2 Project and Account Reference Inventory

Name	Description	Optional	Valid Value	Starting Version
projectUuid	The project UUID.			3.6.0
accountUuid	The account UUID.			3.6.0
groupBy	Groups rows into subgroups based on values of columns or expressions. This field is equivalent to the Group By clause in MySQL, such as groupBy =type.	Yes		3.6.0

Name	Description	Optional	Valid Value	Starting Version
createDate	The creation date. For more information, see Resource Property .			3.6.0
lastOpDate	The last operation date. For more information, see Resource Property .			3.6.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.6.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.6.0

Sample

```
{
  "inventories": [
    {
      "projectUuid": "84e2577b7dcd327792d89b5ea0869044",
      "createDate": "Nov 14, 2017 10:20:57 PM",
      "lastOpDate": "Nov 14, 2017 10:20:57 PM"
    }
  ]
}
```

Account Billing Inventory

Name	Description	Optional	Valid Value	Starting Version
accountUuid	The account UUID.			3.7.0
billingType	The billing type.			3.7.0
groupBy	Groups rows into subgroups based on values of columns or	Yes		3.7.0

Name	Description	Optional	Valid Value	Starting Version
	expressions. This field is equivalent to the Group By clause in MySQL, such as <code>groupBy =type</code> .			
createDate	The creation date. For more information, see Resource Property .			3.7.0
endTime	The end time of the resource billing.			3.7.0
hypervisorType	The hypervisor type.			3.7.0
id	The billing ID.			3.7.0
lastOpDate	The last operation date. For more information, see Resource Property .			3.7.0
resourceName	The resource name.			3.7.0
resourceUuid	The resource UUID.			3.7.0
spending	The spending.			3.7.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.7.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.7.0

Sample

```
{
    "inventories": [
        {
            "accountUuid": "36c27e8ff05c4780bf6d2fa65700f22e",
            "billingType": "CPU",
            "cpuNum": 1,
            "createDate": "Oct 15, 2019 11:59:29 PM",
            "endTime": 1571155168964,
            "hypervisorType": "KVM",
            "id": 19,
            "lastOpDate": "Oct 15, 2019 11:59:29 PM",
            "resourceName": "nfs-2",
            "resourceUuid": "43c747fba85a4c03bacfd2e3cc2da757",
            "spending": 4.799944444444444,
            "startTime": 1571068769088
        },
        {
            "accountUuid": "36c27e8ff05c4780bf6d2fa65700f22e",
            "billingType": "CPU",
            "cpuNum": 1,
            "createDate": "Oct 15, 2019 11:59:29 PM",
            "endTime": 1571155168964,
            "hypervisorType": "KVM",
            "id": 20,
            "lastOpDate": "Oct 15, 2019 11:59:29 PM",
            "resourceName": "NFS-1",
            "resourceUuid": "4dda607c645c47bf8e16c6308f3d48b6",
            "spending": 4.799944444444444,
            "startTime": 1571068769089
        }
    ],
    "success": true
}
```

7.1.3 Operations

7.1.3.1 Organization

7.1.3.1.1 CreateIAM2Organization

Creates an organization. For example,

```
>CreateIAM2Organization name=cloud type=Department
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
name	The resource name.			2.4.0

Name	Description	Optional	Valid Value	Starting Version
description	The detailed description of the resource.	Yes		2.4.0
type	The organization type.		<ul style="list-style-type: none"> • Company • Department 	2.4.0
parentUuid		Yes		2.4.0
attributes		Yes		2.4.0
resourceUuid		Yes		2.4.0
quota	The quota.	Yes		4.3.6
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.4.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.4.0
timeout		Yes		

7.1.3.1.2 DeleteIAM2Organization

Deletes an organization. For example,

```
DeleteIAM2Organization uuid=a9665c1515c04619a2d2078519c4ee40
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			2.4.0
deleteMode		Yes		2.4.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.4.0

Name	Description	Optional	Valid Value	Starting Version
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.4.0
timeout		Yes		

7.1.3.1.3 QueryIAM2Organization

Queries an organization. For example,

```
QueryIAM2Organization name=cloud
```

Primitive Fields of Query

See [Organization Inventory](#).

Nested And Expanded Fields of Query

Field	Inventory	Description	Starting Version
attributes	Attribute Inventory	The attributes.	2.4.0
virtualIDs	Virtual ID Inventory	The users that belong to the organization.	2.4.0

7.1.3.1.4 UpdateIAM2Organization

Updates an organization. For example,

```
UpdateIAM2Organization uuid=e3342a520bc44d5abea4f1bf65503556
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			2.4.0
name	The resource name.	Yes		2.4.0
description	The detailed description of the resource.	Yes		2.4.0
parentUuid		Yes		2.4.0

Name	Description	Optional	Valid Value	Starting Version
type		Yes	• Company • Department	2.4.0
userTags	The user tags, For more information, see CreateUserTag .	Yes		2.4.0
systemTags	The system tags. For more information, see CreateSyst emTag .	Yes		2.4.0
timeout		Yes		

7.1.3.1.5 ChangeIAM2OrganizationParent

Changes the parent department in an organization. For example,

```
ChangeIAM2OrganizationParent parentUuid=4400321828a74631acd3229bbfb374
40 childrenUuids=e3342a520bc44d5abea4f1bf65503556
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
parentUuid	The parent department UUID .			2.4.0
childrenUuids	The subsidiary department UUID .			2.4.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.4.0
systemTags	The system tags. For more information, see CreateSyst emTag .	Yes		2.4.0
timeout		Yes		

7.1.3.1.6 ChangeIAM2OrganizationState

Changes the state of an organization. For example,

```
ChangeIAM2OrganizationState uuid=4400321828a74631acd3229bbfb37440
stateEvent=disable
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			2.4.0
stateEvent			<ul style="list-style-type: none"> Enable Disable 	2.4.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.4.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.4.0
timeout		Yes		

7.1.3.1.7 RemoveAttributesFromIAM2Organization

Removes attributes from an organization. For example,

```
RemoveAttributesFromIAM2Organization uuid=4400321828a74631acd3
229bbfb37440 attributeUuids=a9665c1515c04619a2d2078519c4ee40
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			2.4.0
attributeUuids	The attribute UUIDs.			2.4.0
userTags	TH user tags. For more information,	Yes		2.4.0

Name	Description	Optional	Valid Value	Starting Version
	see CreateUser Tag .			
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.4.0
timeout		Yes		

7.1.3.1.8 RemoveIAM2VirtualIDsFromOrganization

Removes a user from an organization. For example,

```
RemoveIAM2VirtualIDsFromOrganization virtualIDUuids=fd15790e88
c248c6a654859c15ee3022 organizationUuid=b74113ceeffd48878f3c1ab50ba7c1
1a
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
virtualIDUuids				2.4.0
organizationUuid				2.4.0
userTags	The user tags. For more information, see CreateUserTag	Yes		2.4.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.4.0
timeout		Yes		

7.1.3.1.9 CreateIAM2VirtualID

Creates a user. For example,

```
CreateIAM2VirtualID name=user password=password
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
name	The user name.			2.4.0
password				2.4.0
description		Yes		2.4.0
attributes		Yes		2.4.0
projectUuid		Yes		2.4.0
organizationUuid		Yes		2.4.0
resourceUuid		Yes		2.4.0
tagUuids	The tag UUID list.	Yes		3.4.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.4.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.4.0
timeout		Yes		

7.1.3.1.10 DeleteIAM2VirtualID

Deletes a user. For example,

```
DeleteIAM2VirtualID uuid=b141cd136a1f384d9e8e68319f8e1281
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			2.4.0
deleteMode		Yes		2.4.0

Name	Description	Optional	Valid Value	Starting Version
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.4.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.4.0
timeout		Yes		

7.1.3.1.11 QueryIAM2VirtualID

Queries a user. For example,

```
QueryIAM2VirtualID name=user
```

Primitive Fields of Query

See [Virtual ID Inventory](#).

Nested and Expanded Fields of Query

Field	Inventory	Description	Starting Version
attributes	Attributes Inventory	The user attributes.	2.4.0
groups	Virtual ID Group Inventory	The member group to which the user belongs.	2.4.0
organizations	Organization Inventory	The organization to which the user belongs.	2.4.0
projects	Project Inventory	The project to which the user belongs.	2.4.0
roles	Roles Inventory	The permissions owned by the user as a member.	2.4.0

7.1.3.1.12 LoginIAM2VirtualID

Logs in to the cloud as a user. For example,

```
LoginIAM2VirtualID name=user password=password

# Use two-factor authentication.
LoginIAM2VirtualID name=user password=password systemTags=twofatoken::123456
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
name	The resource name.			2.4.0
password				2.4.0
captchaUuid		Yes		2.4.0
verifyCode		Yes		2.4.0
clientInfo	The client information.	Yes		3.5.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.4.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.4.0
timeout		Yes		



Note:

- When you log in to ZStack Cloud as a user, you can use the two-factor authentication method by adding the **twofatoken** option to **SystemTags**.
 - Format of the **twofatoken** option: `twofatoken::6-digit two-factor authentication code`
 - Example: `twofatoken::123456`

7.1.3.1.13 ChangeIAM2VirtualIDState

Changes the state of a user. For example,

```
ChangeIAM2VirtualIDState uuid=cc723702dcc24fafba542aa64d953d58
stateEvent=enable
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			2.4.0
stateEvent			<ul style="list-style-type: none"> enable disable 	2.4.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.4.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.4.0
timeout		Yes		

7.1.3.1.14 AddIAM2VirtualIDsToOrganization

Adds a user to an organization. For example,

```
AddIAM2VirtualIDsToOrganization virtualIDUuids=e747d2bd298c38aab5ac
7ee561377845 organizationUuid=e28067165c7a3d098ea64c564ac2f53f
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
virtualIDUuids				2.4.0
organizationUuid				2.4.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.4.0

Name	Description	Optional	Valid Value	Starting Version
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.4.0
timeout		Yes		

7.1.3.1.15 AddAttributesToIAM2VirtualID

Adds attributes to a user. For example,

```
AddAttributesToIAM2VirtualID uuid=94d943b468573d9d9cdfd5472a6235dc
attributes='[{"name": "__ProjectAdmin__", "value": "feddc59f327240eea305
942cf00ef491"}]'
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			2.4.0
attributes	The attributes.			2.4.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.4.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.4.0
timeout		Yes		

7.1.3.1.16 RemoveAttributesFromIAM2VirtualID

Removes attributes from a user. For example,

```
RemoveAttributesFromIAM2VirtualID uuid=041a44d7d5983fe480c577c897b08eb7 attributeUuids=4d06d2b6742636dfaed60ea4b8807aa2
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			2.4.0
attributeUuids				2.4.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.4.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.4.0
timeout		Yes		

7.1.3.1.17 SetOrganizationSupervisor

Sets an organization supervisor. For example,

```
SetOrganizationSupervisor uuid=25a96af2ef0144e5ae4d0fbeef57a6af8
virtualIDUuid=4424b77e00cb49bca232faf58e5d1f5e
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			3.6.0
virtualIDUuid				3.6.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.6.0

Name	Description	Optional	Valid Value	Starting Version
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.6.0
timeout		Yes		

7.1.3.1.18 BatchCreateIAM2VirtualIDFromConfigFile

Creates users in bulk by importing files. For example,

```
BatchCreateIAM2VirtualIDFromConfigFile virtualIDInfos=5ZCN56ewKi
huYW11KSznroDku4soZGVzY3JpcHRpb24pLOmbhue+pCooY2x1c3R1clV1awQp
LOeJqeeQhuacuklQKihTYW5hZ2VtZW50SXBoKSzmiavmj4/niannkIbmnlpJT01NVe
uvue9rihJT01NVSksU1NI56uv5Y+jKihzc2hQb3J0KSzn1KjmiLf1kI0qKHVzZXJuYW1
1KSzlr4bnoIEqKHbh3N3b3JkQosLGF1ZDIwMmJmYmM2MTQ1NDNhMjNiNDM3NGYzNGJ1Y
zM1LDE3Mi4yMC4xOTguMjMyLCwscm9vdCxwYXNzd29yZAosLDkyN2NkNmRmZmZiYTQzMTI
4Yzk1MDY0MTFhzjAyMmQzLDE3Mi4yMC4xOTcuMjQ3LCwscm9vdCxwYXNzd29yZAo=
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
virtualIDInfos	The user information encoded in Base64 format.			3.6.0
resourceUuid		Yes		3.6.0
tagUuids	The tag UUID list.	Yes		3.6.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.6.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.6.0
timeout		Yes		

7.1.3.1.19 CheckIAM2VirtualIDConfigFile

Checks the user information imported from the files to determine whether users can be created in bulk. For example,

```
CheckIAM2VirtualIDConfigFile virtualIDInfos=5ZCN56ewKihuYW1lKSzn
roDku4soZGVzY3JpcHRpb24pLombhue+pCooY2x1c3Rlc1V1aWQpL0eJqeeQhu
acuklQKihTYW5hZ2VtZW50SXBSzKSmiavmj4/niannkIbmnlpJT01NViuvue9rihJT
01NVSkSu1NI56uv5Y+jKihzc2hQb3J0KSzn1KjmiLf1kI0qKHVzZXJuYW1lKSzlr4bno
IEqKHBhc3N3b3JkKQosLGFiZDIwMmJmYmM2MTQ1NDNhMjNindM3NGYzNGJ1YzM1LDE3Mi4
yMC4xOTguMjMyLCwscm9vdCxwYXNzd29yZAosLDkyN2NkNmRmZmZiYTQzMTI4Yzk1MDY0M
TFhzjAyMmQzLDE3Mi4yMC4xOTcuMjQ3LCwscm9vdCxwYXNzd29yZAo=
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
virtualIDInfos	The user information encoded in Base64 format.			3.6.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.6.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.6.0
timeout		Yes		

7.1.3.1.20 AttachIAM2ProjectToIAM2Organization

Attaches a project to an organization. For example,

```
AttachIAM2ProjectToIAM2Organization projectUuid=d5698b56f9f23a619582
01cf7bee4e72 organizationUuid=72363068daea3772bb52aa663554c1e5
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
projectUuid	The project UUID.			3.6.0
organizationUuid	The organization UUID.			3.6.0

Name	Description	Optional	Valid Value	Starting Version
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.6.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.6.0
timeout		Yes		

7.1.3.1.21 DetachIAM2ProjectFromIAM2Organization

Detaches a project from an organization. For example,

```
DetachIAM2ProjectFromIAM2Organization projectUuid=3fbdf0b46d3b3dec908d
db90fd4c6f42
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
projectUuid	The project UUID.			3.6.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.6.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.6.0
timeout		Yes		

7.1.3.1.22 QueryIAM2OrganizationProjectRef

Queries the reference between an organization and a project. For example,

```
QueryIAM2OrganizationProjectRef
```

Primitive Fields of Query

See [IAM2 Organization and Project Reference Inventory](#).

7.1.3.1.23 QueryIAM2ProjectAccountRef

Queries the reference between a project and an account. For example,

```
QueryIAM2ProjectAccountRef
```

Primitive Fields of Query

See [IAM2 Project and Account Reference Inventory](#).

7.1.3.1.24 GetIAM2OrganizationVirtualIDNumber

Retrieves the number of members in an organization. For example,

```
GetIAM2OrganizationVirtualIDNumber uuid=3fbdf0b46d3b3dec908ddb90fd4c6f42
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID of the organization.			4.0.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		4.0.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		4.0.0
timeout		Yes		

7.1.3.1.25 SetOrganizationOperation

Sets an operational admin, for example,

```
SetOrganizationOperation uuid=3fbdf0b46d3b3dec908ddb90f44c6f33  
virtualIDUuid=3fbdf0b46d3b3dec908ddb90fd4c6f42
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			4.3.6

Name	Description	Optional	Valid Value	Starting Version
virtualIDUuid	The user UUID.			4.3.6
userTags	The user tags. For more information, see CreateUserTag .	Yes		4.3.6
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		4.3.6
timeout		Yes		

7.1.3.1.26 UpdateOrganizationQuota

Updates the quota of an organization.

```
UpdateOrganizationQuota identityUuid=3fbdf0b46d3b3dec908ddb90fd4c6f42
name=quota value=100.0
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
identityUuid	uuid			4.3.6
name	The quota name.			4.3.6
value	The modified value.			4.3.6
userTags	The user tags. For more information, see CreateUserTag .	Yes		4.3.6
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		4.3.6
timeout		Yes		

7.1.3.1.27 GetOrganizationQuotaUsage

Obtains the quota of an organization.

```
GetOrganizationQuotaUsage uuid=3fbdf0b46d3b3dec908ddb90fd4c6f42
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			4.3.6
userTags	The user tags. For more information, see CreateUserTag .	Yes		4.3.6
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		4.3.6
timeout		Yes		

7.1.3.2 Project

7.1.3.2.1 CreateIAM2Project

Creates a project. For example,

```
CreateIAM2Project name=cloud
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
name	The resource name.			2.4.0
description	The detailed description of the resource.	Yes		2.4.0
attributes		Yes		2.4.0
resourceUuid		Yes		2.4.0
quota		Yes		2.4.0

Name	Description	Optional	Valid Value	Starting Version
roleUuids		Yes		2.4.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.4.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.4.0
timeout		Yes		

7.1.3.2.2 DeleteIAM2Project

Deletes a project. For example,

```
DeleteIAM2Project uuid=fffc7e1b2a983029833d1ab52bfa8187
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			2.4.0
deleteMode		Yes		2.4.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.4.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.4.0
timeout		Yes		

7.1.3.2.3 QueryIAM2Project

Queries a project. For example,

```
QueryIAM2Project name=cloud
```

Primitive Fields of Query

See [Project Inventory](#).

Nested and Expanded Fields of Query

Field	Inventory	Description	Starting Version
attributes	Attribute Inventory	The attributes.	2.4.0
virtualIDs	<i>Virtual ID Inventory</i>	The members (users) that belong to the project.	2.4.0

7.1.3.2.4 UpdateIAM2Project

Updates a project. For example,

```
UpdateIAM2Project uuid=63f57ce8c8013d56ac4df307cfb1c648
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			2.4.0
name	The resource name.	Yes		2.4.0
description	The detailed description of the resource.	Yes		2.4.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.4.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.4.0

Name	Description	Optional	Valid Value	Starting Version
timeout		Yes		

7.1.3.2.5 LoginIAM2Project

Logs in to a project. For example,

```
LoginIAM2Project projectName=cloud
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
projectName				2.4.0
clientInfo	The client information.	Yes		3.5.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.4.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.4.0
timeout		Yes		

7.1.3.2.6 SetIAM2ProjectLoginExpired

Sets limits on login to a project. For example,

```
SetIAM2ProjectLoginExpired uuid=0897b0890bef412ebff18b515282025d  
loginExpired="allow 0 6 12 ? * 1 to 0 6 18 ? * 1"
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			4.3.0
loginExpired	The login expiration expression.			4.3.0

Name	Description	Optional	Valid Value	Starting Version
userTags	The user tags. For more information, see CreateUserTag .	Yes		4.3.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		4.3.0
timeout		Yes		

7.1.3.2.7 RemoveIAM2ProjectLoginExpired

Removes a limit on logins to a project. For example,

```
RemoveIAM2ProjectLoginExpired uuid=0897b0890bef412ebff18b515282025d
attributeUuid=fc0faa18dd03408fbc7aa94f46a96ad9
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			4.3.0
attributeUuid				4.3.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		4.3.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		4.3.0
timeout		Yes		

7.1.3.2.8 ChangeIAM2ProjectState

Changes the state of a project. For example,

```
ChangeIAM2ProjectState uuid=13096969d0093f76802126ca15d9ac9c
stateEvent=enable
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			2.4.0
stateEvent			<ul style="list-style-type: none"> enable disable 	2.4.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.4.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.4.0
timeout		Yes		

7.1.3.2.9 RemoveIAM2VirtualIDsFromProject

Removes a member from a project. For example,

```
RemoveIAM2VirtualIDsFromProject projectUuid=bd9eaf0cc58e3ffb8792
922633be41d6 virtualIDUuids=e1bc00e294e430069d37c620583ed9fd
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
projectUuid				2.4.0
virtualIDUuids				2.4.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.4.0

Name	Description	Optional	Valid Value	Starting Version
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.4.0
timeout		Yes		

7.1.3.2.10 GetIAM2SystemAttributes

Obtains the system attributes. For example,

```
GetIAM2SystemAttributes
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
userTags	The user tags. For more information, see CreateUserTag .	Yes		
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		
timeout		Yes		

7.1.3.2.11 AddAttributesToIAM2Project

Adds attributes to a project. For example,

```
AddAttributesToIAM2Project uuid=71c17463bb2434f28e4649d77cd12366
attributes='[ { "name" : "some-attribute-name" , "value" : "attribute-value"
" } ]'
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid				2.4.0
attributes				2.4.0

Name	Description	Optional	Valid Value	Starting Version
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.4.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.4.0
timeout		Yes		

7.1.3.2.12 RemoveAttributesFromIAM2Project

Removes attributes from a project. For example,

```
RemoveAttributesFromIAM2Project uuid=71c17463bb2434f28e4649d77cd12366
attributeUuids=3212113e647a3c4d9e7d2dc87f607a45
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			2.4.0
attributeUuids				2.4.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.4.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.4.0
timeout		Yes		

7.1.3.2.13 CreateIAM2VirtualIDGroup

Creates a member group. For example,

```
CreateIAM2VirtualIDGroup name=IAM2VirtualIDGroup
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
projectUuid		Yes		4.0.0
name	The resource name.			2.4.0
description	The detailed description of the resource.	Yes		2.4.0
attributes		Yes		2.4.0
resourceUuid		Yes		2.4.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.4.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.4.0
timeout		Yes		

7.1.3.2.14 DeleteIAM2VirtualIDGroup

Deletes a member group. For example,

```
DeleteIAM2VirtualIDGroup uuid=70844c49506031a69cb4a19a1478cddf
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			2.4.0
deleteMode		Yes		2.4.0

Name	Description	Optional	Valid Value	Starting Version
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.4.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.4.0
timeout		Yes		

7.1.3.2.15 QueryIAM2VirtualIDGroup

Queries a member group. For example,

```
QueryIAM2VirtualIDGroup name=VirtualIDGroup
```

Primitive Fields of Query

See [Virtual ID Group Inventory](#).

Nested and Expanded Fields of Query

Field	Inventory	Description	Starting Version
attributes	Attribute Inventory	The attributes.	2.4.0
virtualIDs	Virtual ID Inventory	The members that belong to the group.	2.4.0
roles	Role Inventory	The permissions owned by the user as a member.	2.4.0

7.1.3.2.16 UpdateIAM2VirtualIDGroup

Updates a member group. For example,

```
UpdateIAM2VirtualIDGroup uuid=384bd47592273ddcb71039de694a37d3
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			2.4.0

Name	Description	Optional	Valid Value	Starting Version
name	The resource name.	Yes		2.4.0
description	The detailed description of the resource.	Yes		2.4.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.4.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.4.0
timeout		Yes		

7.1.3.2.17 ChangeIAM2VirtualIDGroupState

Changes the state of a member group. For example,

```
ChangeIAM2VirtualIDGroupState uuid=2da22aa4a4c840e2a0e5368427c7ab60
stateEvent=enable
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			2.4.0
stateEvent			<ul style="list-style-type: none"> • Enable • Disable 	2.4.0
userTags	The system tags. For more information, see CreateUserTag .	Yes		2.4.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.4.0

Name	Description	Optional	Valid Value	Starting Version
timeout		Yes		

7.1.3.2.18 AddIAM2VirtualIDsToProject

Adds a member to a project. For example,

```
AddIAM2VirtualIDsToProject projectUuid=6552671ff11d301cb593ed46b6db53
ed virtualIDUuids=70d6ff93cc388d92cd5c2c96f9df0b
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
projectUuid				2.4.0
virtualIDUuids				2.4.0
roleUuids		Yes		2.4.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.4.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.4.0
timeout		Yes		

7.1.3.2.19 RemoveIAM2VirtualIDsFromProjects

Removes users from projects. For example,

```
RemoveIAM2VirtualIDsFromProjects projectUuids=6552671ff11d301cb593
ed46b6db53ed virtualIDUuids=70d6ff93cc388d92cd5c2c96f9df0b
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
projectUuids	The project UUIDs.			4.0.0
virtualIDUuids	The user UUIDs.			4.0.0

Name	Description	Optional	Valid Value	Starting Version
userTags	The user tags. For more information, see CreateUserTag .	Yes		4.0.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		4.0.0
timeout		Yes		

7.1.3.2.20 AddIAM2VirtualIDsToProjects

Add multiple users to multiple projects. For example,

```
AddIAM2VirtualIDsToProjects projectUuids=6552671ff11d301cb593  
ed46b6db53ed virtualIDUuids=70d6ff93cc388d92cd5c2c96f9df0b
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
projectUuids	The project UUIDs.			4.0.0
virtualIDUuids	The user UUIDs.			4.0.0
roleUuids	The role UUIDs.	Yes		4.0.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		4.0.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		4.0.0
timeout		Yes		

7.1.3.2.21 AddIAM2VirtualIDGroupToProjects

Add multiple member groups to multiple projects. For example,

```
AddIAM2VirtualIDGroupToProjects structs={projectUuid:'44c1f89e3ea84f22ad7f50bb4da7d045', groupUuids:'818a4b0c515b410f8cbd58cdc505b897', roleUuids:'952c1a4da12f4ed9a9e2df0328d1b213'}
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
structs	The entry about the project, role, and member group.			4.0.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		4.0.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		4.0.0
timeout		Yes		

7.1.3.2.22 RemoveIAM2VirtualIDGroupFromProjects

Removes member groups from projects. For example,

```
RemoveIAM2VirtualIDGroupFromProjects projectUuids=6552671ff11d301cb593ed46b6db53ed
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
projectUuids	The project UUIDs.	Yes		4.0.0
groupUuids	The member group UUIDs.	Yes		4.0.0
userTags	The user tags. For more	Yes		4.0.0

Name	Description	Optional	Valid Value	Starting Version
	information, see CreateUserTag .			
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		4.0.0
timeout		Yes		

7.1.3.2.23 AddIAM2VirtualIDsToGroup

Adds a member to a group. For example,

```
AddIAM2VirtualIDsToGroup virtualIDUuids=28e44658cba33e57b96da2c430cbbe
fe groupUuid=2a5a0fe00543339f8c424e069df8c956
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
virtualIDUuids				2.4.0
groupUuid				2.4.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.4.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.4.0
timeout		Yes		

7.1.3.2.24 RemoveIAM2VirtualIDsFromGroup

Removes a member from a group. For example,

```
RemoveIAM2VirtualIDsFromGroup virtualIDUuids=de445baef47130f68b3d
b86d7614151f groupUuid=7e89f250537f36818cd3d079f2730b2d
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
virtualIDUuids				2.4.0
groupUuid				2.4.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.4.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.4.0
timeout		Yes		

7.1.3.2.25 UpdateIAM2VirtualID

Updates permissions of a user. For example,

```
UpdateIAM2VirtualID uuid=b86c9016b4f24953a9edefb53ca0678c
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			2.4.0
name	The resource name.	Yes		2.4.0
description	The detailed description of the resource.	Yes		2.4.0
password		Yes		2.4.0

Name	Description	Optional	Valid Value	Starting Version
userTags	The user tag. For more information, see CreateUser Tag .	Yes		2.4.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.4.0
timeout		Yes		

7.1.3.2.26 AddRolesToIAM2VirtualID

Adds permission to a member. For example,

```
AddRolesToIAM2VirtualID virtualIDUuid=8245aba180633254a5dfd76cbdd6f773
roleUuids=d1140b7d8ca03f7ba15ce467a9befec6
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
virtualIDUuid				2.4.0
roleUuids				2.4.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.4.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.4.0
timeout		Yes		

7.1.3.2.27 RemoveRolesFromIAM2VirtualID

Removes permission from a member. For example,

```
RemoveRolesFromIAM2VirtualID roleUuids=0c535557981832d2a8a9748c590e72
22 virtualIDUuid=8ac88abb03b336c68d9a5facd7a0cd8d
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
roleUuids				2.4.0
virtualIDUuid				2.4.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.4.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.4.0
timeout		Yes		

7.1.3.2.28 AddRolesToIAM2VirtualIDGroup

Adds permission to a member group. For example,

```
AddRolesToIAM2VirtualIDGroup roleUuids=15258e508f6e39cabb2b68e5e8b1dc
57 groupUuid=606625f400b739b99a78355a54175dc7
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
roleUuids				2.4.0
groupUuid				2.4.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.4.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.4.0

Name	Description	Optional	Valid Value	Starting Version
	CreateSystemTag .			
timeout		Yes		

7.1.3.2.29 RemoveRolesFromIAM2VirtualIDGroup

Removes permission from a member group. For example,

```
RemoveRolesFromIAM2VirtualIDGroup roleUuids=46c87204285e38428ddb  
f4c971df2907 groupUuid=ala30de59ad4346d9660fa63ea326ee7
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
roleUuids				2.4.0
groupUuid				2.4.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.4.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.4.0
timeout		Yes		

7.1.3.2.30 AddAttributesToIAM2VirtualIDGroup

Adds attributes to a member group. For example,

```
AddAttributesToIAM2VirtualIDGroup uuid=b86c9016b4f24953a9edefb53ca067  
8c attributes='[{"name": "some-attribute-name", "value": "attribute-value"}]'
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			2.4.0
attributes	The attributes.			2.4.0

Name	Description	Optional	Valid Value	Starting Version
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.4.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.4.0
timeout		Yes		

7.1.3.2.31 RemoveAttributesFromIAM2VirtualIDGroup

Removes attributes from a member group. For example,

```
RemoveAttributesFromIAM2VirtualIDGroup  uuid=71c17463bb2434f28e46
49d77cd12366 attributeUuids=3212113e647a3c4d9e7d2dc87f607a45
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			2.4.0
attributeUuids				2.4.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.4.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.4.0
timeout		Yes		

7.1.3.2.32 CreateRole

Creates a role. For example,

```
CreateRole name=role1
```

Parameters

Name	Description	Optional	Optional Version	Starting Version
name	The resource name.			2.4.0
description	The detailed description of the resource.	Yes		2.4.0
statements		Yes		2.4.0
policyUuids		Yes		2.4.0
resourceUuid		Yes		2.4.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.4.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.4.0
timeout		Yes		

7.1.3.2.33 DeleteRole

Deletes a role. For example,

```
DeleteRole uuid=b246c8a6bce34bd8b771838a8596adf1
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			2.4.0
deleteMode		Yes		2.4.0

Name	Description	Optional	Valid Value	Starting Version
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.4.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.4.0
timeout		Yes		

7.1.3.2.34 QueryRole

Queries a role. For example,

```
QueryRole
```

Primitive Fields of Query

See [Role Inventory](#).

Nested and Expanded Fields of Query

Field	Inventory	Description	Starting Version
virtualIDGroups	Virtual ID Group Inventory	The member group associated with the role.	2.4.0
virtualIDs	Virtual ID Inventory	The members (users) that belong to the group.	2.4.0

7.1.3.2.35 UpdateRole

Updates a role. For example,

```
UpdateRole uuid=b6991548b90a42dc8b2a533a027aad9a name=testrole
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			2.4.0

Name	Description	Optional	Valid Value	Starting Version
name	The resource name.			2.4.0
description	The detailed description of the resource.	Yes		2.4.0
statements	The permission statements.	Yes		2.4.0
policyUuids	The permission policy UUID.	Yes		2.4.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.4.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.4.0
timeout		Yes		

7.1.3.2.36 ChangeRoleState

Changes the state of a role. For example,

```
ChangeRoleState uuid=fd5a3c75d69e40de99f94bfa0af831e0 stateEvent=disable
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			2.4.0
stateEvent			<ul style="list-style-type: none"> enable disable 	2.4.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.4.0

Name	Description	Optional	Valid Value	Starting Version
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.4.0
timeout		Yes		

7.1.3.2.37 AttachPolicyToRole

Attaches a permission policy to a role. For example,

```
AttachPolicyToRole roleUuid=655590adb52c496b9a89e24e73d36189
policyUuid=ff5cb8effd1144c9858218d948afbb61
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
roleUuid				2.4.0
policyUuid	The permission policy UUID.			2.4.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.4.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.4.0
timeout		Yes		

7.1.3.2.38 DetachPolicyFromRole

Detaches a permission policy from a role. For example,

```
DetachPolicyFromRole roleUuid=655590adb52c496b9a89e24e73d36189
policyUuid=ff5cb8effd1144c9858218d948afbb61
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
roleUuid				2.4.0
policyUuid	The permission policy UUID.			2.4.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.4.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.4.0
timeout		Yes		

7.1.3.2.39 AddPolicyStatementsToRole

Adds policy statements to a role. For example,

```
AddPolicyStatementsToRole uuid=655590adb52c496b9a89e24e73d36189
statements='[ { "name": "ipsec", "effect": "Allow", "actions": [ "org.zstack.header.vipQos.*" ] } ]'
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			2.4.0
statements				2.4.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.4.0

Name	Description	Optional	Valid Value	Starting Version
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.4.0
timeout		Yes		

7.1.3.2.40 RemovePolicyStatementsFromRole

Removes policy statements from a role. For example,

```
RemovePolicyStatementsFromRole uuid=655590adb52c496b9a89e24e73d36189
    policyStatementUuids='[{"name": "ipsec", "effect": "Allow", "actions": ["org.zstack.header.vipQos.*"]}]'
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			2.4.0
policyStatementUuids				2.4.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.4.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.4.0
timeout		Yes		

7.1.3.2.41 AttachRoleToAccount

Attaches a role to an account. For example,

```
AttachRoleToAccount roleUuid=655590adb52c496b9a89e24e73d36189
accountUuid=2533823b9a764cd89f141f7bbcb78430
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
roleUuid				2.4.0
accountUuid	The account UUID.			2.4.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.4.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.4.0
timeout		Yes		

7.1.3.2.42 DetachRoleFromAccount

Detaches a role from an account. For example,

```
DetachRoleFromAccount roleUuid=655590adb52c496b9a89e24e73d36189
accountUuid=2533823b9a764cd89f141f7bbcb78430
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
roleUuid				2.4.0
accountUuid	The account UUID.			2.4.0
deleteMode		Yes		2.4.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.4.0

Name	Description	Optional	Valid Value	Starting Version
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.4.0
timeout		Yes		

7.1.3.2.43 GetIAM2VirtualIDAPIPermission

Obtains an API permission of a user. For example,

```
GetIAM2VirtualIDAPIPermission
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
apisToCheck		Yes		2.4.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.4.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.4.0
timeout		Yes		

7.1.3.2.44 LoginIAM2Platform

Log in to the platform by using a different role. For example,

```
LoginIAM2Platform
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
clientInfo		Yes		4.0.0
userTags	The user tags. For more	Yes		4.0.0

Name	Description	Optional	Valid Value	Starting Version
	information, see CreateUserTag .			
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		4.0.0
timeout		Yes		

7.1.3.3 Ticket

7.1.3.3.1 CreateTicket

Creates a ticket. For example,

```
CreateTicket name=cloud_Ticket requests='[{"requestName": "create
vm", "apiName": "org.zstack.header.vm.APICreateVmInstanceMsg", "executeTimes": 1, "apiBody": {"name": "vm name", "instanceOfferingUuid": "4646abc6c8931fdaab7a8df43e4f175", "imageUuid": "43e997234af63863b28a5e9987e1d122", "l3NetworkUuids": ["ddd66c7ba30598cdc7ab835e04f96"], "hostUuid": "3c84aa23e55f42758485db459202bdc3"}}]' flowCollectionUuid
=1c4db59a73b63f968889764bcb2bae9d accountSystemType=iam2 accountSys
temContext='{"projectUuid": "28c9a199e3e842d28c9805eb89be56cb", "virtualIDUuid": "1c255722caf34cb888b57d11a744248c"}'
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
name	The resource name.			3.0.0
description	The detailed description of the resource.	Yes		3.0.0
requests				3.0.0
flowCollectionUuid		Yes		3.0.0
accountSystemType				3.0.0
accountSystemContext				3.0.0
resourceUuid		Yes		3.0.0

Name	Description	Optional	Valid Value	Starting Version
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.0.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.0.0
timeout		Yes		

7.1.3.3.2 UpdateTicketRequest

Updates a ticket request. For example,

```
UpdateTicketRequest uuid=b86c9016b4f24953a9edefb53ca0678c requests=
requests='[{"requestName": "create vm", "apiName": "org.zstack.header
.vm.APICreateVmInstanceMsg", "executeTimes": 1, "apiBody": {"name": "
vm name", "instanceOfferingUuid": "46466abc6c8931fdaab7a8df43e4f175
", "imageUuid": "43e997234af63863b28a5e9987e1d122", "l3NetworkUuids":
["ddd66c7ba30598cdc7ab835e04f96"], "hostUuid": "3c84aa23e55f42758485
db459202bdc3"}}]'
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			3.0.0
requests				3.0.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.0.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.0.0
timeout		Yes		

7.1.3.3.3 ChangeTicketStatus

Changes the status of a ticket. For example,

```
ChangeTicketStatus uuid= statusEvent=open comment=this is the comment  
for change status operation
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			3.0.0
statusEvent			<ul style="list-style-type: none"> • open • approve • cancel • reject • reopen 	3.0.0
comment	The comment.	Yes		3.0.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.0.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.0.0
timeout		Yes		

7.1.3.3.4 QueryTicket

Queries a ticket. For example,

```
QueryTicket name=test Ticket
```

Primitive Fields of Query

See [Ticket Inventory](#).

7.1.3.3.5 QueryArchiveTicket

Queries an archived ticket. For example,

```
QueryArchiveTicket name=cloud
```

7.1.3.3.6 QueryTicketHistory

Queries a ticket history. For example,

```
QueryTicketHistory name=ZSatck
```

7.1.3.3.7 CreateIAM2TickFlowCollection

Creates a ticket process. For example,

```
CreateIAM2TickFlowCollection name=cloud projectUuid=1c4db59a73b63f968889764bcb2bae9d
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
flows		Yes		3.0.0
name	The resource name.			3.0.0
description	The detailed description of the resource.	Yes		3.0.0
isDefault		Yes		3.0.0
resourceUuid		Yes		3.0.0
projectUuid				3.0.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.0.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.0.0
timeout		Yes		

7.1.3.3.8 DeleteTicketFlowCollection

Deletes a ticket process. For example,

```
DeleteTicketFlowCollection uuid=657b0e4c4b21394db32f1c7c1066efa9
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid				3.0.0
deleteMode		Yes		3.0.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.0.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.0.0
timeout		Yes		

7.1.3.3.9 UpdateIAM2TicketFlowCollection

Updates a ticket process. For example,

```
UpdateIAM2TicketFlowCollection uuid=b86c9016b4f24953a9edefb53ca0678c  
name=cloud-1
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
flows		Yes		3.0.0
uuid	The resource UUID.			3.0.0
name	The resource name.	Yes		3.0.0
description	The detailed description of the resource.	Yes		3.0.0
isDefault		Yes		3.0.0

Name	Description	Optional	Valid Value	Starting Version
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.0.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.0.0
timeout		Yes		

7.1.3.3.10 QueryTicketFlowCollection

Queries a ticket process. For example,

```
QueryTicketFlowCollection name=cloud
```

Primitive Fields of Query

See [Ticket Flow Collection Inventory](#).

Nested and Expanded Fields of Query

Field	Inventory	Description	Starting Version
flow	Flow Inventory	A flow in a ticket process.	2.4.0
flows	Flow Inventory	Multiple flows in a ticket process.	2.4.0

7.1.3.3.11 ChangeTicketFlowCollectionState

Changes the state of a ticket process. For example,

```
ChangeTicketFlowCollectionState uuid=b86c9016b4f24953a9edefb53ca0678c
stateEvent=enable
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			3.0.0
stateEvent			• enable	3.0.0

Name	Description	Optional	Valid Value	Starting Version
			• disable	
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.0.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.0.0
timeout		Yes		

7.1.3.3.12 QueryTicketFlow

Queries a flow in a ticket process. For example,

```
QueryTicketFlow name=Flow-1
```

Primitive Fields of Query

See [Ticket Flow Inventory](#).

Nested and Expanded Fields of Query

Field	Inventory	Description	Starting Version
collection	Collection Inventory	The flow collection.	3.0.0

7.1.3.3.13 AddIAM2TicketFlow

Adds a custom approval flow. For example,

```
AddIAM2TicketFlow approverUuid=2b1b555f19531df9a94ce42c8959fa9 name=Flow-1 collectionUuid=82b6111a0d7f47bd955f385f959b1eb7
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
approverUuid				3.0.0
approverTitle		Yes		3.0.0
name	The resource name.			3.0.0

Name	Description	Optional	Valid Value	Starting Version
description	The detailed description of the resource.	Yes		3.0.0
collectionUuid				3.0.0
parentFlowUuid		Yes		3.0.0
resourceUuid		Yes		3.0.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.0.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.0.0
timeout		Yes		

7.1.3.3.14 UpdateIAM2TicketFlow

Updates a custom approval flow. For example,

```
UpdateIAM2TicketFlow uuid=b86c9016b4f24953a9edefb53ca0678c name=cloud-1
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			3.0.0
name	The resource name.	Yes		3.0.0
description	The detailed description of the resource.	Yes		3.0.0
approverUuid		Yes		3.0.0
approverTitle		Yes		3.0.0
userTags	The user tags. For more	Yes		3.0.0

Name	Description	Optional	Valid Value	Starting Version
	information, see CreateUserTag .			
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.0.0
timeout		Yes		

7.1.3.3.15 DeleteIAM2TicketFlow

Deletes a custom approval flow. For example,

```
DeleteIAM2TicketFlow uuid=b86c9016b4f24953a9edefb53ca0678c
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			3.0.0
deleteMode		Yes		3.0.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.0.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.0.0
timeout		Yes		

7.1.3.3.16 AddTicketTypesToTicketFlowCollection

Adds a ticket type to a ticket process. For example,

```
AddTicketTypesToTicketFlowCollection ticketFlowCollectionUuid=
3b933e9aaf2d49b9a3dcf0c92867790f ticketTypeUuids=ef064ef45fb446d381db
7b7d5f71695c
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
ticketFlowCollectionUuid	The ticket process UUID.			3.6.0
ticketTypeUuids	The ticket type UUID.			3.6.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.6.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.6.0
timeout		Yes		

7.1.3.3.17 RemoveTicketTypesFromTicketFlowCollection

Removes a ticket type from a ticket process. For example,

```
RemoveTicketTypesFromTicketFlowCollection ticketFlowCollectionUuid=
3b933e9aaf2d49b9a3dcf0c92867790f ticketTypeUuids=ef064ef45fb446d381db
7b7d5f71695c
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
ticketFlowCollectionUuid	The ticket process UUID.			3.6.0
ticketTypeUuids	The ticket type UUID.			3.6.0
userTags	The user tags. For more	Yes		3.6.0

Name	Description	Optional	Valid Value	Starting Version
	information, see CreateUserTag .			
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.6.0
timeout		Yes		

7.1.3.3.18 QueryTicketType

Queries a ticket type. For example,

```
QueryTicketType uuid=3b933e9aaf2d49b9a3dcf0c92867790f
```

Primitive Fields of Query

See [Ticket Type Inventory](#).

7.1.3.4 3rd Party Authentication

7.1.3.4.1 CreateIAM2VirtualIDFromLdapUid

Creates a user from an LDAP user. For example,

```
CreateIAM2VirtualIDFromLdapUid ldapUid=ou\u003dEmployee,uid\u003dtest
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
ldapUid	The AD/LDAP user UID.			3.5.1
resourceUuid	The resource UUID.	Yes		3.5.1
tagUuids	The tag UUID list.	Yes		3.5.1
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.5.1
systemTags	The system tags. For more	Yes		3.5.1

Name	Description	Optional	Valid Value	Starting Version
	information, see CreateSystemTag .			
timeout		Yes		

7.1.3.4.2 CreateIAM2VirtualIDLdapBinding

Binds a user and an LDAP user. For example,

```
CreateIAM2VirtualIDLdapBinding virtualIDUuid=5d1be61d0d1d3657afdd
9e7829f4d2ed ldapUid=ou\003dEmployee,uid\003dtest
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
virtualIDUuid	The user UUID.			3.5.1
ldapUid	The AD/LDAP user UUID.			3.5.1
resourceUuid		Yes		3.5.1
tagUuids	The tag UUID list.	Yes		3.5.1
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.5.1
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.5.1
timeout		Yes		

7.1.3.4.3 GetCandidateLdapEntryForIAM2Binding

Obtains an LDAP entry for user binding. For example,

```
GetCandidateLdapEntryForIAM2Binding ldapFilter=(cn=mevoco)
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
ldapFilter	The AD/LDAP query filter.			3.5.1
limit	The limit of AD/LDAP query entries.	Yes		3.5.1
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.5.1
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.5.1
timeout		Yes		

7.1.3.4.4 LoginIAM2VirtualIDWithLdap

Performs login as a user through LDAP authentication. For example,

```
LoginIAM2VirtualIDWithLdap uid=test password=password
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uid	The login attribute value of the AD/LDAP user.			3.5.1
password	The login password of the AD/LDAP user.			3.5.1
verifyCode	The login verification code.	Yes		3.5.1

Name	Description	Optional	Valid Value	Starting Version
captchaUuid	The UUID of the login authentication code.	Yes		3.5.1
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.5.1
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.5.1
timeout		Yes		

7.1.3.4.5 DeleteIAM2VirtualIDLdapBinding

Deletes the binding between a user and an LDAP user. For example,

```
DeleteIAM2VirtualIDLdapBinding uuid=0a7983d3082530c4b6d4b844e694694e
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			3.5.1
deleteMode		Yes		3.5.1
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.5.1
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.5.1
timeout		Yes		

7.1.3.4.6 CleanInvalidLdapIAM2Binding

Cleans the binding between a user and an LDAP user. For example,

```
CleanInvalidLdapIAM2Binding
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.5.1
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.5.1
timeout		Yes		

7.1.3.4.7 QueryIAM2LdapBinding

Queries the binding between a user and an LDAP user. For example,

```
QueryIAM2LdapBinding
```

Primitive Fields of Query

See [IAM2 LDAP Binding Inventory](#).

7.1.3.4.8 SyncLdapServer

Synchronizes an AD/LDAP server and an AD/LDAP organization. For example,

```
SyncLdapServer uuid=14dc461677b23ea1a984849f501a7152
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			3.5.1
userTags	The user tags. For more	Yes		3.5.1

Name	Description	Optional	Valid Value	Starting Version
	information, see CreateUserTag .			
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.5.1
timeout		Yes		

7.1.4 Tags

- You can create a user tag on an organization by using **resourceType=IAM2OrganizationVO**. For example,

```
CreateUserTag resourceType=IAM2OrganizationVO tag=golden-ResourceStack
resourceUuid=42bd9ac18f984dd683ad22a36a5b756c
```

- You can create a user tag on a user by using **resourceType=IAM2VirtualIDVO**. For example,

```
CreateUserTag resourceType=IAM2VirtualIDVO tag=golden-ResourceStack
resourceUuid=42bd9ac18f984dd683ad22a36a5b756c
```

- You can create a user tag on a project by using **resourceType=IAM2ProjectVO**. For example,

```
CreateUserTag resourceType=IAM2ProjectVO tag=golden-ResourceStack
resourceUuid=e1886ebf4c6d40809d7367f4710b82e8
```

- You can create a user tag on a member group by using **resourceType=IAM2VirtualIDGroupVO**. For example,

```
CreateUserTag resourceType=IAM2VirtualIDGroupVO tag=golden-
ResourceStack
resourceUuid=0c535557981832d2a8a9748c590e7222
```

- You can create a user tag on a ticket by using **resourceType=TicketVO**. For example,

```
CreateUserTag resourceType=TicketVO tag=golden-ResourceStack
resourceUuid=8ac88abb03b336c68d9a5facd7a0cd8d
```

- You can create a user tag on a role by using **resourceType=RoleVO**. For example,

```
CreateUserTag resourceType=RoleVO tag=systemrole
```

```
resourceUuid=fd5a3c75d69e40de99f94bfa0af831e0
```

7.2 Billing Management

7.2.1 Overview

Bills of different resources under different projects, departments, and accounts are calculated and displayed in real time based on the unit price and time of usage defined in a pricing list. The time is accurate to seconds.

Pricing list, also known as price table, defines the unit price of different resources based on the resource specification and time of usage. After you attach a pricing list to a project or an account, the corresponding bills of resources will be generated accordingly.

7.2.2 Inventory

Resource Price Inventory

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			0.6
resourceName	The resource name.		<ul style="list-style-type: none"> • cpu • memory • rootVolume • dataVolume 	0.6
resourceUnit	The billing resource unit.	Yes		0.6
timeUnit	The billing time unit.			0.6
price	The unit price.			0.6
dateInLong	The long-integer time.	Yes		0.6
tableuuid	The price table UUID.			3.7.2
pciDeviceOfferings	The PCI device list.			2.4

Name	Description	Optional	Valid Value	Starting Version
createDate	The creation date. For more information, see Resource Property .			0.6
lastOpDate	The last operation date. For more information, see Resource Property .			0.6

Sample

```
{
  "inventories": [ ],
  "success": true
}
```

Price Table Inventory

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			3.7.1
name	The name. For more information, see Resource Property .			3.7.1
description	The description. For more information, see Resource Property .	Yes		3.7.1
groupBy	Groups rows into subgroups based on values of columns or expressions. This field is equivalent to the Group By	Yes		3.7.1

Name	Description	Optional	Valid Value	Starting Version
	clause in MySQL , such as groupBy =type.			
createDate	The creation date. For more information, see Resource Property .			3.7.1
lastOpDate	The last operation date. For more information, see Resource Property .			3.7.1
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.7.1
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.7.1

Sample

```
{
  "inventories": [
    {
      "uuid": "3e78d076698438a6a68aa2eabdde8adf",
      "name": "price table",
      "createDate": "Nov 14, 2017 10:20:57 PM",
      "lastOpDate": "Nov 14, 2017 10:20:57 PM"
    }
  ]
}
```

Account and Price Table Reference Inventory

Name	Description	Optional	Valid Value	Starting Version
accountUuid	The account UUID.			3.7.1

Name	Description	Optional	Valid Value	Starting Version
tableUuid	The price table UUID.			3.7.1
groupBy	Groups rows into subgroups based on values of columns or expressions. This field is equivalent to the Group By clause in MySQL, such as <code>groupBy =type</code> .	Yes		3.7.1
createDate	The creation date. For more information, see Resource Property .			3.7.1
lastOpDate	The last operation date. For more information, see Resource Property .			3.7.1
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.7.1
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.7.1

Sample

```
{
  "inventories": [
    {
      "accountUuid": "3dd9565ef61137c2a8615c26da6ddd4c",
      "tableUuid": "b0c83f78e0323aea8969e5b879ffbe5f",
      "createDate": "Nov 14, 2017 10:20:57 PM",
      "lastOpDate": "Nov 14, 2017 10:20:57 PM"
    }
  ]
}
```

{}

7.2.3 Operations

7.2.3.1 CreateResourcePrice

Creates a resource price. For example,

```
CreateResourcePrice resourceName=memory price=60 timeUnit=d resourceUnit=G
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
resourceName	The resource name.		<ul style="list-style-type: none"> • cpu • memory • rootvolume • datavolume • snapshot • gpu • pubIpVmNic BandwidthOut • pubIpVmNic BandwidthIn • pubIpVipBandwidthOut • pubIpVipBandwidthIn 	0.6
resourceUnit	The billing unit of the resource.	Yes		0.6
timeUnit	The billing time unit.			0.6
price	The unit price.			0.6
accountUuid	The account UUID.	Yes		0.6
dateInLong	The long-integer time.	Yes		0.6
tableuuid	The price table UUID.	Yes		3.7.2

Name	Description	Optional	Valid Value	Starting Version
userTags	The user tags. For more information, see CreateUserTag .	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		0.6
timeout		Yes		



Note:

- When you create a resource price in ZStack Cloud, you can specify a PCI device by adding the **PCI device** option to **SystemTags**.
 - Format of the **PCI device** option: `gpuOfferingUuid::UUID`
 - Example: `gpuOfferingUuid::634b48a7bca139d9944a0f95b0c2dddf`
- When you create a resource price in ZStack Cloud, you can define the resource billing type by adding the **priceUserConfig** option to **SystemTags**.
 - Format of the **priceUserConfig** option: `priceUserConfig::xxx`. Here, xxx must be a JSON string.

7.2.3.2 DeleteResourcePrice

Deletes a resource price. For example,

```
DeleteResourcePrice uuid=7c9a496360c040819dbaa5abd9c074b8
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			0.6
deleteMode	The delete mode. For more information, see DeleteResources .	Yes	<ul style="list-style-type: none"> Permissive Enforcing 	0.6

Name	Description	Optional	Valid Value	Starting Version
userTags	The user tags. For more information, see CreateUserTag .	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		0.6
timeout		Yes		

7.2.3.3 UpdateResourcePrice

Updates a resource price. For example,

```
UpdateResourcePrice uuid=bed31eb3ba76325ba6a1cef1a64c97a3 setEndDate
InLongBaseOnCurrentTime=false
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource price UUID.			3.7.2
endDateInLong	The resource price expiration date.	Yes		3.7.2
setEndDate InLongBase OnCurrentTime	Sets the resource price expiration date to the current time.	Yes		3.7.2
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.7.2
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.7.2

Name	Description	Optional	Valid Value	Starting Version
timeout		Yes		

7.2.3.4 QueryResourcePrice

Queries a resource price. For example,

```
QueryResourcePrice resourceName=datavolume
```

Primitive Fields of Query

See [Resource Price Inventory](#).

7.2.3.5 CalculateAccountSpending

Calculates the spending of an account. For example,

```
CalculateAccountSpending accountUuid=36c27e8ff05c4780bf6d2fa65700f22e
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
accountUuid	The account UUID.			0.6
dateStart	The start date.	Yes		0.6
dateEnd	The end date.	Yes		0.6
userTags	The user tags. For more information, see CreateUserTag .	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		0.6
timeout		Yes		

7.2.3.6 QueryAccountBilling

Queries bills of an account. For example,

```
QueryAccountBilling accountUuid=2533823b9a764cd89f141f7bbcb78430
```

Primitive Fields of Query

See [Account Billing Inventory](#).

7.2.3.7 CreatePriceTable

Creates a price table. For example,

```
CreatePriceTable name=table_1 prices='[{"resourceName": "cpu", "timeUnit": "s", "price": 1.0}]'
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
name	The name of the price table.			3.7.1
description	The detailed description of the price table.	Yes		3.7.1
prices				3.7.1
resourceUuid	The UUID of the price table.	Yes		3.7.1
tagUuids	The tag UUID list.	Yes		3.7.1
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.7.1
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.7.1
timeout		Yes		

7.2.3.8 DeletePriceTable

Deletes a price table. For example,

```
DeletePriceTable uuid=81bd5aa16d203ca39bc5e79e2bbc6de2
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID of the price table.			3.7.1
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.7.1
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.7.1
timeout		Yes		

7.2.3.9 UpdatePriceTable

Modifies a price table. For example,

```
UpdatePriceTable name=table_1 prices='[{"resourceName": "cpu", "timeUnit": "s", "price": 1.2}]'
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID of the price table.			3.7.1
name	The name of the price table.	Yes		3.7.1
description	The detailed description of the price table.	Yes		3.7.1
userTags	The user tags. For more	Yes		3.7.1

Name	Description	Optional	Valid Value	Starting Version
	information, see CreateUserTag .			
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.7.1
timeout		Yes		

7.2.3.10 QueryPriceTable

Queries a price table. For example,

```
QueryPriceTable uuid=86b5cece6d0f3534a0a995ab8e60289f
```

Primitive Fields of Query

See [Price Table Inventory](#).

7.2.3.11 AttachPriceTableToAccount

Attaches a price table to an account or a project. For example,

```
AttachPriceTableToAccount accountUuid=e32698fc57d34d68bbf1c4963af95a0
tableUuid=f354e135276d3e77a46f47c5c0e47b1a
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
accountUuid	The account UUID.			3.7.1
tableUuid	The price table UUID.			3.7.1
tagUuids	The tag UUID list.	Yes		3.7.1
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.7.1
systemTags	The system tags. For more information, see	Yes		3.7.1

Name	Description	Optional	Valid Value	Starting Version
	CreateSystemTag .			
timeout		Yes		

7.2.3.12 DetachPriceTableFromAccount

Detaches a price table from an account or a project. For example,

```
DetachPriceTableFromAccount accountUuid=c27d5d1d46ce3b548ec0755d0b3540
84 tableUuid=5b81c2a13b2f319ea97a4568575b0266
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
accountUuid	The account UUID.			3.7.1
tableUuid	The price table UUID.			3.7.1
tagUuids	The tag UUID list.	Yes		3.7.1
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.7.1
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.7.1
timeout		Yes		

7.2.3.13 ChangeAccountPriceTableBinding

Changes the price table that is attached to an account or a project. For example,

```
ChangeAccountPriceTableBinding accountUuid=ca0f8310310e351f8590
e4d9f03106bc tableUuid=082289755ebe363daa52eb2aa10cbb01
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
accountUuid	The account UUID.			3.7.1
tableUuid	The price table UUID.			3.7.1
resourceUuid		Yes		3.7.1
tagUuids	The tag UUID list.	Yes		3.7.1
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.7.1
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.7.1
timeout		Yes		

7.2.3.14 GetAccountPriceTableRef

Queries the price table used by an account or a project. For example,

```
GetAccountPriceTableRef accountUuid=67fc4b4c5fa0c36adba411d7258d4557e
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
tableUuid	The price table UUID.	Yes		3.7.2
accountUuid	The account UUID.	Yes		3.7.2

Name	Description	Optional	Valid Value	Starting Version
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.7.2
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.7.2
timeout		Yes		

7.2.3.15 QueryAccountPriceTableRef

Queries the reference between a price table and an account or a project. For example,

```
QueryAccountPriceTableRef accountUuid=b86c9016b4f24953a9edefb53ca0678c
```

Primitive Fields of Query

See [Account and Price Table Reference Inventory](#).

7.2.3.16 GenerateAccountBilling

Generates bills. For example,

```
GenerateAccountBilling accountUuid=54caddf06e1e3b7c995df5e99d8ca9d9
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
accountUuid	The account UUID.			3.7.2
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.7.2
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.7.2

Name	Description	Optional	Valid Value	Starting Version
timeout		Yes		

7.2.4 Tags

You can create a user tag on a resource price by using `CreateUserTag resourceType=PriceVO`. For example,

```
CreateUserTag resourceType=PriceVO tag=Test1 \
resourceUuid=3214e0dcd01d4e2aa8407968e1c51d58
```

7.3 Access Control

7.3.1 Console Service

7.3.1.1 Overview

The Platform Management feature of ZStack Cloud displays the current console proxy information, that is, the information about the proxy you use when you open the console of your VM instance.

- You need to modify the console proxy address only in the management node.
- The default proxy address is the IP address of the management node.
- The displayed type is `ManagementServerConsoleProxy`.
- You can open the console of a VM instance only when the state of the console proxy is **Enabled** and the status is **Connected**.

You can perform the following operations on a console proxy:

- **Reconnect:** You can reconnect the console proxy if the console of a VM instance fails to be opened. After reconnection, you can open the console again when the proxy state is Enabled and the proxy status is Connected.
- **Set the console proxy address:** ZStack Cloud allows you to set the console proxy address on the UI.
 - The console proxy address can either be the public IP address, the NAT address, or the domain name of a management node. Port settings are not supported.
 - The setting takes effect immediately without a need to restart the management node.

7.3.1.2 Inventory

Properties

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			0.6
description	The detailed description of the resource.	Yes		0.6
state	The state.		<ul style="list-style-type: none"> Enabled Disabled 	0.6
status	The status, including Connected and Disconnected.			0.6
type	The type.			0.6
managementIp	The IP address of the management node.			0.6
consoleProxyOverriddenIp				0.6
createDate	The creation date. For more information, see Resource Property .			0.6
lastOpDate	The last operation date. For more information, see Resource Property .			0.6

Sample

```
{
  "inventories": [
    {
      "consoleProxyOverriddenIp": ""
    }
  ]
}
```

```

        "createDate": "Mar 10, 2018 3:40:42 PM",
        "description": "Console proxy agent running on the
management node[uuid:c6696896a2a34f1782781e42f85d89a4]",
        "lastOpDate": "Mar 10, 2018 3:40:56 PM",
        "managementIp": "10.0.210.4",
        "state": "Enabled",
        "status": "Connected",
        "type": "ManagementServerConsoleProxy",
        "uuid": "c6696896a2a34f1782781e42f85d89a4"
    }
],
"success": true
}

```

7.3.1.3 Operations

7.3.1.3.1 RequestConsoleAccess

Sends a request to obtain the access address of a console. For example,

```
RequestConsoleAccess vmInstanceUuid=43ff23ed457544e285597ad8d8edad68
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
vmInstanceUuid	The VM instance UUID.			0.6
userTags	The user tags. For more information, see CreateUserTag .	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		0.6
timeout		Yes		

7.3.1.3.2 QueryConsoleProxyAgent

Queries a console proxy. For example,

```
QueryConsoleProxyAgent consoleProxyOverriddenIp=172.20.16.176
```

Primitive Fields of Query

See Console Proxy Agent Inventory.

7.3.1.3.3 ReconnectConsoleProxyAgent

Reconnects a console proxy. For example,

```
ReconnectConsoleProxyAgent agentUuids=f3537a0d957e49fc971acd4198ca1729
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
agentUuids	The console proxy UUID.	Yes		0.6
userTags	The user tags. For more information, see CreateUserTag .	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		0.6
timeout		Yes		

7.3.1.3.4 UpdateConsoleProxyAgent

Updates a console proxy. For example,

```
UpdateConsoleProxyAgent uuid=dccc2549a6b7402cbf5de9551b6c06e9  
consoleProxyOverriddenIp=172.20.16.255
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
consoleProxyOverriddenIp	The IP address of the console proxy.			0.6
uuid				0.6
userTags	The user tags. For more information, see CreateUserTag .	Yes		0.6
systemTags	The system tags. For more	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
	information, see CreateSystemTag .			
timeout		Yes		

7.3.1.4 Tags

You can create a user tag on a console proxy by using `CreateUserTag resourceType=ConsoleProxyAgentVO`. For example,

```
CreateUserTag resourceType=ConsoleProxyAgentVO tag=Test1 \
resourceUuid=3214e0dc01d4e2aa8407968e1ccreatee51d58
```

7.3.2 AccessKey

7.3.2.1 Overview

An AccessKey can either be a local AccessKey or a third-party AccessKey.

- In ZStack CloudPrivate Cloud, a local AccessKey (which contains an AccessKey ID and an AccessKey Secret) is a security credential authorized by the Cloud to third-party users. With the authorized AccessKey, third-party users can access cloud resources by calling ZStack CloudPrivate Cloud APIs. We recommend that you keep your AccessKey confidential to maintain securities.
- A third-party AccessKey (which contains an AccessKey ID and an AccessKey Secret) is a security credential authorized by third-party users to the Cloud. With the authorized AccessKey , the Cloud can access cloud resources of the third-party users by calling APIs. Third-party AccessKey must also be kept confidential to maintain security.

AccessKey is a key factor for ZStack CloudPrivate Cloud to perform security authentication on API requests. We recommend that you keep your AccessKey confidential to maintain securities. If your AccessKey is at risk of leakage, we recommend that you delete it in time and create a new one.

Notice

- Admins and platform admins can create multiple AccessKeys, while the tenants (normal accounts and project members) can create only two AccessKeys.
- Admins and platform admins can enable, disable, or delete AccessKeys created by themselves and those created by tenants at any time.
- Tenants can enable, disable, or delete AccessKeys created by themselves at any time.

- An AccessKey has all permissions of the person who created it.

7.3.2.2 Inventory

Properties

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			3.2.0
description	The detailed description of the resource.	Yes		3.2.0
state	The state. For more information, see Resource Property .		<ul style="list-style-type: none"> Enabled Disabled 	3.2.0
accountUuid	The account UUID.			3.2.0
userUuid	The user UUID.			3.2.0
AccessKeyID				3.2.0
AccessKeySecret				3.2.0
groupBy				3.2.0
createDate	The creation date. For more information, see Resource Property .			3.2.0
lastOpDate	The last operation date. For more information, see Resource Property .			3.2.0
systemTags				
userTags				

Sample

```
{
    "inventories": [
        {
            "AccessKeyID": "PqCuIU6dKGOZkMRB0kcY",
            "AccessKeySecret": "WijjWZuKYDX2j7HdJA99qVkvVdRzCm
5AyBaRpVwt",
            "accountUuid": "36c27e8ff05c4780bf6d2fa65700f22e",
            "createDate": "Dec 4, 2018 10:40:25 AM",
            "description": "",
            "lastOpDate": "Dec 4, 2018 10:40:25 AM",
            "state": "Enabled",
            "userUuid": "36c27e8ff05c4780bf6d2fa65700f22e",
            "uuid": "fff6c1a0d0594124a43debd83f01bda5"
        }
    ],
    "success": true
}
```

7.3.2.3 Operations

7.3.2.3.1 CreateAccessKey

Creates an AccessKey. For example,

```
CreateAccessKey accountUuid=aac1b2040c144342a17182514ff0d072 userUuid=
36c27e8ff05c4780bf6d2fa65700f22e
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
accountUuid	The account UUID.			3.2.0
userUuid	The user UUID.			3.2.0
description	The detailed description of the resource.	Yes		3.2.0
AccessKeyID	The AccessKey ID.	Yes		3.7.0
AccessKeySecret	The AccessKey Secret.	Yes		3.7.0
resourceUuid		Yes		3.2.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.2.0

Name	Description	Optional	Valid Value	Starting Version
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.2.0
timeout		Yes		

7.3.2.3.2 DeleteAccessKey

Creates an AccessKey. For example,

```
DeleteAccessKey uuid=aac1b2040c144342a17182514ff0d072
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The AccessKey UUID.			3.2.0
deleteMode				3.2.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.2.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.2.0
timeout		Yes		

7.3.2.3.3 QueryAccessKey

Queries an AccessKey. For example,

```
QueryAccessKey
```

Primitive Fields of Query

See [AccessKey Inventory](#).

7.3.2.3.4 ChangeAccessKeyState

Enables or disables an AccessKey. For example,

```
ChangeAccessKeyState uuid=aac1b2040c144342a17182514ff0d072 stateEvent=disable
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The AccessKey UUID.			3.2.0
stateEvent	Enables or disables the AccessKey.		<ul style="list-style-type: none"> • enable • disable 	3.2.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.2.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.2.0
timeout		Yes		

7.3.2.4 Tags

You can create a user tag on an AccessKey by using `CreateUserTag ResourceType=AccessKeyVO`. For example,

```
CreateUserTag ResourceType=AccessKeyVO tag=Test1 \
resourceUuid=3214e0dc01d4e2aa8407968e1ccreatee51d58
```

7.3.3 IP Blacklist/Whitelist

7.3.3.1 Overview

ZStack Cloud allows you to configure a blacklist or whitelist for login IP addresses to protect your cloud. You can configure a blacklist or whitelist as needed to identify and filter the identities of those who access your cloud, thereby enhancing the access control and security of your cloud.

7.3.3.2 Inventory

Properties

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			3.5.1
name				3.5.1
description	The detailed description of the resource.	Yes		3.5.1
rule				3.5.1
strategy				3.5.1
groupBy				3.5.1
createDate	The creation date. For more information, see Resource Property .			3.5.1
lastOpDate	The last operation date. For more information, see Resource Property .			3.5.1
systemTags				3.5.1
userTags				3.5.1

Sample

```
{
  "inventories": [
    {
      "createDate": "Jul 11, 2019 2:43:32 PM",
      "description": "",
      "lastOpDate": "Jul 11, 2019 2:43:32 PM",
      "name": "aaa",
      "rule": "1.1.1.1",
      "strategy": "REJECT",
      "uuid": "036e0ab3e5be46909aed2183cd6208e9"
    },
    {
      "createDate": "Jul 11, 2019 2:54:24 PM",
      "description": "This is a test inventory entry."}
```

```
"description": "",  
"lastOpDate": "Jul 11, 2019 2:54:24 PM",  
"name": "tttt",  
"rule": "1.1.1.1",  
"strategy": "ACCEPT",  
"uuid": "1bca2e2d95ad476a9e697692fbbe088c"  
},  
{  
    "createDate": "Jul 11, 2019 8:16:27 PM",  
    "description": "",  
    "lastOpDate": "Jul 11, 2019 8:16:27 PM",  
    "name": "172.20.15.194",  
    "rule": "172.20.15.194",  
    "strategy": "REJECT",  
    "uuid": "37ca231828364ec198cd39931c42f1a8"  
},  
{  
    "createDate": "Jul 11, 2019 2:56:43 PM",  
    "description": "",  
    "lastOpDate": "Jul 11, 2019 2:56:43 PM",  
    "name": "ppppp",  
    "rule": "2.2.2.2",  
    "strategy": "ACCEPT",  
    "uuid": "40249c3b554a4205916c626fc72f8799"  
},  
{  
    "createDate": "Jul 11, 2019 8:16:12 PM",  
    "description": "",  
    "lastOpDate": "Jul 11, 2019 8:16:12 PM",  
    "name": "172.20.15.194",  
    "rule": "172.20.15.194,172.20.15.194",  
    "strategy": "REJECT",  
    "uuid": "4c4e42efd3234772bc07e50ed9acc52d"  
},  
{  
    "createDate": "Jul 11, 2019 8:16:05 PM",  
    "description": "",  
    "lastOpDate": "Jul 11, 2019 8:16:05 PM",  
    "name": "172.20.15.194",  
    "rule": "172.20.15.194",  
    "strategy": "REJECT",  
    "uuid": "5adcfe4410c8436cb7b267c0f860459c"  
},  
{  
    "createDate": "Jul 11, 2019 2:52:58 PM",  
    "description": "",  
    "lastOpDate": "Jul 11, 2019 2:52:58 PM",  
    "name": "rrrrr",  
    "rule": "1.1.1.1",  
    "strategy": "ACCEPT",  
    "uuid": "7afc374dfb8d4a41a103cbbd978af33c"  
},  
{  
    "createDate": "Jul 11, 2019 8:16:18 PM",  
    "description": "",  
    "lastOpDate": "Jul 11, 2019 8:16:18 PM",  
    "name": "172.20.15.194",  
    "rule": "172.20.15.194",  
    "strategy": "REJECT",  
    "uuid": "d862ab35843947dc1f8292b5e04ff4f"  
},  
{
```

```

    "createDate": "Jul 11, 2019 2:53:58 PM",
    "description": "",
    "lastOpDate": "Jul 11, 2019 2:53:58 PM",
    "name": "ccc",
    "rule": "1.1.1.1",
    "strategy": "ACCEPT",
    "uuid": "fb927b7a9e114e7abec82f9d7079f0c6"
}
],
"success": true
}

```

7.3.3.3 Operations

7.3.3.3.1 AddAccessControlRule

Adds an IP access control rule. For example,

```
AddAccessControlRule name=rule1 rule=172.20.1.1,172.20.1.2 controlStrategy=ACCEPT
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
name	The resource name.			3.5.1
description	The detailed description of the resource.	Yes		3.5.1
rule				3.5.1
controlStrategy				3.5.1
resourceUuid		Yes		3.5.1
tagUuids	The tag UUID list.	Yes		3.5.1
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.5.1
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.5.1
timeout		Yes		

7.3.3.3.2 DeleteAccessControlRule

Deletes an IP access control rule. For example,

```
DeleteAccessControlRule uuid=b86c9016b4f24953a9edefb53ca0678c
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			3.5.1
deleteMode		Yes		3.5.1
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.5.1
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.5.1
timeout		Yes		

7.3.3.3.3 UpdateAccessControlRule

Updates an IP access control rule. For example,

```
UpdateAccessControlRule uuid=b86c9016b4f24953a9edefb53ca0678c
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			3.5.1
name	The resource name.	Yes		3.5.1
description	The detailed description of the resource.	Yes		3.5.1
userTags	The user tags. For more	Yes		3.5.1

Name	Description	Optional	Valid Value	Starting Version
	information, see CreateUserTag .			
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.5.1
timeout		Yes		

7.3.3.3.4 QueryAccessControlRule

Queries an IP access control rule. For example,

```
QueryAccessControlRule
```

Primitive Fields of Query

See [Properties](#).

7.3.3.3.5 GetLoginCaptcha

Obtains the login verification code. For example,

```
GetLoginCaptcha resourceName=admin loginType=Test
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
resourceName				3.5.1
loginType				3.5.1
captchaUuid		Yes		3.5.1
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.5.1
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.5.1
timeout		Yes		

7.3.3.4 Tags

You can create a user tag on an access control rule by using `CreateUserTag resourceType=AccessControlRuleVO`. For example,

```
CreateUserTag resourceType=AccessControlRuleVO tag=Test1 \
resourceUuid=3214e0dc01d4e2aa8407968e1ccreatee51d58
```

8 Settings

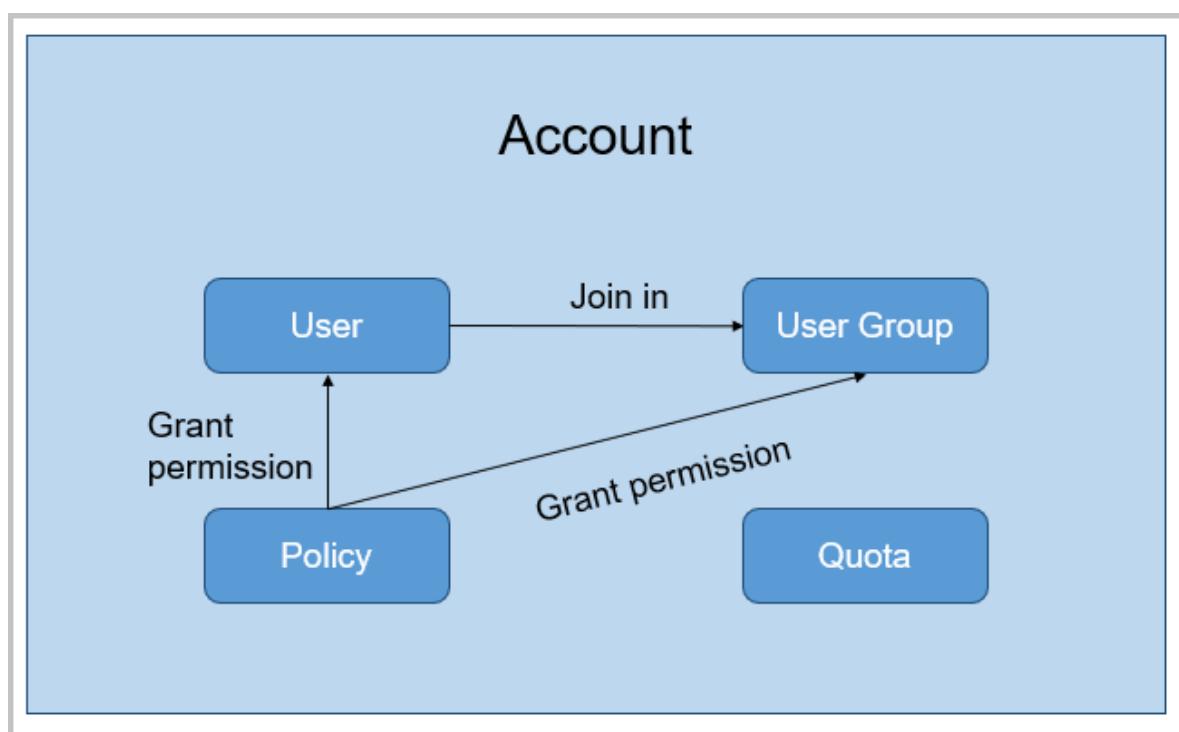
8.1 User Management

8.1.1 Overview

The User Management feature provides you with access control to system resources. With User Management, you can perform fine-grained managements on resource ownership and permission control.

- User Management provides managements of accounts, user groups, and users, and involves concepts such as policy and quota.
- The overall structure of User Management is shown in [Figure 8-1: User Management](#).

Figure 8-1: User Management



Concepts

- **Account**

Account is the root identity that owns all your resources. An account can perform multiple operations, such as create, delete, share, and recall, on resources of its ownership. Account consists of admin account and normal account.

- **User**

User is created by account to achieve fine-grained permission controls. Users created by an admin account are admin users who inherit all permissions of the admin account.

- **User Group**

User group is created by normal account to perform batch permission controls on users in the same group.

- **Resource Quota**

Resource quota, also referred to as quota, is used by admin account to limit the resource amount of a normal account.

- Resource quota involves the following parameters: VM count, CPU count, memory capacity , maximum number of data volumes, and maximum capacity of all volumes.
- The admin account can modify the preceding parameters to adjust the resource quota of each normal account. If a resource is deleted but not expunged, the resource still consumes the primary storage and volume resources.

8.1.2 Inventory

Properties

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			0.6
name	The name. For more information, see Resource Property .			0.6
description	The description. For more information, see Resource Property .	Yes		0.6
state	The state.		<ul style="list-style-type: none"> • Enabled • Disabled 	0.6
createDate	The creation date. For more			0.6

Name	Description	Optional	Valid Value	Starting Version
	information, see Resource Property .			
lastOpDate	The last operation date. For more information, see Resource Property .			0.6
type	The reserved field for internal use.			0.6

Sample

```
{
    "inventories": [
        {
            "createDate": "Mar 10, 2018 2:13:11 PM",
            "lastOpDate": "Mar 10, 2018 2:13:11 PM",
            "name": "admin",
            "type": "SystemAdmin",
            "uuid": "36c27e8ff05c4780bf6d2fa65700f22e"
        }
    ],
    "success": true
}
```

Two-Factor Authentication Inventory

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			3.4.0
secret	The two-factor authentication secret.			3.4.0
userUuid	The user UUID.	Yes		3.4.0
userType	The user type.			3.4.0
status	The status.			3.4.0
groupBy	Groups rows into subgroups based on values	Yes		3.4.0

Name	Description	Optional	Valid Value	Starting Version
	of columns or expressions. This field is equivalent to the Group By clause in MySQL, such as <code>groupBy =type</code> .			
createDate	The creation date. For more information, see Resource Property .			3.4.0
lastOpDate	The last operation date. For more information, see Resource Property .			3.4.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.4.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.4.0

Sample

```
{
  "inventories": [
    {
      "createDate": "Mar 12, 2019 7:50:41 PM",
      "lastOpDate": "Mar 12, 2019 7:50:41 PM",
      "secret": "75BLH2NDTNIVE364",
      "status": "NewCreated",
      "userType": "AccountVO",
      "userUuid": "2dce5dc485554d21a3796500c1db007a",
      "uuid": "060a5b419c894c0bbc57e7e6ca2084fd"
    }
  ]
}
```

{}

Account Inventory

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			0.6
name	The name. For more information, see Resource Property .			0.6
description	The description. For more information, see Resource Property .	Yes		0.6
type	The account type , including admin account and normal account.			0.6
groupBy	Groups rows into subgroups based on values of columns or expressions. This field is equivalent to the Group By clause in MySQL , such as groupBy =type.	Yes		0.6
createDate	The creation date. For more information, see Resource Property .			0.6
lastOpDate	The last operation date. For more information,			0.6

Name	Description	Optional	Valid Value	Starting Version
	see Resource Property .			
userTags	The user tags. For more information, see CreateUserTag .	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		0.6

Sample

```
{
  "inventories": [
    {
      "uuid": "c5962adc77ff40d980bcfe68a39b6fc5",
      "name": "test",
      "type": "Normal"
    }
  ]
}
```

Account and Resource Reference Inventory

Name	Description	Optional	Valid Value	Starting Version
accountUuid	The account UUID.			0.6
resourceUuid	The resource UUID.			0.6
resourceType	The resource type.			0.6
groupBy	Groups rows into subgroups based on values of columns or expressions. This field is equivalent to the Group By clause in MySQL	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
	, such as groupBy =type.			
createDate	The creation date. For more information, see Resource Property .			0.6
lastOpDate	The last operation date. For more information, see Resource Property .			0.6
userTags	The user tags. For more information, see CreateUserTag .	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		0.6

Sample

```
{
  "inventories": [
    {
      "id": 1.0,
      "accountUuid": "a27e124c2a8441be8212a622848c28cd",
      "ownerAccountUuid": "b22d5d9b1c084589aa1abe30d2783bb8",
      "resourceUuid": "c2fa286ab4ac41f18ce5219cc4482641",
      "resourceType": "ImageVO",
      "permission": 1.0,
      "isShared": false
    }
  ]
}
```

User Group Inventory

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information,			0.6

Name	Description	Optional	Valid Value	Starting Version
	see Resource Property .			
name	The name. For more information, see Resource Property .			0.6
description	The description. For more information, see Resource Property .	Yes		0.6
accountUuid	The account UUID.			0.6
groupBy	Groups rows into subgroups based on values of columns or expressions. This field is equivalent to the Group By clause in MySQL, such as <code>groupBy =type</code> .	Yes		0.6
createDate	The creation date. For more information, see Resource Property .			0.6
lastOpDate	The last operation date. For more information, see Resource Property .			0.6
userTags	The user tags. For more information, see CreateUserTag .	Yes		0.6
systemTags	The system tags. For more	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
	information, see CreateSystemTag .			

Sample

```
{
  "inventories": [
    {
      "uuid": "775eb58ab79a41c9803cc8ffc4996f80",
      "accountUuid": "a3511b57fa06498b85c6c7150770120e",
      "name": "usergroup"
    }
  ]
}
```

User Inventory

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			0.6
name	The name. For more information, see Resource Property .			0.6
description	The description. For more information, see Resource Property .	Yes		0.6
accountUuid	The account UUID.			0.6
groupBy	Groups rows into subgroups based on values of columns or expressions. This field is equivalent to the Group By clause in MySQL	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
	, such as groupBy =type.			
createDate	The creation date. For more information, see Resource Property .			0.6
lastOpDate	The last operation date. For more information, see Resource Property .			0.6
userTags	The user tags. For more information, see CreateUserTag .	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		0.6

Sample

```
{
  "inventories": [
    {
      "uuid": "b369a13fbff64812802612040590a682",
      "accountUuid": "9cf0fc6c3d8146dab03a5727da5ebe2b",
      "name": "testuser"
    }
  ]
}
```

Policy Inventory

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			0.6

Name	Description	Optional	Valid Value	Starting Version
name	The name. For more information, see Resource Property .			0.6
accountUuid	The account UUID.			0.6
statements				0.6
groupBy	Groups rows into subgroups based on values of columns or expressions. This field is equivalent to the Group By clause in MySQL, such as groupBy =type.	Yes		0.6
createDate	The creation date. For more information, see Resource Property .			0.6
lastOpDate	The last operation date. For more information, see Resource Property .			0.6
userTags	The user tags. For more information, see CreateUserTag .	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		0.6

Sample

```
{
  "inventories": [
    {
      "statements": [
        {
          "name": "user-reset-password-10e0d5dc0a4846c8b7e2e204aa014370",
          "effect": "Allow",
          "actions": [
            "identity:APIUpdateUserMsg"
          ]
        }
      ],
      "name": "USER-RESET-PASSWORD",
      "uuid": "10e0d5dc0a4846c8b7e2e204aa014370",
      "accountUuid": "2884beb74bff43569096365a90e696fb"
    }
  ]
}
```

Quota Inventory

Name	Description	Optional	Valid Value	Starting Version
name	The name. For more information, see Resource Property .			0.6
identityUuid	The identity UUID, including account UUID and user UUID.			0.6
identityType	The identity type, including account and user			0.6
value	The default quota			0.6
groupBy	Groups rows into subgroups based on values of columns or expressions. This field is equivalent to the Group By clause in MySQL, such as groupBy =type.	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
createDate	The creation date. For more information, see Resource Property .			0.6
lastOpDate	The last operation date. For more information, see Resource Property .			0.6
userTags	The user tags. For more information, see CreateUserTag .	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		0.6

Sample

```
{
  "inventories": [
    {
      "name": "quota",
      "identityUuid": "bdb6f9724a0d40d69ffa47856a916f93",
      "value": 20.0
    }
  ]
}
```

Shared Resource inventory

Name	Description	Optional	Valid Value	Starting Version
ownerAccountUuid	The owner account UUID.			0.6
receiverAccountUuid	The receiver account UUID.			0.6
toPublic	Whether to share the resource globally.			0.6

Name	Description	Optional	Valid Value	Starting Version
resourceType	The resource type.			0.6
resourceUuid	The resource UUID.			0.6
groupBy	Groups rows into subgroups based on values of columns or expressions. This field is equivalent to the Group By clause in MySQL, such as <code>groupBy =type</code> .	Yes		0.6
createDate	The creation date. For more information, see Resource Property .			0.6
lastOpDate	The last operation date. For more information, see Resource Property .			0.6
userTags	The user tags. For more information, see CreateUserTag .	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		0.6

Sample

```
{
  "inventories": [
    {
      "ownerAccountId": "459f08b3915d4c06817e36587bd91fbb",
      "receiverAccountId": "3de68725726544209999d5ec8172926e",
      "id": "459f08b3915d4c06817e36587bd91fbb"
    }
  ]
}
```

```

    "toPublic": false,
    "resourceType": "ImageVO",
    "resourceUuid": "01f2f1309e9f4d67955a0648df6963a0"
  }
]
}

```

8.1.3 Operations

8.1.3.1 CreateAccount

Creates an account. For example,

```
CreateAccount name=normal password=password
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
name	The resource name.			0.6
password	The password.			0.6
type	The account type.	Yes	<ul style="list-style-type: none"> SystemAdmin Normal 	0.6
description	The detailed description of the resource.	Yes		0.6
resourceUuid	The resource UUID.	Yes		0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is AccountVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is AccountVO.	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
timeout		Yes		

8.1.3.2 DeleteAccount

Deletes an account. For example,

```
DeleteAccount uuid=fb955f42278149a7b93e238a8c8bd272
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			0.6
deleteMode	The delete mode. For more information, see Delete Resources .	Yes	<ul style="list-style-type: none"> • Permissive • Enforcing 	0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is AccountVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is AccountVO.	Yes		0.6
timeout		Yes		

8.1.3.3 QueryAccount

Queries an account. For example,

```
QueryAccount uuid=cla0038cf004f59bf7a56c6da8d856b
```

```
QueryAccount user.uuid=523024a60fb4437ab141ce965eb50f05
```

Primitive Fields of Query

See [Account Inventory](#).

Nested and Expanded Fields of Query

Field	Inventory	Description	Starting Version
group	Group Inventory		0.6
policy	Policy Inventory		0.6
quota	Quota Inventory		0.6
user	User Inventory		0.6

8.1.3.4 UpdateAccount

Updates an account. For example,

```
UpdateAccount uuid=f536739a077040afa74af59ac085252b
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The account UUID.			0.6
name	The account name.	Yes		0.6
password	The password.	Yes		0.6
description	The detailed description of the resource.	Yes		0.6
resourceUuid	The resource UUID.	Yes		0.6
userTags	The user tags. For more information, see	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
	CreateUser Tag . The resource type is AccountVO.			
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is AccountVO.	Yes		0.6
timeout		Yes		

8.1.3.5 LogInByAccount

Logs in to the cloud by using an account. For example,

```
LogInByAccount accountName=account1 password=password
# Use two-factor authentication.
LogInByAccount accountName=account1 password=password systemTags=
twofatoken::123456
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
accountName	The account name.			0.6
password	The password.			0.6
captchaUuid	The verification code UUID.	Yes		2.6.0
verifyCode	The verification code.	Yes		2.6.0
clientInfo	The client information.	Yes		3.5.0
userTags	The user tags. For more information, see CreateUser Tag .	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
	resource type is AccountVO.			
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is AccountVO.	Yes		0.6
timeout		Yes		

**Note:**

- When you log in to ZStack Cloud by using an account, you can use the two-factor authentication method by adding the **twofatoken** option to **SystemTags**.
 - Format of the **twofatoken** option: `twofatoken::6-digit two-factor authentication code`
 - Example: `twofatoken::123456`

8.1.3.6 GetLoginCaptcha

Obtains login verification code. For example,

```
GetLoginCaptcha resourceName=admin loginType=Test
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
resourceName	The resource name.			2.6.0
loginType	The login type.			2.6.0
userTags	The user tags. For more information, see CreateUserTag . The resource type is AccountVO.	Yes		2.6.0

Name	Description	Optional	Valid Value	Starting Version
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is AccountVO.	Yes		2.6.0
timeout		Yes		

8.1.3.7 RefreshCaptcha

Refreshes login verification code. For example,

```
RefreshCaptcha uuid=4f9643d18f34440babd971793f6d0b3a
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			2.6.0
userTags	The user tags. For more information, see CreateUserTag . The resource type is AccountVO.	Yes		2.6.0
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is AccountVO.	Yes		2.6.0
timeout		Yes		

8.1.3.8 GetTwoFactorAuthenticationSecret

Obtains a two-factor authentication secret. For example,

```
GetTwoFactorAuthenticationSecret name=admin password=password type=account
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
name	The resource name.			2.6.0
password				2.6.0
type			<ul style="list-style-type: none"> • account • iam2 	2.6.0
userTags	The user tags. For more information, see CreateUser Tag . The resource type is AccountVO.	Yes		2.6.0
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is AccountVO.	Yes		2.6.0
timeout		Yes		

8.1.3.9 QueryTwoFactorAuthentication

Queries a two-factor authentication secret. For example,

```
QueryTwoFactorAuthentication uuid=b86c9016b4f24953a9edefb53ca0678c
```

Primitive Fields of Query

See [Two-Factor Authentication Inventory](#).

8.1.3.10 GetTwoFactorAuthenticationState

Obtains the two-factor authentication state. For example,

```
GetTwoFactorAuthenticationState
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
userTags	The user tags. For more information, see CreateUser Tag . The resource type is AccountVO.	Yes		2.6.0
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is AccountVO.	Yes		2.6.0
timeout		Yes		

8.1.3.11 GetAccountQuotaUsage

Obtains the quota usage of an account. For example,

```
GetAccountQuotaUsage uuid=c1a0038cf004f59bf7a56c6da8d856b
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is AccountVO.	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is AccountVO.	Yes		0.6
timeout		Yes		

8.1.3.12 QueryAccountResourceRef

Queries the reference between an account and a resource. For example,

```
QueryAccountResourceRef accountUuid=36c27e8ff05c4780bf6d2fa65700f22e
resourceType=VolumeVO
```

Primitive Fields of Query

See [Account and Resource Reference Inventory](#).

8.1.3.13 ShareResource

Shares resources to accounts. For example,

```
ShareResource resourceUuids=e29e00c1d18a486b8802a8f53c6a6e4f /
accountUuids=f536739a077040afa74af59ac085252b
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
resourceUuids	The resource UUID list.			0.6
accountUuids	The account UUID list.	Yes		0.6
toPublic	Whether to share a resource globally. If false, you must specify the account UUID.	Yes		0.6
userTags	The user tags. For more	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
	information, see CreateUserTag .			
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		0.6
timeout		Yes		

8.1.3.14 CreateUserGroup

Creates a user group. For example,

```
CreateUserGroup name=usergroup1
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
name	The resource name.			0.6
description	The detailed description of the resource.	Yes		0.6
resourceUuid	The resource UUID.	Yes		0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is UserGroupVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is UserGroupVO.	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
timeout		Yes		

8.1.3.15 DeleteUserGroup

Deletes a user group. For example,

```
DeleteUserGroup uuid=f0f6fc4d36a341e3a61b560bd176b351
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			0.6
deleteMode	The delete mode. For more information, see Delete Resources .	Yes	<ul style="list-style-type: none"> • Permissive • Enforcing 	0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is UserGroupVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is UserGroupVO.	Yes		0.6
timeout		Yes		

8.1.3.16 QueryUserGroup

Queries a user group. For example,

```
QueryUserGroup accountUuid=f536739a077040afa74af59ac085252b
```

```
QueryUserGroup accountUuid=f536739a077040afa74af59ac085252b
```

Primitive Fields of Query

See [User Group Inventory](#).

Nested and Expanded Fields of Query

Field	Inventory	Description	Starting Version
account	Account Inventory	The account to which the user group belongs.	0.6
policy	Policy Inventory	The policy that is attached to the user group.	0.6
user	User Inventory	The user in the user group.	0.6

8.1.3.17 UpdateUserGroup

Updates a user group. For example,

```
UpdateUserGroup uuid=101a72b491024d8fba5a946a9fb5ddb0
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			0.6
name	The resource name.	Yes		0.6
description	The detailed description of the resource.	Yes		0.6
userTags	The user tags. For more information, see	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
	CreateUser Tag . The resource type is UserGroupVO.			
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is UserGroupVO.	Yes		0.6
timeout		Yes		

8.1.3.18 AddUserToGroup

Adds a user to a user group. For example,

```
AddUserToGroup groupUuid=42a53ca7dec74b538bdbee48caa6e27a \
userUuid=ec6f8785d7344214a0e9adf94790aebe
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
userUuid	The user UUID.			0.6
groupUuid	The user group UUID.			0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is UserGroupVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is UserGroupVO.	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
timeout		Yes		

8.1.3.19 AttachPolicyToUserGroup

Attaches a policy to a user group. For example,

```
AttachPolicyToUserGroup groupUuid=101a72b491024d8fba5a946a9fb5ddb0 \
policyUuid=ffb698fe5c7d41b1a913fc3cb83e234c
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
policyUuid	The policy UUID.			0.6
groupUuid	The user group UUID.			0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is UserGroupVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is UserGroupVO.	Yes		0.6
timeout		Yes		

8.1.3.20 DetachPolicyFromUserGroup

Detaches a policy from a user group. For example,

```
DetachPolicyFromUserGroup groupUuid=101a72b491024d8fba5a946a9fb5ddb0 \
policyUuid=ffb698fe5c7d41b1a913fc3cb83e234c
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
policyUuid	The policy UUID.			0.6

Name	Description	Optional	Valid Value	Starting Version
groupUuid	The user group UUID.			0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is UserGroupVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is UserGroupVO.	Yes		0.6
timeout		Yes		

8.1.3.21 RemoveUserFromGroup

Removes a user from a user group. For example,

```
RemoveUserFromGroup groupUuid=101a72b491024d8fba5a946a9fb5ddb0 \
userUuid=523024a60fb4437ab141ce965eb50f05
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
userUuid	The user UUID.			0.6
groupUuid	The user group UUID.			0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is UserGroupVO.	Yes		0.6
systemTags	The system tags. For more	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
	information, see CreateSystemTag . The resource type is UserGroupVO.			
timeout		Yes		

8.1.3.22 CreateUser

Creates a user. For example,

```
CreateUser name=user password=password
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
name	The user name.			0.6
password	The password.			0.6
description	The detailed description of the resource.	Yes		0.6
resourceUuid	The resource UUID.	Yes		0.6
userTags	The user tags. For more information, see CreateUserTag . The resource type is UserVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is UserVO.	Yes		0.6
timeout		Yes		

8.1.3.23 DeleteUser

Deletes a user. For example,

```
DeleteUser uuid=c9b34d9721394c45b6a70529f0aeb39b
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			0.6
deleteMode	The delete mode. For more information, see Delete Resources .	Yes	<ul style="list-style-type: none"> Permissive Enforcing 	0.6
userTags	The user tags. For more information, see CreateUserTag . The resource type is UserVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is UserVO.	Yes		0.6
timeout		Yes		

8.1.3.24 QueryUser

Queries a user. For example,

```
QueryUser accountUuid=36c27e8ff05c4780bf6d2fa65700f22e
```

```
QueryUser account.uuid=36c27e8ff05c4780bf6d2fa65700f22e
```

Primitive Fields of Query

See [User Inventory](#).

Nested and Expanded Fields of Query

Field	Inventory	Description	Starting Version
account	Account Inventory	The account to which the user belongs.	0.6
policy	Policy Inventory	The policy that is attached to the user.	0.6
group	Group Inventory	The user group to which the user belongs.	0.6

8.1.3.25 UpdateUser

Updates a user. For example,

```
UpdateUser uuid=523024a60fb4437ab141ce965eb50f05
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.	Yes		0.6
name	The user name.	Yes		0.6
password	The password.	Yes		0.6
description	The detailed description of the resource.	Yes		0.6
userTags	The user tags. For more information, see CreateUserTag . The resource type is UserVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is UserVO.	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
timeout		Yes		

8.1.3.26 LogInByUser

Logs in to the cloud as a user. For example,

```
LogInByUser userName=12user password=password accountName=12
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
accountUuid	The account UUID.	Yes		0.6
accountName	The account name.	Yes		0.6
userName	The user name.			0.6
password	The password.			0.6
clientInfo	The client information.	Yes		3.5.0
userTags	The user tags. For more information, see CreateUserTag . The resource type is UserVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is UserVO.	Yes		0.6
timeout		Yes		

8.1.3.27 AttachPolicyToUser

Attaches a policy to a user. For example,

```
AttachPolicyToUser userUuid=5fb5b7ba87fb4c07ad3ec89ed0b41379 \
```

```
policyUuid=8dadd2b163c14d639e03ea9c8bc17b9f
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
userUuid	The user UUID.			0.6
policyUuid	The policy UUID.			0.6
userTags	The user tags. For more information, see CreateUserTag . The resource type is UserVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is UserVO.	Yes		0.6
timeout		Yes		

8.1.3.28 DetachPolicyFromUser

Detaches a policy from a user group. For example,

```
DetachPolicyFromUser policyUuid=8dadd2b163c14d639e03ea9c8bc17b9f \
userUuid=5fb5b7ba87fb4c07ad3ec89ed0b41379
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
userUuid	The user UUID.			0.6
policyUuid	The policy UUID.			0.6
userTags	The user tags. For more information, see CreateUserTag . The resource type is UserVO.	Yes		0.6
systemTags	The system tags. For more	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
	information, see CreateSystemTag . The resource type is UserVO.			
timeout		Yes		

8.1.3.29 AttachPoliciesToUser

Attaches multiple policies to a user. For example,

```
AttachPoliciesToUser userUuid=5fb5b7ba87fb4c07ad3ec89ed0b41379 \
policyUuids=9e092aaafa9a14af187d67b4072dd8eda,5cde60162d6e4f9a8e19
84bd0fda542b
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
userUuid	The user UUID.			0.6
policyUuids	The policy UUID list.			0.6
userTags	The user tags. For more information, see CreateUserTag . The resource type is UserVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is UserVO.	Yes		0.6
timeout		Yes		

8.1.3.30 DetachPoliciesFromUser

Detaches multiple policies from a user. For example,

```
DetachPoliciesFromUser userUuid=5fb5b7ba87fb4c07ad3ec89ed0b41379 \
```

```
policyUuids=9e092aa9a14af187d67b4072dd8eda,5cde60162d6e4f9a8e19
84bd0fda542b
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
userUuid	The user UUID.			0.6
policyUuids	The policy UUID list.			0.6
userTags	The user tags. For more information, see CreateUserTag . The resource type is UserVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is UserVO.	Yes		0.6
timeout		Yes		

8.1.3.31 CreatePolicy

Creates a policy. For example,

```
CreatePolicy name=all statements='[{"actions": [".*"], "effect": "Allow"}]'
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
name	The resource name.			0.6
description	The detailed description of the resource.	Yes		0.6
statements	The policy statements.			0.6

Name	Description	Optional	Valid Value	Starting Version
resourceUuid	The resource UUID.	Yes		0.6
userTags	The user tags. For more information, see CreateUserTag . The resource type is PolicyVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is PolicyVO.	Yes		0.6
timeout		Yes		

8.1.3.32 DeletePolicy

Deletes a policy. For example,

```
DeletePolicy uuid=9e092aa9a14af187d67b4072dd8eda
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			0.6
deleteMode	The delete mode. For more information, see Delete Resources .	Yes	<ul style="list-style-type: none"> • Permissive • Enforcing 	0.6
userTags	The user tags. For more information, see CreateUserTag . The resource type is PolicyVO.	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is PolicyVO.	Yes		0.6
timeout		Yes		

8.1.3.33 QueryPolicy

Queries a policy. For example,

```
QueryPolicy uuid=5cde60162d6e4f9a8e1984bd0fda542b
```

```
QueryPolicy account.uuid=2cfcc587668474aa9ae544c014bfbd36e
```

Primitive Fields of Query

See [Policy Inventory](#).

Nested and Expanded Fields of Query

Field	Inventory	Description	Starting Version
account	Account Inventory		0.6
group	Group Inventory		0.6
user	User Inventory		0.6

8.1.3.34 QueryQuota

Queries a quota. For example,

```
QueryQuota name=vm.num
```

```
QueryQuota account.uuid=f536739a077040afa74af59ac085252b
```

Primitive Fields of Query

See [Quota Inventory](#).

Nested and Expanded Fields of Query

Field	Inventory	Description	Starting Version
account	Account Inventory		0.6

8.1.3.35 UpdateQuota

Updates a quota. For example,

```
UpdateQuota identityUuid=f536739a077040afa74af59ac085252b name=vm.num
value=25
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
identityUuid	The identity UUID of an account.			0.6
name	The resource name.			0.6
value	The quota value.			0.6
userTags	The user tags. For more information, see CreateUserTag . The resource type is QuotaVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is QuotaVO.	Yes		0.6
timeout		Yes		

8.1.3.36 GetResourceNames

Obtains resource names. For example,

```
GetResourceNames uuids=bd73a3d1e6784d49897be5ae785305d8
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuids	The resource UUID list.			0.6
userTags	The user tags. For more information, see CreateUser Tag . The resource type is ResourceVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . The resource type is ResourceVO.	Yes		0.6
timeout		Yes		

8.1.3.37 QuerySharedResource

Queries a shared resource. For example,

```
QuerySharedResource resourceUuid=6ec89e13f4a05ed4be42dabfcad6dd7
```

Nested and Expanded Fields of Query

See [Shared Resource Inventory](#).

8.1.3.38 RevokeResourceSharing

Revokes resource sharing. For example,

```
RevokeResourceSharing resourceUuids=6ec89e13f4a05ed4be42dabfcad6dd7
all=true
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
resourceUuids	The resource UUID list.			0.6
toPublic	Whether to share the resource globally.	Yes		0.6
accountUuids	The account UUID list.	Yes		0.6
all	If false, the account UUID is required.	Yes		0.6
userTags	The user tags. For more information, see CreateUserTag .	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		0.6
timeout		Yes		

8.1.3.39 ChangeResourceOwner

Changes the resource owner. For example,

```
ChangeResourceOwner accountUuid=2cfcc587668474aa9ae544c014bfbd36e \
```

```
resourceUuid=1ad7f7f385d64e2fb7531ee3a06bcf8d
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
accountUuid	The account UUID.			0.6
resourceUuid	The resource UUID.			0.6
userTags	The user tags. For more information, see CreateUserTag .	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		0.6
timeout		Yes		

8.1.3.40 CheckApiPermission

Checks the API permission. For example,

```
CheckApiPermission apiNames=org.zstack.storage.primary.local.  
APIQueryLocalStorageResourceRefMs
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
userUuid	The user UUID.			0.6
apiNames	The API name list.			0.6
userTags	The user tags. For more information, see CreateUserTag .	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
	CreateSystemTag .			
timeout		Yes		

8.1.3.41 ValidateSession

Validates a session. For example,

```
ValidateSession sessionUuid=7f69ae7ed38941adb54ba8777ae68cb5
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
sessionUuid	The session UUID.			0.6
userTags	The user tags. For more information, see CreateUserTag .	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		0.6
timeout		Yes		

8.1.3.42 LogOut

Logs out of the current session. For example,

```
LogOut sessionUuid=d22049be779b455f86bc3484becad10f
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
sessionUuid	The session UUID.	Yes		0.6
clientInfo	The client information.	Yes		3.5.0

Name	Description	Optional	Valid Value	Starting Version
userTags	The user tags. For more information, see CreateUserTag .	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		0.6
timeout		Yes		

8.1.3.43 RenewSession

Renews a session. For example,

```
RenewSession sessionUuid=7b93b7648aea3c8d9109498a32288470
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
duration		Yes		2.3
sessionUuid	The session UUID.			0.6
userTags	The user tags. For more information, see CreateUserTag . . The resource type is PolicyVO.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag . . The resource type is PolicyVO.	Yes		0.6
timeout		Yes		

8.1.4 Tags

You can create a user tag on a user by using `CreateUserTag ResourceType=UserTagVO`.

For example,

```
CreateUserTag ResourceType=UserTagVO tag=Test1 \
resourceUuid=3214e0dc01d4e2aa8407968e1c51d58
```

8.2 Log Server

8.2.1 Overview

ZStack Cloud allows you to add a log server to the cloud. With the log server, you can collect management node logs and quickly locate problems, thereby improving the cloud O&M efficiency.

8.2.2 Operations

8.2.2.1 AddLogConfiguration

Adds log server configurations. For example,

```
AddLogConfiguration name=syslog type=log4j2 configuration={\n\"appenderType\": \"Syslog\", \"configuration\": {\\n\"hostname\": \"192.168.0.11\", \\n\"port\": \"514\", \\n\"protocol\": \"UDP\", \\n\"facility\": \"LOCAL5\"\\n}\\n}
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
name	The resource name. For more information, see Resource Property .			3.10.0
description	The resource description. For more information, see Resource Property .	Yes		3.10.0
type				3.10.0
configuration				3.10.0
resourceUuid	The resource UUID.	Yes		3.10.0

Name	Description	Optional	Valid Value	Starting Version
tagUuids	The tag UUID list.	Yes		3.10.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.10.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.10.0
timeout		Yes		

8.2.2.2 DeleteLogConfiguration

Deletes log server configurations. For example,

```
DeleteLogConfiguration configId=0.0
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
configId	The configuration ID.			3.10.0
deleteMode	The delete mode . Default mode: Permissive.	Yes	<ul style="list-style-type: none"> • Enforcing • Permissive 	3.10.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.10.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.10.0
timeout		Yes		

8.2.2.3 GetLogConfiguration

Obtains log server configurations. For example,

```
GetLogConfiguration
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.10.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.10.0
timeout		Yes		

8.2.2.4 UpdateLogConfiguration

Updates log server configurations. For example,

```
UpdateLogConfiguration configId=1.0
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
configId	The configuration ID.			3.10.0
name	The resource name.	Yes		3.10.0
description	The detailed description of the resource.	Yes		3.10.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.10.0
systemTags	The system tags. For more	Yes		3.10.0

Name	Description	Optional	Valid Value	Starting Version
	information, see CreateSystemTag .			
timeout		Yes		

8.3 AD/LDAP

8.3.1 Overview

LDAP is a lightweight version of Directory Access Protocol (DAP) and provides a standard for directory services in a network. Many software, such as Microsoft Windows Active Directory (AD) and OpenLDAP provided in many popular Linux distributions, are all implementations of LDAP. They provide a set of independent and standard login authentication systems for increasingly diverse enterprise office applications.

ZStack Cloud allows you to seamlessly integrate with the AD/LDAP unified authentication service. You can add an AD/LDAP server based on custom rules and obtain the member information. If an AD/LDAP member (user or user group) is successfully attached to a ZStack Cloud account (ordinary account or admin account), the member can directly log in to ZStack Cloud by using the member attributes.

8.3.2 Inventory

Properties

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			0.6
accountUuid	The account UUID.			0.6
ldapUid	The LDAP UID.			0.6
ldapServerUuid	The LDAP server UUID.			0.6
createDate	The creation date. For more information,			0.6

Name	Description	Optional	Valid Value	Starting Version
	see Resource Property .			
lastOpDate	The last operation date. For more information, see Resource Property .			0.6

Sample

```
{
  "inventories": [],
  "success": true
}
```

8.3.3 Operations

8.3.3.1 AddLdapServer

Adds an AD/LDAP server. For example,

```
AddLdapServer name=ldap-server url=ldap://172.20.197.44:389 base="dc=mevoco,dc=com" \
  encryption=TLS username="cn=Manager,dc=mevoco,dc=com" password=
  password description="ldapserver"
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
name	The resource UUID.			0.6
description	The detailed description of the resource.			0.6
url	The URL of the LDAP server.			0.6
base	The base DN of the LDAP server.			0.6
username	The username used to access the LDAP server.			0.6
password	The password.			0.6

Name	Description	Optional	Valid Value	Starting Version
encryption	The encryption method.		• None • TLS	0.6
userTags	The user tags. For more information, see CreateUserTag .	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		0.6
timeout		Yes		



Note:

- When you add an AD/LDAP server in ZStack Cloud, you can synchronize users by adding the **virtualIDSyncConfiguration** option to **SystemTags**.

— Format of the **virtualIDSyncConfiguration** option: `virtualIDSyncConfiguration`

```
:::{\"rules\":[{\\"name\": \"name\", \"attribute\": \"cn\", \"type\": \"SYSTEM\", \"optional\": \"true\"}, {\\"name\": \"fullname\", \"attribute\": \"cn\", \"type\": \"CUSTOM\", \"optional\": \"true\"}]}
```

— Example: `virtualIDSyncConfiguration:::{\"rules\":[{\\"name\": \"name\", \"attribute\": \"cn\", \"type\": \"SYSTEM\", \"optional\": \"true\"}, {\\"name\": \"fullname\", \"attribute\": \"cn\", \"type\": \"CUSTOM\", \"optional\": \"true\"}]}`

- When you add an AD/LDAP server in ZStack Cloud, you can synchronize organizations by adding the **organizationSyncConfiguration** option to **SystemTags**.

— Format of the **organizationSyncConfiguration** option: `organizationSyncConf`

```
iguration:::{\"rules\":[{\\"name\": \"name\", \"attribute\": \"distinguishedName\", \"type\": \"SYSTEM\", \"optional\": \"true\"}, {\\"name\": \"description\", \"attribute\": \"description\", \"type\": \"SYSTEM\", \"optional\": \"true\"}], \"strategy\": \"Group\"}
```

— Example: `organizationSyncConfiguration:::{\"rules\":[{\\"name\": \"name\", \"attribute\": \"distinguishedName\", \"type\": \"SYSTEM\", \"optional\": \"true\"}], \"strategy\": \"Group\"}`

```
\\"optional\":\\"true\\", {\\"name\\":\\"description\\", \\"attribute\\":\"
description, \\"type\\":\\"SYSTEM\\", \\"optional\\":\\"true\\"}], \\"strategy\"
\":\\"Group\\"}
```

**Note:**

- When you add AD/LDAP, the system will automatically check whether the server, port, base DN, login attribute, user DN, and password are correct. The waiting time does not exceed 5 seconds.

8.3.3.2 DeleteLdapServer

Deletes an AD/LDAP server. For example,

```
DeleteLdapServer uuid=b2750052c1e34b9c868c84e645eed79a
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			0.6
deleteMode	The delete mode. For more information, see Delete Resources .	Yes	<ul style="list-style-type: none"> Permissive Enforcing 	0.6
userTags	The user tags. For more information, see CreateUserTag .	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		0.6
timeout		Yes		

8.3.3.3 QueryLdapServer

Queries an AD/LDAP server. For example,

```
QueryLdapServer uuid=b2750052c1e34b9c868c84e645eed79a
```

Primitive Fields of Query

See LDAP Server Inventory.

8.3.3.4 UpdateLdapServer

Updates an AD/LDAP server. For example,

```
UpdateLdapServer ldapServerUuid=ba240fbba3e541b4ab9db4b221cc6e7a
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
ldapServerUuid	The LDAP server UUID.			0.6
name	The resource name.	Yes		0.6
description	The detailed description of the resource.	Yes		0.6
url	The URL of the LDAP server.	Yes		0.6
base	The base DN of the LDAP server.	Yes		0.6
username	The username used to access the LDAP server.	Yes		0.6
password	The password.	Yes		0.6
encryption	The encryption method.	Yes	<ul style="list-style-type: none"> • None • TLS 	
userTags	The user tags. For more information, see CreateUserTag .	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		0.6
timeout		Yes		

8.3.3.5 CreateLdapBinding

Creates an AD/LDAP binding. For example,

```
CreateLdapBinding ldapUid=mevoco accountUuid=2cf587668474aa9ae54
4c014bfbd36e
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
ldapUid	The LDAP UID.			0.6
accountUuid	The account UUID.			0.6
userTags	The user tags. For more information, see CreateUserTag .	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		0.6
timeout		Yes		

8.3.3.6 DeleteLdapBinding

Deletes an AD/LDAP binding. For example,

```
DeleteLdapBinding uuid=d70c0ef1b57043beaffcf9b0216ac1
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			0.6
userTags	The user tags. For more information, see CreateUserTag .	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		0.6
timeout		Yes		

8.3.3.7 QueryLdapBinding

Queries an AD/LDAP binding. For example,

```
QueryLdapBinding ldapUid=mevoco
```

Primitive Fields of Query

See LDAP Binding Inventory.

8.3.3.8 CleanInvalidLdapBinding

Clears an invalid AD/LDAP binding. Sample response:

```
{
    "success": true
}
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
userTags	The user tags. For more	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
	information, see CreateUserTag .			
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		0.6
timeout		Yes		

8.3.3.9 LogInByLdap

Performs login by using an AD/LDAP identity. For example,

```
LogInByLdap uid=mevoco password=password
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uid	The LDAP UID.			0.6
password	The password.			0.6
captchaUuid	The verification code UUID.	Yes		2.6.0
verifyCode	The verification code.	Yes		2.6.0
clientInfo	The client information.	Yes		3.5.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		0.6
timeout		Yes		

8.3.3.10 GetLdapEntry

Obtains AD/LDAP entries. For example,

```
GetLdapEntry ldapFilter=(cn=mevoco)
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
ldapFilter	The query condition.			2.2
limit	The maximum number of returned records. This parameter is similar to the limit field of MySQL.	Yes		2.2
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.2
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.2
timeout		Yes		

8.3.3.11 GetCandidateLdapEntryForBinding

Obtains the candidate AD/LDAP entries for binding (excluding the bound AD/LDAP entries). For example,

```
GetCandidateLdapEntryForBinding ldapFilter=(cn=mevoco)
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
ldapFilter	The query condition.			2.2
limit	The maximum number of	Yes		2.2

Name	Description	Optional	Valid Value	Starting Version
	returned records. This parameter is similar to the limit field of MySQL.			
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.2
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.2
timeout		Yes		

8.3.4 Tags

You can create a user tag on an LDAP server by using `CreateUserTag resourceType=LdapServerVO`. For example,

```
CreateUserTag resourceType=LdapServerVO tag=Test1 \
resourceUuid=3214e0dcd01d4e2aa8407968e1ccreatee51d58
```

8.4 Global Settings

8.4.1 Overview

Global settings allow you to configure multiple platform-level attributes, and are updated without rebooting your management nodes. Once these configurations are made, corresponding platform-level attributes will take effect globally. Each parameter in the global settings has one corresponding default value.

8.4.2 Inventory

Global Configuration Inventory

Name	Description	Optional	Valid Value	Starting Version
name	The resource name.			0.6

Name	Description	Optional	Valid Value	Starting Version
description	The detailed description of the resource.	Yes		0.6
category	The category.			0.6
value	The value.	Yes		0.6
defaultValue	The default value.	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		0.6
userTags	The user tags. For more information, see CreateUserTag .	Yes		0.6

Sample

```
{
  "inventories": [
    {
      "category": "primaryStorage",
      "defaultValue": "60",
      "description": "The interval management server sends ping command to primary storage, in seconds",
      "name": "ping.interval",
      "value": "60"
    },
    {
      "category": "ldap",
      "defaultValue": ",",
      "description": "",
      "name": "queryLdapEntryReturnAttributeSeparator",
      "value": ","
    }
  ]
}
```

{}

8.4.3 Operations

8.4.3.1 UpdateGlobalConfig

Updates a global setting. For example,

```
UpdateGlobalConfig category=quota name=vm.num
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
category	The category.			0.6
name	The resource name.			0.6
value	The value.	Yes		0.6
userTags	The user tags. For more information, see CreateUserTag .	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		0.6
timeout		Yes		

8.4.3.2 QueryGlobalConfig

Queries a global setting. For example,

```
QueryGlobalConfig category=vm
```

Primitive Fields of Query

See [Global Setting Inventory](#).

8.4.3.3 ResetGlobalConfig

Resets a global setting. For example,

```
ResetGlobalConfig
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.1.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.1.0
timeout		Yes		

8.4.4 Tags

You can create a user tag on a global setting by using `CreateUserTag resourceType=GlobalConfigVO`. For example,

```
CreateUserTag resourceType=GlobalConfigVO tag=Test1 \
resourceUuid=3fd25b9e5b87423bba5612a45c1f5ecc
```

8.4.5 Entries

8.4.5.1 accessControl

Name	Description	Default Value	Valid Value
enable.request.source.ip.address.check	Specifies whether to enable IP whitelist or blacklist for logins . If set to true, the platform filters IP addresses of login clients based on the configured IP whitelist or blacklist entries.	false	<ul style="list-style-type: none"> • true • false

8.4.5.2 AD/LDAP

Name	Description	Default Value	Valid Value
queryLdapEntryReturnAttributeSeparator	The separator used to separate attributes of a LDAP entry.	,	
queryLdapEntryReturnAttributes	The attributes in one or more returned AD or LDAP entries.	member,uniqueMember,memberOf	

8.4.5.3 Ansible

Name	Description	Default Value	Valid Value
enable.ansible.cache.system.info	Specifies whether to enable the reconnection acceleration feature .	true	<ul style="list-style-type: none"> • true • false

8.4.5.4 apiTimeout

Name	Description	Default Value	Valid Value
org.zstack.header.image.APIAddImageMsg	The timeout period of adding an image to a backup storage . Default: 3 hours. Unit: second, minute , hour, and day. If the specified timeout period expires, image addition fails.	3 hours	[5 minutes,+∞)
org.zstack.header.image.APICreateRootVolumeTemplateFromRootVolumeMsg	The timeout period of creating volume images from root volumes. Default: 3 days. Unit: second, minute, hour, and day . If the timeout period expires, the creation fails.	3 days	[5 minutes,+∞)
org.zstack.header.image.APICreateD	The timeout period of creating data volume	3 days	[5 minutes,+∞)

Name	Description	Default Value	Valid Value
ataVolumeTemplateFromVolumeMsg	images from data volumes. Default: 3 days. Unit: second, minute, hour, and day . If the timeout period expires, the creation fails.		
org.zstack.header.volume.APICreateDataVolumeFromVolumeTemplateMsg	The timeout period of creating data volumes from volume images. Default: 3 days. Unit: second, minute, hour, and day. If the timeout period expires, the creation fails.	3 days	[5 minutes, +∞)
org.zstack.header.image.APICreateRootVolumeTemplateFromVolumeSnapshotMsg	The timeout period of creating root volume images from volume snapshots. Default: 3 days. Unit: second, minute, hour, and day . If the timeout period expires, the creation fails.	3 hours	[5 minutes, +∞)
org.zstack.header.volume.APICreateDataVolumeFromVolumeSnapshotMsg	The timeout period of creating data volumes from volume snapshots. Default: 3 hours. Unit: second, minute, hour, and day . If the timeout period expires, the creation fails.	3 hours	[5 minutes, +∞)
org.zstack.header.volume.APICreateVolumeSnapshotMsg	The timeout period of creating volume snapshots. Default: 3 hours. Unit: second, minute, hour, and day . If the timeout period	3 hours	[5 minutes, +∞)

Name	Description	Default Value	Valid Value
	expires, the creation fails.		
org.zstack.header.vm.APICreateVmInstanceMsg	The timeout period of creating VM instances . Default: 12 hours. Unit: second, minute, hour, and day. If the timeout period expires , the creation fails.	12 hours	[5 minutes, +∞)
org.zstack.storage.primary.local.APILocalStorageMigrateVolumeMsg	The timeout period of migrating a volume from a Local Storage primary storage. Default: 1 day. Unit: second, minute, hour, and day. If the timeout period expires, the migration fails.	1 day	[5 minutes, +∞)
org.zstack.header.storage.volume.backup.APICreateVmFromVmBackupMsg	The timeout period of creating VM instances from VM instance backups. Default: 1 day. Unit: second, minute, hour, and day . If the timeout period expires, the creation fails.	1 day	[5 minutes, +∞)

8.4.5.5 ApplianceVm

Name	Description	Default Value	Valid Value
connect.timeout	The timeout period that the management node connects the agent running on a VPC vRouter. Default : 300. Unit: second. If the management node fails to connect the agent within the	300	(0, +∞)

Name	Description	Default Value	Valid Value
	specified timeout period, the VPC vRouter fails to be started and is deleted.		
agent.deployOnStart	Specifies whether to enable auto deployment of agent process when a VPC vRouter is started. Default: false. VPC vRouters are deployed with agent process by default. The value false indicates that the management node checks the version of agent process on the VPC vRouter and deploys a new agent on the VPC vRouter if the agent version on the VPC vRouter is earlier than that on the management node. If set to true , the management node does not check the agent version on the VPC vRouter and directly deploys a new agent each time a VPC vRouter is created, started, or restarted.	false	<ul style="list-style-type: none"> • true • false
ssh.timeout	The timeout period that the management node SSH connects a VPC vRouter. Default : 300. Unit: second. If the management node fails to SSH connect	300	(0, +∞)

Name	Description	Default Value	Valid Value
	the VPC vRouter within the specified timeout period, the VPC vRouter fails to be started and is deleted.		
bootstrapinfo.timeout	The timeout period that the management node connects the agent running on a VPC vRouter. Default : 300. Unit: second. If the management node fails to connect the agent within the specified timeout period, the VPC vRouter fails to be started and is deleted.	300	[1, +∞)
deletion.timeout	The timeout period of deleting a VPC vRouter. Default: 3600 . Unit: second	3600	≥0

8.4.5.6 autoscaling

Name	Description	Default Value	Valid Value
vmNicLoadBalancerListenerHealthCheck.interval	The interval of checking the health status of load-balanced auto-scaling groups. Default: 10 . Unit: second. Valid values: 10 to 1000, integer.	10	[10,1000]
vmNicLoadBalancerListenerHealthCheck.threadNum	The concurrency of checking the health status of load-balanced auto-scaling groups. Default: 10	10	[10,1000]

Name	Description	Default Value	Valid Value
	. Unit: second. Valid values: 10 to 1000, integer.		
removeUnhealthyInstance.interval	The interval of deleting unhealthy VM instances from an auto-scaling group. Default : 30. Unit: second. Valid values: 1 to 1000 , integer.	30	[10,1000]
removeUnhealthyInstance.threadNum	The concurrency of deleting unhealthy VM instances from auto-scaling groups. Default : 10. Unit: second. Valid values: 10 to 1000, integer.	10	[10,1000]
checkTheNumberOfInstancesInTheGroup.interval	The interval of checking the number of VM instances in an auto-scaling group . Default: 20. Unit: second. Valid values: 1 to 1000, integer.	20	[10,1000]
autoScalingGroup.activity.retention.amount	The number of reserved auto-scaling records of an auto-scaling group. Default : 10000. Please note that the system deletes the records that exceed the threshold only when the current number is 100 larger than the threshold.	10000	[0,+∞)

8.4.5.7 BackupStorage

Name	Description	Default Value	Valid Value
ping.interval	The interval that the management node pings backup storages . Default: 60. Unit : second. If a ping succeeds, the target backup storage is connected to the management node.	60	(0,+∞)
ping.parallelismDegree	The maximum number of backup storages that the management node can simultaneously ping. Default: 50.	50	(0,+∞)
reservedCapacity	The reserved storage space of a backup storage. Default: 1 GB . Unit: byte, KB, MB, GB, and TB.	1 GB	(0,+∞)

8.4.5.8 baremetal2

Name	Description	Default Value	Valid Value
batch.add.chassis.max.number	The maximum number of bare metal chassis that can be added in batch by using a CSV template.	500	(0,+∞)
get.chassis.hardware.info.timeout	The timeout period of obtaining hardware information for bare metal chassis. Unit: minute.	10	(0,+∞)
baremetal2.check.chassis.power.status.timeout	The timeout period of retrieving power status of bare metal chassis . Unit: second.	60	(0,+∞)

Name	Description	Default Value	Valid Value
baremetal2.baremetal2.chassis.ping.interval	The interval that the management node refreshes the power status of bare metal chassis. Unit: second.	60	(0, +∞)
baremetal2.baremetal2.chassis.ping.parallelism.degree	The concurrency that the management node refreshes the power status of bare metal chassis.	100	(0, +∞)
baremetal2.baremetal2.gatewayallocator.strategy	The default policy that is used to allocate a gateway when you create an elastic bare metal instance.	LeastBmPreferredGatewayAllocatorStrategy	<ul style="list-style-type: none"> • LeastBmPreferredGatewayAllocatorStrategy • LastGatewayPreferredAllocatorStrategy • DefaultGatewayAllocatorStrategy
baremetal2.baremetal2.instance.ping.interval	The interval that the management node refreshes the connection status of the agent installed in elastic bare metal instances. Unit: second.	60	> 0
baremetal2.baremetal2.instance.ping.parallelism.degree	The concurrency that the management node refreshes the connection status of the agent installed in elastic bare metal instances. Default: 100.	100	> 0
baremetal2.num	The default maximum number of elastic baremetal instances	10	> 0

Name	Description	Default Value	Valid Value
	that can be assigned to a tenant. Default: 10.		
convert.volume.to.local.disk.timeout	The timeout period of writing system data from the volume to the local system disk of the baremetal node. Unit: minute.	120	≥1

8.4.5.9 baremetalChassis

Name	Description	Default Value	Valid Value
get.chassis.hw.info.timeout	The timeout period of obtaining the hardware information of a bare metal chassis. Default : 10. Unit: minute.	10	[0,+∞)
batch.maxnumber	The maximum number of bare metal chassis that can be batch added by using the template import method. Default: 500.	500	[0,+∞)

8.4.5.10 BaremetalInstance

Name	Description	Default Value	Valid Value
deletionPolicy	<p>The policy used to delete bare metal instances. Default: Delay. Valid values: Direct and Delay.</p> <ul style="list-style-type: none"> • Direct: If you delete a bare metal instance, the bare metal instance is deleted at once. • Delay: If you delete a bare metal 	Delay	<ul style="list-style-type: none"> • Direct • Delay

Name	Description	Default Value	Valid Value
	instance, the bare metal instance is listed on the Deleted tab of the bare metal instance management page and is in Deleted state. The default retention period is 86,400 seconds. When the retention period expires or if you expunge a deleted bare metal instance, the bare metal instance is expunged.		

8.4.5.11 baremetalPxeServer

Name	Description	Default Value	Valid Value
ping.interval	The interval that the management node pings PXE servers . Default: 60. Unit: second.	60	[0,+∞)
ping.parallelismDegree	The maximum number of PXE servers that the management node can simultaneously ping. Default: 50.	50	[0,+∞)
reservedCapacity	The reserved storage space of a PXE server . Default: 1 GB.	1 GB	[0,+∞)

8.4.5.12 Billing

Name	Description	Default Value	Valid Value
billing.generation.interval	The interval that a bill is generated. Default	1 day	[1,+∞)

Name	Description	Default Value	Valid Value
	: 1. Unit: day. Valid values: 1 to positive infinity.		
billing.generation.hour.point	The time point that a bill is generated . Default: 0. Valid values: 0 to 23, integer .	0	[0,23]
billing.generation.resource.sliceSize	The maximum number of resources for which bills can be simultaneously generated. Default: 400.	400	[0,+∞)
Billing Currency Symbol	The currency symbol used for billing. Valid values: ¥ , \$, € , £ , A \$, HK\$, ¥ , CHF , and C \$.	¥	<ul style="list-style-type: none"> • ¥ • \$ • € • £ • A\$ • HK\$ • ¥ • CHF • C\$
billing.persistUsageSyncLevel	The maximum number of resource configuration records that can be concurrently preserved. Default: 20 . Valid values: -1 to 100, integer. You can set a smaller value to prevent running excessive threads. A value that ranges from 1 to 100 indicates that the system preserves resource configuration records based on the specified	20	[-1,100]

Name	Description	Default Value	Valid Value
	concurrency. The value -1 indicates that preservation concurrency is not limited. The value 0 indicates that concurrent preservation is not supported.		
billing.maxQueryUsageNum	The maximum number of resource configuration records that you can query at a time . Default: 1000000 . A smaller value produces a shorter time consumed for queries. You can set a smaller value to prevent out of memory errors.	1000000	(0, +∞)
billing.enable	Specifies whether to enable the billing feature. Default: true. If set to false, resources are not billed.	true	<ul style="list-style-type: none"> • true • false

8.4.5.13 Ceph

Name	Description	Default Value	Valid Value
backupStorage.mon.autoReconnect	Specifies whether to enable automatic reconnection to the monitoring node of Ceph backup storages if the IP of the monitoring node fails to be detected. Default: true.	true	<ul style="list-style-type: none"> • true • false

Name	Description	Default Value	Valid Value
backupStorage.mon.reconnectDelay	The interval that the management node reconnects the monitoring node of Ceph backup storages if the IP of the monitoring node fails to be detected. Default: 30. Unit: second.	30	(0, +∞)
imageCache.cleanup.interval	The interval of cleaning image caches from Ceph primary storages. This setting is applied after images in Ceph primary storages are deleted and image caches are no longer used for VM instances. Default: 43200. Unit: second.	43200	(0, +∞)
primaryStorage.mon.reconnectDelay	The interval of automatic reconnection if the IP address of the monitoring node of Ceph primary storages fails to be detected. Default: 30. Unit: second.	30	(0, +∞)
PrimaryStorage.mon.autoReconnect	Specifies whether to enable automatic reconnection if the IP address of the monitoring node of Ceph primary storages fails to be detected. Default: true.	true	<ul style="list-style-type: none"> • true • false
deletion.gcInterval	The interval of collecting garbage from volumes in Ceph	3600	(0, +∞)

Name	Description	Default Value	Valid Value
	primary storages. Default: 3600. Unit: second.		
checkImage WatcherBeforeStartVm	Specifies whether to check if the RBD images in the root volume of a VM instance have watchers before start the VM instance. Default: true. If a watcher is detected , the VM instance is not started up. The supported versions of Ceph primary storage include Ceph Enterprise 3.1.9/3.2. x, Open-source Ceph Hammer series, and Open-source Ceph Jewel series.	true	<ul style="list-style-type: none"> • true • false
thirdPartySdkTimeout	The timeout period of calling a third-party SDK. Default: 30. Unit : minute.	30	(0, +∞)

8.4.5.14 cdp

Name	Description	Default Value	Valid Value
monitor.interval	The interval that the status of CDP tasks is sync to the management node. Default: 5 minutes. Valid values : 1 to 9223372036 854775807. Unit: minute.	5 minutes	[1, 9223372036 854775807]

8.4.5.15 CloudBus

Name	Description	Default Value	Valid Value
openReadAPILog	Specifies whether to enable log query. Default: -1. Valid values: 0, 1, and -1. The value 0 indicates the log query is disabled. The value 1 indicates that log query is enabled. The value -1 indicates that this setting does not take effect globally. You can use the command zstack-ctl configure CloudBus.readAPILogOff to enable or disable log query for APIs.	-1	<ul style="list-style-type: none"> • -1 • 0 • 1

8.4.5.16 CloudFormation

Name	Description	Default Value	Valid Value
vm.port.check.interval	The interval that CloudFormation inspects the status of VM ports. Default: 60. Unit: second.	60	(0, +∞)

8.4.5.17 databaseBackup_name

Name	Description	Default Value	Valid Value
databaseBackup_cover Database_allow	Specifies whether to enable database recovery from backup data when data exists in the database. Default: true.	true	<ul style="list-style-type: none"> • true • false

8.4.5.18 drs

Name	Description	Default Value	Valid Value
drs.enable	Specifies whether to enable the dynamic resource scheduling feature. Default: true. If the dynamic resource scheduling feature is configured for an individual cluster, this global setting does not take effect on the cluster.	false	<ul style="list-style-type: none"> • true • false
drs.collectHostMetricDataDuration	The duration that host workload metrics are collected after the dynamic resource scheduling feature is enabled. Default: 60. Unit: second.	60	[0, +∞)
drs.schedulingInterval	The interval of scanning clusters while implementing dynamic resource scheduling. Default: 600. Unit: second.	600	[0, +∞)
drs.migrateVm.concurrent	The maximum number of VM instances that can be simultaneously migrated from the current host to the destination host while implement dynamic resource scheduling. Default: 1.	1	[0, +∞)

8.4.5.19 encrypt

Name	Description	Default Value	Valid Value
enable.password.encrypt	Specifies whether to encrypt the login password of hosts in the database. Default : false. If set true, the login password of the host is encrypted in the database.	false	<ul style="list-style-type: none"> • true • false

8.4.5.20 GC

Name	Description	Default Value	Valid Value
orphanJobScanInterval	The interval that the management node scans orphaned garbage collection (GC) jobs. Default: 60. Unit: second. If orphaned GC jobs are detected, the management node takes over the jobs.	60	[1, +∞)
cleanUpCompletedJobInterval	The interval that the management node cleans up completed orphaned GC jobs. Unit: hour.	24	(0, +∞)
retentionTime	The retention period of completed orphaned GC jobs. If the retention period of a completed orphaned GC jobs does not exceed the specified threshold, the job is not cleaned up while the management node cleans up completed	14	(0, +∞)

Name	Description	Default Value	Valid Value
	orphaned GC jobs. Unit: day.		

8.4.5.21 HA

Name	Description	Default Value	Valid Value
enable	Specifies whether to enable high availability for VM instances . Default: true. If set to false, the high availability feature is disabled globally. Please proceed with caution.	true	<ul style="list-style-type: none"> • true • false
host.check.interval	The interval that the management node pings abnormal hosts . Default: 5. Unit: second.	5	[0,+∞)
host.check.maxAttempts	The maximum number of failed connections that are required to determine that a host is disconnected. Default: 12.	12	[0,+∞)
host.check.successInterval	The time period of a successful connection to a host. Default: 5. Unit: second. If a connection request is responded with the specified time, the connection succeeds.	5	[0,+∞)
host.check.successRatio	The possibility of successful connections in contrast to failed connections that determine whether a host is successfully	50	(1,99)

Name	Description	Default Value	Valid Value
	connected. Default: 50 . Unit: %.		
host.check.successTimes	The minimum number of successful connections that are required to determine that a host is successfully connected. Default: 5.	5	[0, +∞)
host.selfFencer.interval	The interval that a host inspects its own status. Default: 5. Unit : second.	5	[0, +∞)
host.selfFencer.maxAttempts	The maximum number of attempts that a host inspects its own status. If the self-inspection of a host fails by the maximum attempts, it is determined that network errors occur with the host. Default: 6.	6	[0, +∞)
host.selfFencer.storageChecker.timeout	The timeout period that a host checks its connection with primary storages . Default: 5. Unit: second.	5	[0, +∞)
neverStopVm.retry.delay	The delay of another retry to start up a NeverStop VM instance after the last startup attempt fails . Default: 60. Unit: second.	60	[1, +∞)
neverStopVm.scan.interval	The interval of scanning NeverStop VM instances that fail	60	[1, +∞)

Name	Description	Default Value	Valid Value
	to start up. Default: 60 . Unit: second.		
neverStopVm.notification.times	The synchronization speed of the state of HA VM instances on the UI. Default: 1. Valid values: -1 to 5, integer. A higher value indicates a lower synchronization speed. However, a higher value lowers system loads because outdated status update notifications are ignored. The value -1 indicates the state of HA VM instances on the UI does not automatically change.	1	[-1,5]
neverStopVm.gc.maxRetryIntervalTime	The maximum interval of GC attempts to start up NeverStop VM instances that are stopped unexpectedly. Default: 300. Unit: second.	300	[0,+∞)
allow.slibing.cross.clusters	Specifies whether to enable VM migration across clusters to achieve high availability. Default: false. If set to true, hosts across clusters can be detected to achieve VM high availability. Before you enable this feature, make sure that clusters are well connected.	false	<ul style="list-style-type: none"> • true • false

Name	Description	Default Value	Valid Value
self.fencer.strategy	<p>The high availability policy of VM instances</p> <ul style="list-style-type: none"> . Default: Permissive . Valid values: Permissive and Force . The value Permissive indicates that if a VM instance is in unknown state due to primary storage downtime, the management node does not migrate the VM instance and the self fencer process that runs on the host does not stop the VM instance. The value Force indicates that if the condition that triggers high availability migration is met , the management node migrates the VM instance to another host. 	Permissive	<ul style="list-style-type: none"> • Permissive • Force

8.4.5.22 Host

Name	Description	Default Value	Valid Value
connection.autoReconnectOnError	Specifies whether to enable automatic reconnection to a host if the management node pings the host and fails. Default: true.	true	<ul style="list-style-type: none"> • true • false
CPU.overProvisioning.ratio	The CPU overcommitment. This parameter is used to control the vCPUs allocated to a VM instance. Default: 10, integer. Formula:	10	[1,1000]

Name	Description	Default Value	Valid Value
	Physical CPU threads x CPU overcommit = Allocable number of vCPUs.		
load.parallelismDegree	The maximum parallelism that the management node reconnects hosts. Default: 100.	100	[0, +∞)
maintenanceMode.ignoreError	Specifies whether to ignore errors and report requests as successful while the host is in maintenance mode. Default: false.	false	<ul style="list-style-type: none"> • true • false
ping.interval	The interval that the management node pings hosts. Default : 60. Unit: second. If a ping succeeds , the target host is connected to the management node.	60	[0, +∞)
ping.parallelismDegree	The maximum parallelism that the management node pings hosts. Default: 100.	100	[0, +∞)
reconnectAllOnBoot	Specifies whether to reconnect all hosts while the management node starts its services. Default: true.	true	<ul style="list-style-type: none"> • true • false
ping.maxFailure	The maximum number of failures that are allowed while the management node inspects a compute node. Default: 3.	3	[0, +∞)

Name	Description	Default Value	Valid Value
host.maintenance.policy	The policy used for VM instances or the host if VM migration fails while the host is entering maintenance mode. Default: StopVmOnMigrationFailure. Valid values: JustMigrate and StopVmOnMigrationFailure. The value JustMigrate indicates that if a VM instance fails to be migrated while the host is entering maintenance mode , the host cannot enter maintenance mode. The value StopVmOnMigrationFailure indicates if a VM instance fails to be migrated while the host is entering maintenance mode , the VM instance is stopped.	StopVmOnMigrationFailure	<ul style="list-style-type: none"> • JustMigrate • StopVmOnMigrationFailure
connection.autoReconnectOnError.maxAttemptsNum	The maximum number of failed attempts that are allowed for the management node to automatically reconnect hosts. If the number of attempts exceeds the threshold , the management node stops reconnecting the hosts. Default : 0. This value indicates that the	0	[0, +∞)

Name	Description	Default Value	Valid Value
	management nodes keeps auto-reconnecting disconnected hosts .		
reportHostCapacityInterval	The interval of updating the available storage space of a host. Default: 30. Unit: minute.	30	[1, +∞)

8.4.5.23 HostAllocator

Name	Description	Default Value	Valid Value
reservedCapacity.zoneLevel	Specifies whether to set reserved storage space for all hosts in a zone. Default: true.	true	<ul style="list-style-type: none"> • true • false
reservedCapacity.clusterLevel	Specifies whether to set reserved storage space for all hosts in a cluster. Default: true.	true	<ul style="list-style-type: none"> • true • false
reservedCapacity.hostLevel	Specifies whether to set reserved storage space for individual hosts. Default: true.	true	<ul style="list-style-type: none"> • true • false
hostAllocator.concurrentLevel	The maximum number of host allocators that can be concurrently running. Default: 10. Valid values: 1 to 255 . Before you configure this setting, you need to turn on the Host Concurrent Allocation switch. Otherwise, the setting does not take effect.	10	[1,255]
usePagination	Specifies whether to enable pagination for	true	<ul style="list-style-type: none"> • true • false

Name	Description	Default Value	Valid Value
	host allocation. Default : true.		
paginationLimit	The number of allocated hosts on each page. Default: 500.	500	[1,500]
hostAllocator.concurrent	Specifies whether to enable concurrent allocation of a host to VM instances. Default : false.	false	<ul style="list-style-type: none"> • true • false
hostAllocator.checkHostMem	Specifies whether to check the available memory of a host when the host is allocated to a VM instance. Default: true . This value indicates that if the memory quota of the VM instance exceeds the available memory of a host, this host becomes unavailable for the VM instance.	true	<ul style="list-style-type: none"> • true • false

8.4.5.24 Hybrid

Name	Description	Default	Valid Value
management.time.zone	The timezone of the terminal address to which API requests are sent.	CHINA	<ul style="list-style-type: none"> • CHINA • USA-EAST • USA-WEST • JAPAN • EURA • HK • ANZAC • SEA • EMEA

Name	Description	Default	Valid Value
max.backup.per.region	The maximum number of backup files in a region.	20	(0, +∞)

8.4.5.25 IAM2

Name	Description	Default Value	Valid Value
expungeInterval	The interval of expunging a deleted project. Default: 3600. Unit: second.	3600	[1,+∞)
expungePeriod	The delay of expunging a deleted project. Default: 86400 . Unit: second.	86400	[0,+∞)
retireEvaluationInterval	The interval of inspecting whether the total expense of the current project exceeds the specified threshold. Default: 3600. Unit: second. If the total expense exceeds the threshold , resources in the project is reclaimed based on specified the reclaim action. This setting is available only when you set Project Cycle to Billing Recovery.	3600	[1,+∞)
maximumNumberOfImportedUsers	The maximum number of tenants that can be imported to the platform in a template. Default: 10000.	10000	[1,10000]
enable.iam2.script	Specifies whether to enable batch creation	false	<ul style="list-style-type: none"> • true • false

Name	Description	Default Value	Valid Value
	of projects by using a script. Default: false.		

8.4.5.26 IAM2Ldap

Name	Description	Default Value	Valid Value
ldap.auto.sync.interval	The interval of automatically synchronizing the AD or LDA sever. Default: 86400. Unit: second.	86400	[1, +∞)
enable.ldap.auto.sync	Specifies whether to enable automatic synchronization of the AD or LDAP server. Default: false.	false	<ul style="list-style-type: none"> • true • false
skip.all.ssl.certs.check	Specifies whether to skip all check items of LDAP SSL certificate. Default: false. If set to true, all check items of the SSL certificate are not checked.	false	<ul style="list-style-type: none"> • true • false

8.4.5.27 Identity

Name	Description	Default Value	Valid Value
session.cleanup.interval	The interval of cleaning timeout sessions. Default: 3600 seconds. Unit: second, minute, hour, and day.	3600 seconds	[0, +∞)
session.maxConcurrent	The maximum number of sessions that a single tenant can start with the management node. If the threshold is reached, the tenant	500	[0, +∞)

Name	Description	Default Value	Valid Value
	cannot start a new session.		
session.timeout	The timeout period of a session. If a session times out, the system becomes unavailable. You need to log in to the system again. Default: 7200 seconds. Unit: second, minute, hour, and day.	7200 seconds	[0,31536000]
admin.showAllResource	Specifies whether to show all resources of users to the administrator. Default: true.	true	<ul style="list-style-type: none"> • true • false
account.api.control	The admin-only APIs that the administrator allows users to use.	org.zstack.header.storage.backup.APIQueryBackupStorageMsg, org.zstack.storage.backup.sftp.APIQuerySftpBackupStorageMsg, org.zstack.header.image.APIAddImageMsg, org.zstack.header.host.APIQueryHostMsg	
enable.unique.session	Specifies whether to disallow simultaneous connection sessions established by one user. Default: false. If set to true, one user can establish only one connection session with the platform. If a user establishes a new connection session, the previous session will be forcibly closed.	false	<ul style="list-style-type: none"> • true • false

8.4.5.28 Image

Name	Description	Default Value	Valid Value
deletionPolicy	<p>The policy used to delete images. Default: Delay. Valid values: Direct, Delay, and Never.</p> <ul style="list-style-type: none"> • Direct: If you delete an image, the image is deleted from backup storages and the information about the image is deleted from database at once. • Delay: If you delete an image, the image is listed on the Deleted tab of the image management page and is in Deleted state. If you set the value to Delay, you can set the retention period of deleted images. The default retention period is 86,400 seconds. When the retention period expires or if you expunge a deleted image , the image is expunged from backup storages and the information about the image is deleted from the database. 	Delay	<ul style="list-style-type: none"> • Direct • Delay • Never

Name	Description	Default Value	Valid Value
	<ul style="list-style-type: none"> Never: If you delete an image, the information about the image is deleted from the database but the image is not expunged from the backup storages. 		
enableResetPassword	Specifies whether to enable reset passwords for images. Default: true.	true	<ul style="list-style-type: none"> true false
expungeInterval	The interval of expunging an image. Default: 3600. Unit: second.	3600	[1, +∞)
expungePeriod	The delay of expunging an image. Default: 86400. Unit: second.	86400	[1, +∞)
deletion.gcInterval	The interval of implementing GC of deleted images for expungement. Default : 3600. Unit: second.	3600	[1, +∞)
reclaim.interval	The interval that an ImageStore backup storage automatically cleans data. Default: 7. Unit: day. If set to 0, the automatic data cleaning feature is disabled.	7	[1, +∞)
max.capacity	The maximum capacity of an ImageStore backup storage. Default: 0. Unit: byte. This	0	[0, +∞)

Name	Description	Default Value	Valid Value
	value indicates that the capacity of an ImageStore backup storage is not limited.		

8.4.5.29 ImageStore

Name	Description	Default Value	Valid Value
reclaim.interval	<ul style="list-style-type: none"> The interval at which the data on a backup storage is automatically cleaned up. Default : 7 days. Unit: second, minute, hour, and day. If set to 0, the auto cleanup feature is disabled. 	7 days	[1, +∞)

8.4.5.30 KVM

Name	Description	Default Value	Valid Value
dataVolume.maxNum	The maximum number of data volumes that can be attached to a VM instance. Default: 24.	24	[0,24]
host.syncLevel	The maximum number of commands that can be concurrently executed in a host. Default: 10. Excessive concurrently executed commands may bring too high loads to a host. Please proceed with caution.	10	(2, +∞)
reservedMemory	The reserved memory size of hosts that apply	1 GB	[0, +∞)

Name	Description	Default Value	Valid Value
	KVM virtualization. Default: 1 GB. Unit: GB, MB, KB, and byte.		
vm.cacheMode	<p>The cache mode of a VM instance. Default: none. Valid values: none, writethrough, and writeback.</p> <ul style="list-style-type: none"> writethrough: The host page cache is used and data writes are reported as completed only when the data has been committed to the storage device. none: The host page cache is bypassed and data is directly read from or written to the storage device of the VM instance. writeback: The host page cache is used and data writes are reported as completed when data is placed in the host page cache. 	none	<ul style="list-style-type: none"> none writeback writethrough
vm.cpuMode	<ul style="list-style-type: none"> Specifies whether to select the same CPU model as the host for VM instances on the Cloud. Default : none. Valid values: none, host 	none	<ul style="list-style-type: none"> none host-model host-passthrough

Name	Description	Default Value	Valid Value
	<p>-model, and host-passthrough.</p> <ul style="list-style-type: none"> • If you select none, the VM CPU model is inconsistent with the host CPU model. • If you select host-model, the CPU model of the VM instance is the same as that of the host, such as Intel Haswell CPU. • If you select host-passthrough, the CPU features of the VM instance are the same as the CPU features of the host, such as the page table extension, huge page, and virtualization features. <div style="background-color: #e0e0e0; padding: 10px;"> <p>Note:</p> <ul style="list-style-type: none"> • If you select host-model, the CPU of the VM instance may not support the  extended page table extension, huge page, and virtualization features. • If you select host-passthrough, the VM instance allows for </div>		

Name	Description	Default Value	Valid Value
	<p>virtualization. However, if you migrate the VM instance to a host whose CPU model is different from the current host, the migration may fail. In addition, the CPU utilization of the VM instance measured within the instance may differ from the CPU utilization measured from the host.</p> <ul style="list-style-type: none"> • If you specifically set the CPU model of an individual VM instance to host-model or host-passthrough, the VM CPU model configured in the global settings does not take effect on the VM instance. • If you specifically set the CPU model for a cluster to host-model or host-passthrough, the VM CPU model configured in the global settings does not take effect on the VM 		

Name	Description	Default Value	Valid Value
	<p>instances in the cluster.</p> <ul style="list-style-type: none"> If you modify the CPU model, you need to restart a VM instance to make the modification take effect for the VM instance. 		
vm.migrationQuantity	The maximum number of VM instances that can be concurrently migrated when a host is in maintenance mode. Default: 2.	2	(0,+∞)
vmSyncOnHostPing	Specifies whether to synchronize the status of VM instances while pinging the host . Default: true.	true	<ul style="list-style-type: none"> true false
host.DNSCheckList	The checklist used to check the DNS server while adding a host to a cluster.	yahoo.com,google.com,baidu.com	
host.DNSCheckAliyun	The server IP address of Alibaba Cloud images.	mirrors.aliyun.com	
host.DNSCheck163	The server IP address of NetEase Cloud images.	mirrors.163.com	
checkHostCpuModelName	Specifies whether to inspect the CPU type of the host that is to be added to a cluster or to be used for migration. You can use this setting to check the CPU type	false	<ul style="list-style-type: none"> true false

Name	Description	Default Value	Valid Value
	consistency of hosts. Default: false.		
ignoreMsrs	Specifies whether to enable the ignore_msrs option in the KVM kernel module of hosts . Default: false.	false	<ul style="list-style-type: none"> • true • false
migrate.autoConverge	<ul style="list-style-type: none"> • Specifies whether to enable the auto converge feature . Default: false. If set to true, the auto converge feature is used during hot migrations of KVM VM instances. • You can also enable auto converge for a single VM instance . By default, this setting complies with that in the Global Setting. • If the migration is blocked because the VM instance has high I/O operations for a long time, you can enable auto converge to ensure the migration is successful. • If your applications are performance sensitive, we recommend that you do not enable auto converge. 	false	<ul style="list-style-type: none"> • true • false

Name	Description	Default Value	Valid Value
vm.createConcurrency	The maximum number of VM instances that can be concurrently created in a host. Default: 1.	1	[1,10]
host.snapshot.syncLevel	The maximum number of commands that can be concurrently executed in a host. Default: 10. Excessive concurrently executed commands may bring too high loads to a host. Please proceed with caution.	10	[2,+∞)
ivshmem.size	The memory size of the Inter-VM shared memory (ivshmem) device. Default: 0. Unit: byte. This value indicates that memory is not shared between VM instances and the host. If you set a custom value, the value must be the powers of 2 and cannot be lower than 1 MiB.	0	[0,+∞)
restartagentwhenfakedead	Specifies whether to restart KVM agent if the agent is detected hung. Default: true.	true	<ul style="list-style-type: none"> • true • false
migrate.xbzrle	Specifies whether to enable the Xor Based Zero Run Length Encoding (XBZRLE) feature. Default: true. Enabling this feature can make	true	<ul style="list-style-type: none"> • true • false

Name	Description	Default Value	Valid Value
	hot migrations of VM instances more efficient. If your VM instances have high data write workloads , you can enable this feature to reduce the time for migration.		
testSshPortOpenTimeout	The timeout period of SSH reconnecting hosts. Default: 5. Unit : second. If the timeout period expires, SSH reconnection fails.	5	[1,+∞)
enable.host.tcp.connection.check	Specifies whether to enable fast inspection of host connection status. Default: false. If set to true, the interval of inspecting the connection status of the host is shortened.	false	<ul style="list-style-type: none"> • true • false

8.4.5.31 LoadBalancer

Name	Description	Default Value	Valid Value
balancerAlgorithm	The default algorithm that load balancers use to implement load balancing. Default : roundrobin. Valid values: roundrobin, leastconn, and source.	roundrobin	<ul style="list-style-type: none"> • roundrobin • leastconn • source
connectionIdleTimeout	The timeout period of idle connections. If no data is transmitted between the client and server when the timeout period expires, the load	60	[1,+∞)

Name	Description	Default Value	Valid Value
	balancer terminates the connection. Default: 60. Unit: second.		
healthCheckInterval	The interval of checking the health status of load-balanced VM instances. Default: 5. Unit: second.	5	[1,+∞)
healthCheckTimeout	The timeout period of checking the health status of load-balanced VM instances. Default: 2 . Unit: second. If the timeout period expires , the health check fails.	2	[1,+∞)
healthyThreshold	The number of successful health checks that are required for VM instances to be considered healthy. Default: 2.	2	[1,+∞)
maxConnection	The maximum number of connections that a load balancer can establish between the client and server. Default: 100000.	5000	[1,+∞)
unhealthyThreshold	The number of failed health checks that are required for VM instances to be considered unhealthy. Default: 2.	2	[1,+∞)
aclMaxCount	The maximum number of access control lists (ACLs) that are	50	[0,+∞)

Name	Description	Default Value	Valid Value
	allowed to attach to a listener. Default: 50.		
httpMode	The HTTP mode under which HAProxy processes each request and response . Valid values: http -keep-alive, http-server-close, http-tunnel, httpclose, and forceclose.	http-server-close	<ul style="list-style-type: none"> • http-keep-alive • http-server-close • http-tunnel • httpclose • forceclose
Nbprocess	The total number of processes of a load balancer.	1	[1,+∞)
redirectRuleMaxCount	The maximum number of forwarding rules that can be associated with a listener of a load balancer. Default : 40.	40	[0,+∞)

8.4.5.32 LocalStoragePrimaryStorage

Name	Description	Default Value	Valid Value
liveMigrationWithStorage.allow	Specifies whether to enable live migration for VM instances within a local storage . Default: false. If set to true, VM instances can be live migrated within a local storage . Live migration is not supported for Windows-based VM instances.	false	<ul style="list-style-type: none"> • true • false
qcow2.allocation	The preallocation policy for volumes in a local storage. Default : none. Valid values:	none	<ul style="list-style-type: none"> • none • metadata • falloc

Name	Description	Default Value	Valid Value
	none, metadata, falloc , and full.		<ul style="list-style-type: none"> full

8.4.5.33 loginControl

Name	Description	Default Value	Valid Value
login.control	Specifies whether to enable verification by verification code if logins continuously fail. Default: false. If set to true, you can set the maximum number of continuous login failures that trigger verification by verification code . If the verification is triggered, you must enter the correct account name, password, and the verification code before you can log in to the platform.	false	<ul style="list-style-type: none"> true false
login.attempts.maximum	The maximum number of continuous login failures that trigger verification by verification code. Default: 6.	6	[0, +∞)
enable.lock.login.attempts.maximum	Specifies whether to lock the login account if the logins continuously fail. Default: false. If set to true, you can set the maximum number of login failures that cause account lock . You can also set the lock duration. If the number of login	false	<ul style="list-style-type: none"> true false

Name	Description	Default Value	Valid Value
	failures exceeds the threshold, the login account is locked for the configured duration.		
lock.login.attempts.maximum	The maximum number of failed login attempts. Default: 6. If the number of failed logins exceeds 6, the account is locked for the specified time period.	6	[6,10]
lock.login.period	The time period that an account is locked if the number of failed logins exceeds the specified threshold . Default: 10. Unit: minute.	10	[1,1440]
enable.force.change.password.period	Specifies whether to enable regular update of login password. Default: false. If set to true, you can set the update interval. When the update time comes , you are reminded to modify the password when you login to the platform.	false	<ul style="list-style-type: none"> • true • false
force.change.password.period	The password update interval. Default: 90. Unit: day.	90	[0,999]
historical.password.num	The number of recent passwords that cannot be reused. Default: 5. If you set this parameter to 3 , you cannot reuse	5	[3,32]

Name	Description	Default Value	Valid Value
	the recent three passwords to login to the platform.		
enable.historical.password.compare	Specifies whether to disallow the reuse of previous passwords . Default: false. If set to true, you can set the number of recent passwords that cannot be reused.	false	<ul style="list-style-type: none"> • true • false
password.strength.check.config	Specifies whether to enable the password strength policy. Default : false. If set to true, you can set the range of the password length and enable the combination of digits , lowercase letters, uppercase letters, and special characters.	false	<ul style="list-style-type: none"> • true • false
Basic password strength check config	The range of the password length. Default: 8-32. You can enable the combination of digits, lowercase letters, uppercase letters, and special characters.	8-32	8-32

8.4.5.34 l2Network

Name	Description	Default Value	Valid Value
deleteL2.bridge	Specifies whether to delete the network bridge on the host while deleting an L2 network. Default: true.	true	<ul style="list-style-type: none"> • true • false

8.4.5.35 LongJob

Name	Description	Default Value	Valid Value
longJob.api.timeout	The timeout period of a long job. If a long job times out, the job fails and is deleted. . Default: 259200 seconds. Unit: second.	259200	[0, +∞)

8.4.5.36 ManagementServer

Name	Description	Default Value	Valid Value
node.heartbeatInterval	The interval that the management node writes its heartbeat pulses to the database . Default: 5. Unit: second.	5	[0, +∞)
log.delete.lastModified	Specifies whether to set the retention period of locally retained management node logs. Default : false. This value indicates that the retention period of locally retained management node logs is not limited . If set to true, you can set a retention period threshold. Unit: day. The part of management node logs that exceeds the threshold is expunged.	false	<ul style="list-style-type: none"> • false • true

8.4.5.37 mevoco

Name	Description	Default	Valid Value
vm.console.password.strength.check.config	<ul style="list-style-type: none"> Specifies whether to set a password for VNC console login. Default: false. The length range of a password is in the format of m-n. Default: 6-8. <div style="background-color: #e0e0e0; padding: 10px;"> <p>Note: You can set a password length that ranges from 6 to 8. You can also enable the combination of digits, lowercase letters, uppercase letters, and special characters for a password.</p> </div>	false	<ul style="list-style-type: none"> • true • false
vm.password.strength.check.config	<p>Specifies whether to set login passwords for VM instances. Default: false.</p> <div style="background-color: #e0e0e0; padding: 10px;"> <p>Note:</p> <ul style="list-style-type: none"> If you set a login password, please note the following: The length range of a password is in the format of m-n. Default: 8-18. The length of a password ranges from 8 to 18. Before you set a login password </div>	false	<ul style="list-style-type: none"> • true • false

Name	Description	Default	Valid Value
	for a VM instance , make sure that cloud-init is installed in the system image of the VM instance. We recommend that the version of cloud-init be 0.7.9 , 17.1, 19.4, 19.4, or later.		
xfsFragScrape.enable	Specifies whether to inspect disk scraps.	false	<ul style="list-style-type: none"> • true • false
vm.windows.auto.attach.virtio.driver.format	<p>Specifies whether to auto-attach VirtIO driver when creating a Windows-based VM instance. Default: VFD</p> <ul style="list-style-type: none"> • VFD: auto-attach a vfd-formatted VirtIO driver to a newly created Windows-based VM instances. • ISO: auto-attach an iso-formatted VirtIO driver to a newly created Windows-based VM instances. • NONE: disable auto-attach of the VirtIO driver to a newly created Windows-based VM instances. <p> Note: This setting only takes effect</p>	VFD	<ul style="list-style-type: none"> • VFD • ISO • NONE

Name	Description	Default	Valid Value
	on x86_64 Windows-based VM instances that are newly created from VirtIO-installed ISO images.		

8.4.5.38 Monitoring

Name	Description	Default Value	Valid Value
Trigger.recovery.checker.interval	The interval of inspecting whether a trigger is recovered . Default: 10. Unit: second.	10	[1, +∞)

8.4.5.39 networkPlugin

Name	Description	Default Value	Valid Value
gracefulARP.interval	The interval at which error injections are implemented for physical NICs. Default : 5. Unit: second.	5	[0, +∞)

8.4.5.40 NetworkService

Name	Description	Default Value	Valid Value
defaultDhcpMtu.I2NoVlanNetwork	The default maximum packet size that can be transmitted over a L2 NoVLAN. Default: 1500. Unit: byte.	1500	[1, +∞)
defaultDhcpMtu.I2VlanNetwork	The default maximum packet size that can be transmitted over a L2 VLAN. Default: 1500. Unit: byte.	1500	[1, +∞)

Name	Description	Default Value	Valid Value
defaultDhcpMtu. l2VxlanNetwork	The default maximum packet size that can be transmitted over a L2 VXLAN. Default: 1450. Unit: byte.	1450	[1,+∞)
defaultDhcpMtu. dummyNetwork	The default maximum packet size that can be transmitted over a L2 network. Default: 1500. Unit: byte.	1500	[1,+∞)

8.4.5.41 Nfs-PrimaryStorage

Name	Description	Default Value	Valid Value
mount.base	The mount point of the NFS primary storage on the KVM host. Default: /opt/zstack/nfsprimarystorage.	/opt/zstack/nfsprimarystorage	absolute path starting with /
deletion.gcInterval	The interval of collecting volume and snapshot garbage from an NFS primary storage. Default: 3600 . Unit: second.	3600	[1,+∞)
qcow2.allocation	The policy used to allocate NFS primary storage space for volumes. Default: none. Valid values: none, metadata, falloc , and full. If an NFS primary storage is individually configured with a preallocation policy, this global setting does not take effect on the primary storage.	none	<ul style="list-style-type: none"> • none • metadata • falloc • full

8.4.5.42 PciDevice

Name	Description	Default Value	Valid Value
iommuEnabled	Specifies whether to enable the IOMMU option while connecting the host. Default: 86400. Unit: second.	false	<ul style="list-style-type: none"> • true • false
hotPlugEnabled	Specifies whether to enable hot plugging of PCI devices for a VM instance. Default : true. If a hardware incompatibility error occurs or during hot plugging or a hardware device does not support hot plugging, you can set this parameter to false.	true	<ul style="list-style-type: none"> • true • false

8.4.5.43 PrimaryStorage

Name	Description	Default Value	Valid Value
imageCache.garbageCollector.interval	The interval of scanning and collecting image cache garbage. Default: 86400. Unit: second.	86400	[1,+∞)
ping.interval	The interval that the management node pings primary storages . Default: 60. Unit : second. If a ping succeeds, the target primary storage is connected to the management node.	60	[1,+∞)
ping.parallelismDegree	The maximum number of primary storages that the management	50	[0,+∞)

Name	Description	Default Value	Valid Value
	node can simultaneously ping. Default: 50.		
primarystorage.delete.bits.garbage.on	Specifies whether to cleanup garbage in a primary storage if a VM instance or volume fails to be created. Default: true.	true	<ul style="list-style-type: none"> • true • false
primarystorage.delete.bits.garbageCollector.interval	The interval of cleaning garbage from a primary storage. Default: 600. Unit: second.	600	[0,+∞)
primarystorage.delete.bits.times	The number of attempts to cleanup garbage from a primary storage. Default: 50.	50	[0,+∞)
reservedCapacity	The reserved space of a primary storage . Default: 1 GB. Unit: byte, KB, MB, and GB.	1 GB	[1 B,1 TB]

8.4.5.44 Progress

Name	Description	Default Value	Valid Value
progress.ttl	The retention period of progress bar data in the database. Default: 86400. Unit: second.	86400	[0,+∞)
progress.on	Specifies whether to enable the progress bar feature. Default: true.	true	<ul style="list-style-type: none"> • true • false
progress.cleanupThreadInterval	The interval of cleaning obsolete progress bar records . Default: 300. Unit: second.	300	[0,+∞)

8.4.5.45 Prometheus

Name	Description	Default Value	Valid Value
storage.local.retention	The retention period of locally retained monitoring data. Default: 6. Unit: month . Valid values: 1 to 12.	6	[1,12]
storage.local.retention.size	The size of locally retained monitoring data. Default: 50 GB. Unit: MB, GB, and TB.	50 GB	[0,+∞)
storage.tsdb.min-block-duration	The refresh interval of write-ahead logs . Default: 2 hours. Unit: minute, hour, and day. If the size of monitoring data is too large, we recommend that you set this parameter to 30 minutes.	2 hours	[1,+∞)

8.4.5.46 Quota

Name	Description	Default Value	Valid Value
eip.num	The default quota of elastic IPs for a tenant . Default: 20.	20	[0,+∞)
image.num	The default quota of images for a tenant. Default: 20.	20	[0,+∞)
image.size	The default quota of image size for a tenant . Default: 10 TB. Unit: MB, GB, and TB.	10 TB	[0,+∞)
l3.num	The default quota of L3 networks for a tenant. Default: 20.	20	[0,+∞)

Name	Description	Default Value	Valid Value
loadBalancer.num	The default quota of load balancers for a tenant. Default: 20.	20	[0,+∞)
portForwarding.num	The default quota of port forwarding for a tenant. Default: 20.	20	[0,+∞)
scheduler.num	The default quota of scheduled jobs for a tenant. Default: 80.	80	[0,+∞)
securityGroup.num	The default quota of security groups for a tenant. Default: 20.	20	[0,+∞)
snapshot.volume.num	The default quota of volume snapshots for a tenant. Default: 200.	200	[0,+∞)
vip.num	The default quota of virtual IPs for a tenant. Default: 20.	20	[0,+∞)
vm.cpuNum	The default quota of vCPUs for a tenant. Default: 80.	80	[0,+∞)
vm.memorySize	The default quota of memory size for a tenant. Default: 80 GB. Unit: MB, GB, and TB.	80 GB	[0,+∞)
volume.capacity	The default quota of available storage size for a tenant. Default: 10 TB. Unit: MB, GB, and TB.	10 TB	[0,+∞)
volume.data.num	The default quota of data volumes for a tenant. Default: 40.	40	[0,+∞)
vm.num	The default quota of running VM instances	20	[0,+∞)

Name	Description	Default Value	Valid Value
	for a tenant. Default: 20.		
vm.totalNum	The default quota of VM instances for a tenant. Default: 20.	20	[0, +∞)
vxlans.num	The default quota of VXLANS for a tenant. Default: 8.	8	[0, +∞)
affinitygroup.num	The default quota of affinity groups for a tenant. Default: 20.	20	[0, +∞)
scheduler.trigger.num	The default quota of schedulers for a tenant . Default: 80.	80	[0, +∞)
zql.returnWith.concurrency	The concurrency of running the returnWith clause in a zql query . Default: 10. If the response time of the queries for platform monitoring data such as Performance Top 5 is too long, you can set a higher value. However, we recommend that you do not set a too high value.	10	[0, +∞)
volume.backup.num	The default quota of backups for a project. Default: 20.	20	[0, +∞)
volume.backup.size	The default quota of backups for a project. Default: 20.	10 TB	[0, +∞)

8.4.5.47 Rest

Name	Description	Default Value	Valid Value
checkTimeZone	Specifies whether to enable the time zone check feature . Default: false. This value indicates that when you make a Restful API request, the system does not check the time zone of the client. If set to true, when you make a Restful API request, the system checks the time zone of the client.	false	<ul style="list-style-type: none"> • true • false

8.4.5.48 Scheduler

Name	Description	Default Value	Valid Value
job.attached.triggers.limit	The maximum number of schedulers that can be associated with a scheduled job. Default : 30.	30	[1,+∞)
job.resources.limit	The maximum number of VM instances or volumes that can be associated with a scheduled job. Default : 500.	500	[1,+∞)

8.4.5.49 SecurityGroup

Name	Description	Default Value	Valid Value
egress.defaultPolicy	The default egress policy of security groups. Default: accept. Valid values: accept and deny.	accept	<ul style="list-style-type: none"> • accept • deny

Name	Description	Default Value	Valid Value
ingress.defaultPolicy	The default ingress policy of security groups. Default: drop. Valid values: accept, drop, and deny.	drop	<ul style="list-style-type: none"> accept drop deny
host.failureResolvePerTime	The interval of correcting errored security group policy entries. Default: 60. Unit: second.	100	[1, +∞)
refresh.delayInterval	The interval of updating security group policy entries. Default: 1000. Unit: second.	1000	[1, +∞)
host.failureWorkerInterval	The maximum number of errored security group policy entries that are to be corrected at a time. Default: 100.	60	[1, +∞)

8.4.5.50 Sharedblock

Name	Description	Default Value	Valid Value
deletion.gcInterval	The interval of cleaning failed volumes or snapshots that fail to be deleted from a Shared Block primary storage. Default: 3600. Unit: second.	3600	[1, +∞)
qcow2.allocation	The policy used to allocate space for volumes in Shared Block primary storages. Default: metadata. Valid values: none and metadata.	metadata	<ul style="list-style-type: none"> none metadata falloc full

Name	Description	Default Value	Valid Value
qcow2.cluster.size	The cluster size of QCOW files in a Shared Block primary storage. Default: 2097152. Unit: byte. Valid values: 512 to 2097152.	2097152	[512,2097152]
fail.if.multipath.no.path	Specifies whether to disable the queue_if_no_path feature for multipath devices. Default: true. This value indicates that if no path of the multipath devices used by SharedBlock primary storages is active, I/O requests fail. If set to false, the heartbeat detection and recovery mechanisms may not work as expected. Please proceed with caution.	true	<ul style="list-style-type: none"> • true • false
thin.provisioning.initialize.size	The initial size of thin-provisioned volumes . Default: 5368709120 . Unit: byte. The initial size cannot be lower than 1073741824 bytes.	5 GB	[1073741824,+∞)
thin.provisioning.volume.utilization.percent	The maximum usage ratio of thin-provisioned volumes. Default : 85. Unit: %. If the actual usage ratio of a thin-provisioned volume is higher than the maximum usage ratio, the volume will automatically scale	85	[1,+∞)

Name	Description	Default Value	Valid Value
	up based on the Auto Scaleup Size of Thin -Provisioned Volume setting.		
thin.provisioning.volume.freespace	The minimum space that must be available for thin-provisioned volumes. Default : 5368709120. Unit: byte. If the difference between the actual size of a thin-provisioned volume and the used storage space is lower than the minimum available space, the volume will automatically scale up based on the Auto Scaleup Size of Thin -Provisioned Volume setting.	5 GB	[1073741824,+∞)
thin.provisioning.volume.increment	The auto scaleup size of thin-provisioned volumes. Default: 5368709120. Unit: byte.	5 GB	[1073741824,+∞)
enable.lvmetad	Specifies whether to enable the lvmetad service. Default: false. If set to true, operations on Shared Block primary storages will be accelerated. Please note that you need to enable the service in a proper way. Otherwise, metadata may be damaged.	false	<ul style="list-style-type: none"> • true • false

Name	Description	Default Value	Valid Value
heartbeat.io.timeout	The timeout period of inspecting the heartbeats of Shared Block primary storages . Default: 20. Unit : second. If the inspection times out for ten consecutive times, heartbeat inspection fails.	20	[1,+∞)
snapshot.shrink	Specifies whether to enable the snapshot shrinking feature. Default: true. This value indicates that you can shrink the used storage space of snapshots in thick -provisioned root volumes and data volumes in a Shared Block primary storage.	true	<ul style="list-style-type: none"> • true • false
max.actual.size.factor	The maximum rate between the actual size and virtual size of thin-provisioned volumes. Default: 3. Please proceed with caution.	3	[1,+∞)
device.allocate.strategy	<ul style="list-style-type: none"> • The policy used to distribute a SharedBlock LUN to a volume and snapshot . Valid values: none (default), minLvCounts, and maxFreeSize. • If you select maxFreeSize, 	none	<ul style="list-style-type: none"> • none • minLvCounts • maxFreeSize

Name	Description	Default Value	Valid Value
	<p>when you create a volume or snapshot , the SharedBlock LUN that has the the most available space is distributed to the volume or snapshot.</p> <ul style="list-style-type: none"> • If you select minLvCounts, when you create a volume or snapshot , the SharedBlock LUN that has the smallest total number of volumes and snapshots and has sufficient available space is distributed to the volume or snapshot • If you select none , when you create a volume or snapshot, when you create a volume or snapshot , a SharedBlock LUN that has sufficient spaceis is distributed to the volume or snapshot based on the system scheduling. • If you have already set the LUN distribution policy specifically for a SharedBlock primary storage, this global setting 		

Name	Description	Default Value	Valid Value
	does not take effect on the primary storage.		

8.4.5.51 sharedMountPointPrimaryStorage

Name	Description	Default Value	Valid Value
qcow2.allocation	<p>The policy used to allocate SMP primary storage space for volumes. Default: none. Valid values: none, metadata, falloc, and full.</p> <p>Note: If an SMP primary storage is individually configured with a preallocation policy, this global setting does not take effect on the primary storage.</p>	none	<ul style="list-style-type: none"> • none • metadata • falloc • full

8.4.5.52 System(Mevoco)

Name	Description	Default Value	Valid Value
overProvisioning.memory	<p>The memory overcommitment. This parameter is used to control the virtual memory size allocated to a VM instance. Default: 1. Formula: Physical memory size x Memory overcommit = Allocable virtual memory size.</p>	1	[1.00, +∞)

Name	Description	Default Value	Valid Value
distributelimage.concurrency	The concurrency of distributing images to a Local Storage primary storage. Default: 2.	2	[0,+∞)
hostAllocatorStrategy	The policy used to allocate hosts to VM instances migrated from the VMware platform to the KVM platform. Default: LeastVmPreferredHost AllocatorStrategy.	LeastVmPreferredHost AllocatorStrategy	<ul style="list-style-type: none"> • LeastVmPreferredHost AllocatorStrategy • MinimumCPU UsageHostAllocatorStrategy • MinimumMemoryUsageHostAllocatorStrategy
distributelimage	Specifies whether to distribute an image to a Local Storage primary storage when the image is added to a backup storage. Default: true.	true	<ul style="list-style-type: none"> • true • false
threshold.primaryStorage.physicalCapacity	The usage threshold of a primary storage. Default: 0.9. You can set this parameter to avoid excessive usage of primary storage space. If you set the Primary Storage Overcommit parameter, we recommend that you set this parameter. This prevents excessive attaching of volumes and the ensuing crashes of VM instances.	0.9	(0,1.00]

Name	Description	Default Value	Valid Value
overProvisioning.primaryStorage	The primary storage overcommitment. This parameter is used to control the size of virtual primary storage space allocated to a VM instance. Default: 1.00, double. Formula : Physical primary storage size x Primary storage overcommit = Allocable virtual primary storage size.	1.0	[1.00,+∞)
apiRetry.vm	The number of retries if a VM instance fails to be created or started. Default: 0.	0	[0,+∞)
apiRetry.interval.vm	The interval of retries if a VM instance fails to be created or started . Default: 3. Unit: second.	3	[0,+∞)
aio.native	Specifies whether to enable kernel AIO. Default: false. If set to true, make sure that VM Cache Mode is set to none.	false	<ul style="list-style-type: none"> • true • false
ui.operation.max.history	The retention period of operation logs. Default: 90. Unit: day . Operation logs that exceed the retention period threshold are expunged.	90	[1,+∞)
xfsFragScrape.interval	The interval of sampling the monitoring data of the fragmentation of XFS file systems. Default	12	[1,+∞)

Name	Description	Default Value	Valid Value
	: 12. Unit: hour. Valid values: 1 to positive infinity, integer.		
xfsVolumeDetect.size	The threshold of the volume size exceeding which XFS fragmentation inspection is triggered. Default: 100 . Unit: GiB.	100	[0,+∞)
deleteTemplImages	Specifies whether to enable auto-deletion of temporary images generated while cloning VM instances or recovering VM instances or volumes from backups. Default : false.	false	<ul style="list-style-type: none"> • true • false
license.scrape.interval	The interval that the system obtains the latest license information. Default: 3600. Unit: second.	3600	[0,+∞)
enableSpiceChannelSupportTLS	Specifies whether to enable TLS encryption for SPICE channels . Default: 0. Eight channels are available . They are main, display, inputs, cursor , playback, record, smartcard, usbredir in ascending order of bit significance. For example, if you set the value to 1, TLS encryption is enabled for the main channel . If you set the value to 3, TLS encryption	0	[0,255]

Name	Description	Default Value	Valid Value
	<p>is enabled for the main channel and the display channel. If you set the value to 255, TLS encryption is enabled for all SPICE channels.</p> <p>Please note that you need to reconnect to hosts and restart VM instances before the TLS encryption takes effect.</p>		
vm.consoleMode	<p>The type of protocol used to connect to the console of a VM instance. Default : vnc. Valid values : vnc, spice, and vncAndSpice. If you set this parameter on the details page of a VM instance, this global setting does not take effect on the VM instance. In addition, if you modify the console mode, you must restart a VM instance before the modification takes effects on the VM instance.</p>	vnc	<ul style="list-style-type: none"> • vnc • spice • vnc+spice
default.login.portal	<p>The default login portal. Default: iam-and-iam2. This value indicates that when you log in to the platform, the main login portal and project login portal</p>	iam-and-iam2	<ul style="list-style-type: none"> • iam-and-iam2 • iam2

Name	Description	Default Value	Valid Value
	are displayed. If you set the value to iam2 , when you log in to the platform, the project login portal is displayed.		
vm.console.password.strength.check.config	Specifies whether to set a password for VNC console login . Default: false. The length range of a password is in the format of m-n. Default : 6-8. You can set a password length that ranges from 6 to 32. You can also enable the combination of digits, lowercase letters, uppercase letters, and special characters for a password.	false	<ul style="list-style-type: none"> • true • false
vm.password.strength.check.config	Specifies whether to set login passwords for VM instances. Default: false. If you set a login password , please note the following: The length range of a password is in the format of m-n. Default: 8-18. The length of a password ranges from 8 to 18 . Before you set a login password for a VM instance, make sure that cloud-init is installed in the system image of the	false	<ul style="list-style-type: none"> • true • false

Name	Description	Default Value	Valid Value
	VM instance. We recommend that the version of cloud-init be 0.7.9, 17.1, 19.4, 19.4 , or later.		
auto.set.vm.nic.multiqueue	Specifies whether to enable multi-queue upgrading for vNICs of VM instances. Default : true. This value indicates that when a VM instance is started for the first time, the system automatically upgrades the number of queues for each vNIC based on the number of vCPUs of the VM instance. This helps improve the performance of the VM instance. The maximum number of queues for each vNIC is 12.	true	<ul style="list-style-type: none"> • true • false

8.4.5.53 tag2

Name	Description	Default Value	Valid Value
tag.resource.attached	The maximum number of tags that can be attached to a resource. Default: 50. Maximum: 200.	50	[0,200]

8.4.5.54 Twofa

Name	Description	Default Value	Valid Value
twofa.enable	Specifies whether to enable two-factor	false	<ul style="list-style-type: none"> • true • false

Name	Description	Default Value	Valid Value
	verification for platform login. Default: false.		

8.4.5.55 UIConfig(System)

Name	Description	Default Value	Valid Value
ui.tag.sort.by	<p>The tag sort method of resources. Default : tagName. Valid values: tagName and tagAttachDate . If set to tagName , tags are sorted based on their names . Special symbols , digits, Chinese characters, and English lowercase or uppercase characters in names are prioritized in descending order . If set to tagAttachDate, tags are sorted based on the time tags are attached to resources. Tags that are attached to resources in the most recent time are listed first.</p>	tagName	<ul style="list-style-type: none"> • tagName • tagAttachDate
virtualrouter.arm.enable	<p>Specifies whether to enable the ARM vRouter feature. Default: false. If set to true, you can use the vRouter network and its network services.</p>	false	<ul style="list-style-type: none"> • true • false
vm.create.limit.num	The maximum number of VM instances that can be created in batch on the UI.	100	[1,10000]

Name	Description	Default Value	Valid Value
	Default: 100. Valid values: 1 to 10000.		
default.login.portal	The default login portal. Default: iam-and-iam2. This value indicates that when you log in to the platform, the main login portal and project login portal are displayed. If you set the value to iam2 , when you log in to the platform, the project login portal is displayed.	iam-and-iam2	<ul style="list-style-type: none"> • iam-and-iam2 • iam2
vm.check.guest.tools	Specifies whether to notify in a banner on the top of the VNC window whether the performance upgrading tool is installed. Default: True . If set to False, the notification banner is not displayed.	true	<ul style="list-style-type: none"> • true • false
delete.resource.double.check	<ul style="list-style-type: none"> • Specifies whether to enable identity authentication for sensitive operations on important resources, such as deleting a host or stopping a VPC vRouter. Default: true. If set to false, identify authentication is not triggered when sensitive 	true	<ul style="list-style-type: none"> • true • false

Name	Description	Default Value	Valid Value
	operations are performed.		
iam2project.login.portal	<p>The default method of project login. Default: Local User. If you do not enable CAS authentication, you can select Local User and AD/LDAP User. If you enable CAS authentication, you can select Local User, AD/LDAP User, or CAS User.</p> <div style="background-color: #e0e0e0; padding: 10px;"> <p>Note: This CAS authentication mechanism is different from the general mechanism. If you apply the general or your custom CAS authentication method, this global setting does not take effect.</p> </div>	Local User	<ul style="list-style-type: none"> • Local User • AD/LDAP User • CAS User

8.4.5.56 Userdata

Name	Description	Default Value	Valid Value
userdata.openServiceByDefault	Specifies whether to enable the User Data service. Default: true . If set to false, the User Data service is disabled. In this case , if you set user data for a VM instance, the agent installed on the	true	<ul style="list-style-type: none"> • true • false

Name	Description	Default Value	Valid Value
	VM instance cannot upload the internal monitoring data.		

8.4.5.57 vCenter

Name	Description	Default Value	Valid Value
vcenter.sync.interval	The interval of automatically synchronizing vCenter data to the cloud platform. Default: 0. Unit: hour and day. The value 0 indicates that vCenter data is not automatically synchronized to the platform.	0	[0, +∞)
vcenter.task.timeout	The timeout period of creating a VM instance in vCenter . Default: 600. Unit: second. If the timeout period expires, the VM instance creation task is cancelled. If creation attempt fails by three consecutive times, the creation fails.	600	[0, +∞)
vcenter.getInstancesParallelismDegree	The maximum number of service instances that can be simultaneously used while connecting with vCenter.	10	[0, +∞)

8.4.5.58 VirtualRouter

Name	Description	Default Value	Valid Value
agent.deployOnStart	Specifies whether to enable auto deployment of agent process when a VPC vRouter is started. Default: false. VPC vRouters are deployed with agent process by default. The value false indicates that the management node checks the version of agent process on the VPC vRouter and deploys a new agent on the VPC vRouter if the agent version on the VPC vRouter is earlier than that on the management node. If set to true , the management node does not check the agent version on the VPC vRouter and directly deploys a new agent each time a VPC vRouter is created, started, or restarted.	false	<ul style="list-style-type: none"> • true • false
command.parallelismDegree	The maximum number of commands that a vRouter can simultaneously execute. Default: 100.	100	[1,+∞)
dnsmasq.restartAfterNumberOfSIGUSER1	The maximum number of SIGUSR1 signals . If the number of sent SIGUSR1	500	[1,+∞)

Name	Description	Default Value	Valid Value
	signals exceeds the threshold, DNSmasq is restarted. Default: 500.		
ping.interval	The interval that the management node pings vRouters. Default: 60. Unit: second. If a ping succeeds, the target vRouter is connected to the management node.	60	[1,+∞)
ping.parallelismDegree	The maximum number of vRouters that the management node can simultaneously ping. Default: 60.	500	[1,+∞)
ssh.port	The port number used to SSH log in to a VPC vRouter. Default: 22.	22	
ssh.username	The username used to SSH log in to a VPC vRouter. Default: vyos.	vyos	
vrouter.echoTimeout	The timeout period of echoes from the agent installed on a VPC vRouter. Default: 120 . Unit: second. If the agent does not echo within the specified time, the VPC vRouter fails to be started up and is deleted.	60	[1,+∞)
vrouter.password	The password used to SSH log in to a VPC vRouter. If you set a password, you need to restart the VPC vRouter on the UI	vrouter12#	

Name	Description	Default Value	Valid Value
	before this password takes effect.		
ssh.passwordAuth	Specifies whether to enable SSH login to a VPC vRouter by using a password. Default: false. If set to true, you can SSH login to a VPC vRouter with a password. Note: If you modify the setting, reconnect the VPC vRouter to make the modification take effect.	false	<ul style="list-style-type: none"> • true • false
haproxy.logLevel	The severity of listener logs. Default: info. You need to reconnect to a VPC vRouter before the modification takes effect.	info	<ul style="list-style-type: none"> • info • debug • error
ipv4LocalPortRange	The range of local ports that TCP and UDP packets transfer. The value 0-0 indicates that the system setting is applied. If set to another value, the starting port number must be equal to or higher than 1024.	0-0	[0, +∞)

8.4.5.59 VmInstance(vm)

Name	Description	Default Value	Valid Value
bootMenu	Specifies whether to enable the boot menu during VM instance startup. Default: true . If the host does not support the boot menu feature, you can set this parameter to false.	true	<ul style="list-style-type: none"> • true • false
cleanTraffic	Specifies whether to enable the feature of defending against IP spoofing or MAC spoofing attacks for a VM instance. Default: false.	false	<ul style="list-style-type: none"> • true • false
deletionPolicy	<p>The policy used to delete VM instances. Default: Delay. Valid values: Direct, Delay, and Never.</p> <ul style="list-style-type: none"> • Direct: If you delete a VM instance, the VM instance is deleted at once. • Delay: If you delete a VM instance, the VM instance is listed on the Deleted tab of the VM instance management page and is in Deleted state. If you set the value to Delay , you can set the retention period of deleted VM instances. The default retention 	Delay	<ul style="list-style-type: none"> • Direct • Delay • Never

Name	Description	Default Value	Valid Value
	<p>period is 86,400 seconds. When the retention period expires or if you expunge a deleted VM instance, the VM instance is expunged.</p> <ul style="list-style-type: none"> Never: If you delete a VM instance, the system does not automatically expunge the deleted VM instance. 		
emulateHyperV	Specifies whether to enable Hyper-V emulation for a VM instance. Default: false	false	<ul style="list-style-type: none"> true false
expungeInterval	The interval of expunging a deleted VM instance. Default: 3600. Unit: second.	3600	[1, +∞)
expungePeriod	The delay of expunging a deleted VM instance. Default: 86400. Unit: second.	86400	[0, +∞)
instanceOffering.setNullWhenDeleting	Specifies whether to update the Instance Offering parameter of a VM instance to NULL after the instance offering of the VM instance is deleted. Default: true.	true	<ul style="list-style-type: none"> true false
kvmHiddenState	Specifies whether to hide the KVM virtualization flag. Default: false. If set to	false	<ul style="list-style-type: none"> true false

Name	Description	Default Value	Valid Value
	true, <hidden state='on'> is inserted in the <kvm> field of the XML file defined for a newly started VM instance . If you use NVIDIA video cards for VM instances, you need to set this parameter to true.		
numa	Default: false. If set to true, you can modify the number of vCPUs and memory size of a VM instance online . We recommend that you do not modify the number of vCPUs and memory size of a Windows-based VM instance in the production environment. Please exercise with caution.	false	<ul style="list-style-type: none"> • true • false
spiceStreamingMode	<ul style="list-style-type: none"> • all: All video frames are encoded, compressed, and then transferred. This lowers bandwidth requirements, promotes streaming fluency, while increases the CPU pressure of thin clients. • filter: Incremental video frames are encoded, compressed, and then transferred 	off	<ul style="list-style-type: none"> • off • filter • all

Name	Description	Default Value	Valid Value
	<p>. Compared with the all mode, this mode further lowers bandwidth requirements and promotes streaming fluency. The CPU pressure of thin clients is relatively low. However, Chrome flash of thin clients will cause streaking issues.</p> <ul style="list-style-type: none"> • off: Video frames are not encoded or compressed before transmission. This produces HD video streaming while have highest requirements for bandwidth. The CPU pressure of thin clients is the lowest among the three modes. 		
videoType	The type of video card that is used when a VM instance is started up. Default: cirrus. Valid values: cirrus, vga, and qxl.	cirrus	<ul style="list-style-type: none"> • cirrus • vga • qxl
dataVolume. deleteOnVmDestroy	Specifies whether to delete attached data volumes while deleting a VM instance . Default: false.	false	<ul style="list-style-type: none"> • true • false
Disable VMWare io port emulation	Specifies whether to enable VMware I	false	<ul style="list-style-type: none"> • true • false

Name	Description	Default Value	Valid Value
	/O port simulation. Default: false.		
vmDefaultCdRomNum	The default number of virtual drives that the system creates for a VM instance (the cdrom parameter is not specified). Default: 1. Valid values: 1, 2, and 3. This setting does not take effect on the VM instances whose number of virtual drives has exceeded the threshold.	1	<ul style="list-style-type: none"> • 1 • 2 • 3
maximumCdRomNum	The maximum of virtual drives that can be created for a VM instance. Default: 3. Valid values: 1, 2, and 3. This setting does not take effect on the VM instances whose number of virtual drives has exceeded the threshold.	3	<ul style="list-style-type: none"> • 1 • 2 • 3
pciePortNums	The number of PCIe root ports that can be configured for a x86-64 VM instance with Q35 motherboard. Default: 28. Valid values: 0 to 28. This setting predefines the number of PCIe devices that can be hot plugged during VM startup. Modifications of the setting on a VM instance take effect	28	0-28

Name	Description	Default Value	Valid Value
	after you restart the VM instance.		
multivNic.support	Specifies whether to enable multi-vNIC configuration in the same IP range. Default: false. This value indicates that you can configure only one vNIC for a VM instance in the same private IP range. If set to true , you can configure multiple vNICs for a VM instance in the same private IP range.	false	<ul style="list-style-type: none"> • true • false
resourceBinding.strategy	The VM instance or VPC vRouter sticky policy. Valid values: Hard and Soft. Default : Hard. This value indicates that unless manually regulated , a VM instance or VPC vRouter is limited within the scope set by its associated resources. The value Soft indicates that a VM instance or VPC vRouter can be started on an available host if no associated host is available.	Hard	<ul style="list-style-type: none"> • Hard • Soft
resourceBinding.Scen	The scene to which VM or VPC vRouter sticky policy applies . Valid values: Auto and All. Default: Auto. The value Auto	Auto	<ul style="list-style-type: none"> • Auto • All

Name	Description	Default Value	Valid Value
	<p>indicates that unless manually regulated , a VM instance or VPC vRouter is limited within the scope set by its associated resources, such as VM migrating to another host to achieve high availability or upon host entering maintenance mode.</p> <p>The value All indicates that a VM instance or VPC vRouter is limited within the scope set by its associated resources even if manually regulated.</p>		
crash.strategy	<p>Specifies whether to enable error inspection for VM instances.</p> <p>Default: false. If you enable error inspection , you can set the error handling policy.</p> <p>Three error handling policies are available : Preserve, Reboot, and Shutdown. If your VM instance crashes , the VM instance is handled based on the configured policy . Note that before you can enable error inspection, you must install GuestTools of the latest version and make sure the agent is in Running state.</p>	false	<ul style="list-style-type: none"> • true • false

Name	Description	Default Value	Valid Value
crash.rebootThreshold.duration	The restart policy of VM instances upon errors. Default: Restart VM instance up to five times within 30 minutes. If the VM instance is not restarted after five attempts within 30 minutes, the VM instance remains crashed.	1800	[0, +∞)
crash.rebootThreshold.times		5	[0, +∞)
vm.clock.track	<ul style="list-style-type: none"> Specifies whether to enable time synchronization. If enabled, the base time of the VM instance is the same as that of the host. By default, time synchronization is disabled. The time synchronization setting does not take effect on Linux VM instances. If you specifically set time sync for a VM instance, the global setting does not take effect on the VM instance. 	guest	<ul style="list-style-type: none"> guest host

8.4.5.60 Volume

Name	Description	Default Value	Valid Value
deletionPolicy	The policy used to delete volumes. Default: Delay. Valid	Delay	<ul style="list-style-type: none"> Direct Delay Never

Name	Description	Default Value	Valid Value
	values: Direct, Delay, and Never.		
diskOffering.setNullWhenDeleting	Specifies whether to update the Volume Offering field of a volume to NULL if the volume offering is deleted. Default: true.	true	<ul style="list-style-type: none"> • true • false
expungeInterval	The interval of expunging a deleted volume. Default: 3600 . Unit: second.	3600	[1,+∞)
expungePeriod	The delay of expunging a deleted volume. Default: 86400. Unit: second.	86400	[0,+∞)
refreshVolumeSizeInterval	The interval of updating the available storage space of a volume. Default: 3600. Unit: second . You need to set this parameter if you create an alarm to monitor the available storage space of volumes. The interval cannot be smaller than 600 seconds.	3600	[600,+∞)
auto.snapshot.before.change	Specifies whether to auto create a snapshot when the capacity of a volume is expanded.	false	<ul style="list-style-type: none"> • true • false

8.4.5.61 VolumeBackup

Name	Description	Default Value	Valid Value
rebackup.stoppedVm	Specifies whether to rebackup VM instances that are shut	false	<ul style="list-style-type: none"> • true • false

Name	Description	Default Value	Valid Value
	down while a backup task is triggered. Default: false.		

8.4.5.62 V2V

Name	Description	Default Value	Valid Value
v2v.hostAllocatorStrategy	The policy used to allocate hosts to VM instances migrated from the VMware platform to the KVM platform. Default: LeastVmPreferredHost AllocatorStrategy.	LeastVmPreferredHost AllocatorStrategy	<ul style="list-style-type: none"> • LeastVmPreferredHost AllocatorStrategy • MinimumCPUUsageHostAllocatorStrategy • MinimumMemoryUsageHostAllocatorStrategy
v2v.parallelismDegree	The maximum number of V2V migration tasks that can be simultaneously running. Default: 10.	10	[0, +∞)
v2v.cacheRetention	The retention period of data cache during failed V2V migration. Default: 86400. Unit: second.	86400	[0, +∞)
v2v.volumeDownLoadParallelismDegree	The maximum number of volumes that can be migrated from the migration server to the destination primary storage in a V2V migration task. Default : 20.	20	[0, +∞)
v2v.nbdkitPath	The storage path of nbdkit on the management node . You can set the storage path of nbdkit	http://%s:8080/zstack/static/zstack-repo/x86_64/\$releasever/nbdkit-1.14.2.tar.gz	

Name	Description	Default Value	Valid Value
	for vCenter 5.0 or vCenter 5.1.		
v2v.enableRootFirst	Specifies whether to specify an operating system (OS) as the first OS to be used if a target VM instance has multiple OS. Default: false. If set to true, an OS is specified as the first OS to be used based on an algorithm.	false	<ul style="list-style-type: none"> • false • true
v2v.adaptedVddkLibPath	The storage path of vddk lib on the management node . You can set the storage path of nbdkit for vCenter 5.0 or vCenter 5.1.	http://%s:8080/zstack/static/zstack-repo/x86_64/\$releasever/VMware-vix-disklib-5.5.0-1284542.x86_64.tar.gz	
refreshCapacity.interval	The interval of updating the migration server. Default: 5. Unit : minute.	5	[0, +∞)

8.4.5.63 VolumeSnapshot

Name	Description	Default Value	Valid Value
incrementalSnapshot.maxNum	The maximum number of incremental volume snapshots in a snapshot chain. Default: 128. If you set the value to 128 and the number of snapshots of a volume reaches the threshold , the next snapshot is the last one in the snapshot chain.	128	[0, +∞)

Name	Description	Default Value	Valid Value
backup.parallelismDegree	The parallelism of backing up snapshots . Default: 5.	5	[0,+∞)
delete.parallelismDegree	The parallelism of deleting snapshots. Default: 1.	1	[0,+∞)
snapshot.before.revertvolume	Specifies whether to enable auto-snapshotting for volumes before recovering volumes from volume snapshots. Default: false.	false	<ul style="list-style-type: none"> • true • false

8.4.5.64 VPC

Name	Description	Default Value	Valid Value
tc.for.vipqos	Specifies whether to use TC rules to control the VIP ingress or egress traffic of a VPC vRouter. Default: true. If set to false, the ingress or egress traffic of VIPs is not analyzed and you cannot set QoS for the VIPs.	true	<ul style="list-style-type: none"> • true • false

8.4.5.65 VPC(HA)

Name	Description	Default Value	Valid Value
keepalived.interval	The interval of sending Keepalived heartbeat packets. Default: 1. Unit: second. Valid values: 1 to 60, integer .	1	[1,60]
tc.for.vipqos	Specifies whether to use TC rules to control	true	<ul style="list-style-type: none"> • true

Name	Description	Default Value	Valid Value
	the VIP ingress or egress traffic of a VPC vRouter HA group. Default: true. If set to false, the ingress or egress traffic of VIPs is not analyzed and you cannot set QoS for the VIPs.		<ul style="list-style-type: none"> • false

8.4.5.66 VyOS

Name	Description	Default Value	Valid Value
private.l3.firewall.default.action	The default packet filtering behavior of the vNICs of VPC vRouters. Default: reject. Valid values : reject and accept . The value accept indicates that packets are allowed to pass through the vNICs of VPC vRouters. If you modify the setting for a VPC vRouter, you need to reconnect to the VPC vRouter before this setting takes effect.	reject	<ul style="list-style-type: none"> • reject • accept
auto.restart.ipsec	<ul style="list-style-type: none"> • Specifies whether to enable auto restart for the IPsec process in VyOS when the IKE key expires. Default: false. 	false	<ul style="list-style-type: none"> • true • false

8.4.5.67 ZWatch

Name	Description	Default Value	Valid Value
management ServerDirectoriesToMonitor	The management node directory monitored by the system alarm.	/var/lib/zstack/,/usr/local/zstack/	
alarm.repeatInterval	The interval of repetitive alarming. Default: 1800. Unit: second.	1800	[0,+∞)
evaluation.interval	The interval that an alarm inspects metric items. Default: 10. Unit : second.	10	[1,+∞)
evaluation.threadNum	The concurrency that an alarm inspects metric items. Default: 5.	5	[0,+∞)
scrape.interval	The interval of sampling monitoring data. Default: 20. Unit: second. The interval must be equal to or higher than 15 seconds.	10	[15,+∞)
countCache ExpireSecTime	The retention period of resource alarm notifications or event alarm notifications in the cache. Default : 10. Unit: second. If you query the number of alarm notifications within their retention period, the number is returned from the cache. If you do not need cache the notifications, you can set the value to 0.	10	[-1,+∞)

Name	Description	Default Value	Valid Value
minimumCountAmountAllowedAddedToCache	The threshold of resource alarm notifications and event alarm notifications exceeding which notifications are allowed to be written to the cache. Default : 150. If the total number of alarm notifications is equal to or larger than the threshold, alarm notifications are allowed to be written to the cache. If the total number is smaller than the threshold , you can query the number in real time.	150	[-1,+∞)
thirdpartyAlert.enable	Specifies whether to enable the Ceph Enterprise alarm notification feature. Default: false. If set to true, Ceph Enterprise alarm notifications can be displayed on the UI.	false	<ul style="list-style-type: none"> • false • true
thirdpartyAlert.alert.retention.amount	The maximum reserved number of Ceph Enterprise alarm notifications. Default : 10000. If the number of Ceph Enterprise alarm notifications exceeds the threshold by 1,000, the system cleans the notifications from the earliest ones.	10000	[1,+∞)

Name	Description	Default Value	Valid Value
case.sensitive.search	Specifies whether to distinguish the letter case while searching for resources on the Audit page. Default: false. If set to true, the system distinguishes uppercase letters from lowercase letters.	false	<ul style="list-style-type: none"> • false • true
monitorGroup .maximumIn stanceNum	The maximum number of resources that can be added to a resource group. Default: 500. Valid values: 1 to 1000.	500	[1,1000]
monitorTemplate. maximumRuleNum	The maximum number of rules that can be configured in an alarm template. Default: 30. Valid values: 1 to 100.	30	[1,100]
zwatch.audit.retention. duration	The retention period of API audit data in the database. Default: 365 . Unit: day.	365	(0,+∞)
zwatch.alarm.retention. duration	The retention period of resource alarm messages in the database. Default: 90. Unit: day.	90	(0,+∞)
zwatch.event.retention. duration	The retention period of event alarm messages in the database. Default: 90. Unit: day.	90	(0,+∞)
zwatch.alarm.retention. threshold	The maximum number of resource alarm messages retained in the database. Default: -1. This value	-1	[-1,+∞)

Name	Description	Default Value	Valid Value
	indicates that the number of resource alarm messages retained in the database is not limited.		
zwatch.event.retention.threshold	The maximum number of event alarm messages retained in the database. Default: -1. This value indicates that the number of event alarm messages retained in the database is not limited.	-1	[-1, +∞)

8.5 Advanced Settings

8.5.1 Overview

Advanced settings allow you to make fine-grained configurations for multiple resource attributes, and are updated without rebooting your management nodes. Once the configurations are made, corresponding resource attributes will take effect globally. If any advanced setting is not made, the default values of the global settings will be used.

8.5.2 Inventory

Resource Configuration Inventory

Name	Description	Optional	Valid Value	Starting Version
name	The name. For more information, see Resource Property .			3.4.0
description	The description. For more information, see Resource Property .	Yes		3.4.0

Name	Description	Optional	Valid Value	Starting Version
category	The category.			3.4.0
value	The value.	Yes		3.4.0
createDate	The creation date. For more information, see Resource Property .			3.4.0
groupBy				3.4.0
lastOpDate	The last operation date. For more information, see Resource Property .			3.4.0
resourceType	The resource type.			3.4.0
resourceUuid				3.4.0
uuid	The UUID. For more information, see Resource Property .			3.4.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.4.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.4.0

8.5.3 Operations

8.5.3.1 GetResourceConfig

Obtains an advanced setting. For example,

```
GetResourceConfig category=host name=test resourceUuid=46597de31e
ac41539c4e6eda52885769
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
category	The setting category.			3.4.0
name	The setting name.			3.4.0
resourceUuid	The resource UUID.			3.4.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.4.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.4.0
timeout		Yes		

8.5.3.2 GetResourceBindableConfig

Obtains a configurable advanced setting. For example,

```
GetResourceBindableConfig
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
category	The setting category.	Yes		3.4.0
userTags	The user tags. For more	Yes		3.4.0

Name	Description	Optional	Valid Value	Starting Version
	information, see CreateUserTag .			
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.4.0
timeout		Yes		

8.5.3.3 DeleteResourceConfig

Deletes an advanced setting. For example,

```
DeleteResourceConfig category=host name=test resourceUuid=46597de31e
ac41539c4e6eda52885769
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
category	The setting category.			3.4.0
name	The setting name.			3.4.0
resourceUuid	The resource UUID.			3.4.0
deleteMode		Yes		3.4.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.4.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.4.0
timeout		Yes		

8.5.3.4 QueryResourceConfig

Queries an advanced setting. For example,

```
QueryResourceConfig
```

Primitive Fields of Query

See [Resource Configuration Inventory](#).

8.5.3.5 UpdateResourceConfig

Updates an advanced setting. For example,

```
UpdateResourceConfig category=host name=test resourceUuid=435a7c71c8  
2b4b0b971f4674ab346822 value=10
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
category	The setting category.			3.4.0
name	The setting name.			3.4.0
resourceUuid	The resource UUID.			3.4.0
value	The setting value.			3.4.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.4.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.4.0
timeout		Yes		

8.5.4 Tags

You can create a user tag on an advanced setting by using `CreateUserTag resourceType=ResourceConfigVO`. For example,

```
CreateUserTag resourceType=ResourceConfigVO tag=Test1 \
```

```
resourceUuid=3fd25b9e5b87423bba5612a45c1f5ecc
```

8.5.5 Entries

8.5.5.1 Cluster

Name	Description	Default Value	Valid Value
zstack.experimental.repo	Configures whether to enable ZStack Cloud experimental repositories for the cluster.	false	<ul style="list-style-type: none"> • true • false

8.5.5.2 drs

Name	Description	Default	Valid Value
drs.enable	Specifies whether to enable dynamic resource scheduling.	false	<ul style="list-style-type: none"> • true • false

8.5.5.3 Host

Name	Description	Default Value	Valid Value
cpu.overProvisioning.ratio	Provisions the vCPU number for the VM instance. vCPU formula: PhysicalCP UTotalthreads X CPUOverprovisioningratio = DistributablevCPUNumber.	10	1-1000

8.5.5.4 KVM

Name	Description	Default Value	Valid Value
reservedMemory	The reserved memories on all KVM hosts.	1G	≥ 0
vm.cpuMode	For cluster with x86_64 CPU architecture:	<ul style="list-style-type: none"> • For cluster with x86_64 CPU architecture: None • None • a custom CPU model • host-model 	

Name	Description	Default Value	Valid Value
	<ul style="list-style-type: none"> Specifies whether to select the same CPU model as the host for VM instances in the cluster. Default: none. Valid values : none, host-model , host-passthrough, and a specified CPU model. If you select none, the VM CPU model is consistent with that configured in the global setting. If you specify a custom CPU model , the VM instances in the cluster share the specified CPU model. If you select host -model, the CPU model of the VM instances is the same as that of the host. If you select host -passthrough, the CPU model and features of the VM instance in the cluster are the same as the CPU model and features of the hosts in the cluster. 	<ul style="list-style-type: none"> For cluster with aarch64 CPU architecture: host-passthrough For cluster with mips64el CPU architecture: a custom CPU model 	<ul style="list-style-type: none"> host-passthrough



Note:

Name	Description	Default Value	Valid Value
	<ul style="list-style-type: none"> If you select host-model, the CPU of the VM instance may not support the extended page table extension, huge page, and virtualization features. If you select host-passthrough, the VM instance allows for virtualization. However, if you migrate the VM instance to a host whose CPU model is different from the current host, the migration may fail. In addition, the CPU utilization of the VM instance measured within the instance may differ from the CPU utilization measured from the host. If you specifically set the CPU model of an individual VM instance to host-model or host-passthrough, the VM CPU model configured for the cluster does not 		

Name	Description	Default Value	Valid Value
	<p>take effect on the VM instance.</p> <ul style="list-style-type: none"> If you modify the CPU model, you need to restart the VM instance to make the modification take effect. <p>For cluster with aarch64 CPU architecture: You can select only host-passthrough. The CPU model and features of the VM instance in the cluster are the same as the CPU model and features of the hosts in the cluster.</p> <p>For cluster with mips64el CPU architecture: You can specify a custom CPU model. If you specify a custom CPU model , VM instances in the cluster share the specified CPU model.</p>		

8.5.5.5 localstorage

Name	Description	Default	Valid Value
qcow2.allocation	The preallocation policy of LocalStorage storage space for volumes.	none	<ul style="list-style-type: none"> none metadata falloc full

8.5.5.6 nfsPrimaryStorage

Name	Description	Default	Valid Value
qcow2.allocation	The policy used to allocate NFS primary storage space for volumes.	none	<ul style="list-style-type: none"> • none • metadata • falloc • full

8.5.5.7 Premium Cluster

Name	Description	Default Value	Valid Value
hugepage.enable	<p>Specifies whether to enable hugepages for a cluster. Default: false. If set to true, hugepages is enabled for all hosts in the cluster, with a size of 2 MB for each page. In addition, hugepage space is allocated to VM instances.</p> <div style="background-color: #e0e0e0; padding: 10px;"> <p>Note:</p> <ul style="list-style-type: none"> • Before you enable hugepages for a cluster, make sure that all hosts in the cluster are in maintenance mode.  <p>If you enable or disable hugepages for a cluster, you need to restart the hosts in the cluster for the change to take effect.</p> </div>	false	<ul style="list-style-type: none"> • true • false

Name	Description	Default Value	Valid Value
	<ul style="list-style-type: none"> If hugepages is enabled for a cluster and you modify the memory of a host in the cluster, you need to re-enable hugepages and restart the host to make the hugepages feature take effect. If you enable hugepages for a cluster and the reserved memory size of a host in the cluster is smaller than 4 GB, the reserved memory size of the host is automatically increased to 4 GB. In addition, the rest of the memory in the host is allocated to hugepage memory. Hugepage memory can only be used by VM instances. You need to set a reasonable reserved memory size for hosts. A too-small reserved memory may cause 		

Name	Description	Default Value	Valid Value
	system service exceptions of hosts. We recommend that you set the reserved memory size to over 16 GB.		
hugepage.size	The size of each page for each host after hugepages is enabled for a cluster. Default: 2 MB.	2	(0, +∞)
network.ovsdpdk	Specifies whether to enable network acceleration support for a cluster. Default: false.	false	<ul style="list-style-type: none"> • true • false

8.5.5.8 sharedblock

Name	Description	Default	Valid Value
qcow2.allocation	The policy used to allocate Shared Block primary storage space for volumes.	none	<ul style="list-style-type: none"> • none • metadata
device.allocate.strategy	<ul style="list-style-type: none"> • If you select maxFreeSize, when you create a volume or snapshot , the SharedBlock LUN that has the the most available space is distributed to the volume or snapshot. • If you select minLvCounts, when you create a volume or snapshot 	none	<ul style="list-style-type: none"> • none • minLvCounts • maxFreeSize

Name	Description	Default	Valid Value
	<p>, the SharedBlock LUN that has the smallest total number of volumes and snapshots and has sufficient available space is distributed to the volume or snapshot.</p> <ul style="list-style-type: none"> • If you select none, when you create a volume or snapshot , a SharedBlock LUN is distributed to the volume or snapshot based on the drive letter of the LUNs. If the first LUN does not have sufficient space to store the volume or snapshot , the second LUN that has sufficient space is used to store the volume or snapshot. • The policy used to distribute a SharedBlock LUN to a volume and snapshot . Valid values: none (default), minLvCounts, and maxFreeSize. • If you have already set the LUN distribution policy specifically for a SharedBlock 		

Name	Description	Default	Valid Value
	primary storage, this global setting does not take effect on the primary storage.		

8.5.5.9 sharedMountPointPrimaryStorage

Name	Description	Default	Valid Value
qcow2.allocation	The policy used to allocate SMP primary storage space for volumes.	none	<ul style="list-style-type: none"> • none • metadata • falloc • full

8.5.5.10 System (Mevoco)

Name	Description	Default Value	Valid Value
overProvisioning.primaryStorage	Provisions the virtual memory capacity for the VM instance. The memory capacity formula: PhysicalMemoryCapacity X MemoryOverprovisioningRatio = DistributableMemoryCapacity.	1.0	>0
overProvisioning.memory	Provisions the available space of the virtual primary storage for the VM instance. The primary storage space formula: PhysicalAvailablePrimaryStorageSpace X PrimaryStorageSuperResolution = DistributableAvailablePrimaryStorageSpace.	1.0	>0

8.5.5.11 Instance (VM)

Name	Description	Default Value	Valid Value
numa	The Instance Offering Online Modification value, which allows you to modify the VM CPU and the memory. It's not recommended to modify the VM CPU and the memory for Windows VM instance online in a production environment.	false	<ul style="list-style-type: none"> • true • false
emulateHyperV	Sets whether to emulate Hyper-V.	false	<ul style="list-style-type: none"> • true • false
kvmHiddenState	Sets whether to hide KVM hypervisor signature to Windows guest. If this parameter is true, when the VM instance reboots, <hidden state ='on'> is added to <kvm> for the XML configuration file of the VM instance, and vice versa. Note that the NVIDIA graphics card cluster will enable the switch of the parameter.	false	<ul style="list-style-type: none"> • true • false

8.6 Template

8.6.1 Overview

ZStack Cloud allows you to perform scenario-based encapsulations for global settings. You can configure a global setting as needed with just one click, which helps to improve the O&M efficiency.

The following three types of scenario-based encapsulation templates are supported:

- Recommended configuration for production
- HA quick recovery
- VM performance optimization

8.6.2 Inventory

Global Configuration Template Inventory

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			3.6.0
name	The name. For more information, see Resource Property .			3.6.0
description	The description. For more information, see Resource Property .	Yes		3.6.0
type	The template type .			3.6.0
groupBy	Groups rows into subgroups based on values of columns or expressions. This field is equivalent to the Group By clause in MySQL , such as groupBy =type.	Yes		3.6.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.6.0
systemTags	The system tags. For more	Yes		3.6.0

Name	Description	Optional	Valid Value	Starting Version
	information, see CreateSystemTag .			

Sample

```
{
  "inventories": [
    {
      "uuid": "reservedCapacity",
      "name": "scenes1",
      "type": "System",
      "description": "For scenes1"
    }
  ]
}
```

Template Configuration Inventory

Name	Description	Optional	Valid Value	Starting Version
category	The configuration type.			3.6.0
name	The name. For more information, see Resource Property .			3.6.0
defaultValue	The default value of the template.			3.6.0
templateUuid	The template UUID.			3.6.0
value	The template value.			3.6.0
groupBy	Groups rows into subgroups based on values of columns or expressions. This field is equivalent to the Group By clause in MySQL, such as groupBy =type.	Yes		3.6.0

Name	Description	Optional	Valid Value	Starting Version
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.6.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.6.0

Sample

```
{
  "inventories": [
    {
      "templateUuid": "000011122223333",
      "category": "backupStorage",
      "name": "reservedCapacity",
      "defaultValue": "1G",
      "value": "2G"
    }
  ]
}
```

8.6.3 Operations

8.6.3.1 ApplyTemplateConfig

Uses a template setting. For example,

```
ApplyTemplateConfig templateUuid=b86c9016b4f24953a9edefb53ca0678c
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
templateUuid	The template UUID.			3.6.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.6.0
systemTags	The system tags. For more information, see	Yes		3.6.0

Name	Description	Optional	Valid Value	Starting Version
	<i>CreateSystemTag.</i>			
timeout		Yes		

8.6.3.2 QueryGlobalConfigTemplate

Queries all the template information. For example,

```
QueryGlobalConfigTemplate
```

Primitive Fields of Query

See [Global Configuration Template Inventory](#).

8.6.3.3 QueryTemplateConfig

Queries a template setting. For example,

```
QueryTemplateConfig
```

Primitive Fields of Query

See [Template Configuration Inventory](#).

8.6.3.4 UpdateTemplateConfig

Updates a template setting. For example,

```
UpdateTemplateConfig templateUuid=000011112222 category=vm name=emulateHyperV value=true
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
templateUuid	The template UUID.			3.6.0
category	The corresponding global setting category.			3.6.0
name	The corresponding global setting name.			3.6.0

Name	Description	Optional	Valid Value	Starting Version
value	The template value.			3.6.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.6.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.6.0
timeout		Yes		

8.6.3.5 ResetTemplateConfig

Resets a template setting. For example,

```
ResetTemplateConfig templateUuid=b86c9016b4f24953a9edefb53ca0678c
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
templateUuid	The template UUID.			3.6.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.6.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.6.0
timeout		Yes		

8.6.4 Tags

You can create a user tag on a global setting by using `CreateUserTag ResourceType=GlobalConfigVO`. For example,

```
CreateUserTag ResourceType=GlobalConfigVO tag=Test1 \
resourceUuid=3fd25b9e5b87423bba5612a45c1f5ecc
```

9 System Global Type

9.1 Management Node

9.1.1 Overview

Management nodes are used to set up ZStack Cloud services, such as hosts and VM instances.

You can set up a single management node environment or multiple management node environment as needed. You can also log in to a management node through the UI server to manage your cloud in a visualized interface.

9.1.2 Inventory

Management Node Inventory

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			0.6
hostName	The hostname.			0.6
joinDate	The joining date.			0.6
heartBeat	The heartbeat time.			
groupBy	Groups rows into subgroups based on values of columns or expressions. This field is equivalent to the Group By clause in MySQL, such as <code>groupBy =type</code> .	Yes		1.9
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
userTags	The user tags. For more information, see CreateUserTag .	Yes		0.6

9.1.3 Operations

9.1.3.1 QueryManagementNode

Queries a management node. For example,

```
QueryManagementNode hostName=10.0.166.75
```

Primitive Fields of Query

See [Management Node Inventory](#).

9.1.3.2 GetVersion

Obtains the current version. Sample response:

```
{
  "success": true,
  "version": "2.2.2"
}
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
userTags	The user tags. For more information, see CreateUserTag .	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		0.6
timeout		Yes		

9.1.3.3 GetCurrentTime

Obtains the current time. Sample response:

```
{
```

```

    "currentTime": {
        "MillionSeconds": 1510548249056,
        "Seconds": 1510548249
    },
    "success": true
}

```

Parameters

Name	Description	Optional	Valid Value	Starting Version
userTags	The user tags. For more information, see CreateUserTag .	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		0.6
timeout		Yes		

9.1.3.4 GetPlatformTimeZone

Retrieves the current time zone information of the management node. for example,

```

{
    "timezone": "Asia/Shanghai",
    "offset": "+8:00"
}

```

Parameters

Name	Description	Optional	Valid Value	Starting Version
userTags	The user tags. For more information, see CreateUserTag .	Yes		4.1.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		4.1.0
timeout		Yes		

9.1.3.5 IsReadyToGo

Checks whether a management node can work properly. For example,

```
IsReadyToGo managementNodeId=a1b641b3cd084166a5cc79c8c5e0174c
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
management NodeId		Yes		0.6
userTags	The user tags. For more information, see CreateUserTag .	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		0.6
timeout		Yes		

9.1.3.6 GetManagementNodeOS

Retrieves the information of the management node OS. For example,

```
GetManagementNodeOS
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
userTags	The user tags. For more information, see CreateUserTag .	Yes		4.1.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		4.1.0
timeout		Yes		

9.1.3.7 GetManagementNodeArch

Retrieves the CPU architecture of the management node. For example,

```
GetManagementNodeArch
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
userTags	The user tags. For more information, see CreateUserTag .	Yes		4.1.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		4.1.0
timeout		Yes		

9.1.4 Tags

You can create a user tag on a management node by using `CreateUserTag resourceType=ManagementNodeVO`. For example,

```
CreateUserTag resourceType=ManagementNodeVO tag=Test1 \
resourceUuid=3fd25b9e5b87423bba5612a45c1f5ecc
```

9.2 Progress Bar

9.2.1 Overview

When you manage your tasks, the process of the tasks will be displayed in forms of pictures to indicate your task progress in real time.

9.2.2 Inventory

Properties

Name	Description	Optional	Valid Value	Starting Version
apild	The API ID corresponded by the task.			1.11

Name	Description	Optional	Valid Value	Starting Version
all	Specifies to obtain all the progress information.	Yes	<ul style="list-style-type: none"> • true • false 	1.11
systemTags	The user tags. For more information, see CreateUserTag .	Yes		1.11
userTags	The system tags. For more information, see CreateSystemTag .	Yes		1.11

9.2.3 Operations

9.2.3.1 GetTaskProgress

Obtains a task progress. For example,

```
GetTaskProgress apilid=6fa0b72b3f801867952e3f55b43c3698
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
apilid	The API ID corresponded by the task.			1.11
all	Specifies to obtain all the progress information.			1.11
userTags	The user tags. For more information, see CreateUserTag .	Yes		1.11
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		1.11

Name	Description	Optional	Valid Value	Starting Version
	<i>CreateSystemTag.</i>			
timeout		Yes		

9.2.4 Tags

You can create a user tag on a progress bar by using `CreateUserTag resourceType=TaskProgressVO`. For example,

```
CreateUserTag resourceType=TaskProgressVO tag=Test1 \
resourceUuid=3fd25b9e5b87423bba5612a45c1f5ecc
```

9.3 Available Resource Query

9.3.1 Overview

You can query available resources by zone, cluster, or host.

9.3.2 Inventory

Properties

Name	Description	Optional	Valid Value	Starting Version
zoneUuids	The zone UUID list.	Yes		0.6
clusterUuids	The cluster UUID list used for attaching the network and the storage.	Yes		0.6
hostUuids	The host UUID list used for adding and deleting the host.	Yes		0.6
all	When you use this parameter, set it to true, or set at least one of the zone UUID, cluster UUID, or host UUID.	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
userTags	The user tags. For more information, see CreateUserTag .	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		0.6

9.3.3 Operations

9.3.3.1 GetCpuMemoryCapacity

Obtains a CPU and a memory capacity. For example,

```
GetCpuMemoryCapacity zoneUuids=bd73a3d1e6784d49897be5ae785305d8
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
zoneUuids	The zone UUID.	Yes		0.6
clusterUuids	The cluster UUID list used for attaching the network and the storage.	Yes		0.6
hostUuids	The host UUID list used for adding and deleting the host.	Yes		0.6
all	When you use this parameter, set it to true, or set at least one of the zone UUID, cluster UUID, or host UUID.	Yes		0.6
userTags	The user tags. For more	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
	information, see CreateUserTag .			
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		0.6
timeout		Yes		

9.4 Garbage Collection

9.4.1 Overview

You can use the Garbage Collection feature to collect the garbage data that cannot be automatically cleansed are generated.

9.4.2 Inventory

Properties

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			0.6
name	The name. For more information, see Resource Property .			0.6
createDate	The creation date. For more information, see Resource Property .			0.6
lastOpDate	The last operation date. For more information, see Resource Property .			0.6

Name	Description	Optional	Valid Value	Starting Version
managementNodeUuid				0.6
context				0.6
runnerClass				0.6
status				0.6
type	The reserved field .			0.6
userTags	The user tags. For more information, see CreateUserTag .	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		0.6

9.4.3 Operations

9.4.3.1 TriggerGCJob

Triggers a garbage collection job. For example,

```
TriggerGCJob uuid=838bd276c5cf4320b8163de473f98a45
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			0.6
userTags	The user tags. For more information, see CreateUserTag .	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
timeout		Yes		

9.4.3.2 DeleteGCJob

Deletes a garbage collection job. For example,

```
DeleteGCJob uuid=838bd276c5cf4320b8163de473f98a45
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			0.6
userTags	The user tags. For more information, see CreateUserTag .	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		0.6
timeout		Yes		

9.4.3.3 QueryGCJob

Queries a garbage collection job. For example,

```
QueryGCJob uuid=1b92f2b5c8f14f599b41ce0553ecc0b7
```

Primitive Fields of Query

See [Garbage Collection Job Inventory](#).

9.4.4 Tags

You can create a user tag on a garbage collection by using `CreateUserTag resourceType=GarbageCollectorVO`. For example,

```
CreateUserTag resourceType=GarbageCollectorVO tag=Test1 \
```

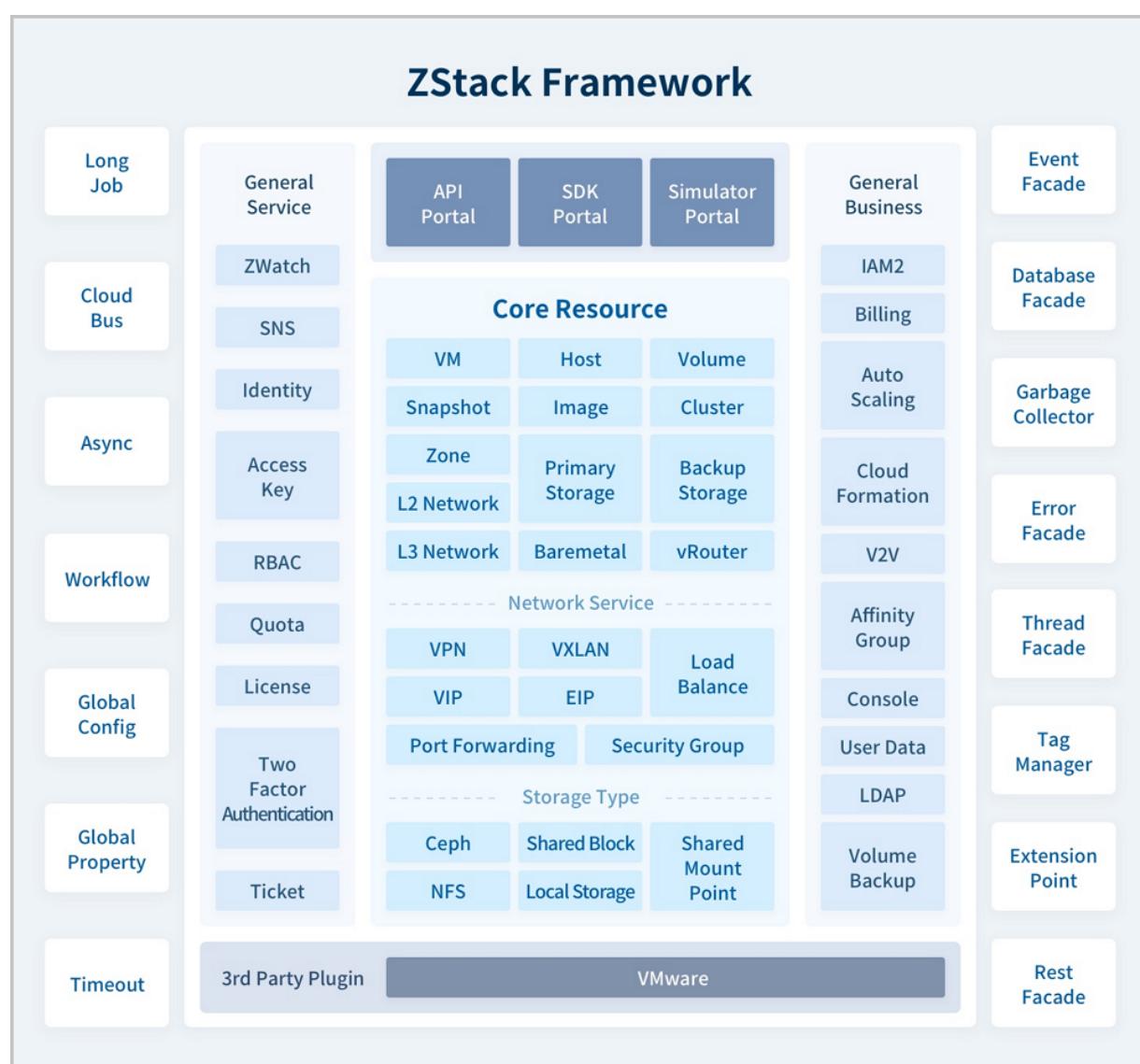
```
resourceUuid=3fd25b9e5b87423bba5612a45c1f5ecc
```

9.5 License

9.5.1 Overview

ZStack Cloud is the next-generation, open-source IaaS software designed mainly for future-oriented, smart data centers. Also, it manipulates multiple data center resources of compute, storage, and network by providing flexible and comprehensive APIs. You can quickly create your own smart cloud data center by using ZStack Cloud, and set up flexible cloud usage scenarios, such as VDI, PaaS, and SaaS, on the stable ZStack Cloud.

Figure 9-1: ZStack Cloud Framework



ZStack Cloud provides multiple **Authorization Protocols**, including Base License and Plus License.

- **Base License**

- Provides key basic cloud features, and meets your mainstream business needs.
- Mainly includes License ZStack Cloud Enterprise and License ZStack Cloud Hybrid.

- **Plus License**

- Provides add-on licensed features or augmented features, and meets your specific business needs.
- Mainly includes VMware management module, migration service module, enterprise management module, backup module, BareMetal management module, ARM64 server management module, and 5x8 (7x24) after-sales service module.

9.5.2 Inventory

Properties

Name	Description	Optional	Valid Value	Starting Version
userTags	The user tags. For more information, see CreateUserTag .	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		0.6

9.5.3 Operations

9.5.3.1 GetLicenseInfo

Obtains the license information. Sample response:

```
{
  "inventory": {
    "licenseType": "Free",
    "licenseRequest": "example request",
    "issuedDate": "2017-01-19 14:31:06",
    "user": "example",
    "hostNum": 10.0,
    "expired": true,
    "managementNodeUuid": "00898b3538e53e70bb7521e54ff80276"
  },
  "additions": []
}
```

{}

Parameters

Name	Description	Optional	Valid Value	Starting Version
additionSession	The additional information. The value is a JSON-formatted string.	Yes		4.1.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		0.6
timeout		Yes		

9.5.3.2 GetLicenseRecords

Retrieves historic license authorization records. For example,

```
GetLicenseRecords limit=30
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
limit	The maximum number of records that can be retrieved. Default: 20. This parameter is similar to the limit parameter in MySQL.	Yes		4.1.0
start	The position to start a query. You need to set this parameter if you specify the limit	Yes		4.1.0

Name	Description	Optional	Valid Value	Starting Version
	parameter. This parameter is similar to the offset parameter in MySQL.			
replyWithCount	Specifies whether to return the number of records. If you set the value to true , the number of records are returned.	Yes		4.1.0
count	Specifies whether to count the number of records that meet the specified conditions. This parameter is similar to the count() function. If you set the value to true , the number of records that meet the specified conditions is calculated and returned.	Yes		4.1.0
sortBy	Specifies to start records by a key, for example sortBy=ip. You need to specify the sortDirection parameter if you specify this parameter. This parameter is similar to the sort	Yes		4.1.0

Name	Description	Optional	Valid Value	Starting Version
	by parameter in MySQL.			
sortDirection	The sort direction. You need to set this parameter if you specify the sortByParameter .	Yes		4.1.0
userTags	The user tags. For more information, see CreateUser Tag . The resource type is VmInstanceVO.	Yes		4.1.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		4.1.0
timeout		Yes		

9.5.3.3 GetLicenseCapabilities

Obtains a license capability. Sample response:

```
{
  "capabilities": {
    "addHost": "true",
    "clonevm": "true",
    "imagestore": "true",
    "ipsec": "true",
    "log": "true",
    "monitoring": "true",
    "overProvisioning": "true",
    "pciDevice": "true",
    "performanceMonitor": "true",
    "qos": "true",
    "setVmRootPassword": "true",
    "usbDevice": "true",
    "vipqos": "true",
    "vmware": "true",
    "vrouterRoute": "true"
  },
  "success": true
}
```

{}

Parameters

Name	Description	Optional	Valid Value	Starting Version
userTags	The user tags. For more information, see CreateUserTag .	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		0.6
timeout		Yes		

9.5.3.4 DeleteLicense

Deletes a license file. For example,

```
DeleteLicense managementNodeUuid=a1b641b3cd084166a5cc79c8c5e0174c
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid				0.6
managementNodeUuids	The management node UUID list.	Yes		0.6
userTags	The user tags. For more information, see CreateUserTag .	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		0.6
timeout		Yes		

9.5.3.5 ReloadLicense

Reloads a license. For example,

```
ReloadLicense managementNodeUuids=a1b641b3cd084166a5cc79c8c5e0174c
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
managementNodeUuids	The management node UUID list.	Yes		0.6
userTags	The user tags. For more information, see CreateUserTag .	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		0.6
timeout		Yes		

9.5.3.6 UpdateLicense

Updates the license information. For example,

```
UpdateLicense license=eyJwcm12YXRlSdE1...SlF5QkxSVmt0TFMwdExWeHVJbjA9In0= managementNodeUuid=a1b641b3cd084166a5cc79c8c5e0174c
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
license	The license content encoded in Base64 format.			0.6
additionSession	The additional information. The value is a JSON-formatted string.	Yes		4.1.0
managementNodeUuids	The management node UUID list.	Yes		0.6

Name	Description	Optional	Valid Value	Starting Version
userTags	The user tags. For more information, see CreateUserTag .	Yes		0.6
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		0.6
timeout		Yes		

9.6 Long Job

9.6.1 Overview

In a distributed system, for time-consuming tasks, ZStack Cloud uses the Flowchain technology to segment your business logic into multiple flows. In this way, the flows can be performed in sequence, which helps to avoid task failure led by API timeouts.

9.6.2 Inventory

Properties

Name	Description	Optional	Valid Value	Starting Version
uuid	The UUID. For more information, see Resource Property .			2.3
name	The name. For more information, see Resource Property .			2.3
description	The description. For more information, see Resource Property .	Yes		2.3
jobName	The job name.			2.3
jobData	The job data.			2.3

Name	Description	Optional	Valid Value	Starting Version
jobResult	The job result.			2.3
managementNodeUuid	The management node UUID.			2.3
apiId	The API ID used to associate with the task progress.			2.3
targetResourceUuid	The target resource UUID.			2.3
state	The job state.			2.3
groupBy				
createDate	The creation date. For more information, see Resource Property .			2.3
lastOpDate	The last operation date. For more information, see Resource Property .			2.3

Sample

```
{
    "apiId": "faf95996726e4381aa5226f912857338",
    "createDate": "Jan 30, 2018 3:56:43 PM",
    "jobData": "{ \"volumeUuid\": \"3d261d02dc2142eb9806750847d6a4fb\", \"srcPri
04e5aa031fc92e8ddff31\", \"type\": \"NFSTONFSVO
LUME\", \"vmInstanceUuid\": \"682c775b19f546f
6c27e8ff05
c4780bf6d2fa65700f22e\", \"userUuid\": \"36c27e8ff05c4780bf6d2fa65700f22e\", \"

            : -1, \"headers\": {}, \"id\": \"85fb934a7b8e40ab9d9a730c63429a
36\", \"createdTime\": 151729900
                \"jobName\": \"APIPrimaryStorageMigrateVolumeMsg\",
                \"jobResult\": \"Succeeded\",
                \"lastOpDate\": \"Jan 30, 2018 3:56:43 PM\",
                \"managementNodeUuid\": \"b44bfa17ef294a75824db6e455b183fa\",
                \"name\": \"APIPrimaryStorageMigrateVolumeMsg\",
                \"state\": \"Succeeded\",
                \"uuid\": \"b7e65467cff4bcd9d7ca09ec77d35e8\""
}
```

{}

9.6.3 Operations

9.6.3.1 SubmitLongJob

Submits a long job. For example,

```
SubmitLongJob jobData={volumeUuid:3d261d02dc2142eb9806750847d6a4fb,
dstPrimaryStorageUuid:3024617c6eee45e0845430fef8b8a7f3} \
jobName=APIPrimaryStorageMigrateVolumeMsg
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
name	The resource name.	Yes		2.3
description	The detailed description of the resource.	Yes		2.3
jobName	The job name.			2.3
jobData	The job data.			2.3
resourceUuid	The resource UUID.	Yes		2.3
targetResourceUuid		Yes		2.3
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.3
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.3
timeout		Yes		

9.6.3.2 UpdateLongJob

Updates a long job. For example,

```
UpdateLongJob uuid=dee3e1e3706f3e52a2cb9a47850508e7
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The resource UUID.			3.9.0
name	The resource name.	Yes		3.9.0
description	The detailed description of the resource.	Yes		3.9.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.9.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.9.0
timeout		Yes		

9.6.3.3 DeleteLongJob

Deletes a long job. For example,

```
DeleteLongJob uuid=7e42d390839e4fb2afe94e032de2f19d
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
uuid	The job UUID.			2.3
userTags	The user tags. For more information, see CreateUserTag .	Yes		2.3

Name	Description	Optional	Valid Value	Starting Version
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		2.3
timeout		Yes		

9.6.3.4 QueryLongJob

Queries a long job. For example,

```
QueryLongJob jobName=APIPrimaryStorageMigrateVolumeMsg
```

Primitive Fields of Query

See [Long Job Inventory](#).

9.6.4 Tags

You can create a user tag on a long job by using `CreateUserTag resourceType=LongJobVO`. For example,

```
CreateUserTag resourceType=LongJobVO tag=Test1 \
resourceUuid=3fd25b9e5b87423bba5612a45c1f5ecc
```

9.7 System Error Code

9.7.1 Overview

A system error code is the error information sent by the backend API when an operation fails.

9.7.2 Operations

9.7.2.1 GetElaborations

Checks a system error code. For example,

```
GetElaborations
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
category	The error code category.	Yes		3.3.0

Name	Description	Optional	Valid Value	Starting Version
regex	The error code keyword.	Yes		3.3.0
code	The error code , which is used with the error code category.	Yes		3.3.0
userTags	The user tags. For more information, see CreateUserTag .	Yes		3.3.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		3.3.0
timeout		Yes		

9.8 Search

9.8.1 Operations

9.8.1.1 RefreshSearchIndexes

Refreshes search indexes. For example,

```
RefreshSearchIndexes
```

Parameters

Name	Description	Optional	Valid Value	Starting Version
userTags	The user tags. For more information, see CreateUserTag .	Yes		4.0.0
systemTags	The system tags. For more information, see CreateSystemTag .	Yes		4.0.0
timeout		Yes		

10 CLI Best Practice

10.1 ZStack Cloud Setup in CLI

Context

This topic describes how to set up ZStack by using zstack-cli.

In this scenario, you will set up ZStack with a local primary storage, an ImageStore backup storage, a vRouter network, and a public network (which also acts as a management network).

Basic procedure:

1. Initialize ZStack by using zstack-cli.
2. Create a vRouter network by using zstack-cli.
3. Create a VM instance by using zstack-cli.
4. Specify parameters, such as the console password, the HA settings, and the volumes, by using zstack-cli.
5. Create an elastic IP address (EIP) and verify its function by using zstack-cli.
6. Create a port forwarding and verify its function by using zstack-cli.

Procedure

1. Create a zone.

```
admin >>>CreateZone name=Zone-1
{
    "inventory": {
        "createDate": "Nov 24, 2017 4:20:33 PM",
        "lastOpDate": "Nov 24, 2017 4:20:33 PM",
        "name": "Zone-1",
        "state": "Enabled",
        "type": "zstack",
        "uuid": "af67d572c1104768965120d19ed4c19a"
    },
    "success": true
}
```

2. Create a cluster in the zone.

```
admin >>>CreateCluster name=Cluster-1 zoneUuid=af67d572c11047689651
20d19ed4c19a hypervisorType=KVM
{
    "inventory": {
        "createDate": "Nov 24, 2017 4:21:34 PM",
        "hypervisorType": "KVM",
        "lastOpDate": "Nov 24, 2017 4:21:34 PM",
        "name": "Cluster-1",
        "state": "Enabled",
        "type": "zstack",
```

```

        "uuid": "7cfa5479e92d4e9095a8010eda78fa55",
        "zoneUuid": "af67d572c1104768965120d19ed4c19a"
    },
    "success": true
}

```

3. Add a host in the cluster.

```

admin >>>AddKVMHost name=Host-1 sshPort=22 username=root password=
password clusterUuid=7cfa5479e92d4e9095a8010eda78fa55 managementIp=
10.0.119.61
{
    "inventory": {
        "availableCpuCapacity": 40,
        "availableMemoryCapacity": 8186286080,
        "clusterUuid": "7cfa5479e92d4e9095a8010eda78fa55",
        "cpuNum": 4,
        "cpu.Sockets": 1,
        "createDate": "Nov 24, 2017 4:23:15 PM",
        "hypervisorType": "KVM",
        "lastOpDate": "Nov 24, 2017 4:23:40 PM",
        "managementIp": "10.0.119.61",
        "name": "Host-1",
        "sshPort": 22,
        "state": "Enabled",
        "status": "Connected",
        "totalCpuCapacity": 40,
        "totalMemoryCapacity": 8186286080,
        "username": "root",
        "uuid": "6dd772cadd314b3d93d2150fc70d112c",
        "zoneUuid": "af67d572c1104768965120d19ed4c19a"
    },
    "success": true
}

```

4. Add a local primary storage in the zone.

```

admin >>>AddLocalPrimaryStorage name=PS-1 url=/Cloud_ps zoneUuid=
af67d572c1104768965120d19ed4c19a
{
    "inventory": {
        "attachedClusterUuids": [],
        "availableCapacity": 0,
        "availablePhysicalCapacity": 0,
        "createDate": "Nov 24, 2017 4:25:02 PM",
        "lastOpDate": "Nov 24, 2017 4:25:02 PM",
        "mountPath": "/Cloud_ps",
        "name": "PS-1",
        "state": "Enabled",
        "status": "Connected",
        "totalCapacity": 0,
        "totalPhysicalCapacity": 0,
        "type": "LocalStorage",
        "url": "/Cloud_ps",
        "uuid": "f0b8633d067343598faf0c329be1834f",
        "zoneUuid": "af67d572c1104768965120d19ed4c19a"
    },
    "success": true
}

```

```
}
```

Attach the local primary storage to the cluster.

```
admin >>>AttachPrimaryStorageToCluster primaryStorageUuid=f0b8633d06
7343598faf0c329be1834f clusterUuid=7cfa5479e92d4e9095a8010eda78fa55
{
    "inventory": {
        "attachedClusterUuids": [
            "7cfa5479e92d4e9095a8010eda78fa55"
        ],
        "availableCapacity": 78236143616,
        "availablePhysicalCapacity": 78236143616,
        "createDate": "Nov 24, 2017 4:25:02 PM",
        "lastOpDate": "Nov 24, 2017 4:25:02 PM",
        "mountPath": "/Cloud_ps",
        "name": "PS-1",
        "state": "Enabled",
        "status": "Connected",
        "systemUsedCapacity": 20059684864,
        "totalCapacity": 98295828480,
        "totalPhysicalCapacity": 98295828480,
        "type": "LocalStorage",
        "url": "/Cloud_ps",
        "uuid": "f0b8633d067343598faf0c329be1834f",
        "zoneUuid": "af67d572c1104768965120d19ed4c19a"
    },
    "success": true
}
```

5. Add an ImageStore backup storage.

```
admin >>>AddImageStoreBackupStorage name=BS-1 url=/Cloud_bs username
=root password=password hostname=10.0.119.61
{
    "inventory": {
        "attachedZoneUuids": [],
        "availableCapacity": 78234513408,
        "createDate": "Nov 24, 2017 4:28:27 PM",
        "hostname": "10.0.119.61",
        "lastOpDate": "Nov 24, 2017 4:28:34 PM",
        "name": "BS-1",
        "sshPort": 22,
        "state": "Enabled",
        "status": "Connected",
        "totalCapacity": 98295828480,
        "type": "ImageStoreBackupStorage",
        "url": "/Cloud_bs",
        "username": "root",
        "uuid": "d2b7899877f24a07bd846036f18c95c8"
    },
    "success": true
}
```

Attach the ImageStore backup storage to the zone.

```
admin >>>AttachBackupStorageToZone backupStorageUuid=d2b7899877
f24a07bd846036f18c95c8 zoneUuid=af67d572c1104768965120d19ed4c19a
{
    "inventory": {
```

```

    "attachedZoneUuids": [
        "af67d572c1104768965120d19ed4c19a"
    ],
    "availableCapacity": 78234513408,
    "createDate": "Nov 24, 2017 4:28:27 PM",
    "hostname": "10.0.119.61",
    "lastOpDate": "Nov 24, 2017 4:28:34 PM",
    "name": "BS-1",
    "sshPort": 22,
    "state": "Enabled",
    "status": "Connected",
    "totalCapacity": 98295828480,
    "type": "ImageStoreBackupStorage",
    "url": "/Cloud_bs",
    "username": "root",
    "uuid": "d2b7899877f24a07bd846036f18c95c8"
},
"success": true
}

```

6. Create an instance offering.

```

admin >>>CreateInstanceOffering name=InstanceOffering cpuNum=1
memorySize=1073741824
{
    "inventory": {
        "allocatorStrategy": "LeastVmPreferredHostAllocatorStrategy"
    },
    "cpuNum": 1,
    "cpuSpeed": 0,
    "createDate": "Nov 24, 2017 4:30:22 PM",
    "lastOpDate": "Nov 24, 2017 4:30:22 PM",
    "memorySize": 1073741824,
    "name": "InstanceOffering",
    "sortKey": 0,
    "state": "Enabled",
    "type": "UserVm",
    "uuid": "ed3de28193e343b5ab27cb425318ff21"
},
"success": true
}

```

7. Add an image of a VM instance.

```

admin >>>AddImage name=Image-1 url=http://192.168.200.100/mirror
/diskimages/centos7.2-test-8G.qcow2 backupStorageUuids=d2b7899877
f24a07bd846036f18c95c8 format=qcow2 platform=Linux
{
    "inventory": {
        "actualSize": 2618611200,
        "backupStorageRefs": [
            {
                "backupStorageUuid": "d2b7899877f24a07bd846036f18c95
c8",
                "createDate": "Nov 24, 2017 4:32:55 PM",
                "imageUuid": "0d38fc48c0af4341bec4e19a35e7b55b",
                "installPath": "zstore://0d38fc48c0af4341bec4
e19a35e7b55b/d27dcabb17adcd9c16f1ab6d1e705ca8a7bbdb89",
                "lastOpDate": "Nov 24, 2017 4:32:55 PM",
                "status": "Ready"
            }
        ]
    }
}

```

```

        ],
        "createDate": "Nov 24, 2017 4:32:55 PM",
        "format": "qcow2",
        "lastOpDate": "Nov 24, 2017 4:35:23 PM",
        "md5Sum": "7905bd85897480da05ed619a7d3a468b86ece47b
d31c9d5ff2baa21bee29388e",
        "mediaType": "RootVolumeTemplate",
        "name": "Image-1",
        "platform": "Linux",
        "size": 8589934592,
        "state": "Enabled",
        "status": "Ready",
        "system": false,
        "type": "zstack",
        "url": "http://192.168.200.100/mirror/diskimages/centos7.2-
test-8G.qcow2",
        "uuid": "0d38fc48c0af4341bec4e19a35e7b55b"
    },
    "success": true
}

```

Add an image of a vRouter.

```

admin >>>AddImage name=VR url=http://192.168.200.100/mirror/
diskimages/vrouter-latest.qcow2 backupStorageUuids=d2b7899877
f24a07bd846036f18c95c8 format=qcow2 platform=Linux system=true
{
    "inventory": {
        "actualSize": 293641216,
        "backupStorageRefs": [
            {
                "backupStorageUuid": "d2b7899877f24a07bd846036f18c95
c8",
                "createDate": "Nov 24, 2017 4:37:58 PM",
                "imageUuid": "81df8288d9054448b3518573f805a6b7",
                "installPath": "zstore://81df8288d9054448b351
8573f805a6b7/6fe3929deelae47eeee48fee8d4696463e6c7b829",
                "lastOpDate": "Nov 24, 2017 4:37:58 PM",
                "status": "Ready"
            }
        ],
        "createDate": "Nov 24, 2017 4:37:57 PM",
        "format": "qcow2",
        "lastOpDate": "Nov 24, 2017 4:38:44 PM",
        "md5Sum": "2371972fe83831b2c196801c04cd5afa651226ba
3c3f872facd4e06c2a6aa6c5",
        "mediaType": "RootVolumeTemplate",
        "name": "VR",
        "platform": "Linux",
        "size": 8589934592,
        "state": "Enabled",
        "status": "Ready",
        "system": true,
        "type": "zstack",
        "url": "http://192.168.200.100/mirror/diskimages/zstack-
vrouter-latest.qcow2",
        "uuid": "81df8288d9054448b3518573f805a6b7"
    },
    "success": true
}

```

```
}
```

8. Create an L2 public network in the zone.

```
admin >>>CreateL2NoVlanNetwork physicalInterface=eth0 zoneUuid=af67d572c1104768965120d19ed4c19a name=L2-pub
{
    "inventory": {
        "attachedClusterUuids": [],
        "createDate": "Nov 24, 2017 4:40:01 PM",
        "lastOpDate": "Nov 24, 2017 4:40:01 PM",
        "name": "L2-pub",
        "physicalInterface": "eth0",
        "type": "L2NoVlanNetwork",
        "uuid": "18e6f9183ab74c43bf6f54f4cb9ac619",
        "zoneUuid": "af67d572c1104768965120d19ed4c19a"
    },
    "success": true
}
```

Attach the L2 public network to the cluster.

```
admin >>>AttachL2NetworkToCluster clusterUuid=7cfa5479e92d4e9095a8010eda78fa55 l2NetworkUuid=18e6f9183ab74c43bf6f54f4cb9ac619
{
    "inventory": {
        "attachedClusterUuids": [
            "7cfa5479e92d4e9095a8010eda78fa55"
        ],
        "createDate": "Nov 24, 2017 4:40:01 PM",
        "lastOpDate": "Nov 24, 2017 4:40:01 PM",
        "name": "L2-pub",
        "physicalInterface": "eth0",
        "type": "L2NoVlanNetwork",
        "uuid": "18e6f9183ab74c43bf6f54f4cb9ac619",
        "zoneUuid": "af67d572c1104768965120d19ed4c19a"
    },
    "success": true
}
```

9. Create an L2 private network in the zone.

```
admin >>>CreateL2VlanNetwork name=L2-pri vlan=2763 physicalInterface=eth0 zoneUuid=af67d572c1104768965120d19ed4c19a
{
    "inventory": {
        "attachedClusterUuids": [],
        "createDate": "Nov 24, 2017 4:42:08 PM",
        "lastOpDate": "Nov 24, 2017 4:42:08 PM",
        "name": "L2-pri",
        "physicalInterface": "eth0",
        "type": "L2VlanNetwork",
        "uuid": "81c73ae08d2240dd95e378967c213c2e",
        "vlan": 2763,
        "zoneUuid": "af67d572c1104768965120d19ed4c19a"
    },
    "success": true
}
```

```
}
```

Attach the L2 private network to the cluster.

```
admin >>>AttachL2NetworkToCluster clusterUuid=7cfa5479e92d4e9095a8
010eda78fa55 l2NetworkUuid=81c73ae08d2240dd95e378967c213c2e
{
    "inventory": {
        "attachedClusterUuids": [
            "7cfa5479e92d4e9095a8010eda78fa55"
        ],
        "createDate": "Nov 24, 2017 4:42:08 PM",
        "lastOpDate": "Nov 24, 2017 4:42:08 PM",
        "name": "L2-pri",
        "physicalInterface": "eth0",
        "type": "L2VlanNetwork",
        "uuid": "81c73ae08d2240dd95e378967c213c2e",
        "vlan": 2763,
        "zoneUuid": "af67d572c1104768965120d19ed4c19a"
    },
    "success": true
}
```

10.Create an L3 public network on the L2 public network.

```
admin >>>CreateL3Network name=L3-pub l2NetworkUuid=18e6f9183a
b74c43bf6f54f4cb9ac619 category=Public system=false
{
    "inventory": {
        "category": "Public",
        "createDate": "Nov 24, 2017 4:44:07 PM",
        "ipRanges": [],
        "l2NetworkUuid": "18e6f9183ab74c43bf6f54f4cb9ac619",
        "lastOpDate": "Nov 24, 2017 4:44:07 PM",
        "name": "L3-pub",
        "networkServices": [],
        "state": "Enabled",
        "system": false,
        "type": "L3BasicNetwork",
        "uuid": "d701ff5f4e4c4cdf8779199c5d8d168d",
        "zoneUuid": "af67d572c1104768965120d19ed4c19a"
    },
    "success": true
}
```

Add an IP range.

```
admin >>>AddIpRange l3NetworkUuid=d701ff5f4e4c4cdf8779199c5d8d168d
startIp=10.108.10.100 endIp=10.108.10.110 netmask=255.0.0.0 gateway=
10.0.0.1 name=L3-PUB
{
    "inventory": {
        "createDate": "Nov 24, 2017 4:47:21 PM",
        "endIp": "10.108.10.110",
        "gateway": "10.0.0.1",
        "l3NetworkUuid": "d701ff5f4e4c4cdf8779199c5d8d168d",
        "lastOpDate": "Nov 24, 2017 4:47:21 PM",
        "name": "L3-PUB",
        "netmask": "255.0.0.0",
        "networkCidr": "10.0.0.1/8",
    }
}
```

```

        "startIp": "10.108.10.100",
        "uuid": "73b061cac86d40bfa49cda68b584d589"
    },
    "success": true
}

```

Add DNS.

```

admin >>>AddDnsToL3Network l3NetworkUuid=d701ff5f4e4c4cdf8779
199c5d8d168d dns=223.5.5.5
{
    "inventory": {
        "category": "Public",
        "createDate": "Nov 24, 2017 4:44:07 PM",
        "dns": [
            "223.5.5.5"
        ],
        "ipRanges": [
            {
                "createDate": "Nov 24, 2017 4:47:21 PM",
                "endIp": "10.108.10.110",
                "gateway": "10.0.0.1",
                "l3NetworkUuid": "d701ff5f4e4c4cdf8779199c5d8d168d",
                "lastOpDate": "Nov 24, 2017 4:47:21 PM",
                "name": "L3-PUB",
                "netmask": "255.0.0.0",
                "networkCidr": "10.0.0.1/8",
                "startIp": "10.108.10.100",
                "uuid": "73b061cac86d40bfa49cda68b584d589"
            }
        ],
        "l2NetworkUuid": "18e6f9183ab74c43bf6f54f4cb9ac619",
        "lastOpDate": "Nov 24, 2017 4:44:07 PM",
        "name": "L3-pub",
        "networkServices": [],
        "state": "Enabled",
        "system": false,
        "type": "L3BasicNetwork",
        "uuid": "d701ff5f4e4c4cdf8779199c5d8d168d",
        "zoneUuid": "af67d572c1104768965120d19ed4c19a"
    },
    "success": true
}

```

Query the UUID of the network service provider that provides flat network services.

```

admin >>>QueryNetworkServiceProvider name="Flat Network Service
Provider"
{
    "inventories": [
        {
            "attachedL2NetworkUuids": [
                "81c73ae08d2240dd95e378967c213c2e",
                "18e6f9183ab74c43bf6f54f4cb9ac619"
            ],
            "createDate": "Nov 13, 2017 3:01:53 PM",
            "description": "Flat Network Service Provider",
            "lastOpDate": "Nov 13, 2017 3:01:53 PM",
            "name": "Flat Network Service Provider",
            "networkServiceTypes": [

```

```

        "Userdata",
        "Eip",
        "DHCP"
    ],
    "type": "Flat",
    "uuid": "3d46e334773845adac0d90c86a5999ee"
}
],
"success": true
}

```

Attach the network services to the L3 public network.

```

admin >>>AttachNetworkServiceToL3Network l3NetworkUuid=d701ff5f4e
4c4cdf8779199c5d8d168d networkServices="{'3d46e334773845adac0d
90c86a5999ee': ['Userdata', 'Eip', 'DHCP']}"
{
    "inventory": {
        "category": "Public",
        "createDate": "Nov 24, 2017 4:44:07 PM",
        "dns": [
            "223.5.5.5"
        ],
        "ipRanges": [
            {
                "createDate": "Nov 24, 2017 4:47:21 PM",
                "endIp": "10.108.10.110",
                "gateway": "10.0.0.1",
                "l3NetworkUuid": "d701ff5f4e4c4cdf8779199c5d8d168d",
                "lastOpDate": "Nov 24, 2017 4:47:21 PM",
                "name": "L3-PUB",
                "netmask": "255.0.0.0",
                "networkCidr": "10.0.0.1/8",
                "startIp": "10.108.10.100",
                "uuid": "73b061cac86d40bfa49cda68b584d589"
            }
        ],
        "l2NetworkUuid": "18e6f9183ab74c43bf6f54f4cb9ac619",
        "lastOpDate": "Nov 24, 2017 4:44:07 PM",
        "name": "L3-pub",
        "networkServices": [
            {
                "l3NetworkUuid": "d701ff5f4e4c4cdf8779199c5d8d168d",
                "networkServiceProviderUuid": "3d46e334773845adac0d
90c86a5999ee",
                "networkServiceType": "Eip"
            },
            {
                "l3NetworkUuid": "d701ff5f4e4c4cdf8779199c5d8d168d",
                "networkServiceProviderUuid": "3d46e334773845adac0d
90c86a5999ee",
                "networkServiceType": "DHCP"
            },
            {
                "l3NetworkUuid": "d701ff5f4e4c4cdf8779199c5d8d168d",
                "networkServiceProviderUuid": "3d46e334773845adac0d
90c86a5999ee",
                "networkServiceType": "Userdata"
            }
        ],
        "state": "Enabled",
    }
}

```

```

        "system": false,
        "type": "L3BasicNetwork",
        "uuid": "d701ff5f4e4c4cdf8779199c5d8d168d",
        "zoneUuid": "af67d572c1104768965120d19ed4c19a"
    },
    "success": true
}

```

11.Create a vRouter offering by using the L3 public network (which act as both the public and the management networks) and the vRouter image added previously.

```

admin >>>CreateVirtualRouterOffering cpuNum=2 memorySize=2147483648
    imageUuid=81df8288d9054448b3518573f805a6b7 managementNetworkUuid=d701ff5f4e
    4c4cdf8779199c5d8d168d publicNetworkUuid=d701ff5f4e
    4c4cdf8779199c5d8d168d name=VR-Offering zoneUuid=af67d572c1
    104768965120d19ed4c19a
{
    "inventory": {
        "allocatorStrategy": "LeastVmPreferredHostAllocatorStrategy"
    },
    "cpuNum": 2,
    "cpuSpeed": 0,
    "createDate": "Nov 24, 2017 4:55:14 PM",
    "imageUuid": "81df8288d9054448b3518573f805a6b7",
    "isDefault": false,
    "lastOpDate": "Nov 24, 2017 4:55:14 PM",
    "managementNetworkUuid": "d701ff5f4e4c4cdf8779199c5d8d168d",
    "memorySize": 2147483648,
    "name": "VR-Offering",
    "publicNetworkUuid": "d701ff5f4e4c4cdf8779199c5d8d168d",
    "sortKey": 0,
    "state": "Enabled",
    "type": "VirtualRouter",
    "uuid": "9f68633082494b35a20551dd3805ea6b",
    "zoneUuid": "af67d572c1104768965120d19ed4c19a"
},
    "success": true
}

```

12.Create an L3 private network.

```

admin >>>CreateL3Network name=L3-pri l2NetworkUuid=81c73ae08d
2240dd95e378967c213c2e category=Private
{
    "inventory": {
        "category": "Private",
        "createDate": "Nov 24, 2017 4:56:37 PM",
        "ipRanges": [],
        "l2NetworkUuid": "81c73ae08d2240dd95e378967c213c2e",
        "lastOpDate": "Nov 24, 2017 4:56:37 PM",
        "name": "L3-pri",
        "networkServices": [],
        "state": "Enabled",
        "system": false,
        "type": "L3BasicNetwork",
        "uuid": "7bf9e3ee3f8f4765bc20331b1fc9251d",
        "zoneUuid": "af67d572c1104768965120d19ed4c19a"
},
    "success": true
}

```

```
}
```

Add an IP range.

```
admin >>>AddIpRangeByNetworkCidr l3NetworkUuid=7bf9e3ee3f8f4765bc20
331b1fc9251d networkCidr=192.168.10.0/24 name=L3-PRI
{
    "inventory": {
        "createDate": "Nov 24, 2017 4:58:11 PM",
        "endIp": "192.168.10.254",
        "gateway": "192.168.10.1",
        "l3NetworkUuid": "7bf9e3ee3f8f4765bc20331b1fc9251d",
        "lastOpDate": "Nov 24, 2017 4:58:11 PM",
        "name": "L3-PRI",
        "netmask": "255.255.255.0",
        "networkCidr": "192.168.10.0/24",
        "startIp": "192.168.10.2",
        "uuid": "89a731c83ae24738bec84916128af056"
    },
    "success": true
}
```

Add DNS.

```
admin >>>AddDnsToL3Network l3NetworkUuid=7bf9e3ee3f8f4765bc20
331b1fc9251d dns=223.5.5.5
{
    "inventory": {
        "category": "Private",
        "createDate": "Nov 24, 2017 4:56:37 PM",
        "dns": [
            "223.5.5.5"
        ],
        "ipRanges": [
            {
                "createDate": "Nov 24, 2017 4:58:11 PM",
                "endIp": "192.168.10.254",
                "gateway": "192.168.10.1",
                "l3NetworkUuid": "7bf9e3ee3f8f4765bc20331b1fc9251d",
                "lastOpDate": "Nov 24, 2017 4:58:11 PM",
                "name": "L3-PRI",
                "netmask": "255.255.255.0",
                "networkCidr": "192.168.10.0/24",
                "startIp": "192.168.10.2",
                "uuid": "89a731c83ae24738bec84916128af056"
            }
        ],
        "l2NetworkUuid": "81c73ae08d2240dd95e378967c213c2e",
        "lastOpDate": "Nov 24, 2017 4:56:37 PM",
        "name": "L3-pri",
        "networkServices": [],
        "state": "Enabled",
        "system": false,
        "type": "L3BasicNetwork",
        "uuid": "7bf9e3ee3f8f4765bc20331b1fc9251d",
        "zoneUuid": "af67d572c1104768965120d19ed4c19a"
    },
    "success": true
}
```

```
}
```

Query the UUID of the network service provider that provides vRouter network services.

```
admin >>>QueryNetworkServiceProvider name="vrouter"
{
    "inventories": [
        {
            "attachedL2NetworkUuids": [
                "81c73ae08d2240dd95e378967c213c2e",
                "18e6f9183ab74c43bf6f54f4cb9ac619"
            ],
            "createDate": "Nov 13, 2017 3:01:53 PM",
            "description": "cloud vrouter network service provider",
            "lastOpDate": "Nov 13, 2017 3:01:53 PM",
            "name": "vrouter",
            "networkServiceTypes": [
                "IPsec",
                "VRouterRoute",
                "CentralizedDNS",
                "VipQos",
                "DNS",
                "SNAT",
                "LoadBalancer",
                "PortForwarding",
                "Eip",
                "DHCP"
            ],
            "type": "vrouter",
            "uuid": "a04998321fc44bf8a6050b93986329d3"
        }
    ],
    "success": true
}
```

Attach the network services to the L3 private network.

```
admin >>>AttachNetworkServiceToL3Network l3NetworkUuid=7bf9e3ee3f
8f4765bc20331b1fc9251d networkServices="{'a04998321fc44bf8a605
0b93986329d3':['IPsec','VRouterRoute','CentralizedDNS','VipQos','DNS
','SNAT','LoadBalancer','PortForwarding','Eip','DHCP']}"
{
    "inventory": {
        "category": "Private",
        "createDate": "Nov 24, 2017 4:56:37 PM",
        "dns": [
            "223.5.5.5"
        ],
        "ipRanges": [
            {
                "createDate": "Nov 24, 2017 4:58:11 PM",
                "endIp": "192.168.10.254",
                "gateway": "192.168.10.1",
                "l3NetworkUuid": "7bf9e3ee3f8f4765bc20331b1fc9251d",
                "lastOpDate": "Nov 24, 2017 4:58:11 PM",
                "name": "L3-PRI",
                "netmask": "255.255.255.0",
                "networkCidr": "192.168.10.0/24",
                "startIp": "192.168.10.2",
                "uuid": "89a731c83ae24738bec84916128af056"
            }
        ]
    }
}
```

```

        }
    ],
    "l2NetworkUuid": "81c73ae08d2240dd95e378967c213c2e",
    "lastOpDate": "Nov 24, 2017 4:56:37 PM",
    "name": "L3-pri",
    "networkServices": [
        {
            "l3NetworkUuid": "7bf9e3ee3f8f4765bc20331b1fc9251d",
            "networkServiceProviderUuid": "a04998321fc44bf8a605
0b93986329d3",
            "networkServiceType": "PortForwarding"
        },
        {
            "l3NetworkUuid": "7bf9e3ee3f8f4765bc20331b1fc9251d",
            "networkServiceProviderUuid": "a04998321fc44bf8a605
0b93986329d3",
            "networkServiceType": "VipQos"
        },
        {
            "l3NetworkUuid": "7bf9e3ee3f8f4765bc20331b1fc9251d",
            "networkServiceProviderUuid": "a04998321fc44bf8a605
0b93986329d3",
            "networkServiceType": "DNS"
        },
        {
            "l3NetworkUuid": "7bf9e3ee3f8f4765bc20331b1fc9251d",
            "networkServiceProviderUuid": "a04998321fc44bf8a605
0b93986329d3",
            "networkServiceType": "VRouterRoute"
        },
        {
            "l3NetworkUuid": "7bf9e3ee3f8f4765bc20331b1fc9251d",
            "networkServiceProviderUuid": "a04998321fc44bf8a605
0b93986329d3",
            "networkServiceType": "SNAT"
        },
        {
            "l3NetworkUuid": "7bf9e3ee3f8f4765bc20331b1fc9251d",
            "networkServiceProviderUuid": "a04998321fc44bf8a605
0b93986329d3",
            "networkServiceType": "IPsec"
        },
        {
            "l3NetworkUuid": "7bf9e3ee3f8f4765bc20331b1fc9251d",
            "networkServiceProviderUuid": "a04998321fc44bf8a605
0b93986329d3",
            "networkServiceType": "LoadBalancer"
        },
        {
            "l3NetworkUuid": "7bf9e3ee3f8f4765bc20331b1fc9251d",
            "networkServiceProviderUuid": "a04998321fc44bf8a605
0b93986329d3",
            "networkServiceType": "Eip"
        },
        {
            "l3NetworkUuid": "7bf9e3ee3f8f4765bc20331b1fc9251d",
            "networkServiceProviderUuid": "a04998321fc44bf8a605
0b93986329d3",
            "networkServiceType": "CentralizedDNS"
        },
        {
            "l3NetworkUuid": "7bf9e3ee3f8f4765bc20331b1fc9251d",

```

```

        "networkServiceProviderUuid": "a04998321fc44bf8a605
0b93986329d3",
        "networkServiceType": "DHCP"
    }
],
"state": "Enabled",
"system": false,
"type": "L3BasicNetwork",
"uuid": "7bf9e3ee3f8f4765bc20331b1fc9251d",
"zoneUuid": "af67d572c1104768965120d19ed4c19a"
},
"success": true
}

```

Create a system tag to correlate the vRouter offering and the L3 private network.

```

admin >>>CreateSystemTag resourceUuid=9f68633082494b35a20551dd3805ea
6b tag="guestL3Network::7bf9e3ee3f8f4765bc20331b1fc9251d" resourceTy
pe=InstanceOfferingVO
{
    "inventory": {
        "createDate": "Nov 24, 2017 5:04:11 PM",
        "inherent": false,
        "lastOpDate": "Nov 24, 2017 5:04:11 PM",
        "resourceType": "InstanceOfferingVO",
        "resourceUuid": "9f68633082494b35a20551dd3805ea6b",
        "tag": "guestL3Network::7bf9e3ee3f8f4765bc20331b1fc9251d",
        "type": "System",
        "uuid": "09c558c2023647a6820673382a4ac9ce"
    },
    "success": true
}

```

13.Create a disk offering.

```

admin >>>CreateDiskOffering name=Data-Volume-Offering diskSize=
10737418240
{
    "inventory": {
        "allocatorStrategy": "DefaultPrimaryStorageAllocatio
nStrategy",
        "createDate": "Nov 24, 2017 5:05:35 PM",
        "diskSize": 10737418240,
        "lastOpDate": "Nov 24, 2017 5:05:35 PM",
        "name": "Data-Volume-Offering",
        "sortKey": 0,
        "state": "Enabled",
        "type": "DefaultDiskOfferingType",
        "uuid": "40b562ef06c44e1897681c02fd354416"
    },
    "success": true
}

```

14.Create a VM instance by using the image, instance offering, and networks prepared previously.

```

admin >>>CreateVmInstance name=VM-1 instanceOfferingUuid=ed3de28193
e343b5ab27cb425318ff21 imageUuid=0d38fc48c0af4341bec4e19a35e7b55b
l3NetworkUuids=7bf9e3ee3f8f4765bc20331b1fc9251d
{
    "inventory": {

```

```

    "allVolumes": [
        {
            "actualSize": 2618611200,
            "createDate": "Nov 24, 2017 5:08:02 PM",
            "description": "Root volume for VM[uuid:143440faca89413e8b6094c9e1b12157]",
            "deviceId": 0,
            "format": "qcow2",
            "installPath": "/Cloud_ps/rootVolumes/acct-36c27e8ff05c4780bf6d2fa65700f22e/vol-3ab0afbd82c6434dac7de11d0363abd/3ab0afbd82c6434dac7de11d0363abdb.qcow2",
            "isShareable": false,
            "lastOpDate": "Nov 24, 2017 5:08:02 PM",
            "name": "ROOT-for-VM-1",
            "primaryStorageUuid": "f0b8633d067343598faf0c329be1834f",
            "rootImageUuid": "0d38fc48c0af4341bec4e19a35e7b55b",
            "size": 8589934592,
            "state": "Enabled",
            "status": "Ready",
            "type": "Root",
            "uuid": "3ab0afbd82c6434dac7de11d0363abdb",
            "vmInstanceUuid": "143440faca89413e8b6094c9e1b12157"
        }
    ],
    "allocatorStrategy": "LeastVmPreferredHostAllocatorStrategy"
},
    "clusterUuid": "7cfa5479e92d4e9095a8010eda78fa55",
    "cpuNum": 1,
    "cpuSpeed": 0,
    "createDate": "Nov 24, 2017 5:08:01 PM",
    "defaultL3NetworkUuid": "7bf9e3ee3f8f4765bc20331b1fc9251d",
    "hostUuid": "6dd772cadd314b3d93d2150fc70d112c",
    "hypervisorType": "KVM",
    "imageUuid": "0d38fc48c0af4341bec4e19a35e7b55b",
    "instanceOfferingUuid": "ed3de28193e343b5ab27cb425318ff21",
    "lastHostUuid": "6dd772cadd314b3d93d2150fc70d112c",
    "lastOpDate": "Nov 24, 2017 5:09:17 PM",
    "memorySize": 1073741824,
    "name": "VM-1",
    "platform": "Linux",
    "rootVolumeUuid": "3ab0afbd82c6434dac7de11d0363abdb",
    "state": "Running",
    "type": "UserVm",
    "uuid": "143440faca89413e8b6094c9e1b12157",
    "vmNics": [
        {
            "createDate": "Nov 24, 2017 5:08:02 PM",
            "deviceId": 0,
            "gateway": "192.168.10.1",
            "ip": "192.168.10.129",
            "l3NetworkUuid": "7bf9e3ee3f8f4765bc20331b1fc9251d",
            "lastOpDate": "Nov 24, 2017 5:08:02 PM",
            "mac": "fa:af:40:4b:39:00",
            "netmask": "255.255.255.0",
            "uuid": "c42be9f56798419fadfa0f34475c9b4a",
            "vmInstanceUuid": "143440faca89413e8b6094c9e1b12157"
        }
    ],
    "zoneUuid": "af67d572c1104768965120d19ed4c19a"
},
    "success": true

```

```
}
```

15.Create a VM instance by using the image, instance offering, and networks prepared previously.

Meanwhile, specify the parameters, such as the data disk offering, the cluster, the host, the console password, the HA NeverStop switch, and the primary storage which the data volume is located.

```
admin >>>CreateVmInstance name=VM-2 instanceOfferingUuid=ed3de28193
e343b5ab27cb425318ff21 imageUuid=0d38fc48c0af4341bec4e19a35e7b55b
13NetworkUuids=7bf9e3ee3f8f4765bc20331b1fc9251d dataDiskOfferingUuid
s=40b562ef06c44e1897681c02fd354416 clusterUuid=7cfa5479e92d4e9095a8
010eda78fa55 hostUuid=6dd772cadd314b3d93d2150fc70d112c systemTags
="consolePassword::123456","ha::NeverStop","vmConsoleMode::vnc",
primaryStorageUuidForDataVolume::f0b8633d067343598faf0c329be1834f"
{
    "inventory": {
        "allVolumes": [
            {
                "actualSize": 0,
                "createDate": "Nov 24, 2017 5:13:04 PM",
                "description": "DataVolume-effeb1b473334dc48773
bef5301292b",
                "deviceId": 1,
                "diskOfferingUuid": "40b562ef06c44e1897681c02fd3544
16",
                "format": "qcow2",
                "installPath": "/Cloud_ps/dataVolumes/acct-
36c27e8ff05c4780bf6d2fa65700f22e/vol-9a11ebdc1b074aea82292e148c8be4
d6/9a11ebdc1b074aea82292e148c8be4d6.qcow2",
                "isShareable": false,
                "lastOpDate": "Nov 24, 2017 5:13:04 PM",
                "name": "DATA-for-VM-2",
                "primaryStorageUuid": "f0b8633d067343598faf
0c329be1834f",
                "size": 10737418240,
                "state": "Enabled",
                "status": "Ready",
                "type": "Data",
                "uuid": "9a11ebdc1b074aea82292e148c8be4d6",
                "vmInstanceId": "effeb1b473334dc48773bef5301292b"
            },
            {
                "actualSize": 2618611200,
                "createDate": "Nov 24, 2017 5:13:04 PM",
                "description": "Root volume for VM[uuid:effeb1b473
334dc48773bef5301292b]",
                "deviceId": 0,
                "format": "qcow2",
                "installPath": "/Cloud_ps/rootVolumes/acct-
36c27e8ff05c4780bf6d2fa65700f22e/vol-c82422eae86e4eb8bea225e860d624
44/c82422eae86e4eb8bea225e860d62444.qcow2",
                "isShareable": false,
                "lastOpDate": "Nov 24, 2017 5:13:04 PM",
                "name": "ROOT-for-VM-2",
                "primaryStorageUuid": "f0b8633d067343598faf
0c329be1834f",
                "rootImageUuid": "0d38fc48c0af4341bec4e19a35e7b55b",
                "size": 8589934592,
                "state": "Enabled",
            }
        ]
    }
}
```

```

        "status": "Ready",
        "type": "Root",
        "uuid": "c82422eae86e4eb8bea225e860d62444",
        "vmInstanceUuid": "effeb1b473334dc48773bef5301292b"
    }
],
"allocatorStrategy": "LeastVmPreferredHostAllocatorStrategy"
",
"clusterUuid": "7cfa5479e92d4e9095a8010eda78fa55",
"cpuNum": 1,
"cpuSpeed": 0,
"createDate": "Nov 24, 2017 5:13:04 PM",
"defaultL3NetworkUuid": "7bf9e3ee3f8f4765bc20331b1fc9251d",
"hostUuid": "6dd772cadd314b3d93d2150fc70d112c",
"hypervisorType": "KVM",
"imageUuid": "0d38fc48c0af4341bec4e19a35e7b55b",
"instanceOfferingUuid": "ed3de28193e343b5ab27cb425318ff21",
"lastHostUuid": "6dd772cadd314b3d93d2150fc70d112c",
"lastOpDate": "Nov 24, 2017 5:13:16 PM",
"memorySize": 1073741824,
"name": "VM-2",
"platform": "Linux",
"rootVolumeUuid": "c82422eae86e4eb8bea225e860d62444",
"state": "Running",
"type": "UserVm",
"uuid": "effeb1b473334dc48773bef5301292b",
"vmNics": [
    {
        "createDate": "Nov 24, 2017 5:13:04 PM",
        "deviceId": 0,
        "gateway": "192.168.10.1",
        "ip": "192.168.10.201",
        "l3NetworkUuid": "7bf9e3ee3f8f4765bc20331b1fc9251d",
        "lastOpDate": "Nov 24, 2017 5:13:04 PM",
        "mac": "fa:be:4f:fb:db:00",
        "netmask": "255.255.255.0",
        "uuid": "92e6d8b564654efebd17ecade2d48aa9",
        "vmInstanceUuid": "effeb1b473334dc48773bef5301292b"
    }
],
"zoneUuid": "af67d572c1104768965120d19ed4c19a"
},
"success": true
}

```

16.Create an EIP service.

- Create a virtual IP address (VIP) and obtain its UUID.

```

admin >>>CreateVip name=VIP-EIP l3NetworkUuid=d701ff5f4e4c4cdf8779
199c5d8d168d
{
    "inventory": {
        "createDate": "Nov 24, 2017 5:14:29 PM",
        "gateway": "10.0.0.1",
        "ip": "10.108.10.108",
        "l3NetworkUuid": "d701ff5f4e4c4cdf8779199c5d8d168d",
        "lastOpDate": "Nov 24, 2017 5:14:29 PM",
        "name": "VIP-EIP",
        "netmask": "255.0.0.0",
        "state": "Enabled",
        "uuid": "db4d627e2f7f4be8bbd626240e31a521"
    }
}

```

```

    },
    "success": true
}
```

b) Create an EIP and obtain its UUID.

```

admin >>>CreateEip name=EIP vipUuid=db4d627e2f7f4be8bbd626240e31a5
21
{
    "inventory": {
        "createDate": "Nov 24, 2017 5:15:18 PM",
        "lastOpDate": "Nov 24, 2017 5:15:18 PM",
        "name": "EIP",
        "state": "Enabled",
        "uuid": "e60a1580bc0240518241594f3570218e",
        "vipIp": "10.108.10.108",
        "vipUuid": "db4d627e2f7f4be8bbd626240e31a521"
    },
    "success": true
}
```

c) Query the UUID of the NIC **vmNics** of the VM instance VM-1.

```

admin >>>QueryVmInstance name=VM-1
{
    "inventories": [
        {
            "allVolumes": [
                {
                    "actualSize": 2618611200,
                    "createDate": "Nov 24, 2017 5:08:02 PM",
                    "description": "Root volume for VM[uuid: 143440faca89413e8b6094c9e1b12157]",
                    "deviceId": 0,
                    "format": "qcow2",
                    "installPath": "/Cloud_ps/rootVolumes/acct-36c27e8ff05c4780bf6d2fa65700f22e/vol-3ab0afbd82c6434dac7de11d0363abdb/3ab0afbd82c6434dac7de11d0363abdb.qcow2",
                    "isShareable": false,
                    "lastOpDate": "Nov 24, 2017 5:08:02 PM",
                    "name": "ROOT-for-VM-1",
                    "primaryStorageUuid": "f0b8633d067343598faf0c329be1834f",
                    "rootImageUuid": "0d38fc48c0af4341bec4e19a35e7b55b",
                    "size": 8589934592,
                    "state": "Enabled",
                    "status": "Ready",
                    "type": "Root",
                    "uuid": "3ab0afbd82c6434dac7de11d0363abdb",
                    "vmInstanceId": "143440faca89413e8b6094c9e1b12157"
                }
            ],
            "allocatorStrategy": "LeastVmPreferredHostAllocatorsStrategy",
            "clusterUuid": "7cfa5479e92d4e9095a8010eda78fa55",
            "cpuNum": 1,
            "cpuSpeed": 0,
            "createDate": "Nov 24, 2017 5:08:01 PM",
            "cpuType": "Intel(R) Xeon(R) CPU E5-2620 v3 @ 2.40GHz"
        }
    ]
}
```

```

        "defaultL3NetworkUuid": "7bf9e3ee3f8f4765bc20
331b1fc9251d",
        "hostUuid": "6dd772cadd314b3d93d2150fc70d112c",
        "hypervisorType": "KVM",
        "imageUuid": "0d38fc48c0af4341bec4e19a35e7b55b",
        "instanceOfferingUuid": "ed3de28193e343b5ab27
cb425318ff21",
        "lastHostUuid": "6dd772cadd314b3d93d2150fc70d112c",
        "lastOpDate": "Nov 24, 2017 5:09:17 PM",
        "memorySize": 1073741824,
        "name": "VM-1",
        "platform": "Linux",
        "rootVolumeUuid": "3ab0afbd82c6434dac7de11d0363abdb",
        "state": "Running",
        "type": "UserVm",
        "uuid": "143440faca89413e8b6094c9e1b12157",
        "vmNics": [
            {
                "createDate": "Nov 24, 2017 5:08:02 PM",
                "deviceId": 0,
                "gateway": "192.168.10.1",
                "ip": "192.168.10.129",
                "l3NetworkUuid": "7bf9e3ee3f8f4765bc20
331b1fc9251d",
                "lastOpDate": "Nov 24, 2017 5:08:02 PM",
                "mac": "fa:af:40:4b:39:00",
                "netmask": "255.255.255.0",
                "uuid": "c42be9f56798419fadfa0f34475c9b4a",
                "vmInstanceUuid": "143440faca89413e8b60
94c9e1b12157"
            }
        ],
        "zoneUuid": "af67d572c1104768965120d19ed4c19a"
    ],
    "success": true
}

```

d) Attach the EIP to the VM NIC.

```

admin >>>AttachEip eipUuid=e60a1580bc0240518241594f3570218e
vmNicUuid=c42be9f56798419fadfa0f34475c9b4a
{
    "inventory": {
        "createDate": "Nov 24, 2017 5:15:18 PM",
        "guestIp": "192.168.10.129",
        "lastOpDate": "Nov 24, 2017 5:17:16 PM",
        "name": "EIP",
        "state": "Enabled",
        "uuid": "e60a1580bc0240518241594f3570218e",
        "vipIp": "10.108.10.108",
        "vipUuid": "db4d627e2f7f4be8bbd626240e31a521",
        "vmNicUuid": "c42be9f56798419fadfa0f34475c9b4a"
    },
    "success": true
}

```

e) Perform SSH login to the VM instance by using the EIP to verify the function of the EIP.

As shown in [Figure 10-1: Login to VM-1 via the EIP](#).

Figure 10-1: Login to VM-1 via the EIP

```
192-168-10-238 login: root
Password:
Last login: Fri Nov 24 17:57:03 from 10.108.10.108
[root@192-168-10-238 ~]# ssh 10.108.10.108
root@10.108.10.108's password:
Last login: Fri Nov 24 17:57:45 2017
[root@192-168-10-238 ~]# _
```

17.Create a port forwarding service.

- a) Create a VIP and obtain its UUID.

```
admin >>>CreateVip name=PF l3NetworkUuid=d701ff5f4e4c4cdf8779199c5d8d168d
{
    "inventory": {
        "createDate": "Nov 24, 2017 5:28:11 PM",
        "gateway": "10.0.0.1",
        "ip": "10.108.10.109",
        "l3NetworkUuid": "d701ff5f4e4c4cdf8779199c5d8d168d",
        "lastOpDate": "Nov 24, 2017 5:28:11 PM",
        "name": "PF",
        "netmask": "255.0.0.0",
        "state": "Enabled",
        "uuid": "2898660b07b54832b2d39c285acd803c"
    },
    "success": true
}
```

- b) Create a port forwarding service and specify the port range.

```
admin >>>CreatePortForwardingRule name=PF vipUuid=2898660b07b54832b2d39c285acd803c vipPortStart=22 vipPortEnd=80 protocolType=TCP
{
    "inventory": {
        "name": "PF",
        "privatePortEnd": 80,
        "privatePortStart": 22,
        "protocolType": "TCP",
        "state": "Enabled",
        "uuid": "03a54bf2ec3a4252a51cada88298fd0c",
        "vipIp": "10.108.10.109",
        "vipPortEnd": 80,
        "vipPortStart": 22,
        "vipUuid": "2898660b07b54832b2d39c285acd803c"
    },
    "success": true
}
```

```
}
```

- c) Query the UUID of the NIC **vmNics** of the VM instance VM-2.

```
admin >>>QueryVmInstance name=VM-2
{
    "inventories": [
        {
            "allVolumes": [
                {
                    "actualSize": 2618611200,
                    "createDate": "Nov 24, 2017 5:13:04 PM",
                    "description": "Root volume for VM[uuid:efffeb1b473334dc48773befe5301292b]",
                    "deviceId": 0,
                    "format": "qcow2",
                    "installPath": "/Cloud_ps/rootVolumes/acct-36c27e8ff05c4780bf6d2fa65700f22e/vol-c82422eae86e4eb8bea25e860d62444/c82422eae86e4eb8bea225e860d62444.qcow2",
                    "isShareable": false,
                    "lastOpDate": "Nov 24, 2017 5:13:04 PM",
                    "name": "ROOT-for-VM-2",
                    "primaryStorageUuid": "f0b8633d067343598faf0c329be1834f",
                    "rootImageUuid": "0d38fc48c0af4341bec4e19a35e7b55b",
                    "size": 8589934592,
                    "state": "Enabled",
                    "status": "Ready",
                    "type": "Root",
                    "uuid": "c82422eae86e4eb8bea225e860d62444",
                    "vmInstanceUuid": "efffeb1b473334dc48773befe5301292b"
                },
                {
                    "actualSize": 0,
                    "createDate": "Nov 24, 2017 5:13:04 PM",
                    "description": "DataVolume-efffeb1b47334dc48773befe5301292b",
                    "deviceId": 1,
                    "diskOfferingUuid": "40b562ef06c44e1897681c02fd354416",
                    "format": "qcow2",
                    "installPath": "/Cloud_ps/dataVolumes/acct-36c27e8ff05c4780bf6d2fa65700f22e/vol-9a11ebdc1b074aea82292e148c8be4d6/9a11ebdc1b074aea82292e148c8be4d6.qcow2",
                    "isShareable": false,
                    "lastOpDate": "Nov 24, 2017 5:13:04 PM",
                    "name": "DATA-for-VM-2",
                    "primaryStorageUuid": "f0b8633d067343598faf0c329be1834f",
                    "size": 10737418240,
                    "state": "Enabled",
                    "status": "Ready",
                    "type": "Data",
                    "uuid": "9a11ebdc1b074aea82292e148c8be4d6",
                    "vmInstanceUuid": "efffeb1b473334dc48773befe5301292b"
                }
            ],
            "allocatorStrategy": "LeastVmPreferredHostAllocatorsStrategy"
        }
    ]
}
```

```

        "clusterUuid": "7cfa5479e92d4e9095a8010eda78fa55",
        "cpuNum": 1,
        "cpuSpeed": 0,
        "createDate": "Nov 24, 2017 5:13:04 PM",
        "defaultL3NetworkUuid": "7bf9e3ee3f8f4765bc20
331b1fc9251d",
        "hostUuid": "6dd772cadd314b3d93d2150fc70d112c",
        "hypervisorType": "KVM",
        "imageUuid": "0d38fc48c0af4341bec4e19a35e7b55b",
        "instanceOfferingUuid": "ed3de28193e343b5ab27
cb425318ff21",
        "lastHostUuid": "6dd772cadd314b3d93d2150fc70d112c",
        "lastOpDate": "Nov 24, 2017 5:13:16 PM",
        "memorySize": 1073741824,
        "name": "VM-2",
        "platform": "Linux",
        "rootVolumeUuid": "c82422eae86e4eb8bea225e860d62444",
        "state": "Running",
        "type": "UserVm",
        "uuid": "effeb1b473334dc48773bef5301292b",
        "vmNics": [
            {
                "createDate": "Nov 24, 2017 5:13:04 PM",
                "deviceId": 0,
                "gateway": "192.168.10.1",
                "ip": "192.168.10.201",
                "l3NetworkUuid": "7bf9e3ee3f8f4765bc20
331b1fc9251d",
                "lastOpDate": "Nov 24, 2017 5:13:04 PM",
                "mac": "fa:be:4f:fb:db:00",
                "netmask": "255.255.255.0",
                "uuid": "92e6d8b564654efebd17ecade2d48aa9",
                "vmInstanceUuid": "effeb1b473334dc48773
bef5301292b"
            }
        ],
        "zoneUuid": "af67d572c1104768965120d19ed4c19a"
    }
],
"success": true
}

```

d) Attach the port forwarding rule to the VM NIC.

```

admin >>>AttachPortForwardingRule vmNicUuid=92e6d8b564654efebd17
ecade2d48aa9 ruleUuid=03a54bf2ec3a4252a51cada88298fd0c
{
    "inventory": {
        "createDate": "Nov 24, 2017 5:29:27 PM",
        "guestIp": "192.168.10.201",
        "lastOpDate": "Nov 24, 2017 5:30:52 PM",
        "name": "PF",
        "privatePortEnd": 80,
        "privatePortStart": 22,
        "protocolType": "TCP",
        "state": "Enabled",
        "uuid": "03a54bf2ec3a4252a51cada88298fd0c",
        "vipIp": "10.108.10.109",
        "vipPortEnd": 80,
        "vipPortStart": 22,
        "vipUuid": "2898660b07b54832b2d39c285acd803c",
        "vmNicUuid": "92e6d8b564654efebd17ecade2d48aa9"
    }
}

```

```

    },
  "success": true
}

```

- e) Perform SSH login to the VM instance to verify the function of the port forwarding rule.

As shown in [Figure 10-2: Login to VM-2 via the Port Forwarding](#).

Figure 10-2: Login to VM-2 via the Port Forwarding

```

[root@192-168-10-129 ~]# ssh 10.108.10.109 -p 22
The authenticity of host '10.108.10.109 (10.108.10.109)' can't be established.
ECDSA key fingerprint is c0:12:7f:ac:f1:0b:5e:c8:66:34:21:a4:91:cb:09:ee.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added '10.108.10.109' (ECDSA) to the list of known hosts.
root@10.108.10.109's password:
Last login: Fri Nov 24 17:33:33 2017
[root@192-168-10-201 ~]# _

```

10.2 Use zstack-cli to Create an IP Whitelist and Blacklist for a Load Balancer

ZStack Cloud load balancers provide the IP whitelisting and blacklisting features. You can specify an IP whitelist or blacklist for a load balancer to control access to your services. This topic describes how to use the zstack-cli command to create an IP whitelist for a load balancer and filter traffic.

Prerequisites

The latest version of ZStack Cloud is installed and services that require load balancing are deployed.

Context

The following tables list the load balancer and VM instances that access the services.

Table 10-1: Load Balancer

Parameter	Value
Listener UUID	78e84306bb604dd4b921592de2a60fb1
Virtual IP address	10.0.0.254

Table 10-2: VM Instances

Name	IP Address	Whitelisting
VM 1	10.254.254.1	No
VM 2	10.0.0.1	Yes

Process:

1. Create an IP access control list (ACL).
2. Create an ACL entry.
3. Specify the ACL for the listener of the load balancer and whitelist the ACL.
4. Enable the ACL.
5. Check whether the whitelisting takes effects.

Procedure

1. Use the zstack-cli command to create an IP ACL.

```
admin >>>CreateAccessControlList name=white_list ipVersion=4
{
    "inventory": {
        "createDate": "Jul 9, 2020 2:55:32 PM",
        "entries": [],
        "ipVersion": 4,
        "lastOpDate": "Jul 9, 2020 2:55:32 PM",
        "name": "white_list",
        "uuid": "b01e0cb4deaf4edd86778942d9e9e5c2"
    },
    "success": true
}
```

2. Use the zstack-cli command to create an ACL entry.

```
admin >>>AddAccessControlListEntry aclUuid=b01e0cb4deaf4edd8677
8942d9e9e5c2 entries=10.0.0.1 description='white test'
{
    "inventory": {
        "aclUuid": "b01e0cb4deaf4edd86778942d9e9e5c2",
        "createDate": "Jul 9, 2020 3:05:42 PM",
        "description": "white test",
        "ipEntries": "10.0.0.1",
        "lastOpDate": "Jul 9, 2020 3:05:42 PM",
        "uuid": "1cdc96491dd14d27a236f98c7eabae21"
    },
    "success": true
}
```

```
}
```

- 3.** Use the zstack-cli command to specify the ACL for the listener of the load balancer and whitelist the ACL.

```
admin >>>AddAccessControlListToLoadBalancer aclType=white aclUuids=b01e0cb4deaf4edd86778942d9e9e5c2 listenerUuid=78e84306bb604dd4b921592de2a60fb1
{
    "inventory": {
        "aclRefs": [
            {
                "aclUuid": "b01e0cb4deaf4edd86778942d9e9e5c2",
                "createDate": "Jul 9, 2020 4:42:12 PM",
                "id": 3,
                "lastOpDate": "Jul 9, 2020 4:42:12 PM",
                "listenerUuid": "78e84306bb604dd4b921592de2a60fb1",
                "type": "white"
            }
        ],
        "certificateRefs": [],
        "createDate": "Jul 7, 2020 9:08:23 PM",
        "instancePort": 80,
        "lastOpDate": "Jul 8, 2020 10:17:32 AM",
        "loadBalancerPort": 80,
        "loadBalancerUuid": "bf3520cbb2314fe98416bd5cd982ebf9",
        "name": "VPC listener",
        "protocol": "tcp",
        "uuid": "78e84306bb604dd4b921592de2a60fb1",
        "vmNicRefs": [
            {
                "createDate": "Jul 8, 2020 9:54:34 AM",
                "id": 4,
                "lastOpDate": "Jul 8, 2020 9:54:34 AM",
                "listenerUuid": "78e84306bb604dd4b921592de2a60fb1",
                "status": "Active",
                "vmNicUuid": "2e3814e26d364e2cbc4679e46ad51454"
            },
            {
                "createDate": "Jul 8, 2020 9:54:34 AM",
                "id": 6,
                "lastOpDate": "Jul 8, 2020 9:54:34 AM",
                "listenerUuid": "78e84306bb604dd4b921592de2a60fb1",
                "status": "Active",
                "vmNicUuid": "9aec86a02b4149f4b111a904cf89f4d1"
            },
            {
                "createDate": "Jul 8, 2020 9:54:34 AM",
                "id": 5,
                "lastOpDate": "Jul 8, 2020 9:54:34 AM",
                "listenerUuid": "78e84306bb604dd4b921592de2a60fb1",
                "status": "Active",
                "vmNicUuid": "6e612c3a80d047d9b46378fa38fc96"
            }
        ]
    },
    "success": true
}
```

```
}
```

4. Use the zstack-cli command to enable the ACL.

```
admin >>>ChangeLoadBalancerListener aclStatus=enable uuid=78e84306bb604dd4b921592de2a60fb1
{
    "inventory": {
        "aclRefs": [
            {
                "aclUuid": "2884b4aeb83345b6884b7dbb3c2f66d5",
                "createDate": "Jul 9, 2020 3:15:58 PM",
                "id": 2,
                "lastOpDate": "Jul 9, 2020 3:15:58 PM",
                "listenerUuid": "78e84306bb604dd4b921592de2a60fb1",
                "type": "white"
            },
            {
                "aclUuid": "b01e0cb4deaf4edd86778942d9e9e5c2",
                "createDate": "Jul 9, 2020 3:15:03 PM",
                "id": 1,
                "lastOpDate": "Jul 9, 2020 3:15:03 PM",
                "listenerUuid": "78e84306bb604dd4b921592de2a60fb1",
                "type": "white"
            }
        ],
        "certificateRefs": [],
        "createDate": "Jul 7, 2020 9:08:23 PM",
        "instancePort": 80,
        "lastOpDate": "Jul 8, 2020 10:17:32 AM",
        "loadBalancerPort": 80,
        "loadBalancerUuid": "bf3520ccb2314fe98416bd5cd982ebf9",
        "name": "VPC listener",
        "protocol": "tcp",
        "uuid": "78e84306bb604dd4b921592de2a60fb1",
        "vmNicRefs": [
            {
                "createDate": "Jul 8, 2020 9:54:34 AM",
                "id": 6,
                "lastOpDate": "Jul 8, 2020 9:54:34 AM",
                "listenerUuid": "78e84306bb604dd4b921592de2a60fb1",
                "status": "Active",
                "vmNicUuid": "9aec86a02b4149f4b111a904cf89f4d1"
            },
            {
                "createDate": "Jul 8, 2020 9:54:34 AM",
                "id": 5,
                "lastOpDate": "Jul 8, 2020 9:54:34 AM",
                "listenerUuid": "78e84306bb604dd4b921592de2a60fb1",
                "status": "Active",
                "vmNicUuid": "6e612c3a80d047d9b46378fa38fc96"
            },
            {
                "createDate": "Jul 8, 2020 9:54:34 AM",
                "id": 4,
                "lastOpDate": "Jul 8, 2020 9:54:34 AM",
                "listenerUuid": "78e84306bb604dd4b921592de2a60fb1",
                "status": "Active",
                "vmNicUuid": "2e3814e26d364e2cbc4679e46ad51454"
            }
        ]
    }
}
```

```
        "success": true  
    }
```

5. Use the curl command to check whether the whitelisting takes effects.

Expected results:

- Requests from VM 1 are rejected.
- Requests from VM 2 are accepted to and the requested resources are returned.

Actual results:

```
[root@10.254.254.1 ~]# curl http://10.0.0.254  
curl: (56) Recv failure: Connection reset by peer  
[root@10.254.254.1 ~]# ssh root@10.0.0.1  
Last login: Thu Sep 17 19:08:35 2020 from 127.0.0.1  
[root@10.0.0.1 ~]# curl http://10.0.0.254  
web1
```

The request from the IP address 10.254.254.1 is rejected while the request from the IP address 10.0.0.1 is accepted and the requested web page is returned. This indicates that the IP whitelisting takes effect.

Glossary

VM Instance

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

Volume

A volume provides storage space for a VM instance. Volumes are categorized into root volumes and data volumes.

Root Volume

A root volume provides support for the system operations of a VM instance.

Data Volume

A data volume provides extended storage space for a VM instance.

Image

An image is a template file used to create a VM instance or volume. Images are categorized into system images and volume images.

Instance Offering

An instance offering defines the number of vCPU cores, memory size, network bandwidth, and other configuration settings of VM instances.

Disk Offering

A disk offering defines the capacity and other configuration settings of volumes.

GPU Specification

A GPU specification defines the frame per second (FPS), video memory, resolution, and other configuration settings of a physical or virtual GPU. GPU specifications are categorized into physical GPU specifications and virtual GPU specifications.

Auto-Scaling Group

An auto-scaling group is a group of VM instances that are used for the same scenarios. An auto-scaling group can automatically scale out or in based on application workloads or health status of VM instances in the group.

Snapshot

A snapshot is a point-in-time capture of data status in a volume.

Affinity Group

An affinity group is an orchestration policy for IaaS resources to ensure the high performance and high availability of businesses...

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 the Cloud.

Cluster

A cluster is a logical group of hosts (compute nodes).

Host

A host provides compute, network, and storage resources for VM instances.

Primary Storage

A primary storage is one or more servers that store volume files of VM instances. These files include root volume snapshots, data volume snapshots, image caches, root volumes, and data volumes.

Backup Storage

A backup storage is one or more servers that store VM image templates, including ISO image files

iSCSI Storage

iSCSI storage is an SAN storage that uses the iSCSI protocol for data transmission. You can add an iSCSI SAN block as a Shared Block primary storage or pass through the block to a VM instance.

FC Storage

FC storage is an SAN storage that uses the FC technology for data transmission. You can add an FC SAN block as a Shared Block primary storage or pass through the block to a VM instance.

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.

VXLAN Pool

A VXLAN pool is a collection of VXLAN networks established based on VXLAN Tunnel Endpoints (VTEPs). The VNI of each VXLAN network in a VXLAN pool must be unique.

L3 Network

An L3 network includes IP ranges, gateway, DNS, and other network configurations that are used by VM instances.

Public Network

Generally, a public network is a logical network that is connected to the Internet. However, in an environment that has no access to the Internet, you can also create a public network.

Flat Network

A flat network is connected to the network where the host is located and has direct access to the Internet. VM instances in a flat network can access public networks by using elastic IP addresses.

VPC Network

A VPC network is a private network where VM instances can be created. A VM instance in a VPC network can access the Internet through a VPC vRouter.

Management Network

A management network is used to manage physical resources in the Cloud. For example, you can create a management network to manage access to hosts, primary storages, backup storages, and VPC vRouters.

Flow Network

A flow network is a dedicated network for port mirror transmission. You can use a flow network to transmit the mirrors of data packets of NIC ports to the target ports.

VPC vRouter

A VPC vRouter is a dedicated VM instance that provides multiple network services.

VPC vRouter HA Group

A VPC vRouter HA group consists of two VPC vRouters. Either VPC vRouter can be a primary or secondary VPC vRouter for the group. If the primary VPC vRouter does not work as expected, the VPC vRouter becomes the secondary VPC vRouter in the group to ensure high availability of business.

vRouter Image

A vRouter image encapsulates network services and can be used to create VPC vRouters and load balancers. vRouter images can be categorized into VPC vRouter images and load balancer (LB) images.

Dedicated-Performance LB Image

A dedicated-performance load balancer (LB) image encapsulates dedicated-performance load-balancing services and can be used to create load balancer instances. However, a dedicated-performance load balancer image cannot be used to create VM instances.

vRouter Offering

A vRouter offering defines the number of vCPU cores, memory size, image, management network, and public network configuration settings of VPC vRouters. You can use a vRouter offering to create VPC vRouters that can provide network services for public networks and VPC networks.

LB Instance Offering

A load balancer (LB) instance offering defines the CPU, memory, image, and management network configuration settings used to create LB instances. LB instances provide load balancing services for the public network, flat network, and VPC network.

SDN Controller

An SDN controller is used to control network devices such as switches. You can add an external SDN controller to the Cloud and use the controller to control external switches and other network devices.

Security Group

A security group provides security control services for VM instances on the L3 network. It filters the ingress or egress TCP, UDP, and ICMP packets of specified VM instances in specified networks based on the specified security rules.

VIP

In bridged network environments, a virtual IP address (VIP) provides network services such as serving as an elastic IP address (EIP), port forwarding, load balancing, IPsec tunneling. When a VIP provides the preceding network services, packets are sent to the VIP and then routed to the destination network where VM instances are located.

EIP

An elastic IP address (EIP) functions based on the NAT technology. IP addresses in a private network are translated into an EIP that is in another network. This way, private networks can be accessed from other networks by using EIPs.

Port Forwarding

Port forwarding functions based on the layer-3 forwarding service of VPC vRouters. This service forwards traffic flows of the specified IP addresses and ports in a public network to specified ports of VM instances by using the specified protocol. If your public IP addresses are insufficient, you can configure port forwarding for multiple VM instances by using one public IP address and port.

Load Balancer

A load balancer distributes traffic flows of a virtual IP address to backend servers. It automatically inspects the availability of backend servers and isolates unavailable servers during traffic distribution. This way, the load balancer improves the availability and service capability of your business.

Listener

A listener monitors the frontend requests of a load balancer and distributes the requests to a backend server based on the specified policy. In addition, the listener performs health checks on backend servers.

Forwarding Rule

A forwarding rule forwards the requests from different domain names or URLs to different backend server groups.

Backend Server Group

A backend server group is a group of backend servers that handles requests distributed by load balancers. It is the basic unit for traffic distribution by load balancer instances.

Backend Server

A backend server handles requests distributed by a load balancer. You can add a VM instance on the Cloud or a server on a third-party cloud as a backend server.

Frontend Network

A frontend network is a type of network that is associated with a load balancer. Requests from the network are distributed by the load balancer to backend servers based on a specified policy.

Backend Network

A backend network is a type of network that is associated with a load balancer. Requests from frontend networks are distributed by the load balancer to servers in the backend network.

Load Balancer Instance

A load balancer instance is a custom VM instance used to provide load balancing services.

Certificate

If you select HTTPS for a listener, associate it with a certificate to make the listener take effect.

You can upload either a certificate or certificate chain.

Firewall

A firewall is an access control policy that monitors ingress and egress traffic of VPC vRouters and decides whether to allow or block specific traffic based on a defined set of security rules.

IPsec Tunnel

An IPsec tunnel encrypts and verifies IP packets that transmit over a virtual private network (VPN) from one site to another.

OSPF Area

An OSPF area is split from an autonomous system based on the OSPF protocol. This splitting simplifies the management of vRouters.

NetFlow

An NetFlow monitors the ingress and egress traffic of the NICs of VPC vRouters. The supported versions of data flows are V5 and V9.

Port Mirroring

Port mirroring mirrors the traffic data of VM NICs and sends the traffic data to the target ports. This allows for the analysis of data packets of ports and simplifies the monitoring and management of data traffic and makes it easier to locate network errors and exceptions.

Route Table

A route table contains information about various routes that you configure. Route entries in a route table must include the destination network, next hop, and route priority.

CloudFormation

CloudFormation is a service that simplifies the management of cloud resources and automates deployment and O&S. You can create a stack template to configure cloud resources and their dependencies. This way, resources can be automatically configured and deployed in batches. CloudFormation provides easy management of the lifecycle of cloud resources and integrates automatic O&S into API and SDK.

Resource Stack

A resource stack is a stack of resources that are configured by using a stack template. The resources in the stack have dependencies with each other. You can manage resources in the stack by managing the resource stack.

Stack Template

A stack template is a UTF8-encoded file based on which you can create resource stacks. The stack template defines the resources that you want, the dependencies between the resources , and the configuration settings of the resources. When you use a stack template to create a resource stack, CloudFormation parses the template and the resources are automatically created and configured.

Sample Template

A sample template is a commonly used resource stack. You can use a sample template provide by the Cloud to create resource stacks.

Designer

A designer is a CloudFormation tool that allows you to orchestrate cloud resources. You can drag and drop resources on a canvas and use lines to establish dependencies between the resources.

Baremetal Cluster

A baremetal cluster consists of baremetal chassis. You can manage baremetal chassis by managing a baremetal cluster where the chassis reside.

Deployment Server

A deployment server is a server that provides PXE service and console proxy service for baremetal chassis.

Baremetal Chassis

A baremetal chassis is used to create a baremetal instance and is identified based on the BMC interface and IPMI configuration setting.

Preconfigured Template

A preconfigured template is used to create a preconfigured file that allows for unattended batch installation of an operating system for baremetal instances.

Baremetal Instance

A baremetal instance is an instantiated baremetal chassis.

Elastic Baremetal Management

Elastic Baremetal Management provides dedicated physical servers for your applications to ensure high performance and stability. In addition, this feature allows elastic scaling. You can apply for and scale resources based on your needs.

Provision Network

A provision network is a dedicated network for PXE boot and image downloads while creating elastic baremetal instances.

Elastic Baremetal Cluster

An elastic baremetal cluster consists of elastic baremetal instances. You can manage elastic baremetal instances by managing an elastic baremetal cluster where the instances reside.

Gateway Node

A gateway node is a node where the ingress and egress traffic of the Cloud and elastic baremetal instances is forwarded.

Baremetal Node

A baremetal node is used to create a baremetal instance and is identified based on the BMC interface and IPMI configuration setting.

Elastic Baremetal Instance

An elastic baremetal instance has the same performance as physical servers and allows elastic scaling. You can apply for and scale resources based on your needs.

Elastic Baremetal Offering

An elastic baremetal offering defines the number of vCPU cores, memory size, CPU architecture, CPU model, and other configuration settings of elastic baremetal instances.

vCenter

The Cloud allows you to take over vCenter and manage resources on the vCenter.

VM Instance

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

Network

A vCenter network defines the network settings of VM instances on vCenter, such as IP range, gateway, DNS, and network services.

Volume

A volume provides storage space for a VM instance on vCenter. A volume attached to a VM instance can be used as a root volume or data volume. A root volume provides support for the system operations of a VM instance. A data volume provides extended storage space for a VM instance.

Image

An image is a template file used to create a VM instance or volume on vCenter. Images are categorized into system images and volume images.

Event Message

Event Message displays event alarm messages of vCenter that is took over by the Cloud. This feature allows you to locate errors and exceptions efficiently.

Network Topology

A network topology visualizes the network architecture of the Cloud. It allows for efficient planning, management, and improvement of network architecture. Network topologies can be categorized into global topologies and custom topologies.

Performance Analysis

Performance Analysis displays the performance metrics of key resources under monitoring in the Cloud. Cloud resources can be externally or internally monitored. You can use either method to monitor the performance of resources in the Cloud and improve O&S efficiency.

Capacity Management

Capacity Management visualizes the capacities and usages of key resources in the Cloud. You can use this feature to improve O&S efficiency.

MN Monitoring

MN monitoring allows you to view the health status of each management node when you use multiple management nodes to achieve high availability.

Alarm

An alarm is used to monitor the status of time-series data and events and respond to the status change. Alarms can be categorized into resource alarm, event alarm, and extended alarm.

One-Click Alarm

A one-click alarm integrates multiple metrics of a resource. You can create one-click alarms for multiple resources to monitor these resources.

Alarm Template

An alarm template is a template of alarm rules. If you associate an alarm template with a resource group, an alarm is created to monitor the resources in the group.

Resource Group

A resource group consists of resources grouped based on your business needs. If you associate an alarm template with a resource group, the alarm rules specified by the template take effect on all the resources in the group.

Message Template

A message template specifies the text template of a resource alarm message or event alarm message sent to an SNS system.

Message Source

A message source is used to take over extended alarm messages. If you configure alarms for message sources, extended alarm messages can be sent to various endpoints.

Endpoint

An endpoint is a method that users obtain subscribed messages. Endpoints are categorized into system endpoints, email, DingTalk, HTTP application, short message service, and Microsoft Teams.

Alarm Message

An alarm message is a message sent the time when an alarm is triggered.

Operation Log

An operation log is a chronological record of operations on the specified objects and their operation results.

Audit

Audit monitors and records all activities on the Cloud. You can use this feature to implement operation tracking, cybersecurity classified protection compliance, security analysis, troubleshooting, and automatic O&M.

Backup Management

Backup management integrates multiple disaster recovery technologies such as incremental backup and full backup that are suitable for multiple business scenarios. You can implement local backup and remote backup based on your business needs.

Backup Job

You can create a backup job to back up local VM instances, volumes, or databases to a specified storage server on a regular basis.

Local Backup Data

Local backup data of VM instances, volumes, and databases is stored in the local backup storage.

Local Backup Storage

A local backup storage is located at the local data center and is used to store local backup data.

Remote Backup Storage

A remote backup storage is located at a remote data center or a public cloud and is used to store remote backup data.

Continuous Data Protection (CDP)

Continuous Data Protection (CDP) provides second-level and fine-grained continuous backups for important business systems in VM instances, allowing users to restore VM data to any time state and retrieve files without restoring the system.

CDP Task

You can create a CDP task to continuously back up your VM data to a specified backup storage to achieve continuous data protection and restoration.

CDP Data

The backup data generated from continuous data protection on VM instances is stored in local backup storages.

Scheduled Job

A scheduled job defines that a specific action be implemented at a specified time based on a scheduler.

Scheduler

A scheduler is used to schedule jobs. It is suitable for business scenarios that last for a long time.

Tag

A tag is used to mark resources. You can use a tag to search for and aggregate resources.

Migration Service

The Cloud provides V2V migration service that allows you to migrate VM instances and data from other virtualized platform to the current cloud platform.

V2V Migration

V2V Migration allows you to migrate VM instances from the VMware or KVM platform to the current cloud platform.

V2V Conversion Host

A V2V conversion host is a host in the destination cluster that you need to specify during V2V migration to cache VM instances and data when you implement V2V migration. After the VM instances and data are cached in the V2Vconversion host, they are migrated to the destination primary storage.

User

A user is a natural person that constructs the most basic unit in business management.

Member Group

A member group is a collection of natural persons or a collection of project members. You can use a member group to grant permissions.

Role

A role is a collection of permissions that can be granted to users. A user that assumes a role can call API operations based on the permissions specified by the role. Roles are categorized into system roles and custom roles.

3rd Party Authentication

The 3rd party authentication feature allows you to integrate third-party authentication systems to the Cloud. Then you can use a third-party account to log in to the Cloud and use the resources in the Cloud. You can add an AD or LDAP server to the Cloud.

Project

A project is a task that needs to be accomplished by specific personnel at a specified time. Resources and budgets are also specified for projects. In business management, you can plan resources at the project granularity and allocate an independent resource pool for a project.

Project Member

A project member is a member in a project who is granted permissions on specific project resources and can use the resources to accomplish tasks. Project members include the project admin, project managers, and normal project members.

Process Management

Process management is part of ticket management that manages the processes related to the resources of projects. Processes can be categorized into default processes and custom processes

My Approvals

In the Cloud, only the administrator and project administrators are granted approval permissions. the administrator and project administrators can approve or reject a ticket. If a ticket is approved, resources are automatically deployed and allocated to the specified project.

Bills

A bill is the expense of resources totaled at a specified time period. Billing is accurate to the second. Bills can be categorized into project bills, department bills, and account bills.

Pricing List

A pricing list is a list of unit prices of different resources. The unit price of a resource is set based on the specification and usage time of the resource.

Console Proxy

Console proxy allows you to log in to a VM instance by using the IP address of a proxy.

AccessKey Management

An AccessKey pair is a security credential that one party authorizes another party to call API operations and access its resources in the Cloud. AccessKey pairs shall be kept confidential.

IP Blocklist/Allowlist

An IP blocklist or allowlist identifies and filters IP addresses that access the Cloud. You can create an IP allowlist or blocklist to improve access control of the Cloud.

Application Center

Application Center allows you to add third-party applications to the Cloud and then access the applications by using the Cloud. It extends the functionality of the Cloud.

Sub-Account Management

A sub-account is created and managed by the admin. Resources created under a sub-account is managed by the sub-account.

Theme and Appearance

You can customize the theme and appearance of the Cloud.

Email Server

If you select Email as the endpoint of an alarm, you need to set an email server. Then alarm messages are sent to the email server.

Log Server

A log server is used to collect logs of the management node. You can add a log server to the cloud and use the collected logs to locate errors and exceptions. This makes your O&M more efficient.

Global Setting

Global Setting allows you to configure settings that take effect on the whole platform.

Scenario Template

Scenario Template provides multiple templates that encapsulate scenario-based global settings. You can apply a template globally with one click based on your business needs. This improves your O&M efficiency.