使用Restful API调用API

1. 调用API获取token：

```
curl -i -X POST -d '{"auth":{"identity":{"methods":["password"],"password":{"user":
{"domain":{"name":"default"},"name":"admin","password":"123456"}}},"scope":{"project":
{"domain":{"name":"default"},"name":"admin"}}}}' -H "Content-Type: application/json"
http://192.168.1.11:35357/v3/auth/tokens | grep X-Subject-Token
```

> token是存在返回消息的header中

2. 使用curl调用，获取所有的network：

```
curl -X GET -H "Content-Type: application/json" -H "Accept: application/json" -H "X-Auth-
Token:gAAAAABbImwck6IK7i7JVMyTkx23gf53Ymig-MN8VvgoZm4PgAxQ97x5kW_-hU4E23yRGzJSC-
CiMP9paEC7LZOZ9-Er9luLMLju-rn7L39j8SjjSznZYcmki4L7oY1JG4a8d7GOLjrqUr-Trj-
VhfySVNddHgnymNUV2FGmXq7CKS4XLAWq2gO" http://controller:9696/v2.0/networks | python -m
json.tool
```

> `X-Auth-Token`后跟的是获取到的token

3. 获取所有的port信息：

```
curl -X GET -H "Content-Type: application/json" -H "Accept: application/json" -H "X-Auth-
Token:gAAAAABbImwck6IK7i7JVMyTkx23gf53Ymig-MN8VvgoZm4PgAxQ97x5kW_-hU4E23yRGzJSC-
CiMP9paEC7LZOZ9-Er9luLMLju-rn7L39j8SjjSznZYcmki4L7oY1JG4a8d7GOLjrqUr-Trj-
VhfySVNddHgnymNUV2FGmXq7CKS4XLAWq2gO" http://controller:9696/v2.0/ports | python -m
json.tool
```

4. 创建port：

向openstack调用的POST消息格式如下：

```
{
    "port": {
        "admin_state_up": true,
        "name": "1234567890-port",
        "network_id": "a4f79459-6659-4a7e-a05a-a42a03befd9e",
        "device_owner": "compute:kuryr",
        "device_id": "1234567890",
        "binding:host_id": "compute5",
        "port_security_enabled": false,
        "fixed_ips": [{
            "ip_address": "1.0.0.120",
            "subnet_id": "5bac07f5-2762-4391-8ed8-029d4ed0eb80"
        }]
```

```
    }
}
```

使用如下命令调用API：

```
curl -X POST -H "Content-Type: application/json" -H "Accept: application/json" -H "X-Auth-Token:gAAAAABbOMa4-OBCFzp_6S1RsB_dwjSCa8I3vzlYZHgIyutxqDr4ox-bgJA3AdEe3TomBDJWf1pbKuLnZtHgSEy2SvonepDEvmpF4HvdhtRQu4DrH-PI5QER221t17xLdYV-atkmhIc3Jn-Cl378nru51YQTO1En4Of_CH4_cIP8RLfopioPek8" -d '{"port": {"admin_state_up": true, "name": "1234567890-port", "network_id": "a4f79459-6659-4a7e-a05a-a42a03befd9e", "device_owner": "compute:kuryr", "device_id": "1234567890", "binding:host_id": "compute5", "port_security_enabled": false, "fixed_ips": [{"ip_address": "1.0.0.120", "subnet_id": "5bac07f5-2762-4391-8ed8-029d4ed0eb80"}]}}' -i "http://controller:9696/v2.0/ports"
```

收到的回复消息格式如下：

```
{
    "port": {
        "status": "DOWN",
        "binding:host_id": "compute5",
        "description": "",
        "allowed_address_pairs": [],
        "extra_dhcp_opts": [],
        "updated_at": "2018-06-22T13:05:10",
        "device_owner": "compute:kuryr",
        "port_security_enabled": true,
        "binding:profile": {},
        "fixed_ips": [{
            "subnet_id": "5bac07f5-2762-4391-8ed8-029d4ed0eb80",
            "ip_address": "1.0.0.120"
        }],
        "id": "ad05e867-fafb-4413-9f1c-ca9420ec56af",
        "security_groups": ["82accba2-c713-4b41-84d7-bd1832c632c2"],
        "device_id": "1234567890",
        "name": "1234567890-port",
        "admin_state_up": true,
        "network_id": "a4f79459-6659-4a7e-a05a-a42a03befd9e",
        "dns_name": null,
        "binding:vif_details": {
            "port_filter": true,
            "ovs_hybrid_plug": true
        },
        "binding:vnic_type": "normal",
        "binding:vif_type": "ovs",
        "tenant_id": "f2e64bde168f41358b47ca3f1e1caea1",
        "mac_address": "fa:16:3e:4d:7f:22",
        "created_at": "2018-06-22T13:05:10"
    }
}
```

在创建完port之后，port的状态是 `DOWN` 的，需要将其置为 `ACTIVE` 还需要以下操作：

- 首先，需要在主机所在的宿主机节点上创建一对veth设备，如：yunad05e867-fa和eth0

  > ad05e867-fa是portID的前11位

- 其次将两个设备都置为UP
- 将yunad05e867-fa挂载到ovs的`br-int`上，并配置`external-ids`选项，使neutron-openvswitch-agent在扫描到该端口后，可以将逻辑port的状态改为`ACTIVE`，并添加相关的流表，命令如下：

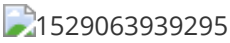
```
ovs-vsctl -- --may-exist add-port br-int yunad05e867-fa -- set Interface yunad05e867-fa external-ids:iface-id=ad05e867-fafb-4413-9f1c-ca9420ec56af external-ids:iface-status=active external-ids:attached-mac=fa:16:3e:4d:7f:22 external-ids:vm-uuid=1234567890 external-ids:owner=kuryr
```

  > 1. 设置`iface-id`为portID
  > 2. 设置`iface-status`为active
  > 3. 设置`attached-mac`为创建的port信息的MAC地址
  > 4. 设置`vm-uuid`为docker的endpointID，保持与返回的port信息中的`device_id`一致
  > 5. 设置`owner`为kuryr（这个可能不是必须的，如果写的话，尽量保证与port信息中的`device_owner`中的一致）

- 此处是将qvb02ef553a-e9挂载至命名空间中做测试，因此需要将该端口的网卡MAC地址更改为port信息中的MAC地址，这样才可以匹配ovs的流表：

```
ip link set eth0 address fa:16:3e:4d:7f:22
```

构建的拓扑图如下：

 1529063939295

5. 从glance下载镜像：

```
curl -i -v -s -X GET -H "X-Auth-Token:$OS_TOKEN"
http://controller:9292/v2/images/{image_id}/file > {image_id}.img
```

> 将上面的image_id替换为镜像的ID

利用重定向符将文件保存为.img格式的镜像文件