

Managing Networks with Neutron



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Overview



Nova Network

What's in a network

Neutron concepts

Connecting servers

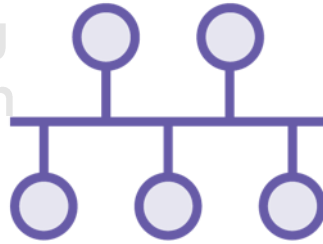


Nova Network



Nova: Compute and Network

Image Catalog
Authentication
Block Storage
Networking



Quantum: Network



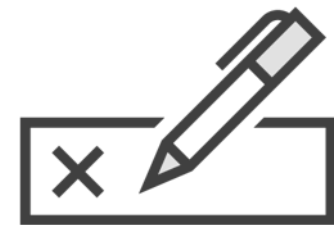
Cinder: Block Storage



Swift: Object Storage



Glance: Image



Keystone: Identity





Nova Network

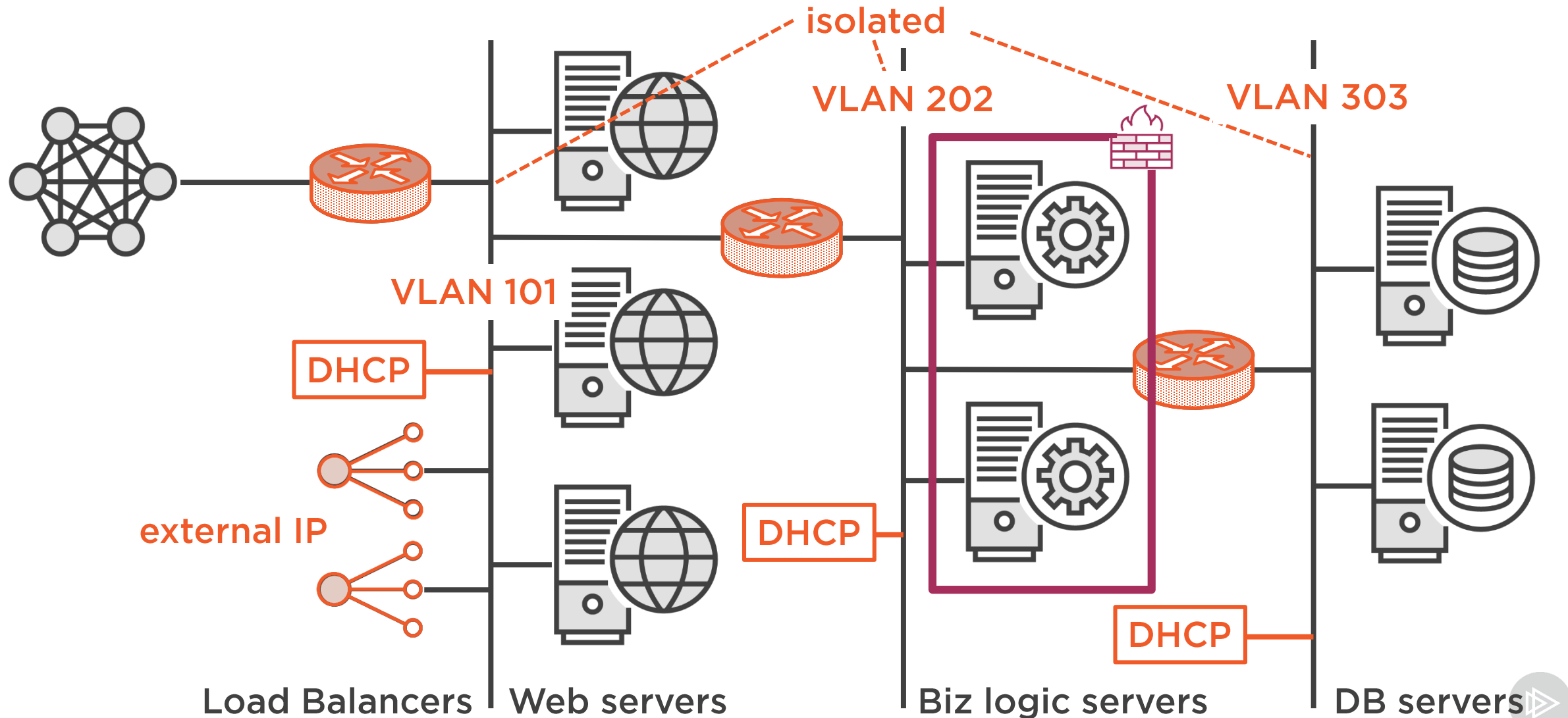
What's in a network

Neutron concepts

Connecting servers



What's in a Network?

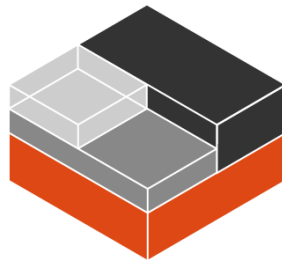


What's Under the Hood?

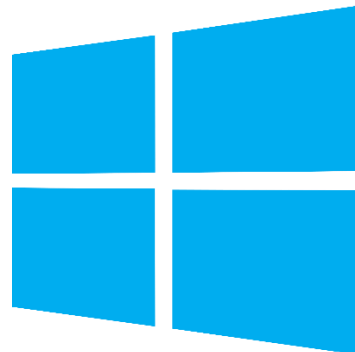
Nova hypervisor support



baremetal



Linux Containers



Hyper-V

MidoNet

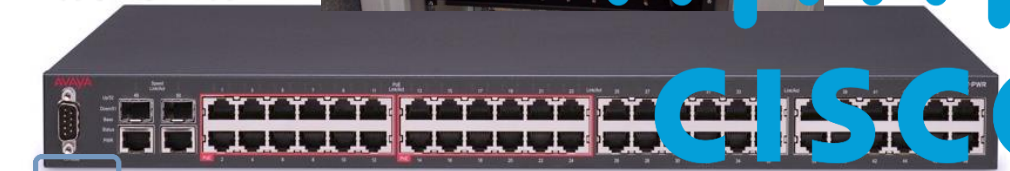
Neutron network technologies support

VLAN

BROCADE

OPEN VSW
An Open Virtual Switch

SR-IOV
Linuxbridge



VXLAN

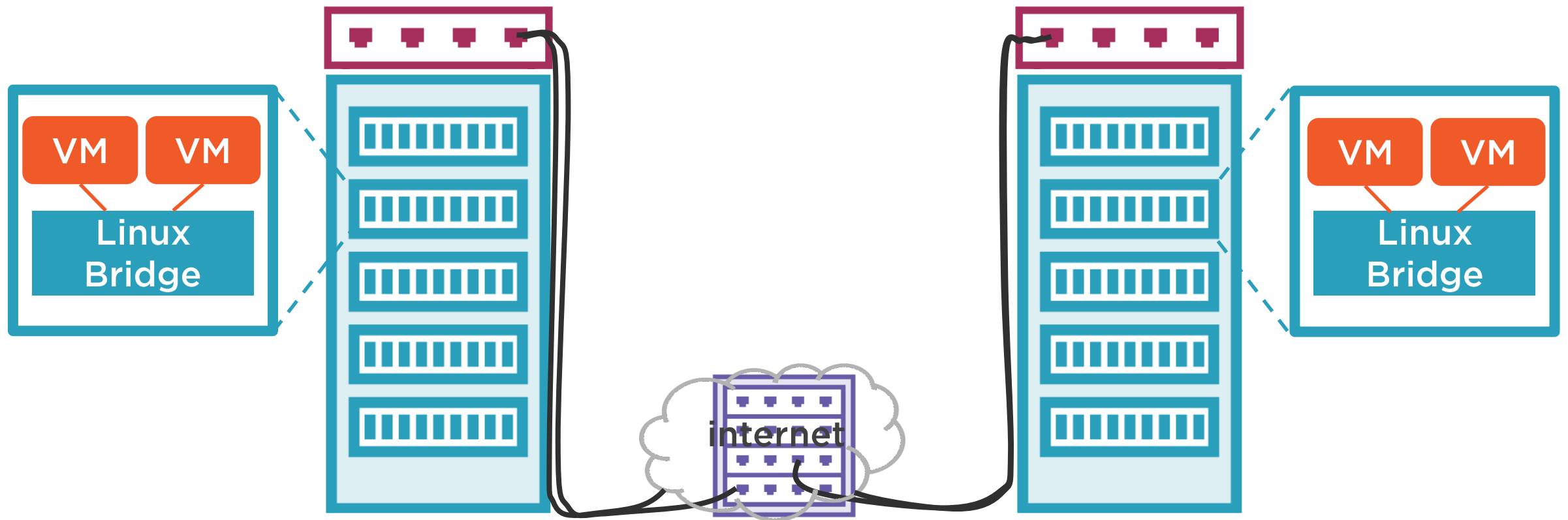
GRE



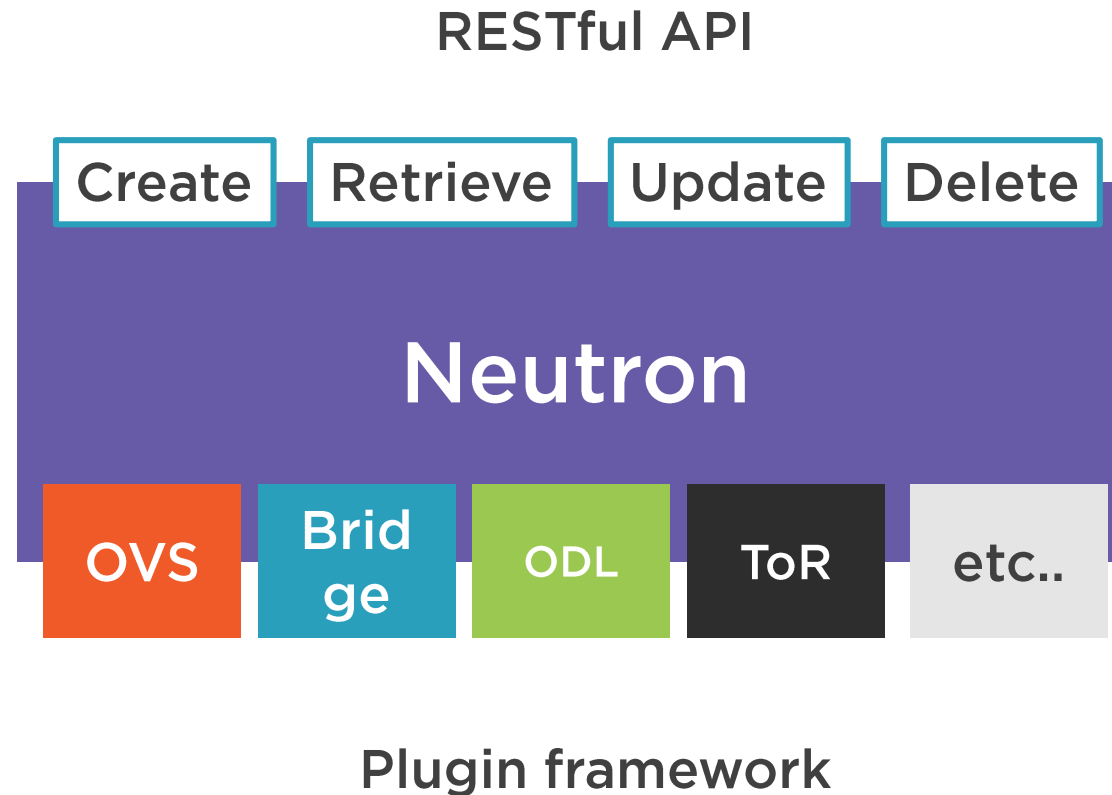
JUNIPER
OPEN NETWORKS
DAYLIGHT



What's Under the Hood?



What's Under the Hood?





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Neutron Core Concepts

192.168.10.0/24
172.24.4.224/28

Subnet

- IP address range
- TCP, UDP, ICMP, ARP packets
- DNS, DHCP



Port

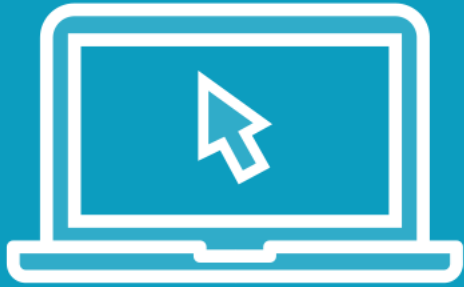
- Connects servers, routers, DHCP etc
- Network attachment
- Carries MAC and IP addresses

Network

- Layer 2 broadcast domain
- Ethernet packets
- MAC addresses



Demo



Use the neutron client

Networks, subnets, ports



Command Summary

```
$ openstack network create  
$ openstack network list  
$ openstack network show  
$ openstack network update
```

```
$ openstack port create  
$ openstack port list  
$ openstack port show  
$ openstack port update
```

```
$ openstack subnet create  
$ openstack subnet list  
$ openstack subnet show  
$ openstack subnet update
```

```
$ openstack server create ... --nic net-id=NETWORK_UUID
```



Equivalent Neutron/Nova Commands

```
$ neutron net-create
```

```
$ neutron net-list
```

```
$ neutron net-show
```

```
$ neutron net-update
```

```
$ neutron port-create
```

```
$ neutron port-list
```

```
$ neutron port-show
```

```
$ neutron port-update
```

```
$ neutron subnet-create
```

```
$ neutron subnet-list
```

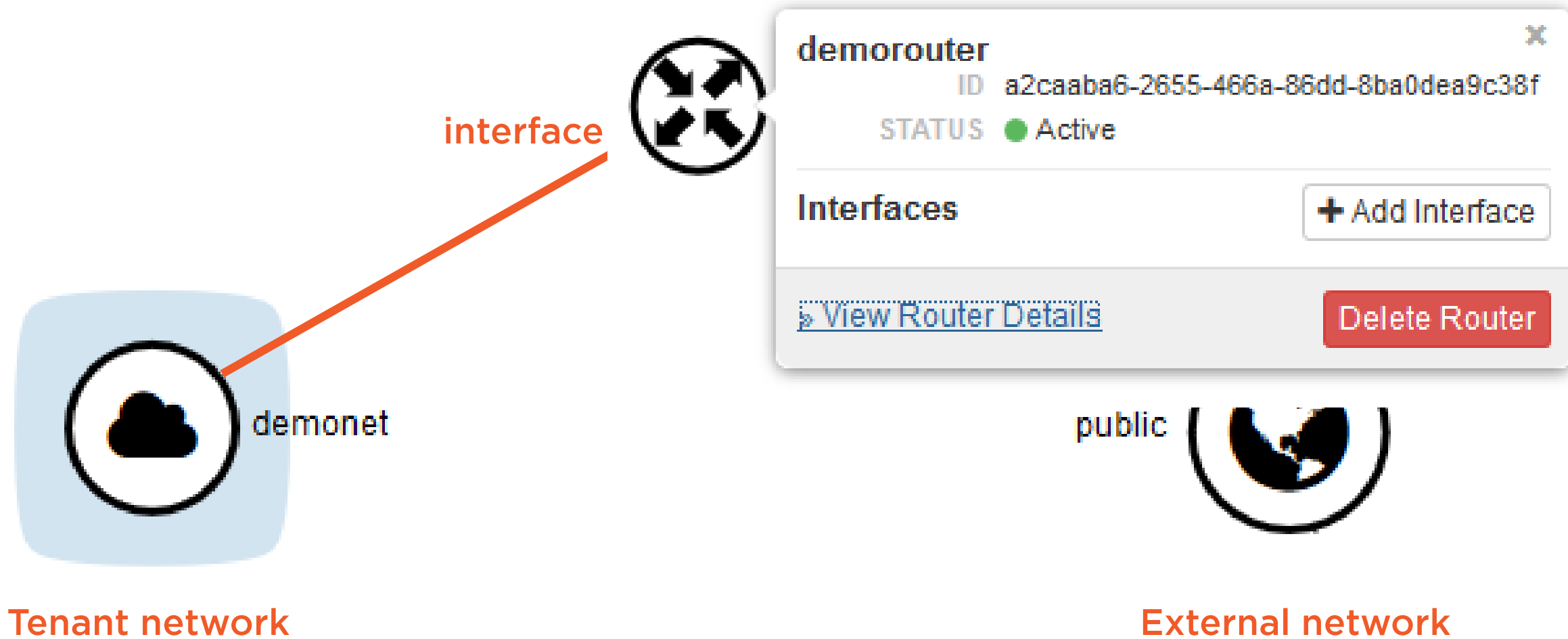
```
$ neutron subnet-show
```

```
$ neutron subnet-update
```

```
$ nova boot ... --nic net-id=NETWORK_UUID
```



Routers



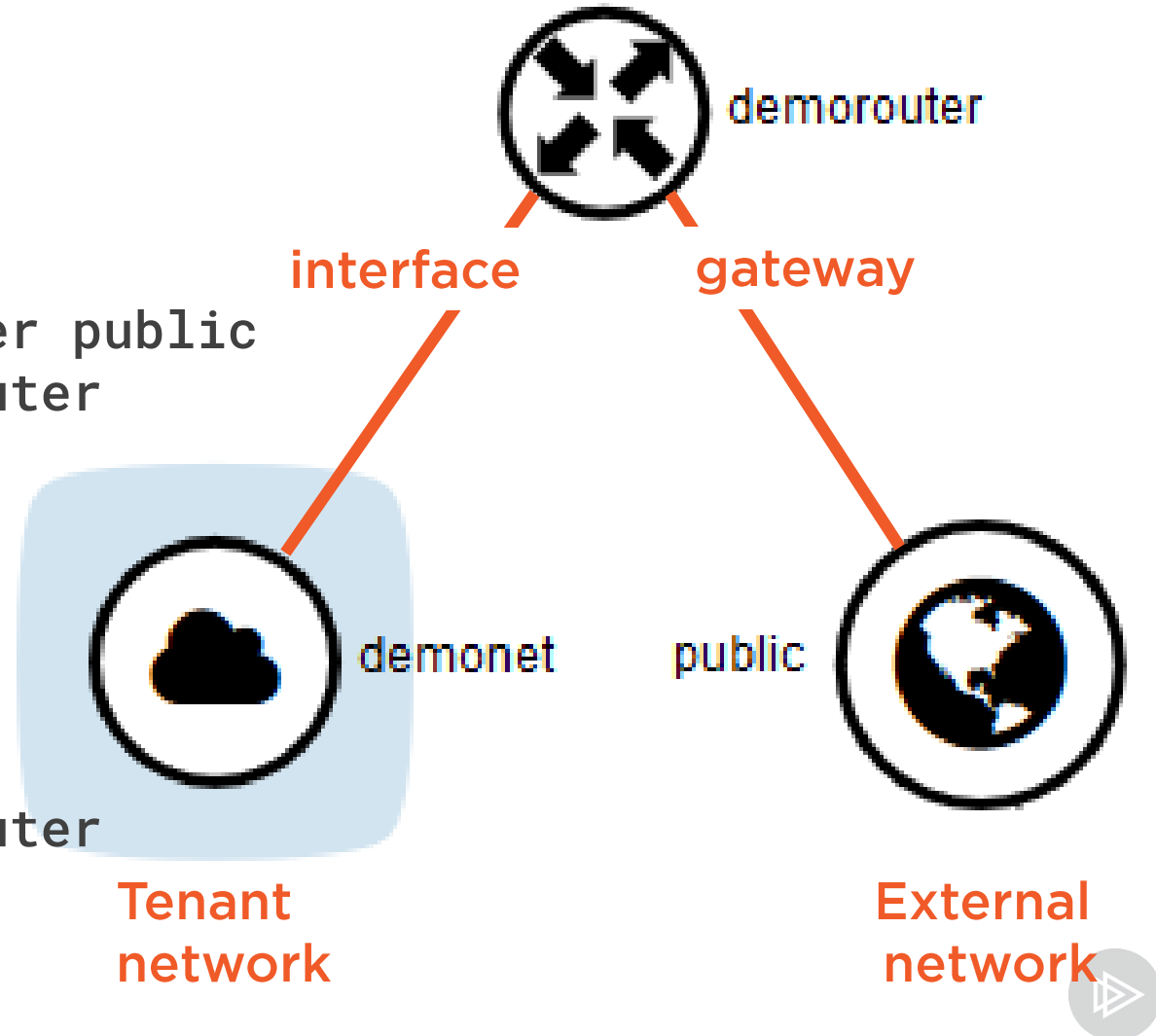
Routers

```
$ openstack router create demorouter  
$ openstack router show demorouter  
$ openstack router delete demorouter
```

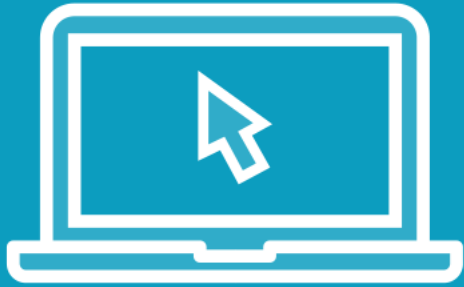
```
$ neutron router-gateway-set demorouter public  
$ neutron router-gateway-clear demorouter
```

```
$ openstack router add subnet \  
    demorouter private_subnet  
$ openstack router remove subnet \  
    demorouter private_subnet
```

```
$ openstack port list --router demorouter
```



Demo



Routers





Nova Network

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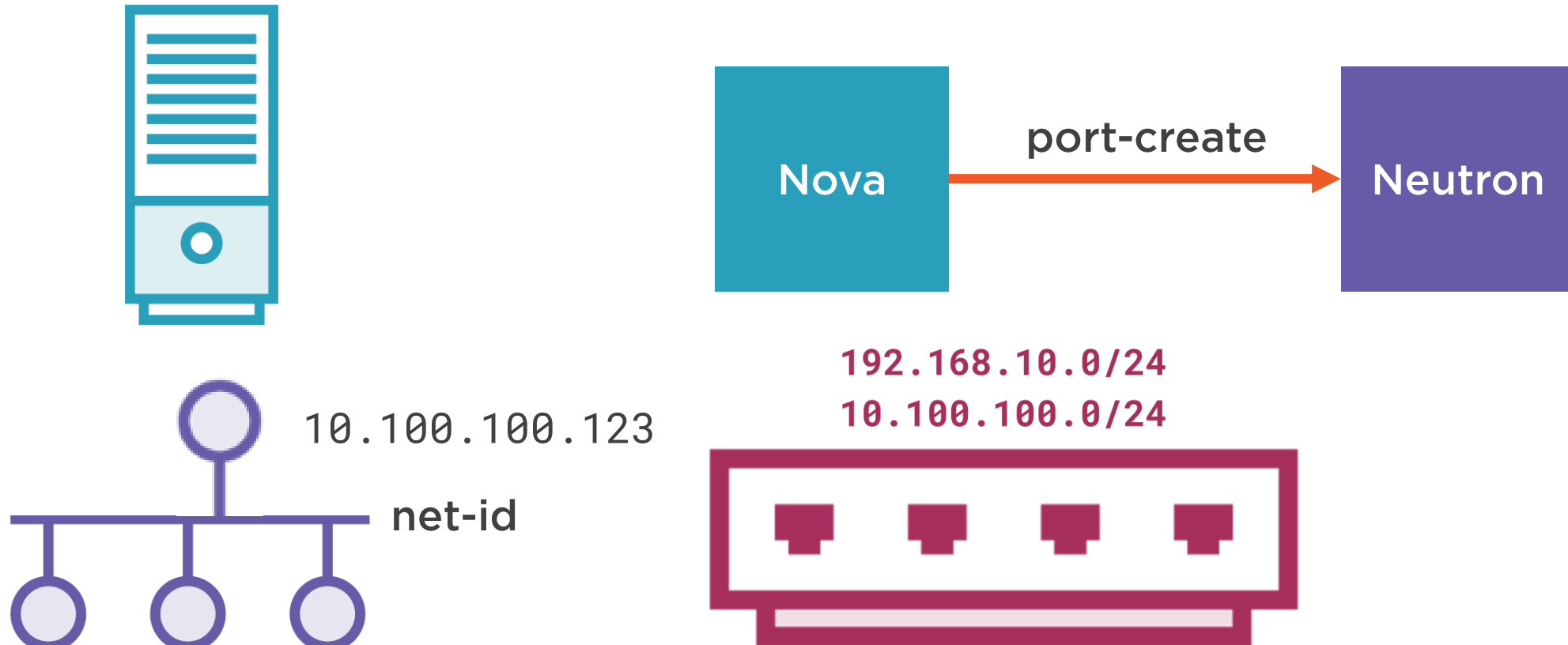
Connecting servers



Connecting a Server to a Network

```
$ openstack server create ... --nic net-id=NETWORK_UUID
```

```
$ openstack server create ... --nic port-id=PORT_UUID
```



IP Addresses, Subnets and Ports

```
$ openstack port create ... --fixed-ip subnet=SUBNET
```

```
$ openstack port create ... --fixed-ip ip-address=10.0.0.123
```

```
$ openstack server create ... -nic port-id=PORT_ID
```

```
$ openstack server create ...  
    --nic net-id=NETWORK_ID, v4-fixed-ip=10.0.0.123
```

```
$ openstack floating ip set 172.24.4.227 --port PORT
```

```
$ openstack floating ip create EXTERNAL_NW --port PORT
```



Demo



Setting IP Addresses



Summary



Nova Network

What's in a network

Neutron concepts

Neutron in practice

