

OpenStack Neutron Lab 4: Building Your Cloud Playground

Use Case Scenario:

Welcome to the OpenStack Neutron Lab – your gateway to creating and managing your cloud playground. As a member of a technology enthusiasts club at a university, your mission is to establish a dynamic and collaborative platform for experimenting with virtual machines, networks, and more. In this lab, OpenStack Neutron will be your primary tool for networking tasks, complemented by OpenStack Nova (Compute service) for virtual machine management. Together, they empower you to shape the digital infrastructure that fuels your club's innovative projects. In this setup:

- **Neutron:** Used for creating and managing networks, subnets, and routers. It plays a crucial role in setting up isolated environments for different project teams within your tech club.
- **Nova (Compute service):** Used for creating and managing virtual machines. As the admin, you'll leverage Nova to launch new VMs, specifying details such as flavor, network setup, and ensuring the SSH key pair is allocated.

Part 1: Setting Up SSH Keys

In this section, you'll focus on securing access to virtual machines through SSH. As the tech club admin, leverage OpenStack Neutron and Nova to enable SSH services and manage virtual machines, ensuring seamless communication and secure coding environments.

Interactive Lab Activities:

Activity 1: Enabling SSH and Creating Key Pairs

- Your task: Using the OpenStack CLI, navigate to Neutron and ensure SSH services are enabled by managing security group rules. Follow the steps to add an SSH rule if needed.
- Next, use the CLI to create a key pair for secure SSH connections within Nova. Download the key pair file for future use.

Part 2: Setting Up Networks

Imagine scenarios where different project teams within the tech club require isolated networks for their experiments. This section guides you through using Neutron to create networks, set up subnets, and establish routers, allowing project teams to work independently on their innovative projects without interference.

Activity 2: Creating Networks and Routers

- Envision different project teams requiring isolated networks. As the admin, use the OpenStack CLI to navigate to Neutron, create a new network, and set up an associated subnet for proper isolation.

- Continuing with the network setup, use the CLI to create a router within Neutron to connect these networks and enable communication between them.

Activity 3: Creating and Managing VMs

Now, picture each project team wanting to experiment with virtual machines. As the admin, use the OpenStack CLI to navigate to Nova and follow the steps to launch a new VM. Specify details such as flavor, network setup, and ensure the SSH key pair you created earlier within Nova is allocated. Explore the progress by checking the VM's log.

Activity 4: Associating Floating IPs

- To make the VM accessible externally, use the OpenStack CLI to navigate to Neutron, associate a floating IP to the VM, enabling external access. This feature is especially handy when showcasing your innovative projects to the broader community.

Conclusion:

Through these hands-on activities, you'll gain proficiency in using OpenStack Neutron and Nova, witnessing their power in fostering collaborative efforts. SSH-enabled instances, isolated networks, and virtual machines become the foundational elements of your digital playground. As the admin, you'll empower club members to push the boundaries of technology, cultivating a culture of innovation and exploration within your tech enthusiasts community. OpenStack Neutron and Nova transform into more than tools; they become the canvas for your club's digital masterpiece.