OpenStack Neutron Lab: Building Your Cloud Playground

As a forward-thinking software development company embracing the paradigm shift towards cloud-native applications, the pivotal role of OpenStack Neutron and Nova becomes increasingly evident. These robust components are indispensable in constructing a cutting-edge development environment characterized by agility, efficiency, and scalability. OpenStack Neutron empowers us to create and manage isolated networks and routers, ensuring a secure and dynamic foundation for our cloud-native initiatives. Meanwhile, OpenStack Nova takes center stage in the orchestration of virtual machines, providing the flexibility and resource management essential for crafting resilient and scalable solutions. Together, these technologies form the backbone of our transformative journey, enabling us to build, test, and deploy modern, cloud-native applications with unparalleled efficiency and adaptability.

Part 1: Setting Up SSH Keys

Activity 1: Enabling SSH and Creating Key Pairs

1. Ensure SSH Services in Neutron via Horizon:
    - Navigate to the "Network" section in Horizon.
    - Review and manage security group rules for SSH services.

Real-world Example: In a research institution, scientists collaborate on various projects. Enabling SSH ensures secure access to virtual machines, allowing researchers to remotely access and analyze data without compromising security.

2. Create Key Pair in Nova via Horizon:
    - Go to the "Compute" section in Horizon.
    - Create a new key pair for secure SSH connections.
    - Download the key pair file.

Real-world Example: Imagine a startup with a development team. Creating a key pair ensures secure communication between developers and their virtual machines, safeguarding sensitive code and data.

Part 2: Setting Up Networks

Activity 2: Creating Networks and Routers

3. Create Isolated Networks and Routers in Neutron via Horizon:
    - Navigate to the "Network" section in Horizon.
    - Create networks for different project teams.

- Set up subnets for proper isolation.
- Create routers to connect these networks.

Real-world Example: Within a corporate setting, different departments may need isolated environments for their projects. Setting up networks and routers ensures secure collaboration while maintaining network separation.

Activity 3: Creating and Managing VMs

4. Launch VMs for Project Teams in Nova via Horizon:
    - Go to the "Compute" section in Horizon.
    - Launch a new virtual machine.
    - Specify details such as flavor, network setup, and allocate the SSH key pair.

Real-world Example: In an educational institution, each class may require VMs for hands-on learning. Launching VMs for project teams ensures a dedicated and controlled environment for students to experiment and develop their skills.

Activity 4: Associating Floating IPs

5. Associate Floating IPs in Neutron via Horizon:
    - Navigate to the "Network" section in Horizon.
    - Associate a floating IP to make VMs externally accessible.

Real-world Example: A software development company conducts client demonstrations. Associating floating IPs allows developers to showcase applications running on VMs to clients over the internet without exposing the internal network.

Conclusion:

Through these activities in OpenStack Horizon, you'll become proficient in using Neutron and Nova. SSH-enabled instances, isolated networks, and virtual machines become foundational elements in your digital playground. As the admin, you empower club members to explore technology, fostering a culture of innovation within the tech enthusiasts community. OpenStack Neutron and Nova transform into the canvas for your club's digital masterpiece.