

## Course Outline:

### Lab Architecture: Single Node OpenStack Cluster

- **An introduction to OpenStack**, including its architecture, history, the OpenStack Foundation, plus an overview of the most commonly used components with discussion of additional components for containers, bare metal, workflows, monitoring, cloud costing, and more.
- **Keystone (Identity service)**: Authenticating with Keystone, managing tokens, RBAC policies, & the purpose of the Service Catalog
- **Glance (Image service)**: Creating & managing images, options to build an image, the purpose of cloud-init
- **Neutron (Network service)**: Understand what networks OpenStack uses, such as, the management network. Neutron architecture, including plugins, namespaces, layer 2 protocols, layer 3 routing, Neutron security groups, and more.
- **Nova (Compute service)**: Using Nova to deploy virtual machine (VM) instances & control where the instances are deployed. Deploying instances with SSH keys for better security. Understanding the supported hypervisors. Lastly, implementing resource quotas.
- **Cinder (Block Storage/Volume service)**: Understand the use of volumes, snapshots, and backups. You also create and use a boot volume.
- **Heat (Orchestration service)**: Discusses Heat templates, their syntax, and MANY practical day-to-day examples of Heat templates, including examples of installing and configuring software on your instances at boot. Heat (Orchestration service): Discusses Heat templates, their syntax, and MANY practical day-to-day examples of Heat templates, including examples of installing and configuring software on your instances at boot.