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Study on Openstack

Aim :

To study about Openstack

Procedure:

What is OpenStack?

OpenStack is an open source platform that uses pooled virtual resources to build and manage private and public clouds. The tools that comprise the OpenStack platform, called "projects," handle the core cloud-computing services of compute, networking, storage, identity, and image services. More than a dozen optional projects can also be bundled together to create unique, deployable clouds.

In virtualization, resources such as storage, CPU, and RAM are abstracted from a variety of vendor-specific programs and split by a hypervisor before being distributed as needed. OpenStack uses a consistent set of application programming interfaces (APIs) to abstract those virtual resources 1 step further into discrete pools used to power standard cloud computing tools that administrators and users interact with directly.

Private cloud

Private cloud refers to a model of cloud computing where IT services are provisioned over private IT infrastructure for the dedicated use of a single organization. A private cloud is usually managed via internal resources. OpenStack is a cloud operating system that controls large pools of compute, storage, and networking resources throughout a datacenter, all managed through a dashboard that gives administrators control while empowering their users to provision resources through a web interface.

How does OpenStack work?

OpenStack is essentially a series of commands known as scripts. Those scripts are bundled into packages called projects that relay tasks that create cloud environments. In order to create those environments, OpenStack relies on 2 other types of software:

- Virtualization that creates a layer of virtual resources abstracted from hardware
- A base operating system (OS) that carries out commands given by OpenStack scripts

Think about it like this: OpenStack itself doesn't virtualize resources, but rather uses them to build clouds. OpenStack also doesn't execute commands, but rather relays them to the base OS. All 3 technologies—OpenStack, virtualization, and the base OS—must work together. That interdependency is why so many OpenStack clouds are deployed using Linux®, which was the inspiration behind RackSpace and NASA's decision to release OpenStack as open source software.

The OpenStack components

OpenStack's architecture is made up of numerous open source projects. These projects are used to set up OpenStack's undercloud and overcloud—used by sys admins and cloud users, respectively. Underclouds contain the core components sys admins need to set up and manage end users' OpenStack environments, known as overclouds.

There are 6 stable, core services that handle compute, networking, storage, identity, and images while more than a dozen optional ones vary in developmental maturity. Those 6 core services are the infrastructure that allows the rest of the projects to handle dashboarding, orchestration, bare-metal provisioning, messaging, containers, and governance.

Nova

Nova is a full management and access tool to OpenStack compute resources—handling scheduling, creation, and deletion.

Neutron

Neutron connects the networks across other OpenStack services.

Swift

Swift is a highly fault-tolerant object storage service that stores and retrieves unstructured data objects using a RESTful API.

Cinder

Cinder provides persistent block storage accessible through a self-service API.

Keystone

Keystone authenticates and authorizes all OpenStack services. It's also the endpoint catalog for all services.

Glance

Glance stores and retrieves virtual machine disk images from a variety of locations.

System Requirements:

Operating system:

Ubuntu 16.04 LTS (Xenial Xerus)

CentOS (support is experimental)

Centos 7, fully updated.

Processor- 1

Memory -4 GB

Storage- 10 GB

Result:

Thus, the study of Openstack is completed successfully