**The cloud and some history on OpenStack**

**The Cloud (**As described by the NIST (National Institute of Standards and Technology)

**An on-demand self-service**

A consumer can provision computing capabilities, such as servers, networks, and storage, as needed automatically and without human interaction.

**Broad network access**

The services are available over the network and can be accessed through standard client platforms (mobile phones, tablets, laptops, and workstations).

**Resource Pooling**

Computing resources are pooled to serve multiple consumers using a multi-tenant model.

Customer typically has no knowledge over the exact location of resources

**Rapid Elasticity**

Capabilities can be elastically provisioned and released to scale rapidly.

**Measured Service**

Resource usage can be monitored, controlled, and reported.

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Amazon was one of the first major companies that was able to make ‘cloud’ marketing work.

Amazon released EC2 which gave us servers that we could use and pay for by the hour.

The idea with cloud infrastructure is to develop applications that are smart enough to work with hardware failures.

Essentially OpenStack’s first goals was to offer what Amazon did with the cloud.

OpenStack today is far beyond that and extremely powerful.

**What is Openstack?**

“OpenStack aims to produce the ubiquitous Open Source Cloud Computing platform that will meet the needs of public and private clouds regardless of size, by being simple to implement and massively scalable.” – As described by the OpenStack Foundation – openstack.org

OpenStack began in 2010 as a joint project of Rackspace Hosting and of NASA

* NASA was creating their own cloud platform that was called Nebula
* Rackspace donated code that powers it files and Open Storage platform known as Cloud Files (known as Swift today) is a lot like AWS (Amazon Web Services) S3

OpenStack is about ‘doing it yourself’ making it open source and offering your own cloud without the expensive AWS cost.

Many other companies joined this effort such as Red Hat, HP, AT&T, Dell, Comcast, and many more.

Today OpenStack is managed by the OpenStack Foundation which is a non-profit corporate entity that promotes OpenStack software and its community.

Early on in OpenStack (2010-2012) with so many major companies having their hands in the code the fear was that one company could have too much say and or control.

* Example: HP didn’t want it to be a Red Hat product, Red Hat didn’t want it to be an HP product.

In 2012 it was decided that OpenStack would license itself under the Apache license and the OpenStack Foundation was founded to manage the project(s).

In 2015 notable Fortune 100 companies like BMW, Disney, and Walmart have irrefutably proven that OpenStack is viable for production environments.

**So where does OpenStack fit in to the cloud?**

“OpenStack is a cloud computing project aimed at providing an infrastructure as a service (IaaS).”

OpenStack is under the Apache 2.0 open source licensing umbrella.

OpenStack was about doing what companies like Amazon was doing, only doing it yourself and making it completely open source.

**OpenStack releases new versions every 6 months**

Most recent versions include (from oldest to newest), Havana, Icehouse, Juno, Kilo, Liberty.

**Overview**

OpenStack is a cloud operating system that controls large pools of compute, storage, and networking resources through a datacenter.

* It allows us to provision virtual machines on demand
  + Provisioning
  + Snapshotting
* Networks
* Storage for VMs and arbitrary files
* Multi-tenancy
  + Quotas for different projects or users
  + A user can be associated with multiple projects