

# Building scalable cloud infrastructure using Red Hat Enterprise Linux OpenStack Platform



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# Agenda

## OpenStack

Introduction | Use Cases | Framework | Components

## Red Hat Enterprise Linux OpenStack Platform

Community Releases | Enterprise Offering | Cloud Infrastructure

## Dell & Red Hat

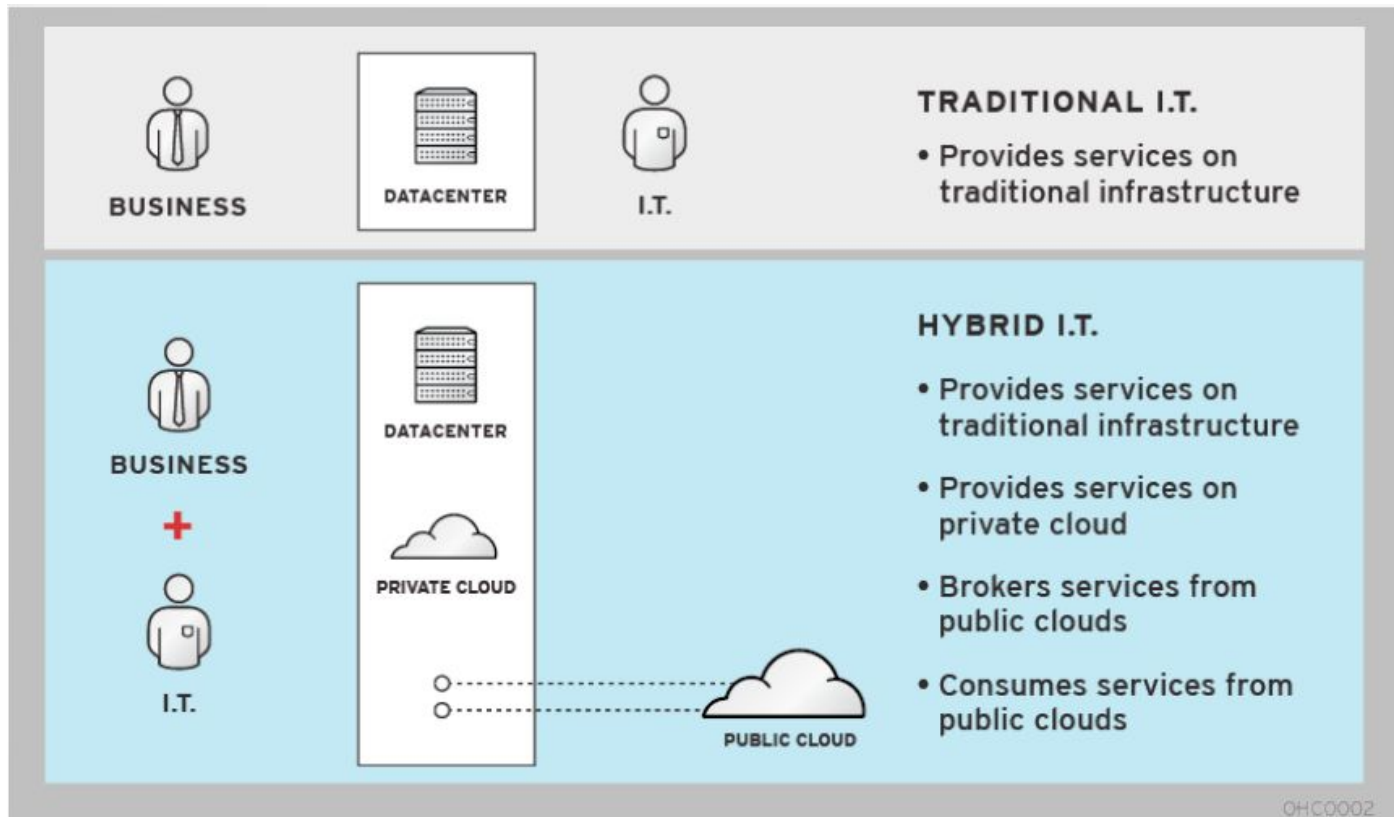
Joint Solutions | Components | Enablement

# uli@redhat.com

- Senior Architect at Red Hat
- based out of Singapore, covering APAC
- web infrastructure, virtualization, automation, cloud
- software developer → project manager → consultant → architect



# The changing role of IT



# What is OpenStack?

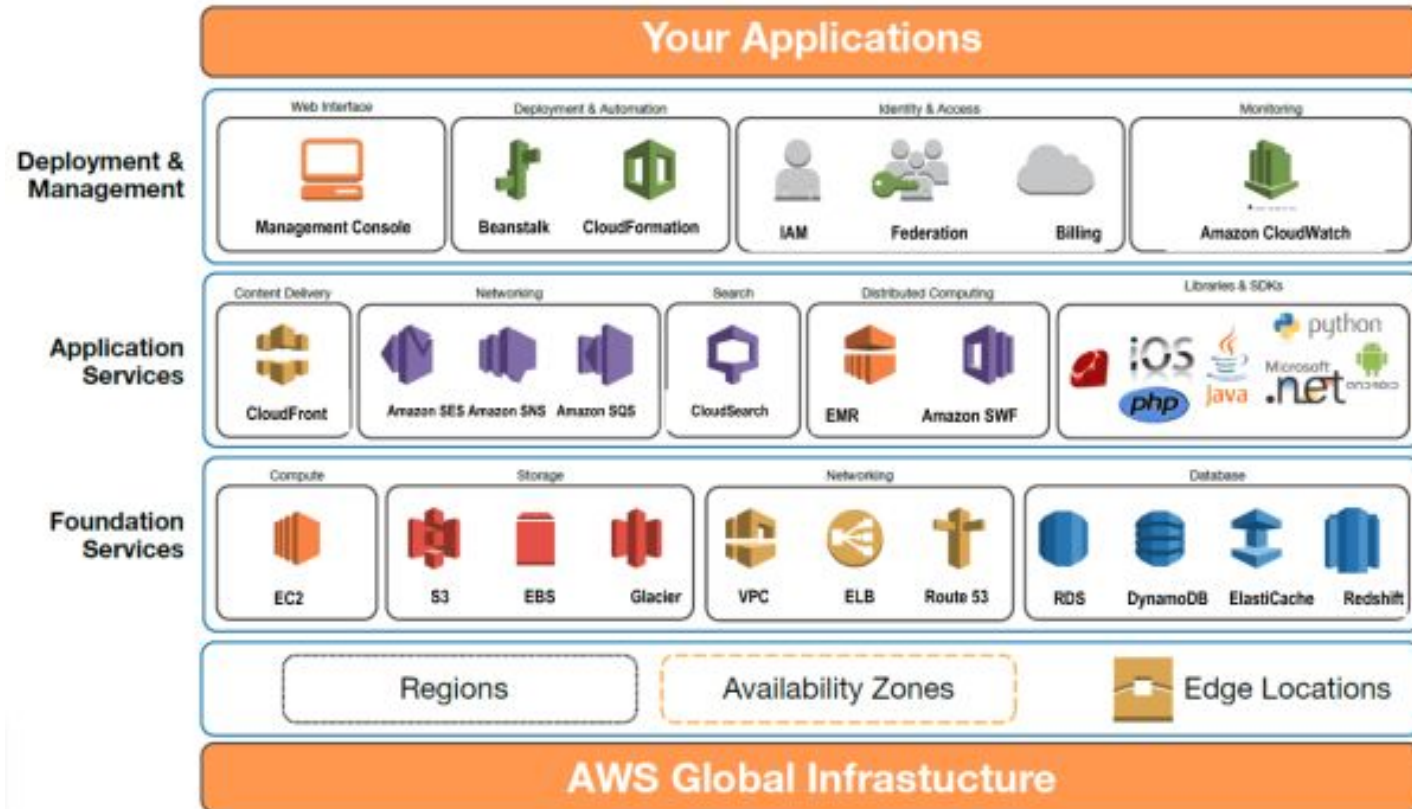
An **open source project** for building a private or public infrastructure-as-a-Service (IaaS) cloud running on standard hardware

A **cloud operating system** that controls large pools of compute, storage and networking resources throughout a datacenter

A **community** of global collaborators creating open source software to build public and private clouds



# Amazon Web Services - Offerings



# Workloads are evolving



**TRADITIONAL WORKLOADS**

- Typically resides on a single large Virtual Machine
- Cannot tolerate any downtime
- Needs expensive high availability tools found in VMware vSphere
- Application scales up rather than out



**CLOUD WORKLOADS**

- Workload resides on multiple Virtual Machines
- Tolerates VM failure – if one fails, another quickly replaces it
- Fault tolerance often built into workload
- Application scales out rather than up



# Workloads are evolving





# OpenStack - Use Cases



- Telco/ISP based Public Cloud offering
- Internal Private Cloud
- AWS Equivalent
- REPLACING: Amazon, first generation private cloud

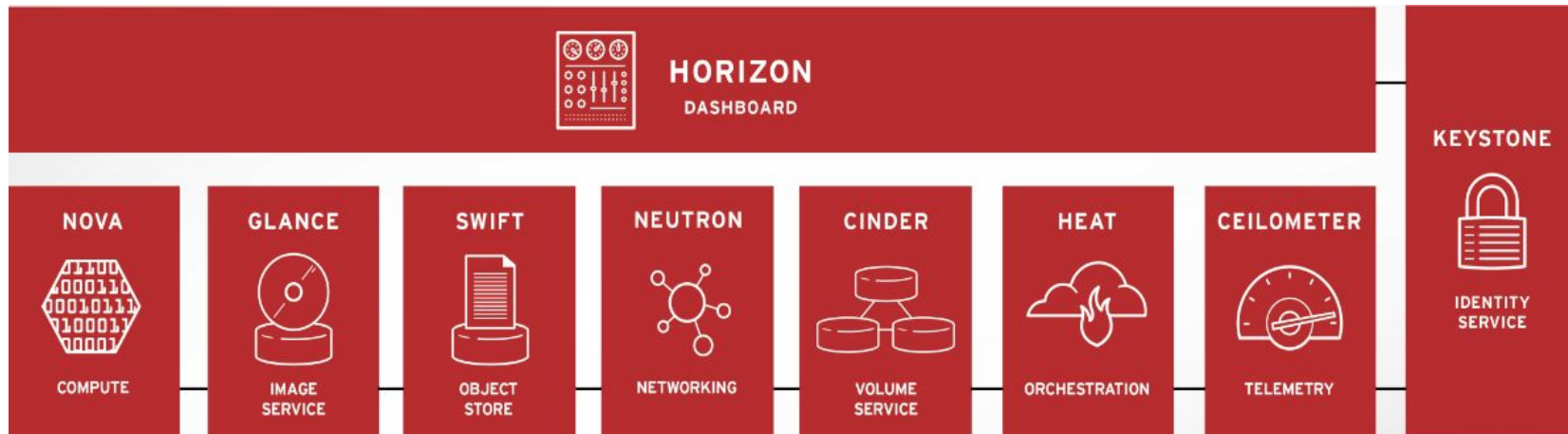


- Content farm
- Scale-out storage
- AWS S3 (Swift) and EBS (Cinder) Equivalent
- REPLACING: SAN, NAS, hardware storage appliances, Amazon S3 and EBS



- Network Functions Virtualization (NFV) platform
- Software Defined Networking (SDN) APIs
- REPLACING: Network appliances, high-end traffic shapers, firewalls, etc.

# The OpenStack Framework



- Modular architecture, designed to easily scale out
- Based on (growing) set of core services
- Needs to access x86 hardware resources
- Needs an operating environment, hypervisor, services
- Leverages existing code libraries for functionality

# Keystone



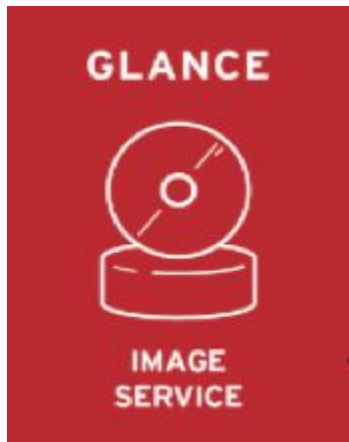
- Identity Service
- Common authorization framework
- Manages users, tenants and roles
- Pluggable backends (SQL, PAM, LDAP, etc)

# Nova



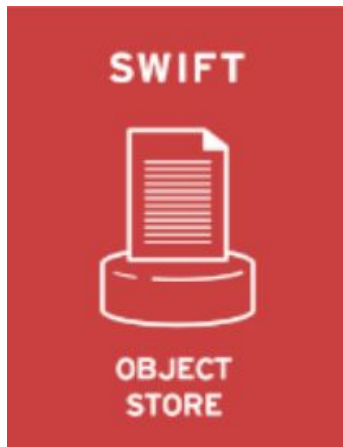
- Core compute service comprised of Compute Nodes – hypervisors that run virtual machines
- Supports multiple hypervisors KVM, Xen, LXC, Hyper-V and ESX
- Distributed controllers that handle scheduling, API calls, etc
- Native OpenStack API and Amazon EC2 compatible API

# Glance



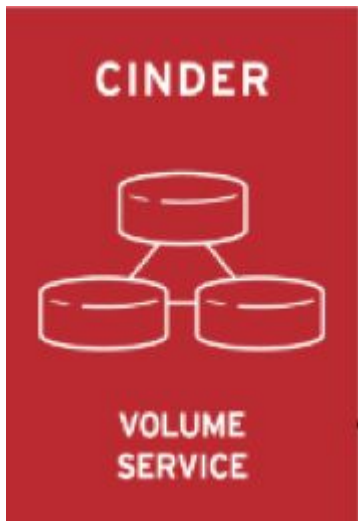
- Image service
- Stores and retrieves disk images (virtual machine templates)
- Supports Raw, QCOW, VMDK, VHD, ISO, OVF & AMI/AKI
- Backend storage : Filesystem, Swift, Amazon S3

# Swift



- Object Storage service
- Modeled after Amazon's S3 service
- Provides simple service for storing and retrieving arbitrary data
- Native API and S3 compatible API

# Cinder



- Block Storage (Volume) Service
- Provides block storage for virtual machines (persistent disks)
- Similar to Amazon EBS service
- Plugin architecture for vendor extensions
- eg. NetApp driver for Cinder



# Neutron



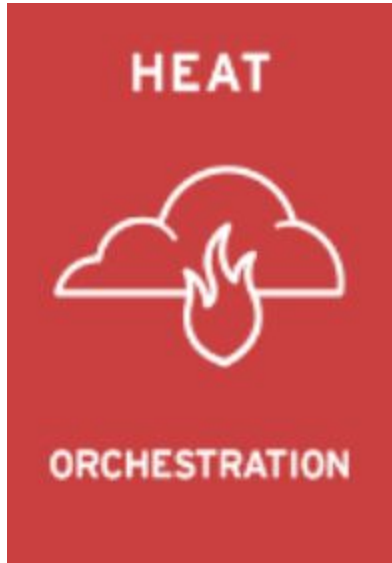
- Network Service
- Provides framework for Software Defined Network (SDN)
- Plugin architecture
- Allows integration of hardware and software based network solutions

# Ceilometer



- Monitors, collects, and stores usage data for all OpenStack infrastructure
- Primary targets metering and monitoring with expandable framework
- Provides API access to usage data for OSS and BSS systems

# Heat



- Template-based deployment orchestrator
- Automates deployment of compute, storage, and networking resources
- Provides AWS CloudFormation implementation for OpenStack
- Deploys composite cloud applications to OpenStack

# Horizon

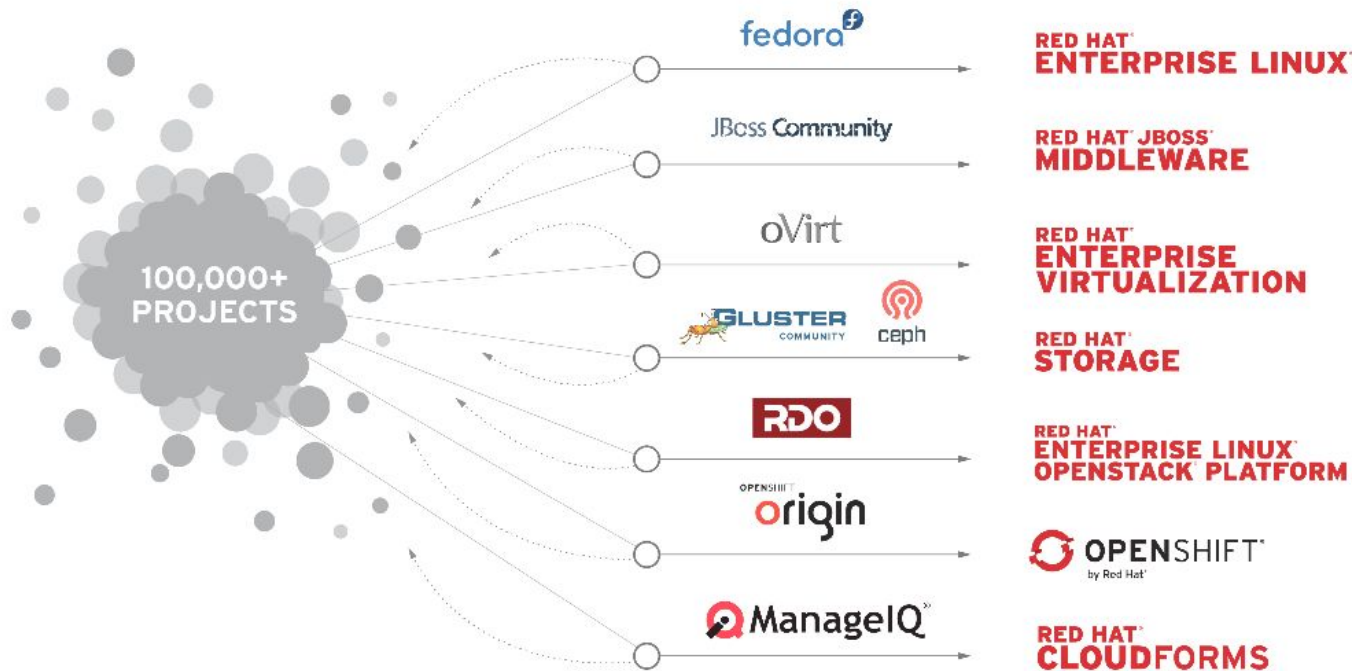


- Dashboard
- Provides simple self service UI for end-users
- Basic cloud administrator functions
- Define users, tenants and quotas
- No infrastructure management

# Community Release Cadence



# Community → Enterprise Products



# Red Hat Cloud Infrastructure

## **RED HAT® CLOUD INFRASTRUCTURE**

### **RED HAT® CLOUDFORMS**

Cloud Management Platform

### **RED HAT® ENTERPRISE LINUX®**

**WITH SMART MANAGEMENT**

Best Operating System for the Cloud

### **RED HAT® ENTERPRISE VIRTUALIZATION**

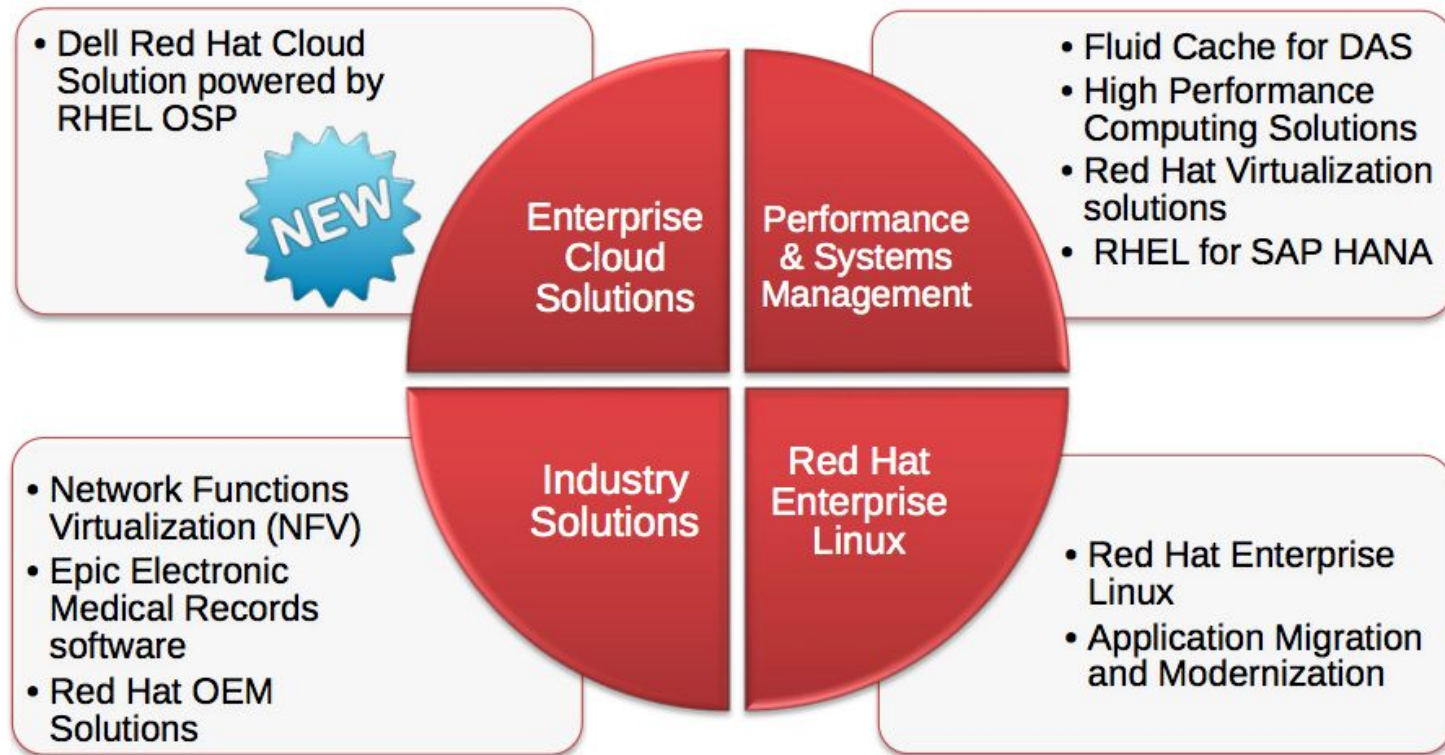
Low Cost Traditional Virtualization

### **RED HAT® ENTERPRISE LINUX® OPENSTACK® PLATFORM**

Massively Scalable Cloud Workloads

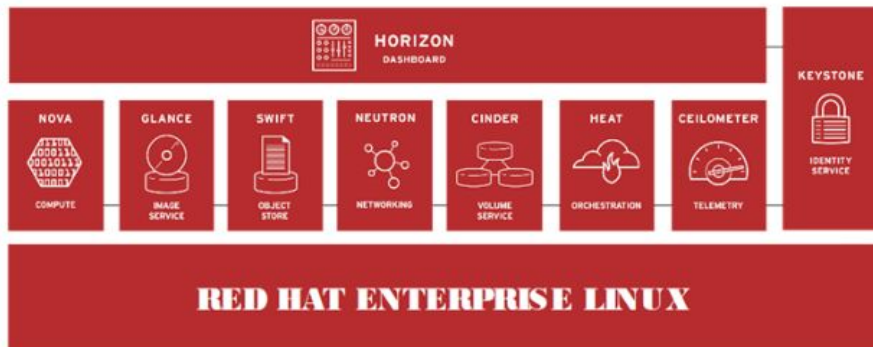


# Dell & Red Hat Joint Solutions



# Dell & Red Hat Cloud Solution

Announcing the new  
Dell Red Hat Cloud Solution, Powered  
by RHEL OpenStack Platform



- **Leverage validated reference architecture** with infrastructure, software and services
- **Drive innovation and flexibility** with open cloud infrastructure
- **Automate the deployment and configuration** of an OpenStack cloud
- **Quickly provision bare-metal servers** from box to cluster with minimal intervention

# Dell & Red Hat Solution Components



## Solution Architectures

Red Hat Enterprise Linux OpenStack  
Platform, Dell PowerEdge,  
Dell Storage, Dell Networking

- Dell RHEL OSP Enterprise Ref. Architecture
- Dell POC configuration
- Dell Pilot/Pilot HA configuration
- Dell Production configuration

## Certifications

- Joint solution certification
- Dell services staff certifications
- Customer staff certifications

## Professional Services

- Dell Assessment Services
- Dell Consulting Services
- Dell Implementation Services
- Red Hat Training and Certification services

## Support Services

- Dell ProSupport
- Red Hat Support & Updates (RHEL OSP)

## OpenStack Community

- Joint code contributions
- OpenStack Foundation Board membership
- Active community engagements

# Configurations

## POC

**Deployed in days, purpose-designed, tested, certified cloud infrastructure for concept testing**



## Pilot

**Enterprise grade, designed for entry-level production, large scale pilots, rapid scale up, expansion, advanced networking**

Scale  
up  
blocks



## Production

**Massive cloud scale, integrated cloud infrastructure, consultative design, deployment, support with Dell Professional Services**

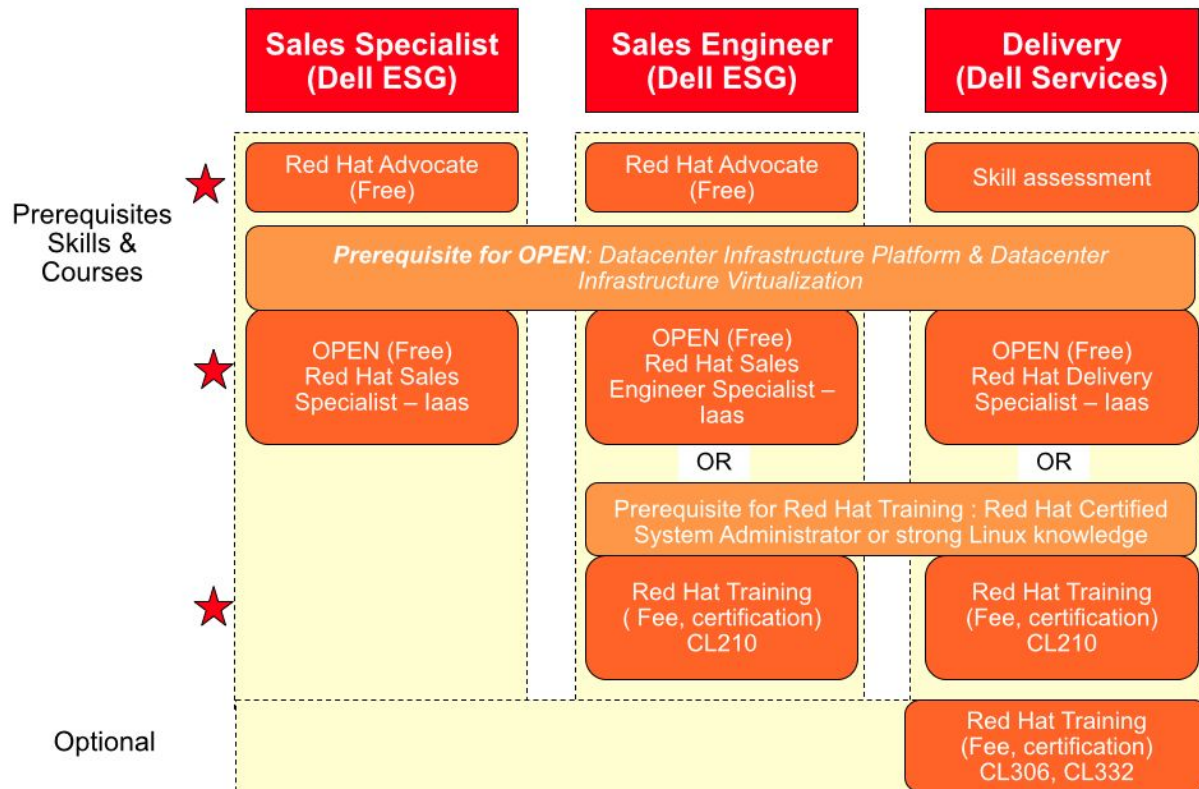


# Enablement - Goals





# Enablement - Roadmap



# Red Hat Online Enablement Network (OPEN)

SKILLS TRACK - INFRASTRUCTURE AS A SERVICE			
Accreditation	Courses	Duration	Type
<b>Sales : 3.5 hours</b>			
Red Hat Sales Specialist - IaaS * Available November 2014	Foundations	2 hr	eLT
	Infrastructure as a Service Essentials for Salesperson	1 hr	eLT
	Assessment - "Red Hat Sales Specialist - IaaS"	.5 hr	eLT
<b>Sales Engineer : 11.5 hours</b>			
Red Hat Sales Engineer Specialist - IaaS * Available November 2014	Foundations	2 hr	eLT
	Infrastructure as a Service PreSales Essentials for Sales Engineer	1 hr	eLT
	Assessment - "Red Hat Sales Engineer Completion - IaaS PreSales"	.5 hr	eLT
	OpenStack FASTRAX	8 hrs	iLT <sup>1</sup>
<b>Delivery : 24 hours</b>			
Red Hat Delivery Specialist - IaaS * Available December	OpenStack Implementation	24 hrs	iLT <sup>1</sup>

Prerequisites for all roles: Both Datacenter Infrastructure Platform & Datacenter Infrastructure Virtualization accreditations  
Content is in English Only



# Thank you.

