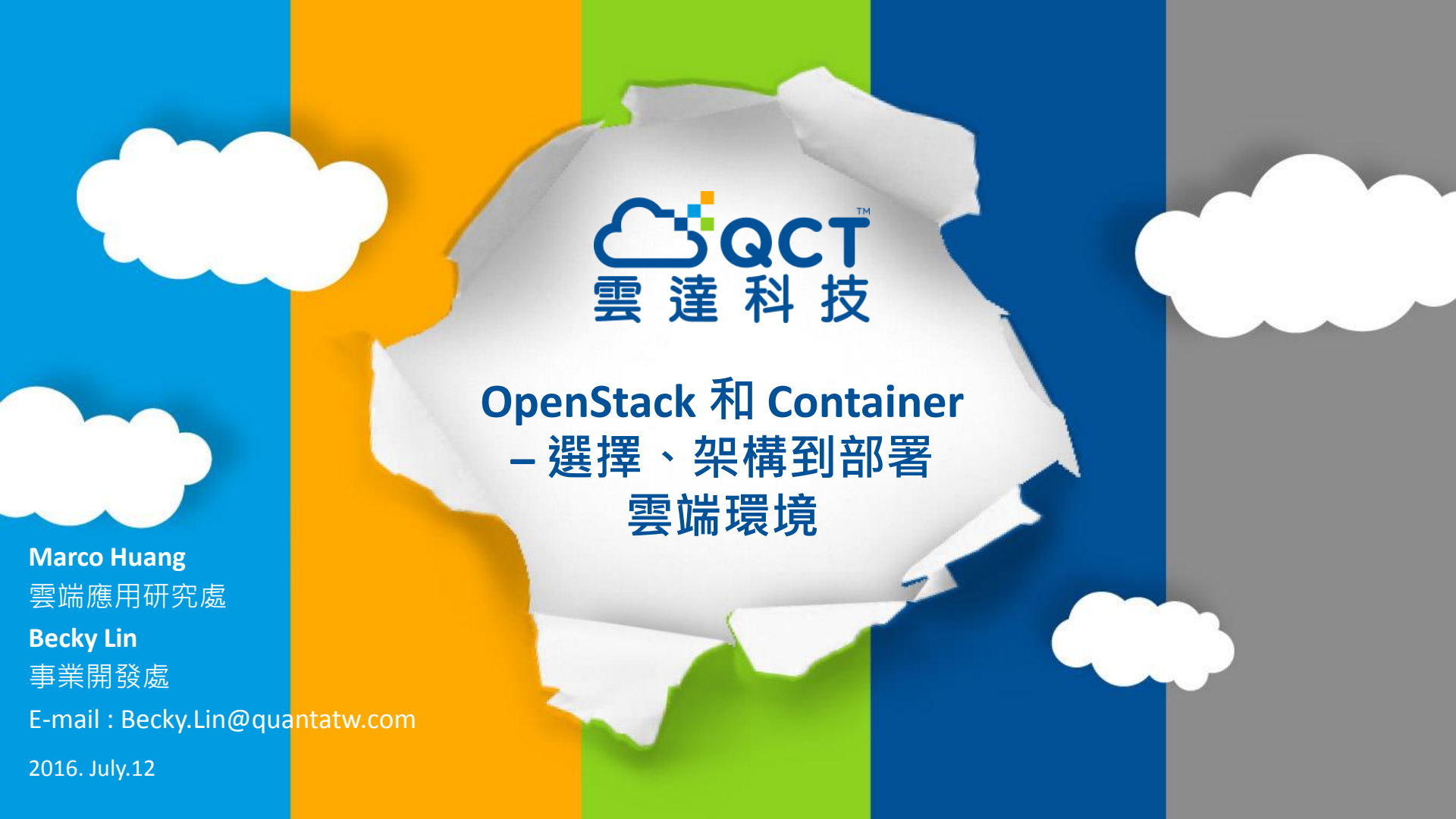

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2016. July.12

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Agenda

1. The Age of Cloud
2. OpenStack and Container: Distribution & Types
3. Container in OpenStack
4. OpenStack in Container
5. OpenStack or Container, or Better Together?

Cloud is not a hype but real with benefits for data centers

Traditional IT

- Physical infra
  - dedicated to specific server, storage and network
  - serving specific applications
- Applications runs for good
- Proprietary: SW and HW locked in

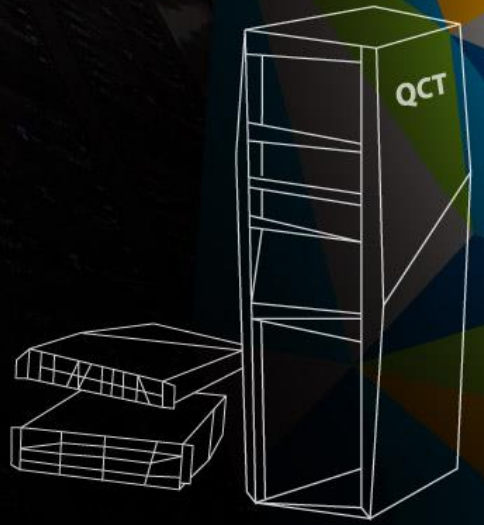
Cloud IT

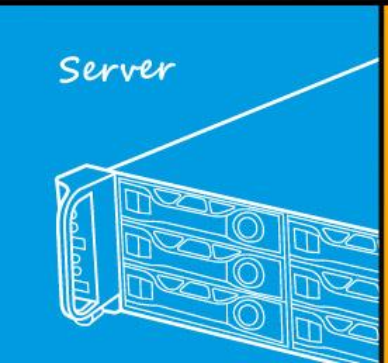
- Software Defined Infrastructure (SDI)
- Agility
- Scalability
- Automation & Orchestration
- Dynamic business request

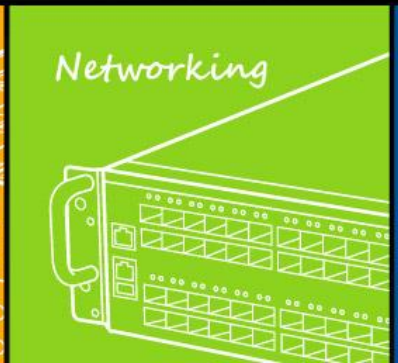
QCT™

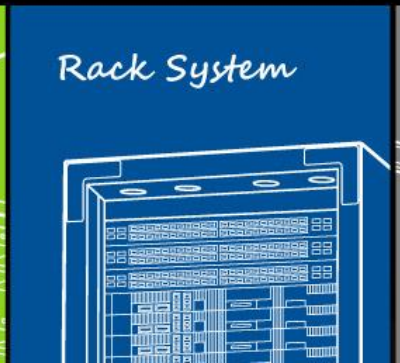
A leading cloud datacenter solution provider that delivers

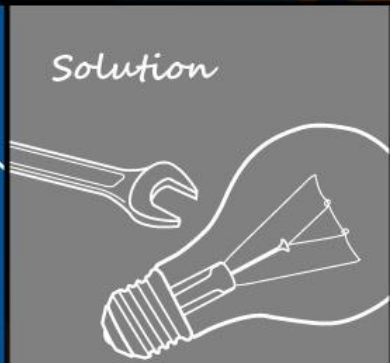
Server, **Storage**, **Networking**, **Rack System** and **Cloud Solution** under a single, proven roof











QCT's Cloud Solutions

Accelerate and power enterprises' cloud adoption

Ease of Deployment
- Align with industry trend
- Reference architecture design

Optimized for Workloads
- Extensive test for various use cases
- Tune and optimized HW & SW config

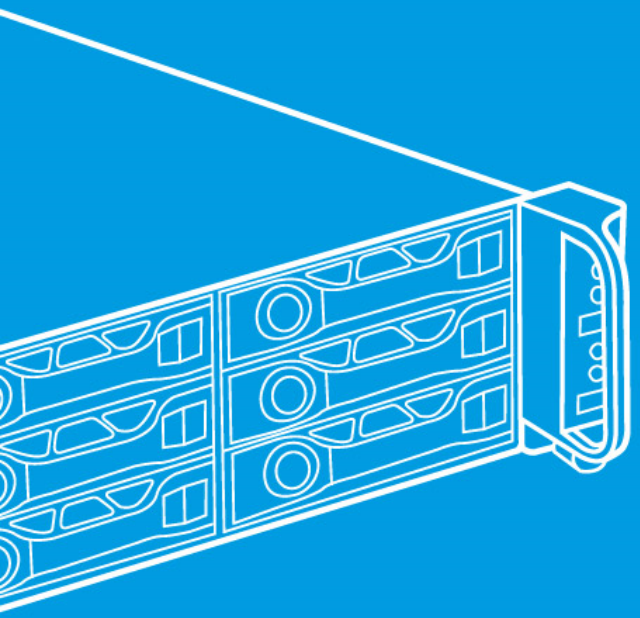
One-Stop Shop & Support
- Integrated Cloud Solutions
- Hardware and Software Service & Support

Software-Defined Integrated Solutions

Cloud SW

MESOSPHERE
openstack CLOUD SOFTWARE
CoreOS
docker

Cloud HW



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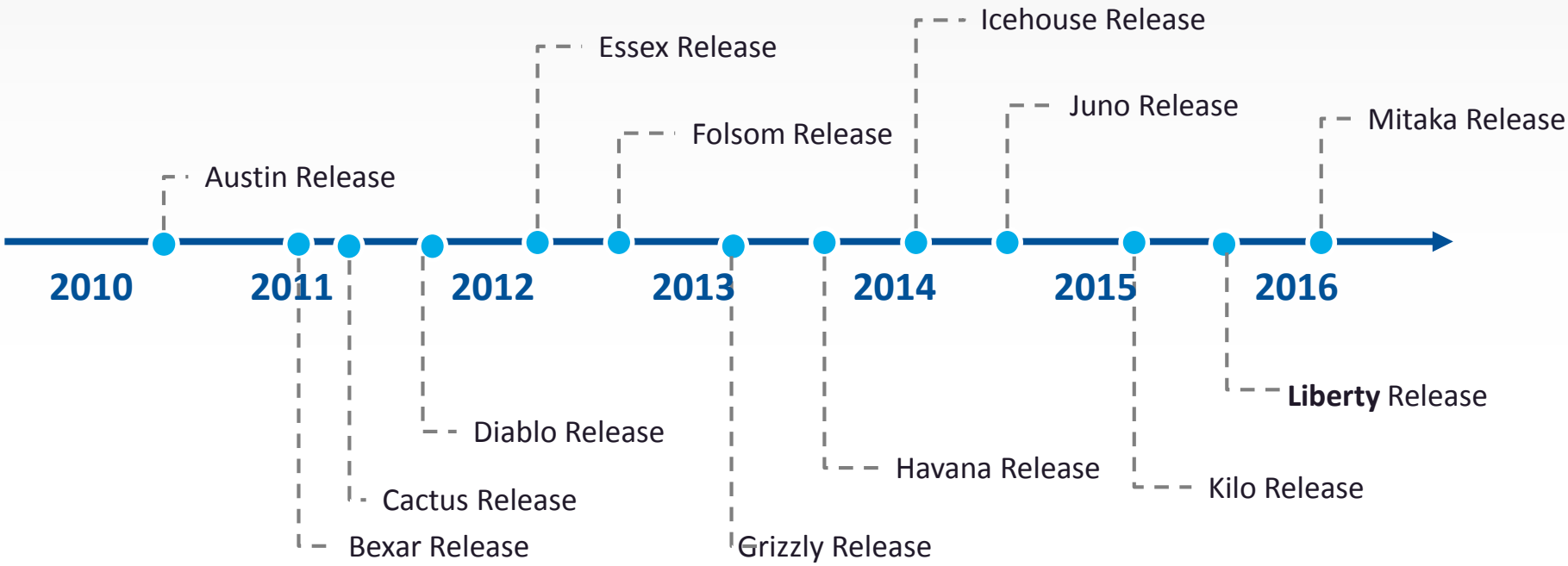
OpenStack History

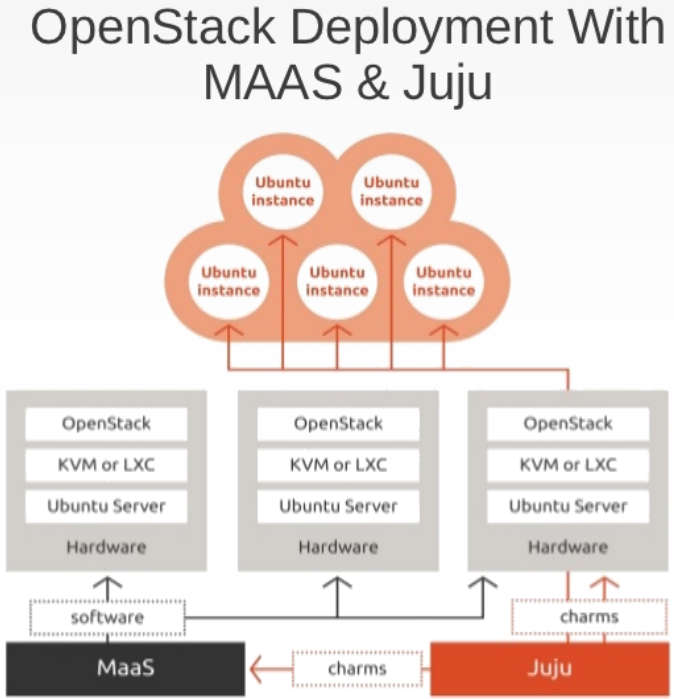


Distribution of OpenStack

Distribution of OpenStack – Ubuntu

Ubuntu OpenStack

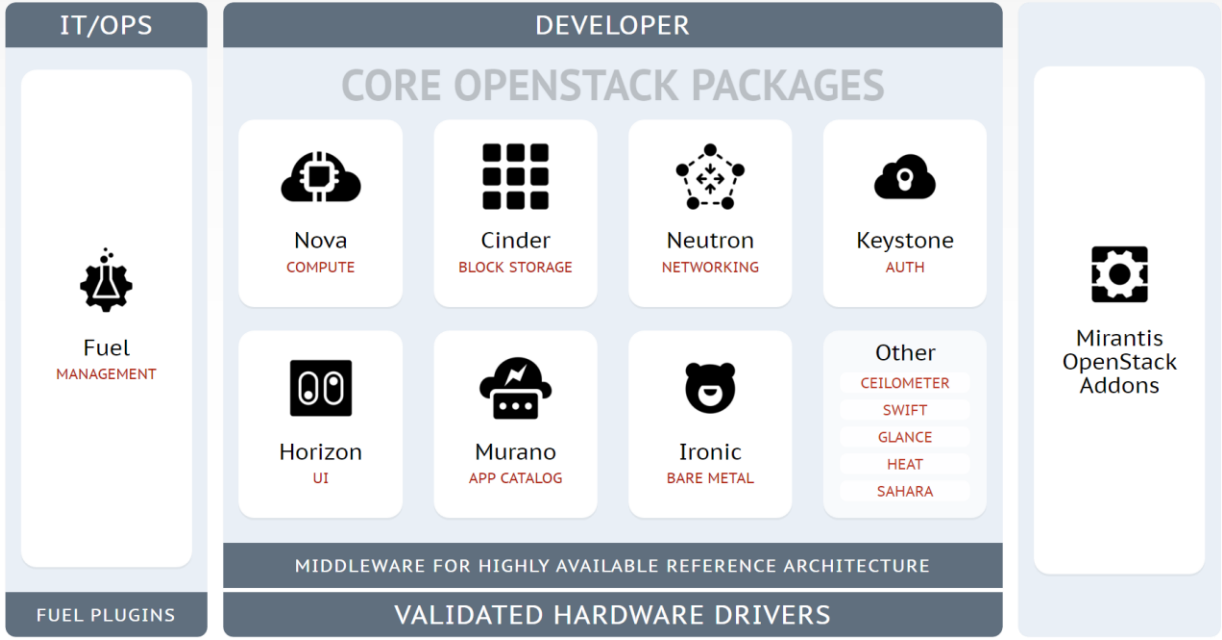
- Baremetal Provisioning : MAAS
- Orchestration : Juju



Distribution of OpenStack - Mirantis

Mirantis OpenStack

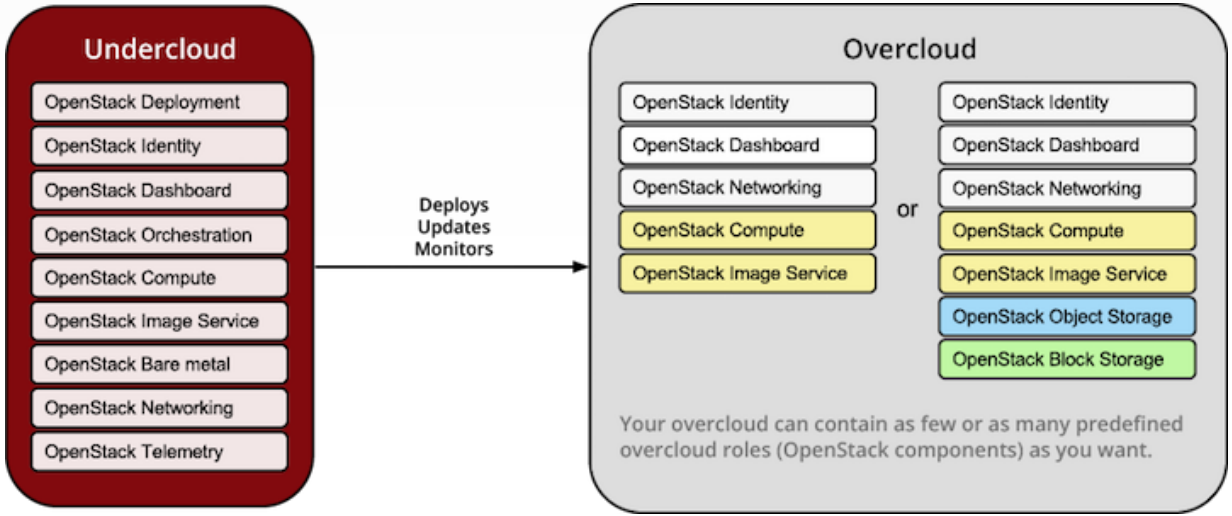
- Baremetal Provisioning : Fuel
- Orchestration : Puppet



Distribution of OpenStack – Red Hat

Red Hat OpenStack Platform – TripleO (OpenStack on OpenStack)

- Baremetal Provisioning : Ironic
- Orchestration : Heat



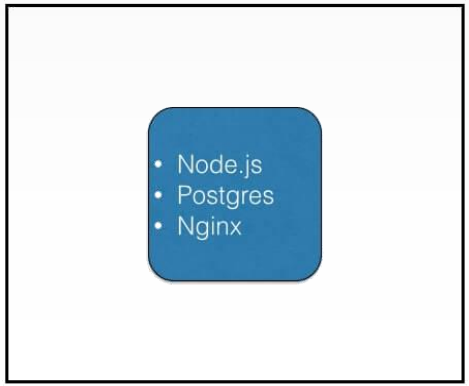
System (OS) Container and Application Container

System Container:

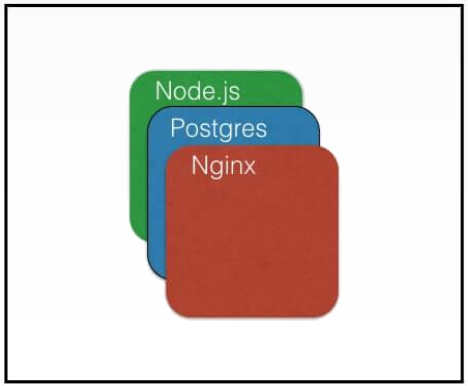
- Meant to used as an OS
- Run Multiple services
- Build on Cgroups, namespaces and native process resource isolation
- LXD, OpenVZ…etc

Application Container:

- Meant to run for a single service
- Build on top of Docker or Rocket
- Self-contained
- Portable
- Decoupled from OS



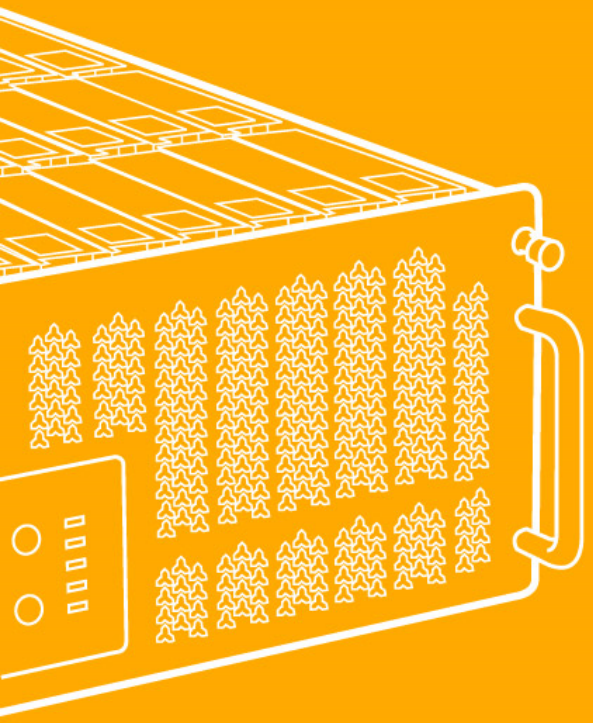
OS containers



App containers

Type of Container OS

- CoreOS
  - Linux
  - Support : Docker and Rocket
  - Orchestration : Kubernetes
- RancherOS
  - Linux
  - Support : Docker
  - Orchestration : Rancher
- Red Hat Project Atomic Host
  - Linux
  - Support : Docker and Rocket
  - Orchestration : Kubernetes
- Intel Clear Linux
  - Linux
  - Support : Docker and Rocket
  - Orchestration : Kubernetes



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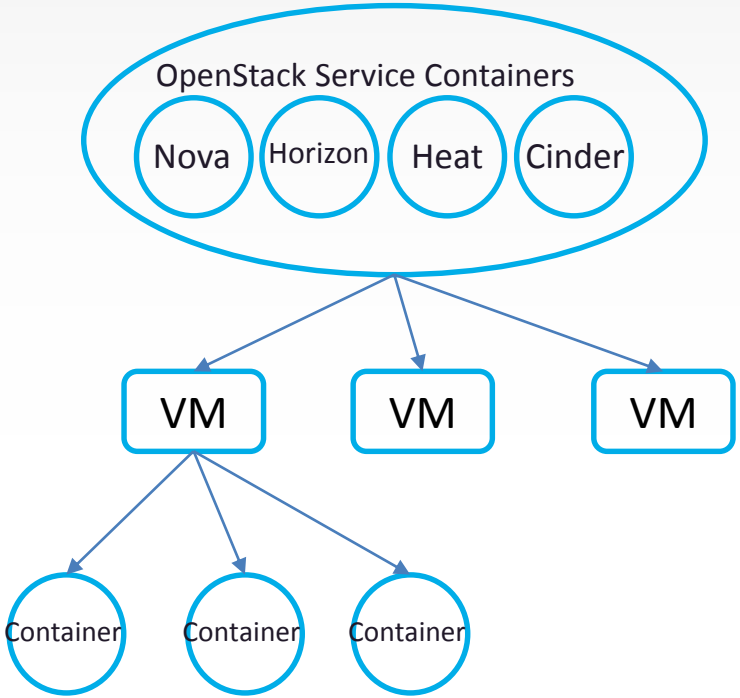
Container within OpenStack Infrastructure

- OpenStack can provide multi-tenant security and isolation, management and monitoring.

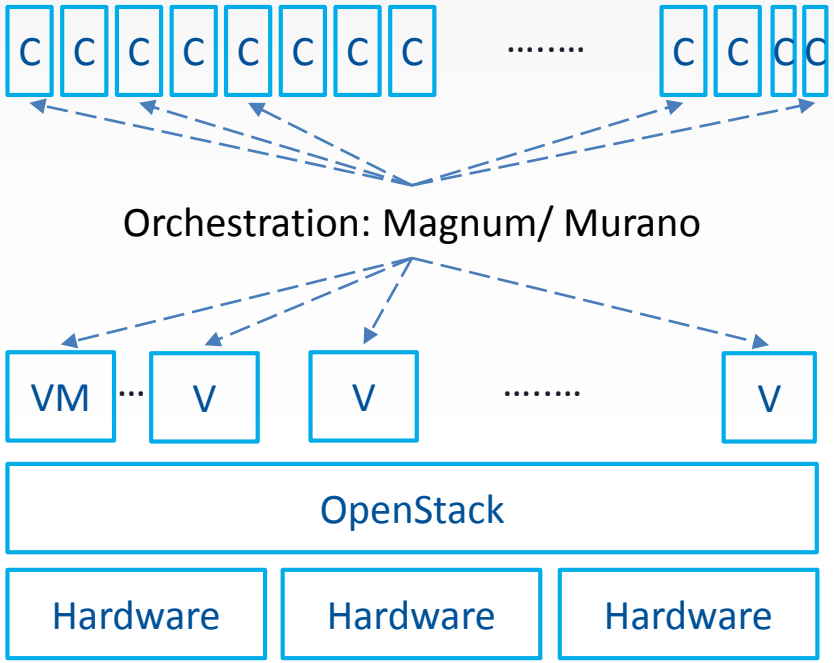
- OpenStack Container-as-a-Service now is ready:
  1. Support LXC and Virtuozzo system containers.
  2. Docker application containers and Docker Swarm, Kubernetes and Mesos container orchestration are available with the Liberty release of Magnum.



Deploy Container in Openstack

Options :

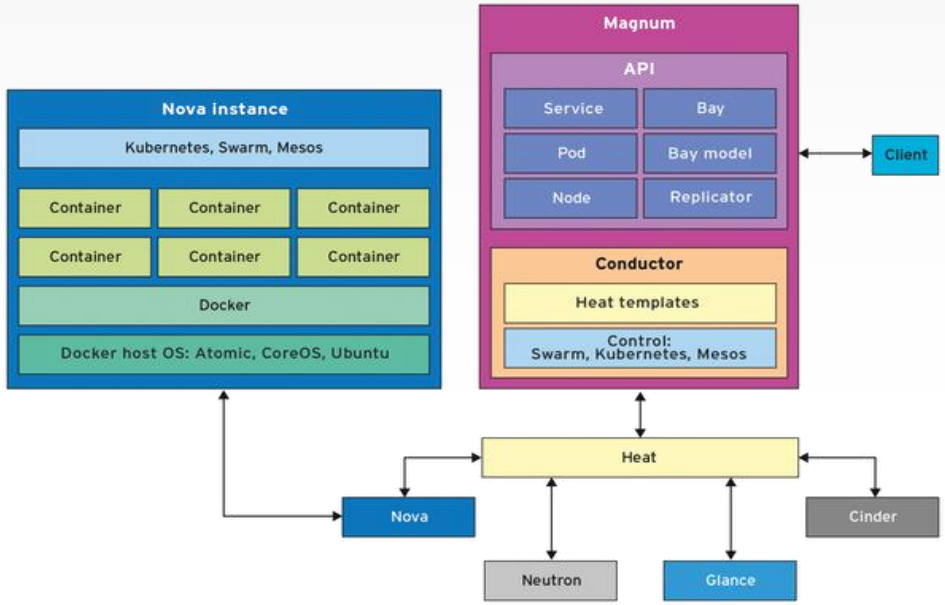
- Nova-Docker driver
- Heat-Docker driver
- Magnum - Containers-as-a-Service in OpenStack
- Murano – Catalog as a service in OpenStack



Deploy Container in OpenStack - Magnum

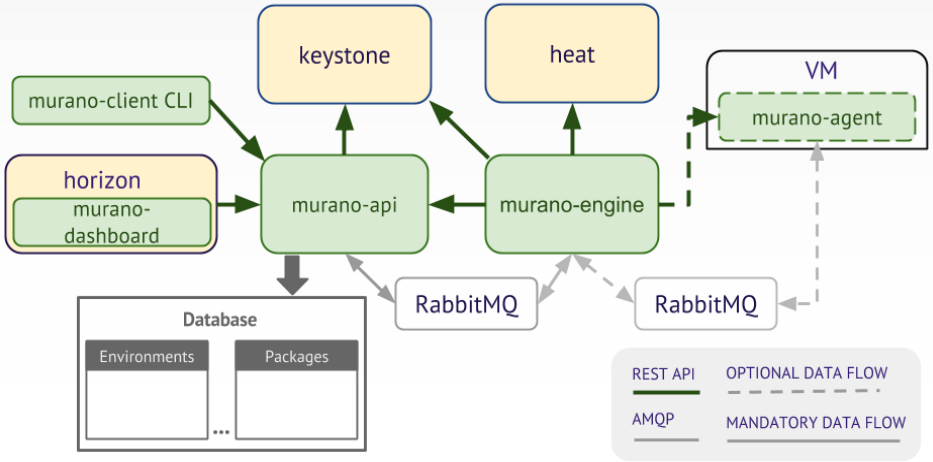
- Magnum is designed to offer container specic APIs for multi-tenant containers-as-a-service with OpenStack.

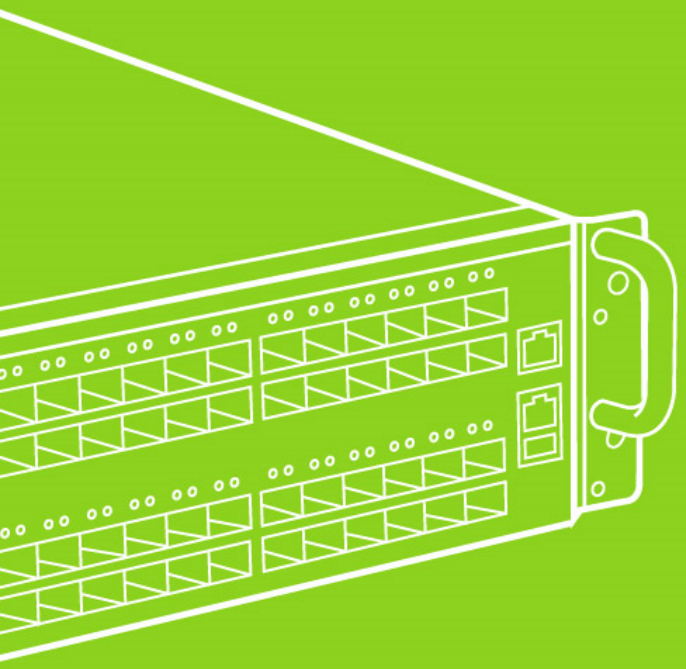
- OpenStack Container Infrastructure Management service to support container orchestration engines - Kubernetes, Docker Swarm and Apache Mesos.



Deploy Container in OpenStack - Murano

- The Murano enable application developers and cloud administrators to publish various cloud-ready applications in a browsable categorized catalog.
- Murano provides UI and API which allows to compose and deploy composite environments on the Application abstraction level and then manage their lifecycle.





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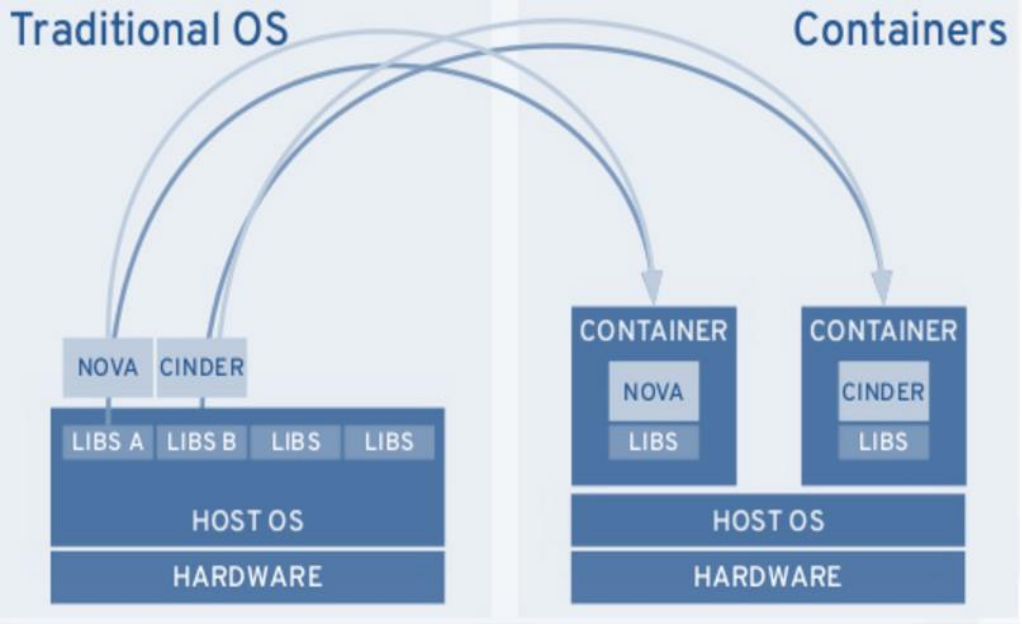
OpenStack lives inside Container

- Simplified lifecycle management of OpenStack services from deployments to upgrades
- Single platform for consistently managing both IaaS and container workloads
- Ability to easily scale, operate and ensure resilience of OpenStack IaaS within their data center environments



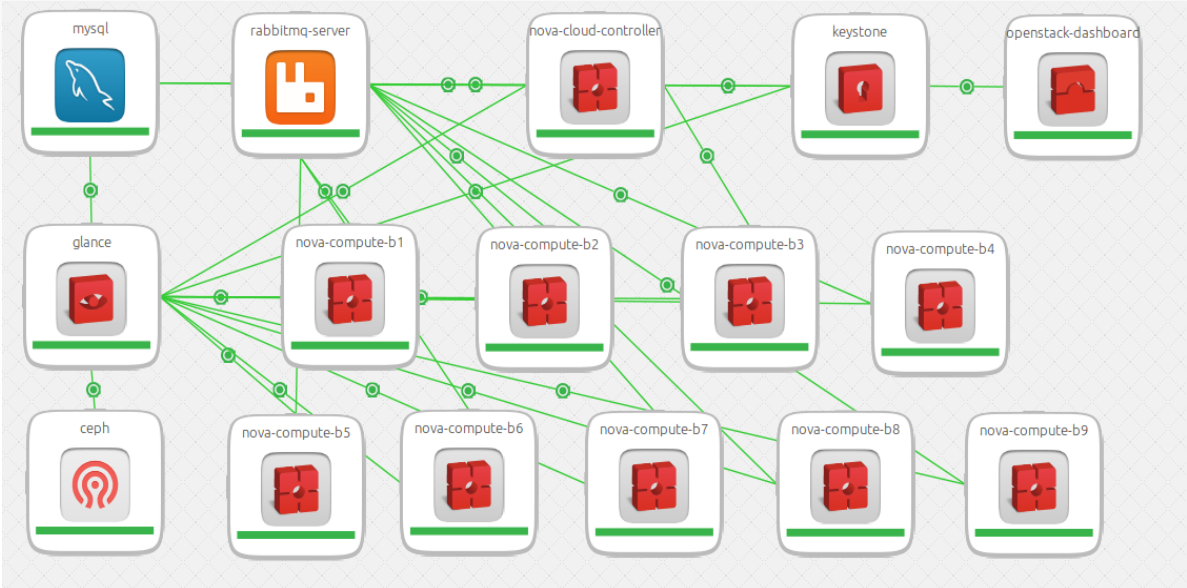
Deploy OpenStack in Container

Options

- Ubunu LXC/LXD
- Kolla
- Stackanetes

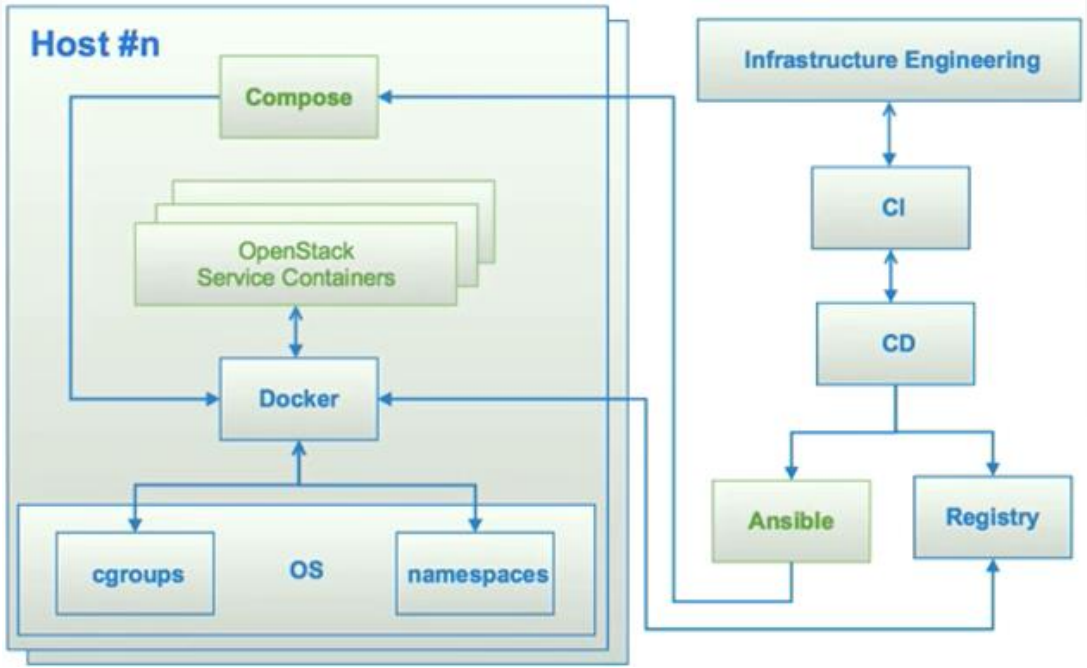
Deploy OpenStack in Container – Ubuntu LXD

Ubunu LXD (Mitaka)



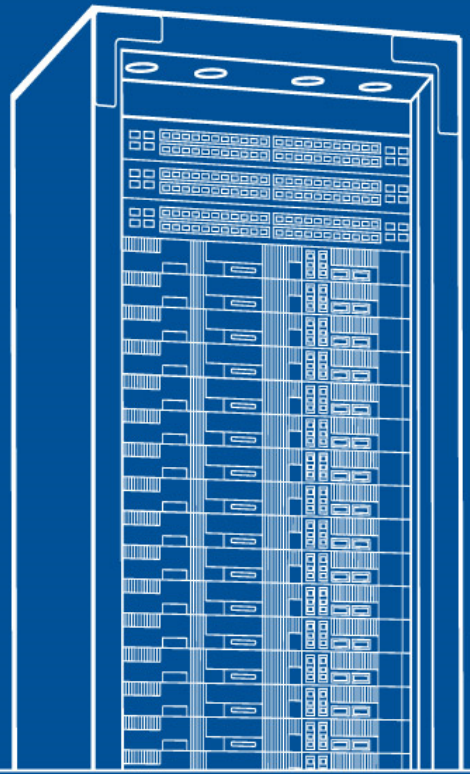
Deploy OpenStack in Container – Kolla

- Offer a dynamic OpenStack control plane where each OpenStack service runs in a Docker container
- Easy to upgrade or rollback
- Provide a more complete and uniform container environment where components can connect and scale with minimal manual intervention



Deploy OpenStack in Container - Stackanetes

- Self healing
- Dynamic resource scheduling
- Robust automation at scale
- Workload portability
- Resource isolation
- Resource monitoring
- Applying Resource Quotas and Limits



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Container vs OpenStack VM

How to tell which is the right choice for your enterprise

Container

- Multiple copies of a *single app* into a single physical server
- Increase the density of computing at scale

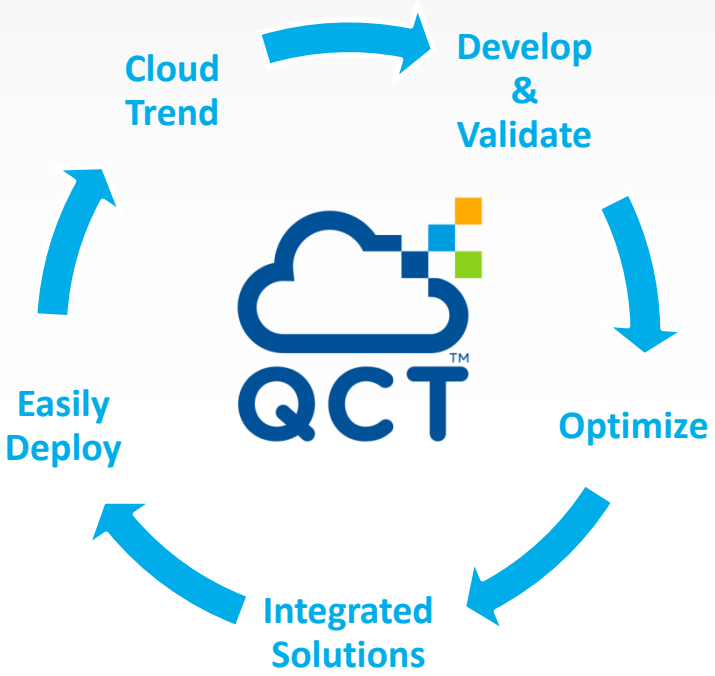
OpenStack VM

- Security
- Multiple OS in a single physical server
- Management tool is more comprehensive for now

→ Depends on your use case

QCT's Cloud Solutions

Accelerate and power enterprises' cloud adoption



QxStack

- Ubuntu OpenStack
- Red Hat OpenStack with NFV (coming soon)

QxStack

- Mesosphere Reference Architecture

QxStor

- Red Hat Ceph Storage
- Red Hat Gluster Storage (coming soon)

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