



CHINA
OpenStack Days

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IT大咖说
知识分享平台

Topic: **OpenStack**多云管理

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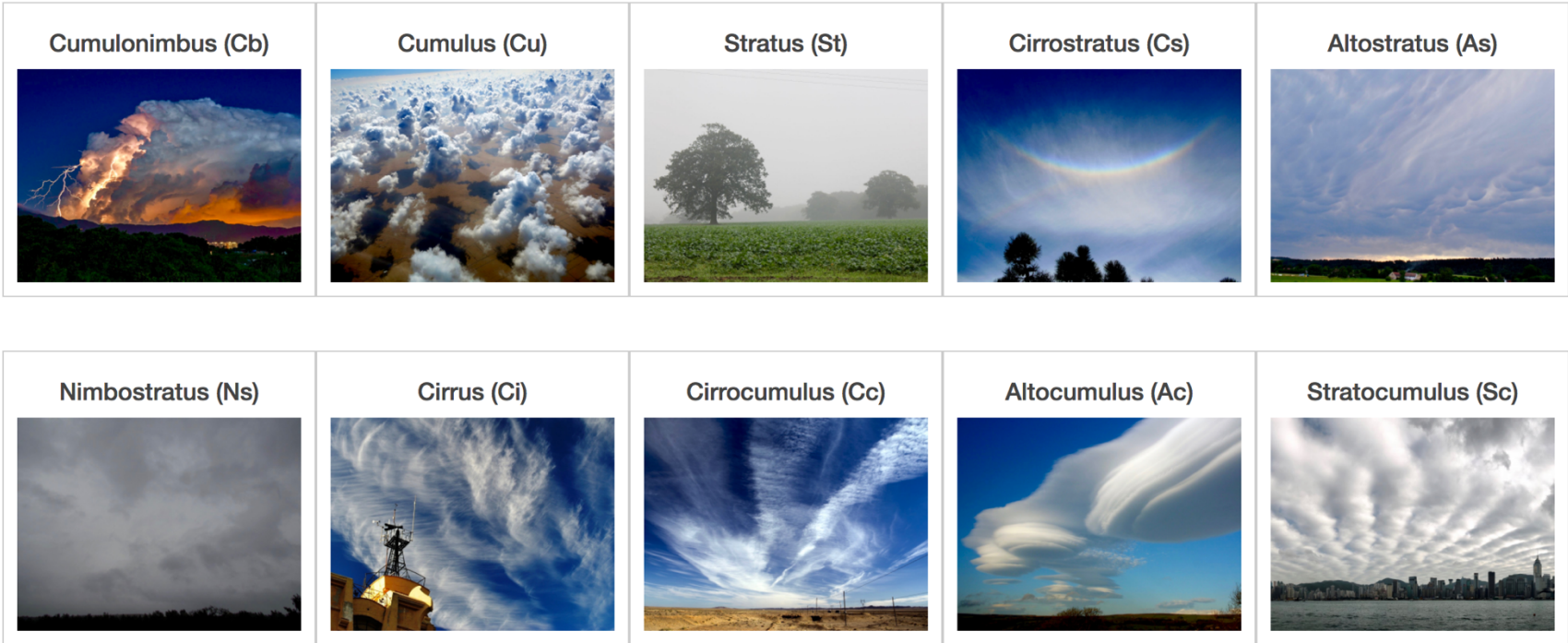
Title: **KylinCloud**研发工程师



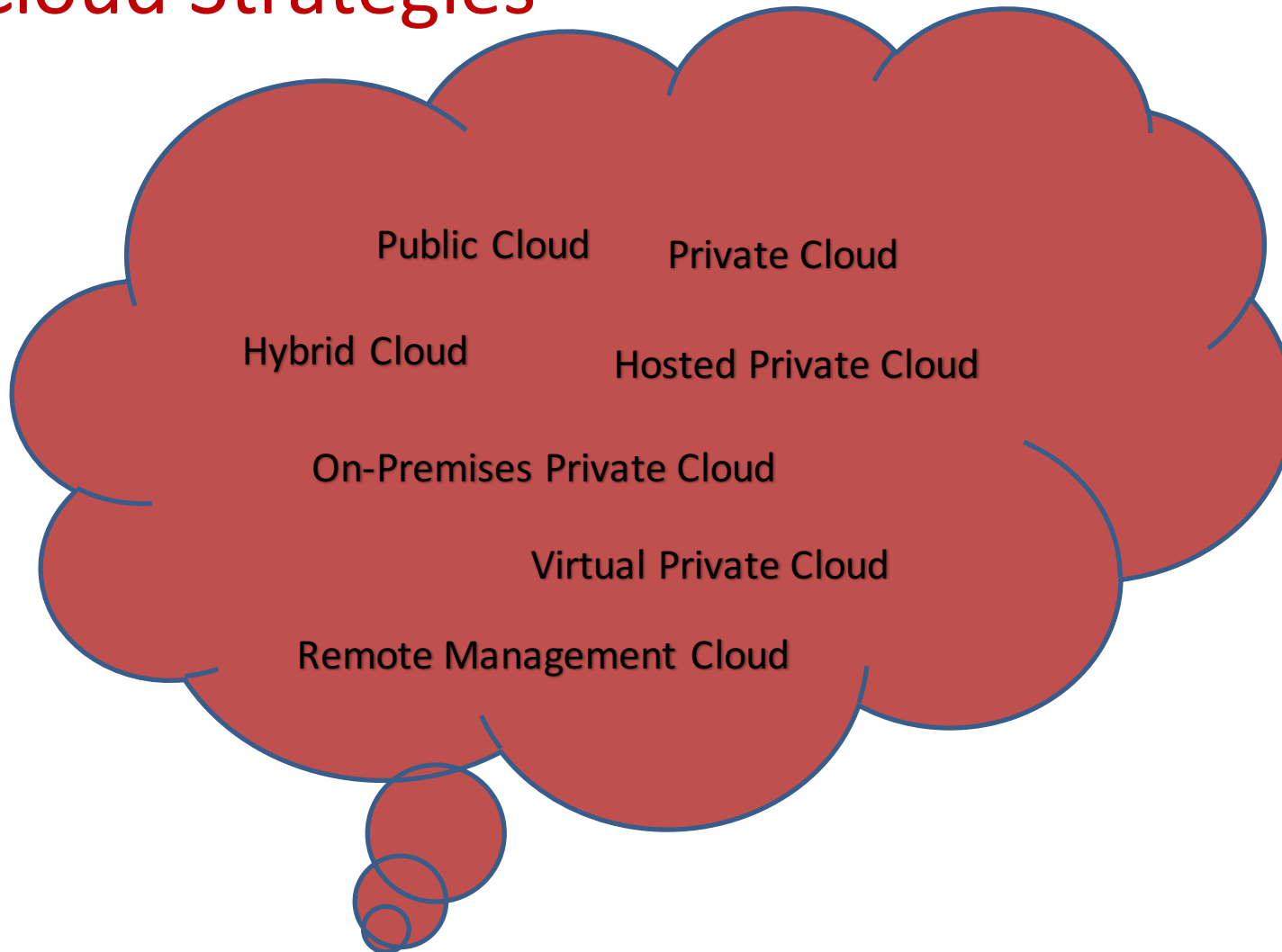
Agenda

- State of Multi-Cloud
- Why Multi-Cloud?
- Challenges For OpenStack Multi-Cloud
- OpenStack Multi-Cloud Solutions

Clouds in Weather



Cloud Strategies



Cloud Providers



OpenStack Companies

informology

Infortrend

INFRANICS

innifision

Innominds

innova

ScaleCloud

INNOVAZONE

INOCYBE
TECHNOLOGIES

it
instituto de
telecomunicações

INTALIO

Invensis

IN WIN

io

Iron.io

ISD
THE DESIGN
FACTORY

SOFT
SERVICES

isotrol

it synergy

itkey

ITWORX

iw NETWORKS
Virtual Networks for Dynamic Systems

IzeITech
depend on us

IZUMBASE

J2 COMPANY

jamcracker

JAVASPARKS

ji
talent

jawdat

JDN
ICT SERVICES

4 BRAINS

img

kaminario

KEMP
Load Balancer
in price-performance

KeyTone Cloud

KON TIKI ACADEMY

KINX
www.kinx.net

KUMULUS
TECHNOLOGIES

kylincloud

LCN

LEOSTREAM

librato

Light speed

LINAGORA

Linaro

linerate

LITMUS
Automation

LOCLIZ

LSI

Lum n21

Lynxwork
Technologies

Mach
TECHNOLOGY

MALDIVICA

Marketing
Solutions
link



It's a Multi-Cloud World

Multi-Cloud

We will have multiple cloud environments, but there will be little to no interoperability between the cloud environments

32% Multi-Cloud

We will focus primarily on a single cloud environment, not multiple clouds

30% Single Cloud

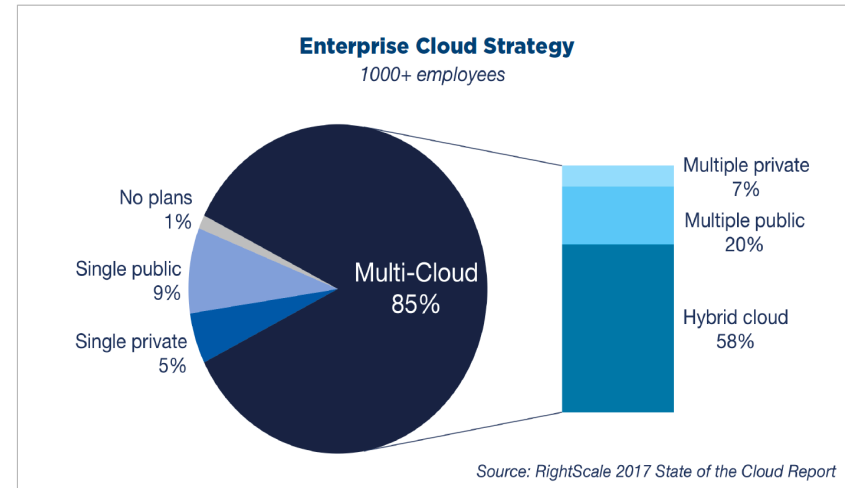
We will have multiple cloud environments to migrate workloads or data between different cloud environments

28% Multi-Cloud Plus

We will have multiple cloud environments where the delivery of a single business function across the different cloud environments is seamless

10% Hybrid

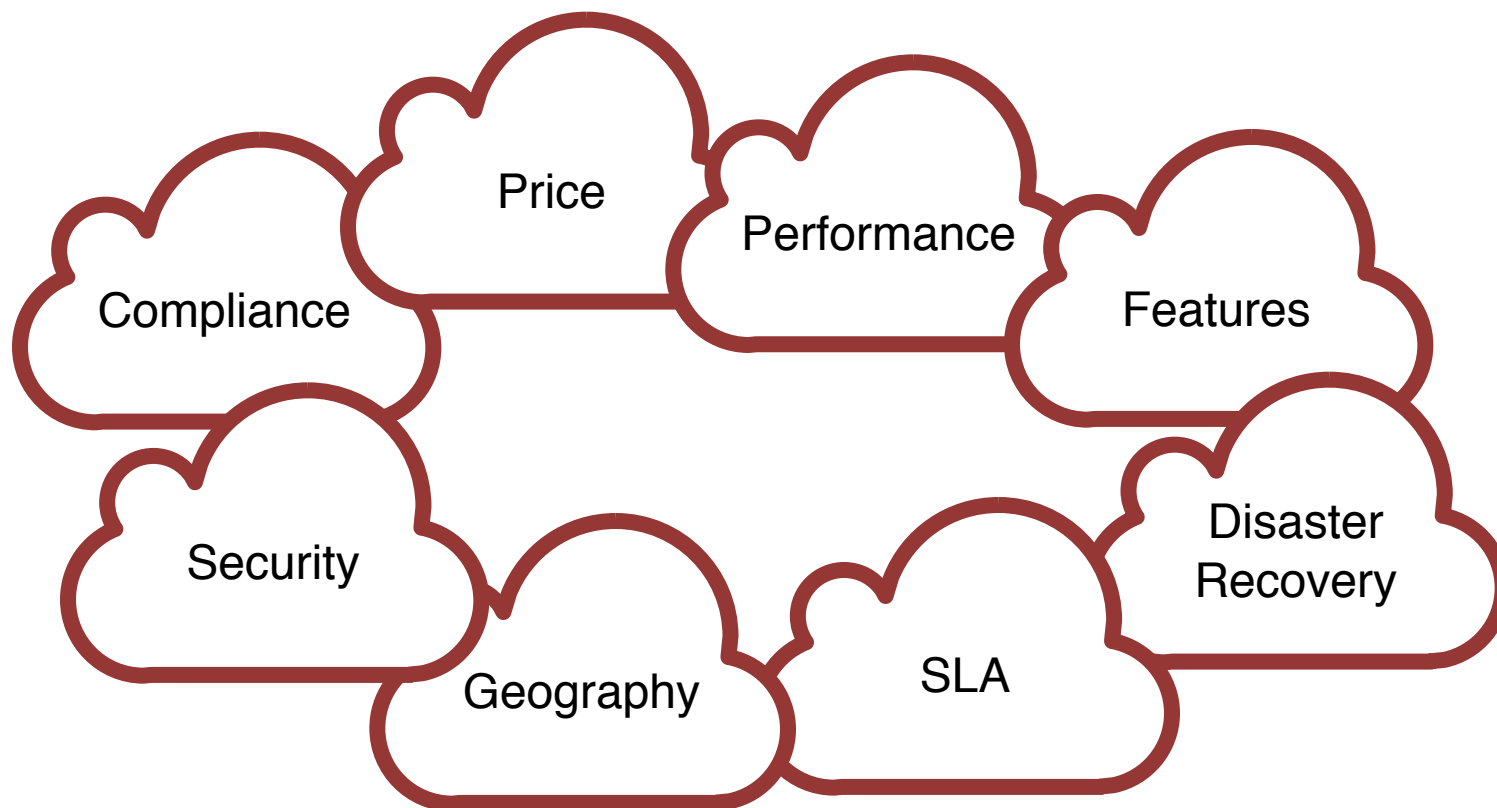
Source: 451 Research



# of Clouds Used	Public Clouds <i>All respondents</i>	Private Clouds <i>All respondents</i>
Running applications	1.8	2.3
Experimenting	1.8	2.1
Total	3.6	4.4

Source: RightScale 2017 State of the Cloud Report

Why Multi-Cloud?

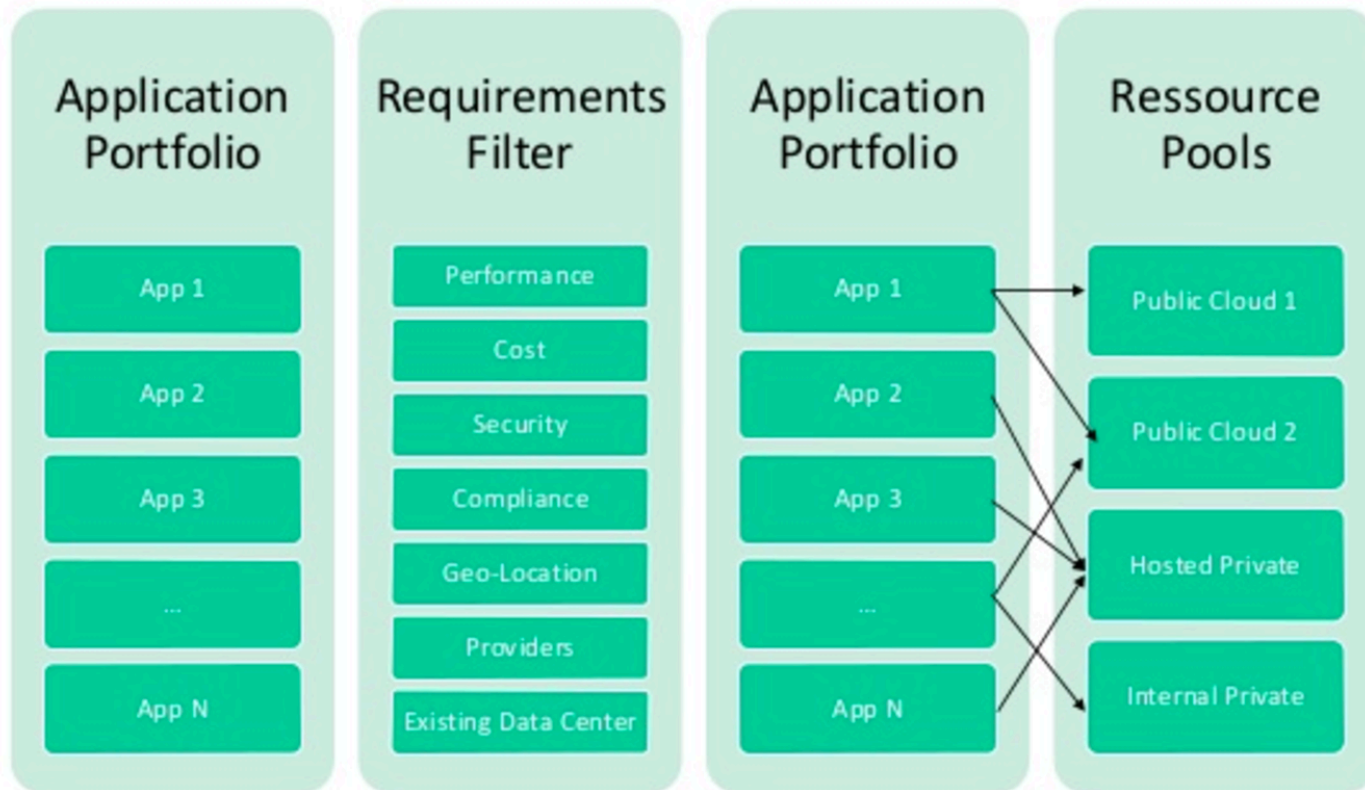


Multi-Cloud Use Cases

- Choose Right Clouds
- Avoid Vendor Lock-in
- Disaster Recovery

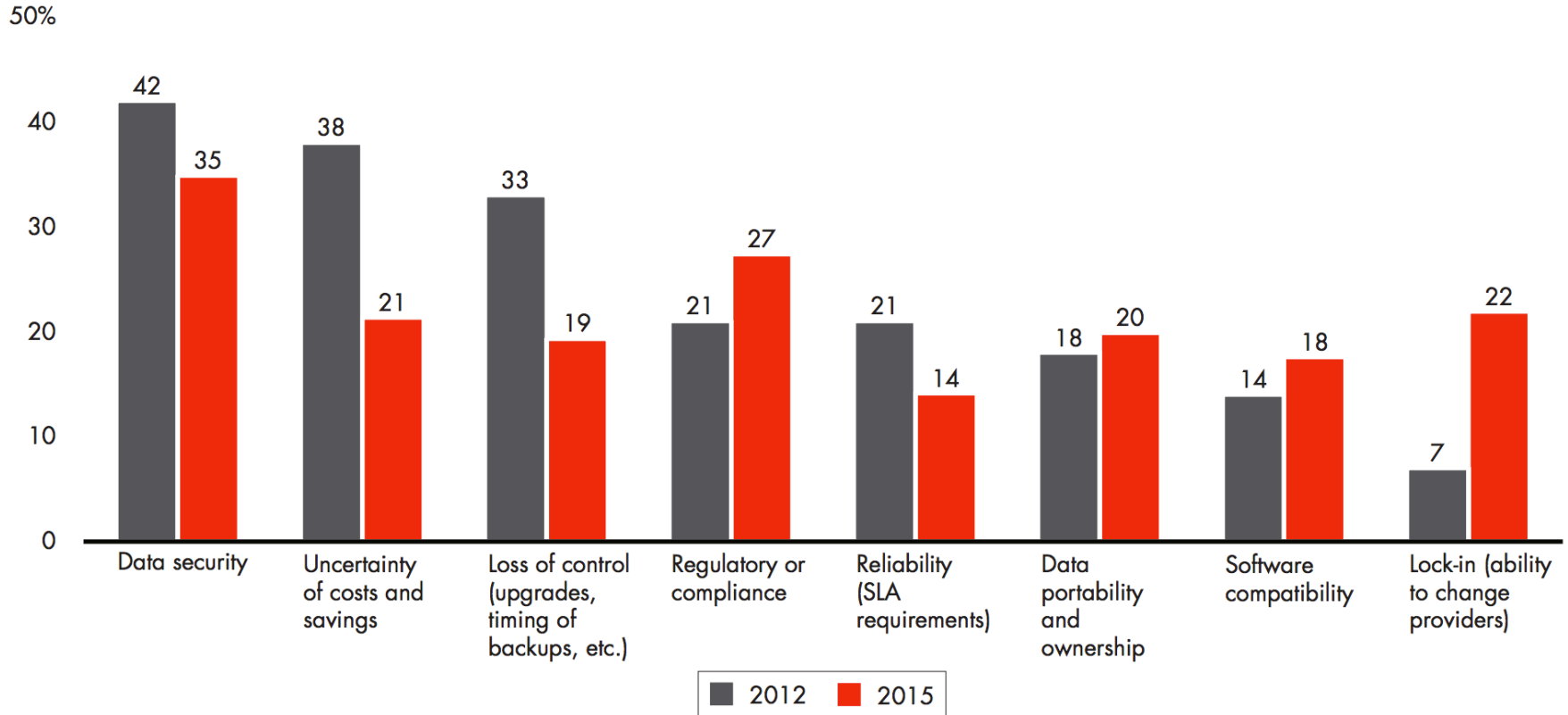
Choose Right Clouds

- Every cloud is built different
- Know your cloud business drivers
- Match the right applications to the right clouds



Avoid Vendor Lock-In

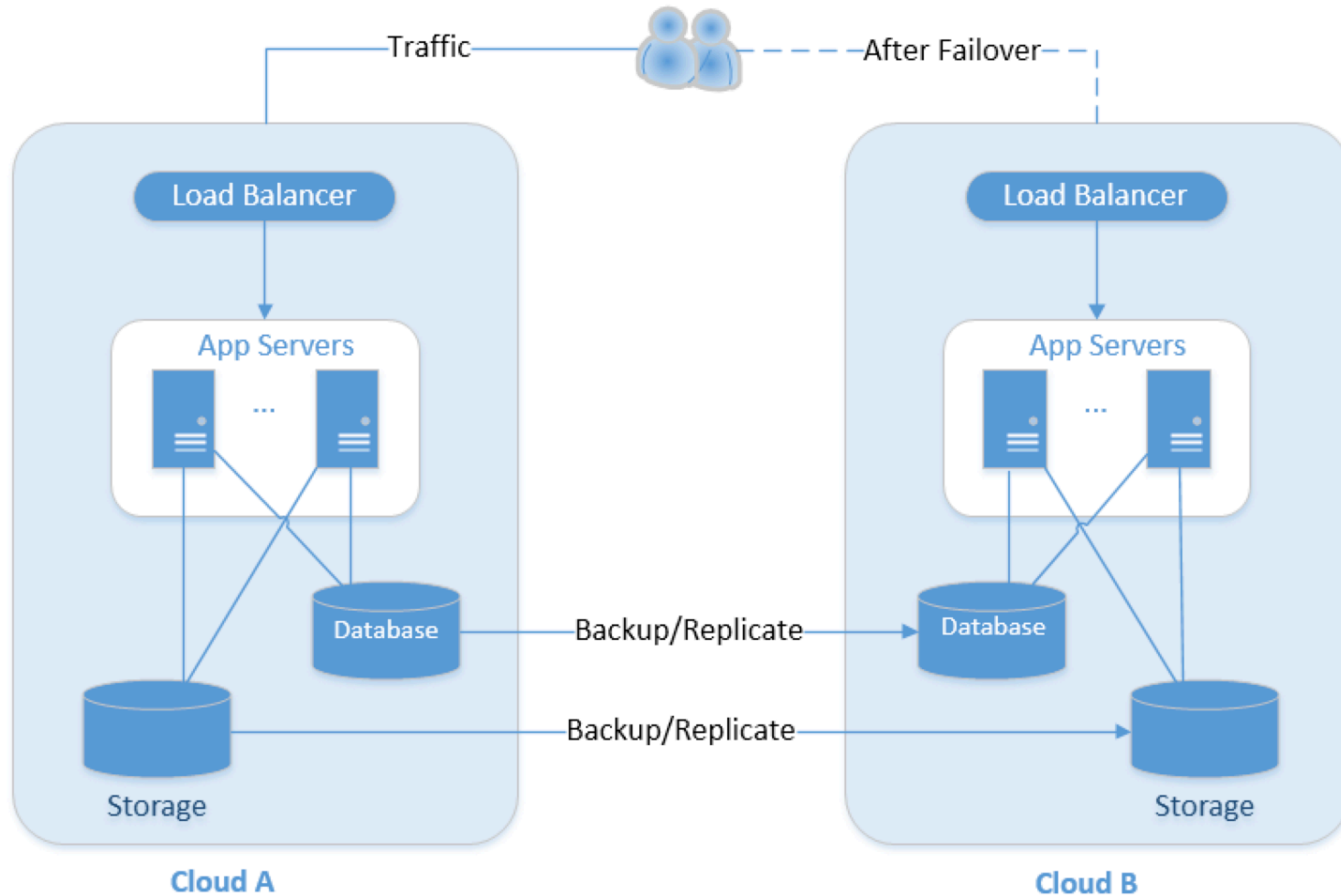
Share of respondents citing criteria as a top-three concern



Sources: Bain cloud computing survey, 2015 (n=347); Morgan Stanley AlphaWise survey of IT managers (n=304)

Shifting from Data Security + Costs Uncertainly => Vendor Lock-in + Compliance

Disaster Recovery



Multi-Cloud: Other use cases

- Leverage existing investments: private cloud
- Move services with bursty, unpredictable apps to public cloud
- ...

Multi-Cloud Management Tools

RightScale
(2006)

- SaaS solution only
- Private: OpenStack, CloudStack
- Public: AWS, RS, Azure, GCE, HP, IDCf (Japan), DataPipe

DELL Cloud Manager
(2013)

- Hosted and On-premise installation
- Private: OpenStack, CloudStack, Nimbula, vCloud
- Public: AWS, BL, CS, GoGrid, HP, Joyent, DD, RS, Tata, Verizon, TM

Scalr
(2007)

- OpenSource, SaaS, On-premise installation
- Supports: OpenStack, CloudStack, AWS, GCE

Scale Xtreme
(2010)

- Private: OpenStack, CloudStack, vCloud
- Public: AWS, RS, Azure,

Service Mesh

- Private: OpenStack, CloudStack, vCloud, Eucalyptus
- Public: AWS, Azure

Borrow from <https://www.slideshare.net/corestack/extending-horizon-for-multi-cloud-management-v11>

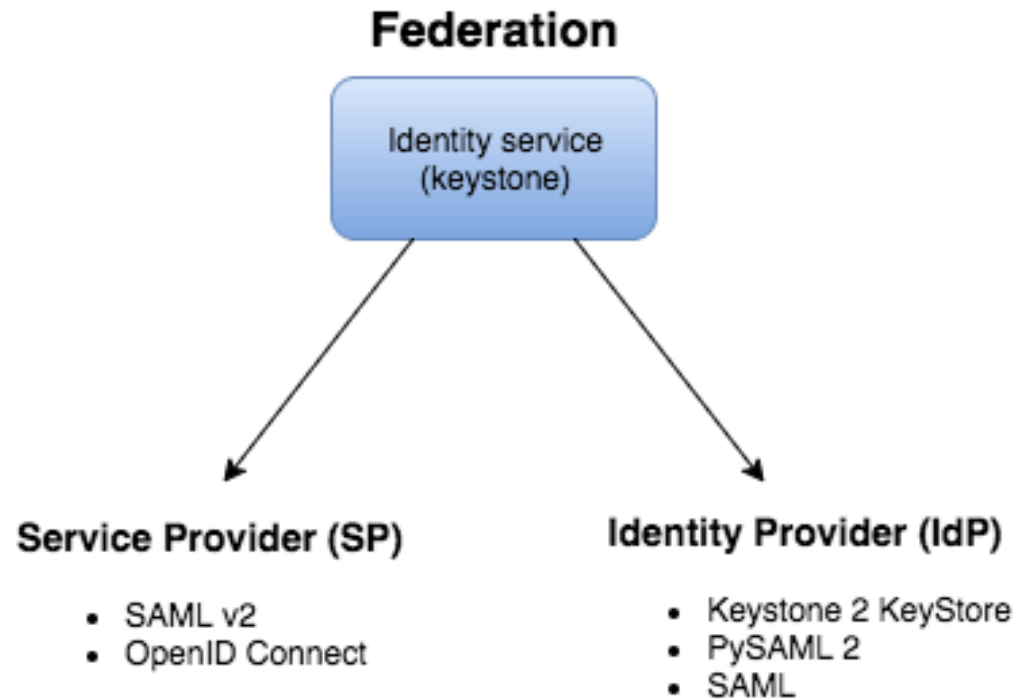
OpenStack Multi-Cloud: Challenges

- Multi-Cloud Identity
- Multi-Cloud Management
- Multi-Cloud Networking
- NFV Across Multi-Cloud
- Multi-Cloud Orchestration

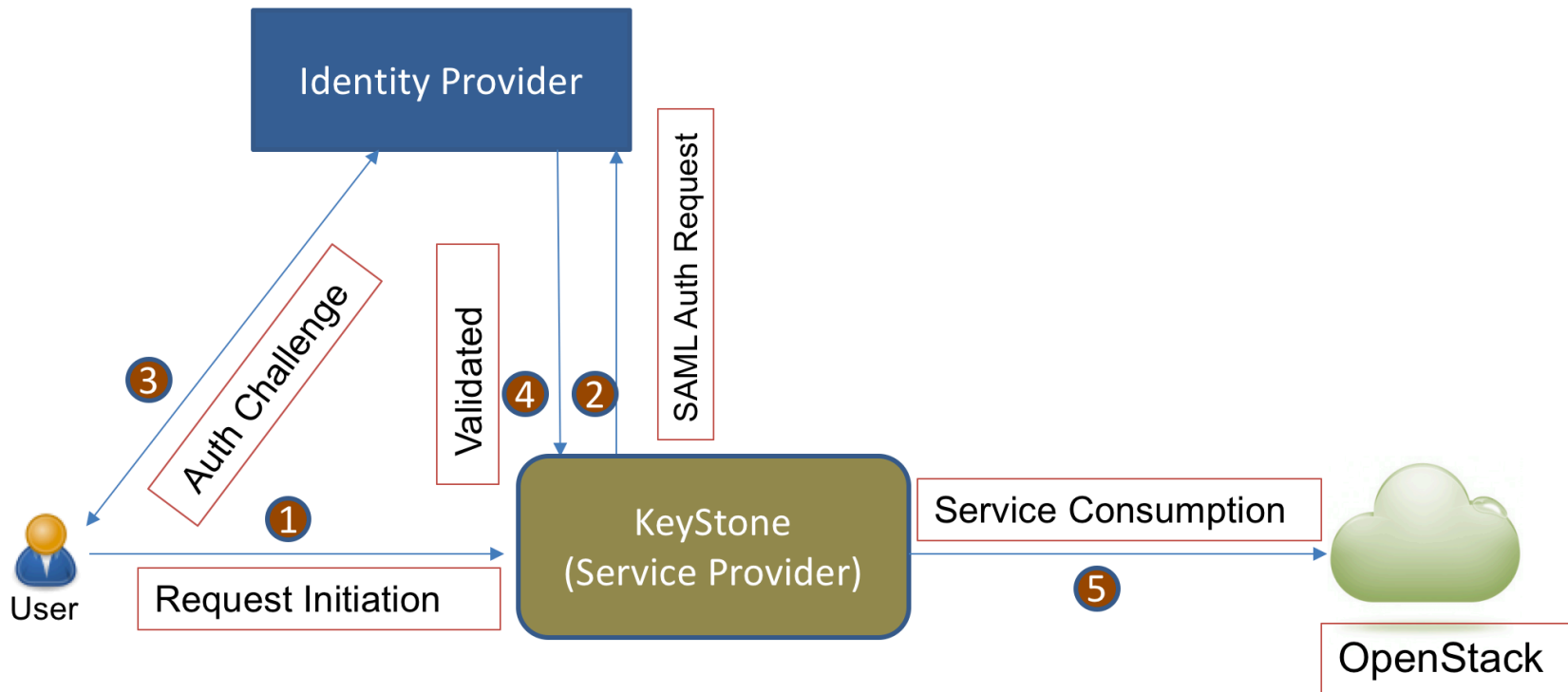
OpenStack Solutions

Challenges	Solutions
Multi-Cloud Identity	Federated Identity
Multi-Cloud Management	Region, Nova Cells, Cascading => Trio2o
Multi-Cloud Networking	Tricircle
Multi-Cloud NFV	Tacker
Multi-Cloud Orchestration	Heat Multi-Cloud

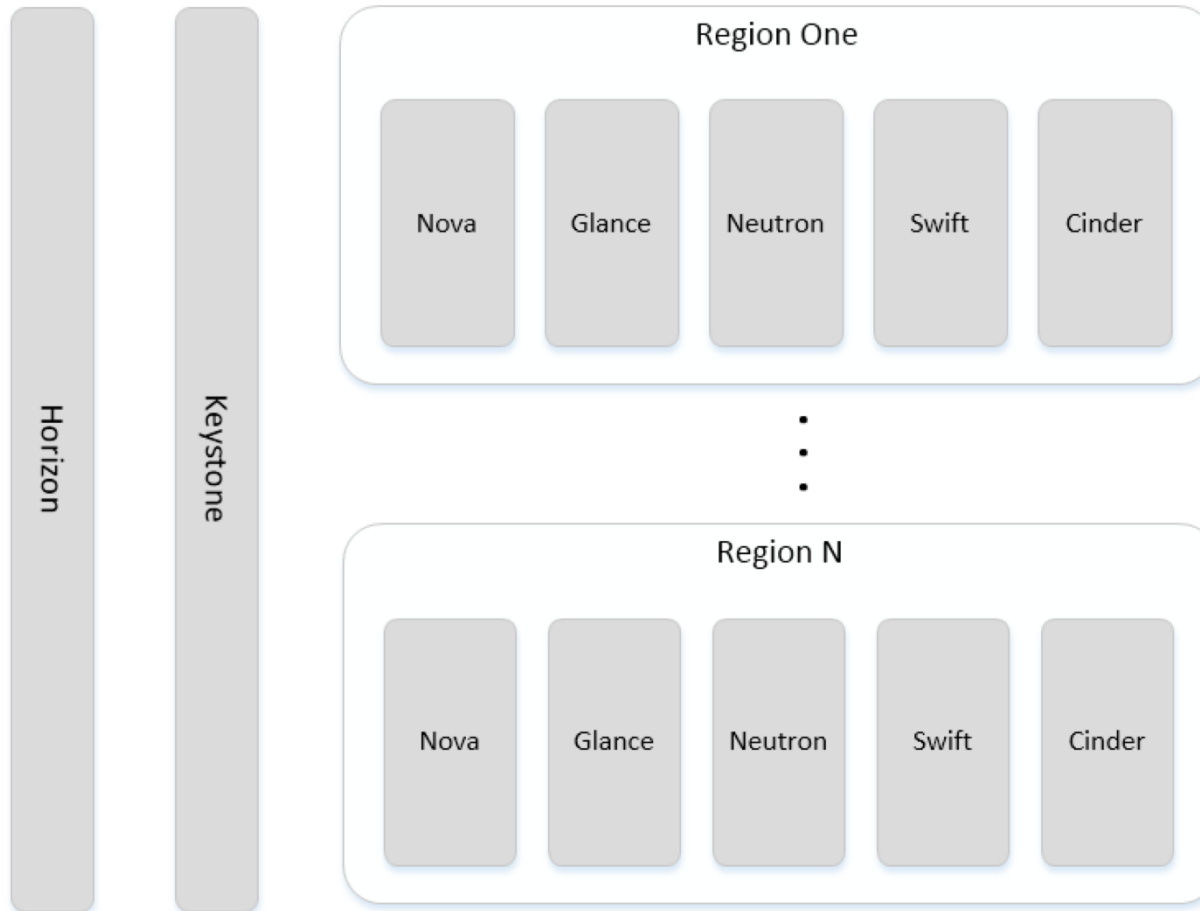
Federated Identity



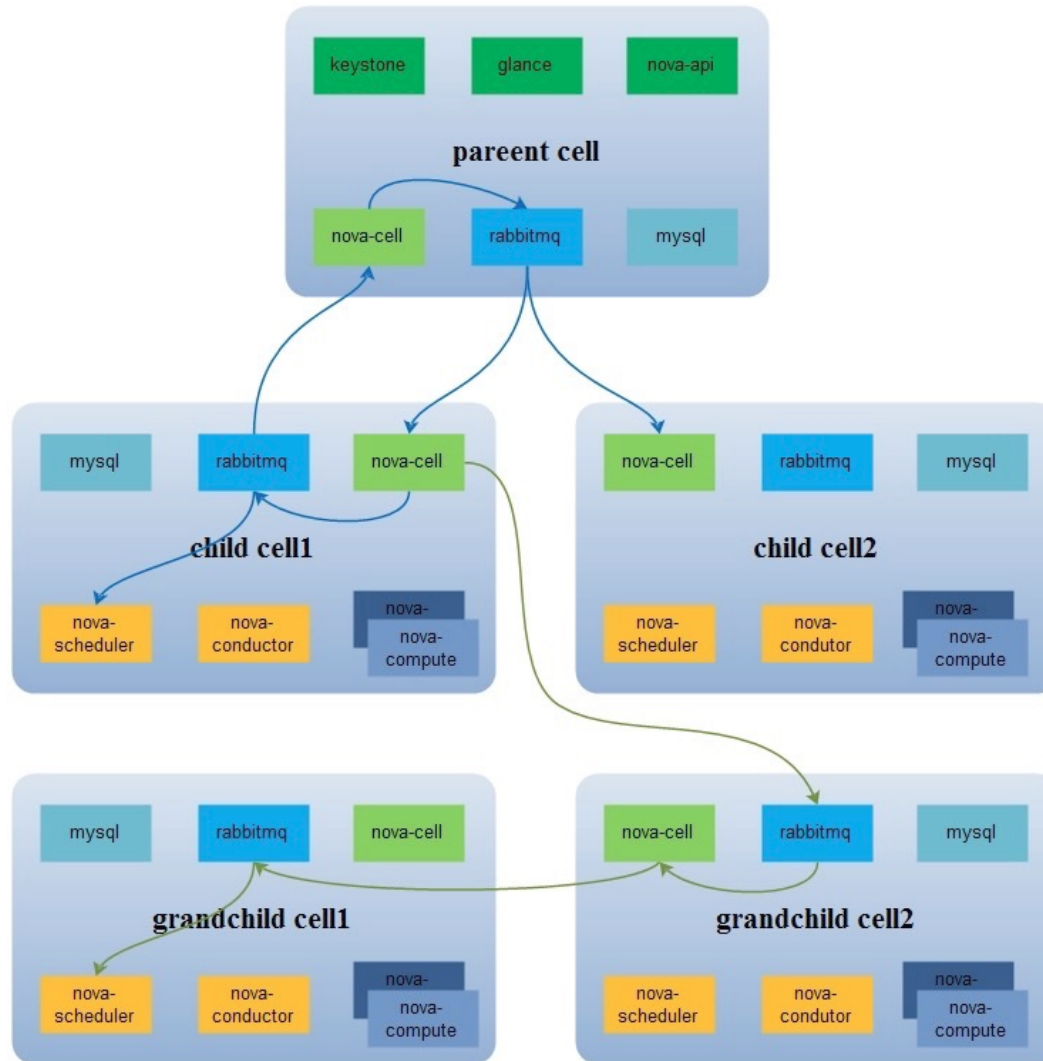
Federated Identity



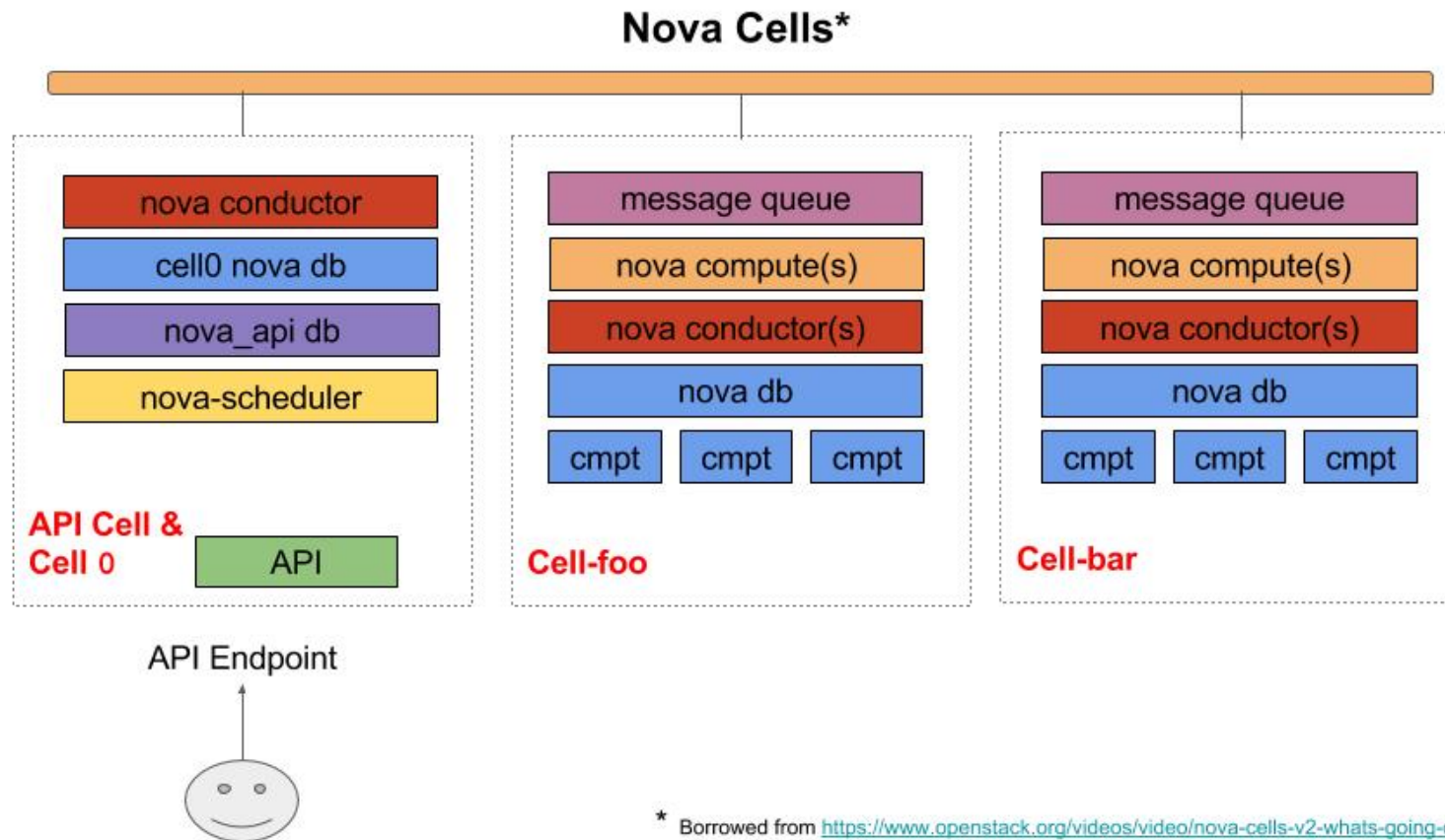
OpenStack Regions



Nova Cells V1

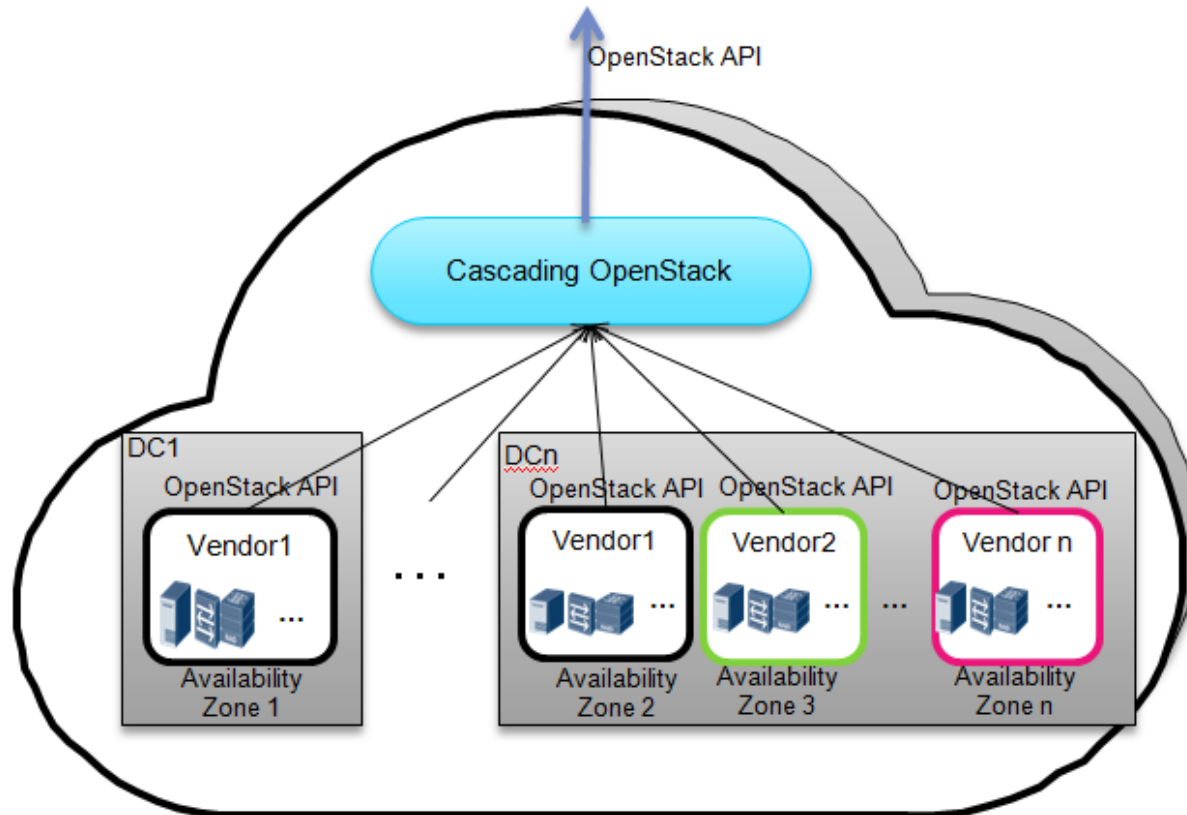


Nova Cells V2



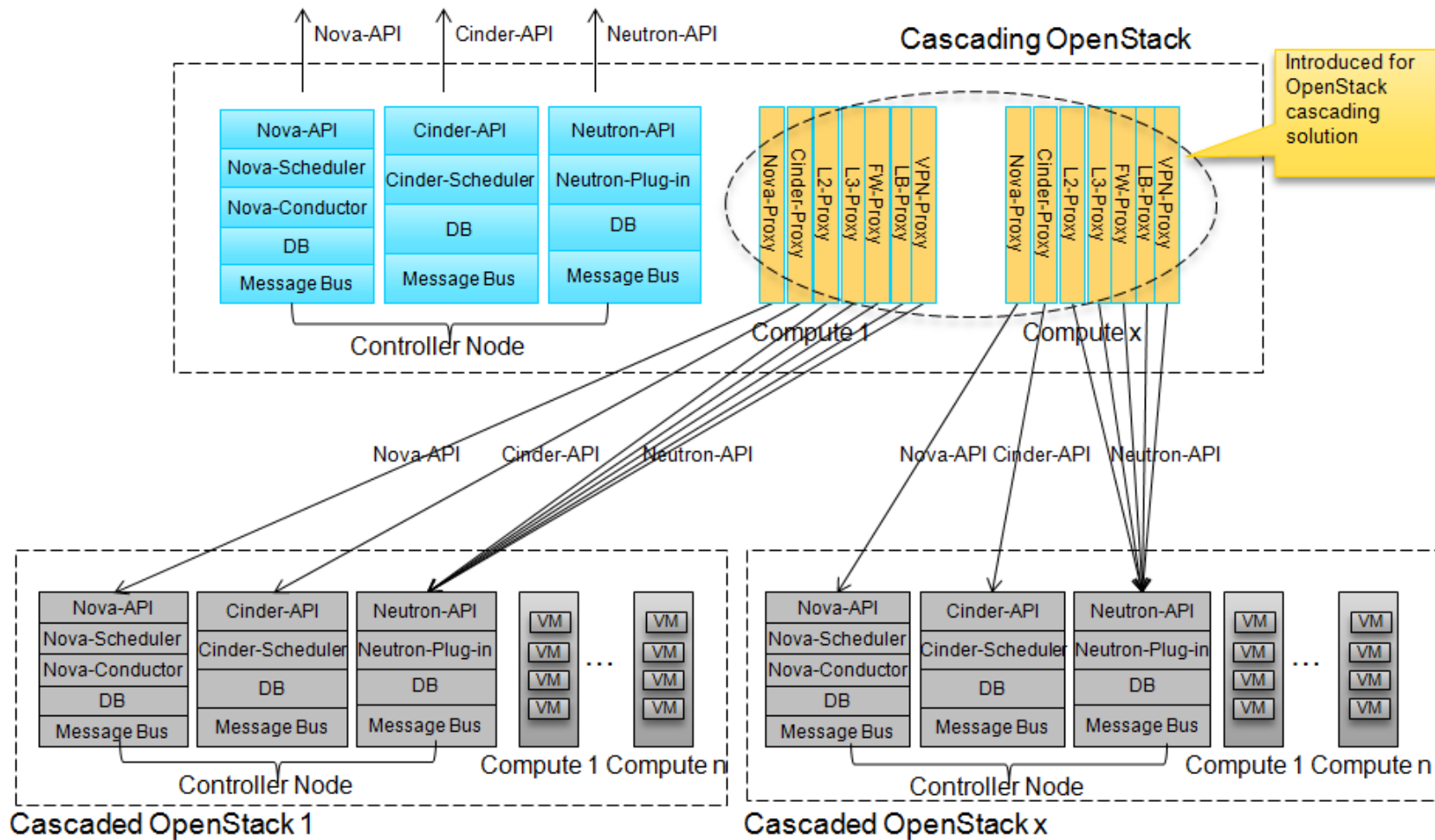
* Borrowed from <https://www.openstack.org/videos/video/nova-cells-v2-whats-going-on>

OpenStack Cascading



***One AZ can still integrate different vendor's hypervisors or physical resources

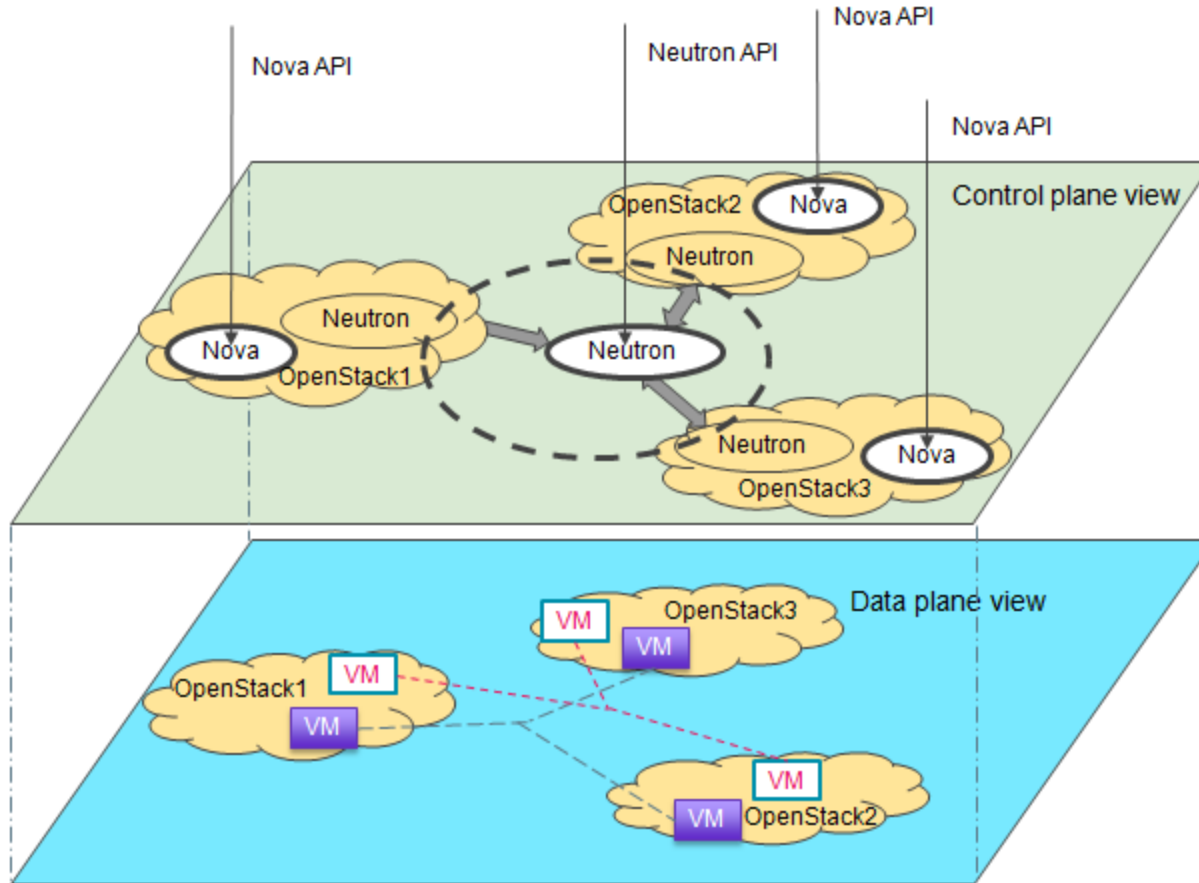
OpenStack Cascading



Tricircle

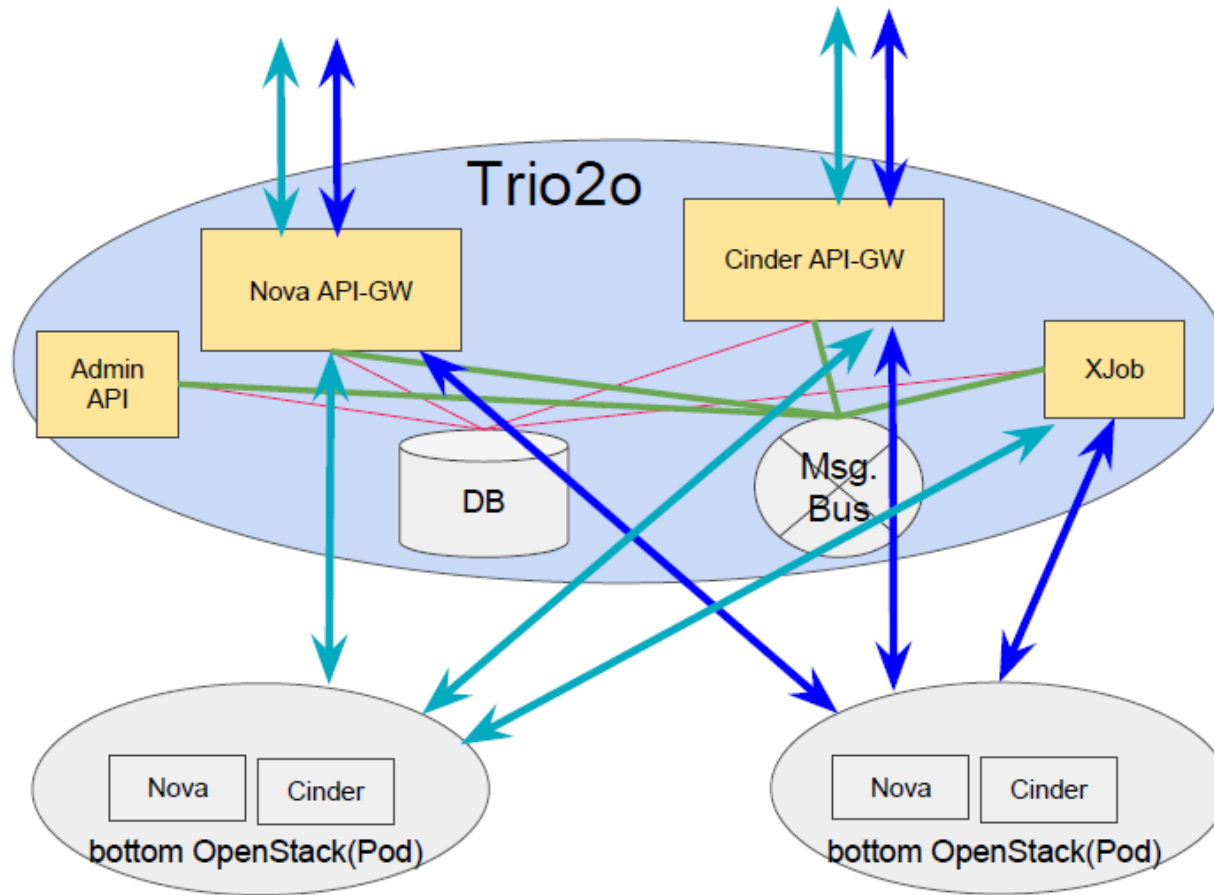
- Enhanced OpenStack Cascading solution
- Split to two projects in Ocata: Tricircle and Trio2o

Tricircle



<https://wiki.openstack.org/wiki/Tricircle>

Trio2o



KeyStone:

- Shared Keystone with Centralized or distributed deployment
- Federated KeyStones

Glance:

- Shared Glance
- Distributed Glance deployment
- Separate Glance deployment

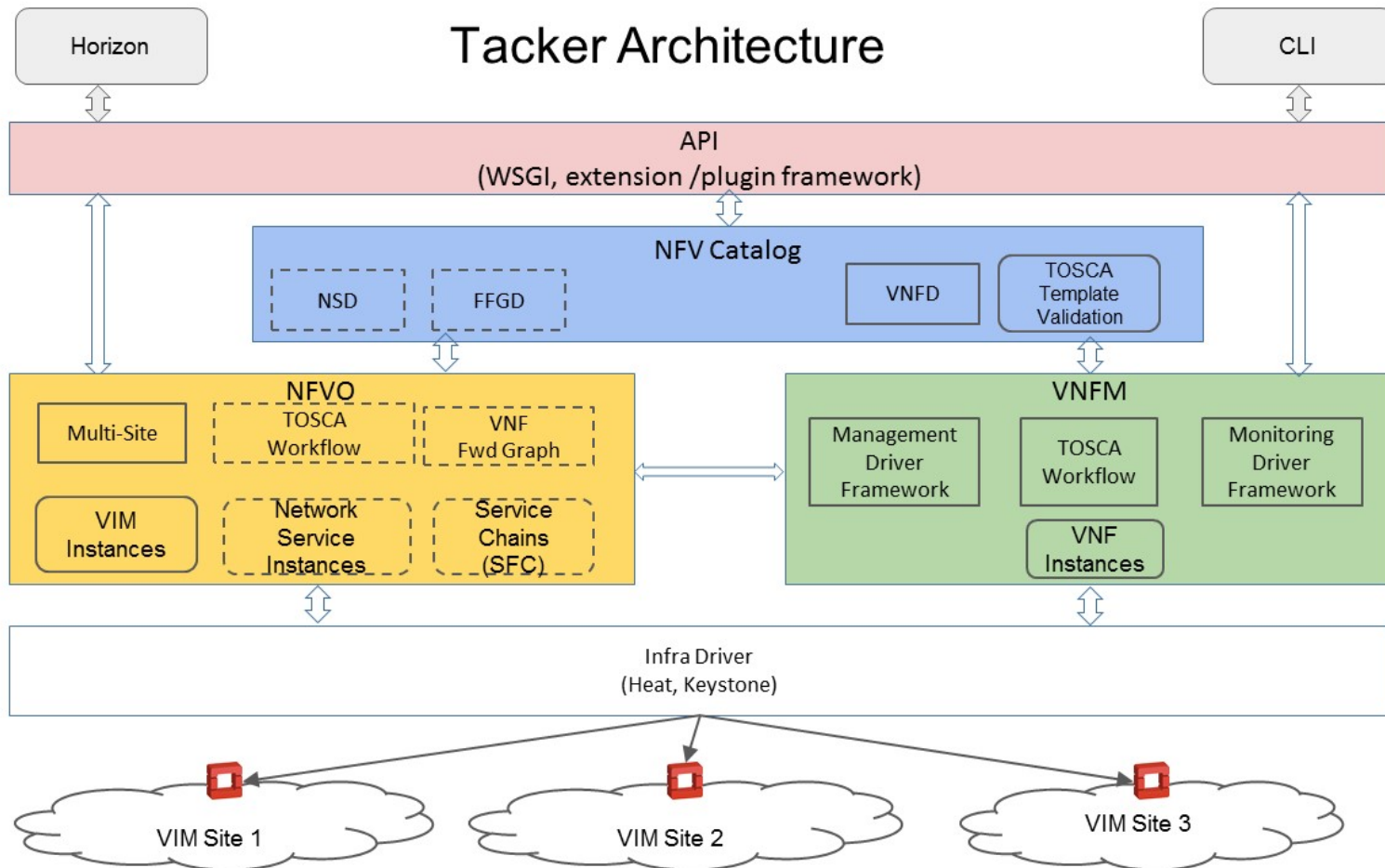
□ ○ New components of Trio2o

↔ Restful OpenStack API

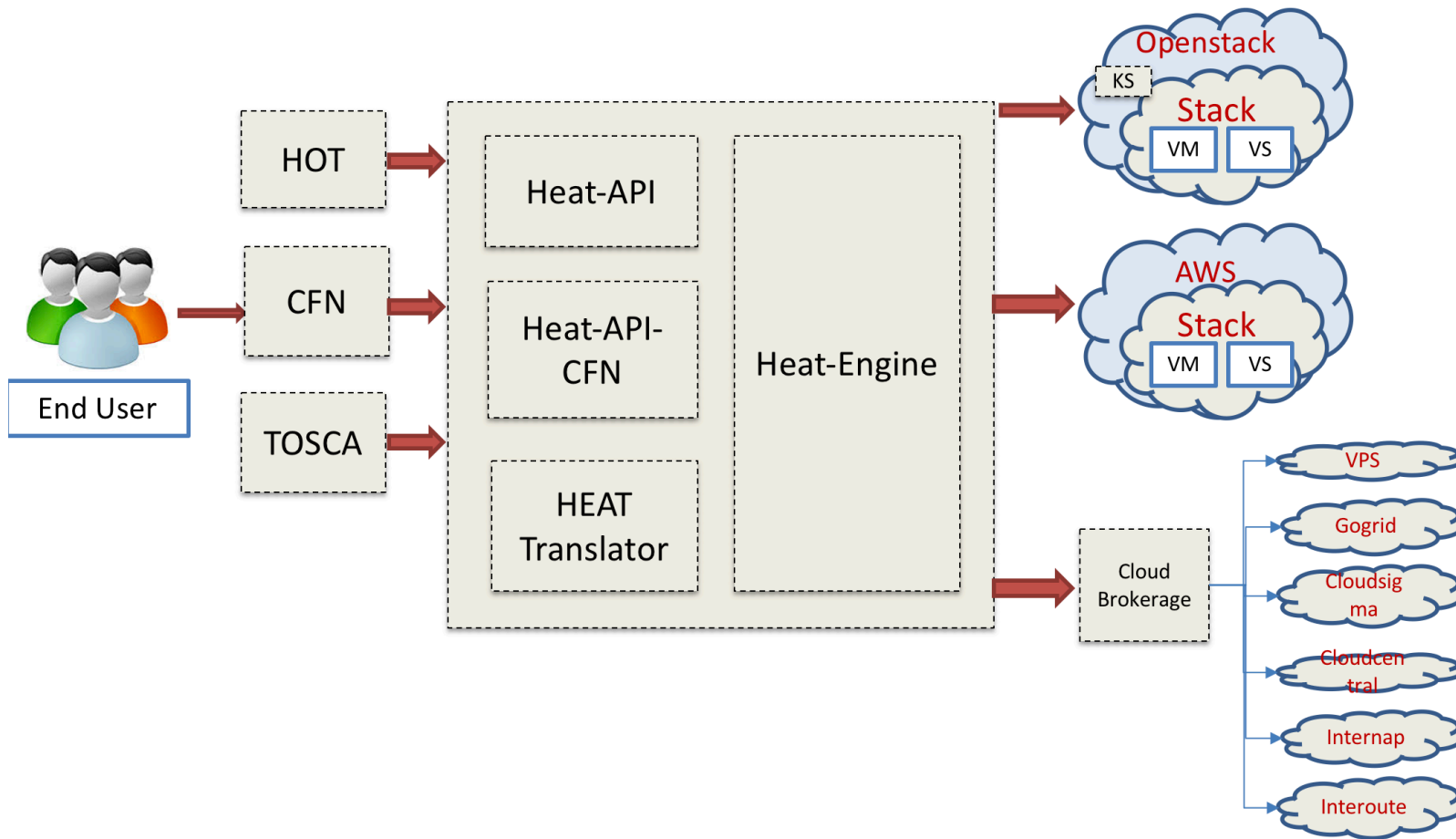
— Message bus, Async. XJob RPC API for cross OpenStack functionalities like networking, volume migration

— DB Access for site management, resource routing

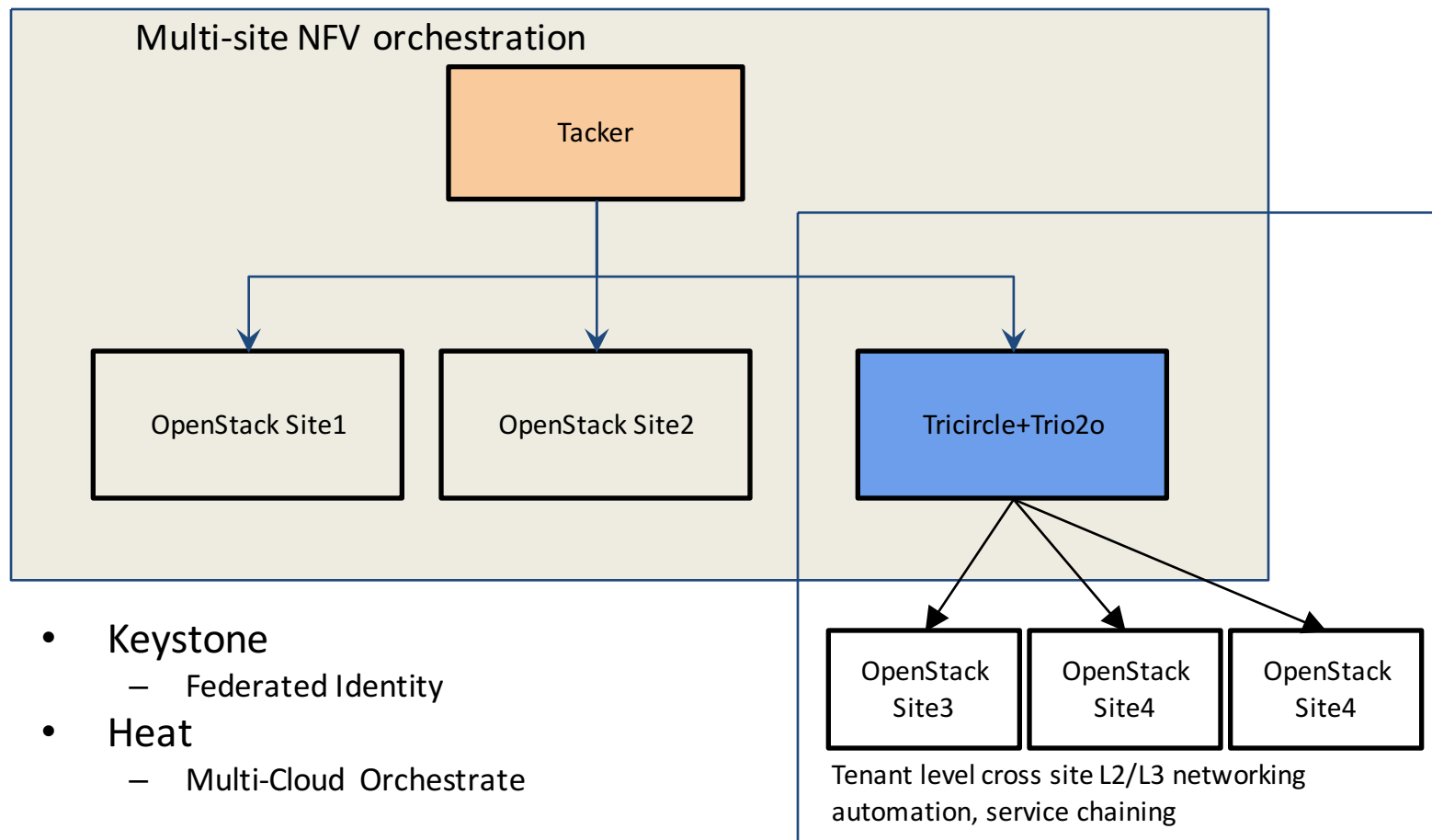
Tacker



Heat Multi-Cloud



Putting all together



THANK YOU

References

- <https://wiki.openstack.org/wiki/Tricircle#Architecture>
- https://wiki.openstack.org/wiki/OpenStack_cascading_solution
- <https://marketplace.computenext.com/>
- <http://serverascode.com/2017/05/09/openstack-multisite-multicloud.html>
- <http://www.cnblogs.com/wanglm/p/5749813.html>
- <https://docs.openstack.org/ocata/config-reference/identity/federated-identity.html>
- <http://doc.mbalib.com/view/ddfc06d07d976f1f228576d05055ce5a.html>
- <http://www.cnblogs.com/allcloud/p/5150200.html>