



OPENSTACK DAYS
CHINA

Topic : OpenStack混合云之路

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About

- Technical Director @ 99cloud
- Heavily involve in OpenStack Community since 2012
- Open Source Evangelist



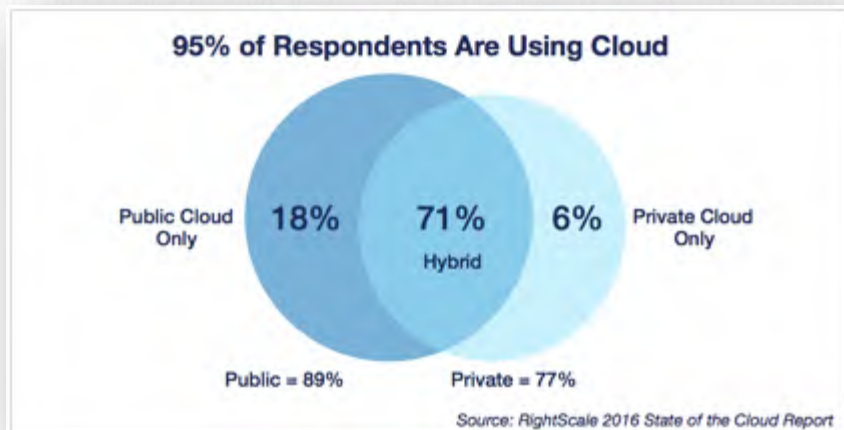
Agenda

- State of Hybrid Cloud
- Why Hybrid Cloud?
- Hybrid Cloud Use Cases
- Challenges
- Bridging Gaps
- Summary



State of Hybrid Cloud

- **71%** of respondents enterprises are using hybrid cloud – *RightScale Report*
- **75%** of companies planned to adapt hybrid cloud – *Cloud Cruiser survey*
- **88%** of respondents believe hybrid cloud is ‘important’ or ‘critical’ to enable digital business transformation - *IDG Research survey*



Hybrid cloud is now mainstream.

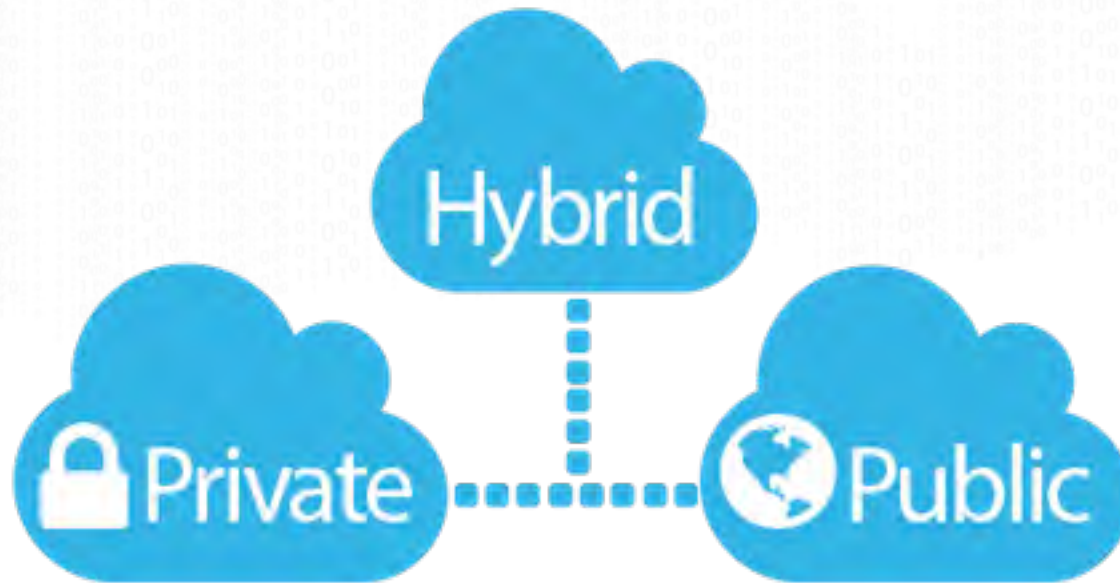
75%

According to a recent survey by Cloud Cruiser, three quarters of companies said that they planned to include hybrid cloud as part of their strategy.



Why Hybrid Cloud?

- Provide resources in a short timeframe
- “buying the base and renting the peak ”
- Full geographic reach needed.



Hybrid Cloud Use Cases

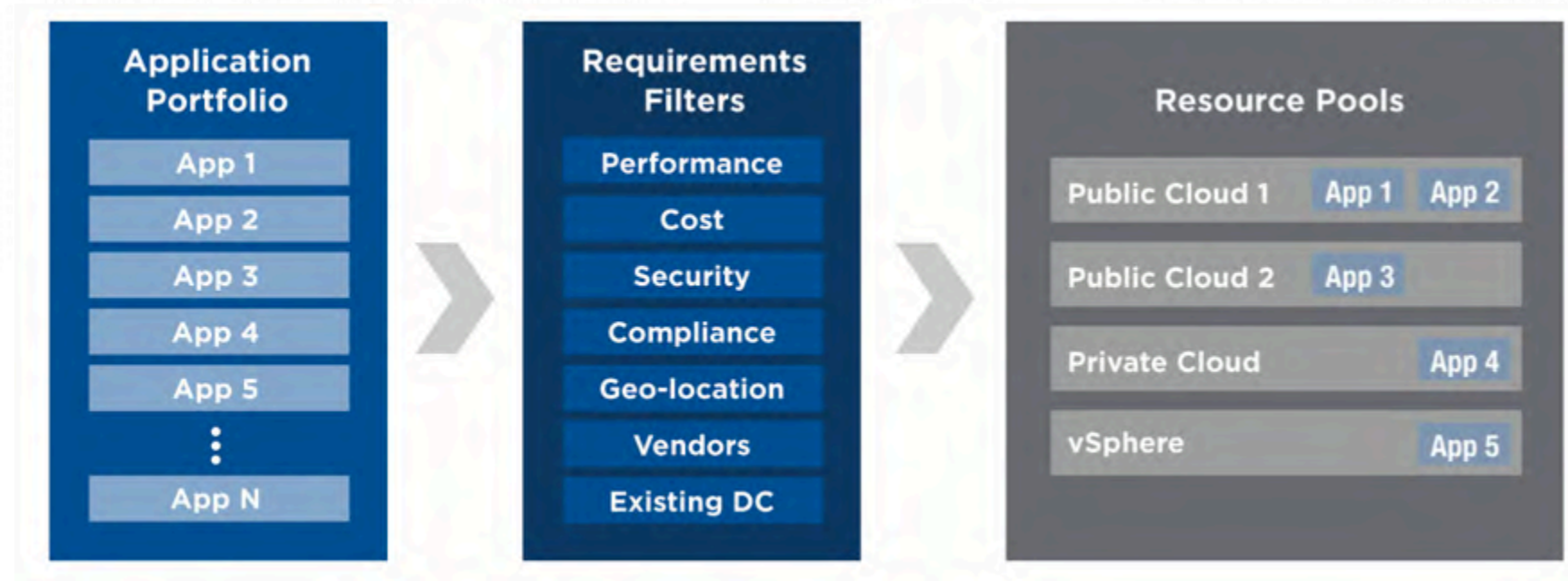
- Best Cloud Allocation
- Lifecycle-Based Deployment
- Disaster Recovery
- Cloud bursting

security, latency, cost, and application complexity.



Best Cloud Allocation

- It involves selecting the best cloud for deploying each application.
- The entire application runs in that selected private or public cloud.



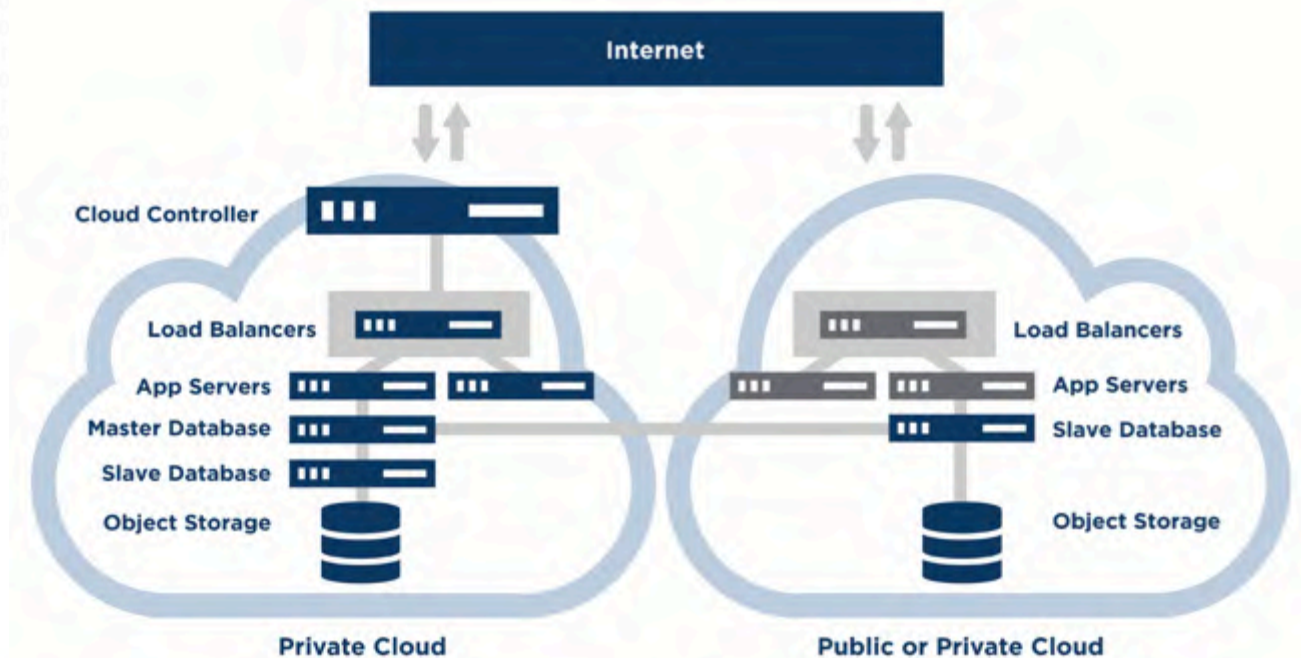
Lifecycle-Based Deployment

- Dev/Test in Public Cloud, Production in Private Cloud
- Dev/Test in Private Cloud, Production in Public Cloud
- New Apps in Public Cloud, Steady-State Apps in Private Cloud



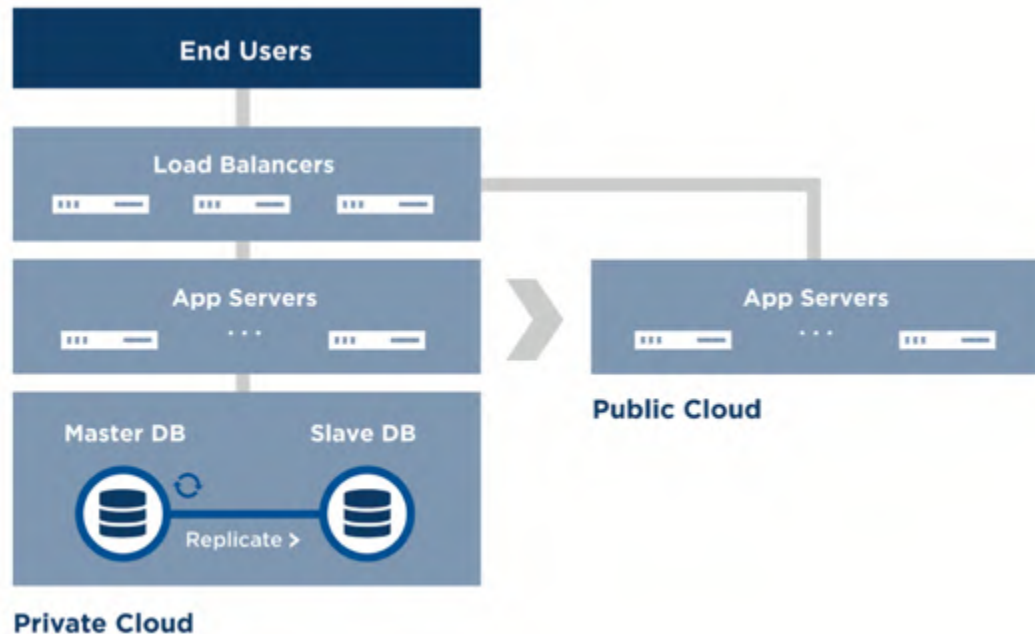
Disaster Recovery

- Using public cloud for disaster recovery avoid the cost of provisioning duplicate infrastructure that is rarely used.
- Greatly reducing the time required to bring the entire configuration to an operational state.



Cloud bursting

- Direct connection between cloud providers
 - AWS Direct Connect
 - Aliyun Express Connect
- Automation capabilities to handle auto-scaling



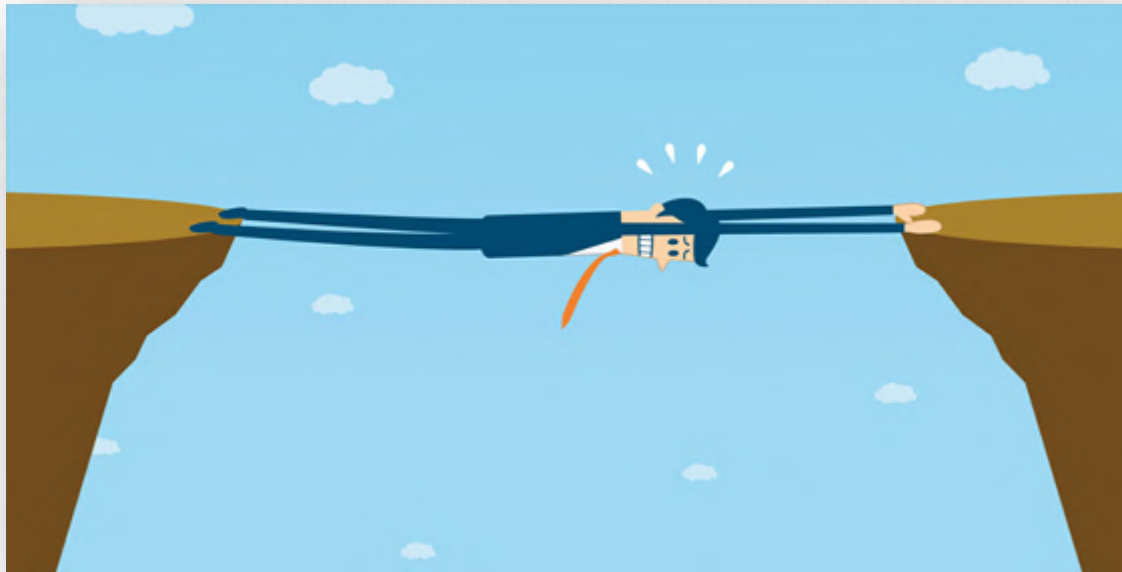
Challenges

- **Access Control:** how to handle different credentials with security manner?
- **Multi-Cloud Management:** how to manage clouds with a single pane?
- **Multi-Cloud Orchestration:** how to orchestrate applications among multi-cloud environment?
- **Audit & Compliance:** how to collect audit data and comply with regulations?
- **Network Connectivity:** how to manage network configurations and maintain connectivity across clouds?



Bridging Gaps

Challenges	OpenStack Solutions
Access Control	Federated Identity
Multi-Cloud Management	<i>tricircle</i>
Multi-Cloud Orchestration	heat-multicloud
Audit & Compliance	✘
Network Connectivity	✘



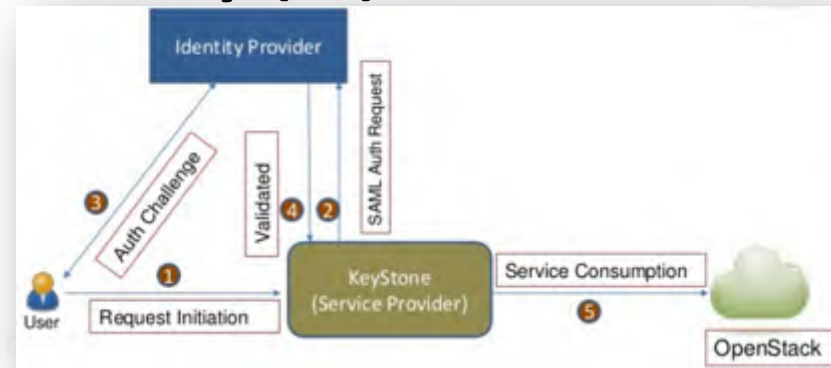
Federated Identity(1)

- Juno implemented specs:
 - [Keystone to Keystone federation](#)
 - [Standardizing the federation process](#)
 - [Audit Support for Keystone Federation](#)
- Kilo implemented specs:
 - [Web Single Sign On Portal](#)
 - [Rescoping Spec - From Unscoped to Scoped](#)
 - [OpenID Connect federation](#)
 - [Enhance Federation mapping algorithms](#)
 - [Federated Service Providers in Keystone](#)
 - [Explicitly Unscoped Tokens](#)
 - [Direct users mapping for federated authentication](#)
 - [Scope federation tokens with token authentication method](#)
 - [IdP ID registration and validation](#)
 - [IETF ABFAB federation](#)
- Liberty implemented specs:
 - [New attributes for SAML Assertion generated by keystone IdP](#)
 - [Identity Provider Specific WebSSO](#)



Federated Identity(2)

- Service Provider (SP)
- Identity Provider (IdP)
- SAML assertion



Federated Identity using Keystone

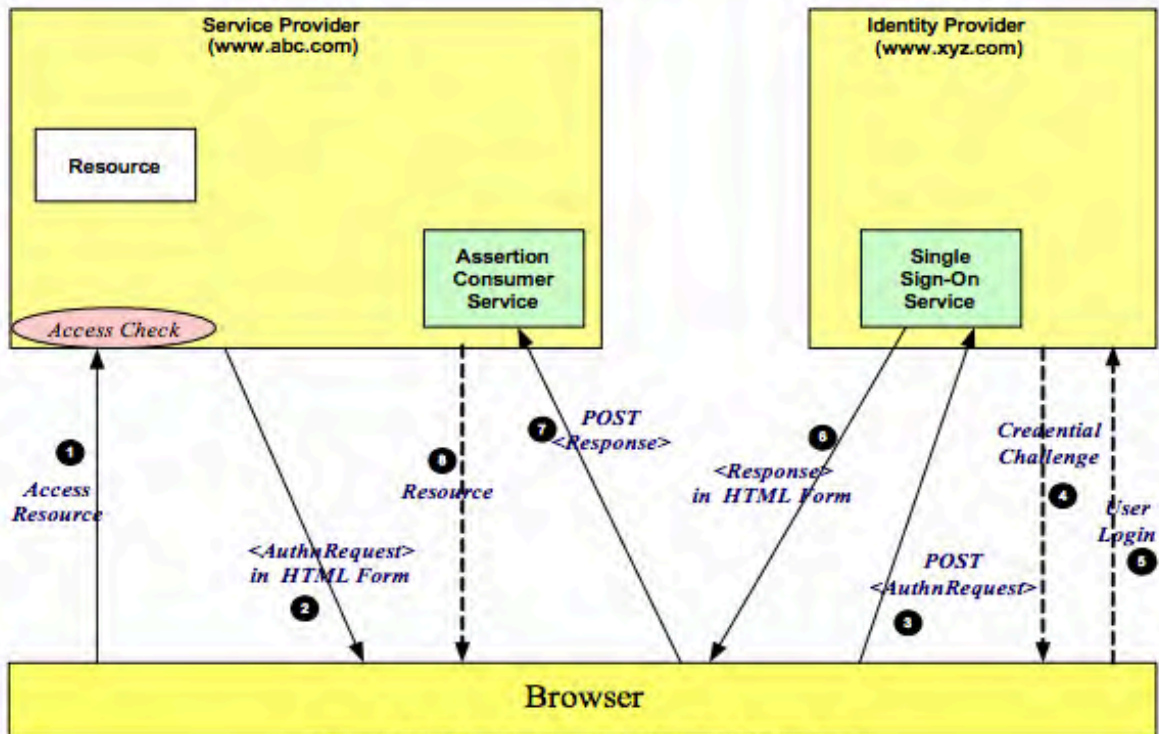
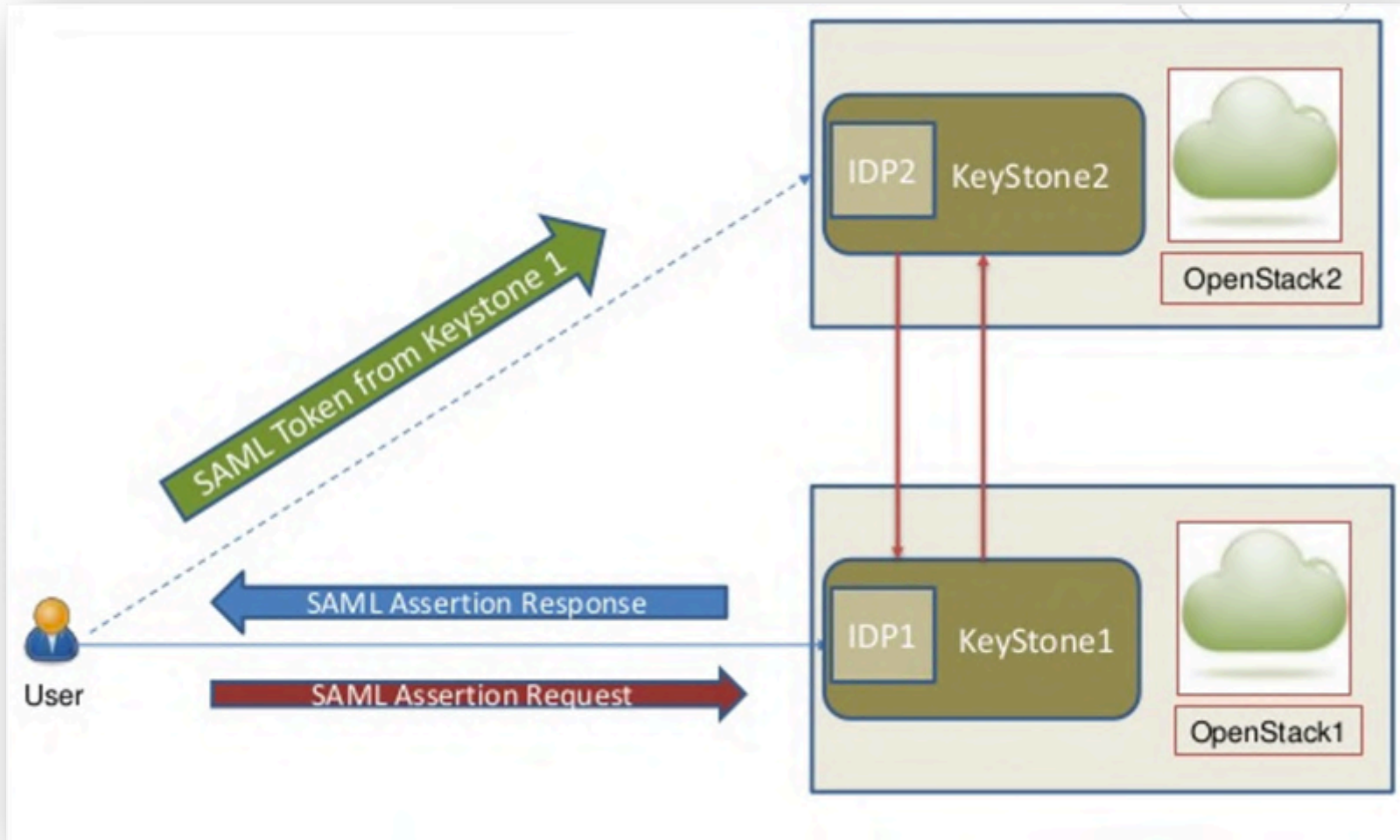


Figure 14: SP initiated: POST->POST binding

The screenshot shows the OpenStack Dashboard Log In page. It features the OpenStack logo and the text "openstack DASHBOARD". Below the logo is a "Log In" section with a dropdown menu for "Authenticate Using" set to "Federated single sign-on". There are input fields for "User Name" (containing "admin") and "Password" (masked with dots). A "Sign In" button is located at the bottom right of the form.

Federated Identity(3)



Keystone to Keystone Federation

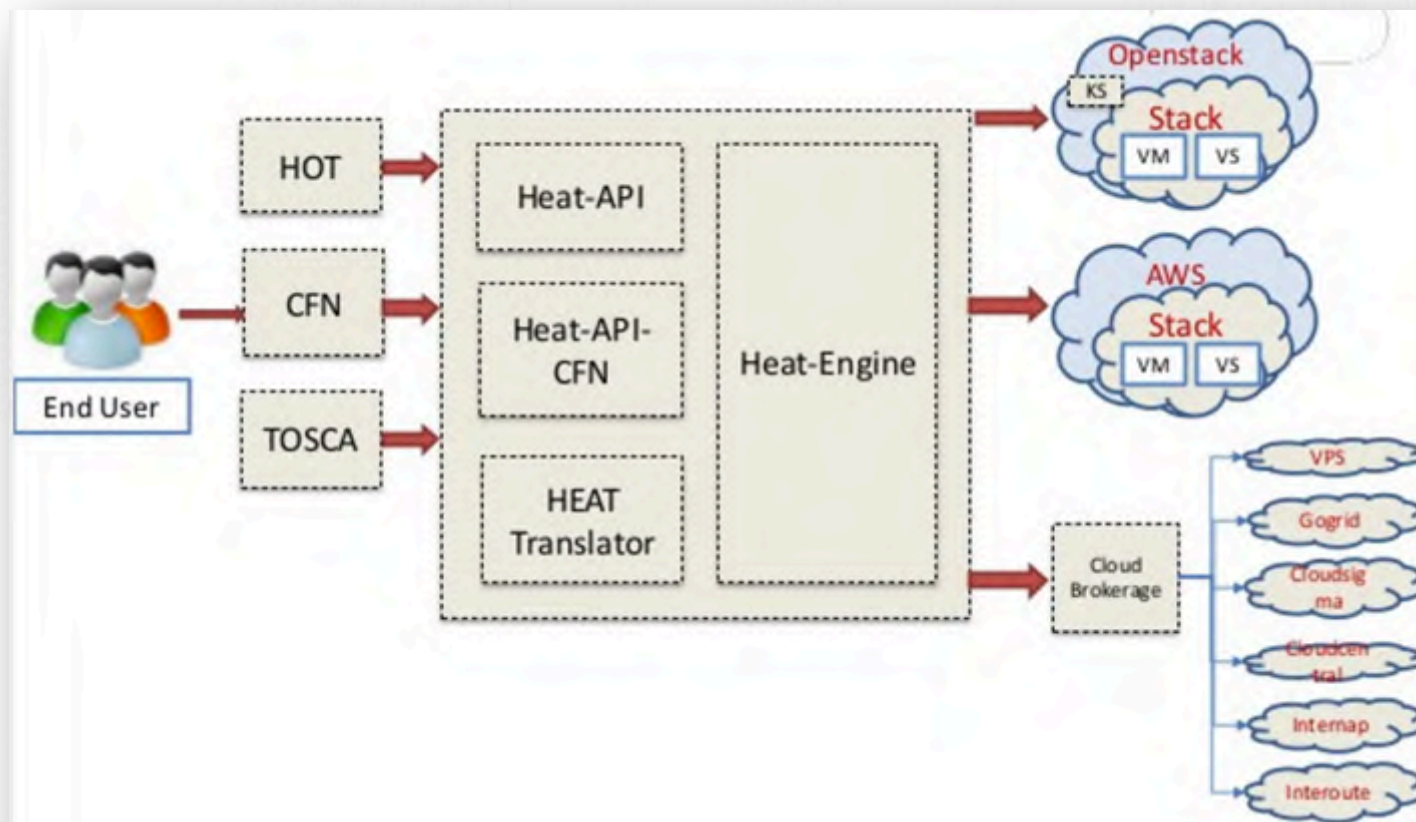
Heat-Multicloud(1)

- Havana implemented
 - <https://blueprints.launchpad.net/heat/+spec/heat-standalone>
 - <https://blueprints.launchpad.net/heat/+spec/heat-multicloud>
- Kilo implemented
 - <https://blueprints.launchpad.net/heat/+spec/multi-region-support>
 - [Multi-region scenario test](#)
- Backlog
 - <https://blueprints.launchpad.net/heat/+spec/multi-cloud-federation>

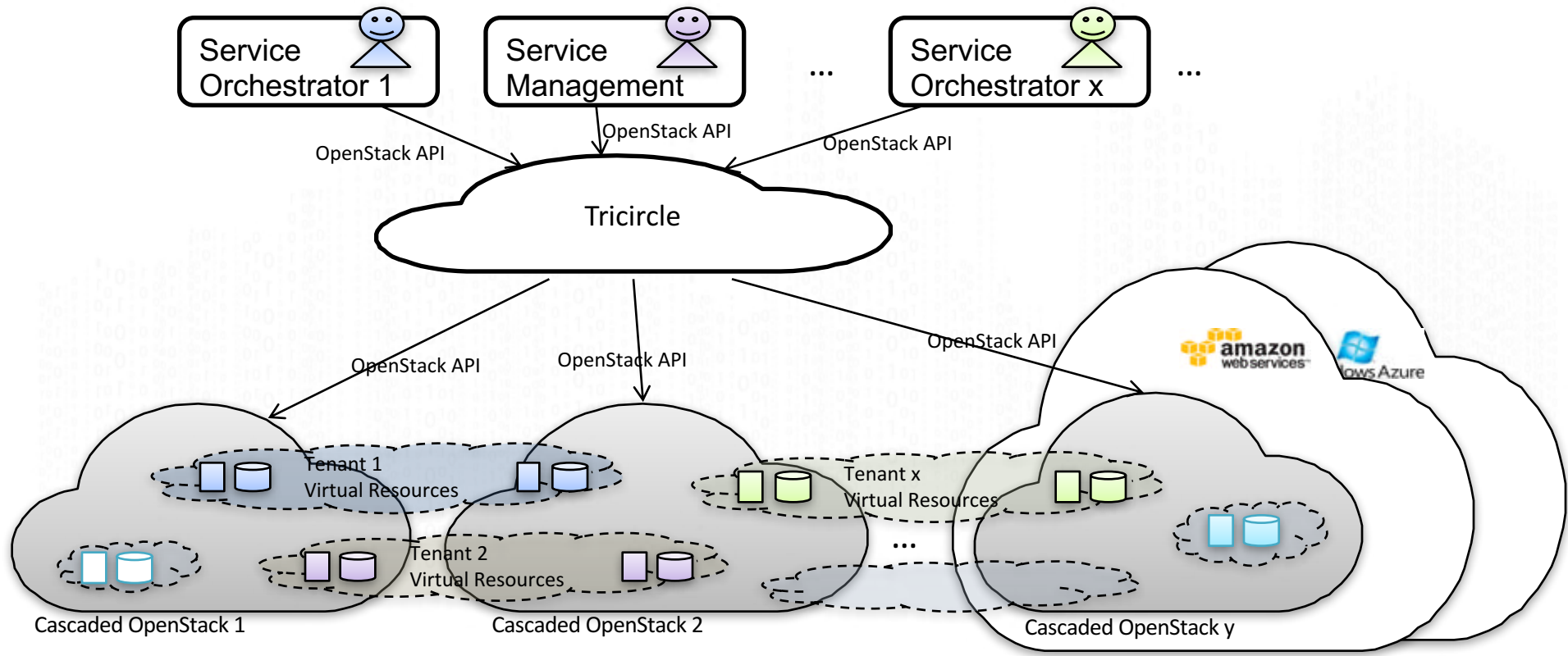


Heat-Multicloud(2)

- Heat Resource Plugin Structure
- Standalone Heat Deployment



Tricircle



Cloud over clouds by OpenStack cascading: the cascaded OpenStack instance even can be running inside Amazon AWS or Windows Azure, and then being integrated into a cloud through the cascading OpenStack. This is cloud over clouds.



99cloud hybrid cloud solution

创建云主机

云主机名称: demo-fedora

云主机数量: 1

云主机启动源: **从阿里云启动**

阿里云地域: 亚太 (新加坡)

阿里云规格: ecs.c1.large

选择镜像源: 阿里云镜像

阿里云镜像: 选择阿里云镜像

I/O优化

状态: 从创建以来

动作: 创建快照

- 绑定浮动IP
- 解除浮动IP的绑定
- 编辑云主机
- 编辑安全组
- 查看日志
- 中止云主机
- 挂起云主机
- 备份至阿里云**
- 调整云主机大小
- 软重启云主机
- 硬重启云主机
- 关闭云主机
- 重建云主机
- 终止云主机

备份至阿里云

备份名称: [输入名称]

描述: 输入备份到阿里云的名称

99cloud-test

Object管理

文件名	大小
demo-demo.raw	18.5MB
demo-fedora	10.0GB

Instance1, Instance2, Instance3

Nova Compute

Ceilometer

Summary

- The road to hybrid cloud with OpenStack is rough and steep.
- OpenStack itself lacks the capabilities to meet hybrid cloud scenarios.
- The 3rd platform can centrally leverage OpenStack APIs to implement hybrid cloud.



Thanks



Reference

- <http://www.rightscale.com/lp/2016-state-of-the-cloud-report>
- <https://www.emc.com/microsites/cio/articles/idg-research-study-hybrid-cloud/index.htm>
- <https://aws.amazon.com/directconnect/>
- http://docs.openstack.org/developer/heat/getting_started/standalone.html

