.

HYBRID CLOUD

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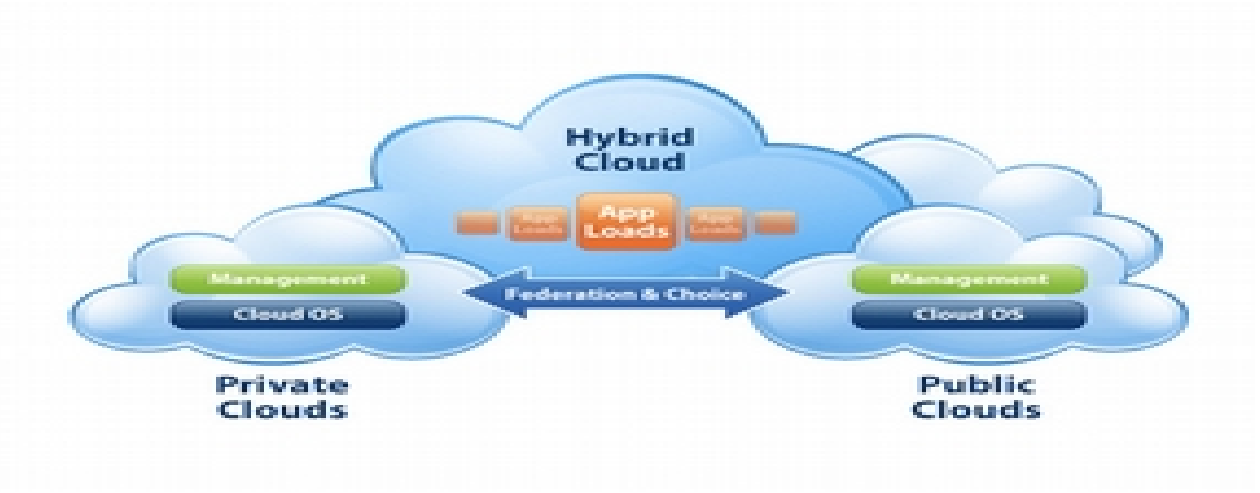
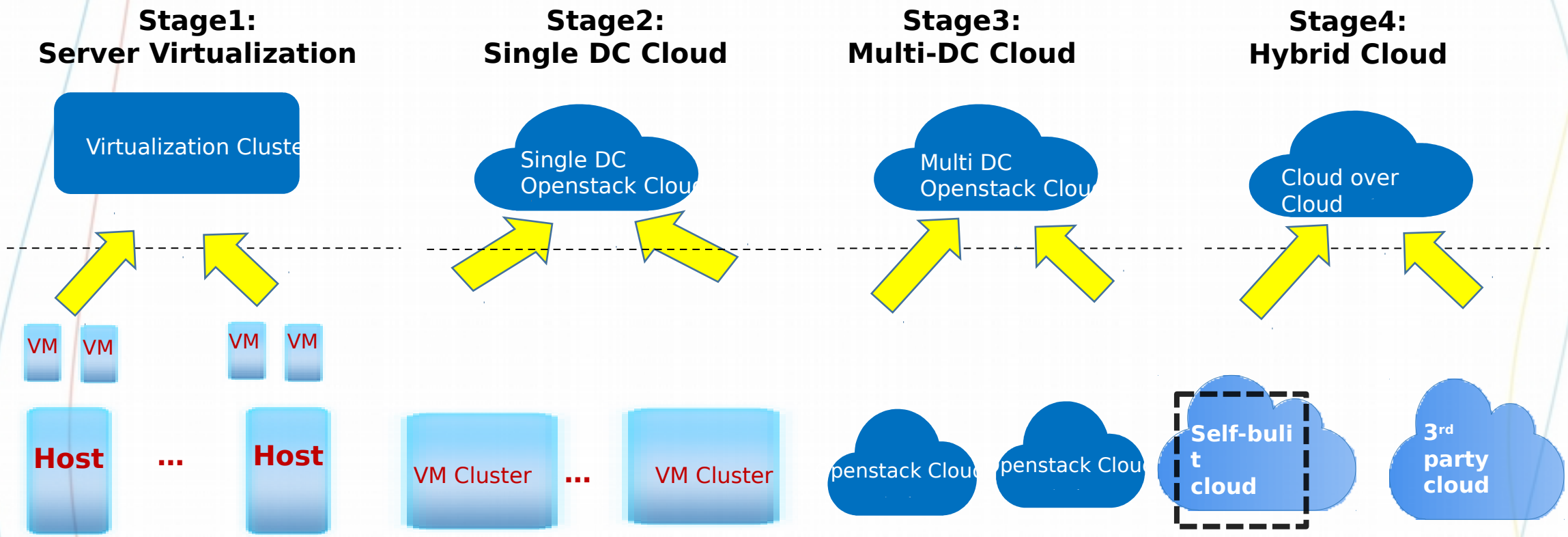


Hybrid Cloud adalah gabungan dari layanan Public Cloud dan Private Cloud yang di-implementasikan oleh suatu organisasi atau perusahaan. Dalam Hybrid Cloud ini, kita bisa memilih proses bisnis mana yang bisa dipindahkan ke Public Cloud dan proses bisnis mana yang harus tetap berjalan di Private Cloud.

Hybrid Cloud is the next hop of Infrastructure Consolidation



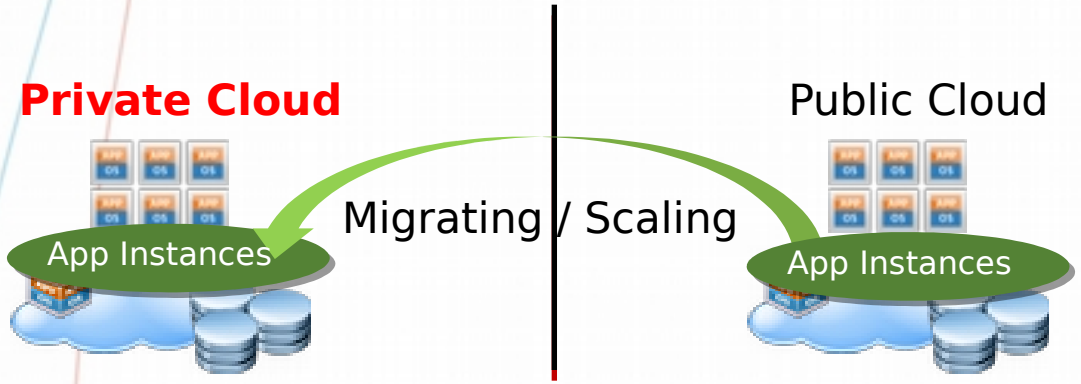
Resource utilization improvement
CAPEX saving

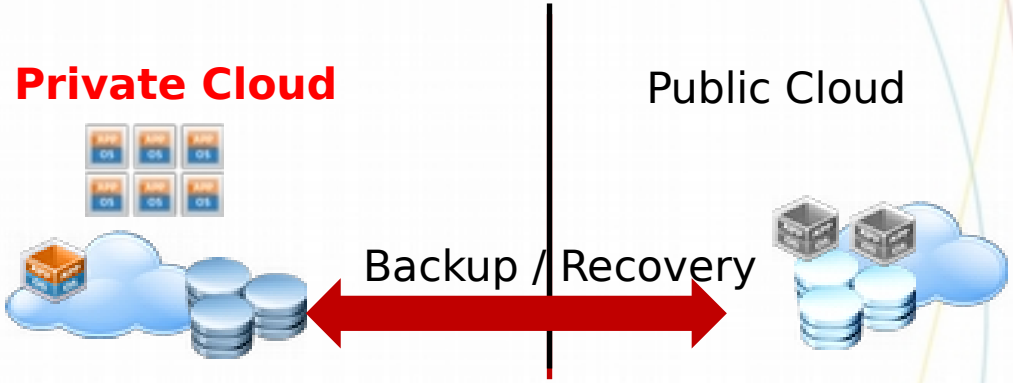
Flexibility and Speed
via automation

Multi-site service
offering

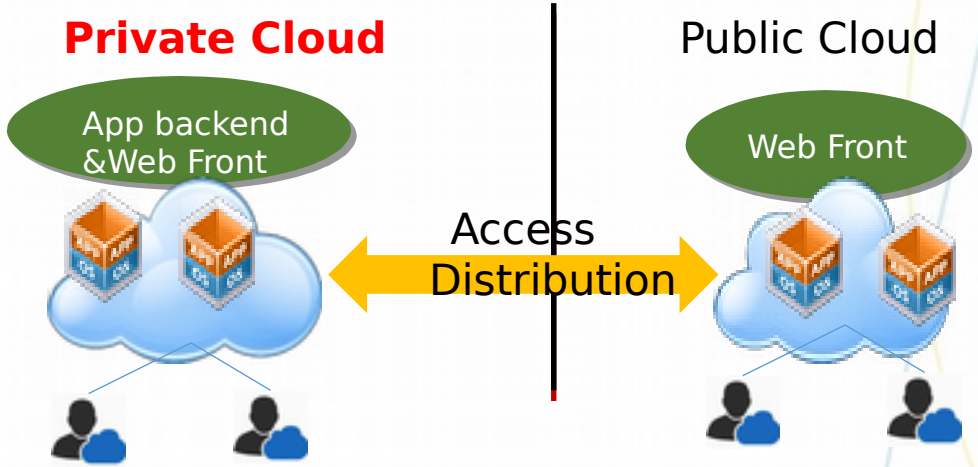
Optimized Cost efficiency
and Business agility

Hybrid Cloud Benefits for Enterprise Private Cloud



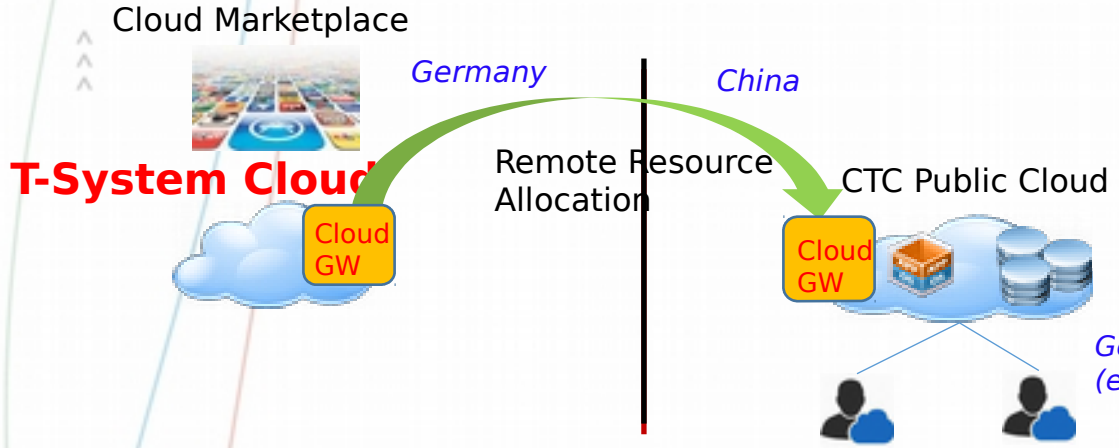


Backup the cold data into Public Cloud to reduce Private Cloud CAPEX.

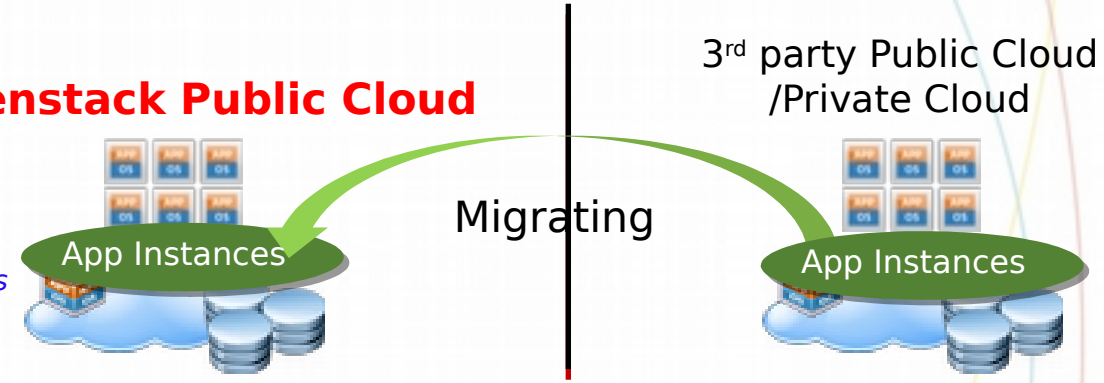


Deploy non-critical Application (Web Front) in Public Cloud to improve end-user experience.

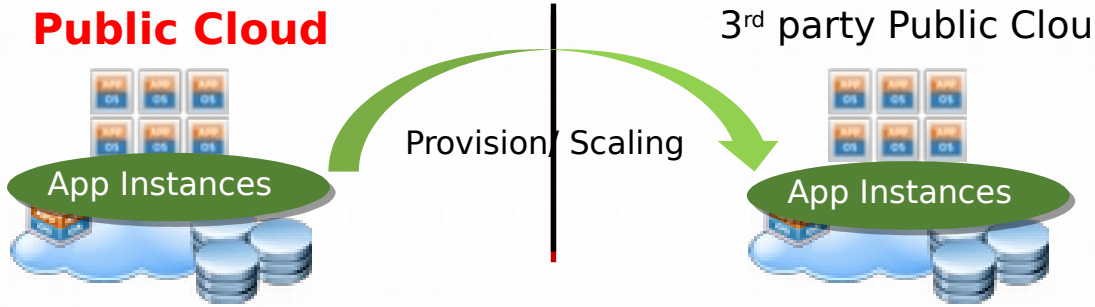
Hybrid Cloud Benefits for Public Cloud



Offering better user experiences of interactive Cloud services (Video, Workspace, Cloud Storage) to remote Cloud tenants without local DC presence.

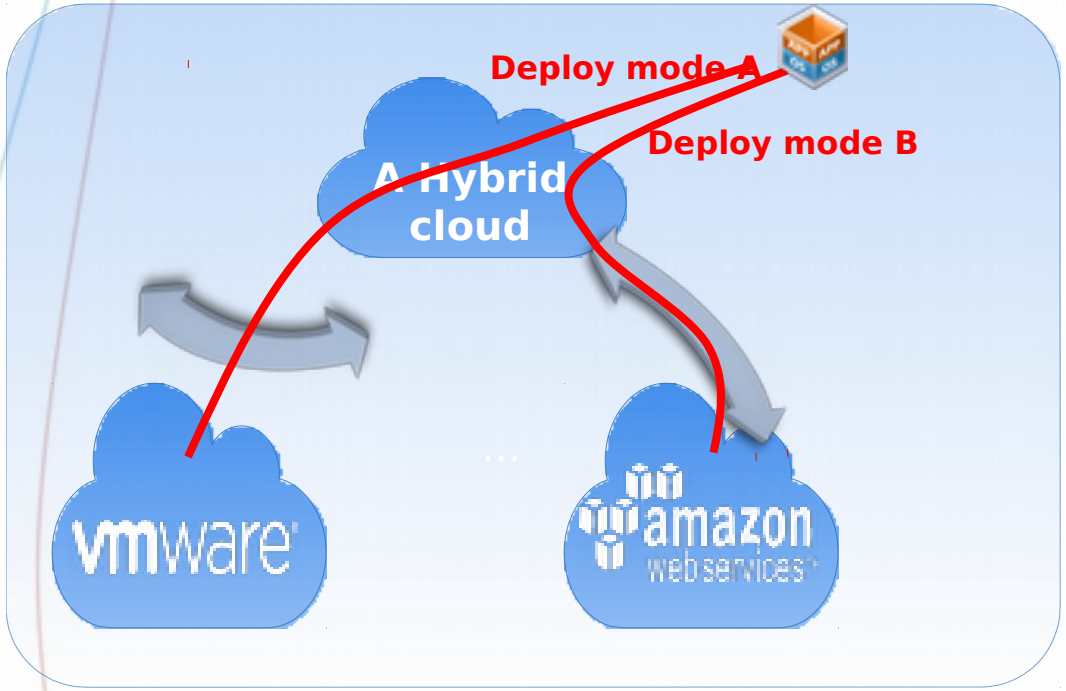


Seamless moving workloads from non-Openstack public Cloud or private Cloud to Openstack public Cloud



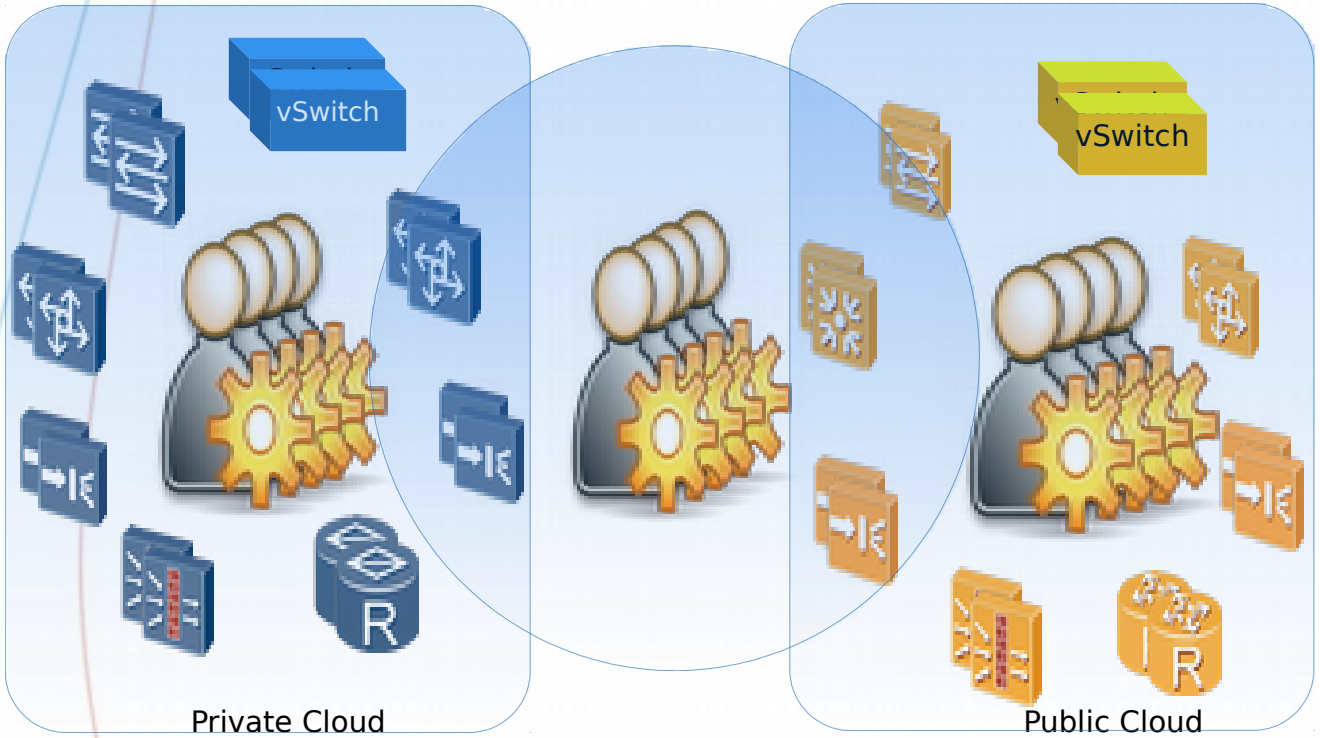
Satisfy temporary burst traffic requirement in case self-owned physical resource is temporarily not enough

However, Challenges still ahead



	AWS	vCloud	Azure	Openstack
Image	AMI	VMDK	VHD	qCow2
Meta data	Yes	No	No	Yes
Data Vol	Yes	No	Yes	Yes
Security Rule	Subnet + VM	Tenant	Tenant + VM	Tenant + VM
API Difference	90%	60%	70%	100% (base)

However, Challenges still ahead

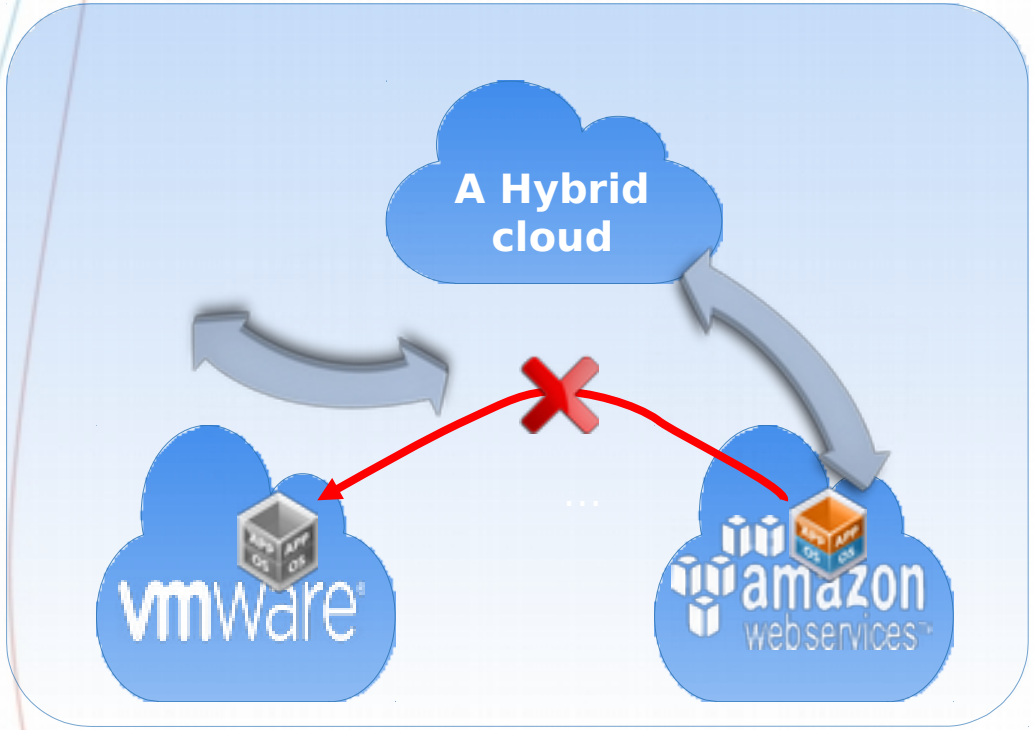


Challenge 2:

Hybrid Brings More Complicated Manual Work in Network management

Address is not managed across clouds
ACL and communication matrix need to be setup manually
Manually VPN connection is complex

However, Challenges still ahead



Challenge 3:

Hard to move across clouds

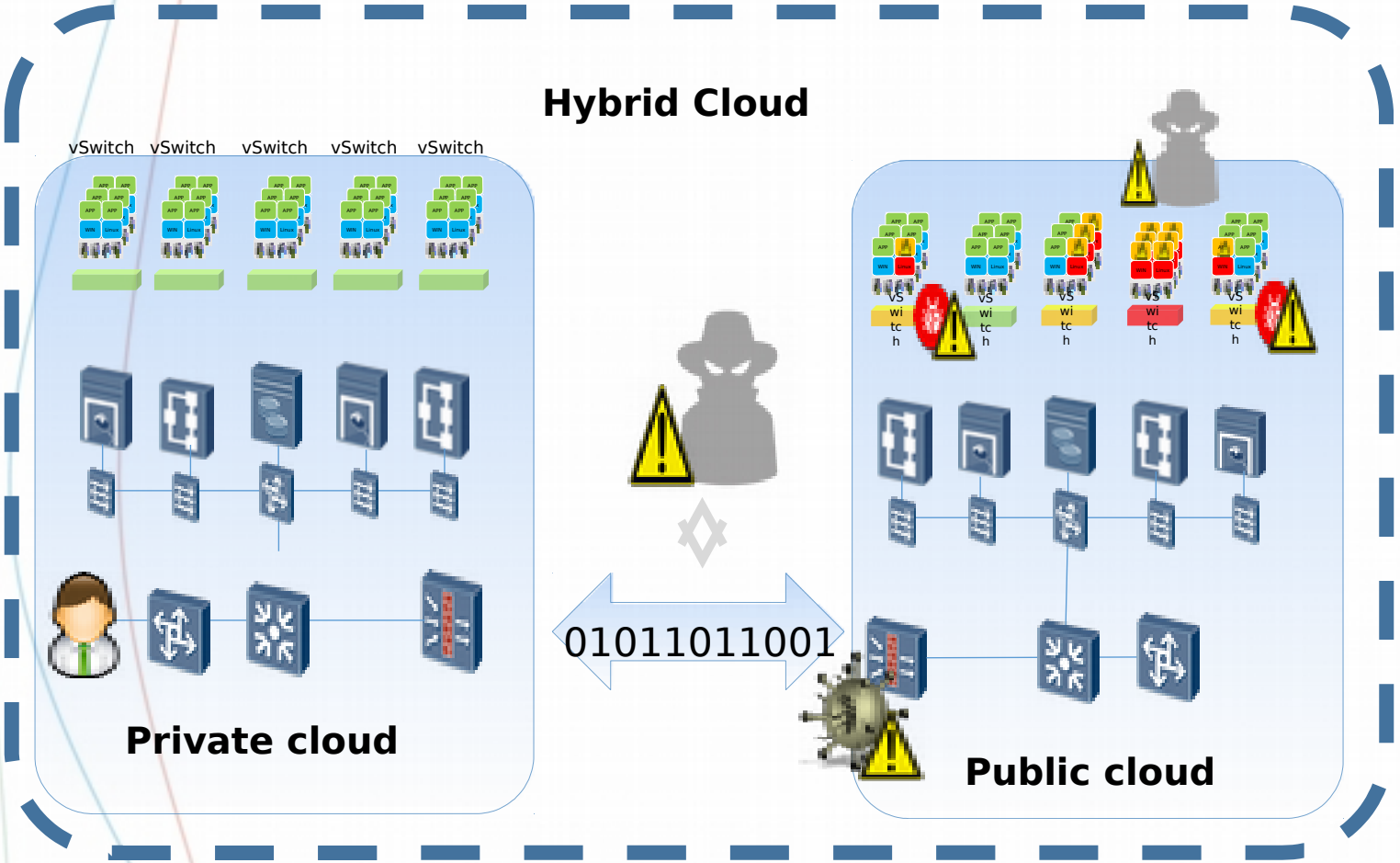
Is your hybrid cloud a continent or many islands?

Image can not shared across clouds
SG/FW/LB is not managed across clouds

Move workloads across clouds? It is a big task!

Automatically scale across clouds? No!

However, Challenges still ahead

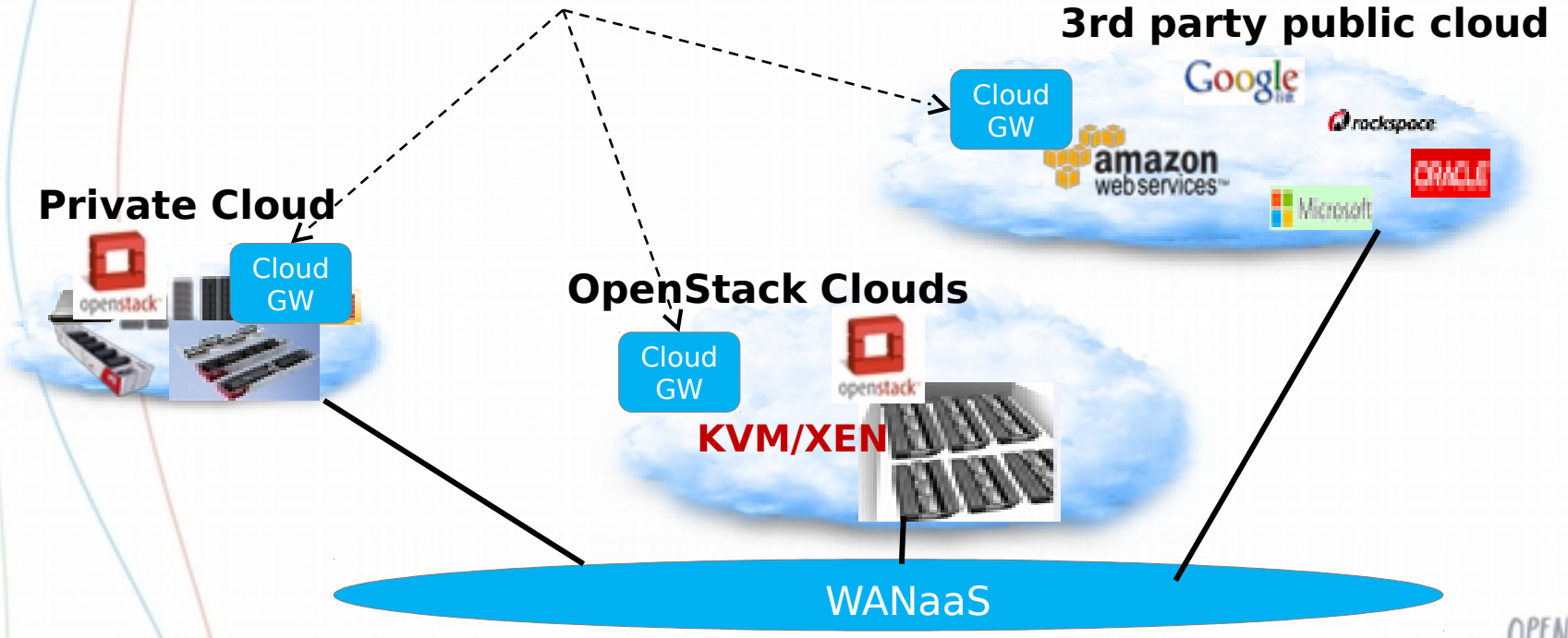


Challenge 4:

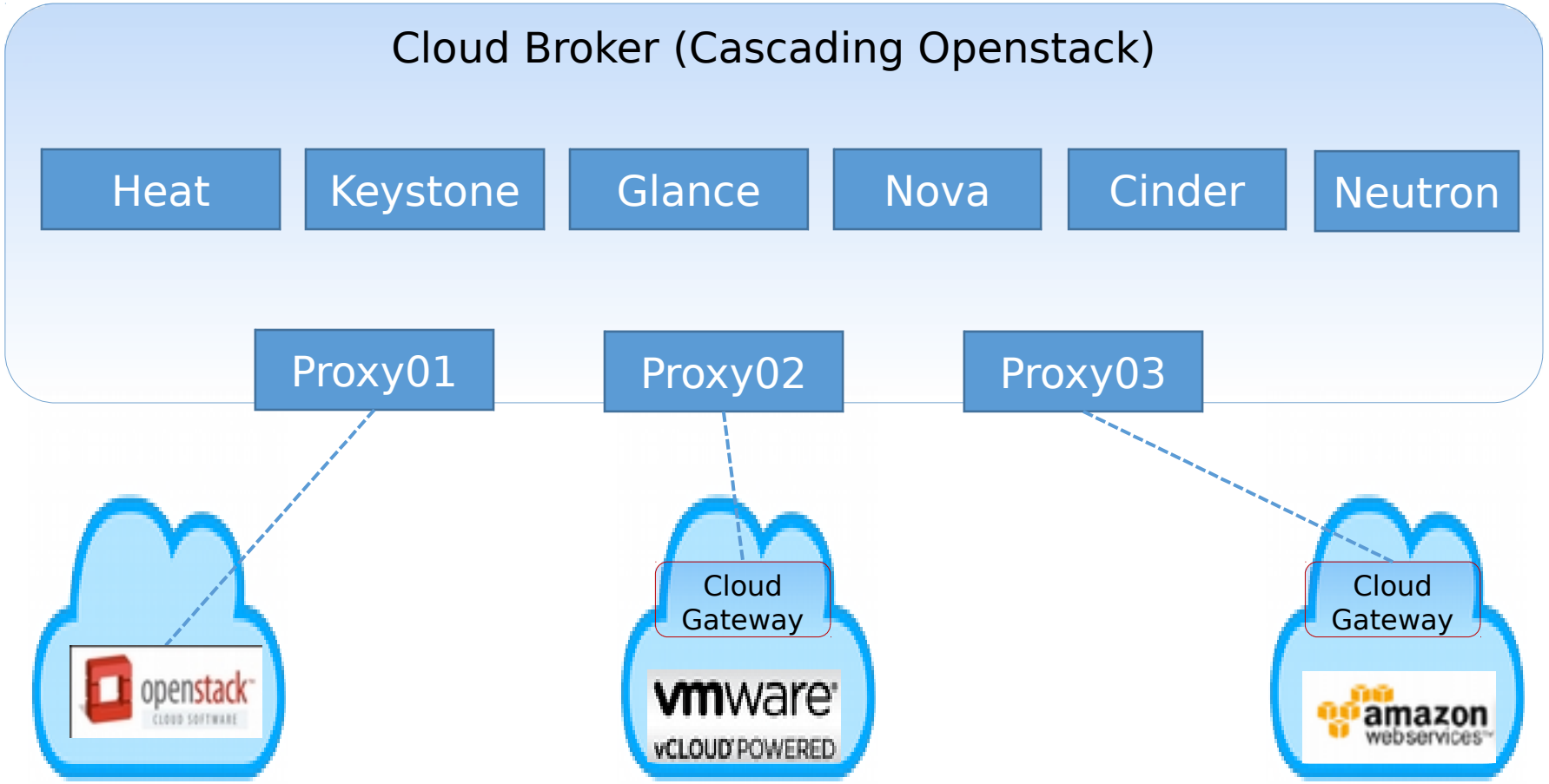
Security Risks Hided in Hybrid Cloud

Inter cloud Data inspection
Attack from public network
Attack from other tenant

Open Hybrid Cloud driven by unified Openstack API



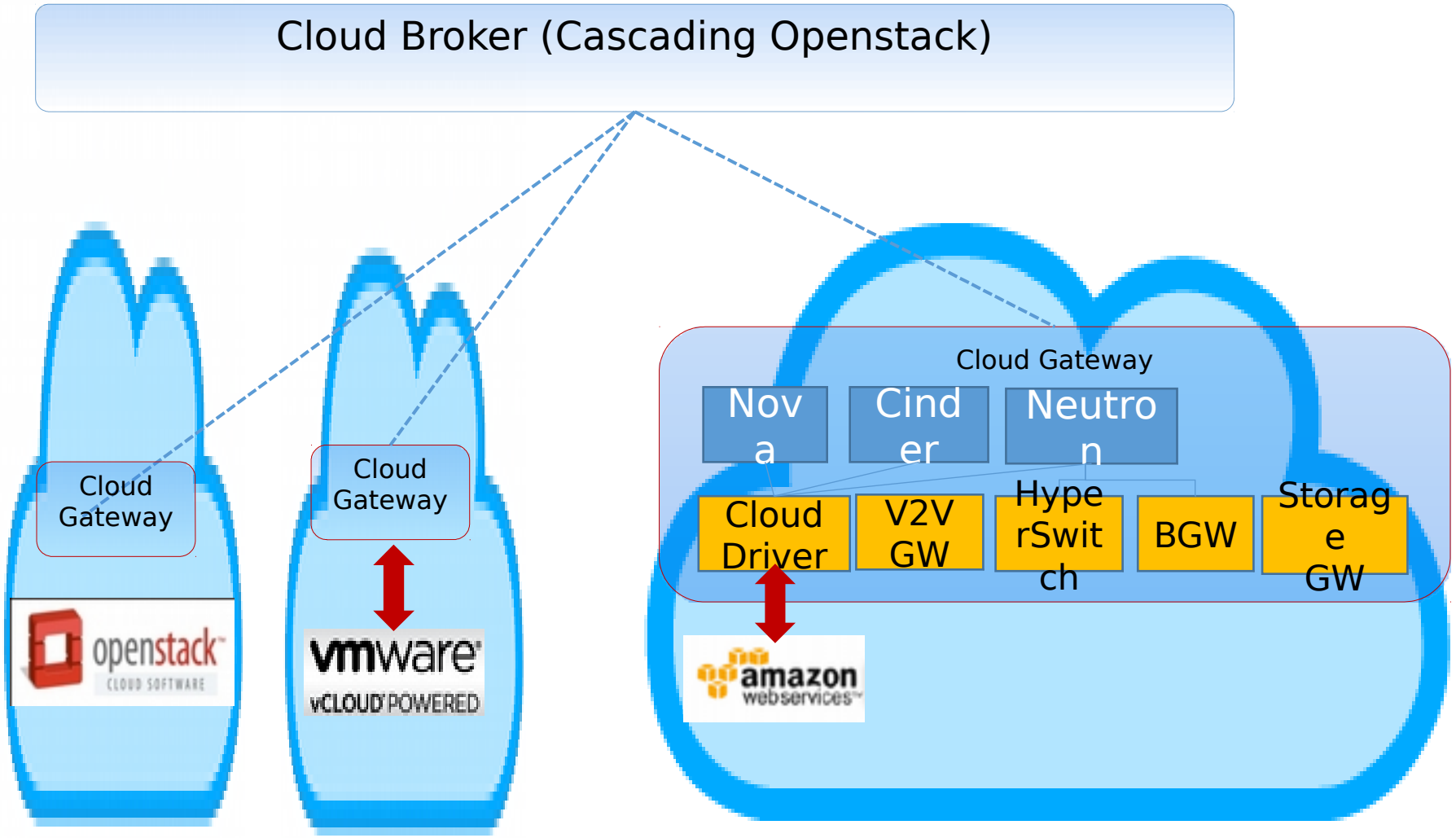
Cloud Broker in “Openstack Hybrid Cloud”



Standard cascading Openstack project (Tricircle) is used to orchestrate & connect multiple clouds.

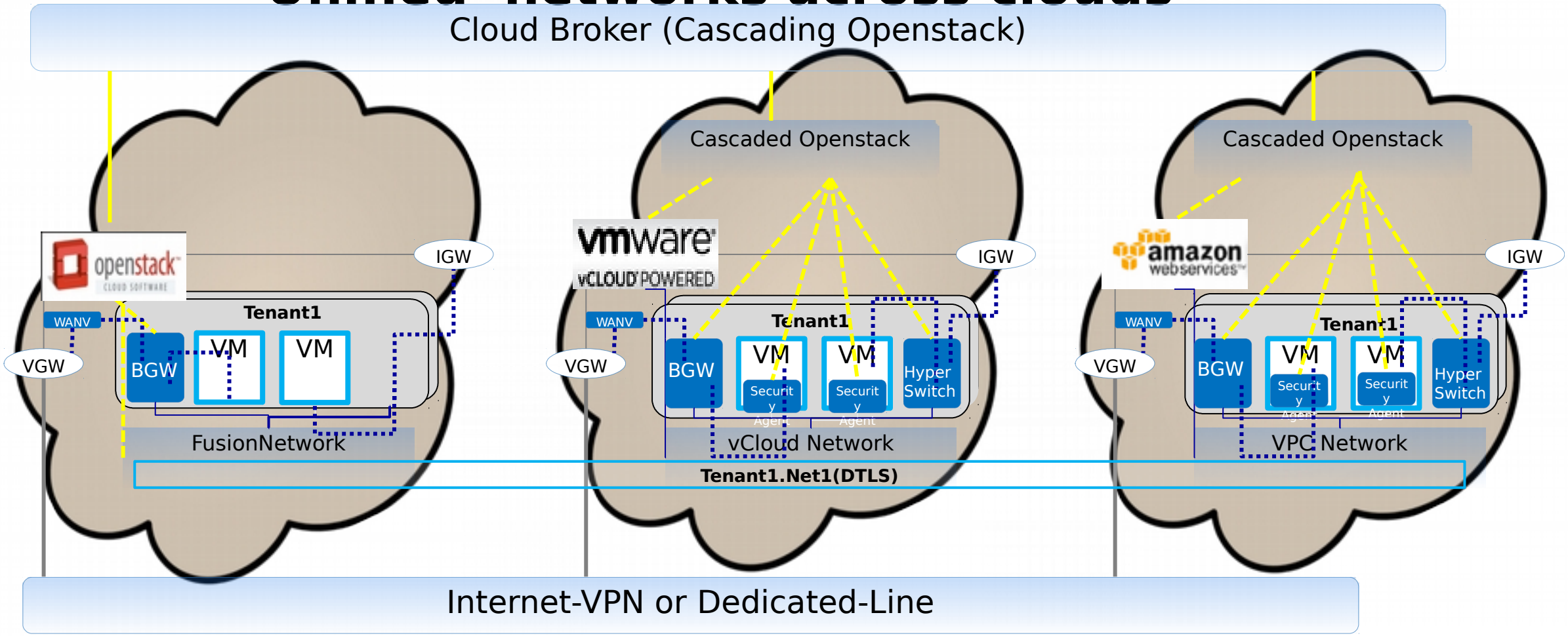
https://github.com/openstack/tricircle

Cloud Gateway in “Openstack Hybrid Cloud”



A Standard Openstack VM is deployed on top of heterogeneous back-end clouds corresponding to specific Openstack AZs, in order to take over the control of the infra. resources

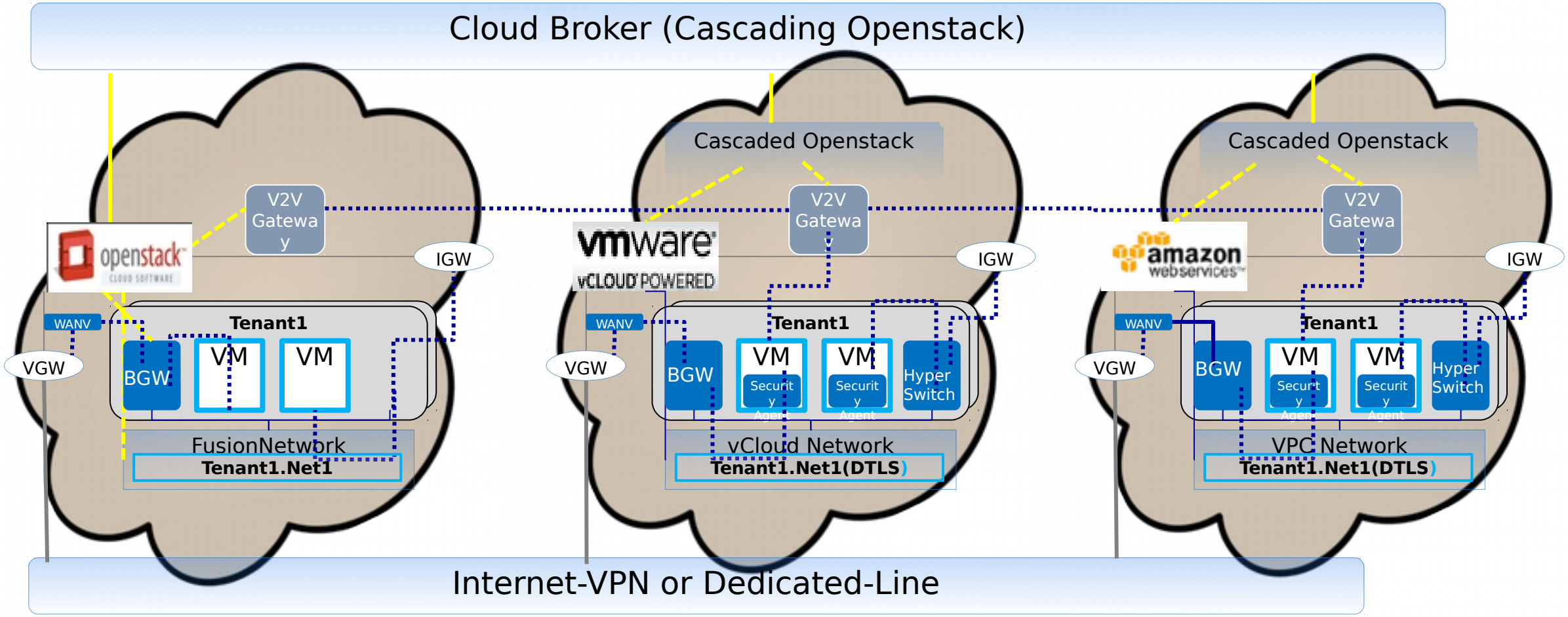
Unified networks across clouds



One network across clouds
Unified IP address Management
Layer2/3 connection across clouds

ACL configure across clouds
DTLS secure tunnel across clouds
Multi-tenant vxLAN networks

Smoothly migrate App across Clouds

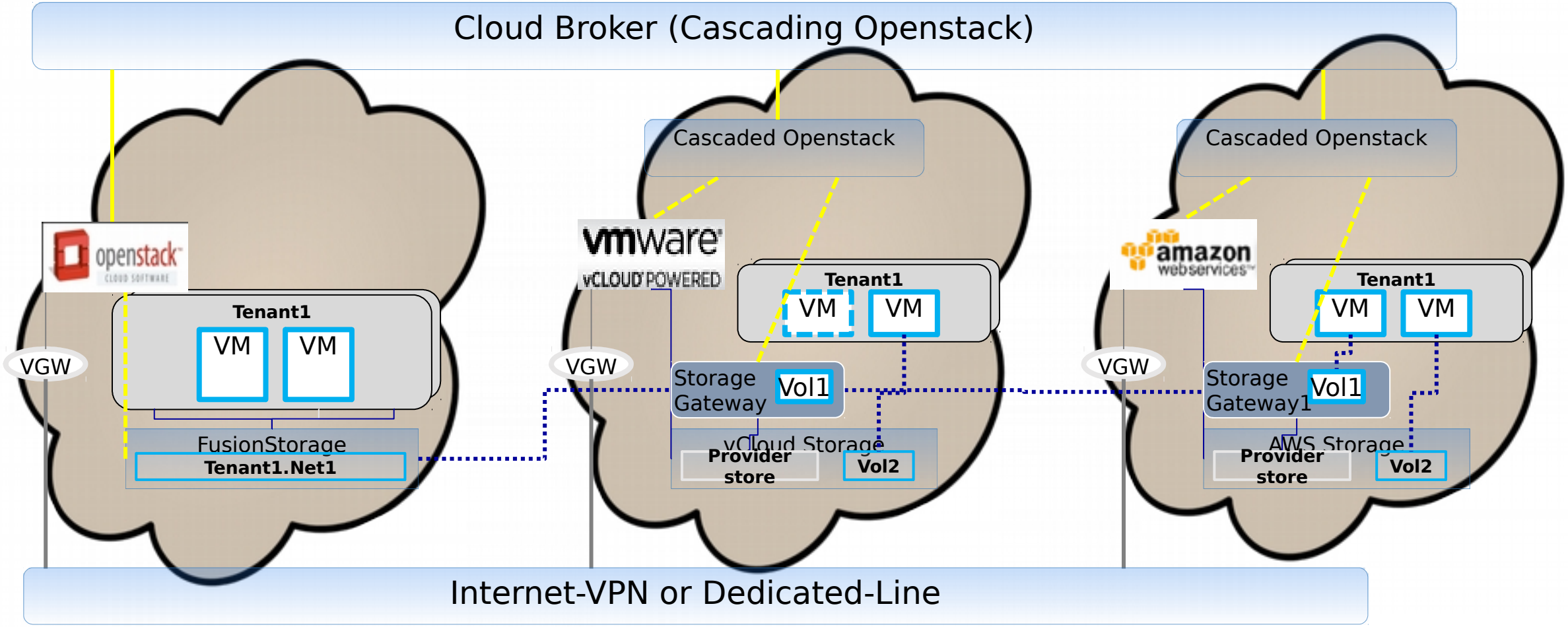


Auto V2V across clouds

One image for all clouds
One touch migration across clouds

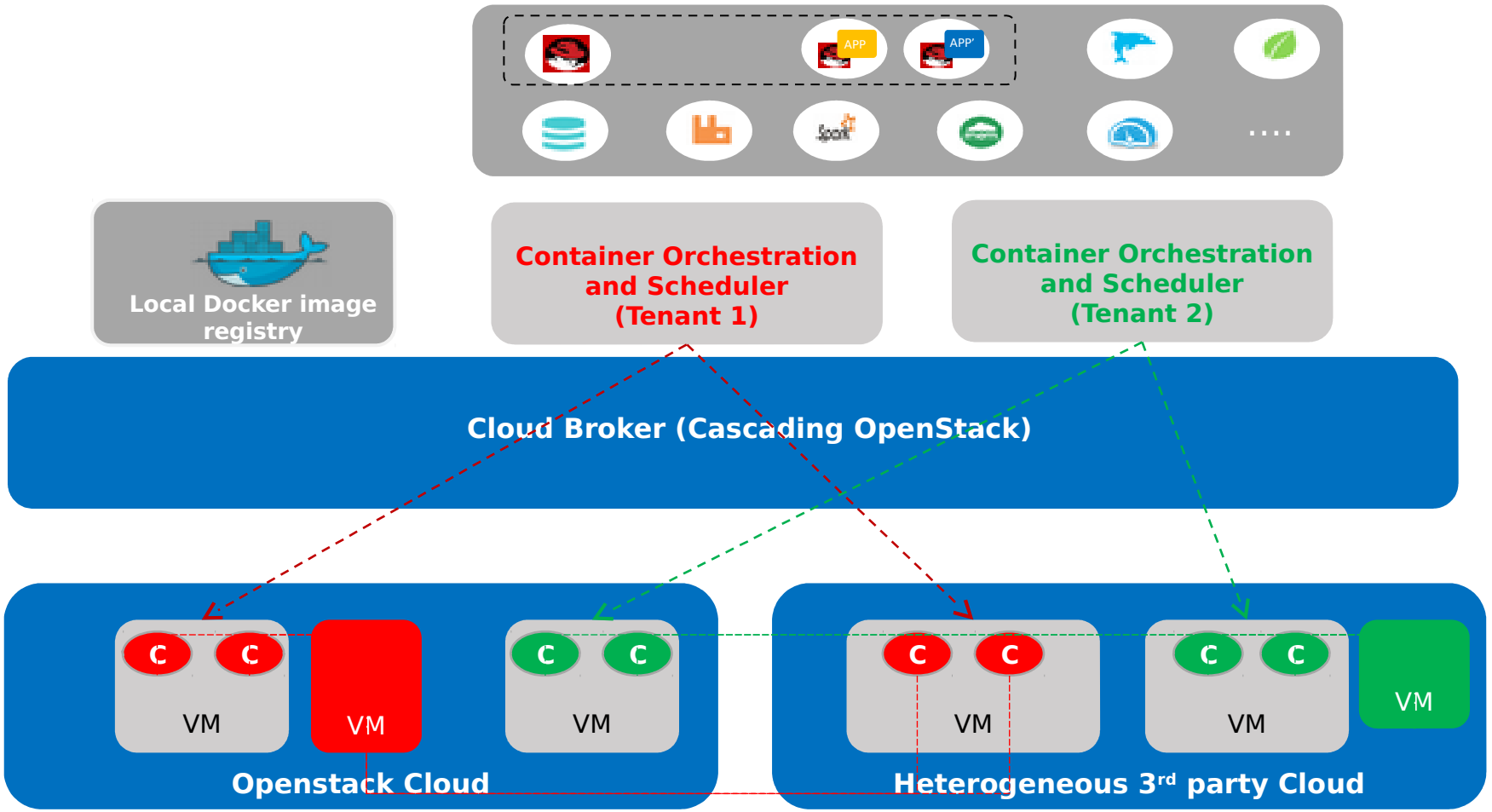
Auto scaling across cloud

DR across Clouds



DR from any cloud to any other cloud
RPO: 15min ~ 24hours
RTO: 1hours

Docker over OpenStack Hybrid Clouds



Key Benefits:

- Unified networking policy& security governance for Docker deployments across clouds

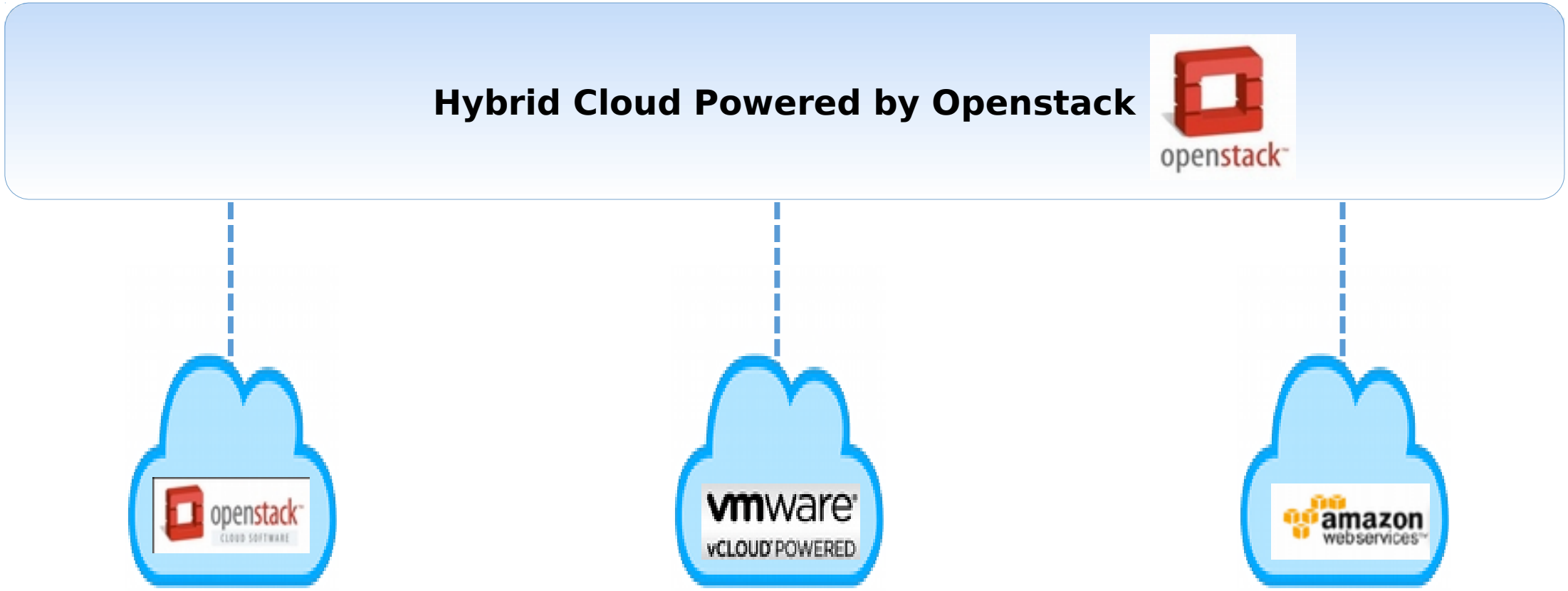
- No need for VM image transformation between different hypervisors

- "Hyperswitch driver"(in Hypervisor) not visible to end user

Agenda

1. Trend of Hybrid Cloud & Key Challenges
2. Architecture of Openstack powered Hybrid Cloud
3. Live Demo
4. Summary

Demo environment

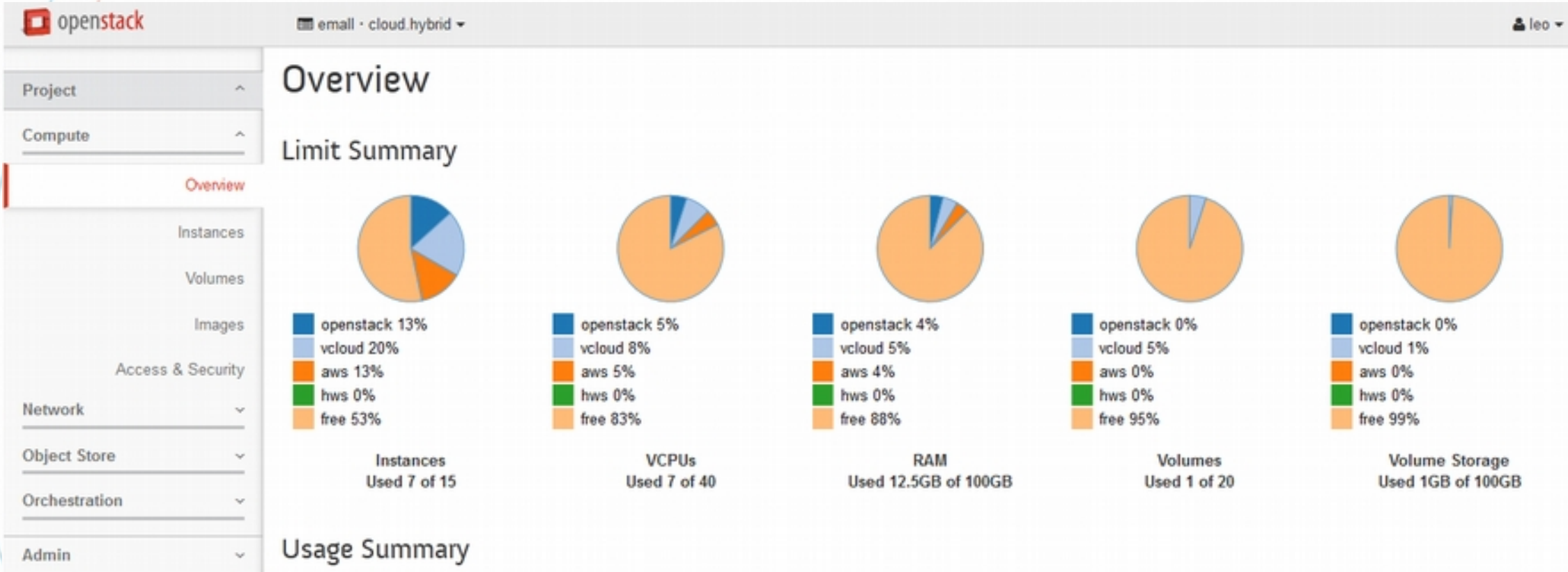


Located in Shenzhen, China
(Private Cloud based on Openstack)

Located in Shenzhen, China
(Private Cloud based on Vmware vCloud)

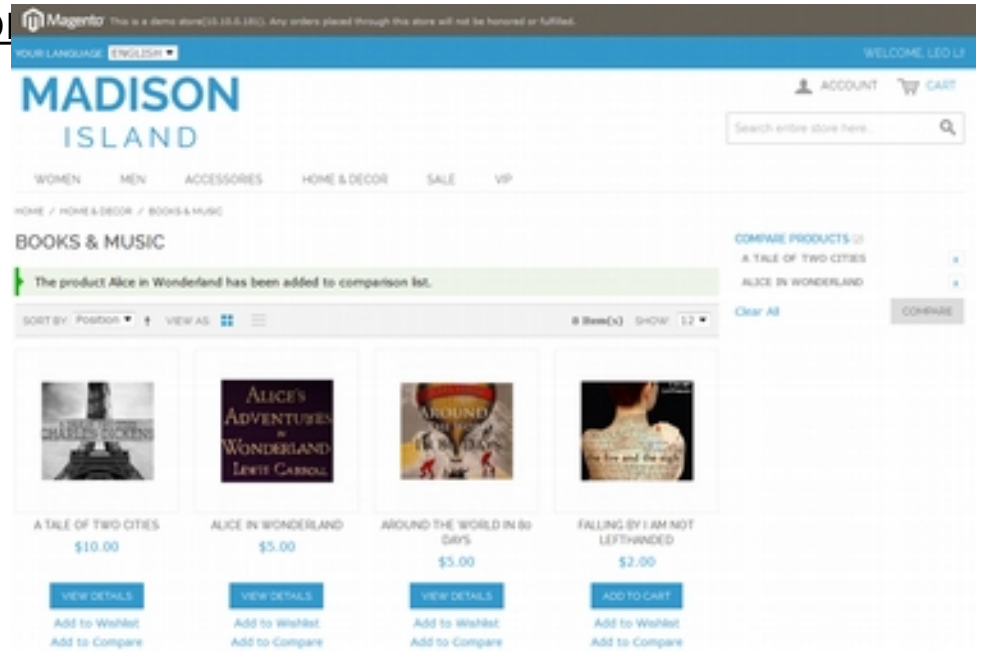
Located in Singapore, AP
(Region of Amazon Public Cloud)

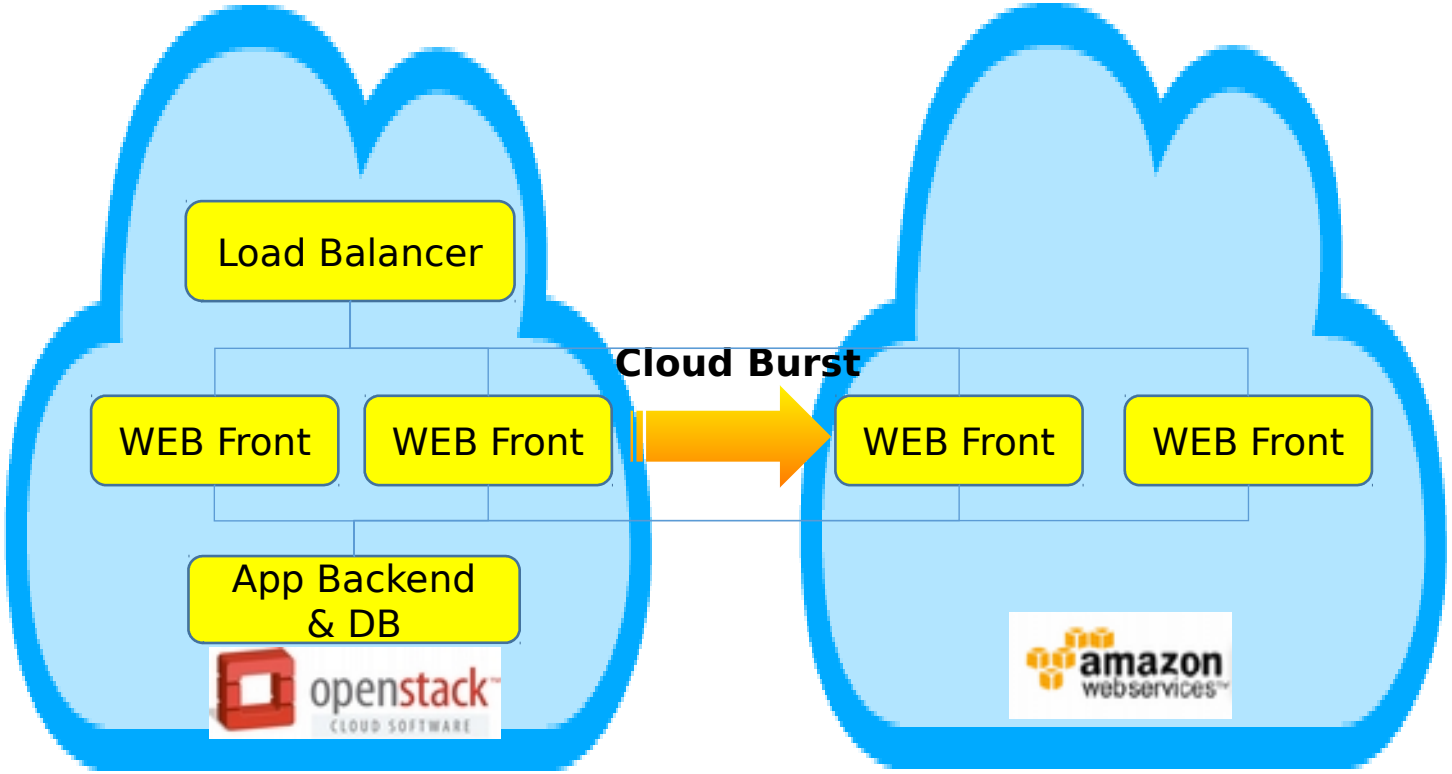
Demo 1: Unified Management of multiple clouds



Example App for Scaling across Clouds

http://www.emall.co



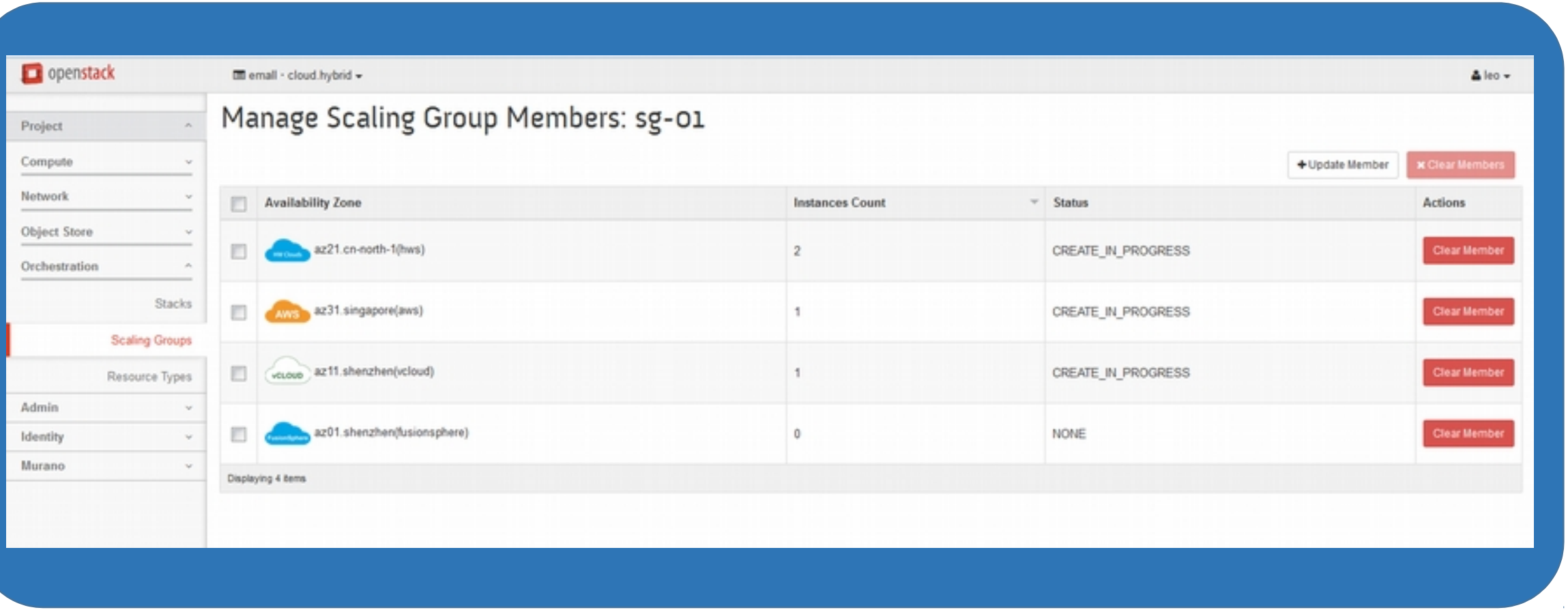


Use case introduce:

- **Emall is an online shopping mall.**
- **Main site is deployed in Private Cloud.**
- **It would use public cloud resource to scale out the Web Front in case any promotion activity.**

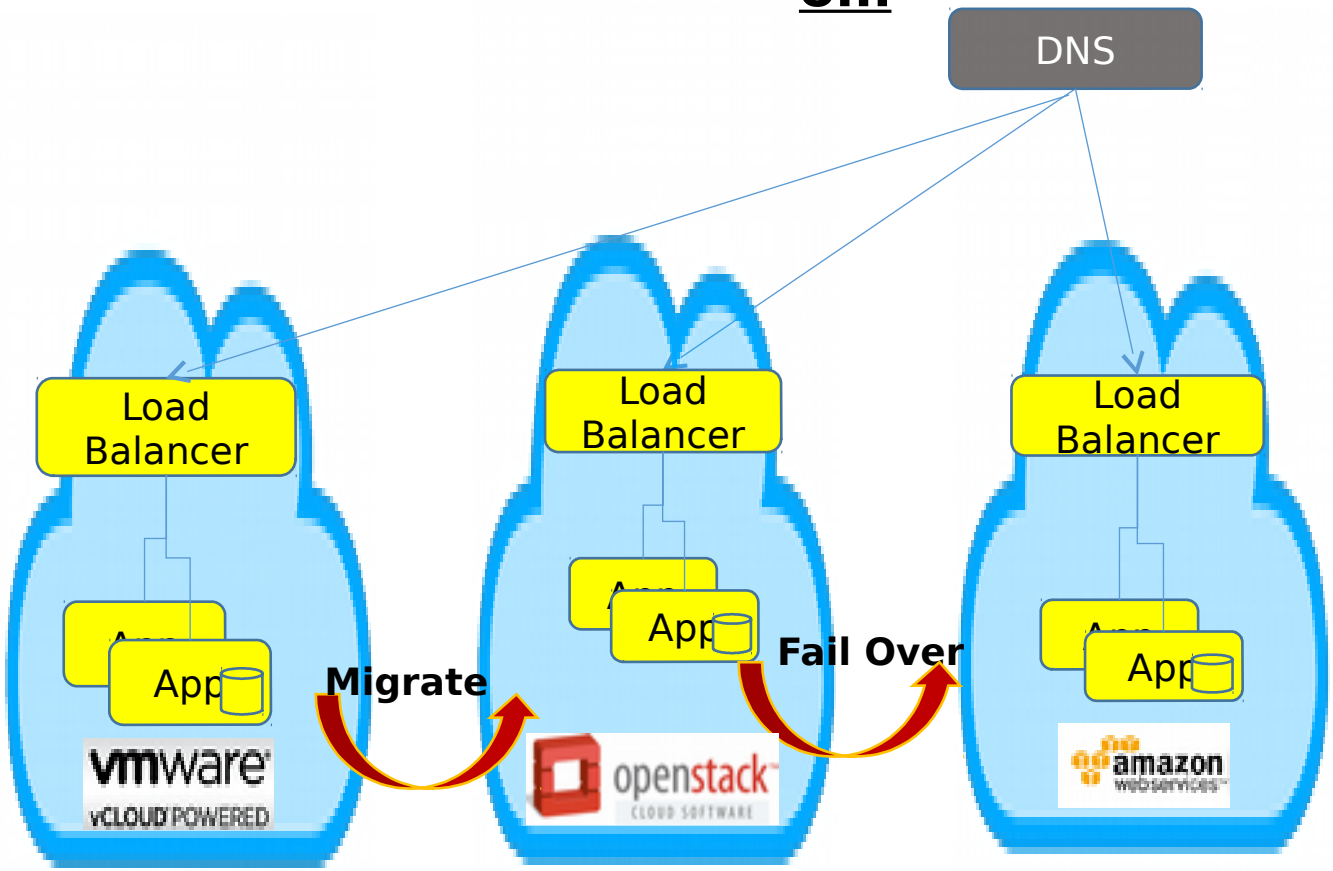
*This demo is using Magento open source e-commerce platform

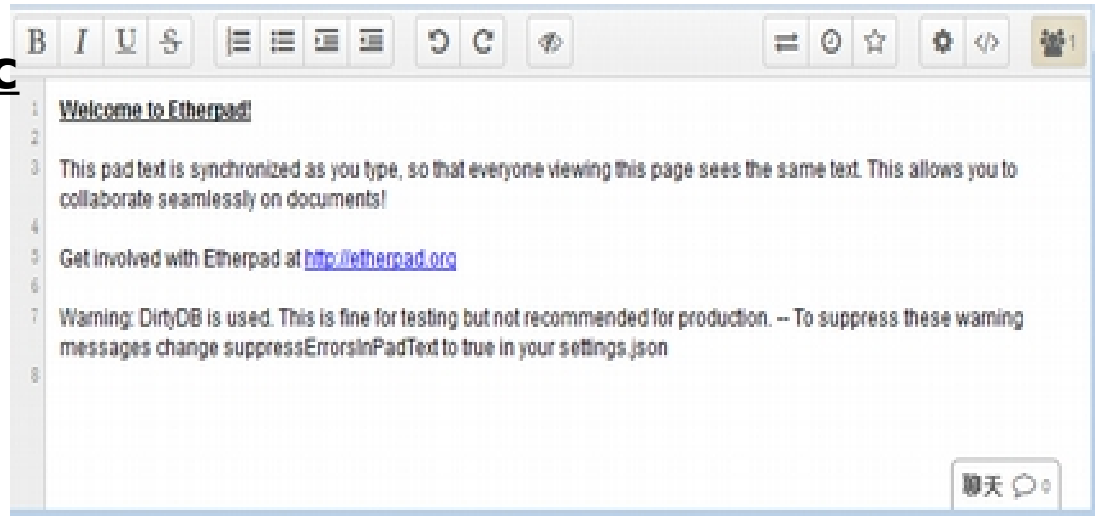
Demo 2: App Scaling across Clouds



Example App for Migration & DR across Clouds

http://www.epad.com



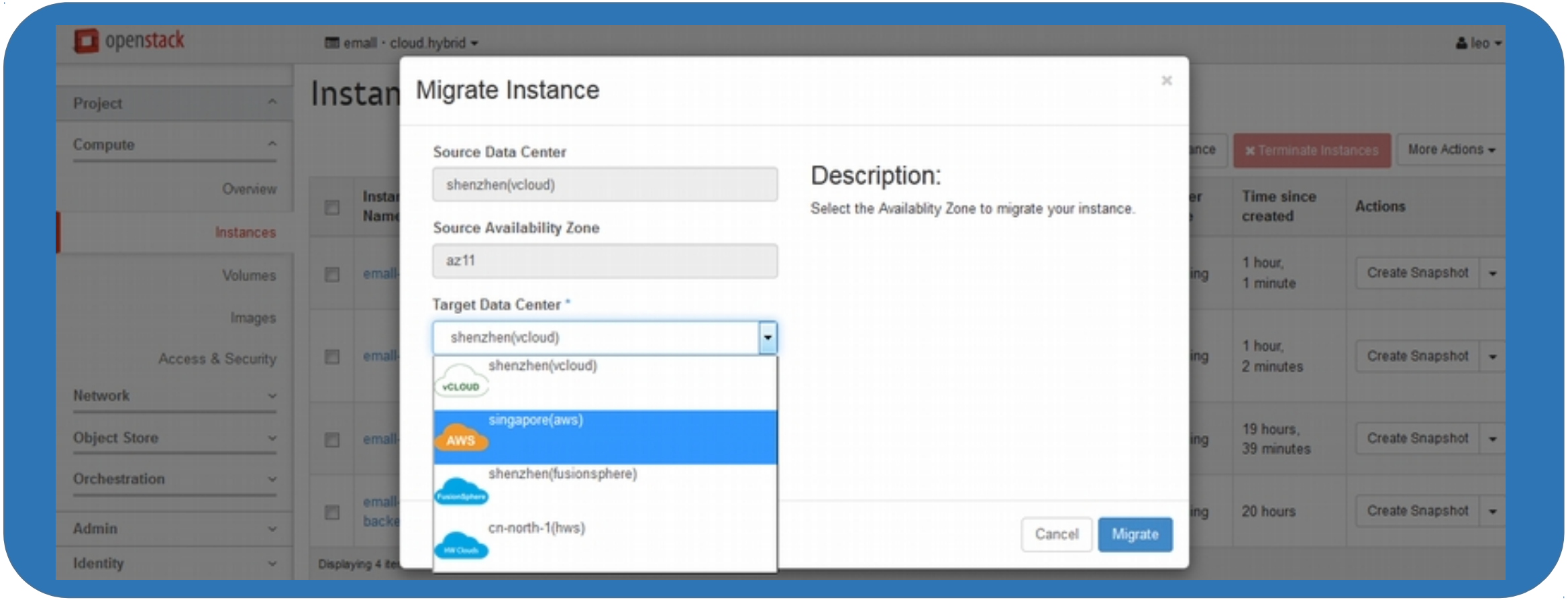


Use case introduce:

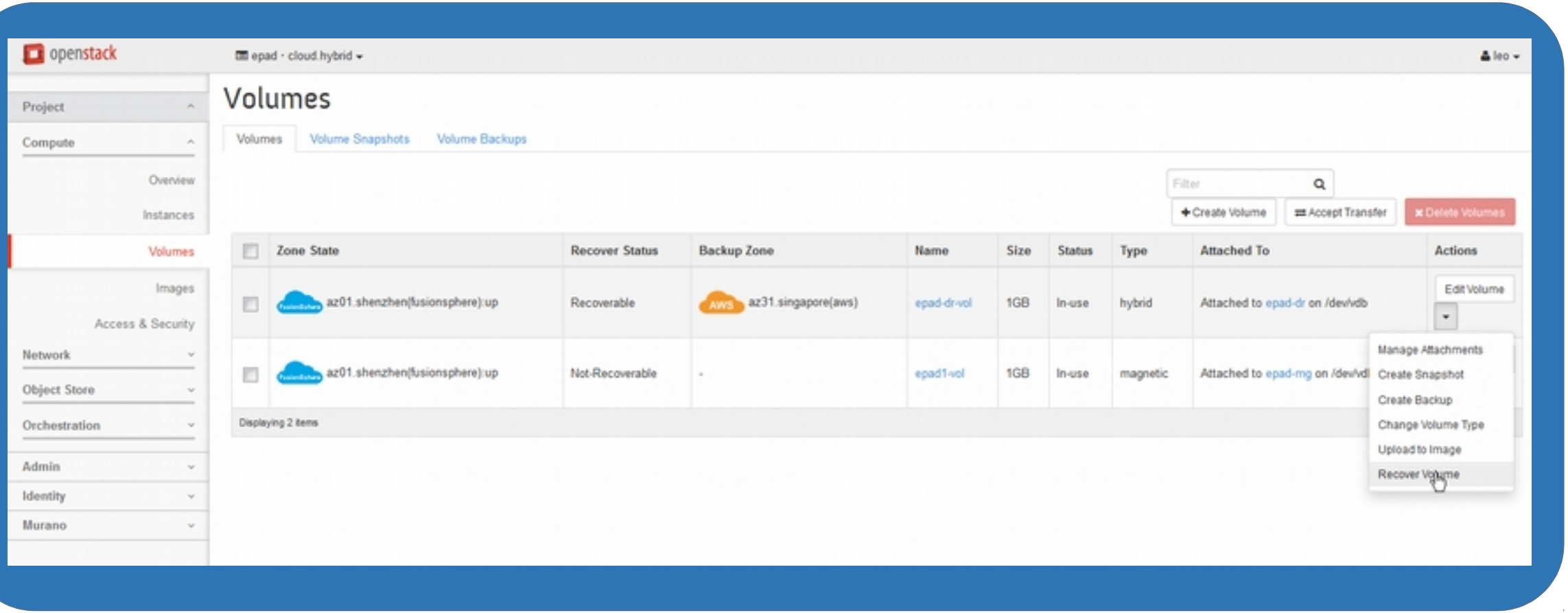
- **Epad is an online editor.**
- **Main site is deployed in Private Cloud.**
- **It would use public cloud resource as DR point.**

*This demo is using etherpad open source platform

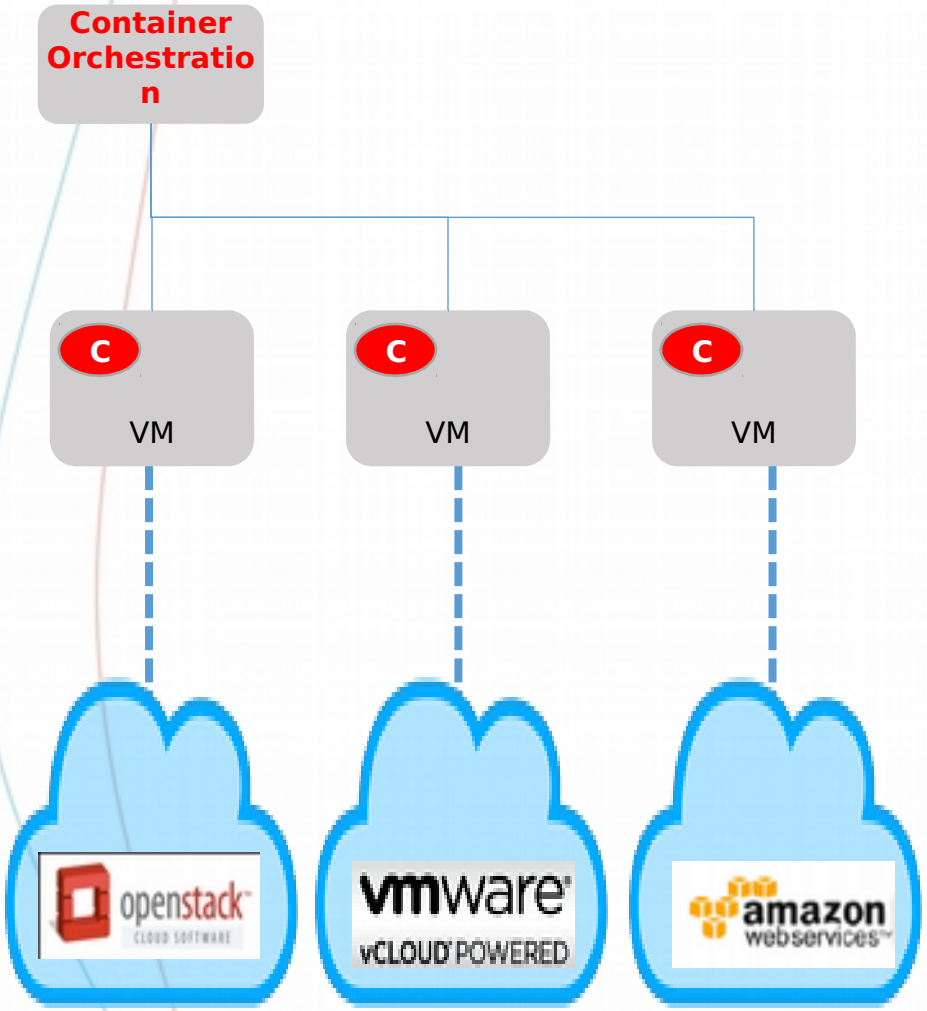
Demo3: App Migrate across Clouds

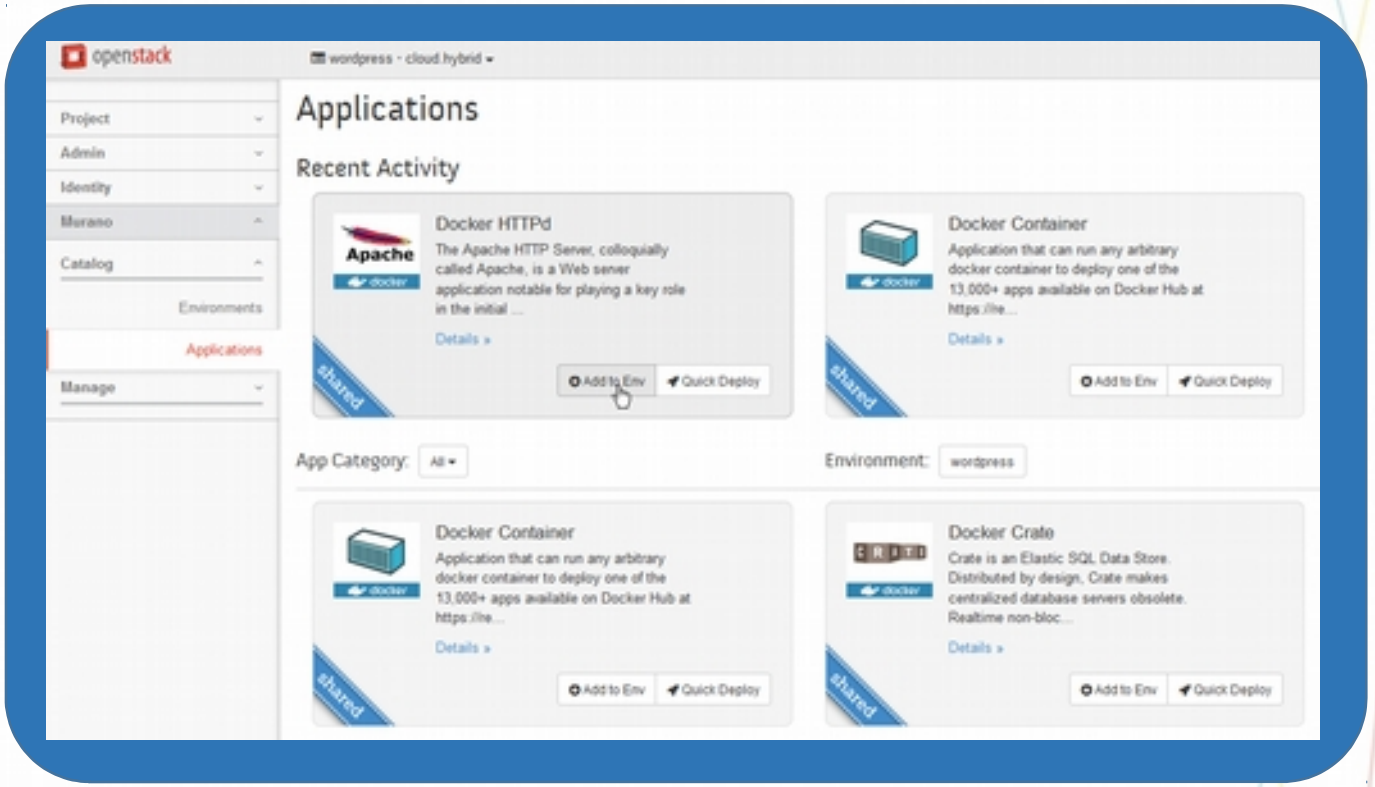


Demo4: App Disaster Recovery across Clouds

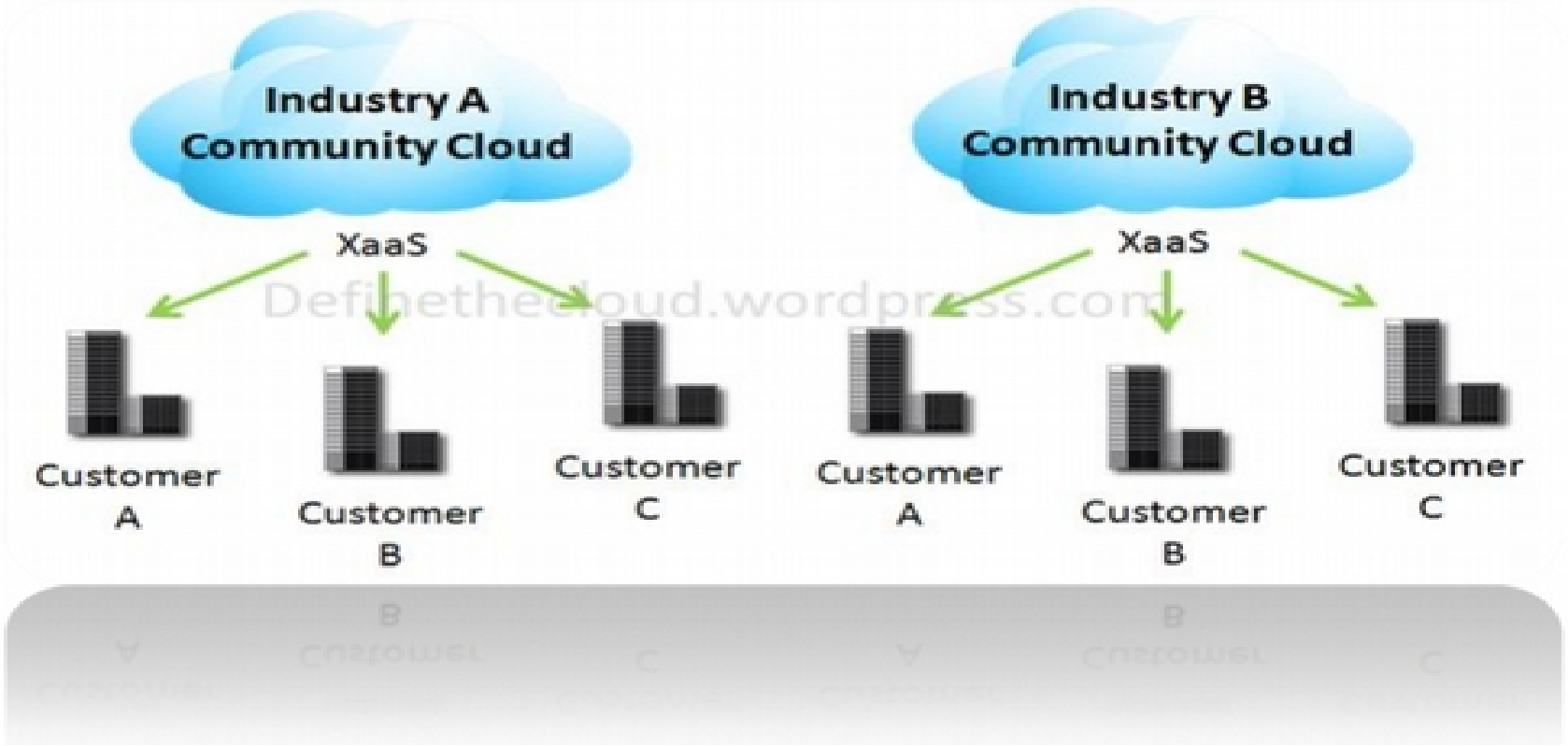


Demo 5: Deploy Container App across clouds





Community Cloud



Community Cloud

Tipe yang satu ini penggunaan infrastruktur cloudnya digunakan bersama-sama oleh beberapa organisasi yang memiliki kesamaan tujuan dan kepentingan. Misalkan dari sisi visi misinya,tingkat keamanan yang di butuhkan,skalabilitas dan hal lainnya. Community cloud ini merupakan “limit development” dari private cl oud. Sama dengan private cloud, infrastruktur cloud yang ada bisa dikelola oleh salah satu organisasi atau pun pihak ketiga.

Keuntungan community Cloud

- Biaya Efektif
- Berbagi Infrastruktur, software dll.
- Keamanan