

Topic

Learn OpenStack from trystack.cn ——Folsom in practice

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99cloud.net #ChengDu for [ECUG Con 2012](#)

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Who am I ?



- OpenStack Evangelist
- Co-founder of COUSG
- OpenStack Foundation board member



who is this talk for?

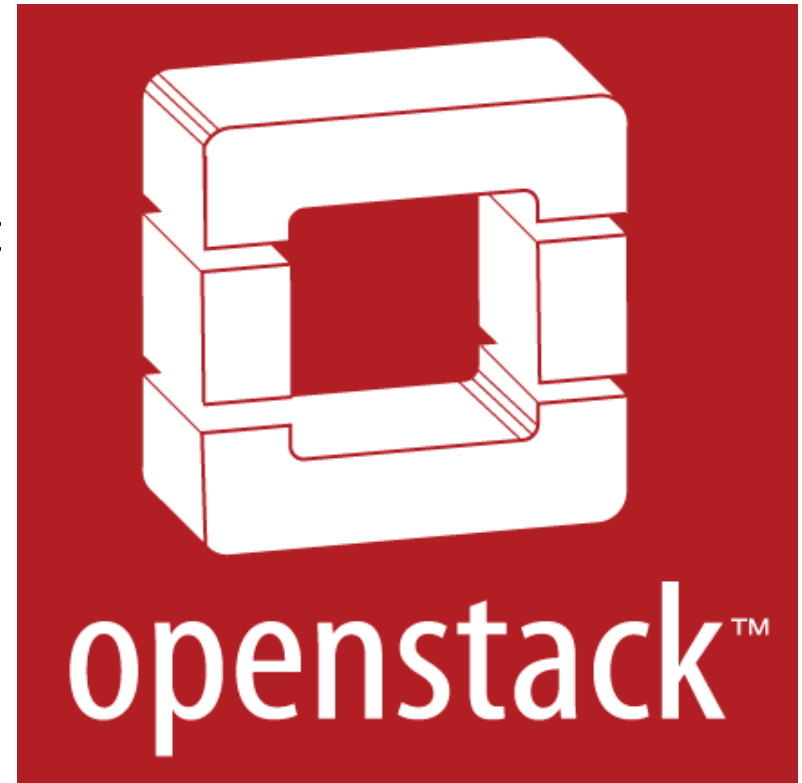
- wants to learn more about OpenStack
- for supporting trystack **@trystack** on  weibo

<http://www.openstack.org/foundation/board-of-directors/>

Why OpenStack?

Open Style

- **Open Source** –Apache 2.0 license, Contributors agreement.
- **Open Design** –Design Summit every six months.
- **Open Development** - managed via Launchpad & gihub.
- **Open community** – *Lazy consensus* model, OpenStack Foundation in 2012.



What's trystack.cn ?



Welcoming contributions and feedback, Join the fun !

Slides are on slideshare for download: www.slideshare.net/openstack/trystack-introfinalpdf

Who are trying?

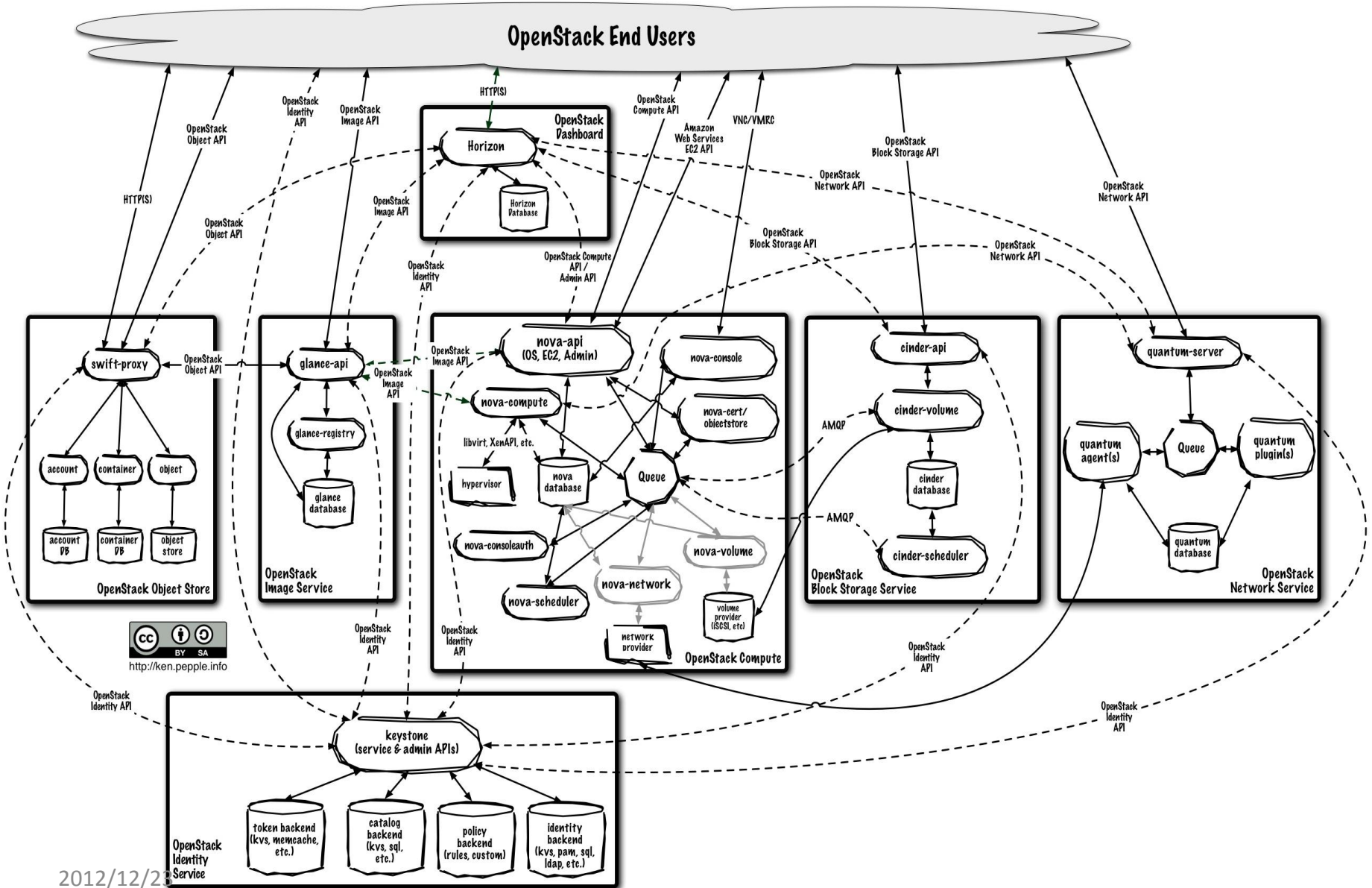
A single region: the “CloudFoundry Region“ for VMWare team

- 4 servers with 32G+ memory, 12+ cores each
- 1TB storage
- Network
 - CF VLAN: 100 ip (all VMs need to access internet directly)
 - Service VLAN (optional): 8 ip
 - Public VLAN: 1 public ip
- Images
 - 64-bit Ubuntu 10.04 LTS
- Openstack
 - Folsom
 - OS_USERNAME, OS_TENANT_NAME, OS_PASSWORD, OS_AUTH_URL
 - Openstack console access

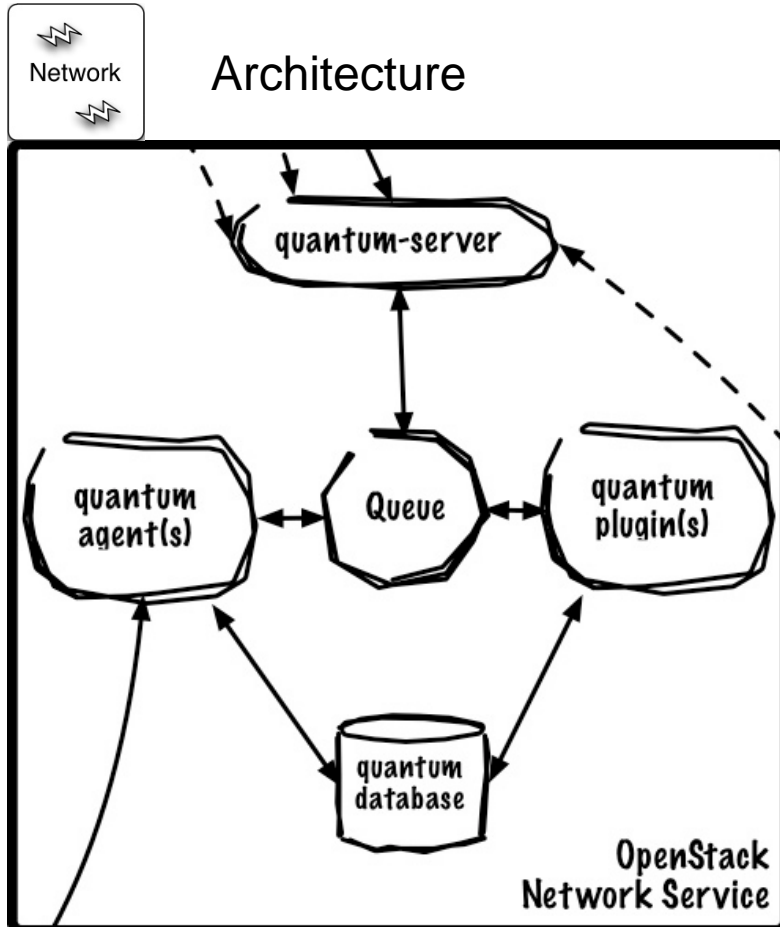


CloudFoundry doesn't work on folsom

- <https://groups.google.com/a/cloudfoundry.org/forum/?fromgroups=#!topic/bosh-users/0mzvv5HLQ5o>
- <https://bugs.launchpad.net/nova/+bug/1076119>



Network connectivity as a service



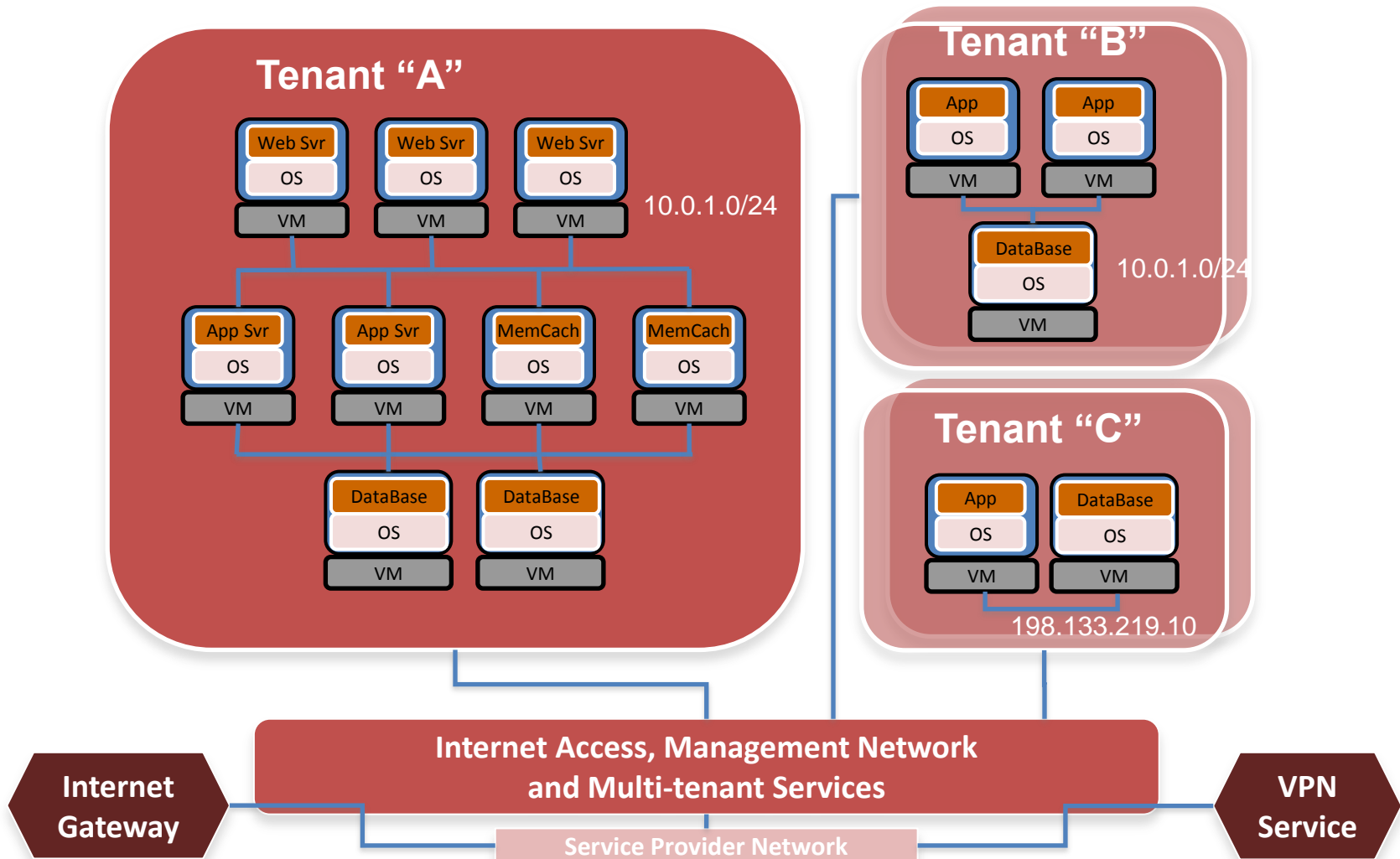
Key Capabilities:

- Responsible for managing networks, ports, and attachments on infrastructure for virtual resources
- Create/delete tenant-specific L2 networks
- L3 support (Floating IPs, DHCP, routing)
- Moving to L4 and above in Grizzly
- Attach / Detach host to network
- Similar to dynamic VLAN support
- Support for
 - Open vSwitch
 - OpenFlow (NEC & Floodlight controllers)
 - Cisco Nexus
 - Niciria

Networking challenges in the Cloud

- Multi-tenants on hypervisors => isolation between guest networks.
- VLANs in the datacenter is hard and **limit at 4K VLANs.**
- Hardware switches may not do it very well or have a lower limit.

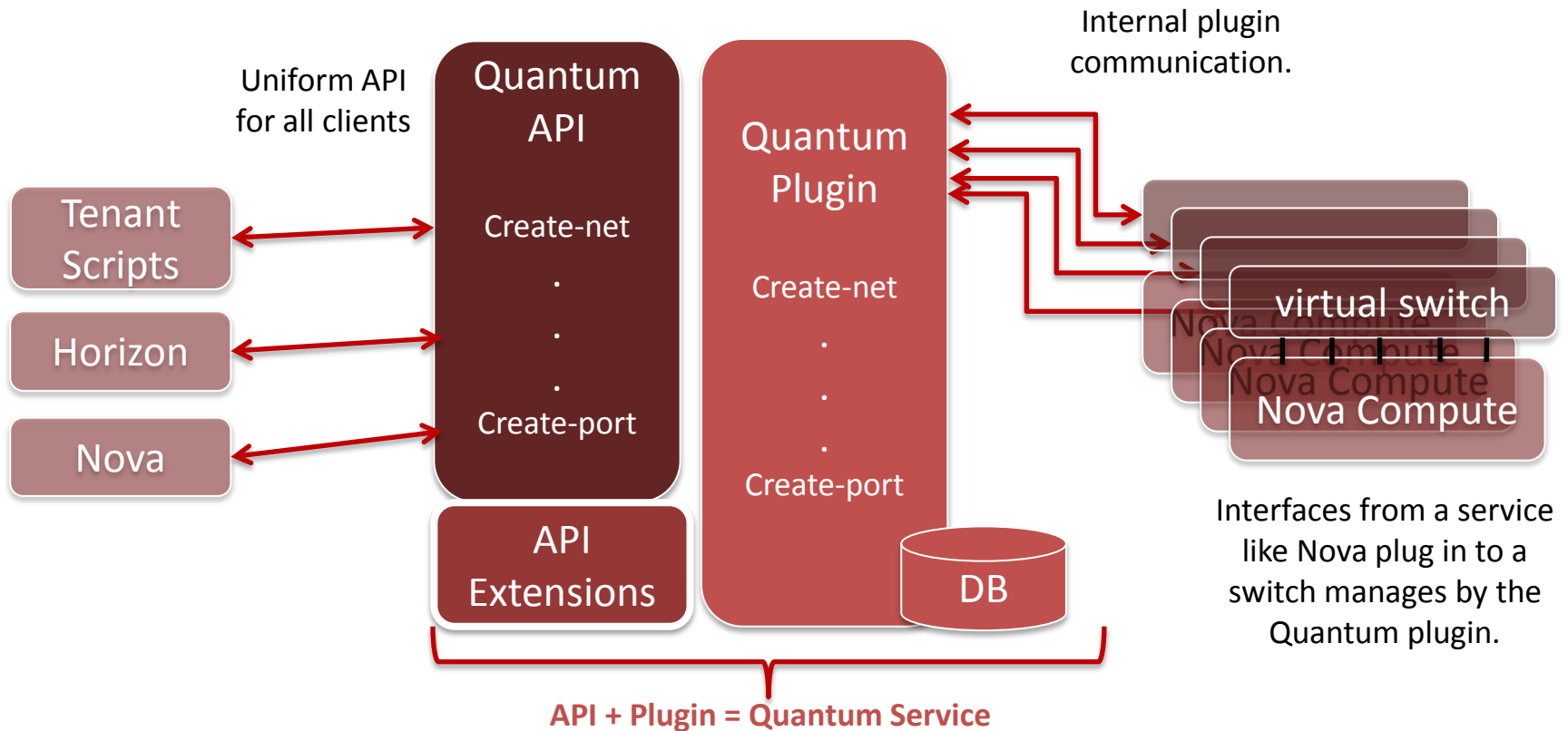
Different tenants and applications have different needs



Quantum Architecture

API Clients

Quantum Server



Quantum in Production

API Clients

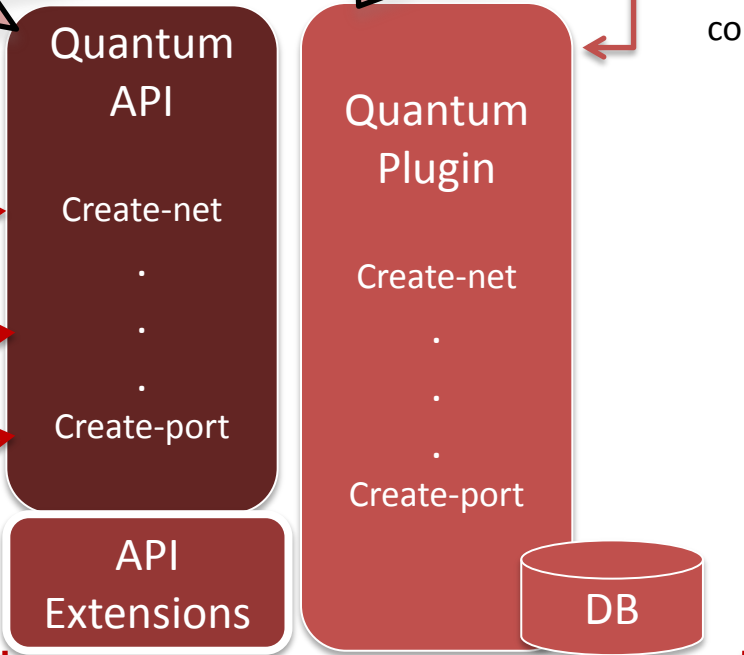
Don't hack Quantum, just use Quantum API

Uniform API for all clients

- Tenant Scripts
- Horizon
- Nova

Quantum Server

Choose the right plugin

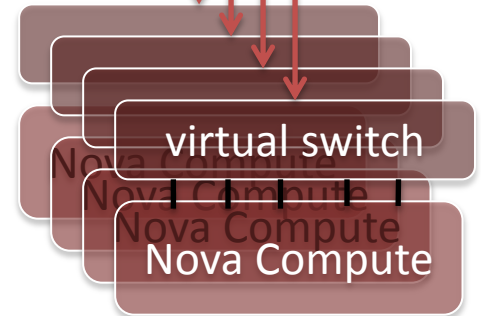


Be ready for SDN !

Use a Networking Controller

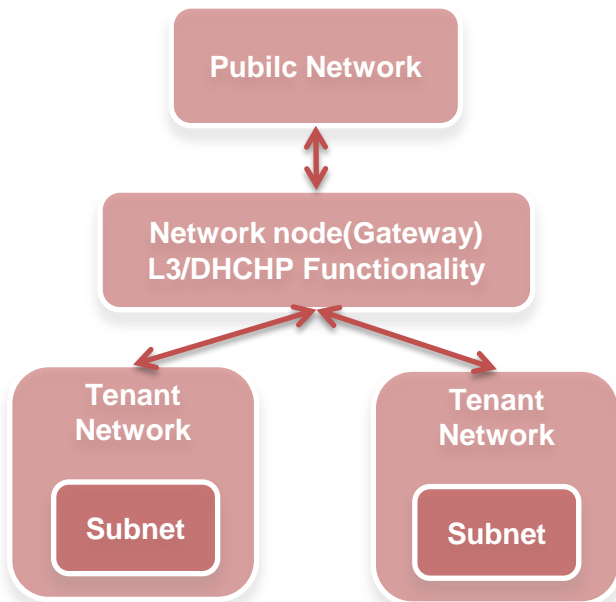


Internal plugin communication.

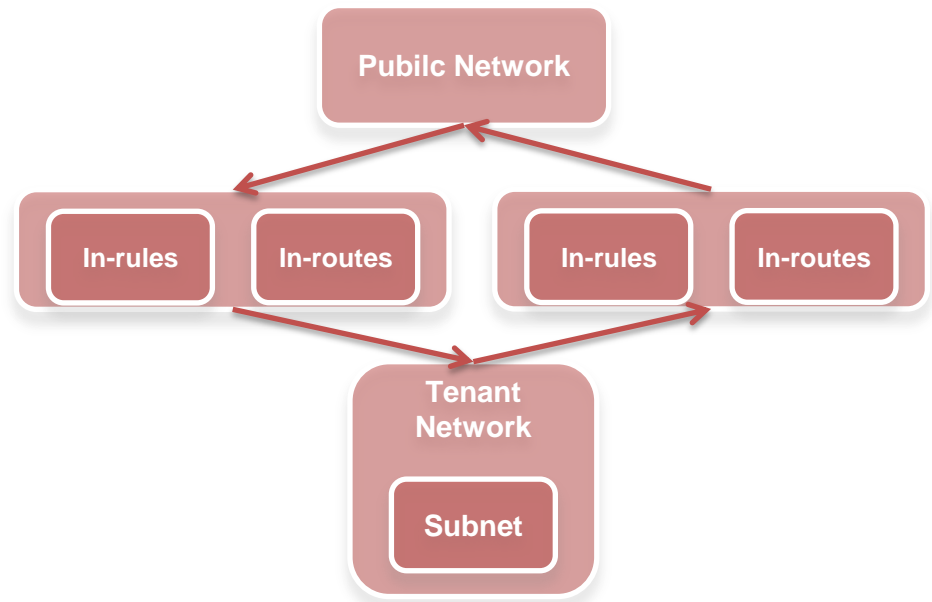


Interfaces from a service like Nova plug in to a switch manages by the Quantum plugin.

Essex model

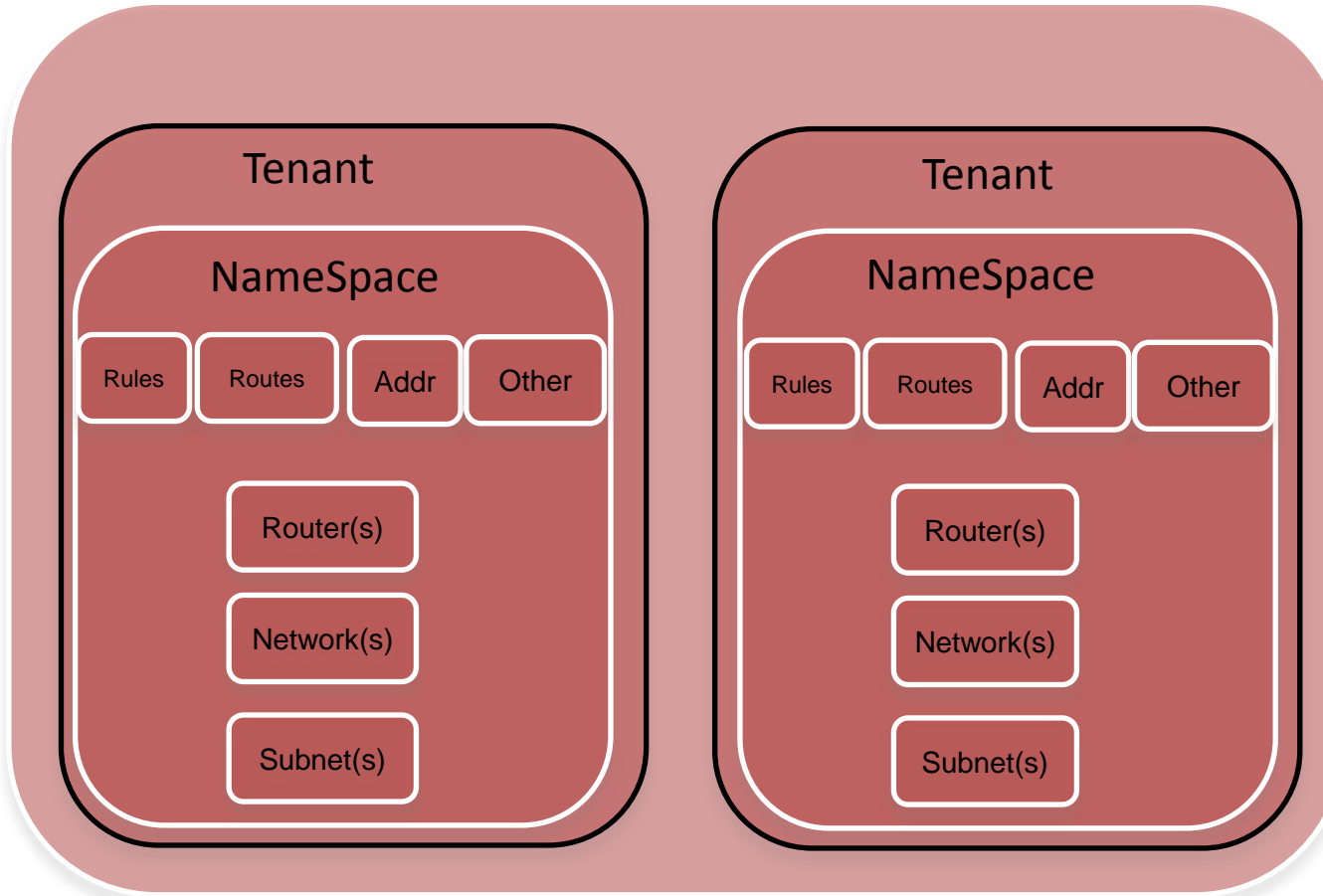


Essex iptables model



There's no namespace shared for all tenant's networks/subnets.
All interfaces and their ip addresses, routes, firewall rules in iptables and dhcp processes for tenant interfaces are in the same "namespace".

The Folsom network node (L3 / DHCP agent node)



Namespace isolated

Interfaces (Gateway interfaces and others like “tap” interfaces...) don’t show up anymore in your OS’s configuration commands like “route”, “ip “, “ifconfig”.

Firewall / NAT rules (Iptables rules) won’t show up anymore in “iptables” commands for the system wide rules.

DHCP interfaces (See left) also doesn’t show up.

What does Quantum provide ?

- API for Networking in OpenStack
- Nova Integration
- OSI Network Layers L2 + L3
- Decouples Logical / Tenant view of the network from Physical / Provider

What does Quantum provide ?

- Provides connectivity to VMs, Decouples Logical / Tenant view of the network from Physical / Provider.
- Manage OSI Network Layers L2 & L3 with an API.
- Not yet full-integrated with Dashboard : only L2 is working. L3 should be managed from CLI. **Horizon can't manage L3 (routers + floating IP).**
- Networking backed by plugins : Open-vSwitch, Linux Bridge, Cisco, OpenFlow (BigSwitch, Floodlight, NEC, Ryu, etc), Midonet (Midokura) and NVP (Nicira /Vmware).

Quantum Openvswitch plugin

- The Quantum Openvswitch plugin consists of two components:
- 1) A **plugin** loaded at runtime by the Quantum service. The plugin processes all API calls and stores the resulting logical network data model and associated network mappings in a database backend .
- 2) An **agent** which runs on each compute node (i.e., each node running nova-compute). This agent gathers the configuration and mappings from the central mysql database and communicates directly with the local Open vSwitch instance to configure flows to implement the logical data model.

Try it yourself: <http://wiki.openstack.org/QuantumDevstack>

Networking trend

- Move to software switches
- Move to L3 isolation
- Use tunnels between OVS (GRE tech preview)
- **Program the network through API**
- Encapsulation virtualizes the network, between overlays on overlays on overlays..
- L3 on L2 on GRE on L3 on L2...
- Then you bring the WAN and you have:
- **L3 on L2 on GRE on L3 on L2 on GRE on L3 on L2Euhhhh !!!**

Try it now !

- Thank you to our Partners/Sponsors:
 - Intel,IBM, Sugon suport hardware
 - VMWare cloudfoundry team testing
- Many thanks to our Contributors:
<http://wiki.trystack.cn/main>

**Don't believe me.
Believe yourself.
Give it a try.
Thanks!**

QQ Group: 162033258

Weibo: @trystack

trystack-china+subscribe@googlegroups.com

Questions ?

Come join us !

Backup

Road to the OpenStack Foundation

October 2011

Announced plans to launch independent Foundation in 2012

April 2012

19 companies announce support for Foundation; form Drafting Committee

July 18, 2012

Final legal documents posted for ratification

Sept 19, 2012

OpenStack Foundation Launch!

July 2010

OpenStack community established

Jan/Feb 2012

Created framework for Foundation as a community

June/July 2012

Drafting committee produces and publishes three rounds of legal documents

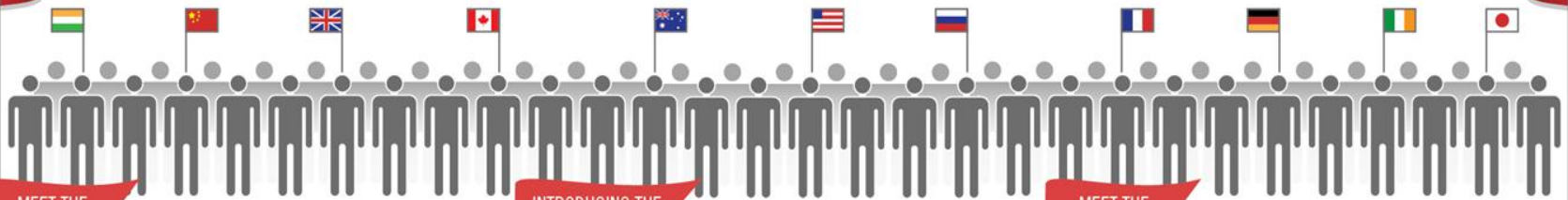
August 2012

Individual & Gold Director elections; first Board of Directors meeting



WELCOME TO OPENSTACK NATION!

★ POPULATION 5,600 & GROWING! ★

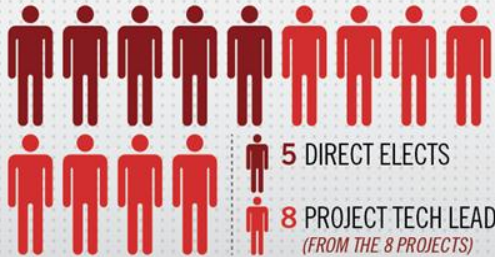


MEET THE

TECH COMMITTEE

SOFTWARE DEVELOPMENT & DIRECTION

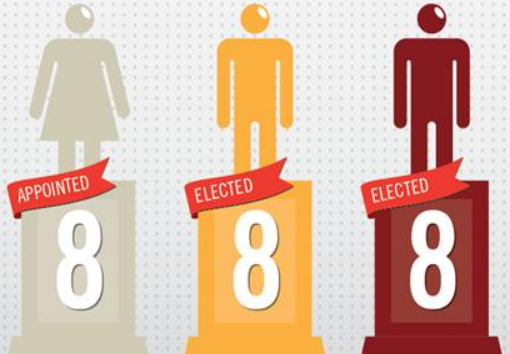
13 TOTAL MEMBERS
(ELECTED BY ACTIVE TECH CONTRIBUTORS)



INTRODUCING THE

BOARD of DIRECTORS

PROTECT, PROMOTE, & EMPOWER



PLATINUM (OUT OF 8 MEMBERS)

GOLD (OUT OF 13 MEMBERS)

INDIVIDUAL (OUT OF 5,600 MEMBERS)

MEET THE

USER COMMITTEE

USER ADVOCACY AND FEEDBACK



THE NEW

FOUNDATION STAFF & SHARED RESOURCES



Foundation Membership

- **Individual Members**

Free to join, run, vote

<http://www.openstack.org/join>

- **Platinum Members**

Contribute funds, full-time employees

Appoint one director to the board

- **Gold Members**

Contribute funds

Elect members to the board from their class

What's next

- **2013 Board Elections**

Individual Member nominations closed December 7th, 2012

Elections taking place January 14-18, 2013

See openstack.org/election

- **Grizzly Release**

Scheduled for April 4 with 195 total blueprints

First milestone released November 23 with 40 blueprints

- **OpenStack Summit**

Details coming soon for April 2013 Summit

First International Summit planned for October 2013

OpenStack Community companies



2012/12/23

Some OpenStack Public Use Cases

- **Internap**
 - <http://www.internap.com/press-release/internap-announces-world%E2%80%99s-first-commercially-available-openstack-cloud-compute-service/>
- **Rackspace Cloud Servers, Powered by OpenStack**
 - <http://www.rackspace.com/blog/rackspace-cloud-servers-powered-by-openstack-beta/>
- **Deutsche Telekom**
 - <http://www.telekom.com/media/media-kits/104982>
- **AT&T**
 - <http://arstechnica.com/business/news/2012/01/att-joins-openstack-as-it-launches-cloud-for-developers.ars>
- **MercadoLibre**
 - <http://openstack.org/user-stories/mercadolibre-inc/mercadolibre-s-bid-for-cloud-automation/>
- **NeCTAR**
 - <http://nectar.org.au/>
- **San Diego Supercomputing Center**
 - <http://openstack.org/user-stories/sdsc/>
- **HPCloud**
 - <https://www.hpcloud.com/>

Where can find OpenStack ?

- <http://trystack.org/>
 - Register to try out a test public OpenStack cloud
- <http://devstack.org/>
 - Script to setup simple/developer installs
 - Currently Ubuntu centric
 - fedoraproject.org/wiki/OpenStack_devstack