

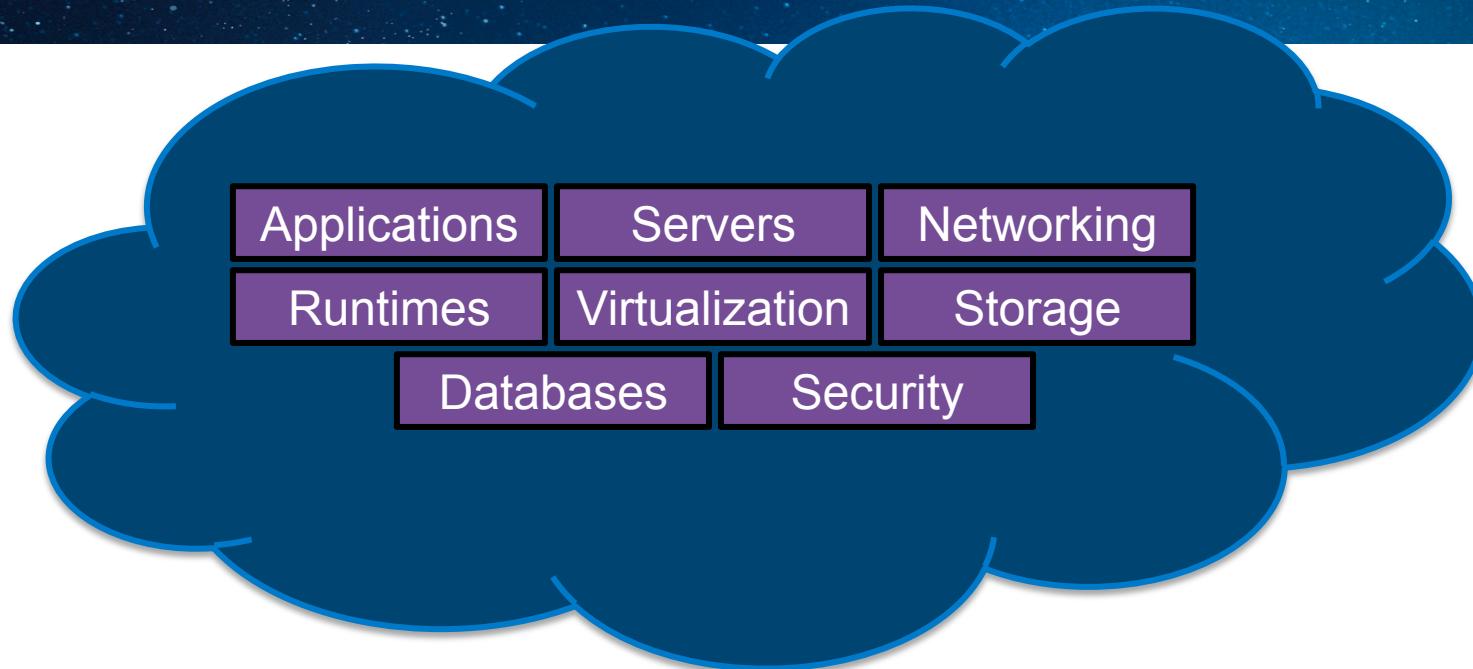


TOMORROW
starts here.

Cisco
Connect

XaaS/OpenStack

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CCIE# 39800



At a more detailed level, there are many resources inside the cloud

What resources you manage inside the cloud defines the following...

A blue cloud-shaped graphic with a white outline and a slight shadow, containing the text "Private Cloud".

Private
Cloud

A blue cloud-shaped graphic with a white outline and a slight shadow, containing the text "Infrastructure as a Service (IAAS)" in yellow.

Infrastructure
as a Service
(IAAS)

A blue cloud-shaped graphic with a white outline and a slight shadow, containing the text "Platform as a Service (PAAS)".

Platform as a
Service
(PAAS)

A blue cloud-shaped graphic with a white outline and a slight shadow, containing the text "Software as a Service (SAAS)".

Software as a
Service
(SAAS)

How do these differ from one another?

Private
Cloud

Applications
Runtimes
Databases
Security
Servers
Virtualization
Networking
Storage

Infrastructure
as a Service
(IAAS)

Applications
Runtimes
Databases
Security
Servers
Virtualization
Networking
Storage

Platform as
a Service
(PAAS)

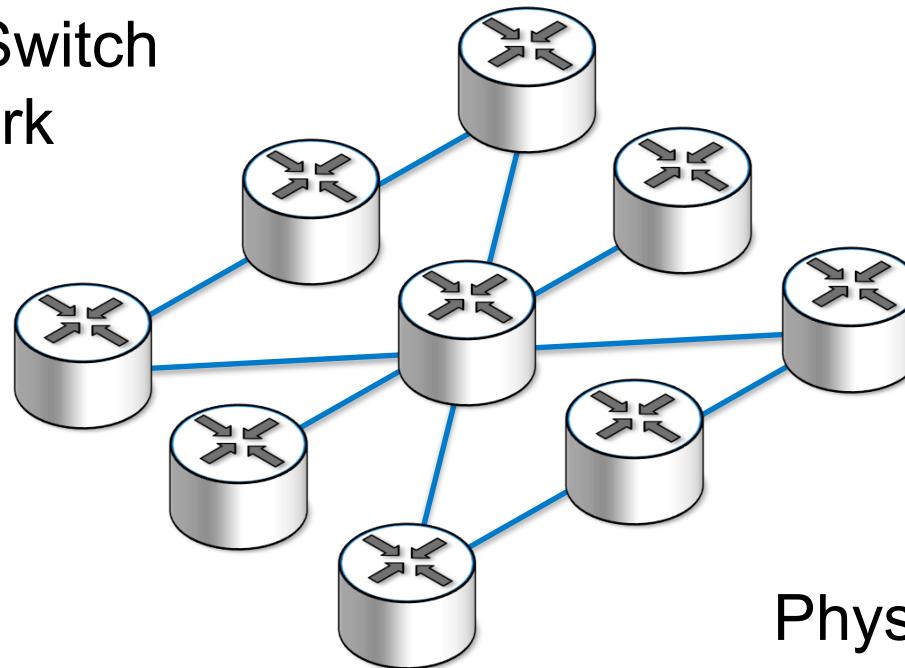
Applications
Runtimes
Databases
Security
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Networking
Storage

Software as
a Service
(SAAS)

Applications
Runtimes
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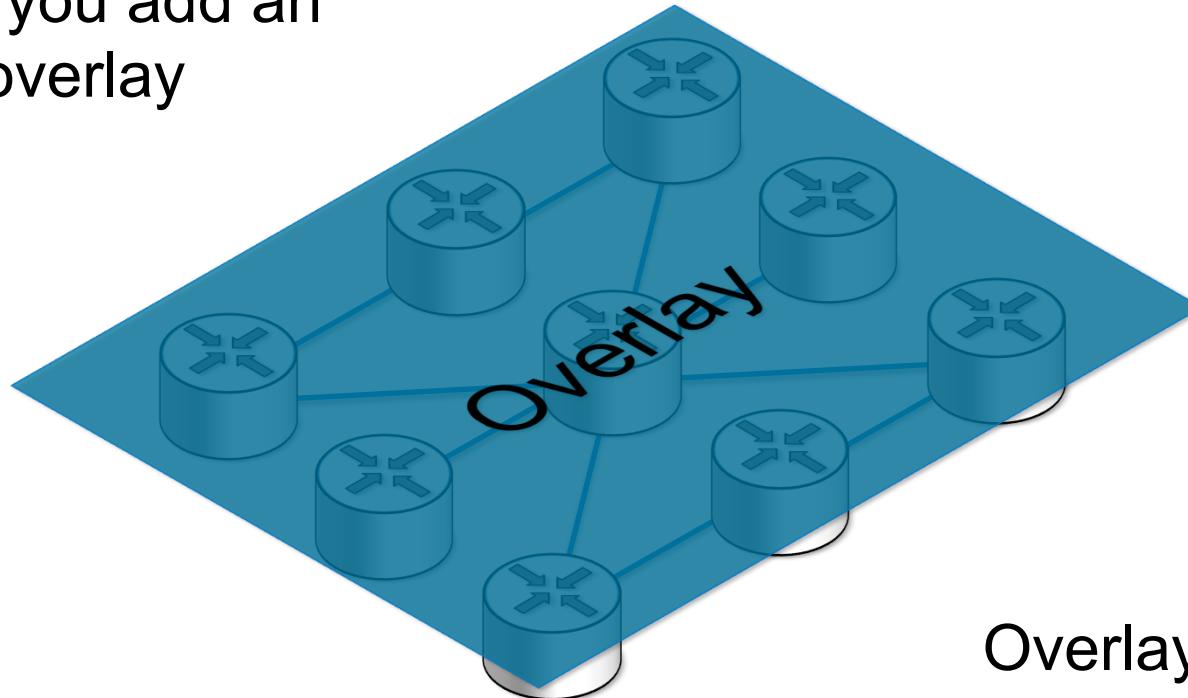
Managed by You
Managed by Vendor

You start with a
Physical Switch
Network



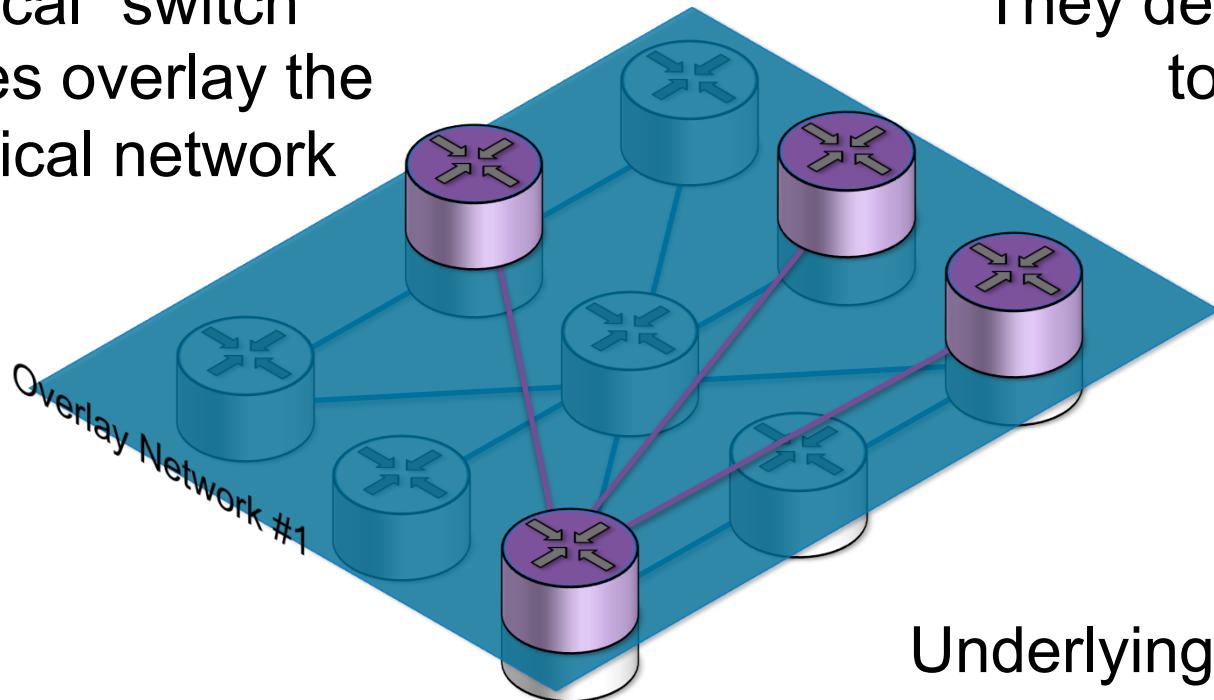
Physical Devices and
Physical Connections

Then you add an
overlay



Overlay provides
base for logical
network

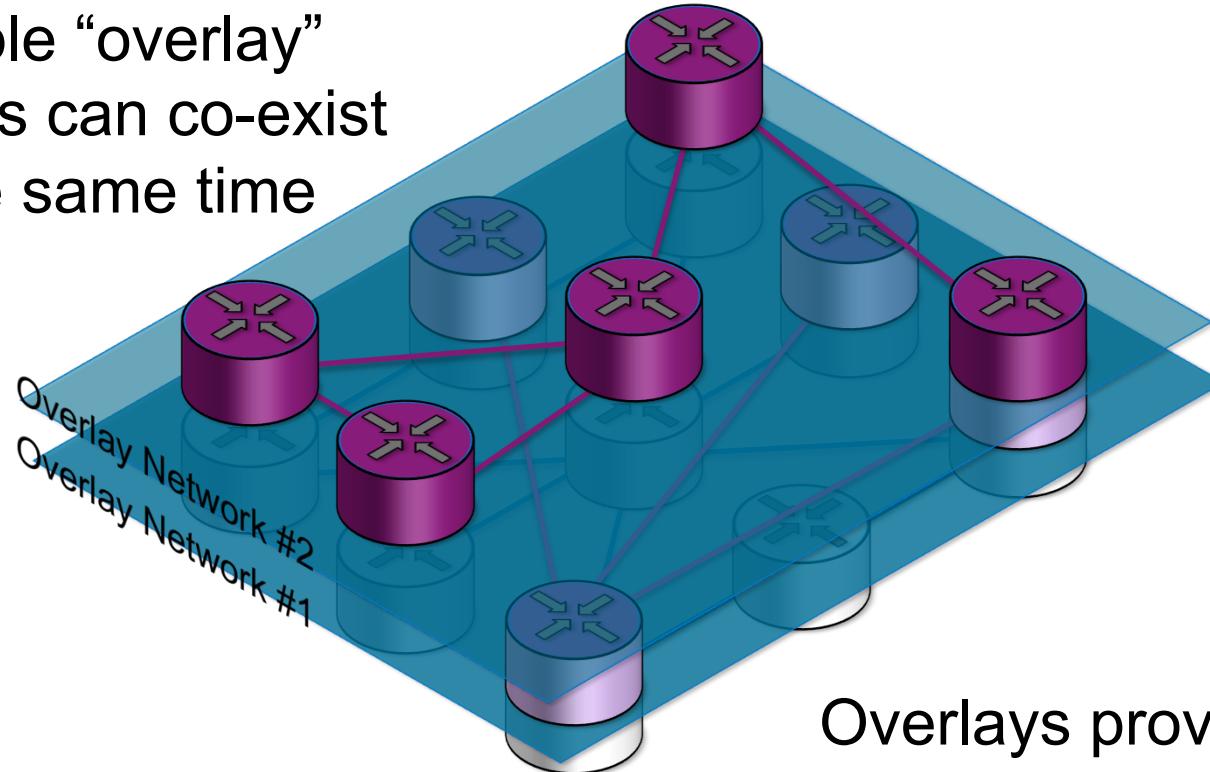
Logical “switch”
devices overlay the
physical network



They define their own
topology

Underlying physical
network carries data
traffic for overlay network

Multiple “overlay”
networks can co-exist
at the same time

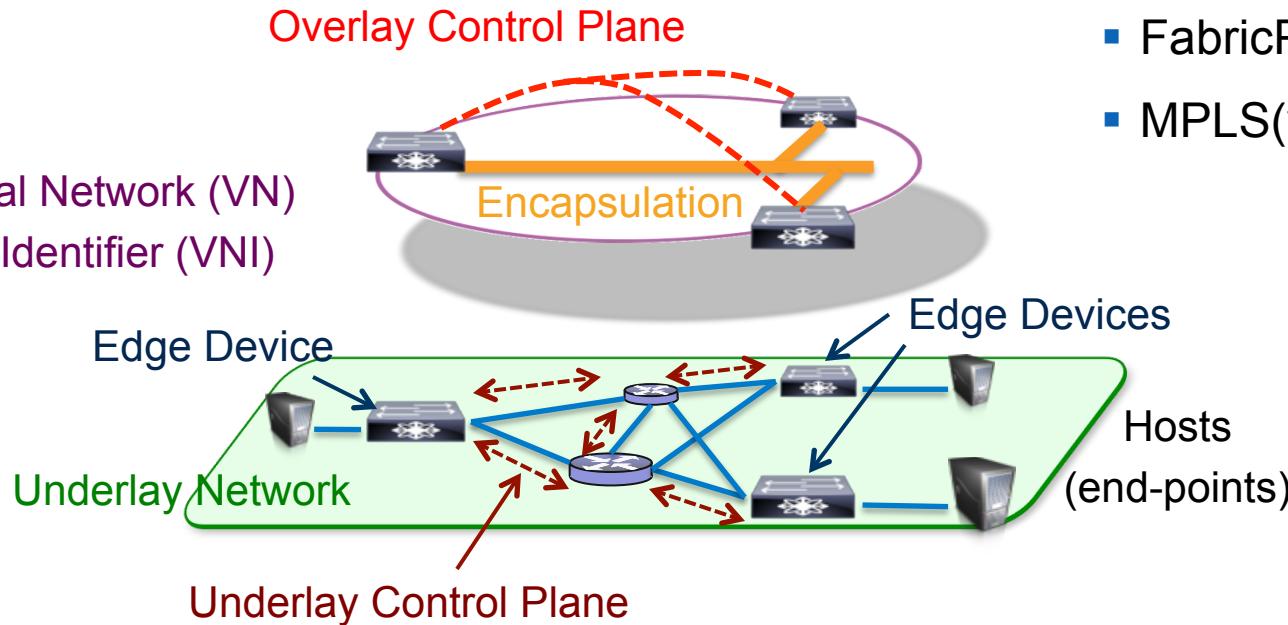


Overlays provides logical
network constructs for
different tenants (customers)

Overlay Taxonomy

- VXLAN
- FabricPath
- MPLS(vPE)

Service = Virtual Network (VN)
Identifier = VN Identifier (VNI)

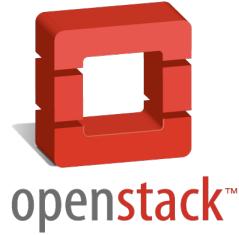


Main Benefit of Overlays?

Overlay Network can be created and torn down without changing underlying physical network



What about Openstack?
Where does that fit in?

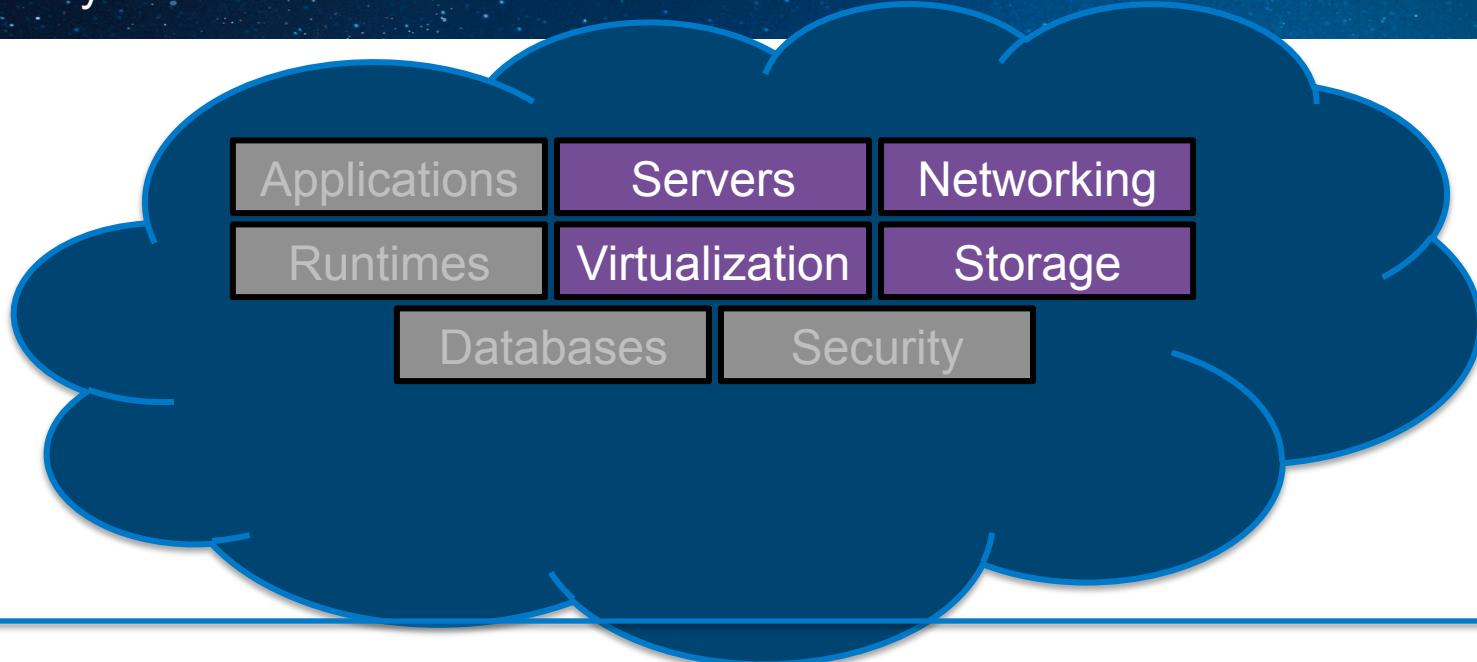


Openstack is an IAAS (Infrastructure As A Service) cloud computing project

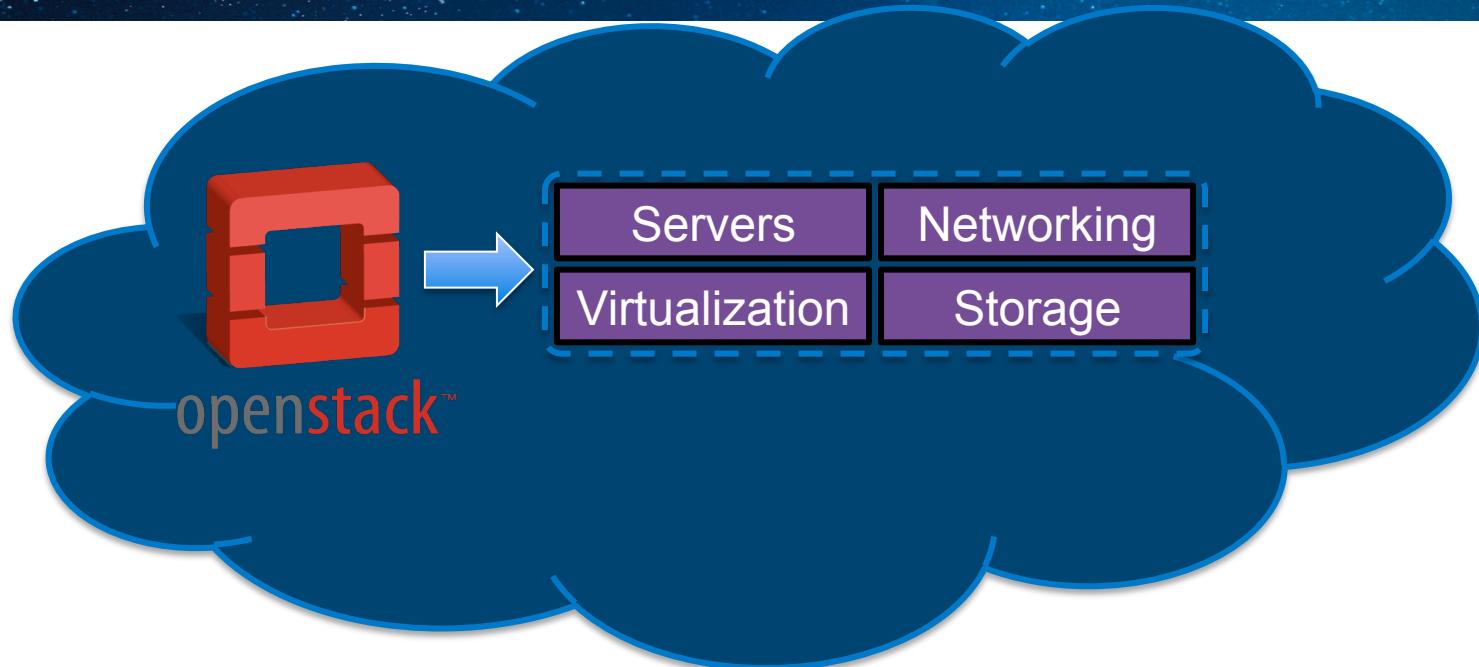
It is also referred to as a Cloud Operating System

“...provides a means to control (administer) compute, storage, network and virtualization technologies...”

Managed by You
Managed by Vendor



With IAAS, compute, storage, networking and virtualization resources are managed by the Vendor (this defines them as an IAAS provider)



Openstack lets the provider manage these resources

The screenshot shows a web-based interface for managing users in an OpenStack project. The left sidebar has tabs for Project, Admin, System Panel, Instances, Services, Flavors, Images, Projects (which is selected), Users, and Quotas. The main content area has a header "Users for Project: demo" and a sub-header "Users For Project". It displays two users in a table:

<input type="checkbox"/>	ID	User Name	Email	Enabled	Actions
<input type="checkbox"/>	779d6a4a2bfe407caa62256d3e9fb4ba	admin	admin@example.com	True	<button>Remove User</button>
<input type="checkbox"/>	fb9e9667d6eb4ba59ac2bbc885d7d890	demo	demo@example.com	True	<button>Remove User</button>

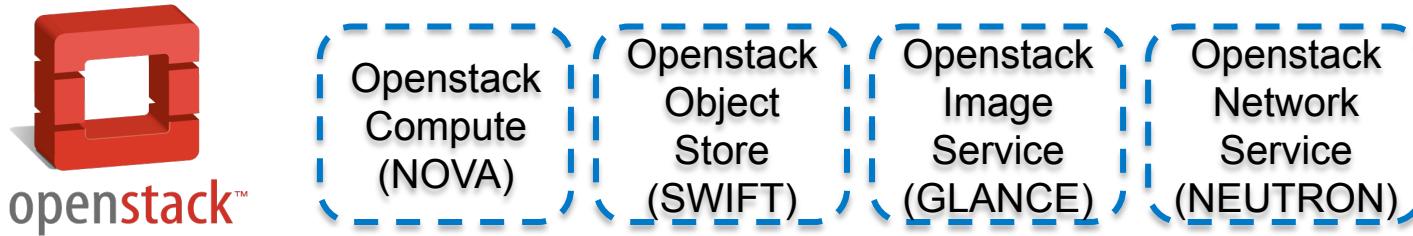
Below the table, it says "Displaying 2 items".

Underneath, there is a section titled "Add New Users" with another table:

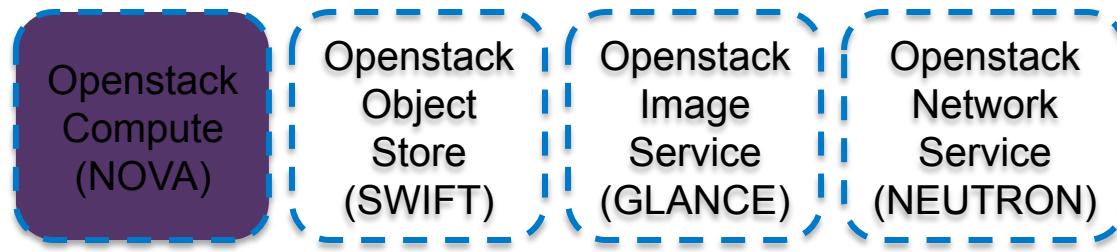
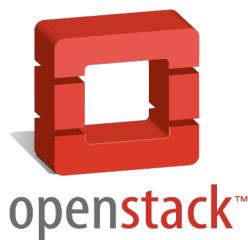
ID	User Name	Email	Enabled	Actions
32d92034862d4c73ad25b83f22335479	nova	nova@example.com	True	<button>Add To Project</button>
c8e76d5da6474adba9cb2161802105df	glance	glance@example.com	True	<button>Add To Project</button>
4b35949bd96d4804aac81c55d196193b	swift	swift@example.com	True	<button>Add To Project</button>
e2b1ab40b9234a5889c91f11f7fbcc52	scott	-	True	<button>Add To Project</button>
0f8f6378ebbe24b8290f6ff80cf5683d3	jesse	-	True	<button>Add To Project</button>
750hhf9ac4534c2ehdd496811he2f4cf	dolph	-	True	<button>Add To Project</button>

Openstack provides web based front end to manage those cloud resources...

Openstack consists of a number of components

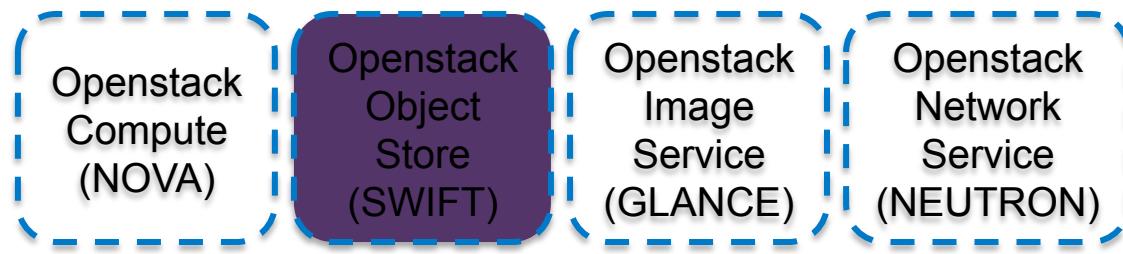
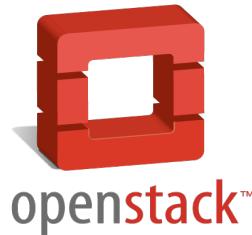


Openstack Compute (NOVA)



Allows the administrator to create and manage Virtual Machines (VM's) using various (stored) machine images

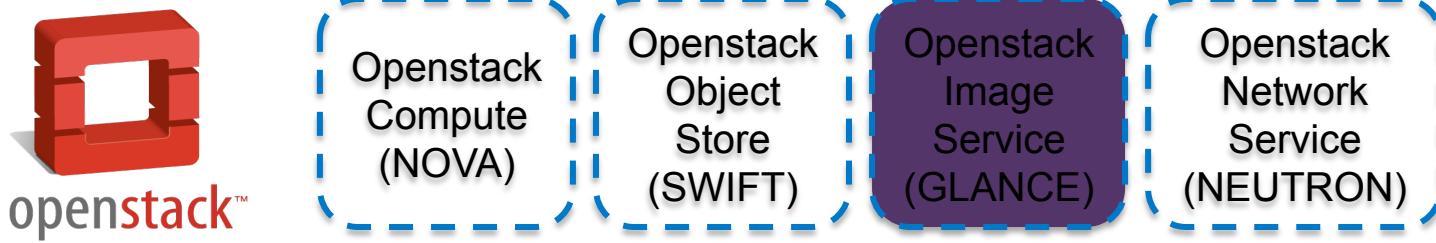
Object Store (SWIFT)



Provides the ability to store objects – basically it is the component that is responsible for managing storage and reading/writing objects to that storage

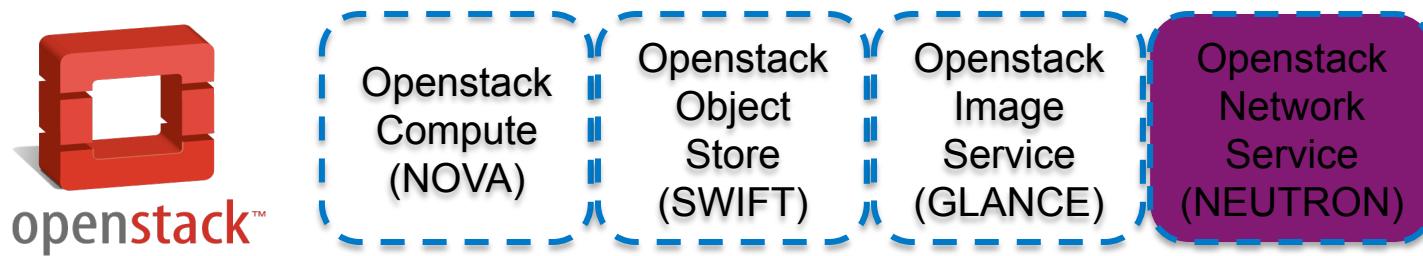
An object could be a video file, a document, a picture, a database... basically anything that you would normally store on your computer

Image Store (GLANCE)



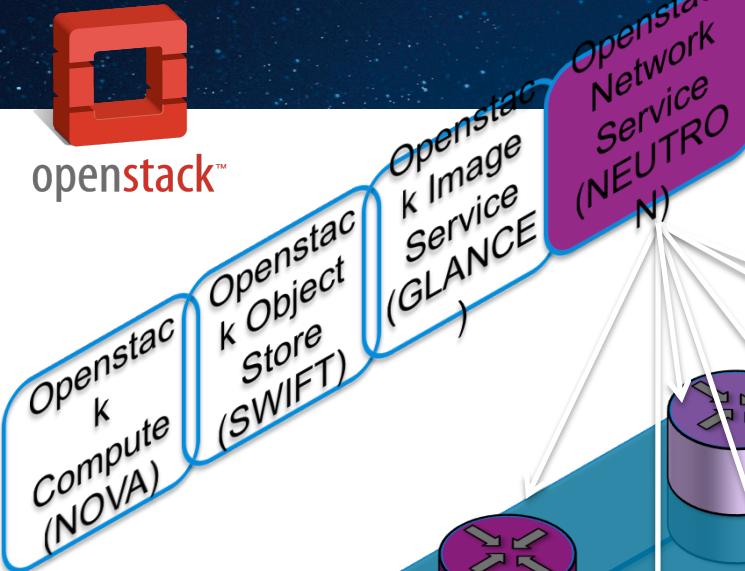
This is the component responsible for managing the different operating system images (Windows, Linux, etc) that NOVA uses to create virtual machine's

Network Service (QUANTUM) → NEUTRON



Allows the administrator to create and manage virtual networks

This is the piece that has relevance to our SDN story

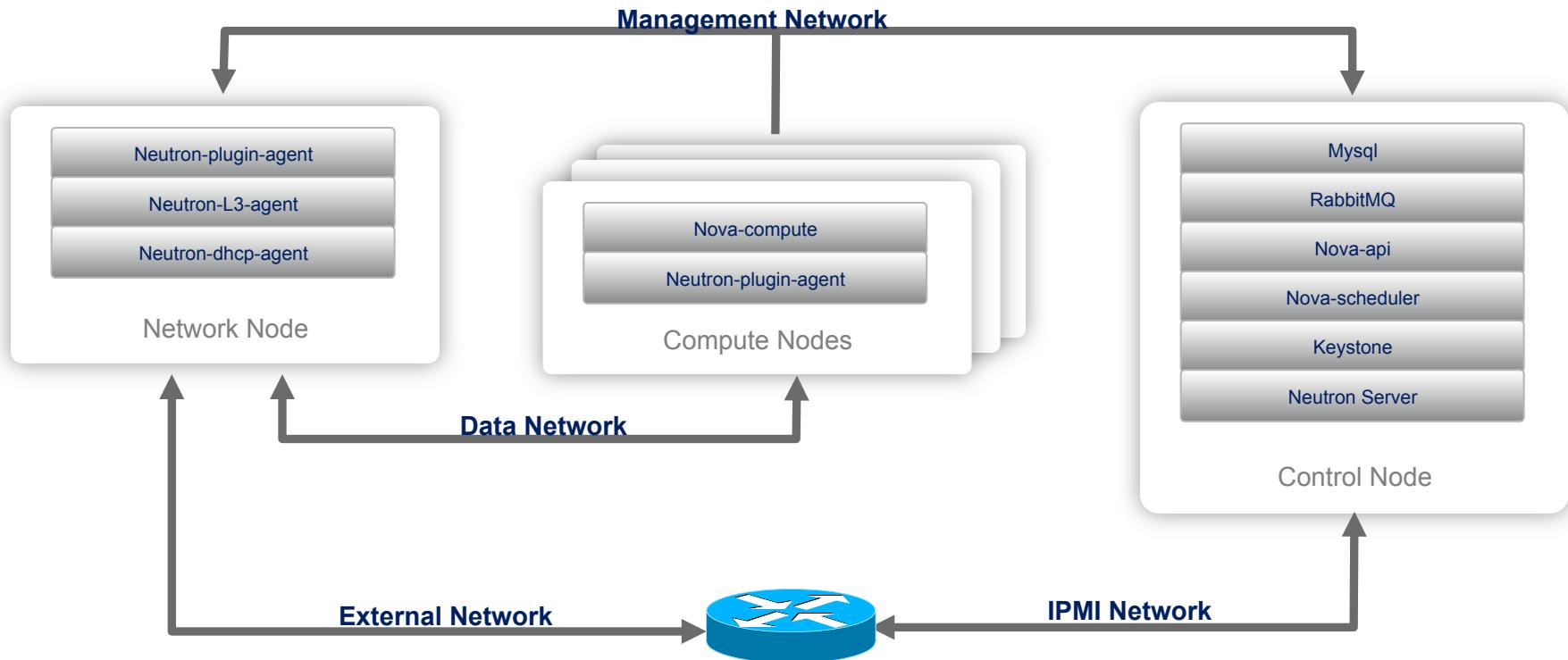


NEUTRON (ex Quantum)
is used to help manage the
overlay (virtual) networks

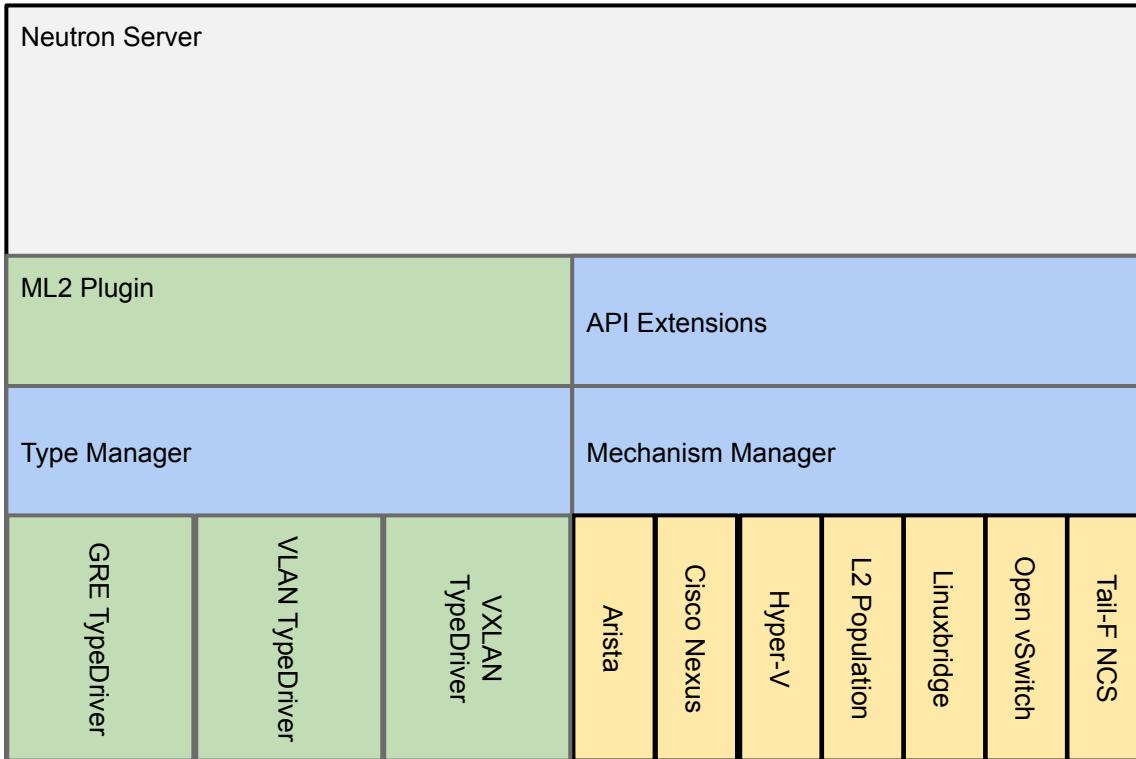


NEUTRON Quick DeepDive

A simple OpenStack Deployment

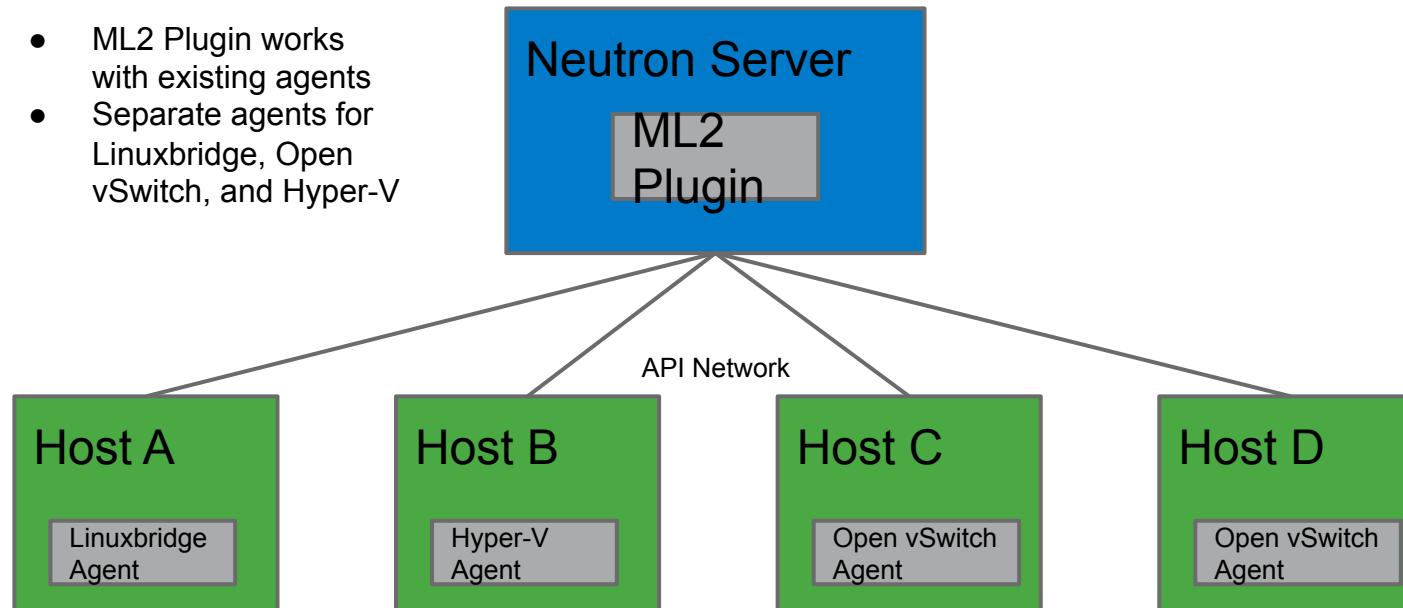


ML2 Architecture Diagram - IceHouse

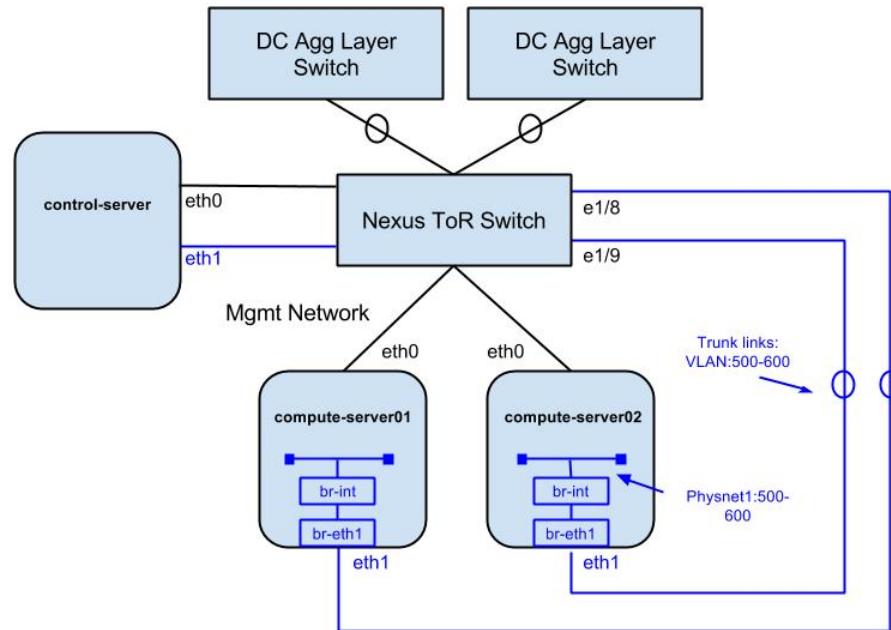


ML2 With Current Agents

- ML2 Plugin works with existing agents
- Separate agents for Linuxbridge, Open vSwitch, and Hyper-V



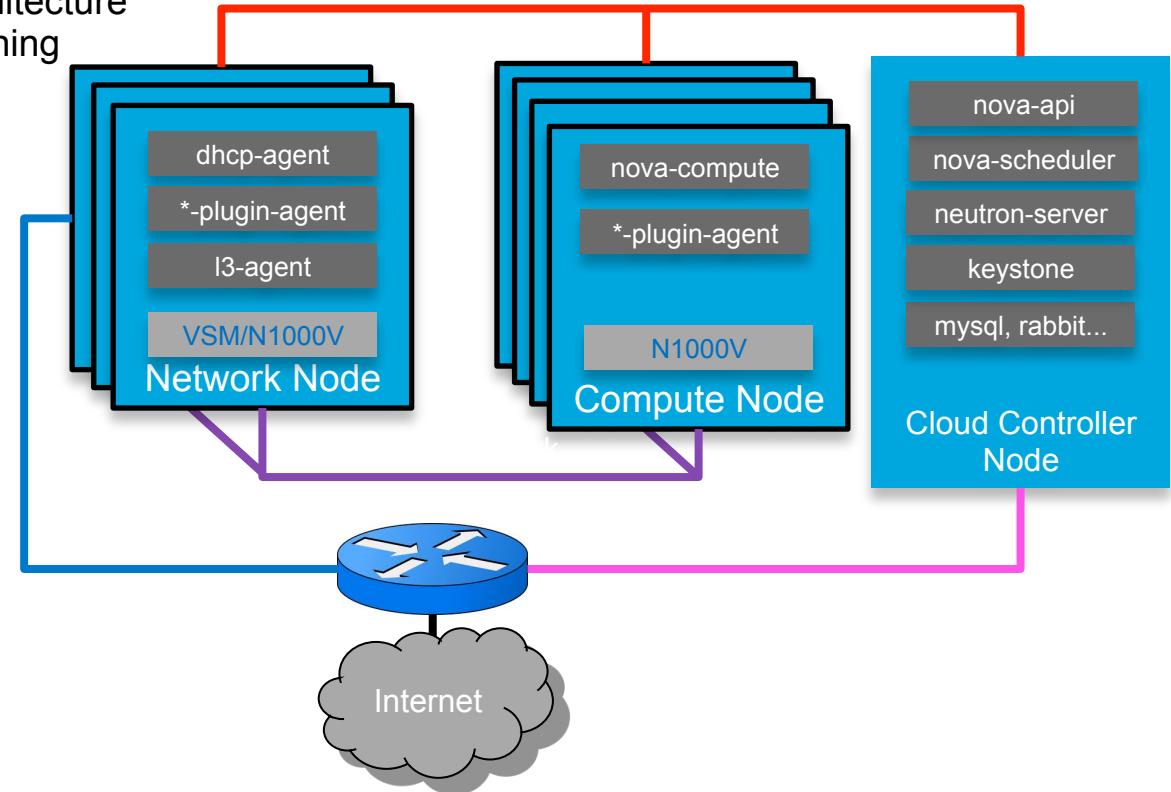
Cisco Nexus Plugin Diagram



Provider Network(s):
VLAN500:192.168.250.0/24
VLAN501:192.168.251.0/24
...

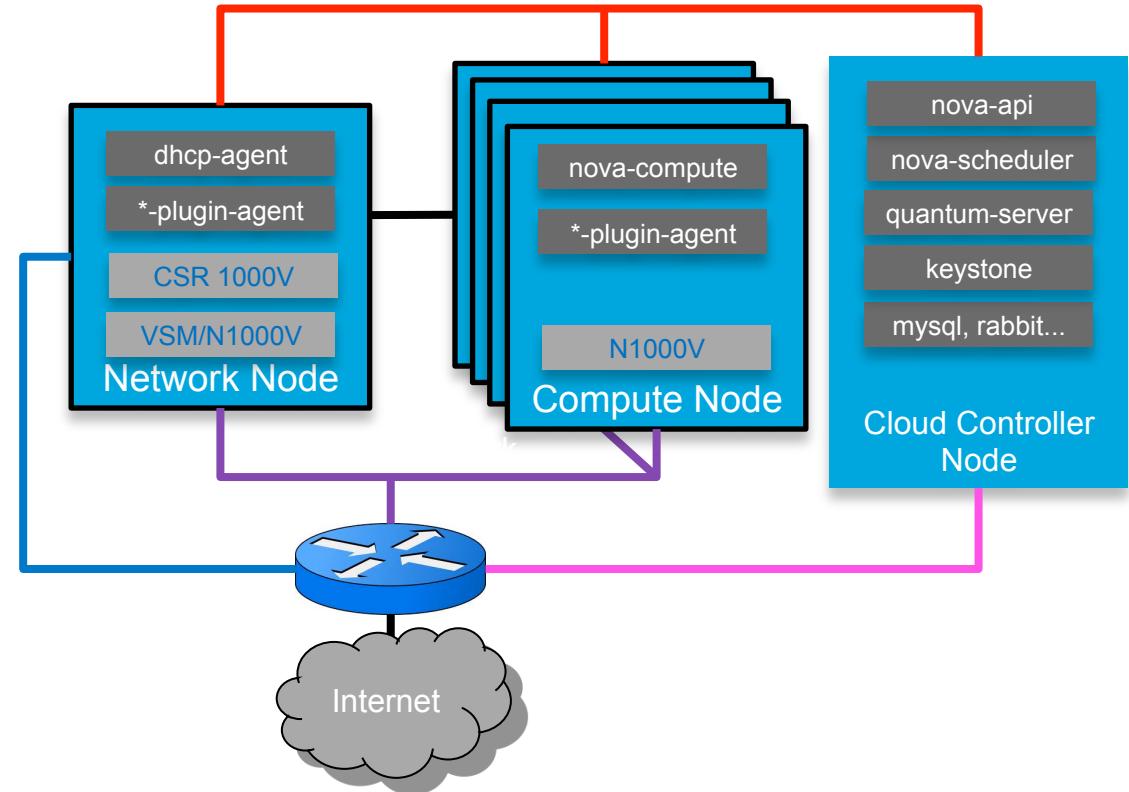
Service Chaining with Nexus 1000V

- Foundation of Virtual Services Architecture
 - vPath Service Insertion/Chaining
 - VXLAN Overlay Networking

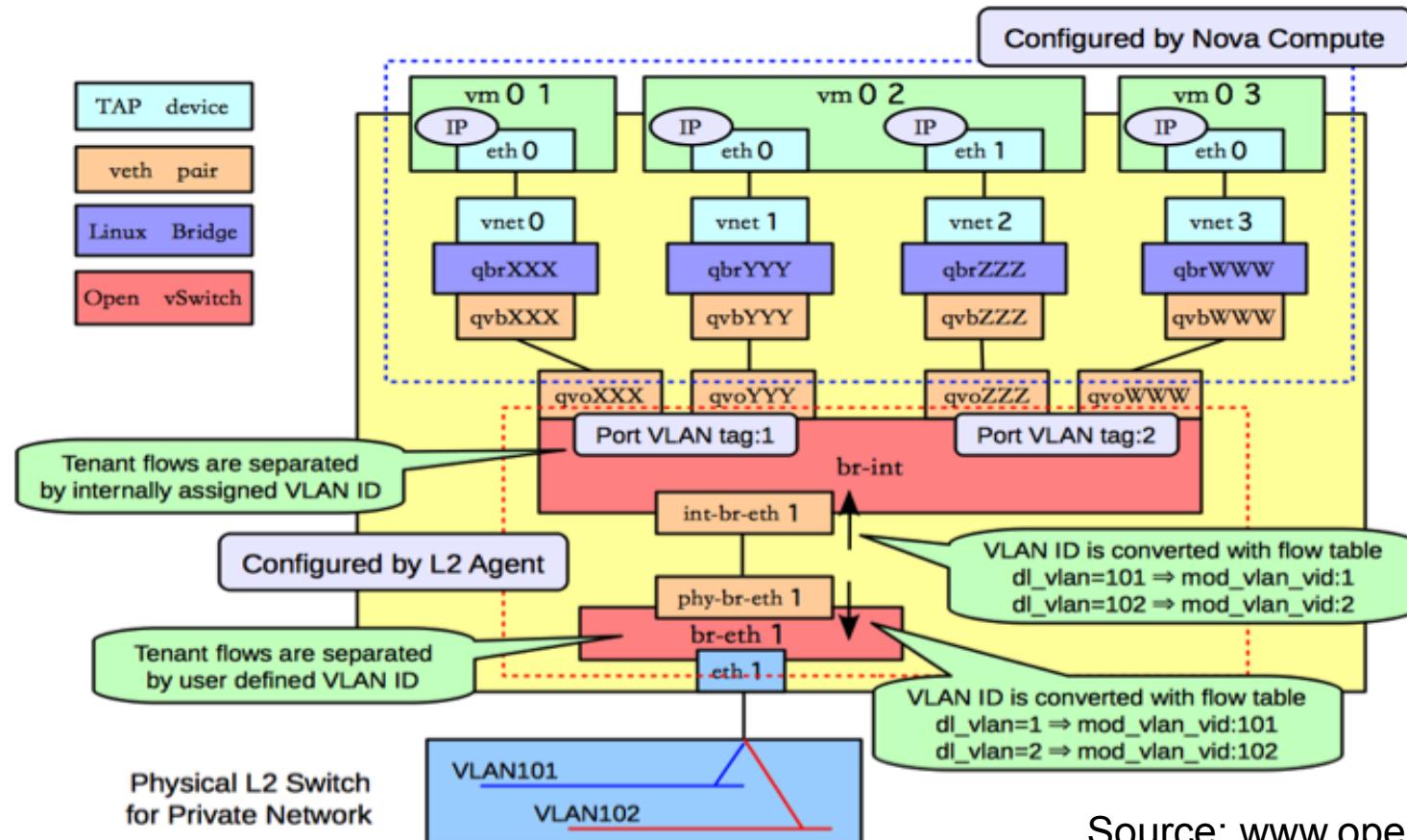


CSR 1000V Routing

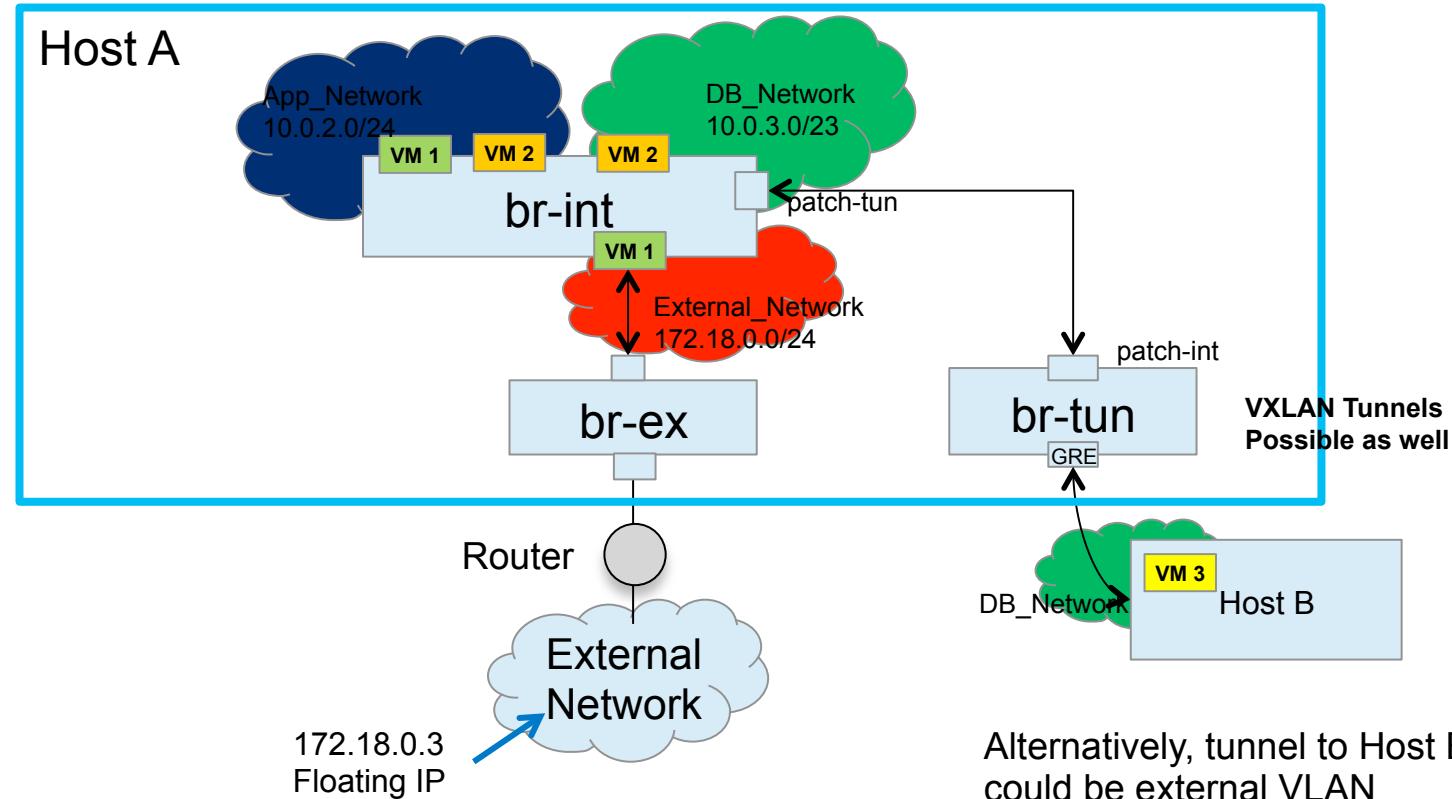
CSR Provides per tenant isolation and full IOS capabilities including VPN, BGP, OSFP, MPLS, etc.



Networking Diagram – Open vSwitch (OVS)

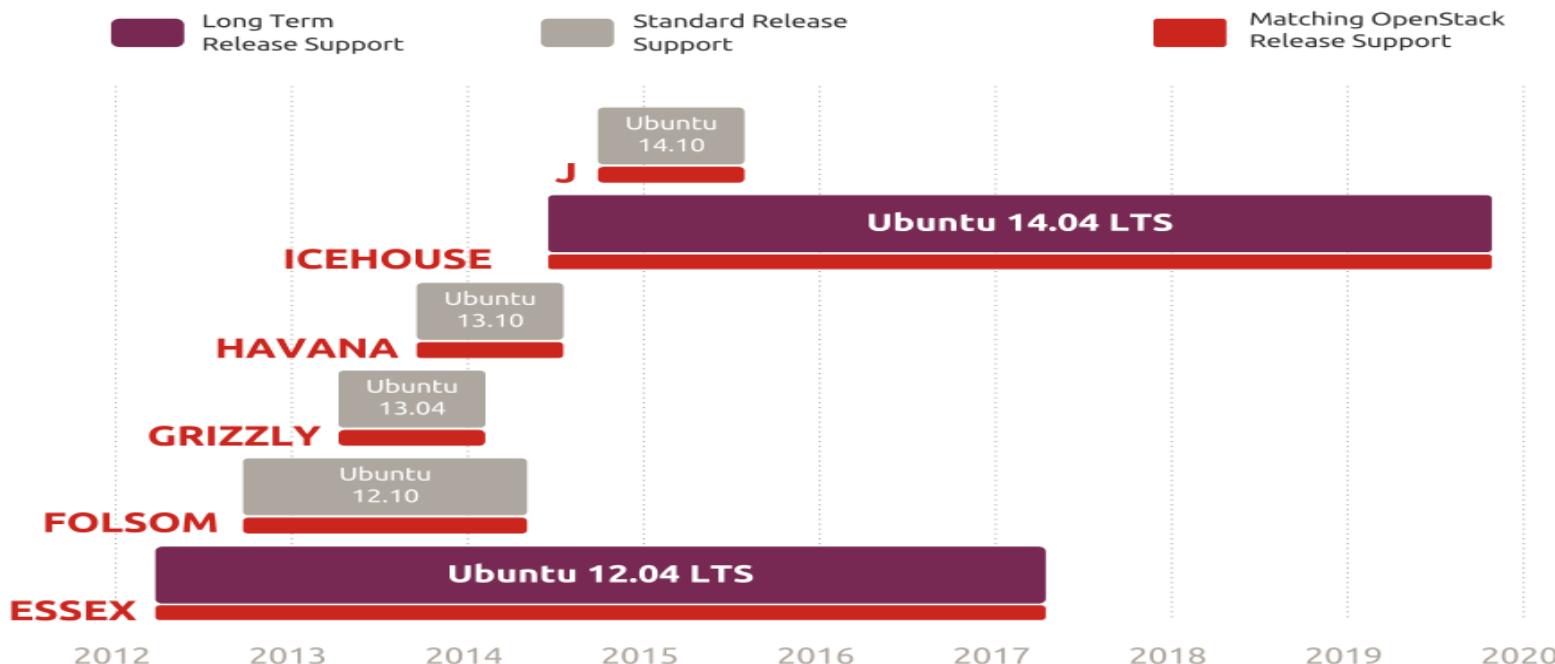


Neutron/Quantum Internals



Canonical/Ubuntu – Openstack releases

OpenStack matches Ubuntu cadence



Source: www.canonical.com

Cisco and Openstack?



<http://www.openstack.org/user-stories/cisco-webex/>

Cisco/Openstack Blueprints

Nova Scheduler

Neutron VPNaas (Cisco CSR1000v)

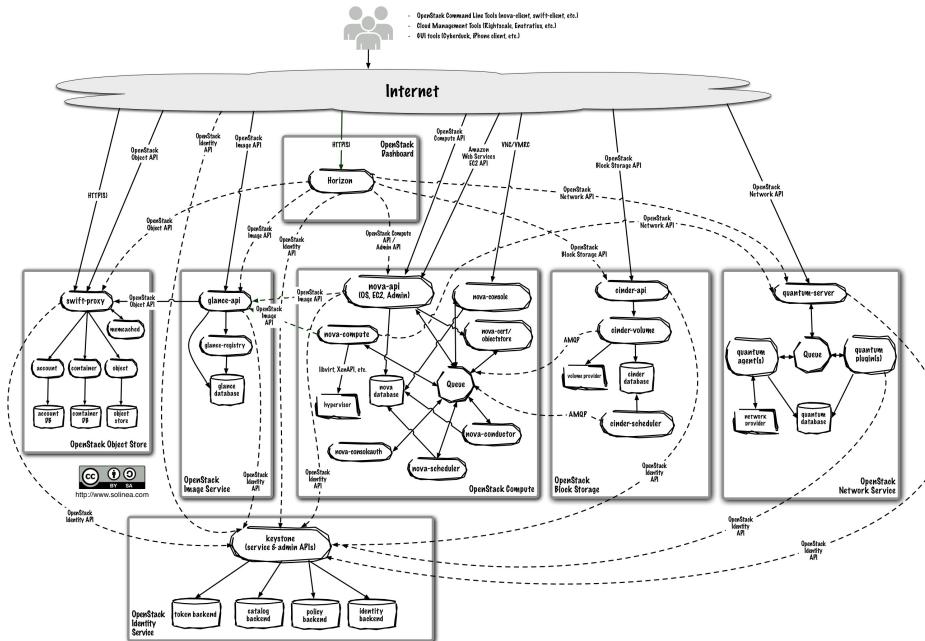
RaaS – CSR1000v

UCS Manager ML2

IPv6

.....

The OpenStack Challenge



80% of all Openstack Installation fail due to Implementation and Integration Issues

Prosíme, ohodnotěte tuto přednášku

Děkujeme

