An Open Approach to Enhancing Networking for OpenStack

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What are we going to talk about today?

• OpenStack and OpenDaylight better together
• Consolidation and Integration through Neutron
• Extending enhanced networking to OpenStack
• An Open Solution for both the Underlay and Overlay
The Challenge
Where we were

- OpenStack creates the network
- Basic connectivity between relevant nodes
- Views each OVS individually
- Limited networking
- No centralization for network control and programmability
- Potentially complex Overlay (OVS) management
Ok, so what?

- What do you do if you need more than Tunnel setup and connectivity?
  - Security, Rate Limiting, QoS, Routing protocol policy, etc.,
- What if underlay infrastructure uses OpenFlow?
- What if network infrastructure was not single vendor?
What was missing?

- Storage
- Compute
- Vlans
- Tunnels
- XaaS
- Basic Net connection

OSPF?
BGP?
Rate Limiting?
QOS?
Routing Policy?
Dynamic Change?
Traffic Engineering?
Net Fault Management?
OpenFlow?
One approach… But..

- Two separate applications
- Different network views
- No integration
- Multi-vendor environment is challenging
But why not make networking be integrated?

Centralization can be a good thing

Simplify Openstack view

Basic connectivity not enough

Also, keep it “open”
The solution
Ok, so what is new

- Business Applications (Overlay Mgmt, Perf Mgmt, Fault Mgmt)
- OpenStack
- Neutron ML2
- OpenDaylight
- RestConf
- OVSDB
- Netconf
- OpenFlow
- Yang
- OVS
- Network Elements (Physical/Virtual)
How exactly is this done?

- ODL Neutron ML2 is now interface for OVS for Openstack
  - Single IP
- ODL is aware of OVS end points
- Neutron Agent removed from OVS
- ODL now configures VxLAN tunneling for KVM hosts
- Can now also extend OF to OVS or Physical Underlay
Why was this done?

- Simplify for OpenStack
- Consistency and Standardization
- Extensibility
- Consolidate Network control to ODL
What can you use this for?

- Provide network management service with OpenDaylight using ML2
- Overlay Management for KVM with OVSDB through Neutron
- Utilize Netconf, OpenFlow for managing, automating, traffic engineering and monitoring of the underlay
Openstack
Virtual Infrastructure Mgmt

OpenDaylight
Network automation, traffic engineering, monitoring

Underlay Neutral
Decouple business application evolution from network

Open joint and integrated platforms
Consistent heterogeneous capability

Overlay
KVM
VNFs

Underlay
KVM
VNFs

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Availability

• OpenDaylight Neutron ML2 MD-SAL enhancements up streamed
• Support with Lithium release!
• Certified first with RHEL OSP 6
• Shown here at RH Summit!
• Brocade SDN Controller 2.0
• Available with other popular ODL based controllers
• Ripe for Heterogeneous data centers and cloud environments
• Network engineering and Devops
Other possibilities

- Cloudforms, OSS/BSS, Business Applications
- Fault, Performance Management
- Single Pane of Glass

REST

RESTCONF

Openstack

OpenDaylight

Underlay

Overlay

OVS

KVM

VNFs

OVS

KVM

VNFs
Thank You