OVN WITH DYNAMIC ROUTING

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Outline

Why
What
How
Why?
● OVN logical routers peer with external router
● External router is internet gateway
● External router provides direct connect
● Multiple OVN logical routers peer with same external router.
WHY

- Advertise /32 routes to external router.
- Forward traffic directly to the VM’s chassis.
- Use standard routing protocol

```
10.0.0.10
10.0.0.20

10.0.0.0/24
20.0.0.0/24

MP BGP

EXTERNAL ROUTER

OVN
```
WHY

Layer 3 East-West

Layer 3 North-South

Pending Tasks

+ Issues

EXTERNAL ROUTER

OVN
OVN DYNAMIC ROUTING

- OVN does not have native dynamic routing support.
- Difficult to adopt in non OpenStack environments.
- Management plane has to write its own adaptor.

- Add native dynamic routing support.
- Makes it “batteries included” with OVN.
What?
• Integrate with non OVN VTEPs
  ○ Switches
  ○ Routers

• Use standard protocols
  ○ EVPN
EVPN (RFC 7432)

- MAC reachability in control plane
- Works with multiple underlay technologies
  - VXLAN, GENEVE, GRE etc.
- Multi tenant BGP-based
WHY

WHAT

Layer 2

Layer 3

East-West

Layer 3

East-West

Layer 3

North-South

Pending Tasks

+ Issues

10.0.0.10

VTEP EXT, MAC EXT

dst ip

VTEP OVN

source ip

VTEP EXT

vni

GREEN VNI

dest mac

MAC ROUTER

src mac

MAC EXT

dst ip

10.0.0.10

Src ip

origin

OUTER HEADER

INNER HEADER

10.0.0.10

<VTEP OVN>

< VTEP EXT, MAC EXT >

< VTEP OVN >

VM
OVN DYNAMIC ROUTING

- Add dynamic routing capability in OVN.
- Use FRR as the protocol stack.
  - Catching up as standard protocol stack
  - Modular architecture
- Read OVN DB and advertise using MP BGP.
How?
### FRR (Free Range Routing)

- Open source IP routing suite
- Supports BGP EVPN
- Forked from Quagga
- Modular architecture
  - Each routing protocol has its own code.
  - Easy to add new protocols.
  - Easy to integrate individual protocols.
OVN-ROUTING

- Centralized daemon
- Links with BGP module of FRR.
  - More protocols can be linked on need basis.
- Reads config from OVN DBs
- Uses FRR BGP for route advertisements.
OVN-ROUTING

 WHY
 WHAT
 HOW

 bgpd

 libfrr.a

 libfrrbgp.a

 ovn-routing

 libovsdb.a

 libovsdb.a
OVN-ROUTING
Open Items?
● Configuration mechanism
  ○ Rely on OVN Northbound DB or introduce a new one.

● Avoid reading from southbound DB ?
  ○ Natural to have a top down approach for vm location.
  ○ Enhance Northbound to add VM location?
Questions