Fabric-based management for Data center network

draft-zhuang-i2rs-yang-dc-fabric-network-topology-02
draft-zhuang-i2rs-fabric-service-model-00

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Thoughts of Fabric-based management

- What are we facing in management of Data Center networks? (Use Case)
  - Fast User service deployment - new applications are developed and asked for on-demand deployment, which requires more dynamically service installation

  - Network Infrastructure Management - with the scale of Data center networks, more and more devices are involved which increases the complex of management and service deployment by administrators.

  - New technologies - new technologies be imported.
Thoughts of Fabric-based management

• **Management Motivation**
  – *Divide* Data Center network into several layers
    • service layer for user service representation
    • fabric topology layer for fabric-based topology management
    • physical topology for device management
  – *Conquer*: different administrator (human) manage through different data models per layer

• **Objectives**
  – Define a fabric service topology models to represent services from users regardless of topology, technology and device information used.
Layering structure

Service layer
- LR – Logical Router
- LSW – Logical Switch
- LP – Logical Port
- EP – End Point (VM, Bare metal server)
...

Abstraction layer
- Device -> Fabric
- Physical Topology -> Fabric Topology

Physical Layer
- Device Modeling
- Physical Topology

Logical topology
- LR1
- LSW1
- LSW2

Fabric topology
- Fabric1
- Fabric2

Physical topology
- ovs1
- ovs2
- ovs3
- ovs4
The usage architecture

Orchestrator

Fabric service model

Topology manager

Network provider

Fabric topology model

Physical Network
A Fabric Service Model

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Logical Switch

Logical Port - Access Port

Logical Port - Gateway port

Logical Router

C3 - L3 Interconnect

Logical Port - External Gateway

C4 - L2 Interconnect

C1 - End Point Attachment
C2 - L2 to L3 Attachment
C3 - L3 Interconnect
C4 - L2 Interconnect
C5 - Route population

Endpoint module
Functions

• Adds Fabric service topology (node, link, TP)
• RPCs
  – Create (or Add) logical router, logical port, gateway, ACL
  – Bind logical port to underlay ports
A Fabric Topology Model

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Fabric topology module

C1 – internal ports for devices to access each other
C2 – fabric access to outside network
C3 - endpoint to access fabric
Implementation

• It is implemented in an open source project and published in previous releases: https://wiki.opendaylight.org/view/FaaS:Main

• The code is also available at github: https://github.com/opendaylight/faas
Comment resolutions and updates since IETF 96

• **Technical changes**
  – **How to provide fabric interconnection?**
    • Add a fabric port type for external network connection which can be used for inter-fabric link configuration.
  – **How to use fabric model to deploy the network**
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  – The extensibility of the fabric topology model

• **New authors**
  – Rong Gu, Hariharan Ananthakrishnan to join our fabric topology work.
Next Step

• Welcome further feedbacks/comments/interests on this fabric work.
Question?