Flow split in Metro Area Network
draft-aoch-nvo3-flow-split-00.txt

Abstract

   In the future, there will be some new application appeared known as
   4K/8K high quality video or VR/AR application.These application needs
   high bandwidth and low lantacy.In order to meet these requirements,
   the flow model of traditional MAN should be changed. This article
   describes a new device using in MAN to support spliting DC's and
   Internet's flow, support to build edge DC in MAN and change MAN flow
   model from pipe type to umbrella type.

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   This Internet-Draft is submitted in full conformance with the
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1. Introduction

This document describes a type of device using in Metro Network to
distribute the user's flows,and forward them to different direction
of MAN. Service Provider can use this device to separate the
valuable flow from Internet flow,and redirect the flow to the edge
cloude.such as 4K/8K video or AR/VR application.

2. Terminology

FSD(Flow Split Device): device to split user flow according to the
control flow table, include forwarding plane and stack module.

3. Device model

FSD equipment's model is described as below.

```
                    +----------------+     +----------------+
                    | stack module   +---> |  SDN controller |
                    |                |     |                |
                    +-------+--------+     +--------+--------+
                         ^                          |
                         |     +----------------+
                         |     |
                         |     ^
              +--------+-----+--+
              | forwarding plane| +---------------->
        +------------> |                |
              +----------------+ +---------------->
```
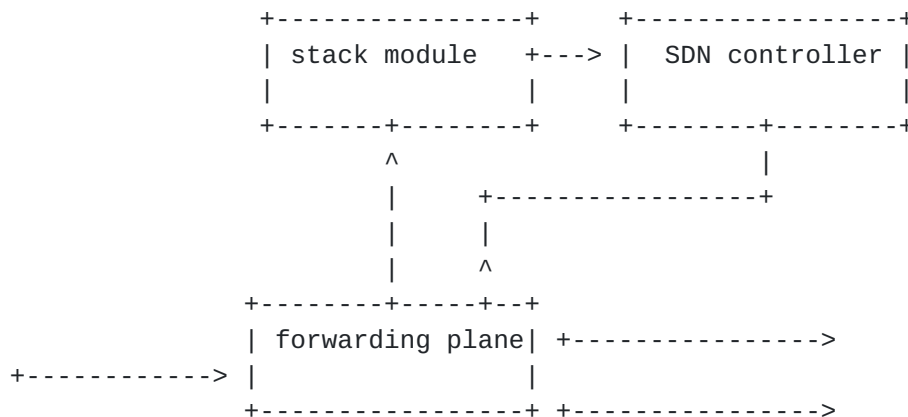
The forwarding plane is the datapath of the FSD. Before it working
,its forwarding table will be configurated by the SDN controller with
NATCONF or OFPCONFIG protocol.

User's data flow is sended to the forwarding plane. In normal
condition, the flow will be forwarded according to the preconfig
table in the forwarding plane.

4. Functionality

4.1. Forward and shunt

Forward and shunt For Internet flow,the packet will be forwarded by
FSD according to pre configuration flow table. The capacity of flow
table is a big problem to the shunt device if using MAC address
forwarding. In a large Metro network the number of the items of flow
table maybe up to one million, so the C/S VLAN(QinQ) forwarding
function will be considered to reducing the capacity of the flow
table.

For local flow,which is disposed in the edge cloud, should be shunted
in the FSD according to the dynamical flow table. The protocol such
as openflow should be supported to create the dynamical forwarding
flow table.

4.2. Interface

VxLAN tunnel should be supported in the uplink of the FSD to the edge
cloud direction, and IP interface should be supported in the uplink
to the Internet direction. In other word, FSD will separate the
east-west flow and south-north flow of the access network.

There are three kinds of interface should be supported in the
downlink of the FSD, VLAN interface,QinQ interface and VxLAN
interface. VLAN interface is for enterprise subscriber to access in,
QinQ interface is for internet user,and VxLAN tunnel interface is for
some VxLAN private line service.

4.3. Other Function

Many other functions should be supported in FSD for different
requirements,as below:

4.3.1. PUPVPVxLAN function

For user isolation and VxLAN internal flow statistic and charging.

4.3.2. Leaf switch function

for realize the leaf-spine frame in DC Downlink port VLAN,QinQ,

4.3.3. VxLAN smart mapping to VxLAN

in uplink port for packet forward

4.3.4. QoS function and rating limiting in VxLAN

for Forwarding priority and service control in VxLAN

4.3.5. EVPN protocol

for the information synchronization in layer2 network

4.3.6. DHCP snooping and relay function in VxLAN tunnel

and so on...

5. Security Considerations

Service Gateway must have the capability of checking the validation
of user's address.

6. IANA Considerations

N/A

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Authors' Addresses

   Zhonghua Chen
   China Telecom
   No.1835, South PuDong Road
   Shanghai 201203
   China

   Phone: +86 18918588897
   Email: 18918588897@189.cn

   Ting Ao
   ZTE Corporation
   No.889, BiBo Road
   Shanghai 201203
   China

   Phone: +86 21 68897642
   Email: ao.ting@zte.com.cn