IPv6 Transition Unification Openv6

IntArea WG
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China Telecom : Qiong Sun, Chongfeng Xie

Telefonica I+D : Diego Lopez

Huawei : Cathy Zhou, Will Liu, Felix Lu, Tina Tsou, Haiyong Xie,
Spencer Dawkins

Viagénie : Guillaume Leclanche

Univ. of Science & Tech of China : Wenfeng Xia

Agenda

- Motivations for this work

- Technology Description

- China Telecom Use Case

- New Protocol Work

- Demo & Next steps

IPv6: Current status

- Current state of IPv6 transition
  - Many solutions and multiple scenarios co-exist, e.g., 4-6-4, 6-6-4, etc.
  - Slow transition

- Challenges
  - Legacy equipment does not support multiple IPv6 transition technologies at the same time
  - Lack of native IPv6 applications

Lack of motivation and **high cost**
for carriers / service providers / end users
to transition to IPv6

IPv6: The Long Slow Evolution
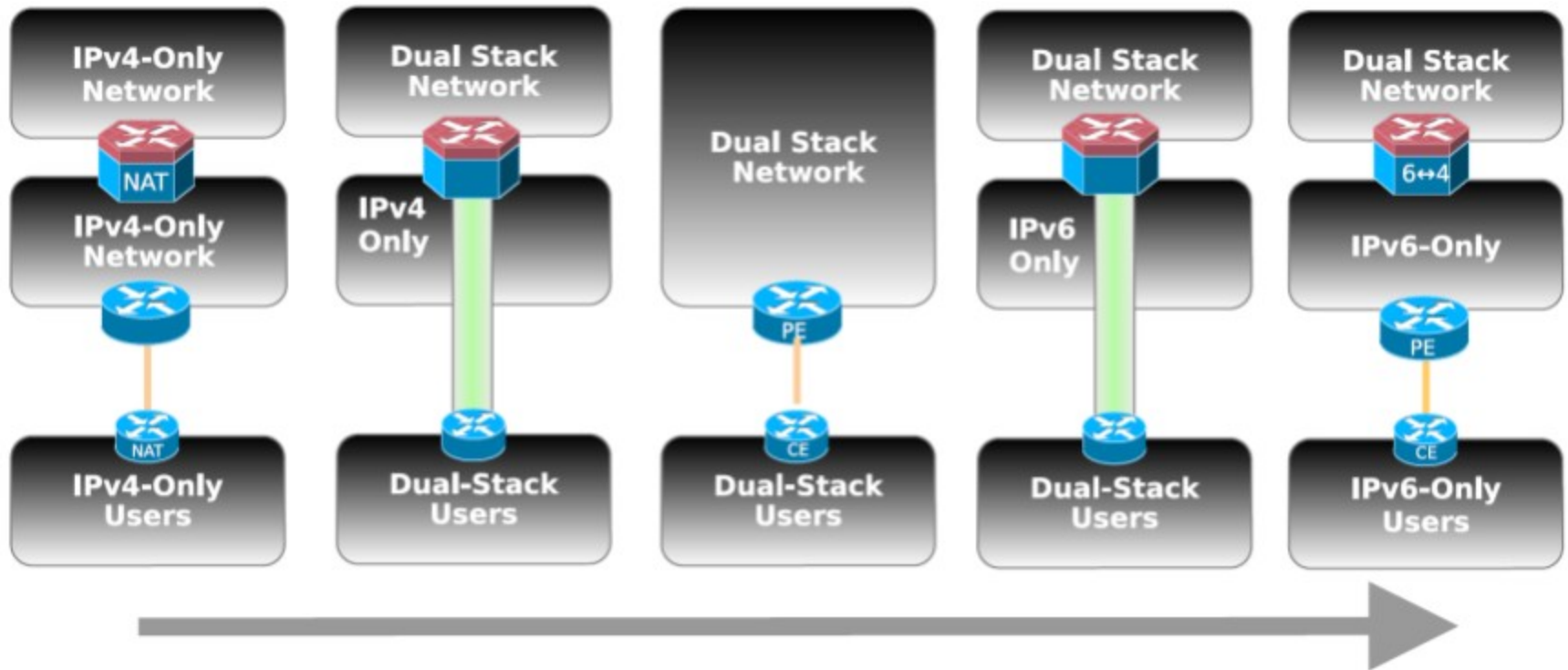
Motivation

- Design a ***low-cost***, ***unified*** approach to IPv6 transition
  - Low-cost: a virtual CPE (e.g. vRGW) for example can cover different scenarios of IPv6 transition. Carriers do NOT have to upgrade/manage CPEs to support a specific IPv6 transition scheme

  - Unified: the design should be open enough to allow future IPv6 transition schemes

Openv6 in a nutshell (1)

1. The Transition CPE sends a packet initiating a new flow
2. The « Transition Device » asks the « Transition Management Server » what to do
3. The TMS configures the TD for this flow
4. The packet is forwarded
5. Every new packet belonging to this flow is forwarded
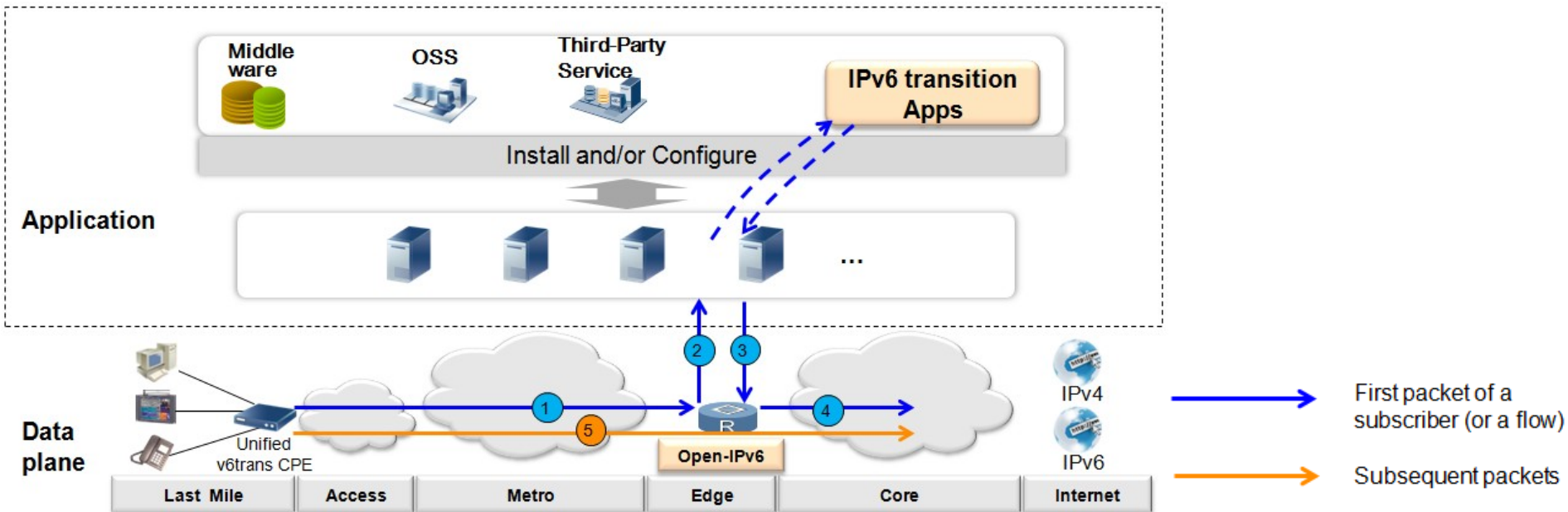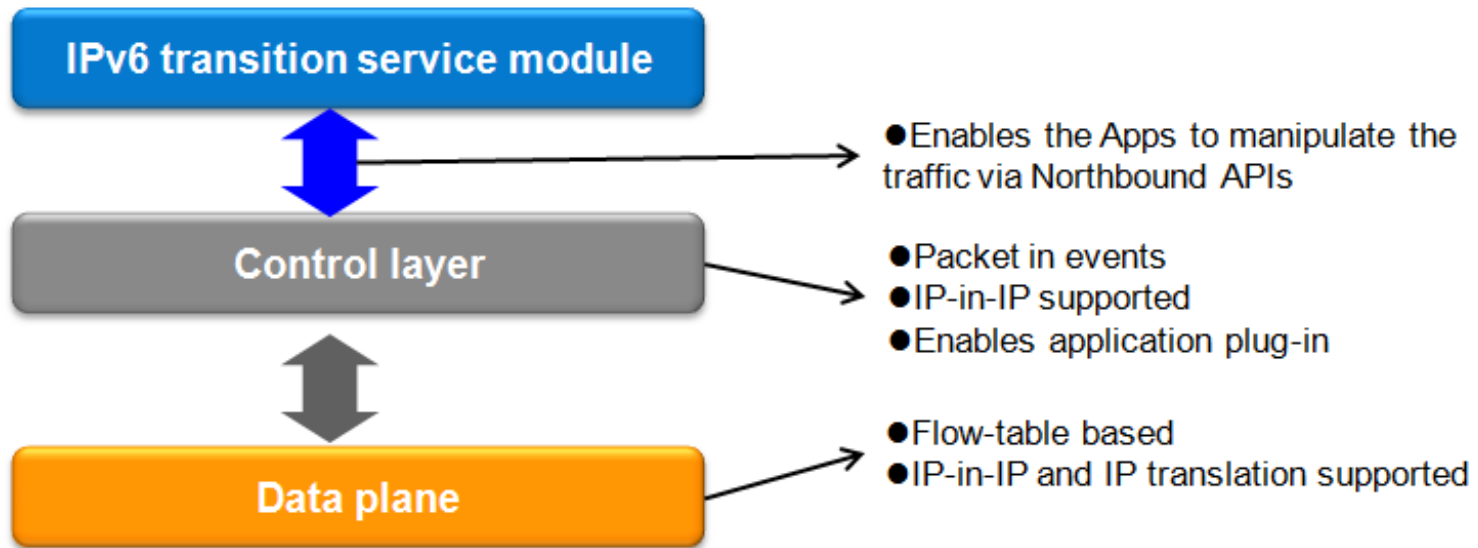
Openv6 in a nutshell (2)

Data Plane
    Action: Modify IP and/or TCP/UDP port
    IP-in-IP: IP-in-IP tunnel en(de)capsulation

Control layer
    Providing a northbound interface (NBI)
    Transition application plug-in
    Packet-in events processing

- Application modules providing user functions

IPv6 transition service module

- Enables the Apps to manipulate the traffic via Northbound APIs

- enabling an application to program the data plane

Control layer

- Packet in events
- IP-in-IP supported
- Enables application plug-in

Data plane

- Flow-table based
- IP-in-IP and IP translation supported

China Telecom Use Case

- CT Uses various transition technologies
  - Examples :
    - DS-Lite + Lightweight4over6 + CGN for Broadband Customers
    - DualStack + CGN for DataCenters

  - They want to :
    1. Change the transition technology used in a straightforward way
    2. Have a centralized management of address pools

New Protocol Work

- draft-sun-v6ops-openv6-address-pool-management-00
  Address Management for IPv6 Transition
  Allocation procedure of addresses for translators/tunnels

- draft-zhou-netmod-openv6-transition-cfg-00
  A YANG Data Model for Open IPv6 Transition
  Communication Transition Servers <-> Transition Devices

And for reference ...

- draft-sun-openv6-problem-statement-00
  Problem Statement for Openv6 Scheme
- draft-liu-openv6-architecture-00
  Openv6 Architecture for IPv6 Deployment

Deployments

- Various lab deployments

- ETSI Network Function Virtualization, 2nd meeting
  April 22–23, 2013. 200+ participants.

  => Openv6 can handle a reasonably *large number of flows with very good cost-performance efficiency*

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Please join us in Bits 'N Bites for more info !

Technology & Networking Social
IETF 88 Meeting - Vancouver, BC, Canada
Hyatt Regency Vancouver
Date: November 7, 2013 (Thursday)
Time: 19:00-21:00
Location: Regency Ballroom D,E,F

Summary

- We propose a new approach to IPv6 transition
  - Low cost
  - High performance
  - Unifying existing IPv6 schemes
  - Extensible: easy to add / implement new IPv6 schemes
  - Easy to implement, deploy and operate

Questions ?