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

- IPv6 transition service module
  - Enables the Apps to manipulate the traffic via Northbound APIs
  - Packet in events
  - IP-in-IP supported
  - Enables application plug-in
  - Flow-table based
  - IP-in-IP and IP translation supported

- Application modules providing user functions
- enabling an application to program the data plane
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, 2\textsuperscript{nd} meeting
  April 22–23, 2013. 200+ participants.

=>$\text{Openv6 can handle a reasonably large number of flows with very good cost-performance efficiency}$
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 ?