IPv6 Use Case & Transition Guide For A Large-scale Broadband Network

draft-huang-v6ops-v4v6tran-bb-usecase-01
draft-yang-v6ops-v4v6tran-bb-transition-guide-01

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Outline

- Drafts' induction

- Network Architecture

- Scenarios

- Solutions

- Problem fixed & Update

- Next steps

drafts' introduction

Quote: draft-carpenter-v4v6tran-framework

Use case

- Briefly describe network model
- Present major generic network models, and their subsets, including network topologies/architectures
- Listed all the possible transition scenarios of this model
- Specify scope (range of technologies)

Transition guide

- Explain how technology components fit together in each scenarios
- Develop analysis criteria on how to recognize appropriate transition technologies for existing provider networks within their scope.

Network Model

Scale:

- Large number of subscribers (> 60m) with fast growing speed. (> 16m per yr)
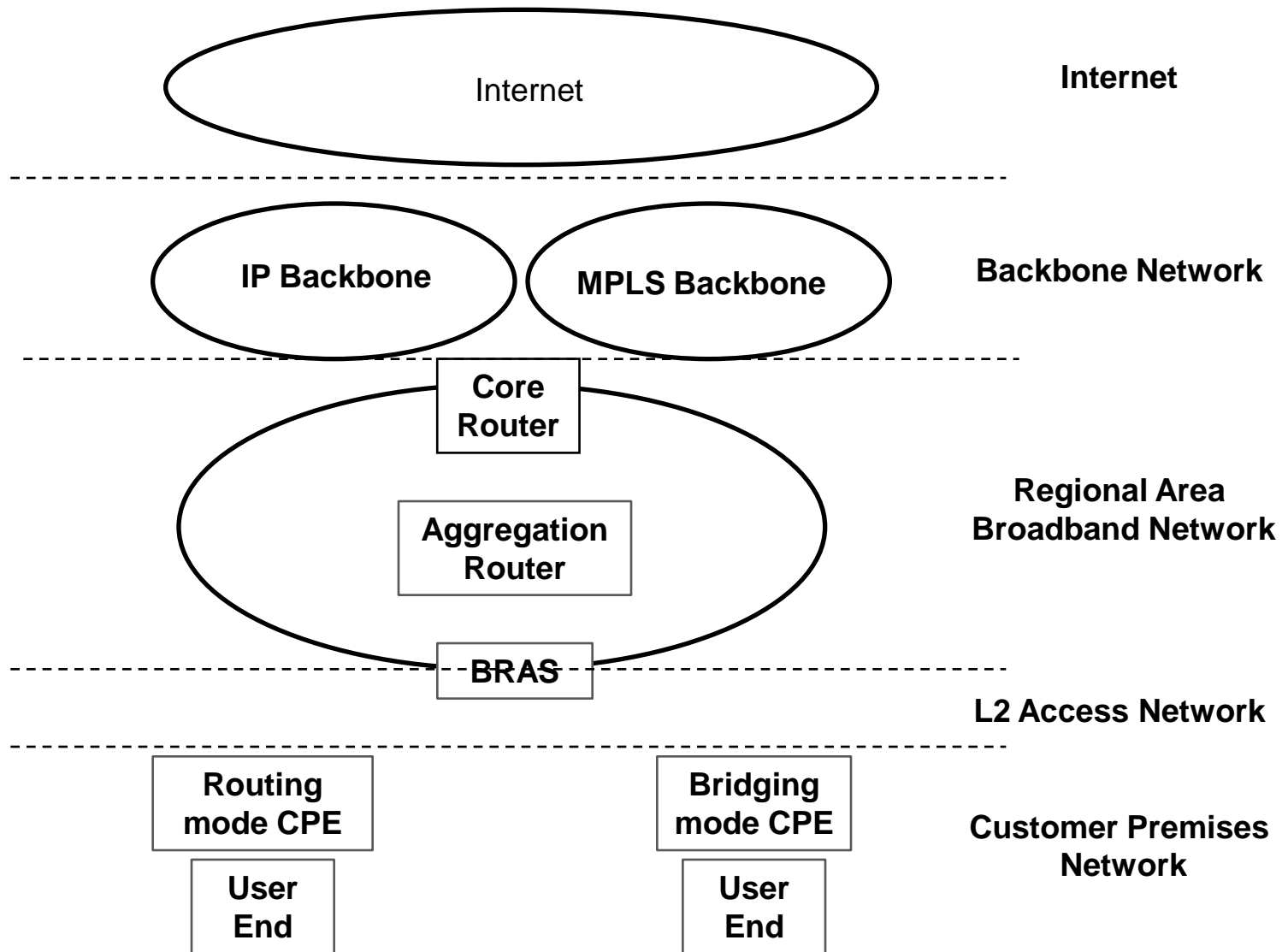- National wide, hundreds of regional broadband networks, thousands of routers.

Access Method:

- Broadband network with L2 Access infrastructure.
- Subscribers access network by PPPoE dail-up.

User End:

- Most CPEs are in bridged mode
- Some CPEs are in routed mode and can be dail-up from it automatically.
- CPEs are unmanaged by ISPs.

Network Architecture

draft-yang-v6ops-v4v6tran-bb-transition-guide & draft-huang-v6ops-v4v6tran-bb-usecase **IETF 79 -- v6ops**

Scenarios

- Backbone
  - IPv6 traffic across the IP backbone;
  - IPv6 traffic across the MPLS backbone;
- Regional Area Broadband Network
  - UE←→New BRAS
    - Heterogeneous Connectivity
    - Homogeneous Connectivity
  - UE←→Legacy BRAS
    - Heterogeneous Connectivity
    - Homogeneous Connectivity

Solutions

- Solutions for Backbone:
  - Upgrade current IP backbone to Dual-Stack;
  - Deploy 6PE on current MPLS backbone;
  - Build a new v6-only backbone.

- Solutions for Regional Area Broadband Network:
  - Upgrade most routers to Dual-Stack;

    (Tunnel tech. ,e.g. L2TP/ 6rd, for too old BRASs;)
  - Little changes on current network infrastructure; (6rd)
  - Provide v4&v6 contents accessibility over a new or partly new IPv6 network infrastructure. (DS-Lite, NAT64)

Problems Fixed & Updates (cont.)

- Focus on the architecture with L2 access network only, but not only for specific ISP. It tries to provide useful information and experiences for other ISPs who have similar technical and business situation.

- Does not consider the transition issues of L2 access network and focus on PPPoE at -01 version.

- "IPoE over DSL" scenario may be added in the future, but we still don't have many practical experience on that. The discussion of migration away from PPPoE to a "IPoE over DSL" service is still out of scope of this work, but we will follow up on that, that is a possible solution for the L2 access network.

Problems Fixed & Updates

- Try to make the document structure clearer and readable. (Add some diagrams and reconstruct the document structure)

- Add "Terminologies" and "References", fix grammar mistakes, words and expressions.

- Consider more from technical aspects, but not ignore the business feasibility.

Next Steps...

- The drafts are still at initial stage, and awaiting for more comments. Any comments and contributions are welcome.

http://tools.ietf.org/html/draft-huang-v6ops-v4v6tran-bb-usecase-01

http://tools.ietf.org/html/draft-yang-v6ops-v4v6tran-bb-transition-guide-01

- Carrying out the solutions and suggestions for the USE CASE.

- Maybe add some practical or experiment datas in the document.

Scenarios of ISPs are different, this document is only to provide some information and considerations to the similar architecture.

Questions?
Comment?

Thank you!

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