

IPv6 Broadband and Cable

NANOG46

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Terminology

- CM – Cable Modem
- MTA – Media Terminal Adapter (VoIP device)
- STB – Set top Box
- eMTA – Embedded MTA (CM-MTA in one device)
- eSTB – Embedded STB (CM-STB in one device)
- CPE – Customer Premises Equipment
- IGD – Internet Gateway Device
- DOCSIS – Data over cable standard Interface specification
- PacketCable – Specification to provision and support MTAs behind a CM
- Provisioning – Assigning an IP-address and a service tier to device and subscriber

Core Concepts

- Deploy IPv6 to support management only using IPv6, example devices include:
 - Cable modems
 - Set top boxes
- IPv6 capable components to achieve this minimally include:
 - Core network
 - Access network
 - Device provisioning and management
- Leverage deployment of common infrastructure to enable IPv6 consumers and drive content and service availability using IPv6

Considerations

- Support for IPv6 in many products is still considered new and not nearly mature as their IPv4 counterparts
- Testing and interoperability are critical for a successful deployment
- Bugs and issues will arise in known entities
- Scale makes a difference
- Deploying IPv6 must not impact existing services

Background

- Availability of content and services over IPv6 to date appears to be lacking
- Simply having IPv6 connectivity available is not sufficient
- Availability of content and services over IPv6 must align with availability of the consumers to encourage adoption

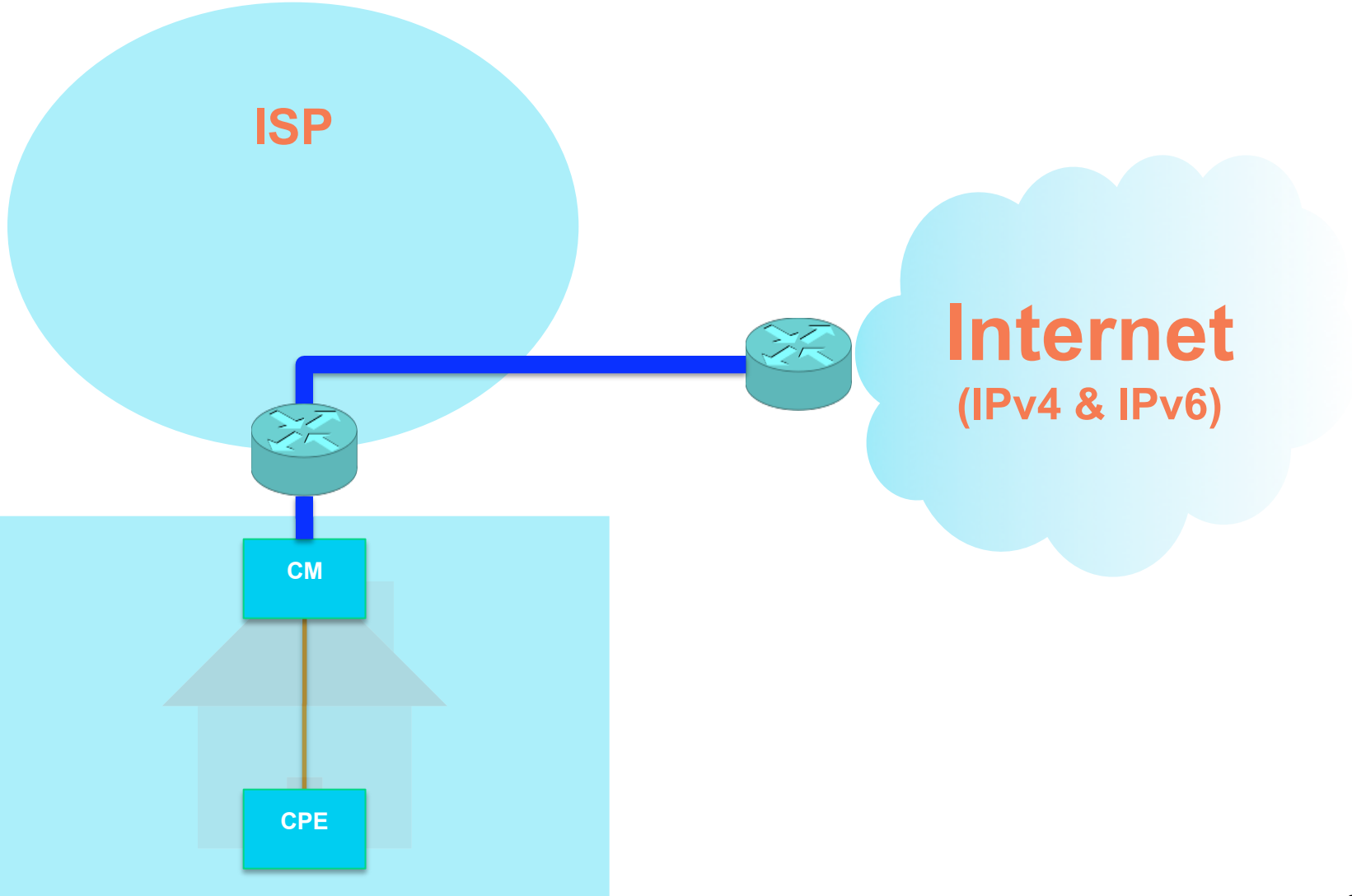
Goals and Objectives

- Ensure that underlying infrastructure can support content and service parity over IPv4 and IPv6
 - Native IPv6 is *preferred* versus the use of tunnels and other techniques
- Understand and identify issues, challenges, and gaps associated with offering content and services over IPv6
- To broaden the adoption of IPv6 among consumers and those who provide content and services.
 - Availability of IPv6 should be transparent to subscribers

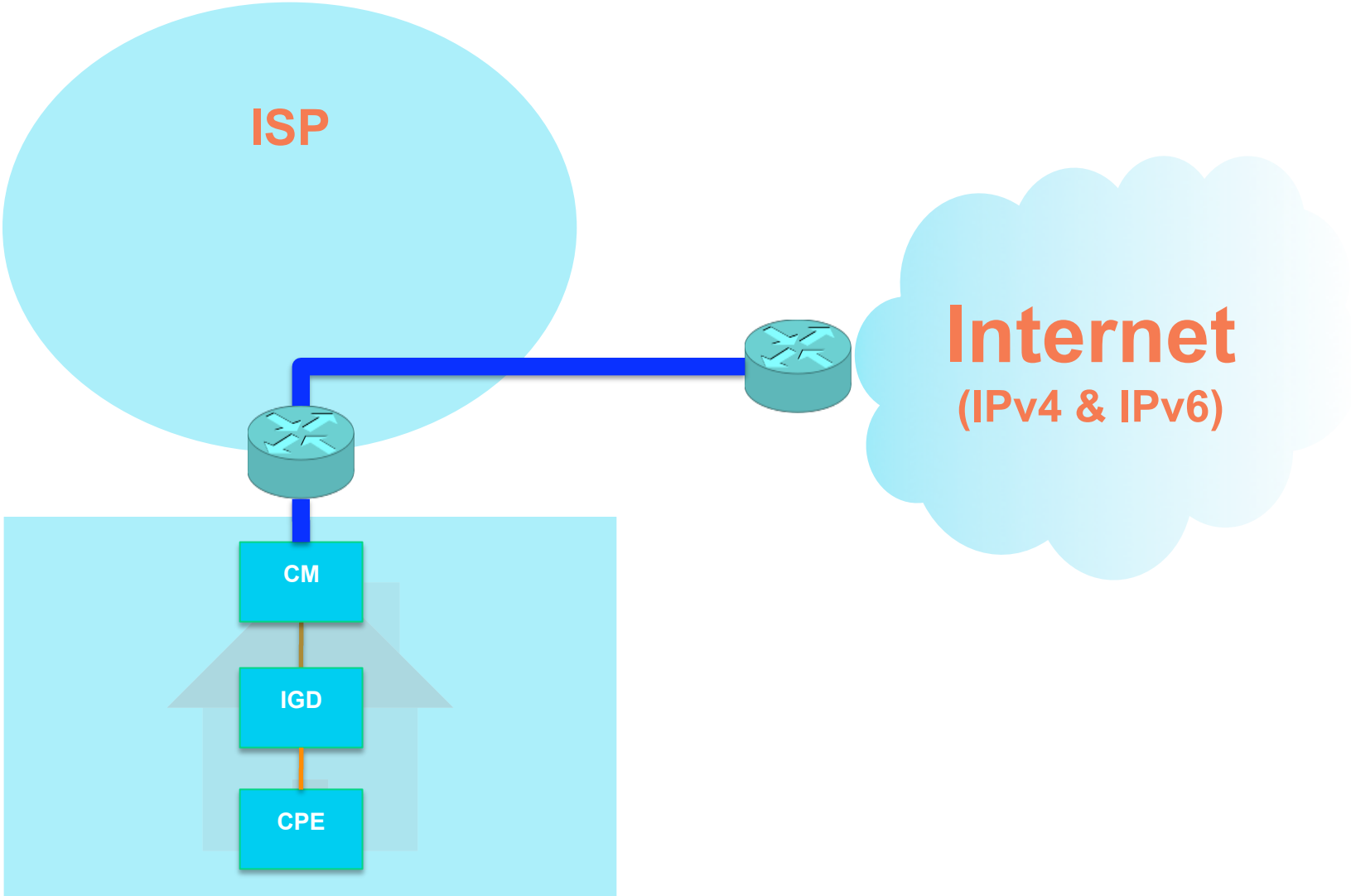
Approach

- Two approaches to consider
 - Subscriber CPE that supports IPv6 (computer in this case) connected directly to a cable modem
 - Subscriber IGD that supports IPv6 connected to a cable modem
- In both cases there are pre-requisites that must be met to support IPv6 in a deployable manner

Subscriber IPv6 CPE



Subscriber IPv6 IGD



Pre-requisite Highlights for CPE

- For subscriber CPE directly connected to cable modem
 - Support for dual stack CPE by underlying network which includes provisioning
 - IPv6 stack and stateful DHCPv6
 - Applications that support the use of IPv6 transport

Pre-requisite Highlights for IGD

- For subscriber IGD connected to cable modem
 - Support for dual stack CPE by underlying network which includes provisioning
 - IPv6 stack and stateful DHCPv6 (WAN) including prefix delegation
 - Configuration and addressing on subscriber LAN
 - IPv6 routing (and firewall)
 - Subscriber CPE must also support IPv6 including applications

Challenges

- Not all subscriber CPEs support the necessary IPv6 pre-requisites for use in some broadband deployments
- Availability and widespread deployment of IPv6 capable IGDs are lacking
- Challenges associated with routing for delegated IPv6 prefixes should be uniformly addressed

Content and Services

- Availability of content and services over IPv6 must also grow
 - If not, lack of consumption may cause delayed maturation of underlying infrastructure
- Start with core content and services
 - Portals and e-mail
- Additional enhancements to infrastructure will be required

Next steps

- Encourage third party content
- Interact and collaborate with third parties to exercise IPv6
- Define simple, yet functional IPv6 deployment requirements
- Document and share IPv6 experiences based on trials and deployment activities

Q&A

- Contact information

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