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Building Networks for People

# IPv6 Home Network, what's Next After W6L?

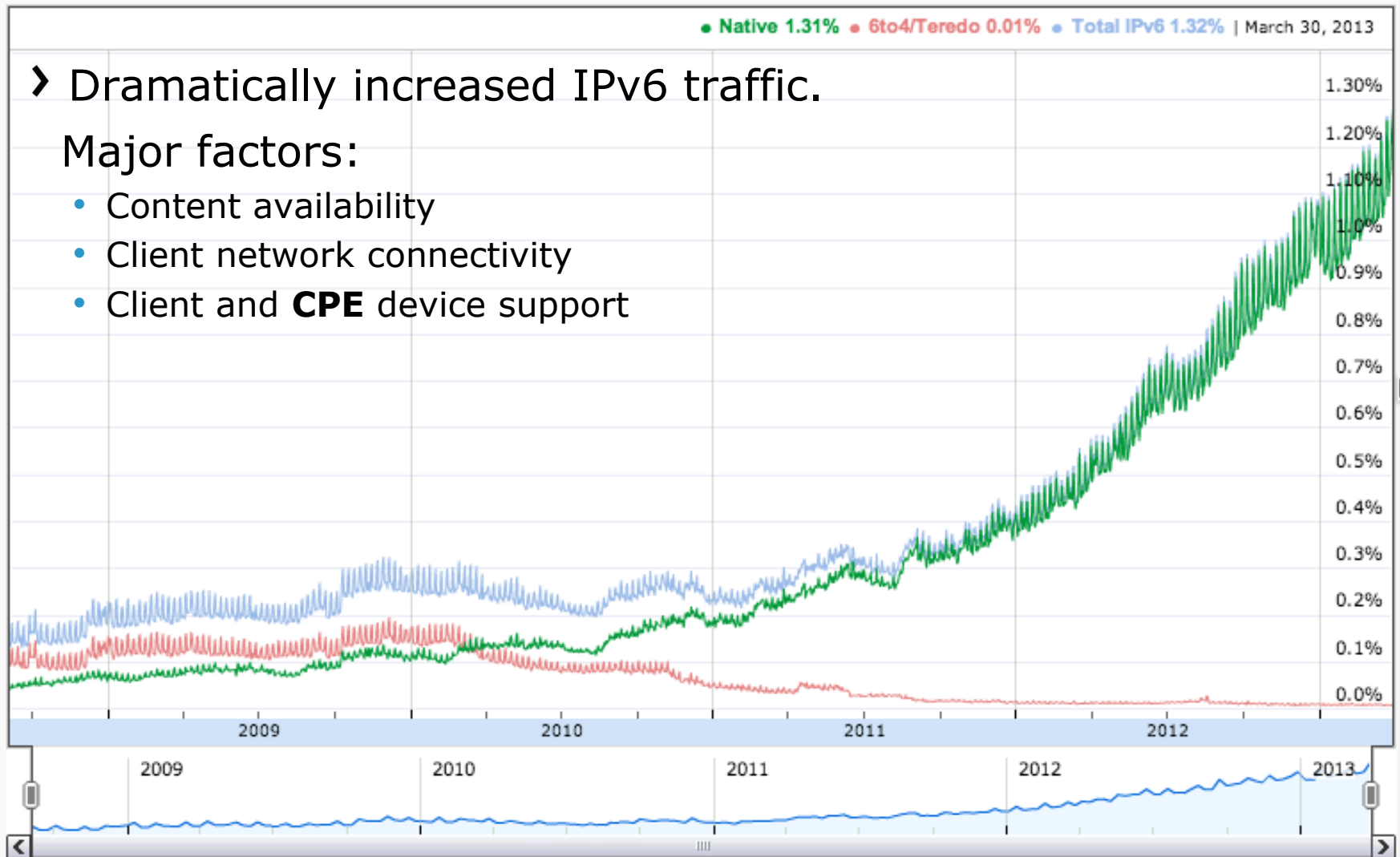**Hans, M.H. Liu**

**North American IPv6 Summit 2013**

**2013.4.19**

# Global IPv6 traffic over 1%

Native 1.31%   6to4/Teredo 0.01%   Total IPv6 1.32%  | March 30, 2013

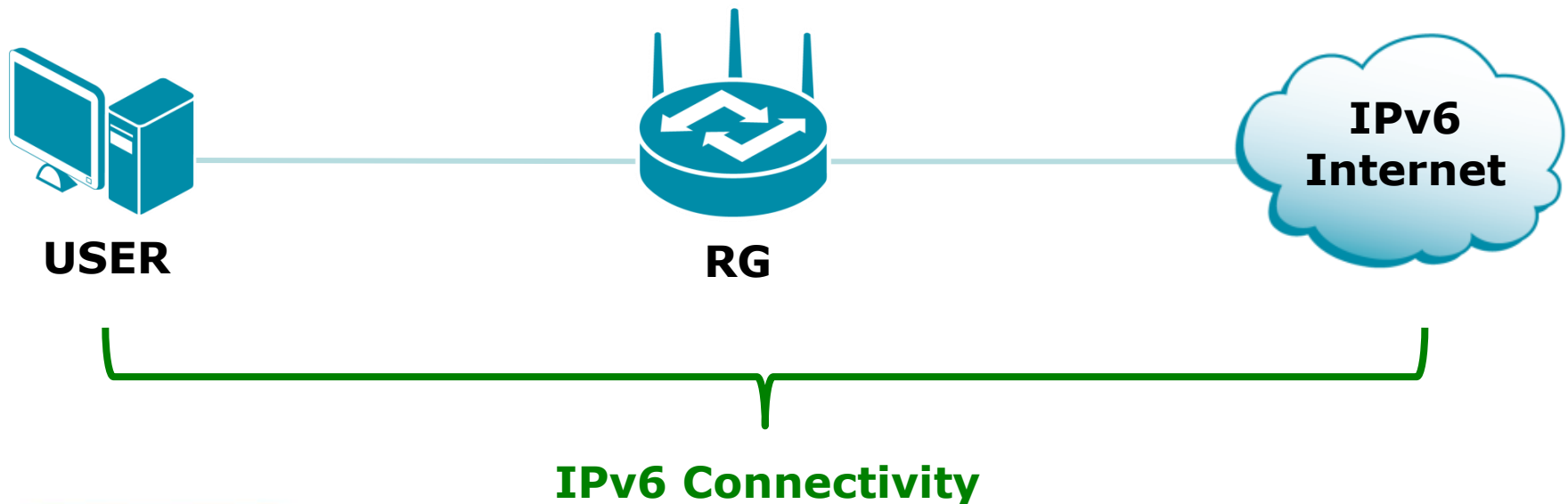› Dramatically increased IPv6 traffic.

Major factors:
- Content availability
- Client network connectivity
- Client and **CPE** device support

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# Basic Requirements (6204bis)

› IPv6 Connectivity (6rd, Native Dual Stack, DS-Lite)

› IPv6 Firewall and Simple Security (RFC 6092)

› IPv6 Static Route

› ULA

**USER**

**RG**

**IPv6 Internet**

**IPv6 Connectivity**

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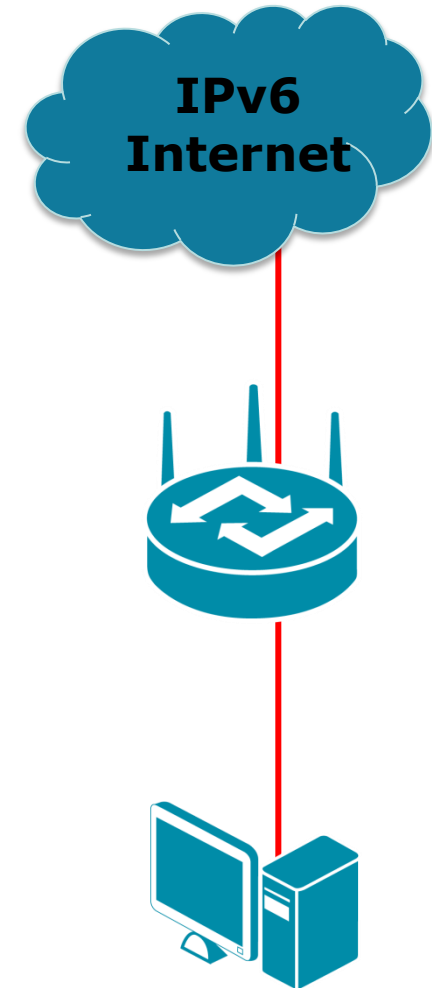
# IPv6 Connectivity

> ## Tunneling
- IPv6 in IPv4 Tunneling
- 6to4 Tunneling
- 6rd Tunneling and DHCP Option for 6rd
- Teredo passthrough

> ## Native Dual Stack
- Static IPv6 and route
- DHCPv6/DHCPv6-PD
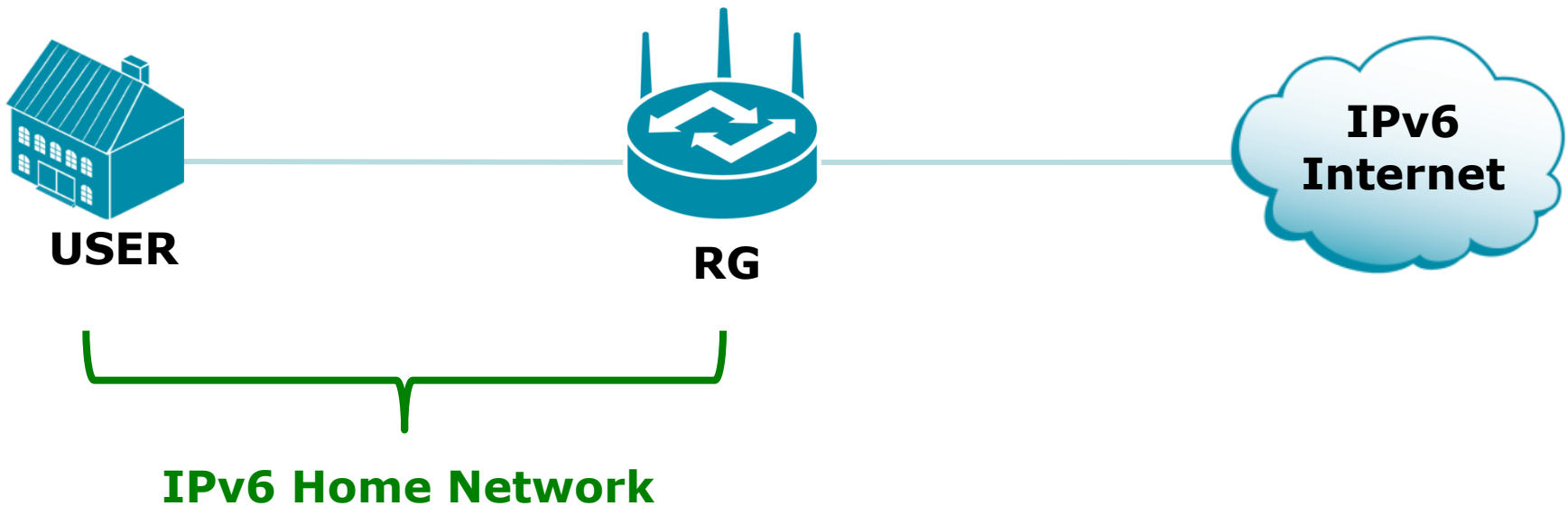- Autoconfiguration
- IPv6 over PPP

> ## DS-Lite (Dual-Stack Lite)
- B4 and DHCPv6 Option for DS-Lite

**IPv6 Internet**

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# IPv6 at Home

› Good use of the prefixes
› Device management
› IPv6 digital home

**USER**

**RG**

**IPv6 Internet**

**IPv6 Home Network**

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# Good use of the prefixes

› Separate guest network and host network
- A standalone /64 prefix for Wi-Fi Guest SSID

› Prefix delegation in LAN
- Automatically delegate unused prefixes in LAN
- Delegate prefixes manually in LAN

**ROUTE LIST**

| Name | | Destination IP/Prefix Length | |
|------|------|------------------------------|------|
| | | | / 64 |
| Metric | Interface | Gateway | |
| 1 | NULL ▼ | | |
| | NULL | | |
| Name | LAN | Destination IP/Prefix Length | |
| | WAN | | |
| | LAN(DHCP-PD) | | / 64 |
| Metric | Interface | Gateway | |

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# Device Management

› **Web Management Interface**
- LLMNR
- mDNS

› **TR-069 and SNMPv6**
- BBF.069 Certified
- SNMPv6 Certified

› **UPnP**
- UPnP Device Architecture Annex A (IPv6 Support)

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# Web Management

> Dual Stack httpd

> LLMNR and mDNS support

# BBF.069 Certification Program

› TR-069 is a remote management standard, used to provision and manage CPE in the connected home.

› D-Link has been working closely with UNH-IOL on BBF.069 certification program.

› D-Link TR-069 implementation  fully supports IPv6.

| D-Link | Internet Gateway Device | DIR-835 | 1.01NEb23 | TR-069a1 | DHCPv4 Options, DHCPv6 Options, SSL3.0, TLS1.0 Upload, Factory Reset, ACS URL change on DUT by 3rd party me CancelTransfer, ScheduleInforn GetAllQueuedTransfer, EnableCWMP set to False | Oct 15, 2012 |

BROADBAND FORUM CERTIFIED

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# IPv6 Digital Home

› UPnP AV
- DLNA Digital Media Server (DMS)*

› Gradually enable IPv6 for all products
- IPCam
- NAS
- Smart Plug
- Wi-Fi Range Extender

› Software Utilities and Applications

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# UPnP AV upon IPv6

> Enjoy media streaming through IPv6 network!

# IPv6 Digital Home

> **IPCam**
> - Business IPCam supports IPv6 today
> - New consumer IPCam will support IPv6

**IPCam**

> **NAS**
> - NAS will support IPv6 gradually
> - DNS-345, IPv6 Ready Logo Certified

**NAS**

> **Smart Plug**
> - IPv6 Management Interface

**Range Extender**

> **Wi-Fi Range Extender**
> - IPv6 Management Interface

**Smart Plug**

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# DNS- Series NAS

› IPv6 Ready Logo Certified

› IPv6 enabled Applications
- Web user interface
- FTP/HTTP Downloads
- Remote Backups
- Local Backups
- MyFiles
- MyPhotos
- MyMusic
- FTP Server

**DNS-345**

https://www.ipv6ready.org/db/index.php/public/logo/02-C-000809/

# IPv6 is a MUST!

Internet Engineering Task Force (IETF)                                    W. George
Request for Comments: 6540                                     Time Warner Cable
BCP: 177                                                              C. Donley
Category: Best Current Practice                                       CableLabs
ISSN: 2070-1721                                                  C. Liljenstolpe
                                                            Big Switch Networks
                                                                    L. Howard
                                                             Time Warner Cable
                                                                   April 2012


### IPv6 Support Required for All IP-Capable Nodes

Abstract

   Given the global lack of available IPv4 space, and limitations in
   IPv4 extension and transition technologies, this document advises
   that IPv6 support is no longer considered optional.  It also cautions
   that there are places in existing IETF documents where the term "IP"
   is used in a way that could be misunderstood by implementers as the
   term "IP" becomes a generic that can mean IPv4 + IPv6, IPv6-only, or
   IPv4-only, depending on context and application.

Status of This Memo

# Contacts

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