

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

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North American IPv6 Summit 2013

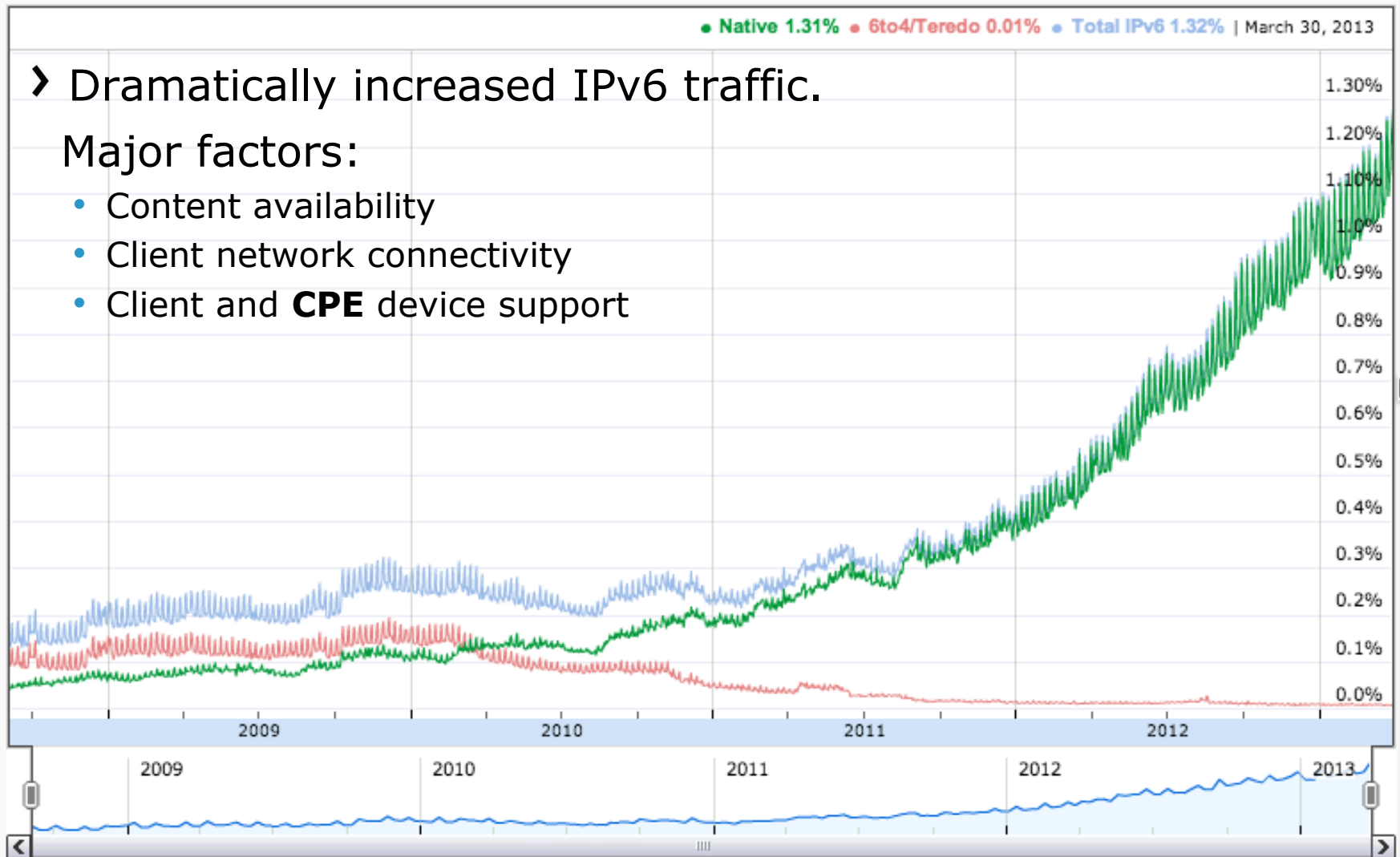
2013.4.19

# Global IPv6 traffic over 1%

› Dramatically increased IPv6 traffic.

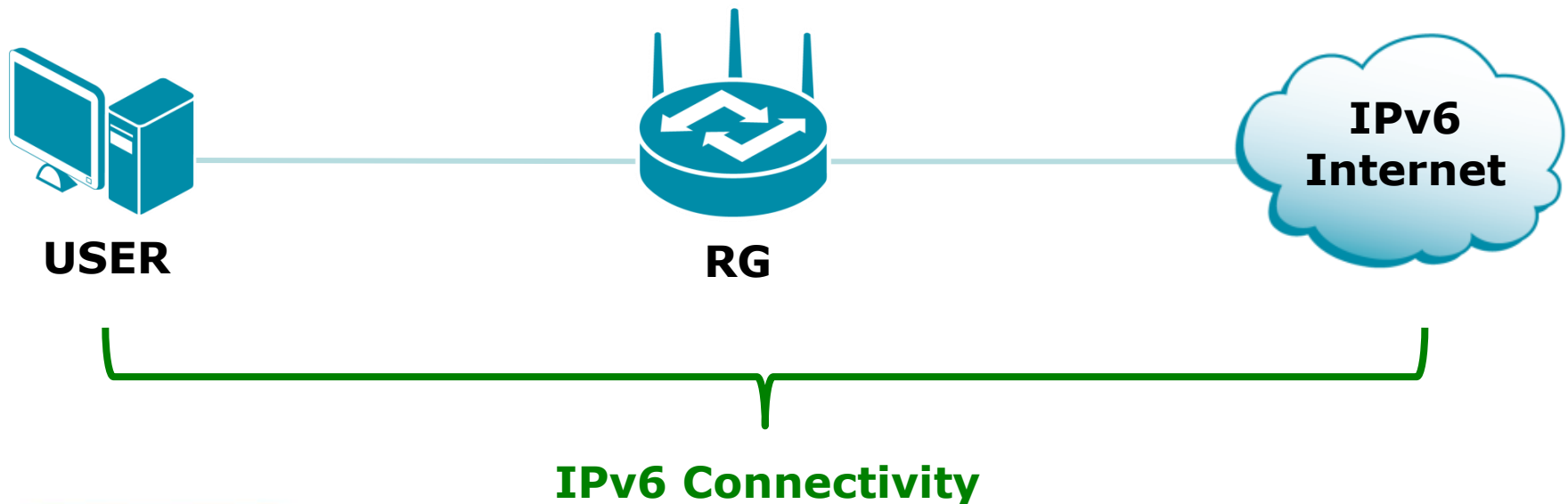
Major factors:

- Content availability
- Client network connectivity
- Client and **CPE** device support



# Basic Requirements (6204bis)

- › IPv6 Connectivity (6rd, Native Dual Stack, DS-Lite)
- › IPv6 Firewall and Simple Security (RFC 6092)
- › IPv6 Static Route
- › ULA



# IPv6 Connectivity

## › Tunneling

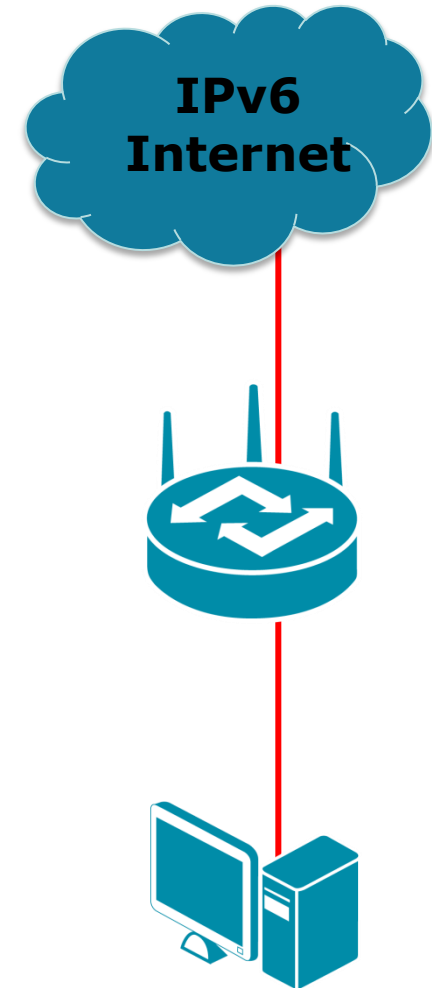
- IPv6 in IPv4 Tunneling
- 6to4 Tunneling
- 6rd Tunneling and DHCP Option for 6rd
- Teredo passthrough

## › Native Dual Stack

- Static IPv6 and route
- DHCPv6/DHCPv6-PD
- Autoconfiguration
- IPv6 over PPP

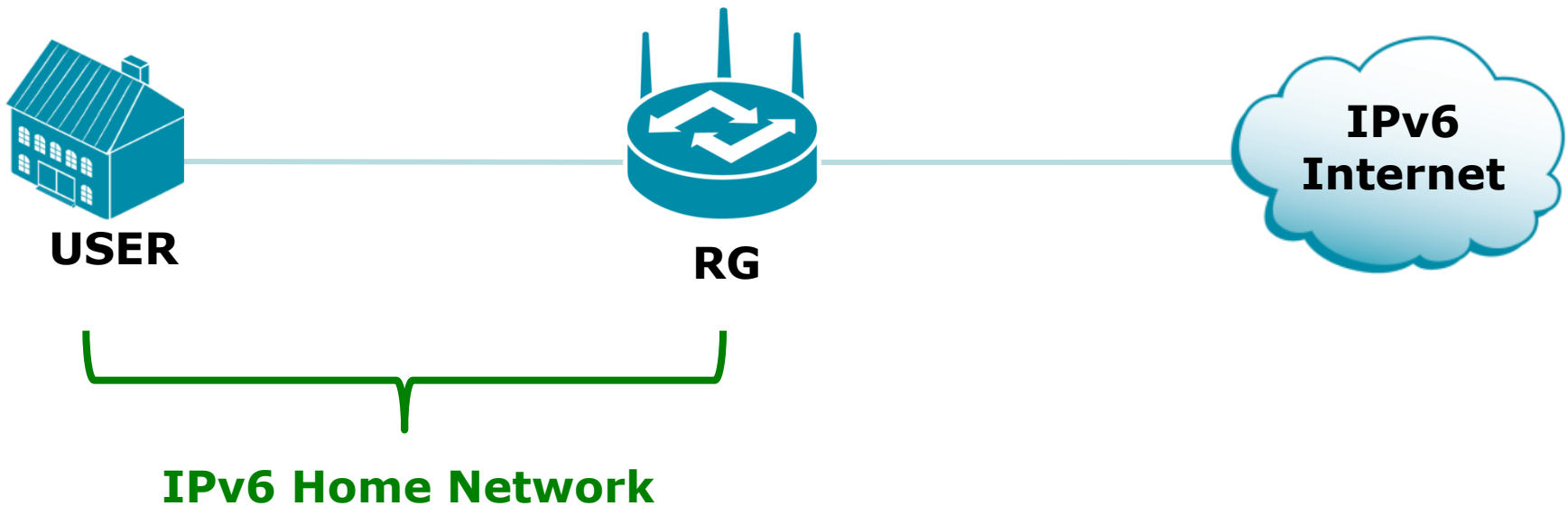
## › DS-Lite (Dual-Stack Lite)

- B4 and DHCPv6 Option for DS-Lite



# IPv6 at Home

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



# 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			
<input type="checkbox"/>	Name	Destination IP/Prefix Length	
	<input type="text"/>	<input type="text"/> / 64	
	Metric	Interface	Gateway
	<input type="text" value="1"/>	NULL	<input type="text"/>
	Name	Destination IP/Prefix Length	
<input type="checkbox"/>	<input type="text"/>	<input type="text"/> / 64	
	Metric	Interface	Gateway
		NULL	
		LAN	
		WAN	
		LAN(DHCP-PD)	

# Device Management

## › Web Management Interface

- LLNMR
- mDNS

## › TR-069 and SNMPv6

- BBF.069 Certified
- SNMPv6 Certified

## › UPnP

- UPnP Device Architecture Annex A (IPv6 Support)

# Web Management

- Dual Stack httpd
- LLNMR and mDNS support

The screenshot shows a web browser window with the address bar set to `dlinkrouter.local`. The page title is "D-LINK CORPORATION, INC | WIRELESS ROUTER | LOGIN". The main content area features a "LOGIN" section with the text "Log in to the router". A "Bonjour Browser" window is overlaid on the page, displaying a list of network services under the "local - 4" category. The services listed are:

- local - 4
  - ▶ `_dhnapp._tcp.` - 1
  - ▶ `Apple File Sharing (_afpovertcp._tcp.)`
  - ▼ `HTTP (_http._tcp.)` - 2
    - ▼ `D-Link DIR-855L Configuration`
      - 192.168.0.1:80
      - [fe80::cabe:19ff:fe76:15d0]:80
    - ▼ `D-Link SharePort Web Access`
      - 192.168.0.1:8181
      - [fe80::cabe:19ff:fe76:15d0]:81
  - ▶ `iTunes Music Sharing (_daap._tcp.)`

The "Bonjour Browser" window also shows a "DIR-835 - 內容" (Content) window with the following information:

網路裝置	
	DIR-835
裝置詳細資料	
製造廠商:	D-Link <a href="http://www.dlink.com">http://www.dlink.com</a>
型號:	D-Link Router <a href="http://support.dlink.com">http://support.dlink.com</a>
型號號碼:	DIR-835
裝置網頁:	<a href="http://fe80::86c9:b2ff:fe6a:ed99">http://fe80::86c9:b2ff:fe6a:ed99</a>
疑難排解資訊	
序號:	104
MAC 位址:	84:c9:b2:6a:ed:99
唯一識別碼:	uuid:5b74b6be-1dd2-11b2-bcd4-84c9b26aed99
IP 位址:	<a href="http://fe80::86c9:b2ff:fe6a:ed99%29">fe80::86c9:b2ff:fe6a:ed99%29</a>



# 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, ScheduleInform GetAllQueuedTransfer, EnableCWMP set to False	Oct 15, 2012
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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

# UPnP AV upon IPv6

➤ Enjoy media streaming through IPv6 network!

The image shows a Windows Media Player window displaying a music library and a 'DIR-835 Properties' dialog box. The dialog box is open to the 'Network Device' tab, showing details for the DIR-835 router.

**Windows Media Player Library:**

Artist	Album	#	Track Title	Length	Rating
Bob Aciri	Bob Aciri Jazz 2004	3	Sleep Away	3:20	☆☆☆☆
Bruno Mars	Doo-Wops & Hooli... Rhythm & Blues 2010	2	Just the Way You Are	3:40	☆☆☆☆
Damien Rice	Cannonball, Pt.2 Folk 2003	6	Amie	4:37	☆☆☆☆
Eagles	Long Road Out of E...	10	Do Something	5:12	☆☆☆☆

**DIR-835 Properties - Network Device Tab:**

**Device Details:**

- Manufacturer: D-Link Corporation (<http://www.dlink.com/>)
- Model: Windows Media Connect compatible (D-Link Router) (<http://www.dlink.com/>)
- Model number: 835
- Device webpage: <http://fe80::baa3:86ff:fe56:e406/>

**Troubleshooting Information:**

- Serial number: 104
- MAC address: b8:a3:86:56:e4:06
- Unique identifier: uuid:4d696e69-444c-164e-9d41-00000000c858
- IP address: fe80::baa3:86ff:fe56:e406%12

UPnP<sup>SM</sup>  
FORUM

# 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**

# 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



# IPv6 is a MUST!

Internet Engineering Task Force (IETF)  
Request for Comments: 6540  
CP: 177  
Category: Best Current Practice  
SSN: 2070-1721

W. George  
Time Warner Cable  
C. Donley  
CableLabs  
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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