

IPv6-only?  
You're kidding, right?

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Warner  
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BETTER



# Test Environment/OS Notes

- Cable Modem filtering IPv4, directly connected to the host under test
- Host receives IPv6 prefix and IPv6 DNS via DHCPv6
- Windows (7/8) – Works
- Mac OS (10.7+) – Works
- Ubuntu (13.04) – Works

Not tested – Wi-Fi connected devices behind a GW is next phase of testing

- Android – no DHCPv6 support
  - <https://code.google.com/p/android/issues/detail?id=32621>
    - filed in 2012, Medium priority enhancement, **no owner**
- iOS – sorta works
  - Some testing details available from Andrew Yourtchenko's RIPE66 talk
    - here: <https://ripe66.ripe.net/archives/video/1196/>

# What happens when all you have is IPv6?

```
C:\Windows\system32\cmd.exe
Microsoft Windows [Version 6.1.7601]
Copyright (c) 2009 Microsoft Corporation. All rights reserved.

C:\Users\E158182>ipconfig

Windows IP Configuration

Ethernet adapter Bluetooth Network Connection:

    Media State . . . . . : Media disconnected
    Connection-specific DNS Suffix . :

Ethernet adapter Local Area Connection:

    Connection-specific DNS Suffix . : corp.twcable.com
    IPv6 Address. . . . . : 2001:1998:601:2003:6820:a8ab:83e1:45ce
    Link-local IPv6 Address . . . . : fe80::cc65:197d:6171:277e%11
    Autoconfiguration IPv4 Address. . : 169.254.39.126
    Subnet Mask . . . . . : 255.255.0.0
    Default Gateway . . . . . : fe80::212:d9ff:fe54:11e3%11

Wireless LAN adapter Wireless Network Connection:

    Media State . . . . . : Media disconnected
```

Let's turn off IPv4 and find out...

# It just works!



RIPE Network Coordination Centre


RIPE Network Coordination Cen... +

https://www.ripe.net

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 **RIPE**  
NCC RIPE NETWORK COORDINATION CENTRE


Search Site  Search

## Welcome to the RIPE Network Coordination Centre

The RIPE NCC is one of five Regional Internet Registries (RIRs) providing IP address allocations, registration services and coordination activities that support the operation of the Internet globally. [Read more...](#)


Your IP address is:  65.114.129.62

### Internet Coordination




Internet Governance · Infrastructure and Industry Information · IPv6 · IPv4 Exhaustion

### Data & Tools



RIPE Database · RIPE Atlas · Abuse Information · Get IPv4, IPv6 and ASNs · Training · Certification · Talk to Us · Become a Member

### RIPE Community



**RIPE 67**  
ATHENS / GREECE

Get Involved · Policy Development · RIPE Documents · Working Groups · Meetings

### News & Announcements

Expansion of Eligible Address Space for

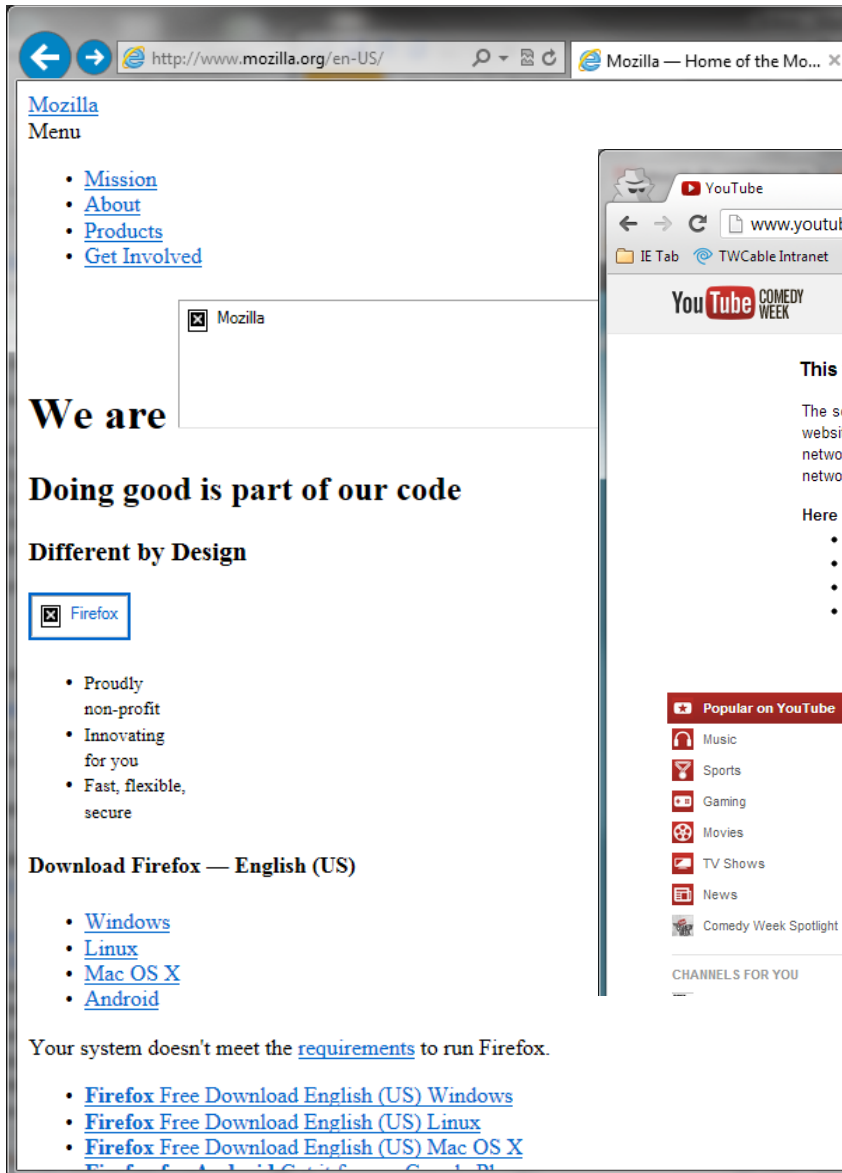
### Meetings

ENOG 6, Kiev, 1 - 2 October 2013

### RIPE Database

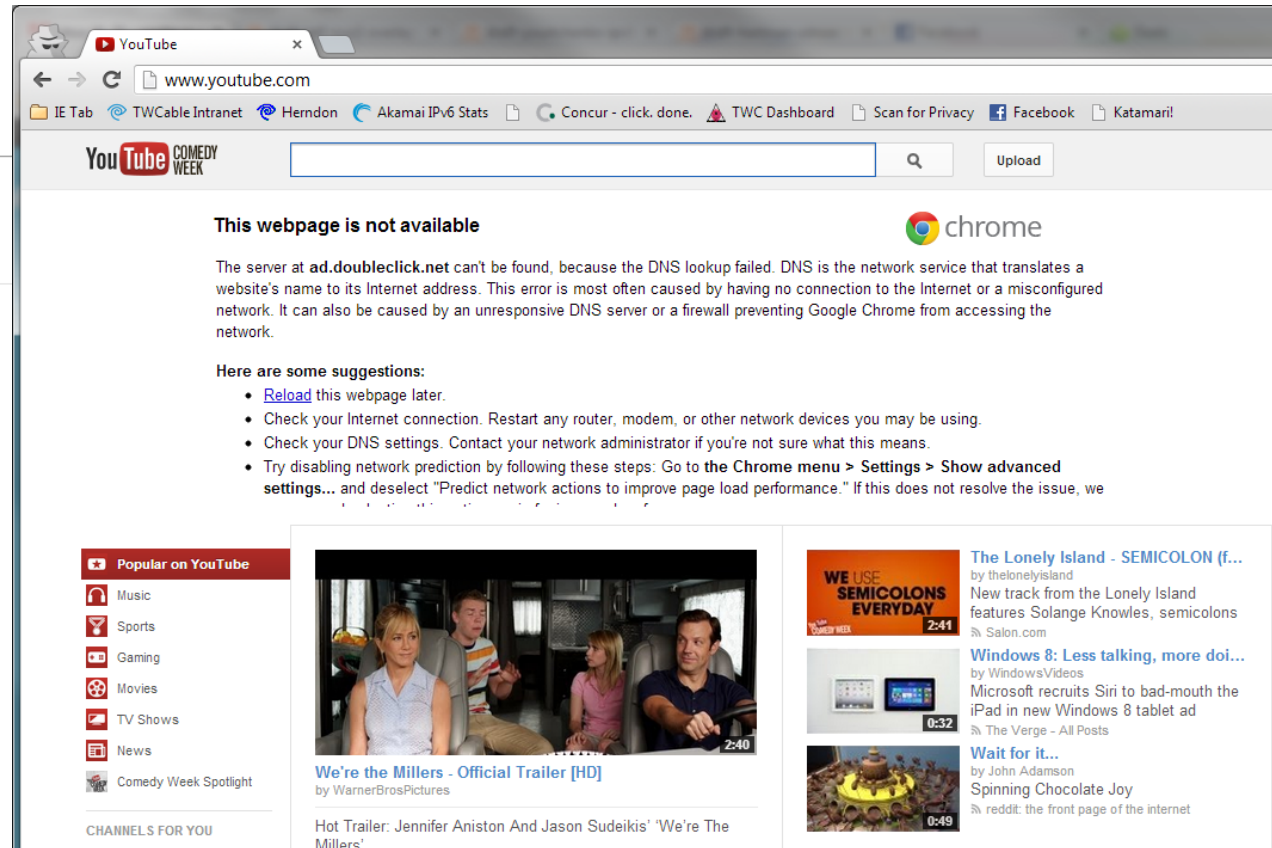
Search

# ... for some values of “work”



The screenshot shows the Mozilla website with the following content:

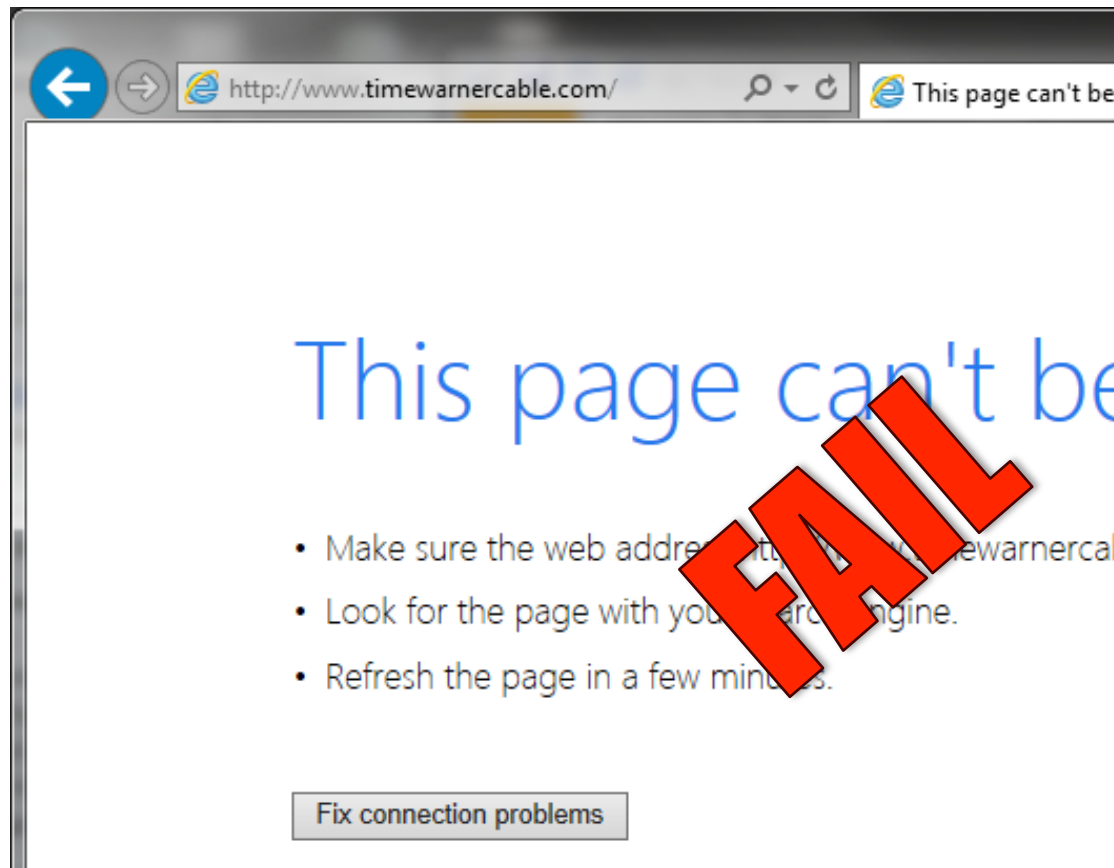
- Navigation bar: Mozilla — Home of the Mo... x
- Menu
  - Mission
  - About
  - Products
  - Get Involved
- Search bar: Mozilla
- Text: We are Doing good is part of our code Different by Design
- Firefox logo
- Text: Proudly non-profit, Innovating for you, Fast, flexible, secure
- Section: Download Firefox — English (US)
  - Windows
  - Linux
  - Mac OS X
  - Android
- Text: Your system doesn't meet the requirements to run Firefox.
- Links:
  - Firefox Free Download English (US) Windows
  - Firefox Free Download English (US) Linux
  - Firefox Free Download English (US) Mac OS X
  - Firefox Free Download English (US) Android



The screenshot shows a Chrome browser window with the following content:

- Address bar: www.youtube.com
- Search bar: YouTube
- Text: This webpage is not available
- Text: The server at ad.doubleclick.net can't be found, because the DNS lookup failed. DNS is the network service that translates a website's name to its Internet address. This error is most often caused by having no connection to the Internet or a misconfigured network. It can also be caused by an unresponsive DNS server or a firewall preventing Google Chrome from accessing the network.
- Text: Here are some suggestions:
  - Reload this webpage later.
  - Check your Internet connection. Restart any router, modem, or other network devices you may be using.
  - Check your DNS settings. Contact your network administrator if you're not sure what this means.
  - Try disabling network prediction by following these steps: Go to the Chrome menu > Settings > Show advanced settings... and deselect "Predict network actions to improve page load performance." If this does not resolve the issue, we
- Popular on YouTube
  - Music
  - Sports
  - Gaming
  - Movies
  - TV Shows
  - News
  - Comedy Week Spotlight
- Channels for You
  - We're the Millers - Official Trailer [HD] by WarnerBrosPictures
  - Hot Trailer: Jennifer Aniston And Jason Sudeikis' 'We're The Millers'
- Video thumbnails:
  - The Lonely Island - SEMICOLON (f... by thelonelyisland
  - Windows 8: Less talking, more doi... by WindowsVideos
  - Wait for it... by John Adamson

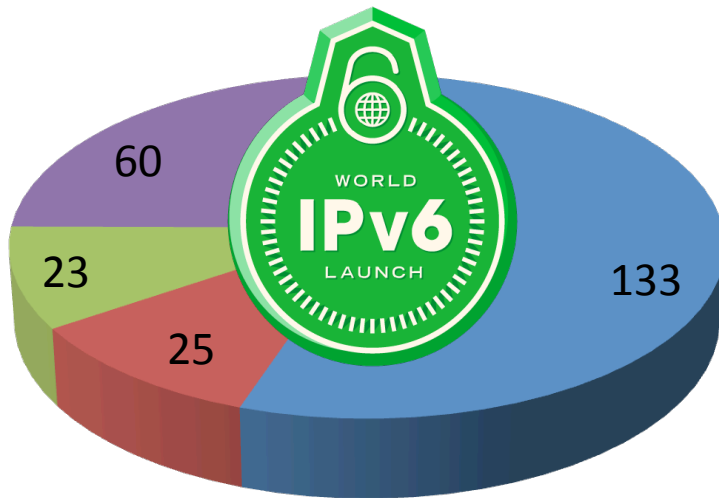
Except... when it doesn't



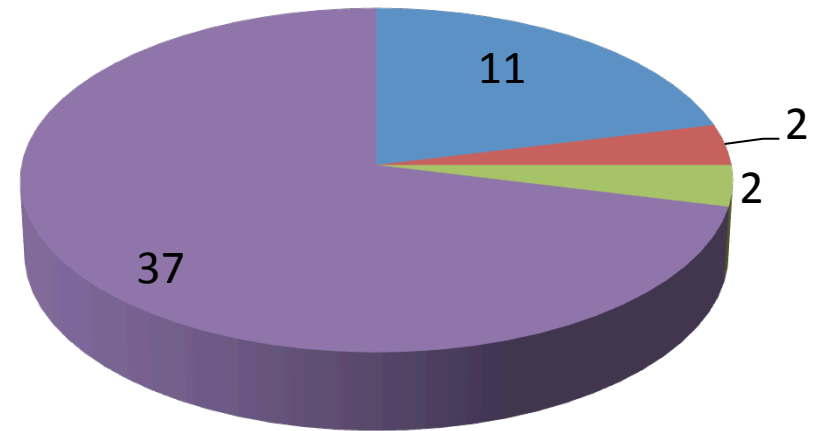
# Test results – Do webpages work over IPv6-only?



## World IPv6 Launch Participants (random sample, mainly US/CA)



## Other sites



■ Yes ■ Mostly ■ Sorta ■ No

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# So what?



- Those with IPv6 websites and apps need to start testing them with IPv4 disabled
  - Dual-stack (especially with Happy Eyeballs) masks problems with your IPv6 connectivity
- Monitor your IPv6 site just like you monitor your IPv4 site
  - Can't fix what you don't know is broken
  - An IPv6 outage should have the same urgency and impact as an IPv4 outage
  - Again, single-stack IPv6 is better at exposing problems
- Those without IPv6 enabled on their websites...

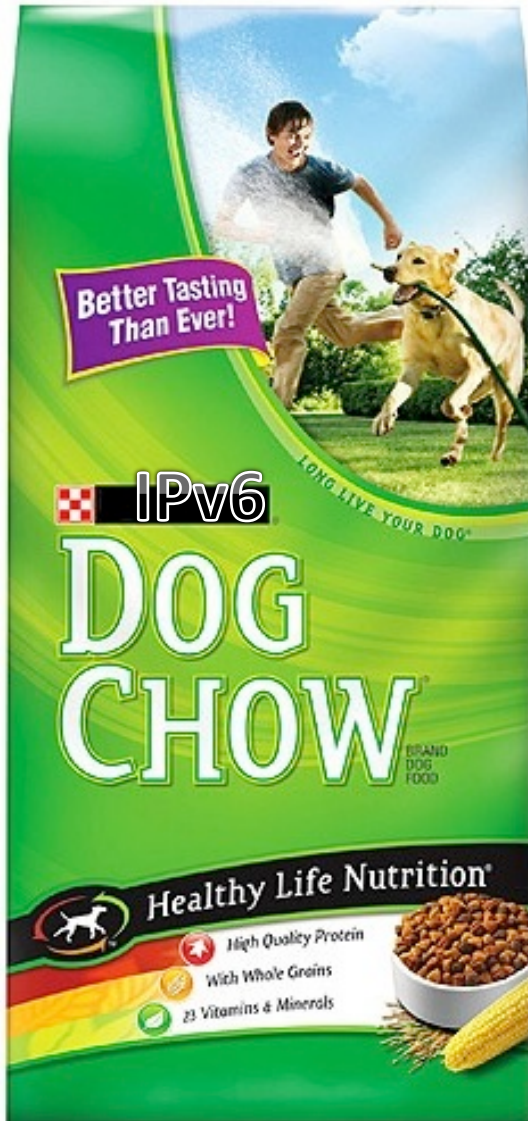
# How committed is your company to IPv6?



“IPv6 is important...”

“We’re committed to IPv6...”

“We are your IPv6 partner...”



Time to make that commitment publicly visible:  
Turn on IPv6 on ***all*** of your external services