

Five Stages of IPv6

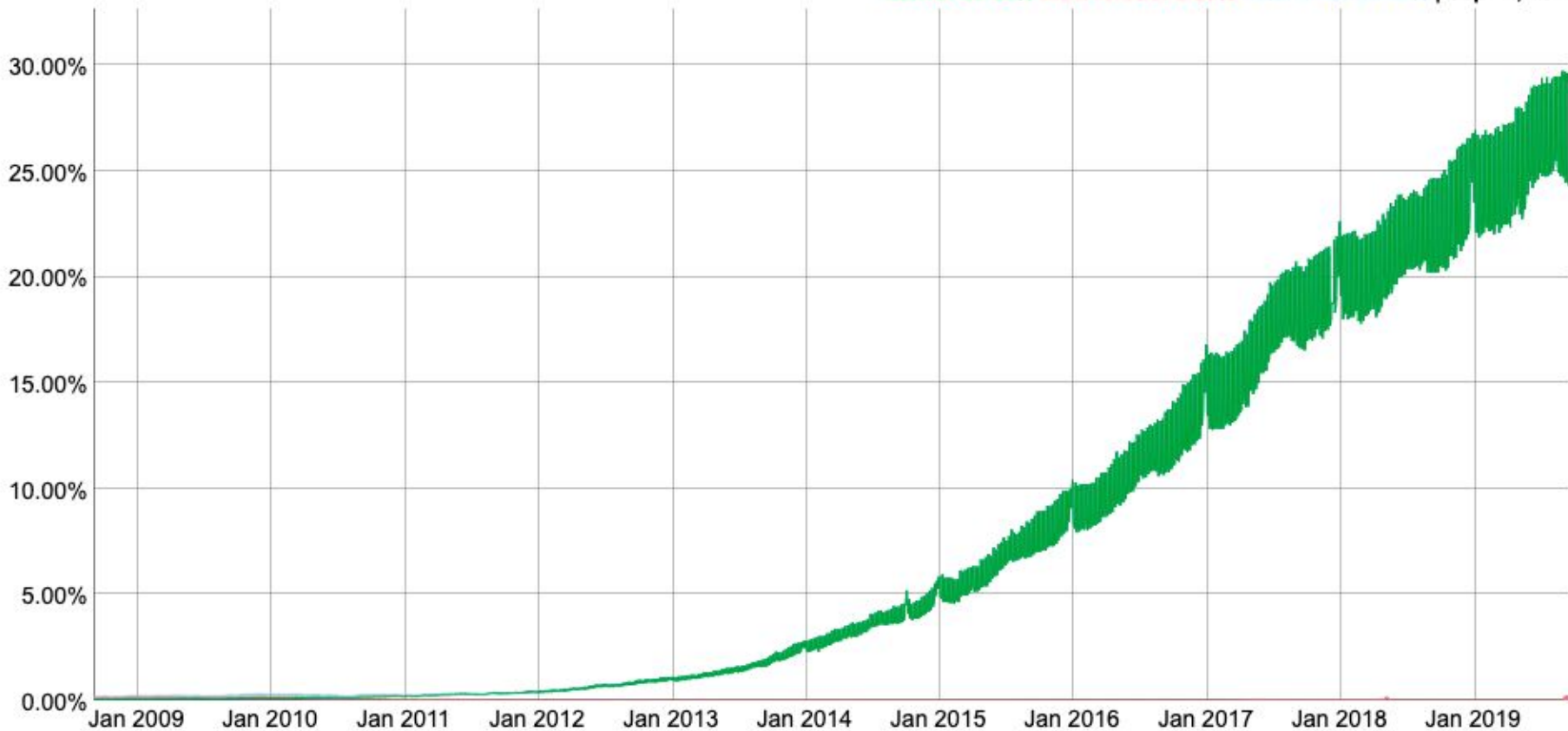
And How To Survive Them

Jen Linkova, furry13@gmail.com
RIPE NCC Regional Meeting, Kyiv, Sep 2019

IPv6 Adoption

We are continuously measuring the availability of IPv6 connectivity among Google users. The graph shows the percentage of users that access Google over IPv6.

Native: 29.42% 6to4/Teredo: 0.00% Total IPv6: 29.42% | Sep 14, 2019

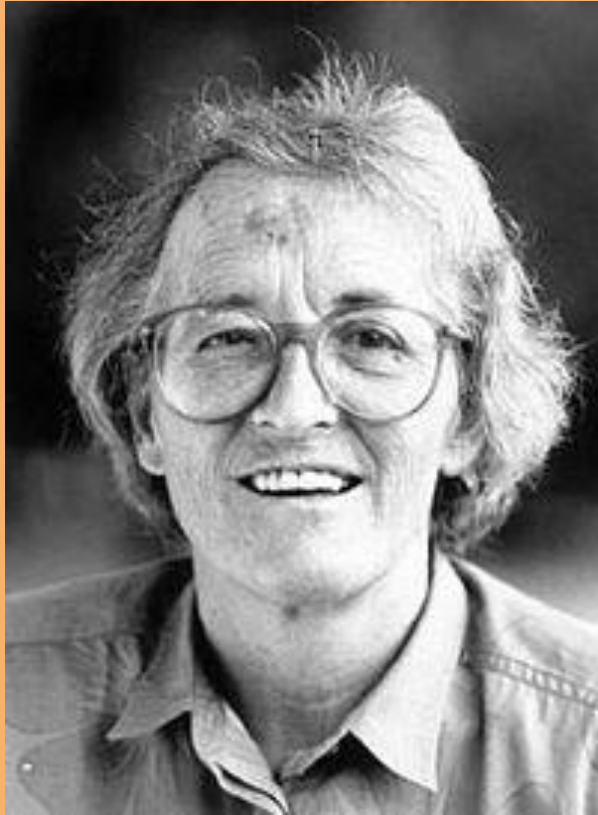


Все на свете должно происходить медленно и неправильно, чтобы не сумел загордиться человек, чтобы человек был грустен и растерян.

— Венедикт Васильевич Ерофеев. "Москва-Петушки"

"Everything should take place slowly and incorrectly so that man doesn't get a chance to start feeling proud, so that man is sad and perplexed."

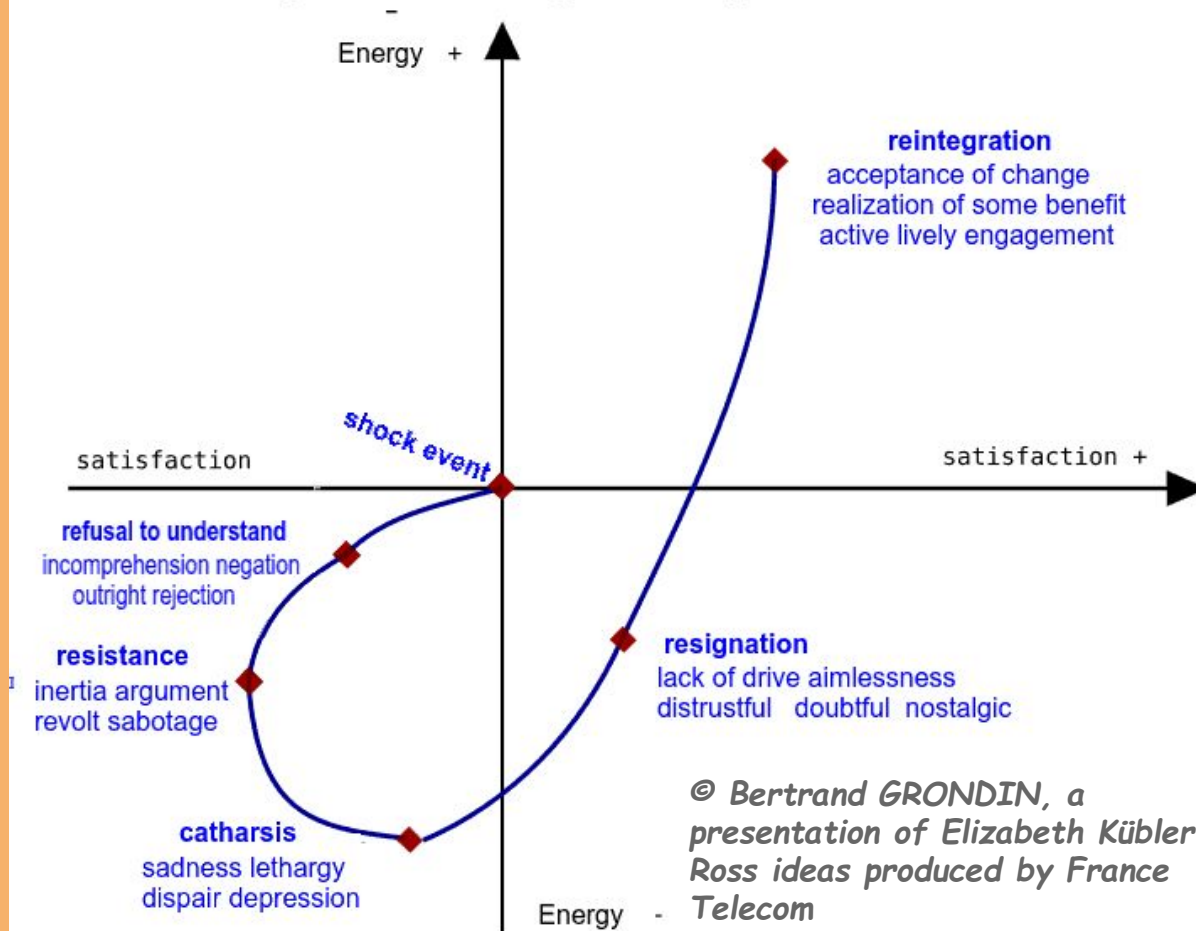
— Venedikt Erofeev, Moscow to the End of the Line



Elisabeth Kübler-Ross,
A Swiss-American
psychiatrist, known for
her "5 stages of grief"
model.

Source: www.wikipedia.org

phases of grieving



Stage 1. Denial

"The first reaction is denial. In this stage, individuals ... cling to a false, preferable reality"

Quotes

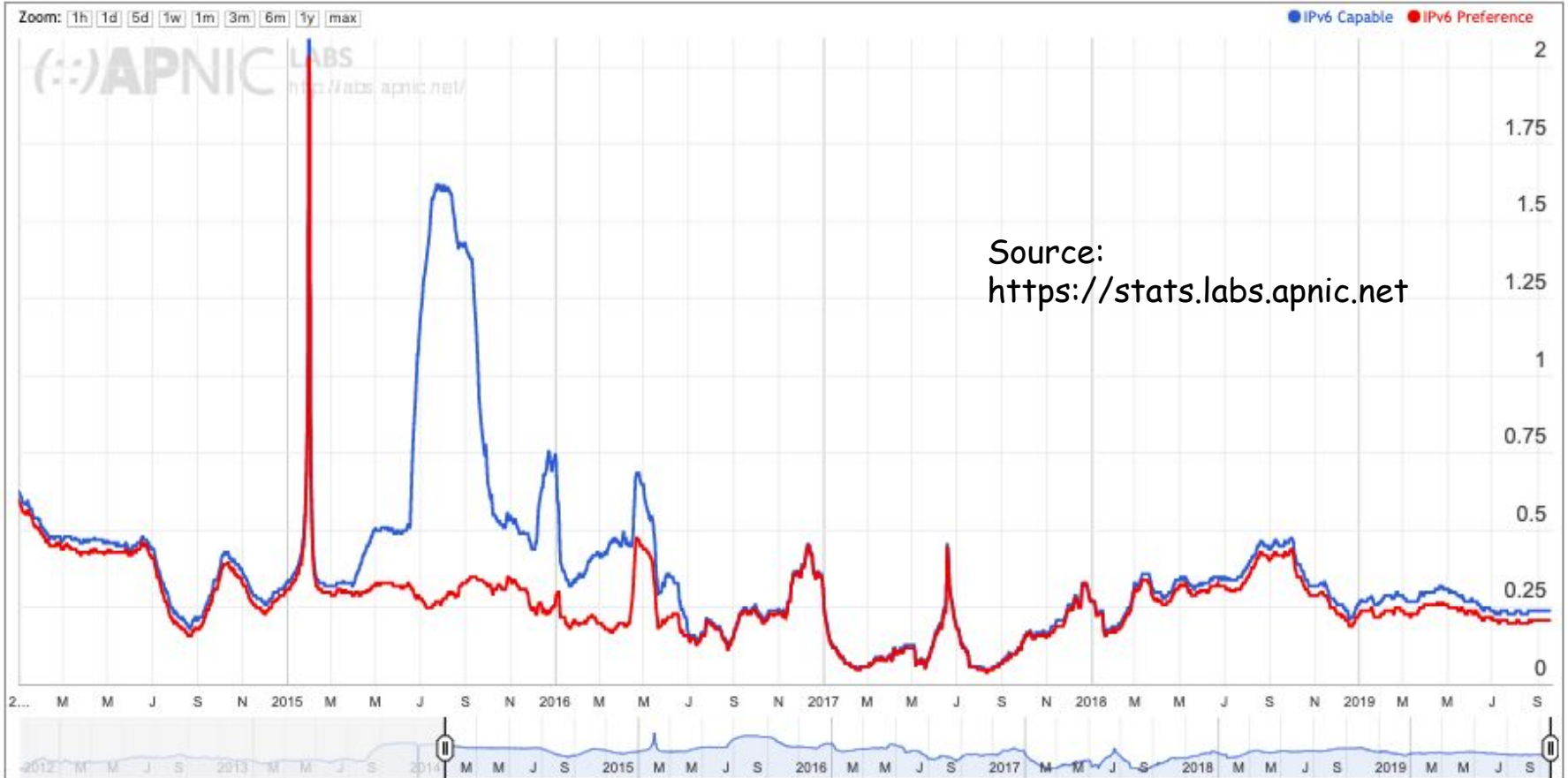
"We do not need IPv6"

"There is no reason to deploy IPv6"

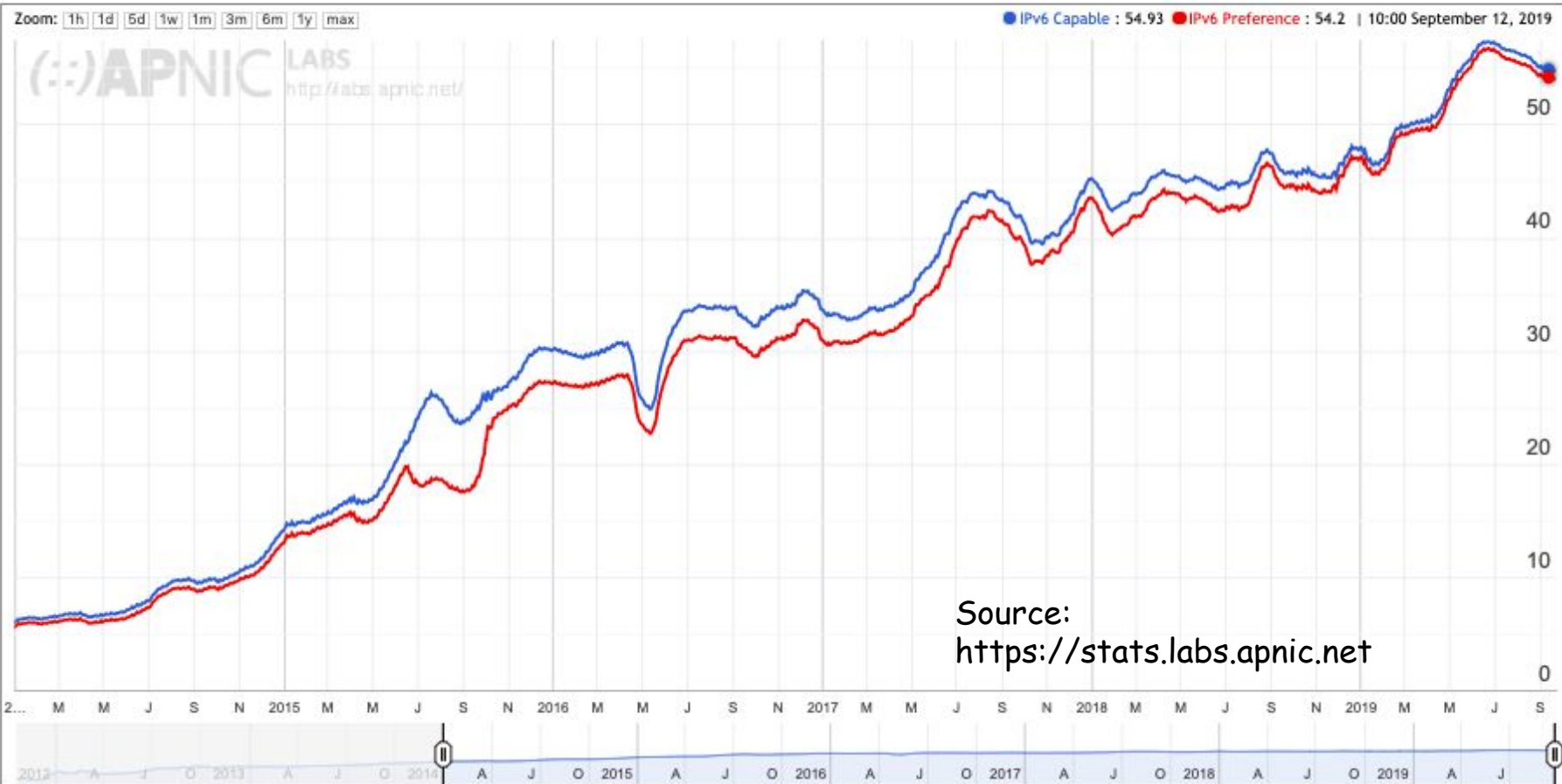
"IPv6 is not going to be deployed"

"I do not believe in that IPv6 nonsense"

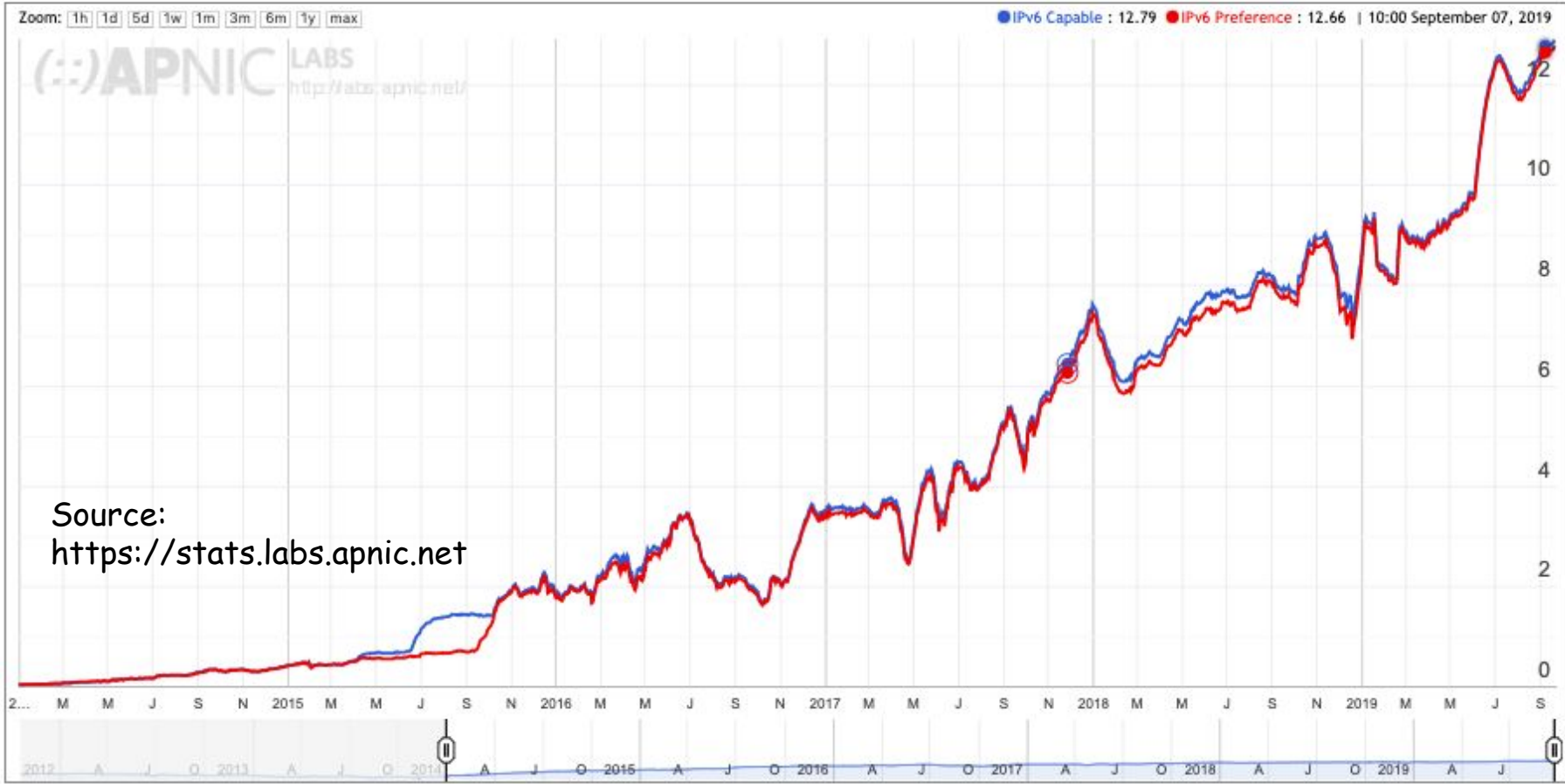
Use of IPv6 for Ukraine (UA)



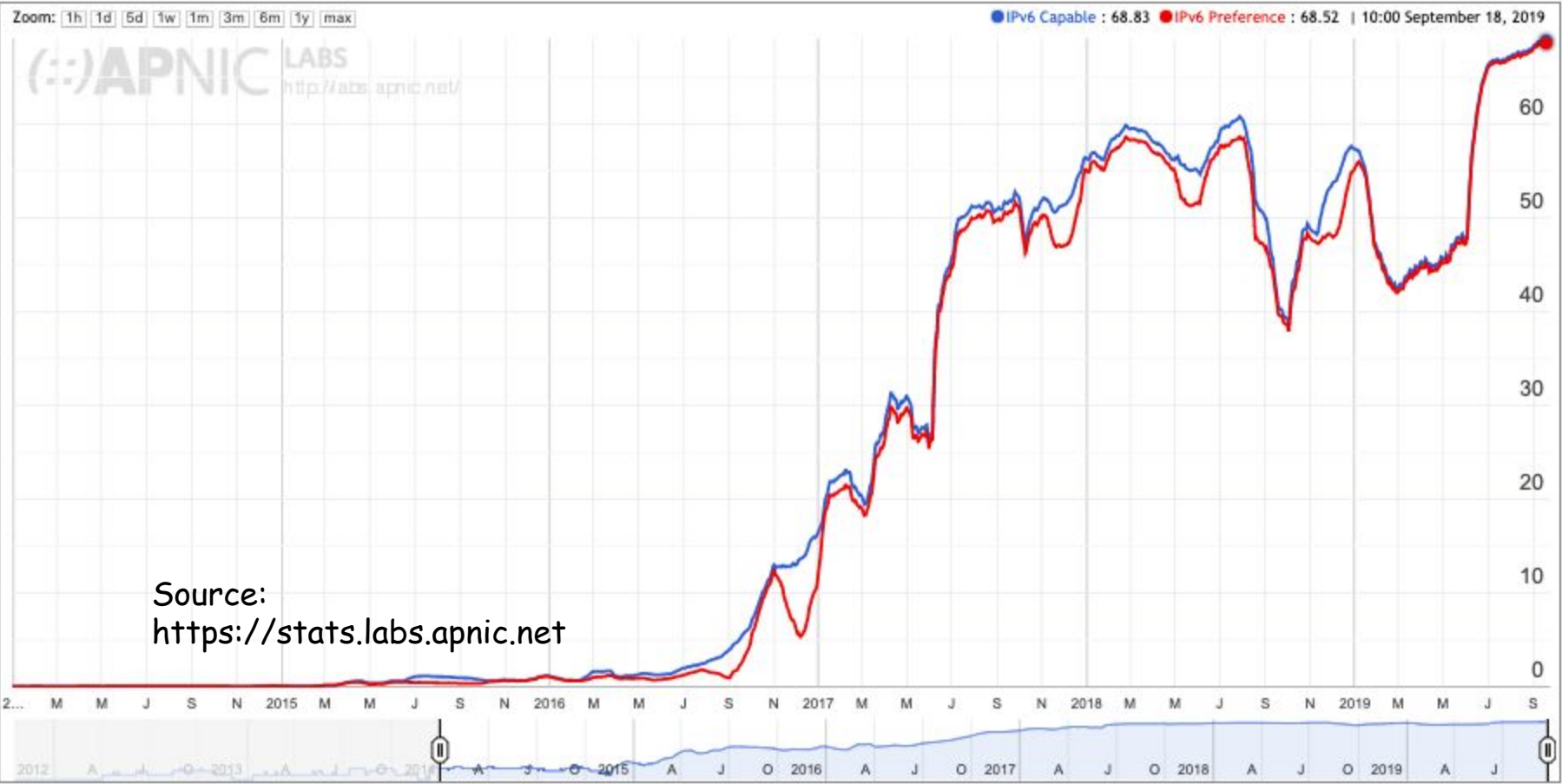
Use of IPv6 for United States of America (US)



Use of IPv6 for Poland (PL)



Use of IPv6 for India (IN)



xda

Phone isn't getting an ipv4 address from Sprint

By [Horace](#), Member on 9th February 2018, 11:26 PM

Post Reply

Email Thread

Apps started failing in odd ways and then I realized that for some reason the phone is only getting an ipv6 address from Sprint, no ipv4 address.

T-Mobile
Going IPv6 only

APNIC

[Get IP](#) - [Manage IP](#) - [Training](#) - [Events](#) - [Research](#) - [Com](#)

Microsoft making progress towards IPv6-only

By [Veronika McKillop](#) on 17 Sep 2018

Category: Tech matters

Tags: [Guest Post](#), [IPv6](#), [Microsoft](#), [case study](#)

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As a colleague of mine published in a [post](#) here on the APNIC Blog in January 2017, Microsoft has been running IPv6 in a form of dual stack in our network environment for some years. Due to the fact that it does not help us with private IPv4-address depletion, we have progressed from discussing IPv6-only and are now experimenting with it for real deployment.

Supporting IPv6-only Networks

Starting June 1, 2016, all apps submitted to the App Store must support IPv6-only networking. A majority of apps will not require any changes as IPv6 is already supported by NSURLSession and CFNetwork APIs. However, if your app utilizes IPv4-specific APIs or hard-coded IP addresses, you will need to make changes. Be sure to test for IPv6 compatibility before submitting your app to the App Store for review.

Stage 2. Anger

"When the individual recognizes that denial cannot continue, they become frustrated...

Certain psychological responses of a person undergoing this phase would be: ..."Who is to blame?"; "Why would this happen?"

Quotes

"IPv6 is too complicated"

"Why can't we just get IPv4 with longer addresses?"

"Those vendors developed such a stupid protocol!"

"I have such and such problem with IPv6!"



Operational Issues with IPv6 deployment?

Unhappy about how the protocol works?

Have suggestions and/or operational feedback?

Getting Started in the IETF

6man Working Group: responsible for the maintenance, upkeep, and advancement of the IPv6 protocol specifications... The working group will address protocol limitations/issues discovered during deployment and operation.

V6ops Working Group: The IPv6 Operations WG develops guidelines for the deployment and operation of new and existing IPv6 networks.

Stage 3. Bargaining

"The third stage involves the hope that the individual can avoid a cause of grief. Usually, the negotiation ... is made in exchange for a reformed lifestyle. People facing less serious trauma can bargain or seek compromise."

Quotes

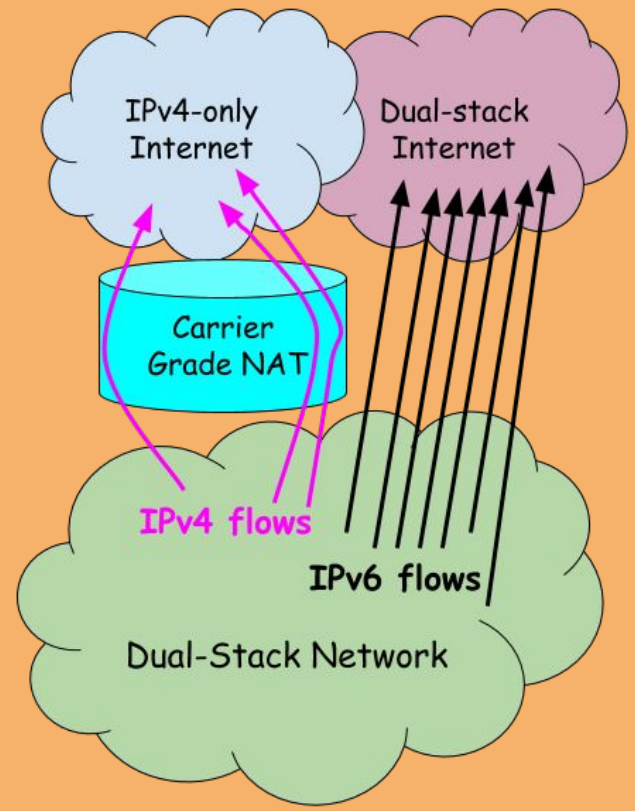
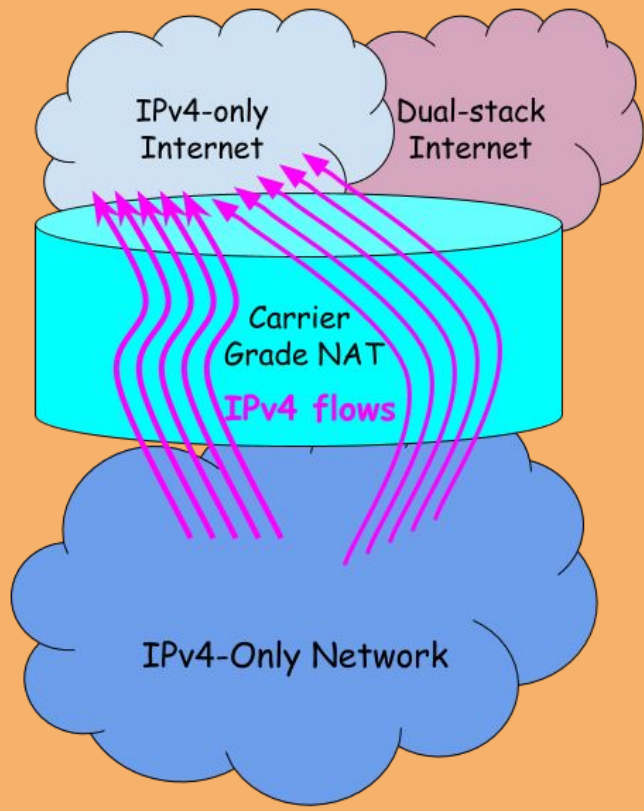
"Can I deploy Carrier Grade NAT?"

"Can I buy more IPv4 addresses?"

"Maybe I'll start deploying IPv6 next year..."



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Operators

- **Reliance JIO** ~80% of LTE traffic is IPv6
- **Verizon Wireless** >80% of traffic to major online content providers is IPv6.

Universities

- **Virginia Tech**, 82% of traffic volume is IPv6.

Source:

<https://www.internetsociety.org/resources/2018/state-of-ipv6-deployment-2018/>

Stage 4. Depression

"During the fourth stage, the individual despairs [...]... In this state, the individual may become silent, refuse visitors and spend much of the time mournful and sullen."

- Software Bugs
- Hardware replacement
- Design changes
- Workflow changes
- Education



The 5th Wave

By Rich Tennant



Useful Resources

Test your IPv6 connectivity: <http://test-ipv6.com>

[IPv6 Troubleshooting for Residential ISP Helpdesks](#)

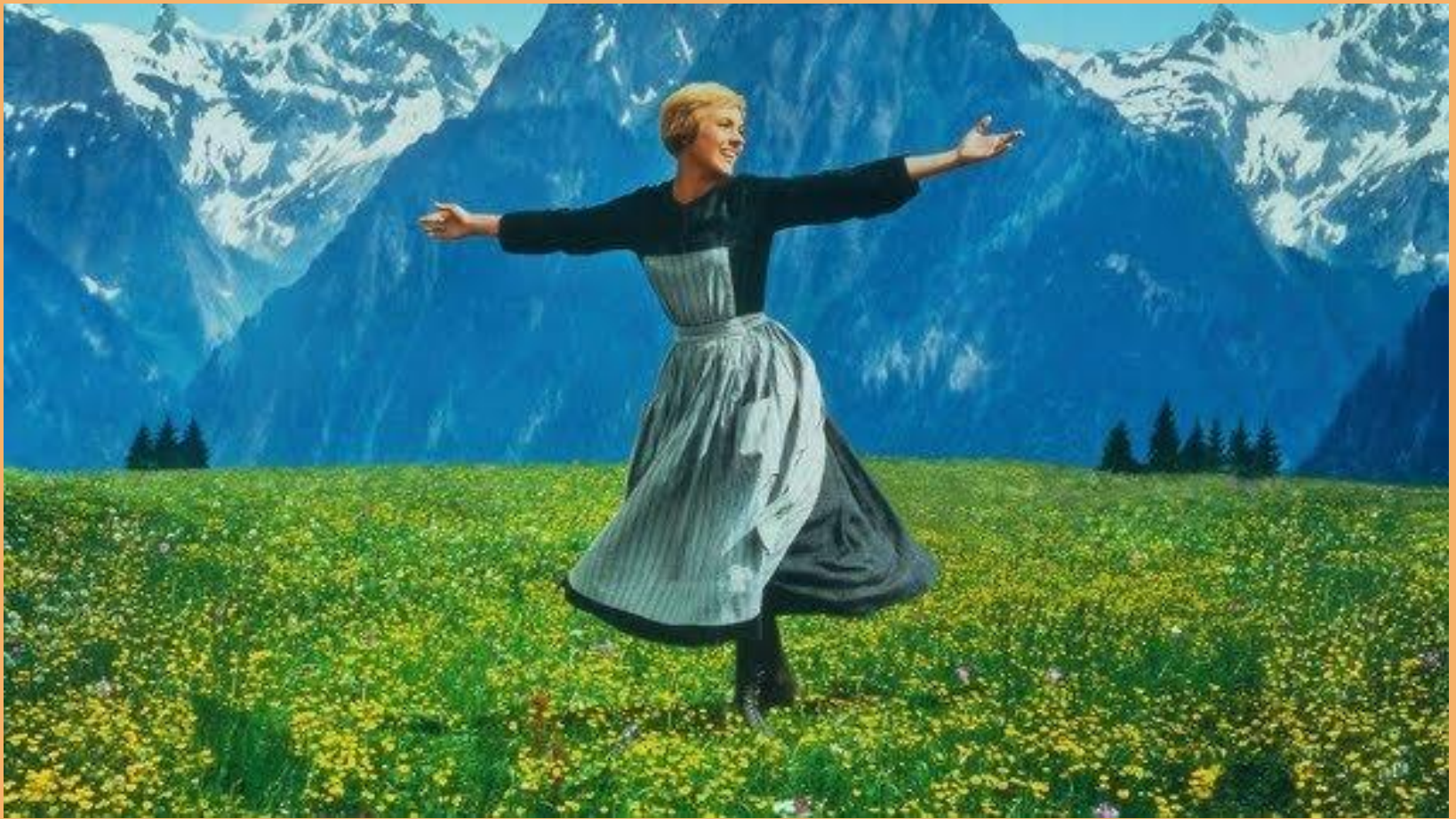
(RIPE-631)

Anything else you'd need?

Stage 5. Acceptance

"It's going to be okay."; "I can't fight it; I may as well prepare for it."

In this last stage, individuals embrace [..] inevitable future"



More than 95% of my users have IPv6

QUESTIONS?