

Putting
IPv6
to work



North American IPv6 Summit

Grand Hyatt, Denver, Colorado

September 23-25, 2014

Rocky Mountain IPv6 Task Force





15 Years of IPv6

North American IPv6 Summit
25 September 2014

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IPv6 Deployment



- RIRs allocating since 1999
- Thousands of organizations have received an IPv6 allocation to date
- ARIN has distribution policies for
 - Service Providers
 - Community Networks
 - End-User Organizations

Prepare for IPv6



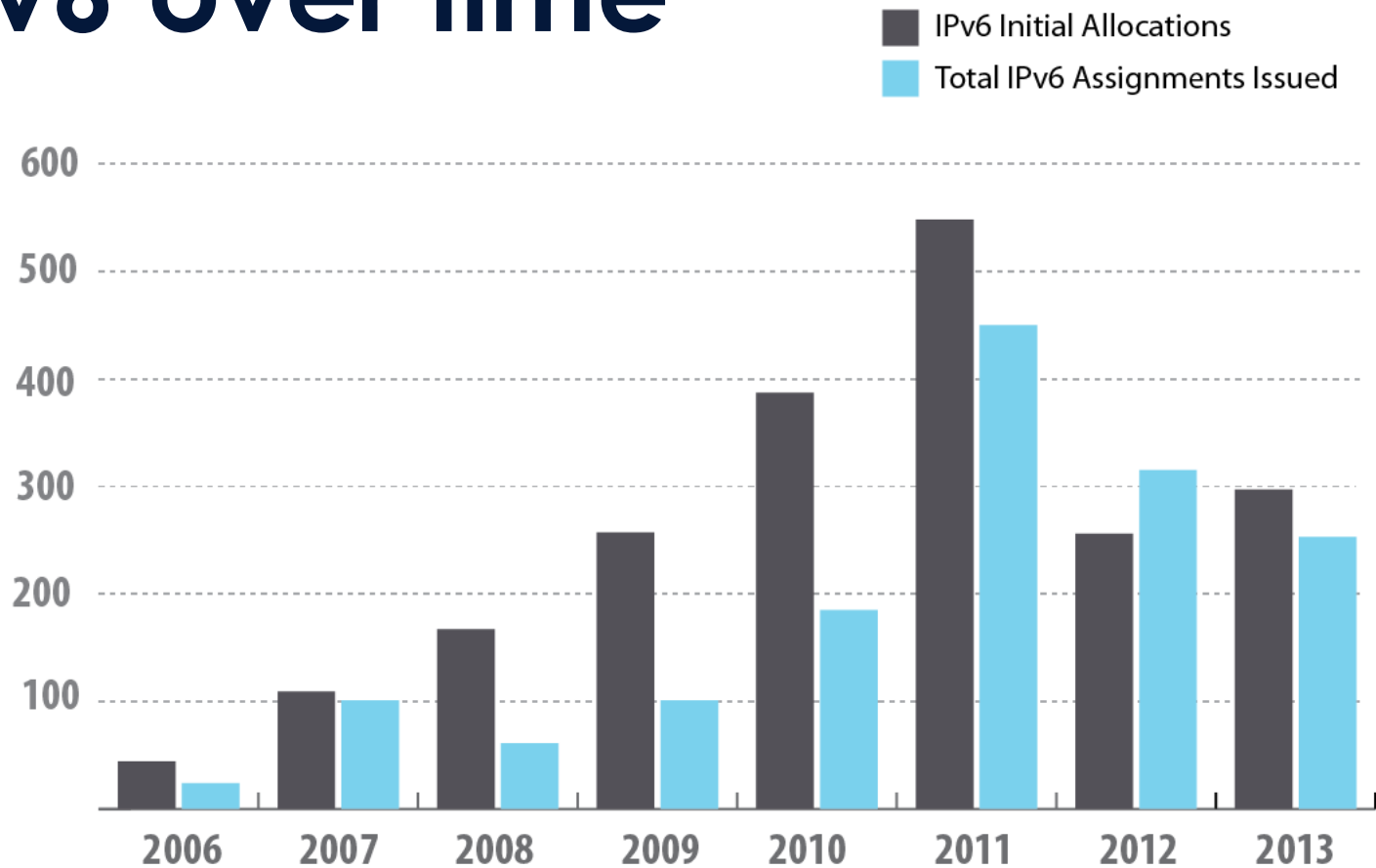
- **The good news**

- Lots more addresses
- IPv6 adoption = easier & more efficient network management
- Designed with security in mind

- **The bad news**

- We've all got some work to do

IPv6 over time



ARIN IPv6 Allocations and Assignments

History of the Internet Protocol

- **Internet Protocol version 4 (IPv4)**
 - Developed for the original Internet (ARPANET) in 1978
 - 4 billion addresses
 - Deployed globally & well entrenched
 - Allocated based on documented need
- **Internet Protocol version 6 (IPv6)**
 - Design began in 1993 when IETF forecasts showed IPv4 depletion between 2010 and 2017
 - 340 undecillion addresses
 - Completed, tested, and available since 1999
 - Used and managed similar to IPv4

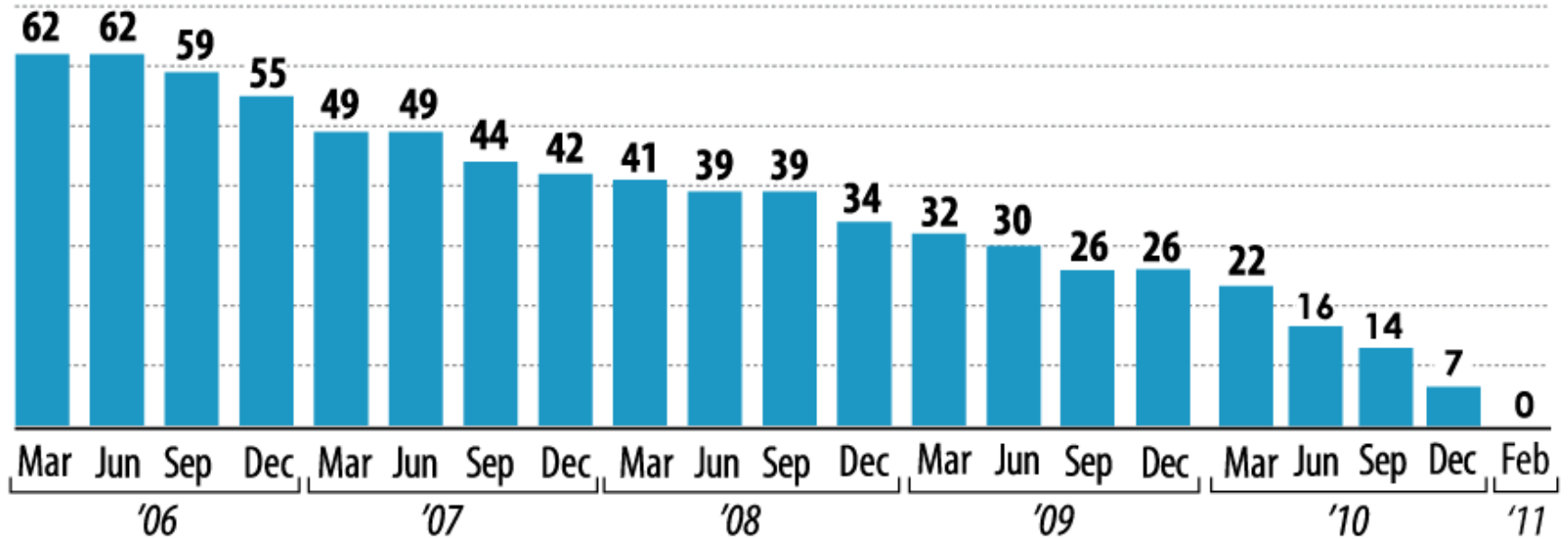
IPv4 Depletion Situation Report

Each RIR received its last /8 from IANA on 3 February 2011



The IANA free pool of IPv4 addresses reached 0%

Global IPv4 Depletion



IANA IPv4 Space in /8s

ARIN IPv4 Depletion



ARIN reached
a last /8 on
23 April 2014

Triggering Final Phase of IPv4 Countdown Plan



What does this mean for you?

Phase 4 of the ARIN IPv4 Countdown Plan changes requesting procedures for all IPv4 requests.

ARIN's IPv4 Inventory

ARIN still has a few IPv4 addresses remaining

The screenshot shows the ARIN website homepage. At the top, there's a navigation bar with links: NUMBER RESOURCES, PARTICIPATE, POLICIES, FEES & INVOICES, KNOWLEDGE, ABOUT US, and FEEDBACK. A search bar is also present. The main content area is divided into several sections:

- ARIN ONLINE:** A login section with fields for username and password, and a "log in" button. Below it is an "IPv6 ENABLED" badge.
- Announcements:** A list of recent announcements, including "Register Now for the ARIN PPC at NANOG 62" and "Ninth IGF Concludes in Istanbul".
- Highlights:** A section with links to "Request Resources", "Draft Policies & Proposals", "Internet Governance", "Resource Revocation and Reinstatement", and "Meetings".
- Transfer Resources:** A section with a "More Information..." link.
- IPv4 Space Available:** A prominent banner showing "0.70" and "IN AGGREGATE", indicating the remaining IPv4 address space.
- Registration Open:** A section for "ARIN 34" registration, with a "SUBMIT STATEMENTS OF SUPPORT" link.

At the bottom, there are social media links for Twitter, Facebook, LinkedIn, Google+, and YouTube, along with a "Connect with us." text.

IPv4 inventory
published on
ARIN's website:
www.arin.net

Updated daily
@ 12AM ET

Get IPv6 from ARIN now

A promotional graphic for ARIN's IPv6 program. It features a dark background with a teal border. The text is arranged in a grid-like fashion. On the left, 'Have IPv4?' is written in white. On the right, 'Getting IPv6 IS EASY!' is written in teal, with 'IS EASY!' in a smaller font. Below this, it says 'MOST ORGANIZATIONS WITH IPv4 can get IPv6 without increasing their annual ARIN fees.' in white and teal. At the bottom, a teal bar contains the text 'FIND OUT IF YOU QUALIFY www.arin.net' in white.

Have IPv4?

Getting IPv6 IS EASY!

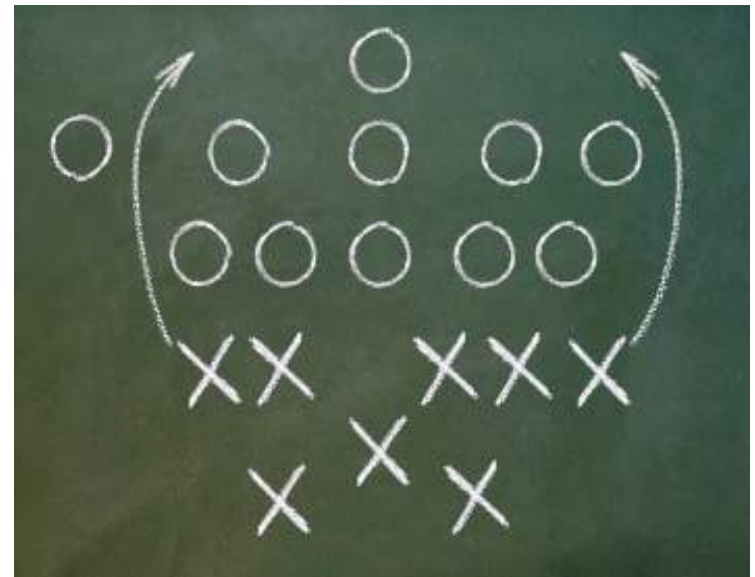
MOST ORGANIZATIONS WITH IPv4
can get IPv6
without increasing their annual ARIN fees.

FIND OUT IF YOU QUALIFY
www.arin.net

Most organizations with IPv4 can IPv6 without increasing their annual ARIN fees

Everyone needs an IPv6 Plan

- Each organization must decide on a unique IPv6 deployment plan right for them
 - Timeline will vary
 - Investment level will vary



How can you get started?

- **Dual-Stack your networks**
 - IPv6 not backwards compatible with IPv4
 - Both will run simultaneously for years
- **Servers must be reachable via both IPv4 and IPv6**
 - Mail
 - Web
 - Applications
- **Do you operate a website?**
 - Ensure content will be available to all customers
 - Even new Internet users with an IPv6-only address



How can you prepare?

- **Talk to your ISP about IPv6 services**
 - You want access to the entire Internet
- **ISPs must connect customers via IPv4-only, IPv4/IPv6, & Via IPv6-only**
- **Must plan for IPv4/IPv6 transition services**
 - Many transition technologies available
 - Research options
 - Make architectural decisions



What else can you do?

- **Audit your equipment and software**
 - Are your devices and applications IPv6 ready?
- **Encourage vendors to support IPv6**
 - If not already, when will IPv6 support be part of their product cycle?
- **Get training for your staff**
 - Free resources available



What Can Governments Do?

- **Government and the Internet community need to coordinate to support and promote**
 - IPv6 awareness
 - IPv6 education
- **Governments should consider:**
 - Regulatory and economic incentives to encourage IPv6 adoption
 - Required IPv6 compatibility in procurement procedures
 - Official IPv6 deployment within agencies



Your IPv6 Check List

- ☒ IPv6 address space
- ☒ IPv6 connectivity (native or tunneled)
- ☒ Operating systems, software, and network management tool upgrades
- ☒ Router, firewall, and other hardware upgrades
- ☒ IT staff and customer service training

Learn More

www.GetIPv6.info



IPv6 Info Center

www.arin.net/knowledge/ipv6_info_center.html



www.TeamARIN.net

Operational Guidance

[www.InternetSociety.org/
Deploy360/](http://www.InternetSociety.org/Deploy360/)



www.NANOG.org/archives/



bcop.NANOG.org

[www.hpc.mil/cms2/index.php/
ipv6-knowledge-base-general-info](http://www.hpc.mil/cms2/index.php/ipv6-knowledge-base-general-info)



Thank you

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