National Telecommunications and Information Administration

United States Department of Commerce

Docket No. 160810714-6714-01

RIN 0660-XC029

The Incentives Benefits, Costs and Challenges to IPv6 Implementation

Comment of the American Registry for Internet Numbers (ARIN)

The American Registry for Internet Numbers (ARIN) began registering IPv6 address space in 1999. Since that time, we have actively engaged with the Internet community about the fact the IPv4 free-pool was depleting and the critical need for organizations to implement IPv6. We intensified those efforts over the last 10 years as the IPv4 depletion event became more imminent. In September of 2015, ARIN's IPv4 free-pool depleted.

The work ARIN conducted over the years with Internet service providers, content companies, and enterprise organizations throughout the region has had a direct impact on their IPv6 awareness and knowledge. Transitively, our work with these organizations positively impacts end-users who rely on the services and infrastructure they provide.

Throughout the years, ARIN has discussed IPv6 adoption with various types of organizations and industry segments. We have held discussions with technical and management staff from thousands of organizations on the topic and have heard their candid feedback about IPv6. We are drawing on their feedback and our own experiences to provide answers to your request for IPv6 implementation information.

BENEFITS

The primary benefit of implementing IPv6 is ensuring your network or service offering is prepared for IPv6-connected clients; in some cases, IPv6-only clients. Having reached the milestone of IPv4 depletion, the decreasing availability of IPv4 is forcing providers to deploy IPv6-only offerings. Going forward, you will need to be connected via IPv6 in order to communicate with the whole Internet.

IPv6 must be implemented by all connected organizations if the Internet is to continue to grow. Organizations who do not deploy IPv6 will realize when their own IPv4 holdings have fully depleted that they are unable to grow their network and service offerings. This has already impacted some organizations, and will impact many others who do not take action as we move forward.

IPv6 implementation is necessary for continued Internet growth and to connect the next billion users. This task is not achievable with IPv4 alone.

OBSTACLES

One of the primary obstacles to IPv6 implementation is feature parity with the IPv4 offerings provided by some hardware and software vendors. Although many vendors have implemented IPv6 for their products, in some cases the features are not as complete for IPv6 as they are for their legacy IPv4-only products. This is causing ongoing issues for organizations deploying IPv6.

Another IPv6 deployment obstacle often relayed in feedback to ARIN was the continued availability of IPv4 address space. Some organizations made it clear in their feedback that they would never deploy IPv6 while IPv4 was still available from the Regional Internet Registries. Even with our strong encouragement to begin their IPv6 deployments, they indicated they would only do so when IPv4 address space was no longer available to them.

One last obstacle we would like to note is that in speaking to organizations over the years, technical staff have indicated though they understand the importance of moving forward with IPv6, they have not been able to get the internal approvals and support they needed to

proceed. They often referred to budgetary restrictions as a major impediment to their IPv6 plans.

INCENTIVES & MOTIVATION

The primary incentive and motivation for implementing IPv6 is the ability to continue grow business networks and connected services. Implementation of IPv6 by a company in many cases is seen as purely a business decision. Those interested in business continuity and growth must implement IPv6, if they have not done so already.

PROMOTIONAL EFFORTS

ARIN has been actively involved for many years in promotional efforts to raise awareness of the need for IPv6 deployment. We have talked in person with thousands of organizations about the need for IPv6 adoption, in addition to reaching out directly to the executives of all ARIN member organizations[1]. Our outreach calendar archive linked below lists some of the venues for these in-person engagements.

http://teamarin.net/calendar-archive/

The different types of in-person engagements on the IPv6 topic have included presentations at industry events, ARIN booths at trade-shows, and direct outreach efforts to targeted industry segments and companies. As directed by ARIN's Board of Trustees, we continue to conduct outreach efforts aimed at increasing the rate of IPv6 adoption.

ARIN welcomes opportunities to collaborate with the NTIA in this critical area of work. The NTIA could play an important role in bringing together those providing IPv6 education with those organizations who have not traditionally participated at venues where this information has been shared. The future of the Internet requires industry-wide adoption of IPv6 in order to

---

[1] As of September 30, 2016 ARIN has 5,376 members.

continue the exponential growth it has enjoyed in the past and to prevent potential harm to Internet-related commerce in the coming years.

ARIN thanks the NTIA for their request for comments on the critically important topic of IPv6 implementation.