The Regional Internet Registries

Global Management of Internet Resources and the Transition to IPv6

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Global Coordination

A fair, stable platform

Whether a user types a domain name into their browser, an email address into their mail client, or dials a phone number on their Voice over IP (VoIP) system, the Internet relies on a system of numbers called IP addresses to determine where the data goes.

The fundamental operation of the Internet and the indispensable services it provides, such as Internet telephony, the World Wide Web, and email, relies on the combined efforts of a number of key organisations. These organisations work collaboratively with the thousands of stakeholders who use and rely on the Internet's secure, robust, and scalable infrastructure.

Internet resources

A number of organisations form a framework for global Internet governance. Number resources are allocated and managed by a series of five Regional Internet Registries (RIRs), which collaboratively work as the Number Resource Organization (NRO). Domain names are managed by a series of domain organisations. Along with bodies like The Internet Society (ISOC), all of these organisations collaborate with stakeholders to build Internet standards, policy, and training.

Ensuring Internet resources are managed responsibly and are available to anyone who needs them is critical to the philosophy of the Internet community. To achieve this, the RIRs utilise a bottom-up, transparent policy development process that gives all stakeholders a voice in deciding how to manage these resources.

The Regional Internet Registries (RIRs)

The Regional Internet Registries are not-for-profit, membership-based organisations charged with ensuring the fair distribution of IP addresses and related Internet number resources in their respective regions. Each RIR community develops its own policies to manage Internet addresses and Autonomous System numbers, as well as working with other RIR communities on policies that require global coordination.

This form of self-regulation has proven to be highly successful in ensuring the stable and reliable operation of the Internet and is an integral part of its future.

There are currently five RIRs:

- AfriNIC, serving Africa
- ARIN, serving Canada, many Caribbean and North Atlantic islands, and the United States
- LACNIC, serving South America and the Caribbean
- APNIC, serving the Asia Pacific region
- RIPE NCC, serving Europe, the Middle East and parts of Central Asia

The Number Resource Organization (NRO)

Formed by the Regional Internet Registries to formalise their cooperative efforts, the NRO exists to protect the unallocated number resource pool, to promote and protect the bottom-up policy development process, and to act as a focal point for Internet community input into the RIR system.

IPv6

Facing a Crucial Challenge

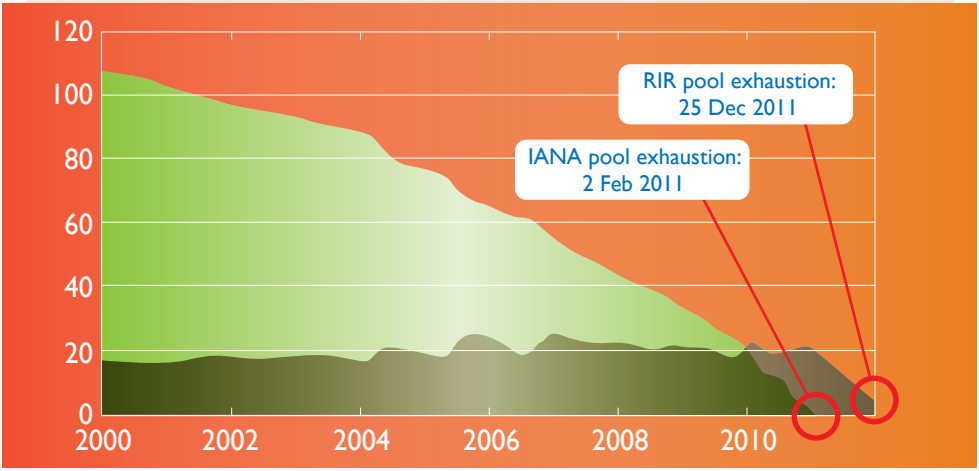
Despite allowing for more than four billion unique addresses, the IPv4 Internet address scheme is reaching capacity due to the explosive growth in Internet usage.

Wider adoption of the Internet and new uses such as mobile Internet and Voice over IP (VoIP) services are rapidly depleting the pool of available IPv4 addresses.

The diagram below shows the trend of address depletion. Projections suggest the remaining unallocated IPv4 address space will be completely exhausted by 2011.

While the Internet will continue to operate once the IPv4 pool is exhausted, this lack of resources may affect the growth of the Internet.

The solution to this problem is the adoption of IPv6.



Projected timeline of remaining IPv4 addresses

Regional Internet Registries: Your Source of IPv4 and IPv6 Information

The Regional Internet Registry (RIR) communities are true multi-stakeholder environments, employing bottom-up, self-regulatory processes to achieve best practice outcomes for Internet addressing.

While the immediate future of IPv4 is of concern, the RIR communities see IPv6 as the longer-term solution to the challenge of sustained Internet growth and stability. The RIR communities, both separately and cooperatively, are responding to these issues and are working to address them.

As the organisations responsible for the global allocation of IP addresses, the RIRs closely monitor address consumption and deployment trends, providing the data, analysis, and leadership needed to assist governments, businesses, and civil society with their IPv6 planning and decision making.

Each RIR conducts outreach programs to promote IPv6 deployment, with special emphasis on supporting capacity building in developing economies in their respective regions.

The five RIRs also undertake many activities to ensure a smooth transition to IPv6 in the coming years:

- IPv6 address allocation, management and measurement
- IPv6 research, education, and information distribution
- Community outreach and liaison
- Representation within peak forums, such as the ITU, OECD, the Internet Governance Forum (IGF), and ICANN
- Transparent, open, bottom-up policy development

Everyone is invited to participate by becoming involved in the global and regional policy development processes.

Educate, plan, participate, implement

Educate

Build your knowledge of IPv6 to prepare for your next generation network.

Research: The five RIRs produce regular reports and statistics on IPv4 and IPv6 usage in their respective regions. Expert members of the RIR community, such as APNIC's Chief Scientist, Geoff Huston, are referenced globally by bodies such as ICANN, the ITU and the OECD.

RIR Meetings: Each RIR holds regular meetings, usually once or twice a year. These provide training opportunities along with conference and seminar sessions.

IPv6 Training: All RIRs operate training programs in their respective regions, many combining face-to-face education with online E-learning options. Find more information on the website of your local RIR.

Plan

Start planning for your IP address transition today!

Assess Your Needs: Your adoption plan should address the specific needs of your organisation and customers. A "dual stack" approach, where your services support both IPv4 and IPv6, will likely be a key element of your migration strategy.

Set a Timetable: IPv6 can be factored in to your current IT upgrade cycle. Actively engage your vendors and suppliers and ensure that they are aware of your needs. The sooner you can inform them of your intentions, the more likely you will find competitive suppliers ready to assist you.

Apply For Resources: You will need to obtain IPv6 address space for your IPv6 network and the RIRs assign this directly. Contact your respective RIR to find out more about how to obtain resources and gain access to tools to effectively manage them.

Educate, plan, participate, implement

Participate

The RIR communities are true multi-stakeholder environments, employing bottom-up, self-regulatory processes to achieve best practice outcomes. To have your say and express your interests, you can:

Attend an RIR Meeting: RIR meetings are your opportunity to take part in the policy development process. They are open to anyone and are particularly relevant to Internet Service Providers (ISPs), Internet equipment vendors, and government regulators. Many of these meetings also offer remote participation, so you can attend in person or participate online.

Discuss IPv4 Policy: Distribution of the remaining free pool of IPv4 address space and handling the IPv4 environment beyond that point are key priorities for the RIR community. It is important to take part in the ongoing process of deciding how these resources will be shared globally and in your region.

Discuss IPv6 Policy: Each RIR community has developed and continues to refine a range of policies that are designed to encourage the adoption of IPv6 and ensure fair and equal access to IPv6 address space.

Implement

Eventually, you will need to deploy IPv6 on your own core IP network.

IPv6 Transit/Tunneling: To allow the distinct worlds of IPv4 and IPv6 to communicate, you will need access to an IPv6 transit exchange. Check with your ISP or an Internet Exchange (IX) in your region.

Website Content: Access to web servers, both internal and external facing, will require support for both IPv4 and IPv6 connections. Take the opportunity to showcase your IPv6 availability and secure a competitive advantage.

Upgrade Your Infrastructure: Ensure your IPv6 DNS services are in place and functioning correctly. Your DNS server should be accessible over both IPv4 and IPv6. Your internal address management systems and customer facing provisioning systems should be reviewed and possibly updated.

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