

Internet Protocol version 6 - IPv6 -

Unleashing more internet addresses to support growth in Europe



The number and range of networked devices that use Internet addresses are still increasing quickly: from PCs and mobile phones to RFID readers and in-car devices. As demand for addresses continues to grow, it is time to start using the next generation Internet Protocol: IPv6 will remedy that situation. Everyone will be able to participate in the future of the Internet on an equal footing, allowing more kinds of networks and a whole range of new innovative services and applications, including home energy management, medical surveillance and new styles of media delivery.

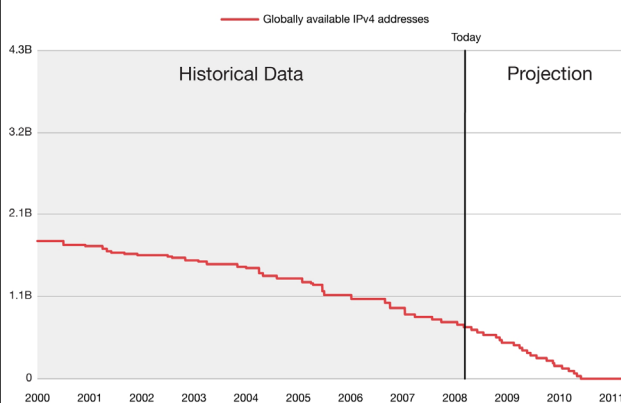
What does IPv6 provide?

All computers and electronic devices that connect to the Internet need an Internet Protocol (IP) address to identify themselves and communicate with other computers or devices. The first versions of the Internet Protocol appeared in the 1970s, but by 1984, IP Version 4, "IPv4" had become a global standard. Since then, IPv4 has become crowded and an improved version has been developed: IPv6.

IPv6 is a long term solution for the increasing demand for, and sophistication of, internet-based services and applications. It provides:

- a massive increase in address space – 3.4×10^{38} addresses or roughly 4 billion x 4 billion x 4 billion - enough for every citizen, network operator or organisation to have as many IP addresses as they need to connect every conceivable device and network to the Internet;
- a basis for developing and deploying applications that may be too complicated or too costly in today's crowded IPv4 environment;
- users with the possibility to have their own networks that can be connected directly to the Internet.

Projected depletion of existing (IPv4) Internet addresses



Source: Alex Band RIPE NCC, based on data generated by Geoff Huston APNIC 2005

IPv6 - the key to the future Internet

Deployment of IPv6 will make it easier for companies to make new technological developments available to the public:

- Auto-configuration, or easy 'plug'n'play' networking of a large number of devices;
- Peer-to-peer applications including those involving VoIP and IP-TV, will be easier to implement and more powerful;
- IPv6 can be a key enabler for new mobile/wireless applications and services that might be less feasible in a constrained IPv4 environment.

What needs to be done?

Significant steps towards IPv6 would boost innovation in Europe and secure a competitive advantage in world markets.

By 2010, the Commission wants to see at least 25% of users able to connect to the Internet using IPv6 and to access their more important content and service providers without noticing a major difference compared to IPv4.

The transition to IPv6 will of course still take some time and will often require operating dual IPv4/IPv6 networks. The Commission will therefore carry on monitoring the situation regarding IPv4.

The Commission is calling for concerted action from all relevant parties to stimulate IPv6 accessibility:

- **Member States** - Public authorities should enable IPv6 on public sector web-sites and eGovernment services and make IPv6 a condition for public procurement. The Commission invites Member States to support the inclusion of IPv6 in relevant training curricula and in engineering courses of universities
- **Internet content and service providers** - At least 100 important European web-sites should provide full IPv6 service to their users by 2010. Where applicable, Internet Service Providers should upgrade the equipment

they supply to consumers. The Commission intends to support this co-operation through "Thematic Networks" involving vendors, ISPs, and content and service providers, as part of its Competitiveness and Innovation Programme (CIP).

- **Industry** - businesses embracing IP technology in their core business should consider IPv6 as their primary platform for developing applications or appliances (such as sensors, cameras etc). The Commission envisages supporting the testing and validation of IPv6 related applications from 2009.

For its part the Commission will make the "Europa" and "CORDIS" websites IPv6 accessible by 2010 and will encourage research projects and practical deployment pilots funded by the Seventh Framework Programme for Research and Technological Development (FP7).

The Commission has already invested €90 million in IPv6 research, financing more than 30 European R&D projects directly related to IPv6 and to the deployment of IPv6 connectivity in GEANT, the European research network.

For further information

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