Everyday Users: A Short Guide to IPv6

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What's an IP address?

An Internet Protocol address (or IP address) is a unique 32-bit number that identifies the location of your computer network. It serves as your computer's "street address," enabling other computers to find out exactly where you are and deliver information to you.

Did the Internet run out of IP addresses?

Yes. The Internet, in its current form, has used up all its IPv4 addresses. According to the Number Resource Organization, the world officially ran out of IPv4 address in February 2011. All that can be done now is to divide the allocated properties into ever-smaller portions or trade what's already been assigned – moves that could complicate and compromise your privacy.

What's IPv4?

IPv4 stands for Internet Protocol version 4. It is the underlying technology that makes it possible for us to connect our devices to the web. Whenever a device accesses the Internet (whether it's a PC, Mac, smartphone or other device), it is assigned a unique, numerical IP address such as 99.48.227.227. To send data from one computer to another, a data packet must be transferred across the network containing the IP addresses of both devices. Without IP addresses, computers would not be able to communicate and send data to each other. It's essential to the infrastructure of the web.

What's IPv6?

IPv6 is the sixth revision to the Internet Protocol and the successor to IPv4. It functions similarly to IPv4 in that it provides the unique, numerical IP addresses necessary for Internet-enabled devices to communicate. However, it does sport one major difference: it utilizes 128-bit addresses.

What is World IPv6 Launch?

Major Internet service providers (ISPs), home networking equipment manufacturers, and web companies around the world are coming together to permanently enable IPv6 for their products and services by 6 June 2012.

- Join the launch!

Is there an IPv5?

IPv5, also called the Internet Stream Protocol, was developed in the 1980s as an experiment. It was created to transmit audio, video, and simulations over the Internet. While it did gain some popularity with large corporations it was never used as an official protocol. In its original form, IPv5 was never widely distributed. It was, however, adapted and developed into what's now known as ST2.

Why is IPv6 a great solution?

The key difference between IPv4 and IPv6 is that IPv6 has significantly more address space. While the addresses look different, users should not be aware of any difference. A typical IPv6 address has 8 groups of four letters and numbers separated by colons so it looks like this: 2001:db8:1f70:999:de8:7648:6e8

The expanded addressing capacity of IPv6 will enable the trillions of new Internet addresses needed to support connectivity for a huge range of smart devices such as phones, household appliances and vehicles. IPv6 also brings the enhanced quality of service that is required for several new applications such as IP telephony, video/audio, interactive games or e-commerce.

Who created IPv6?

The Internet Engineering Task Force (IETF) created IPv6. The IETF is a large open international community of network designers, operators, vendors, and researchers concerned with the evolution of the Internet architecture and the smooth operation of the Internet. Its goal is to make the Internet work better.

Will IPv6 addresses run out eventually?

No. An enormous amount of IP address space exists under IPv6. This addressing capacity will enable the trillions of new Internet addresses needed to support connectivity for a huge range of smart devices such as phones, household appliances and vehicles.

How will the switch to IPv6 affect me?

For the next few months it won't have a major impact on your life. Most operating systems actually support IPv6, including Mac OS X 10.2 and Windows XP SP 1.

However, many routers and servers don’t support it, making a connection between a device with an IPv6 address to a router or server that only supports IPv4 impossible.

If the switch to IPv6 is not made by the industry, it could also mean things like:

- Your favorite web programmes will slow down.
- Computers will have a harder time communicating with each other, making the ability to offer services like Skype difficult.
- Your privacy could be compromised because with all the dividing of addresses, it will be hard to tell the difference between you and another computer user down the street.

Who can I contact about IPv6 in my area?

You can contact your local ISP provider.

IPv6: Why and How Governments Should Be Involved

In this Briefing Paper, the Internet Society looks at one key stakeholder - governments - and outlines what governments can do to increase IPv6 awareness and facilitate IPv6 take-up.

- Download the complete Briefing Paper