

World IPv6 Day Provides a Wake-Up Call



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The transition to Internet Protocol version 6 (IPv6) from IPv4 — IPv5 already exists and was used as a test protocol for video and audio streaming — is right around the corner. In anticipation of this colossal undertaking, several of the world's largest Internet hosts, including Google, Facebook and Yahoo!, will participate in World IPv6 Day on June 8, 2011. During this 24-hour period, these and other companies will utilize IPv6 to deliver Internet content. The idea is to raise awareness among Internet service providers (ISPs), hardware and software vendors, and Web service providers — they need to ensure that their products and services will function on IPv6.

It is projected that during World IPv6 Day, over one million Internet users will experience issues when attempting to visit a participant's website or utilize the Internet-based services of participants. No, the sky isn't falling...yet. Think of World IPv6 Day as a wake-up call.

Why You Should Care About IPv6

IPv6 is the next version of the Internet Protocol (IP). The current implementation of IP is version 4 (IPv4). IPv4 was first put into use on January 1, 1981. In the late 1980s it became apparent that the pool of IP addresses available would eventually be depleted since IPv4 allows about 4.3 billion unique IP addresses.

Under a mandate from the Internet Corporation for Assigned Names and Numbers (ICANN), "When the number of available /8s is equal to the number of regional Internet registries (RIRs), the normal allocation policy goes away and IANA (Internet Assigned Numbers Authority) will allocate the remaining /8s, one to each RIR." So, in effect, all of the /8 blocks are assigned and there's no cushion remaining. This occurred on February 3, 2010.

In 1992, the Internet Engineering Task Force (IETF) announced a call for white papers and the creation of the "IP

next generation" (IPng) working groups to address IPv6. A series of Requests for Comments (RFCs) that defined IPv6 were released by 1996.

Compatibility with IPv6

The impact of IPv6 compatibility primarily affects software and firmware. Since IPv6 was recognized as an issue in the late 1980s and early '90s, technologists began implementing appropriate changes in the networking stack to address the problem. Later versions of Windows 2000 (post SP1) have a functional IPv6 implementation. Windows operating systems since Windows XP SP1, Mac OS X v10.3 and GNU/Linux 2.6 all have a production-ready IPv6 implementation. Linux kernel 2.1.8 actually had alpha quality IPv6 in 1996!

Routers and other network equipment manufactured within the last decade should have the appropriate technology in place to handle IPv6 as well. For older equipment, a firmware upgrade may be necessary to implement the additional features, but it might be time to look at replacing equipment if it's approaching the 10-year mark.

Regarding application software, most applications with network capabilities are not yet IPv6 aware. The exception applies to Java applications adhering to the Java 1.4 specifications, which are ready for IPv6.

Benefits of IPv6

The number one benefit of IPv6 is the number of IP addresses that will become available. Under IPv4, there are 32 bits of data that define the IP address. This allows for about 4.3 billion addresses (4,294,967,296). When IPv4 was first utilized, no one foresaw that devices such as smartphones, cars and even refrigerators would require IP addresses.

