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NETWORKS**

IPv6 - Ready When You Are



The Need for IPv6

New enterprise applications, mobile devices, and wireless technologies being added to the Internet and to internal networks are driving IP address consumption. The requirement for additional addresses will continue to increase over the next number of years as many current devices such as cameras, and automobiles are becoming IP-enabled.

As a direct consequence of this unprecedented growth, the Internet is running out of IPv4 addresses. As of 2010, the number of available IPv4 addresses had dipped below 10%, leaving approximately 400 million IP addresses. This may sound like a large number, however, it is estimated that the IPv4 address space is expected to be fully allocated by 2012.

Enter IPv6, the next generation IP protocol. While there are several advantages to IPv6 such as built-in security, the biggest advantage is clearly that of capacity. Whereas the IPv4 system allows for approximately 4 billion addresses; IPv6 allows for 2^{128} addresses (a number much too large to reproduce here).

Management Challenges

Though IPv6 solves many issues related to growth, it is much more complex than IPv4. In fact, the inherent complexity of IPv6 management represents one of the main challenges to its adoption.

IPv4 is displayed using a dotted decimal format for example: 192.168.1.10. Owing to this relative simplicity, it is not uncommon for a network administrator to memorize many of the IPv4 addresses

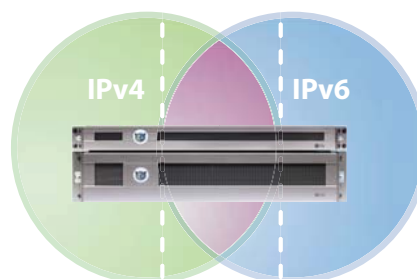
on his or her network. On the other hand, IPv6 addresses are represented using a hexadecimal notation and at 128-bits in length, are four times as long as IPv4 addresses. A typical IPv6 address looks like the following:

fd98:d3e2:f0fe:0:54ae:34ff:fecc:892,

making it impossible to memorize let alone manage manually. Dynamic allocation systems such as DHCP, user-friendly identifiers such as DNS hostnames, and an IP Management (IPAM) system become absolutely essential.

Easing the Migration to IPv6

While some organizations have already started implementing IPv6, many more are just beginning to think about it. In spite of the dwindling number of addresses, IPv4 is expected to remain with us for the foreseeable future. As such, organizations are likely to use IPv4 and IPv6 networks in parallel (also known as "dual-stacking"). Being able to track and manage a device's IPv4 and IPv6 addresses in parallel will be crucial. However, without the proper tools, managing this hybrid infrastructure will be next to impossible.



With Proteus and Adonis you can support IPv6 in parallel with, and independently of IPv4.

The Right Tools for IPv6

Proteus allows you to manage the IPv4 and IPv6 address spaces from a highly intuitive, business-oriented tool. Our integrated approach to DNS uses a multi-core system to link changes to DNS records with the rest of the IPAM system. When you change an IPv6 address associated with a AAAA record, that change is updated on both the DNS record and the IPv6 address record. Proteus' multicore design provides an environment that allows you to focus on managing the IPv6 system, while built-in error and logic checking ensures that you are working with clean data.

Proteus includes the following support for IPv6:

- End-to-end IPv6 Address Management including routing prefixes for global Unicast, subnet ID's and interface ID's
- IPv6 DNS Management - including AAAA and the IP6.ARPA reverse space.
- IPv6 DHCP Management - Stateless option support

Using Proteus, you can model the IPv6 and IPv4 address spaces from a single management interface as you transition from one system to the other.

The complexity of the IPv6 transition requires 21st century tools that can add context to network data and turn it into useful business information. Proteus provides the tools administrators need to focus on the logic and business sense of their decisions, rather than the details. Organizations moving to IPv6 need Proteus IPAM.