ARIES TELECOMS

NETWORKING THE FUTURE

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Company **News**

ARIES TELECOMS has completed the implementation of IPv6 on its network by end of 2015. With the availability of IPv6, the inherent features of IPv6 has further enhanced the network security and performances that meet today's and future need of the users.

IPv6 provides other technical benefits in addition to a larger addressing space. In particular, it permits hierarchical address allocation methods that facilitate route aggregation across the Internet, and thus limit the expansion of routing tables. The use of multicast addressing is expanded and simplified, and provides additional optimization for the delivery of services. Device mobility, security, and configuration aspects have been considered in the design of the protocol.

Aries Telecoms network is predominantly an IP-MPLS Ethernet-WDM enabled based on Packet Optical technology that allow cost effective price-per-megabit for service delivery that enable customers to:

>> Deliver a future proof network that supports existing and future services and simplifies the shift to Ethernet connectivity services and interfaces for high bandwidth, IP-based service network.

>> Offer flexibility to customer network needs for metro-e or wavelengths. Customers are able to design the network as required and in line with the capacity requirements and demand easily.

The Need for **IPv6**

Internet Protocol Version 6

The internet industry remains one of the most vibrant and dynamic global markets; as more and more people are getting connected, new applications and services are being developed and users' online experiences are expanding throughout the world. The Internet Protocol version 4 (IPv4) has been widely used throughout the internet communication network, applications and related devices. Theoretically IPv4 addresses are limited to 4.3 billion addresses which slightly over half of the world population. Since every device on the Internet is assigned an IP address for identification and location definition, obviously IPv4 addresses are insufficient to address the explosive expansion of the devices and applications.

The main advantage of IPv6 over IPv4 is its larger address space. The length of an IPv6 address is 128 bits, compared with 32 bits in IPv4. The address space therefore has 2128 (octillions) or approximately 3.4×1038 addresses.

All of the IT revolutions, transformations and transitions we are witnessing today will ultimately rely on IPv6 for their success. Only in an IPv6-enabled network infrastructure can our latest innovations scale to their full potential. This is most applicable to the Internet of Things, the new paradigm that is one of the buzzwords du jour.

IPv4 address exhaustion isn't driven just by the increasing number of people joining the Internet. Each new user potentially has multiple devices, each one requiring an IP address. Now increase the number of devices and hosts by several orders of magnitude, and you'll understand why the Internet of Things (IoT) can't take hold without IPv6.

The world of IoT is highly instrumented with sensors and actuators that operate in the smallest of devices and platforms, which are all IP-enabled. The virtualization of resources has become easier and faster in the data center and throughout the infrastructure with the help of containers -- each container requiring at least one IP address. The true power of IoT comes not just from a smarter infrastructure, but from the networking effects kicked off by having all these hosts easily and directly accessible over IP. Note the word "directly," as in using a global IP address and not having the devices isolated in enclaves of RFC 1918, the standards for IPv4 and IPv6 private networks. The sheer number of devices coming online will require IPv6.

IPv6 delivers more to IoT than just addressing space, however. With IPv6, IoT overlays a network that, with the new protocol, handles multicast well, supports scalable mobility and enables low-power devices or battery-powered devices to mesh into new, efficient infrastructures. Today's smart grid is just a use case of IoT, yet it depends intrinsically and fundamentally on IPv6 through technologies like IPv6 over low-power wireless personal area networks and the RPL programming language. It's easy to get excited about things like the cloud, software-defined networking, network functions virtualization and IoT, but behind all of these ideas, IPv6 is the great innovation enabler.

Comparison between IPv4 & IPv6

	IPv4	IPv6
Standard since	1974	1998
Developed by	IETF	IETF
Length in bits	32	128
Amount of addresses	2 = 4,294,967,396	2 = 340,282,366,920,938,463, 463,374,607,431,768,211,456
Address format	Dotted Decimal - 192.168.0.1	Hexadecimal Notation - 2001:0DB8 0234:AB00:0123:4567:8901:ABCD
Dynamic addressing	DHCP	SLAAC/DHCPv6
IPSec	Optional	Mandatory
Header length	Variable	Fixed
Minimal packet size	576 bytes (fragmented)	1280 bytes
Header checksum	Yes	No
Header options	Yes	No (extensions)
Flow	No	Packet flow label

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