IPv4 and IPv6

American Registry for Internet Numbers

About ARIN

The American Registry for

Internet Numbers (ARIN) is

the nonprofit corporation

that distributes Internet

number resources, includ-

ing Internet Protocol (IP)

addresses, to Canada,

many Caribbean and

North Atlantic islands, and

the United States.

What is Internet Protocol?

Internet Protocol is a set of technical rules that defines how computers communicate over a network. There are currently two versions: IP version 4 (IPv4) and IP version 6 (IPv6).

What is IPv4?

IPv4 was the first version of Internet Protocol to be widely used, and accounts for most of today's Internet traffic. There are just over 4 billion IPv4 addresses. While that is a lot of IP addresses, it is not enough to last forever.

What is IPv6?

IPv6 is a newer numbering system that provides a much larger address pool than IPv4, amongst other features. It was deployed in 1999 and should meet the world's IP addressing needs well into the future.

What are the major differences?

The major difference between IPv4 and IPv6 is the number of IP addresses. There are 4,294,967,296 IPv4 addresses. In contrast, there are 340,282,366,920,938,463,463,374, 607,431,768,211,456 IPv6 addresses.

The technical functioning of the Internet remains the same with both versions and it is likely that both versions will continue to operate simultaneously on networks well into the future. To date, most networks that use IPv6 support both IPv4 and IPv6 addresses in their networks.

	Internet Protocol version 4 (IPv4)	Internet Protocol version 6 (IPv6)
Deployed	1981	1999
Address Size	32-bit number	128-bit number
Address Format	Dotted Decimal Notation: 192.149.252.76	Hexadecimal Notation: 3FFE:F200:0234:AB00: 0123:4567:8901:ABCD
Prefix Notation	192.149.0.0/24	3FFE:F200:0234::/48
Number of Addresses	$2^{32} = {\sim}4{,}294{,}967{,}296$	$2^{128} = {\sim}340{,}282{,}366{,}$ $920{,}938{,}463{,}463{,}374{,}$ $607{,}431{,}768{,}211{,}456$