IPv6 Role

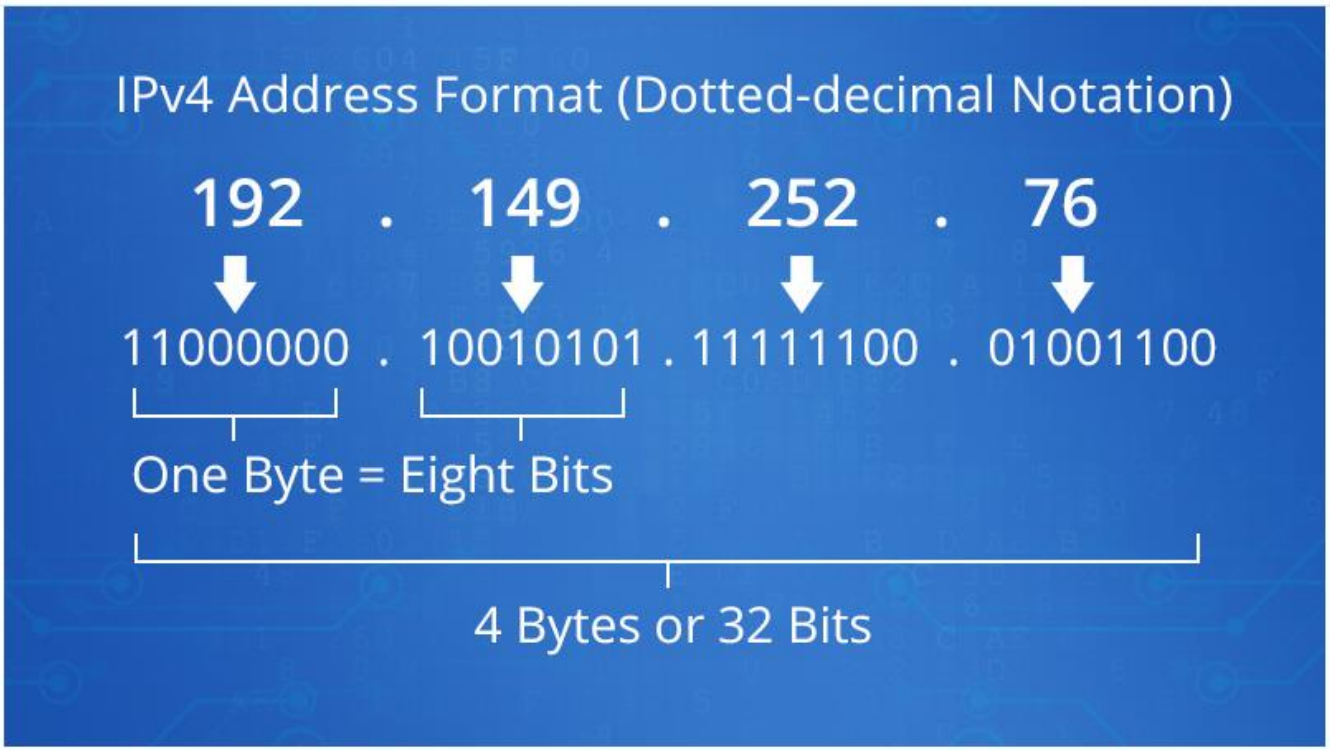
- It is the most recent version of the Internet Protocol (IP)
- the communications protocol that provides an identification and location system for computers on networks and routes traffic across the Internet.

- IPv6 was developed by the Internet Engineering Task Force (IETF) to
- deal with the long-anticipated problem of IPv4 address exhaustion

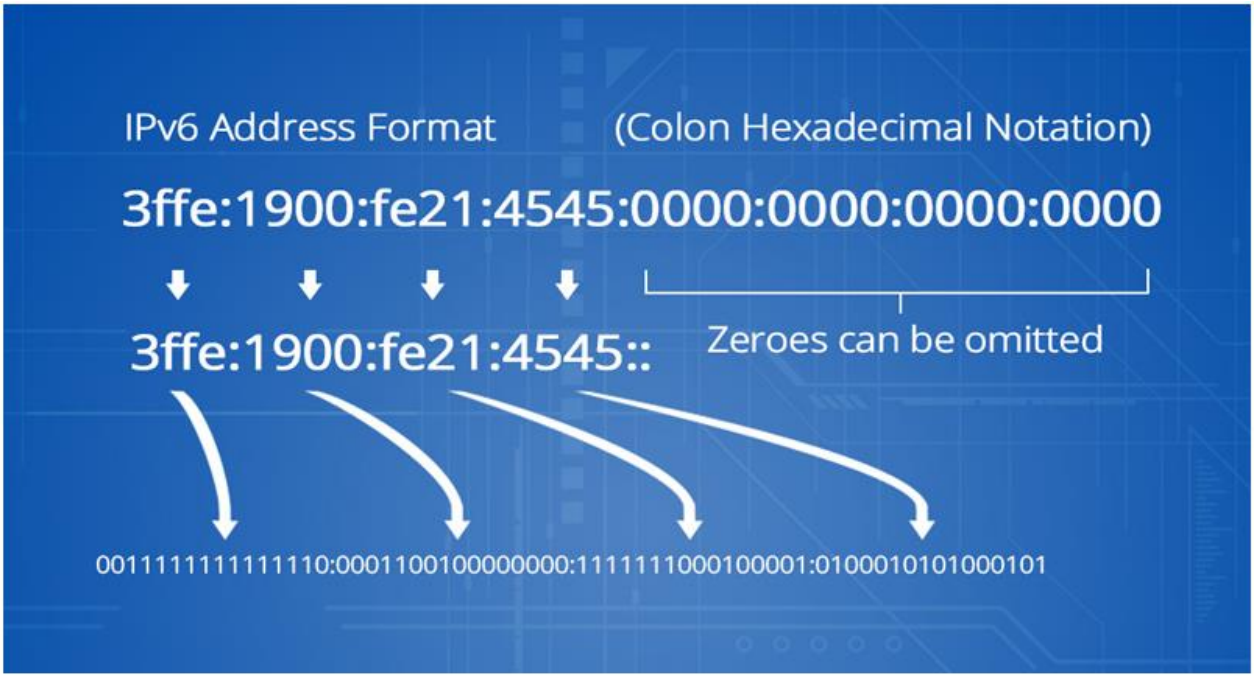
- It is intended to replace IPv4.

- IPv4 has 32 bits and Ipv6 address uses 128 bits

IPv4



IPv6



Why IPv6?	IPv4	IPv6
IPv6 has more addresses	4.3 billion addresses	340 trillion trillion trillion addresses
IPv6 networks are easier and cheaper to manage	Networks must be configured manually or with DHCP. IPv4 has had many overlays to handle Internet growth, which demand increasing maintenance efforts.	IPv6 networks provide autoconfiguration capabilities. They are simpler, flatter and more manageable for large installations.
IPv6 restores end-to-end transparency	Widespread use of NAT devices means that a single NAT address can mask thousands of non-routable addresses, making end-to-end integrity unachievable.	Direct addressing is possible due to vast address space – the need for network address translation devices is effectively eliminated.
IPv6 has improved security features	Security is dependent on applications – IPv4 was not designed with security in mind.	IPSEC is built into the IPv6 protocol, usable with a suitable key infrastructure.
IPv6 has improved mobility capabilities	Relatively constrained network topologies restrict mobility and interoperability capabilities in the IPv4 Internet.	IPv6 provides interoperability and mobility capabilities which are already widely embedded in network devices.
IPv6 encourages innovation	IPv4 was designed as a transport and communications medium, and increasingly any work on IPv4 is to find ways around the constraints.	Given the numbers of addresses, scalability and flexibility of IPv6, its potential for triggering innovation and assisting collaboration is unbounded.