IPv6 Addressing and Types

IPV6

IP Address

- IP Address is Logical Address.
- It is a Network Layer address (Layer 3).
- IP address is given to every device in the network and it is used to identify the device with in the network.

- **Two Versions of IP:**
  - **IP version 4 is a 32 bit address**
  - **IP version 6 is a 128 bit address**

- **Techniques to reduce address shortage in IPv4**
  - Subnetting
  - Classless Inter Domain Routing (CIDR)
  - Network Address Translation (NAT)

IPv6 is an extension of IP with several advanced fea

- Larger address space.
- No more need for NAT.
- Simpler header for increased router efficiency.
- Aggregation-based address hierarchy
- No more broadcasts.
- Stateless auto-configuration.
- Built-in support for Mobile IP.
- Built-in support for IPsec security.
- Rich transition features.
- Easy IP address renumbering.

2001:0db8:0000:0000:1234:0000:0000:3c4d

2001:db8:0:0:1234:0:0:3c4d

2001:db8::1234::3c4d

2001:db8::1234:0:0:3c4d

IPV6 address Types

- Unicast
- Multicast
- Anycast

Unicast Address

1) Global unicast

- like public IP (routable)
- starts with 2000::/3 (the first three bits 001) assigned by

2) unique local

- like private ip (routable)
- FC00::/7
- They are not routable in the global IPv6 Internet.
- Starts wth either FC or FD in the first two numbers

3)link local

- default IPV6 address on every ipv6 enabled interface(non routable) FE80::/10

- ***Multicast***
  - *In IPV6 multicast address will be starting with FF (FF00::/8)*

- ***Any cast***
  - *An anycast address is an address that is assigned to a set of interfaces that typically belong to different nodes.*
  - *similar to multicast , identify multiple interfaces but sends to only one whichever it finds first.*
  - *unique local and Global unicast addresses can be used as anycast.*

  Device(config)# interface f0/0

  Device(config-if)# IPv6 address ipv6-prefix/prefix-length anycast