

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.*

Capability to support multiple simultaneous interfaces

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 IANA

2) unique local

- like private ip (routable)
- FC00::/7
- They are not routable in the global IPv6 Internet.
- Starts with 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