Other Type of IP addresses

Unicast : One to one communication
↳ Public IP Routable IP addresses assigned by an ISP
↳ Privat IP Non-Routable
↳ APIPA : Automatic Private IP Address self assigned by a host when DHCP is not available
IP address range :- 169.254.0.0 - 169.254.255.255

Multicast : One to many
IP range :- 224.0.0.0 - 239.255.255.255

Broadcast : (Layer 3) One to everyone
IP range :- 192.168.30.255/24

Loopback (localhost) : Used for a host to communicate with itself
IP range :- 127.0.0.0 - 127.255.255.255

class C
192.168.30.0 NID Network ID
192.168.30.1 to 254 Assignable IP (AIP)
192.168.30.255 Broadcast IP (BIP)

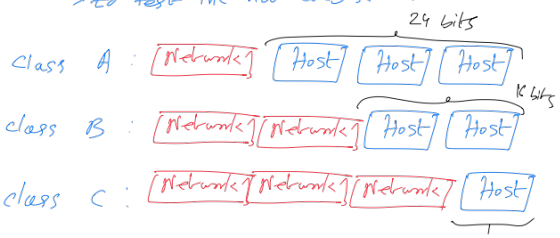
172.30.6.4 /16
class B
NID = 172.30.0.0
BIP = 172.30.255.255

Loakback IP

ping your own self.

IP range : 127.0.0.0 - 127.255.255.255

Why ? → Local Host
→ to test internal web server



loop back
127.0.0.0 - 127.255.255.255

Class	First Octet-address range	# of bits in the network address	# of networks	CIDR equivalent	# of Hosts	Reserved Address
A	1-127	8	126	/8	16,777,214	10.0.0.0 - 10.255.255.255
B	128-191	16	16,384	/16	65,534	172.16.0.0 - 172.31.255.255
C	192-223	24	2,097,152	/24	254	192.168.0.0 - 192.168.255.255
D	224-239	28	NA		Multicasting	
E	240-255				Reserved for Future Use	

IPv6 → 8
↳ 16 bits blocks

Hex
↳ 0-9, A-F
↳ every Hex is 4 binary digits.

→ An IPv6 address is 128 bits divided into 8 fields each being 16 bits

2001:0db8:3c4d:0012:0000:0000:1234:56ab
Global Routing Prefix 48 bits
Subnet ID 16 bits
Interface ID 64 bits
Prefix 64 bits

→ Prefix : First 64 bits assign to an organisation

→ Interface ID : Last 64 bits
↳ to identify a unique interface on a host.

2001:0db8:3c4d:0012:0000:0000:1234:56ab
↳ original

2001:db8:3c4d:12:0000:0000:1234:56ab
↳ drop the leading zeros

2001:db8:3c4d:12:0:0:1234:56ab
↳ 4 zeros turn to single 0

2001:db8:3c4d:12::1234:56ab
↳ Drop group of zeros and not them with :: can only appear once

2001:0000:0000:0001:0000:0000:0123:1234
↓
2001::1:0:0:123:1234

IPv6 format

2001:0db8:3c4d:0012:0000:0000:1234:56ab
8, 16 bits blocks separated by colons

Different type of IPv6

Unicast : One to One

① Global Unicast Address
↳ publicly routable to communicate outside of a local network
↳ 2000::/3 was the original
but now, all "non-derived" address are considered

② Unique Local Address
↳ non-publicly routable to communicate within a local network.
↳ FC00::/7
but the 8th bit must always be enabled so FD00/8 is the actual useable defined space

① Local Link Address
↳ Replacement for automatic Private IP addresses (APIPA), Every IPv6 host will have a link-local Address.
FE80::/10

Multicast : One to many
FF00::/8
Loopback : Used for testing, ::1
Anycast : One to nearest
Replaces broadcast from IPv4