

Globalipv6 Cheat Sheet (www.globalipv6.com)

IPv6 Address Types

Address Type	Prefix in Binary	IPv6 Prefix
Unspecified	0000...	::/128
Loopback	0000..1	::1/128
Link-local	1111111010	FE80::/10
Multicast	11111111	FF00::/8
Unique Local Unicast	11111111	FF00::/8
Global Unicast	001.....	2 or 3
Anycast Address	Any configured global unicast	
6to4	2002::/16	

IPv6 Header

Version (4)	Traffic Class (8)	Flow Label (20)
Payload Length (16)	Next Header (8b)	Hop Limit (8b)
Source IPv6 Address (128)		
Destination IPv6 Address (128)		

Version: Defines version of IPv6
Traffic Class: Used for prioritizing IPv6 packets
Flow Label: Used to label packets for special handling
Next Header: Defines the higher layer protocol or extension header coming up next
Hop Limit: Decrement by one by each router (N-1)
Source IPv6: Source IPv6 address
Destination IPv6: Destination IPv6 address

IPv6 Address Breakdown

Link-local (EUI-64)	FE80:212:3aFF:FEac:2234	Last 64 bits created from MAC with 2 bytes of padding in middle
Link-local (Temporary)	FE80:245:a654:8975:eb49	Last 64 bits of address is scrambled creating a unique address
Global Unicast	2ffb:0:0:4:0:5:6:1	Any IPv6 address starting with a 2 or 3.

Extension Headers

Hop-by-Hop options Header (NH=0)
Destination options header (NH=60)
Router header (NH=44)
Fragment header (NH=44)
Authentication header (NH=51)
ESP header (NH=50)
No next header (NH=59)

ICMPv6 Message Types

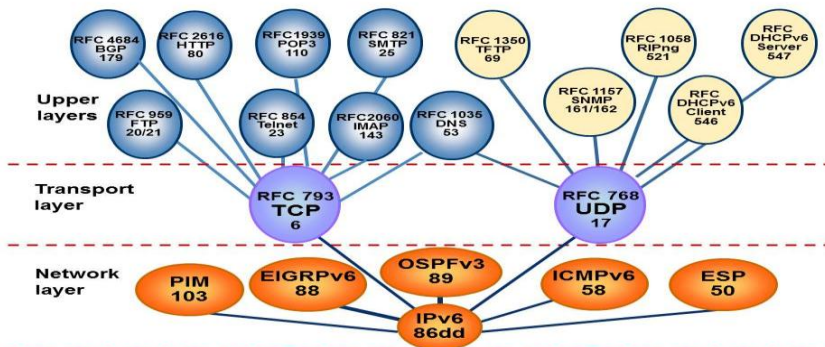
- 128 Echo Request
- 129 Echo Reply
- 130 Multicast Listener Query
- 131 Multicast Listener Report
- 132 Multicast Listener Done
- 133 Router Solicitation
- 134 Router Advertisement
- 135 Neighbor Solicitation
- 136 Neighbor Advertisement
- 137 Redirect Message
- 138 Router Renumbering
- 139 Node Information Query
- 140 Node Information Response
- 143 MLDv2
- 144 Home Agent Discovery Request
- 145 Home Agent Discovery Reply
- 146 Mobile Prefix Solicitation
- 147 Mobile Prefix Advertisement

Well-Known Multicast Addresses

FF01:0:0:0:0:0:1	All Nodes Interface-local
FF01:0:0:0:0:0:2	All Routers Interface-local
FF02:0:0:0:0:0:1	All Nodes Link-local
FF02:0:0:0:0:0:2	All Routers Link-local
FF02:0:0:0:0:0:4	DVMRP Routers
FF02:0:0:0:0:0:5	OSPF Drothers
FF02:0:0:0:0:0:6	OSPF DRs
FF02:0:0:0:0:0:9	Router RIPng
FF02:0:0:0:0:0:A	Router EIGRPv6
FF02:0:0:0:0:0:D	Router All PIM
FF02:0:0:0:0:0:16	Router ALL MLDv2
FF02:0:0:0:0:0:1:2	All DHCPv6 Discovery
FF02:0:0:0:0:0:1:FFXX:XXXX	Solicited-nodes address
FF05:0:0:0:0:0:1:3	All DHCPv6 Relay Agents

IPv6 Router Commands

```
R1# config t (takes you into configuration mode)
R1(config)# ipv6 unicast routing (enables IPv6 globally)
R1(config-if)# ipv6 enable (enables IPv6 on interface)
R1(config)# ipv6 router rip acme (enables RIPng)
R1(config)# ipv6 router ospf 1 (enables OSPFv3)
R1(config)# router bgp 65000 (enables BGP)
R1 (config-if)# ipv6 address 2ffb:0:0:1::1/64 (Static address)
R1(config-if)# ipv6 address 2ffb:0:0:1::/64 eui-64 (configure an EUI-64 address)
```



Multicast Address Headers

