

# IPv6 Quick Reference

## ICMPv6 Informational Messages

Type	Description
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

## ICMPv6 Error Messages

Type	Description	ICMP Code 0	ICMP Code 1	ICMP Code 2	ICMP Code 3	ICMP Code 4	ICMP Code 5	ICMP Code 6
1	dst unreachable	no route to dst	no route to ds	beyond scope of src address	address unreachable	port unreachable	src address failed ingress /egress policy	reject route to dst
2	packet too big	n/a	n/a	n/a	n/a	n/a	n/a	n/a
3	time exceeded	hop limit exceeded in transit	fragment reassembly time exceeded	n/a	n/a	n/a	n/a	n/a
4	parameter problem	erroneous header field	unrecognized next-header type	unrecognized IPv6 option	n/a	n/a	n/a	n/a
100	private	n/a	n/a	n/a	n/a	n/a	n/a	n/a
101	private	n/a	n/a	n/a	n/a	n/a	n/a	n/a
127	reserved	n/a	n/a	n/a	n/a	n/a	n/a	n/a

## IPv4-IPv6 Address Comparison

IPv4 Address	IPv6 Address	Description
224.0.0.0/4	ff00::/8	multicast prefix
224.0.0.1	ff02::1	all-hosts address
224.0.0.2	ff0[0-e]::2	all-routers address
224.0.0.5	ff02::5	OSPF routers address
224.0.0.18	ff02::12	VRRP routers address
	ff02::12	EIGRP routers address
	ff02::16	all-MLDv2 routers address
224.0.0.251	ff0[0-e]::fb	all-mDNS servers address
224.0.1.1	ff0[0-e]::101	all-NTP servers address
169.254.0.0/16	fe80::/64	link-local prefix
RFC-1918	fc00::/7	Unique Local Address (ULA) prefix
192.0.2.0/24	2001:db8::/32	documentation prefix
	2001::/32	Teredo tunnel provider prefix
	2002::/16	6to4 tunnel provider prefix

## Multicast Address Dissection (ff02::1)

ff	0	2::	1
8 bits	4 bits	4 bits	112 bits
11111111	flgs	scop	group ID

## IPv4-IPv6 Command Comparison

IPv4	Linux	Windows
arp	ip -6 neigh sh	netsh interface ipv6 show neighbors
route	ip -6 route sh	netsh interface ipv6 show route
ping	ping6	ping -6
tracert	tracert6	tracert -6

## IPv6 Subnetting

prefix	20	01	:	0d	b8	:	c3	c7	:	49	40	::
subnet bits	8	16		24	32		40	48		56	64	

example:

prefix = 2 0 0 1 :0 d b 8 ::/30

binary = 0010 0000 0000 0001 0000 1101 1011 1000

-----ss

- = prefix bits

s = subnet bits

valid range = 2001:0db8:: - 2001:0dbb:ffff:ffff:ffff:ffff:ffff:ffff

## Multicast Scopes

0	reserved
1	interface-local
2	link-local
3	reserved
4	admin-local
5	site-local
8	organization-local
e	global

## IPv6 RFCs

#	Description
2460	IPv6 Specifications
2461	Neighbor Discovery
2462	SLAAC
3971	SeND
4291	Addressing Architecture
4443	ICMPv6

