

IPv6 Addressing & Subnetting Prefix Cheat Sheet

RFC 4291 address types, standard prefix allocations (/32, /48, /56, /64), and reverse DNS pointer syntax.

Live Interactive IPv6 Calculator: <https://lotsofnetwork.com/ipv6-calculator>

Address Scope / Type	Prefix Mask	Network Scope	RFC 4291 Practical Purpose
Global Unicast	2000::/3	Public Internet	Publicly routable unicast address on the global IPv6 Internet
Unique Local (ULA)	fc00::/7 (fd00::/8)	Private LAN	IPv6 equivalent of RFC 1918 private IPv4. Non-routable on public web
Link-Local	fe80::/10	Single Link / LAN	Auto-configured on every IPv6 interface. Non-routable past local switch
Multicast	ff00::/8	Network Scope	One-to-many packet transmission (ff02::1 all nodes, ff02::2 all routers)
Loopback	::1/128	Host Local	Localhost loopback address (IPv6 equivalent of 127.0.0.1)
Unspecified	:::/128	Default / Any	Represents absence of an address (IPv6 equivalent of 0.0.0.0)
IPv4-Mapped	::ffff:0:0/96	Transition	Embeds an IPv4 address within IPv6 (e.g. ::ffff:192.0.2.1)
Documentation	2001:db8::/32	RFC 3849	Reserved specifically for documentation, guides, and text examples

Standard IPv6 Prefix Allocations & Subnet Capacities

Prefix	Subnet Capacity	Recommended Industry Architecture
/32	65,536 /48 Sites	Standard Regional Internet Registry (RIR) allocation to Internet Service Providers
/48	65,536 /64 Subnets	Standard Enterprise campus, data center, or multi-site organization allocation
/56	256 /64 Subnets	Standard business / residential broadband allocation from modern ISPs
/64	18.4 Quintillion IPs	Standard single LAN subnet (Mandatory for Stateless Address Autoconfiguration / SLAAC)
/127	2 Usable IPs	Point-to-point inter-router link (RFC 6164 standard, prevents ping-pong attacks)
/128	1 Single Host	Single interface host route or loopback interface assignment