

USGv6 Test Selection Tables

IPv6 Core Requirements (IPv6 Specification, ICMPv6, PMTU, ND)

F1-Conformance: IPv6 Core Requirements R1v1.4

Applicable Profile: NIST SP 500-267B Revision 1 USGv6 Profile – November 2020.

Test Specification Id:

- [[Core-Conf](#)]IPv6 Ready Core Protocols Test Specification, [editor: [IPv6 Ready Logo](#)].

IPv6 Core Test Check List			
Reference	Test Specification Id	Test Number	Device Type
RFC 8200	Core-Conf	v6LC.1.1.1 Version Field	Host/Router
RFC 8200	Core-Conf	v6LC.1.1.2 Traffic Class Non-Zero - End Node	Host/Router
RFC 8200	Core-Conf	v6LC.1.1.3 Traffic Class Non-Zero - Intermediate Node	Router
RFC 8200	Core-Conf	v6LC.1.1.4 Flow Label Non-Zero (A)	Host/Router
RFC 8200	Core-Conf	v6LC.1.1.4 Flow Label Non-Zero (B)	Router
RFC 8200	Core-Conf	v6LC.1.1.5 Payload Length (A)(B)(C)	Host/Router
RFC 8200	Core-Conf	v6LC.1.1.6 No Next Header After IPv6 Header (A)(B)	Host/Router
RFC 8200	Core-Conf	v6LC.1.1.8 Hop Limit Zero - End Node	Host/Router
RFC 8200	Core-Conf	v6LC.1.1.9 Hop Limit Decrement - Intermediate Node	Router
RFC 7608	Core-Conf	v6LC.1.1.11 IP Forwarding – Routing prefixes greater than 64 bits (A)(B)(C)	Router
RFC 8200	Core-Conf	v6LC.1.2.2 No Next Header after Extension Header (A)	Host/Router
RFC 8200	Core-Conf	v6LC.1.2.2 No Next Header after Extension Header (B)	Router
RFC 8200	Core-Conf	v6LC.1.2.4 Extension Header Processing Order (A)(B)(C)(D)	Host/Router
RFC 8200	Core-Conf	v6LC.1.2.5 Option Processing Order (A)(B)(C)	Host/Router
RFC 8200	Core-Conf	v6LC.1.2.8 Options Processing, Destination Options Header (A)(B)(C)(D)(E)(F)(G)(H)	Host/Router
RFC 8200	Core-Conf	v6LC.1.2.9: Unrecognized Routing Type - End Node (A)(B)	Host/Router
RFC 8200	Core-Conf	v6LC.1.2.10: Unrecognized Routing Type - Intermediate Node (A)(B)	Host/Router
RFC 8200	Core-Conf	v6LC.1.3.1 Fragment Reassembly (A)(B)(C)(D)(E)(F) Note: Time Exceeded Message Generation is not Required.	Host/Router
RFC 8200	Core-Conf	v6LC.1.3.2 Reassembly Time Exceeded (A)(B)(C)(D)(E) Note: Time Exceeded Message Generation is not Required.	Host/Router
RFC 8200	Core-Conf	v6LC.1.3.4 Atomic Fragments (A)(B)	Host/Router
RFC 8200	Core-Conf	V6LC.1.3.5 Overlapping Fragments (A)(B)(D)(E)(F)(H)	Host/Router
RFC 8200	Core-Conf	V6LC.1.3.6 First Fragment Doesn't Contain All Headers (A)(B)(C)(D) Note: Parameter Problem Message Generation is not Required.	Host/Router
RFC 4861	Core-Conf	v6LC.2.1.1 On-Link Determination (A)(B)(C)	Host/Router

RFC 4861	Core-Conf	v6LC.2.1.2 Resolution Wait Queue (A)(B)	Host/Router
RFC 4861	Core-Conf	v6LC.2.1.3 Prefix Information Option Processing, On-link Flag	Host
RFC 4861	Core-Conf	v6LC.2.1.4 Host Prefix List (A)(B)	Host
RFC 4861	Core-Conf	v6LC.2.1.5 Neighbor Solicitation Origination, Address Resolution (A)(B)	Host/Router
RFC 4861	Core-Conf	v6LC.2.1.6 Neighbor Solicitation Origination, Reachability Confirmation (A)(B)(C)(D)	Host/Router
RFC 4861	Core-Conf	v6LC.2.1.7 Invalid Neighbor Solicitation Handling (A)(B)(C)(D)(E)(F)(G)(H)	Host/Router
RFC 4861	Core-Conf	v6LC.2.1.8 Neighbor Solicitation Processing, No NCE (A)(B)(C)	Host/Router
RFC 4861	Core-Conf	v6LC.2.1.9 Neighbor Solicitation Processing, NCE State INCOMPLETE (A)(B)(C)	Host/Router
RFC 4861	Core-Conf	v6LC.2.1.10 Neighbor Solicitation Processing, NCE State REACHABLE (A)(B)(C)(D)	Host/Router
RFC 4861	Core-Conf	v6LC.2.1.11 Neighbor Solicitation Processing, NCE State STALE (A)(B)(C)(D)	Host/Router
RFC 4861	Core-Conf	v6LC.2.1.12 Neighbor Solicitation Processing, NCE State PROBE (A)(B)(C)(D)	Host/Router
RFC 4861	Core-Conf	v6LC.2.1.13 Neighbor Solicitation Processing, IsRouterFlag (A)(B)(C)	Host
RFC 4861	Core-Conf	v6LC.2.1.15 Invalid Neighbor Advertisement Handling (A)(B)(C)(D)(E)(F)(G)	Host/Router
RFC 4861	Core-Conf	v6LC.2.1.16 Neighbor Advertisement Processing, No NCE (A)(B)(C)(D)(E)(F)(G)(H)	Host/Router
RFC 4861	Core-Conf	v6LC.2.1.17 Neighbor Advertisement Processing, NCE State INCOMPLETE (A)(B)(C)(D)(E)	Host/Router
RFC 4861	Core-Conf	v6LC.2.1.18 Neighbor Advertisement Processing, NCE State REACHABLE (A)(B)(C)(D)(E)(F)(G)(H)(I)(J)(K)(L)(M)(N)(O)(P)(Q)(R)	Host/Router
RFC 4861	Core-Conf	v6LC.2.1.19 Neighbor Advertisement Processing, NCE State STALE (A)(B)(C)(D)(E)(F)(G)(H)(I)(J)(K)(L)(M)(N)(O)(P)(Q)(R)	Host/Router
RFC 4861	Core-Conf	v6LC.2.1.20 Neighbor Advertisement Processing, NCE State PROBE (A)(B)(C)(D)(E)(F)(G)(H)(I)(J)(K)(L)(M)(N)(O)(P)(Q)(R)	Host/Router
RFC 4861	Core-Conf	v6LC.2.1.21 Neighbor Advertisement Processing, R-bit Change (A)(B)(C)(D)(E)(F)(G)(H)	Host
RFC 6980	Core-Conf	V6LC.2.1.22 Atomic Fragments in Neighbor Solicitations and Neighbor Advertisements (A)(B)	Host/Router
RFC 6980	Core-Conf	V6LC.2.1.23 Fragment Header in Neighbor Solicitations and Neighbor Advertisements (A)(B)	Host/Router
RFC 4861	Core-Conf	v6LC.2.2.2 Router Solicitations, Solicited Router Advertisement (A)(B)(C)	Host
RFC 4861	Core-Conf	v6LC.2.2.3 Host Ignores Router Solicitations (A)(B)(C)	Host
RFC 4861	Core-Conf	v6LC.2.2.4 Router Ignores Invalid Router Solicitations (A)(B)(C)(D)(E)(F)	Router
RFC 4861	Core-Conf	v6LC.2.2.5 Router Sends Valid Router Advertisement	Router
RFC 4861	Core-Conf	v6LC.2.2.6 Router Does Not Send Router Advertisements on Non-advertising Interface (A)(B)	Router

RFC 4861	Core-Conf	v6LC.2.2.7 Sending Unsolicited Router Advertisements (C)(D)(E)(F)	Router
RFC 4861	Core-Conf	v6LC.2.2.8 Ceasing to Be An Advertising Interface	Router
RFC 4861	Core-Conf	v6LC.2.2.9 Processing Router Solicitations (A)(B)	Router
RFC 4861	Core-Conf	v6LC.2.2.10 Router Solicitation Processing, Neighbor Cache (A)(B)(C)(D)(E)(F)(G)(H)(I)	Router
RFC 4861	Core-Conf	v6LC.2.2.11: Default Router Switch	Host
RFC 4861	Core-Conf	v6LC.2.2.12 Router Advertisement Processing, Validity (A)(B)(C)(D)(E)(F)	Host
RFC 4861	Core-Conf	v6LC.2.2.13 Router Advertisement Processing, Cur Hop Limit (A)	Host/Router
RFC 4861	Core-Conf	v6LC.2.2.14 Router Advertisement Processing, Router Lifetime (A)(B)(C)	Host
RFC 4861	Core-Conf	v6LC.2.2.15 Router Advertisement Processing, Reachable Time (B)	Router
RFC 4861	Core-Conf	v6LC.2.2.16 Router Advertisement Processing, Neighbor Cache (A)(B)(C)(D)(E)(F)(G)(H)(I)(J)(K)	Host
RFC 4861	Core-Conf	v6LC.2.2.17 Router Advertisement Processing, IsRouter flag (A)(B)(C)	Host
RFC 4861	Core-Conf	v6LC.2.2.18 Next-hop Determination	Host
RFC 4861	Core-Conf	v6LC.2.2.19 Router Advertisement Processing, On-link determination	Host
RFC 4191	Core-Conf	v6LC.2.2.20 Sending Router Advertisement with Route Preference (A)(B)(C)	Router
RFC 4191	Core-Conf	v6LC.2.2.21 Transmitting Route Information Option (A)(B)(C)(D)(E)	Router
RFC 4191	Core-Conf	v6LC.2.2.22 Processing Router Advertisements with Router Preference (A)(B)(C)(D)(E)	Host
RFC 6980	Core-Conf	v6LC.2.2.26: Atomic Fragments in Router Solicitations and Router Advertisement (A)	Host
RFC 6980	Core-Conf	v6LC.2.2.26: Atomic Fragments in Router Solicitations and Router Advertisement (B)	Router
RFC 6980	Core-Conf	v6LC.2.2.27: Fragments in Router Solicitation and Router Advertisements (A)	Host
RFC 6980	Core-Conf	v6LC.2.2.27: Fragments in Router Solicitation and Router Advertisements (B)	Router
RFC 4861	Core-Conf	v6LC.2.3.1 Redirected On-link: Valid (A)(B)(C)(D)	Host
RFC 4861	Core-Conf	v6LC.2.3.2 Redirected On-link: Suspicious (A)(B)(C)	Host
RFC 4861	Core-Conf	v6LC.2.3.3 Redirected On-link: Invalid (A)(B)(C)(D)(E)(F)(G)(H)(I)	Host
RFC 4861	Core-Conf	v6LC.2.3.4 Redirected to Alternate Router: Valid (A)(B)(C)(D)	Host
RFC 4861	Core-Conf	v6LC.2.3.5 Redirected to Alternate Router: Suspicious (A)(B)	Host
RFC 4861	Core-Conf	v6LC.2.3.6 Redirected to Alternate Router: Invalid (A)(B)(C)(D)(E)(F)(G)(H)(I)	Host
RFC 4861	Core-Conf	v6LC.2.3.7 Redirected Twice	Host
RFC 4861	Core-Conf	v6LC.2.3.8 Invalid Option (A)(B)(C)	Host
RFC 4861	Core-Conf	v6LC.2.3.10 Neighbor Cache Updated, No Neighbor Cache Entry (A)(B)(C)(D)	Host
RFC 4861	Core-Conf	v6LC.2.3.11 Neighbor Cache Updated from State INCOMPLETE (A)(B)(C)(D)	Host

RFC 4861	Core-Conf	v6LC.2.3.12 Neighbor Cache Updated from State REACHABLE (A)(B)(C)(D)(E)	Host
RFC 4861	Core-Conf	v6LC.2.3.13 Neighbor Cache Updated from State STALE (A)(B)(C)(D)(E)	Host
RFC 4861	Core-Conf	v6LC.2.3.14 Neighbor Cache Updated from State PROBE (A)(B)(C)(D)(E)	Host
RFC 4861	Core-Conf	v6LC.2.3.15 Invalid Redirect does not Update Neighbor Cache (A)(B)(C)(D)(E)(F)(G)(H)(I)	Host
RFC 4861	Core-Conf	v6LC.2.3.16 Redirect – Transmit (A)(B)(C)(D)	Router
RFC 4861	Core-Conf	v6LC.2.3.17 Redirect - Receive	Router
RFC 6980	Core-Conf	v6LC.2.3.18 Atomic Fragments in Redirect	Host
RFC 6980	Core-Conf	v6LC.2.3.19 Fragment Header in Redirect	Host
RFC 4862	Core-Conf	v6LC.3.1.1 Address Autoconfiguration and Duplicate Address Detection	Host/Router
RFC 4862	Core-Conf	v6LC.3.1.2 Receiving DAD Neighbor Solicitations and Advertisements (A)(B)(C)(D)	Host/Router
RFC 4862	Core-Conf	v6LC.3.1.3 Validation of DAD Neighbor Solicitations (A)(B)(C)(D)(E)(F)(G)(H)(I)(J)	Host/Router
RFC 4862	Core-Conf	v6LC.3.1.4 Validation of DAD Neighbor Advertisements (A)(B)(C)(D)(E)(F)(G)(H)(I)	Host/Router
RFC 4862	Core-Conf	v6LC.3.1.5 Receiving Neighbor Solicitations for Address Resolution (A)(B)	Host/Router
RFC 8201	Core-Conf	v6LC.4.1.1 Confirm Plug (A)(B)(C)	Host/Router
RFC 8201	Core-Conf	v6LC.4.1.3 Non-zero ICMPv6 Code	Host/Router
RFC 8201	Core-Conf	v6LC.4.1.4 Reduce PMTU On-link (A)(B)	Host/Router
RFC 8201	Core-Conf	v6LC.4.1.5 Reduce PMTU Off-link	Host/Router
RFC 8201	Core-Conf	v6LC.4.1.6 Receiving MTU Below IPv6 MTU (A)(B)	Host/Router
RFC 8201	Core-Conf	v6LC.4.1.7 Increase Estimate (A)(B)	Host/Router
RFC 8201	Core-Conf	v6LC.4.1.9 Checking for Increase in PMTU	Host/Router
RFC 4443	Core-Conf	v6LC.5.1.2 Replying to Echo Requests (A)(B)	Host/Router
RFC 4443	Core-Conf	v6LC.5.1.4 Packet Too Big Message Generation (A)(B)	Router
RFC 4443	Core-Conf	v6LC.5.1.5 Hop Limit Exceeded (Time Exceeded Generation) (A)(B)	Router
RFC 4443	Core-Conf	v6LC.5.1.6 Erroneous Header Field (Parameter Problem Generation)	Host/Router
RFC 4443	Core-Conf	v6LC.5.1.7 Unrecognized Next Header (Parameter Problem Generation)	Host/Router
RFC 4443	Core-Conf	v6LC.5.1.8 Unknown Informational Message Type	Host/Router
RFC 4443	Core-Conf	v6LC.5.1.9 Error Condition With ICMPv6 Error Message (A)(B)(C)(D)(E)(F)	Router
RFC 4443	Core-Conf	v6LC.5.1.10 Error Condition With Multicast Destination (A)(B)	Host/Router
RFC 4443	Core-Conf	v6LC.5.1.11 Error Condition With Non-Unique Source - Unspecified (A)(B)(C)(D)	Host/Router
RFC 4443	Core-Conf	v6LC.5.1.12 Error Condition With Non-Unique Source - Multicast (A)(B)(C)(D)	Host/Router
RFC 4443	Core-Conf	v6LC.5.1.13 Error Condition with Non-Unique Source - Anycast (A)(B)(C)(D)	Router

References:

- [RFC 8201] McCann, J., S. Deering, J. Mogul, and R. Hinden, Path MTU Discovery for IPv6, RFC 8201, July 2017.
- [RFC 8200] Hinden, R., S. Deering, Internet Protocol, Version 6 (IPv6) Specification, RFC 8200, July 2017.
- [RFC 4443] Conta, A., S. Deering M. Gupta, Internet Control Message Protocol (ICMPv6) for the Internet Protocol Version 6 (IPv6) Specification, RFC 4443, March 2006.
- [RFC 4861] Narten, T., Nordmark, E., and W. Simpson, H. Soliman, Neighbor Discovery for IP Version 6 (IPv6), RFC 4861, September 2007.
- [RFC 4862] - Thomson, S., T. Narten, T. Jinmei, IPv6 Stateless Address Autoconfiguration, RFC 4862, September 2007.
- [RFC 4191] R. Draves, D. Thaler, Default Router Preferences and More-Specific Routes, RFC 4191, November 2005.
- [RFC 6980] F. Gont, Security Implications of IPv6 Fragmentation with IPv6 Neighbor Discovery, RFC 6980, August 2013.
- [RFC8106] Jeong, J., Park, S., Beloeil, L., and S. Madanapalli, "IPv6 Router Advertisement Options for DNS Configuration", RFC 8106, DOI 10.17487/RFC8106, March 2017.
- [RFC7608] Boucadair, M., Petrescu, A., and F. Baker, "IPv6 Prefix Length Recommendation for Forwarding", BCP 198, RFC 7608, DOI 10.17487/RFC7608, July 2015.

The objective of this test selection sheet is to provide a reference for available test specifications that identifies tests applicable to the USGv6 Profile.