Search Results...

0	Reserved	—
1	Destination Unreachable	[RFC4443]
2	Packet Too Big	[RFC4443]
3	Time Exceeded	[RFC4443]
4	Parameter Problem	[RFC4443]
100	Private experimentation	[RFC4443]
101	Private experimentation	[RFC4443]
102–126	Unassigned	—
127	Reserved for expansion of ICMPv6 error msgs.	[RFC4443]
128	Echo Request	[RFC4443]
129	Echo Reply	[RFC4443]
130	Multicast Listener Query	[RFC2710]
131	Multicast Listener Report	[RFC2710]

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. . . and more Search Results. . .

132	Multicast Listener Done	[RFC2710]
133	Router Solicitation	[RFC4861]
134	Router Advertisement	[RFC4861]
135	Neighbor Solicitation	[RFC4861]
136	Neighbor Advertisement	[RFC4861]
137	Redirect Message	[RFC4861]
138	Router Renumbering	[Crawford]
139	ICMP Node Information Query	[RFC4620]
140	ICMP Node Information Response	[RFC4620]
141	Inverse Neighbor Discovery Solicitation Message	[RFC3122]
142	Inverse Neighbor Discovery Advertisement Message	[RFC3122]

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. . . and even more Search Results. . .

143	Version 2 Multicast Listener Report	[RFC3810]
144	Home Agent Address Discovery Request Message	[RFC6275]
145	Home Agent Address Discovery Reply Message	[RFC6275]
146	Mobile Prefix Solicitation	[RFC6275]
147	Mobile Prefix Advertisement	[RFC6275]
148	Certification Path Solicitation Message	[RFC3971]
149	Certification Path Advertisement Message	[RFC3971]
150	ICMP messages utilized by experimental mobility protocols such as Seamoby	[RFC4065]
151	Multicast Router Advertisement	[RFC4286]
152	Multicast Router Solicitation	[RFC4286]

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Could someone please stop this?

153	Multicast Router Termination	[RFC4286]
154	FMIPv6 Messages	[RFC5568]
155	RPL Control Message	[RFC6550]
156	ILNPv6 Locator Update Message	[RFC6743]
157	Duplicate Address Request	[RFC6775]
158	Duplicate Address Confirmation	[RFC6775]
159-199	Unassigned	—
200	Private experimentation	[RFC4443]
201	Private experimentation	[RFC4443]
255	Reserved for expansion of ICMPv6 informational messages	[RFC4443]

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Profiling

Description:	
Types(Codes):	
From:	**To:**
Forwarding? yes/no	**Hop Limit=255?** yes/no
Stateful? no/new/existing	
Used for what?	

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MLD (1)

Description: Multicast Listener Query	
Types(Codes): 130(0)	
From: LL Unicast	**To:** `ff02::1`, Unicast
Forwarding? no	**Hop Limit=255?** no (=1)
Stateful? no	
Used for what? Has a Router Alert Option; must be admitted when used with MLD capable switches or multicast routing.	

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MLD (2)

Description: Version 2 Multicast Listener Report	
Types(Codes): 143(0)	
From: LL Unicast, `::`	**To:** `ff02::16`
Forwarding? no	**Hop Limit=255?** no (=1)
Stateful? no	
Used for what? Has a Router Alert Option; must be admitted when used with MLD capable switches or multicast routing.	

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MLD (3)

Description: Version 1 Multicast Listener Report	
Types(Codes): 131(0)	
From: LL Unicast	**To:** `Requested MC Address`
Forwarding? no	**Hop Limit=255?** no (=1)
Stateful? no	
Used for what? Has a Router Alert Option; must be admitted when used with MLD capable switches or multicast routing.	

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MLD (4)

Description: Version 1 Multicast Listener Done	
Types(Codes): 132(0)	
From: LL Unicast	**To:** `ff02::2`
Forwarding? no	**Hop Limit=255?** no (=1)
Stateful? theoretically yes	
Used for what? Has a Router Alert Option; must be admitted when used with MLD capable switches or multicast routing.	

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Packet Too Big

Description: Packet Too Big	
Types(Codes): 2(0)	
From: All Unicast	**To:** All Unicast
Forwarding? yes	**Hop Limit=255?** no
Stateful? yes	
Used for what? Can in theory be filtered if it can be guaranteed that fragmentation won't occur, but will retaliate with rather painful troubleshooting sessions if fragmentation actually does occur.	

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ICMPv6 Redirect

Description: ICMPv6 Redirect	
Types(Codes): 137(0)	
From: LL Unicast from Router	**To:** LL Unicast to Host
Forwarding? no	**Hop Limit=255?** yes
Stateful? existing(???)	
Used for what? Won't occur in network topologies designed to avoid them.	

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Destination Unreachable

Description: Destination Unreachable	
Types(Codes): 1(0–7)	
From: All Unicast	**To:** All Unicast
Forwarding? yes	**Hop Limit=255?** no
Stateful? yes	
Used for what? Appear effectively everywhere. Can in theory be filtered, but then lead to exceedingly slow timeouts (up to 3 minutes per address). Can potentially be filtered further based on specific ICMPv6 codes.	

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Time Exceeded (1)

Description: Time Exceeded/Hop Limit Exceeded in Transit	
Types(Codes): 3(0)	
From: All Unicast	**To:** All Unicast
Forwarding? yes	**Hop Limit=255?** no
Stateful? yes	
Used for what? Can in theory be filtered if no dynamic routing protocols are used and all routing tables are guaranteed to be correct, but simplify troubleshooting tremendously.	

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Time Exceeded (2)

Description: Time Exceeded/Fragment Reassembly Time Exceeded	
Types(Codes): 3(1)	
From: All Unicast	**To:** All Unicast
Forwarding? yes	**Hop Limit=255?** no
Stateful? yes	
Used for what? Like "Packet Too Big".	

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Parameter Problem

Description: Parameter Problem	
Types(Codes): 4(0–3)	
From: All Unicast	**To:** All Unicast
Forwarding? yes	**Hop Limit=255?** no
Stateful? yes	
Used for what? Frequently indicate serious problems or incompatibilities; essential for troubleshooting, but very rare.	

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Neighbor Discovery (1)

Description: Neighbor Solicitation	
Types(Codes): 135(0)	
From: LL Unicast, :: (for DAD)	**To:** Unicast, ff02::1:ff*xx*:*xxxx*
Forwarding? no	**Hop Limit=255?** yes
Stateful? no	
Used for what? Must be allowed for Duplicate Address Detection and Neighbor Discovery; in very extreme cases the Neighbor Cache might be statically configured instead.	

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Neighbor Discovery (2)

Description: Neighbor Advertisement	
Types(Codes): 135(0)	
From: LL Unicast	**To:** Unicast, `ff02::1` (for DAD)
Forwarding? no	**Hop Limit=255?** yes
Stateful? yes	
Used for what? Must be allowed for Duplicate Address Detection and Neighbor Discovery; in very extreme cases the Neighbor Cache might be statically configured instead.	

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Autoconfiguration (1)

Description: Router Solicitation	
Types(Codes): 133(0)	
From: LL Unicast	**To:** `ff02::2` LL Unicast (special cases only)
Forwarding? no	**Hop Limit=255?** yes
Stateful? new	
Used for what? Is only used for autoconfiguration.	

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Autoconfiguration (2)

<table>
<tr><td colspan="2">Description: Router Advertisement</td></tr>
<tr><td colspan="2">Types(Codes): 133(0)</td></tr>
<tr><td>From:
LL Unicast from Router</td><td>To:
<code>ff02::1</code>
LL Unicast (special cases only)</td></tr>
<tr><td>Forwarding? no</td><td>Hop Limit=255? yes</td></tr>
<tr><td colspan="2">Stateful? existing</td></tr>
<tr><td colspan="2">Used for what?
Is only used for autoconfiguration.</td></tr>
</table>

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Echo Request

Description: Echo Request	
Types(Codes): 128(0)	
From: All Unicast	**To:** All Unicast, all Multicast
Forwarding? yes	**Hop Limit=255?** no
Stateful? new	
Used for what? Useful for troubleshooting and monitoring purposes, but can be filtered if necessary. Pings to multicast addresses can be particularly troublesome in some scenarios.	

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Echo Reply

Description: Echo Reply	
Types(Codes): 129(0)	
From: All Unicast	**To:** All Unicast
Forwarding? yes	**Hop Limit=255?** no
Stateful? existing	
Used for what? Useful for troubleshooting and monitoring purposes, but can be filtered if necessary. Pings to multicast addresses can be particularly troublesome in some scenarios.	

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Fazit

- Manche ICMPv6-Pakete müssen wir durchlassen.
- Der Link-Local Scope und der Hop Limit=255 Trick verhindern auch ohne Paketfilter viel Probleme.
- Connection Tracking hat in existierenden Implementierungen seine Grenzen.
- Multicast bringt einige zusätzliche Überraschungen mit.

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Silvia Hagen
IPv6 Essentials (3rd edition)
O'Reilly, 2014
ISBN 978-1-4493-1921-2
In-depth description of the IPv6 protocol suite

Benedikt Stockebrand
IPv6 in Practice—A Unixer's Guide to the Next Generation Internet
Springer, 2006
ISBN 3-540-24524-3
Configuration with Unix (including the extra gory details)

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Ressourcen: Web Ressources

Internet Assigned Numbers Authority (IANA)
`http://www.iana.org/assignments/icmpv6-parameters/icmpv6-parameters.xhtml`
The officially allocated ICMPv6 Types and Codes

Internet Engineering Task Force (IETF)
Requests for Comments (RFCs)
`http://www.ietf.org`
The official specifications

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