



## DHCP Options

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DHCP provides a framework for passing configuration information to hosts on a TCP/IP network. Configuration parameters and other control information are carried in tagged data items that are stored in the options field of the DHCP message. The data items themselves are also called options.

This appendix contains DHCP options and BOOTP vendor extensions from RFC 2132, and includes the validation type for each option, as indicated in [Table B-10 on page B-13](#).

This appendix also contains the standard Microsoft client options and several tables displaying the options sorted by categories.

## Option Descriptions

The following sections describe the DHCP options in detail:

- [RFC 1497 Vendor Extensions, page B-1](#)
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## RFC 1497 Vendor Extensions

[Table B-1](#) lists the vendor extensions as defined in RFC 1497.

**Table B-1** RFC 1497 Vendor Extension Options

Option Name	No.	Length	Description
Pad	0	1 octet	Causes the subsequent fields to align on word boundaries.
End	255	1 octet	End of valid information in the vendor field. Subsequent octets should be filled with the Pad options.
Subnet Mask	1	4 octets	Client's subnet mask, as per RFC 950. If both the Subnet Mask and the Router option are specified in a DHCP reply, the Subnet Mask option must be first.
Time Offset	2	4 octets	Offset of the client's subnet, in seconds, from Universal Time (UT). The offset is expressed as a twos-complement 32-bit integer. A positive offset indicates a location east of the zero meridian and a negative offset indicates a location west of the zero meridian.
Router	3	4 octet minimum; multiples of 4	List of IP addresses for routers on the client's subnet. Routers should be in order of preference.
Time Server	4	4 octet minimum; multiples of 4	List of RFC 868 compliant time servers available to the client. Servers should be in order of preference.
Name Server Option	5	4 octet minimum; multiples of 4	List of IEN 116 name servers available to the client. Servers should be in order of preference.
Domain Name Server	6	4 octet minimum; multiples of 4	List of Domain Name System (STD 13, RFC 1035) name servers available to the client. Servers should be in order of preference.
Log Server	7	4 octet minimum; multiples of 4	List of MIT-LCS UDP log servers available to the client. Servers should be in order of preference.
Cookie Server	8	4 octet minimum; multiples of 4	List of RFC 865-compliant cookie servers available to the client. Servers should be in order of preference.
LPR Server	9	4 octet minimum; multiples of 4	List of RFC 1179-compliant line printer servers available to the client. Servers should be in order of preference.
Impress Server	10	4 octet minimum; multiples of 4	List of Imagen Impress servers available to the client. Servers should be in order of preference.
Resource Location Server	11	4 octet minimum; multiples of 4	List of RFC 887-compliant resource location servers available to the client. Servers should be in order of preference.
Host Name	12	1 octet minimum	Name of the client. The name may or may not be qualified with the local domain name. See RFC 1035 for the character set restrictions.
Boot File Size	13	2 octets	Number of 512-octet blocks in the default boot file.
Merit Dump File	14	1 octet minimum	Path name of a file to which the client's core image should be placed in the event the client crashes. The path is formatted as a character string consisting of characters from the NVT ASCII character set.
Domain Name	15	1 octet minimum	Domain name that the client should use when resolving host names through the Domain Name System.
Swap Server	16	4 octets	IP address of the client's swap server.

**Table B-1** *RFC 1497 Vendor Extension Options (continued)*

Option Name	No.	Length	Description
Root Path	17	1 octet minimum	Path name that contains the client's root disk. The path is formatted as a character string consisting of characters from the NVT ASCII character set.
Extensions Path	18	1 octet minimum	Uses a string to specify a file, retrievable through TFTP. The file contains information that can be interpreted in the same way as the 64-octet vendor-extension field within the BOOTP response, with these exceptions: the length of the file is unconstrained, and all references to instances of this option in the file are ignored.

## IP Layer Parameters Per Host

Table B-2 lists the options that affect the operation of the IP layer on a per-host basis.

**Table B-2** *IP Layer Parameters Per Host Options*

Option Name	No.	Length	Description
IP Forwarding Enable/Disable	19	1 octet	Specifies whether the client should configure its IP layer for packet forwarding. Values: 0=disable; 1=enable
Non-Local Source Routing Enable/Disable	20	1 octet	Specifies whether the client should configure its IP layer to allow forwarding of datagrams with non-local source routes. Values: 0=disable; 1=enable
Policy Filter	21	8 octet minimum; multiples of 8	Policy filters for non-local source routing. The filters consist of a list of IP addresses and masks that specify destination/mask pairs with which to filter incoming source routes. Any source-routed datagram whose next-hop address does not match one of the filters should be discarded by the client.
Maximum Datagram Reassembly Size	22	2 octets	Maximum size datagram that the client should be prepared to reassemble. Value: 576 minimum
Default IP Time-to-Live	23	1 octet	Default TTL that the client should use on outgoing datagrams. Values: 1 to 255
Path MTU Aging Timeout	24	4 octets	Timeout (in seconds) to use when aging Path MTU values (defined in RFC 1191).
Path MTU Plateau Table	25	2 octets minimum; multiples of 2	Table of MTU sizes to use when performing Path MTU Discovery as defined in RFC 1191. The table is formatted as a list of 16-bit unsigned integers, ordered from smallest to largest. Value: 68 minimum

## IP Layer Parameters Per Interface

Table B-3 lists the options that affect the operation of the IP layer on a per-interface basis. A client can issue multiple requests, one per interface, to configure interfaces with their specific parameters.

**Table B-3** IP Layer Parameters Per Interface Options

Option Name	No.	Length	Description
Interface MTU	26	2 octets	Maximum time to live to use on this interface.
All Subnets Are Local	27	1 octet	Specifies whether or not the client can assume that all subnets of the IP network to which the client is connected use the same MTU as the subnet of that network to which the client is directly connected. Values: 1=all subnets share same MTU; 0=some directly-connected subnets can have smaller MTUs
Broadcast Address	28	4 octets	Broadcast address in use on the client's subnet.
Perform Mask Discovery	29	1 octet	Specifies whether or not the client should perform subnet mask discovery using ICMP. Values: 0=disable; 1=enable
Mask Supplier	30	1 octet	Specifies whether or not the client should respond to subnet mask requests using ICMP. Values: 0=do not respond; 1=respond
Perform Router Discovery	31	1 octet	Specifies whether or not the client should solicit routers using the Router Discovery mechanism defined in RFC 1256. Values: 0=disable; 1=enable
Router Solicitation Address	32	4 octets	Address to which the client should transmit router solicitation requests.
Static Route	33	8 octet minimum; multiples of 8	List of static routes that the client should install in its routing cache. If multiple routes to the same destination are specified, they are in descending order of priority. The routes consist of a list of IP address pairs. The first address is the destination address, and the second address is the router for the destination. The default route (0.0.0.0) is an illegal destination for a static route.

## Link Layer Parameters Per Interface

Table B-4 lists the options that affect the operation of the data link layer on a per-interface basis.

**Table B-4** Link Layer Parameters Per Interface Options

Option Name	No.	Length	Description
Trailer Encapsulation	34	1 octet	Specifies whether or not the client should negotiate the use of trailers (RFC 893) when using the ARP protocol. Values: 0=do not use; 1=use
ARP Cache Timeout	35	4 octets	Time-out in seconds for ARP cache entries.

**Table B-4** *Link Layer Parameters Per Interface Options (continued)*

Option Name	No.	Length	Description
Ethernet Encapsulation	36	1 octet	Specifies whether or not the client should use Ethernet Version 2 (RFC 894) or IEEE 802.3 (RFC 1042) encapsulation if the interface is an Ethernet. Value: 0=use RFC 894 encapsulation; 1=use RFC 1042 encapsulation

## TCP Parameters

Table B-5 lists the options that affect the operation of the TCP layer on a per-interface basis.

**Table B-5** *TCP Parameter Options*

Option Name	No.	Length	Description
TCP Default TTL	37	1 octet	Default TTL that the client should use when sending TCP segments. Value: minimum 1
TCP Keepalive Interval	38	4 octets	Interval (in seconds) that the client TCP should wait before sending a keepalive message on a TCP connection. The time is specified as a 32-bit unsigned integer. A value of zero indicates that the client should not generate keepalive messages on connections unless specifically requested by an application. Value: 32-bit unsigned; 0=do not generate keepalive messages unless specifically requested.
TCP Keepalive Garbage	39	1 octet	Specifies the whether or not the client should send TCP keep-alive messages with an octet of garbage for compatibility with older implementations. Values: 0=do not send; 1=send

## Application and Service Parameters

Table B-6 lists some miscellaneous options used to configure miscellaneous applications and services.

**Table B-6** *Application and Service Parameter Options*

Option Name	No.	Length	Description
Network Information Service (NIS) Domain	40	1 octet minimum	Name of the client's NIS domain. The domain is formatted as a character string consisting of characters from the NVT ASCII character set.
Network Information Service (NIS) Servers	41	4 octet minimum; multiples of 4	List of IP addresses indicating NIS servers available to the client. Servers should be in order of preference.
Network Time Protocol Servers	42	4 octet minimum; multiples of 4	List of IP addresses indicating NTP servers that are available to the client. Servers should be in order of preference.

Table B-6 Application and Service Parameter Options (continued)

Option Name	No.	Length	Description
Vendor-Specific Information	43	1 octet minimum	<p>This option is used by clients and servers to exchange vendor-specific information. The information is an opaque object of <math>n</math> octets, presumably interpreted by vendor-specific code on the clients and servers. The definition of this information is vendor specific. The vendor is indicated in the <i>dhcp-class-identifier</i> option. Servers not equipped to interpret the vendor-specific information sent by a client must ignore it (although it can be reported). Clients that do not receive desired vendor-specific information should make an attempt to operate without it, although they can do so (and announce they are doing so) in a degraded mode.</p> <p>If a vendor potentially encodes more than one item of information in this option, then the vendor should encode the option using encapsulated vendor-specific options as described here.</p> <p>The encapsulated vendor-specific options field should be encoded as a sequence of code/length/value fields of identical syntax to the DHCP options field with these exceptions:</p> <ul style="list-style-type: none"> <li>• There should not be a magic cookie field in the encapsulated vendor-specific extensions field.</li> <li>• Codes other than 0 or 255 can be redefined by the vendor within the encapsulated vendor-specific extensions field, but should conform to the tag-length-value syntax defined in section 2.</li> </ul> <p>Code 255 (END), if present, signifies the end of the encapsulated vendor extensions, not the end of the vendor extensions field. If no code 255 is present, then the end of the enclosing vendor-specific information field is taken as the end of the encapsulated vendor-specific extensions field.</p>
NetBIOS over TCP/IP Name Server	44	4 octet minimum; multiples of 4	List of RFC 1001/1002 NBNS name servers in order of preference.
NetBIOS over TCP/IP Datagram Distribution Server	45	4 octet minimum; multiples of 4	List of RFC 1001/1002 NBDD servers in order of preference.

**Table B-6 Application and Service Parameter Options (continued)**

Option Name	No.	Length	Description
NetBIOS over TCP/IP Node Type	46	1 octet	Allows NetBIOS over TCP/IP client, which are configured as described in RFC 1001/1002. Values: Single octet in hexadecimal that identifies the client type: <ul style="list-style-type: none"> <li>• 0x1=B-node (broadcast node)</li> <li>• 0x2=P-node (point-to-point node)</li> <li>• 0x4=M-node (mixed node)</li> <li>• 0x8=H-node</li> </ul>
NetBIOS over TCP/IP Scope	47	1 octet minimum	NetBIOS over TCP/IP scope parameter for the client as specified in RFC 1001/1002.
X Window System Font Server	48	4 octet minimum; multiples of 4	List of X Window System Font servers available to the client. Servers should be in order of preference.
X Window System Display Manager	49	4 octet minimum; multiples of 4	List of IP addresses of systems that are running the X Window System Display Manager and are available to the client. Addresses should be in order of preference.
Network Information Service (NIS+) Domain	64	1 octet minimum	Name of the client's NIS+ domain. The domain is formatted as a character string consisting of characters from the NVT ASCII character set.
Network Information Service (NIS+) Servers	65	4 octet minimum; multiples of 4	List of IP addresses indicating NIS+ servers available to the client. Servers should be in order of preference.
Mobile IP Home Agent	68	0 octets minimum; multiples of 4; expected, 4 octets (single home agent's address)	List of IP addresses indicating mobile IP home agents available to the client. Agents should be in order of preference. Value: 32-bit address; 0=no home agents available
Simple Mail Transport Protocol (SMTP) Server	69	4 octet minimum; multiples of 4	List of SMTP servers available to the client. Servers should be in order of preference.
Post Office Protocol (POP3) Server	70	4 octet minimum; multiples of 4	List of POP3 servers available to the client. Servers should be in order of preference.
Network News Transport Protocol (NNTP) Server	71	4 octet minimum; multiples of 4	List of NNTP servers available to the client. Servers should be in order of preference.
World Wide Web (WWW) Server	72	4 octet minimum; multiples of 4	List of World Wide Web (WWW) servers available to the client. Servers should be in order of preference.

**Table B-6** Application and Service Parameter Options (continued)

Option Name	No.	Length	Description
Finger Server	73	4 octet minimum; multiples of 4	List of Finger servers available to the client. Servers should be in order of preference.
Internet Relay Chat Server	74	4 octet minimum; multiples of 4	List of IRC servers available to the client. Servers should be in order of preference.
StreetTalk Server	75	4 octet minimum; multiples of 4	List of StreetTalk servers available to the client. Servers should be in order of preference.
StreetTalk Directory Assistance (STDA) Server	76	4 octet minimum; multiples of 4	List of STDA servers available to the client. Servers should be in order of preference.

## DHCPv4 Extension Options

Table B-7 lists the DHCPv4 extension options.

**Table B-7** DHCPv4 Extensions

Option Name	No.	Length	Description
Requested IP Address	50	4 octets	Used in a client request (DHCPDISCOVER) to allow the client to request that a particular IP address be assigned.
IP Address Lease Time	51	4 octets	Used in a client request (DHCPDISCOVER or DHCPREQUEST) to allow the client to request a lease time for the IP address. In a server reply (DHCP OFFER), a DHCP server uses this option to specify the lease time it is willing to offer. Value: seconds, as 32-bit unsigned integer
Option Overload	52	1 octet	Indicates that the DHCP sname or file fields are being overloaded by using them to carry DHCP options. A DHCP server inserts this option if the returned parameters will exceed the usual space allotted for options. If this option is present, the client interprets the specified additional fields after it concludes interpretation of the standard option fields. Values: 1=file field is used to hold options; 2=sname field is used to hold options; 3=both fields are used to hold options
DHCP Message Type	53	1 octet	Used to convey the type of DHCP message. The default is 1 (DHCPDISCOVER). Values: 1=DHCPDISCOVER; 2=DHCPOFFER; 3=DHCPREQUEST; 4=DHCPDECLINE; 5=DHCPACK; 6=DHCPNAK; 7=DHCPRELEASE; 8=DHCPINFORM

Table B-7 DHCPv4 Extensions (continued)

Option Name	No.	Length	Description
Server Identifier	54	4 octets	Used in DHCPOFFER and DHCPREQUEST messages, and can optionally be included in the DHCPACK and DHCPNAK messages. DHCP servers include this option in the DHCPOFFER in order to allow the client to distinguish between lease offers. DHCP clients use the contents of the server identifier field as the destination address for any DHCP messages unicast to the DHCP server. DHCP clients also indicate which of several lease offers is being accepted by including this option in a DHCPREQUEST message. The identifier is the IP address of the selected server.
Parameter Request List	55	1 octet minimum	Used by a DHCP client to request values for specified configuration parameters. The list of requested parameters is specified as <i>n</i> octets, where each octet is a valid DHCP option code as defined in this document. The client can list the options in order of preference. The DHCP server does not have to return the options in the requested order, but must try to insert the options in the order that the client requested.
Message	56	1 octet minimum	Used by a DHCP server to provide an error message to a DHCP client in a DHCPNAK message in the event of a failure. A client can use this option in a DHCPDECLINE message to indicate why the client declined the offered parameters. The message consists of <i>n</i> octets of NVT ASCII text, which the client can display on an available output device.
Maximum DHCP Message Size	57	2 octets	Maximum length DHCP message that a server is willing to accept. The length is specified as an unsigned 16-bit integer. A client can use the maximum DHCP message size option in DHCPDISCOVER or DHCPREQUEST messages, but should not use the option in DHCPDECLINE messages. Value: 576 minimum
Renewal (T1) Time Value	58	4 octets	Time interval from address assignment until the client transitions to RENEWING state. Value: seconds, as 32-bit unsigned integer
Rebinding (T2) Time Value	59	4 octets	Time interval from address assignment until the client transitions to REBINDING state. Value: seconds, as 32-bit unsigned integer
Vendor Class Identifier	60	1 octet minimum	Used by DHCP clients to optionally identify the vendor type and configuration of a DHCP client. The information is a string of <i>n</i> octets, interpreted by servers. Vendors can choose to define specific vendor class identifiers to convey particular configuration or other identification information about a client. For example, the identifier can encode the client's hardware configuration. Servers not equipped to interpret the class-specific information sent by a client must ignore it (although it can be reported). Servers that respond should only use option 43 to return the vendor-specific information to the client.

**Table B-7** DHCPv4 Extensions (continued)

Option Name	No.	Length	Description
Client-Identifier	61	2 octet minimum	<p>Used by DHCP clients to specify their unique identifier. DHCP servers use this value to index their database of address bindings. This value is expected to be unique for all clients in an administrative domain.</p> <p>DHCP servers should treat identifiers as opaque objects. The client identifier can consist of type-value pairs similar to the <i>htype/chaddr</i> fields. For instance, it can consist of a hardware type and hardware address. In this case, the type field should be one of the ARP hardware types defined in STD2. A hardware type of 0 (zero) should be used when the value field contains an identifier other than a hardware address (for example, a fully qualified domain name).</p> <p>For correct identification of clients, each client's client-identifier must be unique among the client-identifiers used on the subnet to which the client is attached. Vendors and system administrators are responsible for choosing client-identifiers that meet this requirement for uniqueness.</p>
TFTP Server Name	66	1 octet minimum	Identifies a TFTP server when the <i>sname</i> field in the DHCP header has been used for DHCP options.
Bootfile Name	67	1 octet minimum	Identifies a bootfile when the file field in the DHCP header has been used for DHCP options.

## DHCPv6 Options

Table B-8 lists the DHCPv6 options. All the option packets include at least an option length (option-len) and a variable length data field. There can also be additional parameter settings, as described in the table.

**Table B-8** DHCPv6 Options

Network Registrar Name	No.	Description
client-identifier	1	DUID identifying a client between a client and a server.
server-identifier	2	DUID identifying a server between a client and a server.
ia-na	3	Nontemporary Addresses option with the associated parameters and addresses. Parameters are the unique ID, time the client contacts the addresses in the IA to extend the lifetime, and time the client contacts any available server to extend the lifetime of the addresses.
ia-ta	4	Temporary Addresses option with the associated parameters and addresses.
iaaddr	5	IPv6 addresses associated with an IA_NA or IA_TA. (The IAADDR must be encapsulated in the options field of an IA_NA or IA_TA option.) The IAADDR option includes preferred and valid lifetime fields, and the options field that encapsulates the options specific to this address.

**Table B-8** *DHCPv6 Options (continued)*

<b>Network Registrar Name</b>	<b>No.</b>	<b>Description</b>
oro	6	Option Request Option that identifies a list of options in a message between a client and a server.
preference	7	A server sends this option to a client to affect what server the client selects.
option-time	8	A client sends this option to a server to indicate how long the client has been trying to complete a message exchange.
relay-message	9	DHCP message in a Relay-forward or Relay-reply message.
auth	11	Authenticates the identity and contents of a DHCP message. The parameters are the authentication protocol, the authentication algorithm, the replay detection method (RDM), and the authentication information.
server-unicast	12	The server sends this to a client to indicate that the client can unicast messages to the server.
status-code	13	Returns a status indication related to the DHCP message or option in which it appears. The parameters are the status code and status message.
rapid-commit	14	Signals use of the two-message exchange for address assignment.
user-class	15	Used by a client to identify the type or category of user or applications it represents. This is a type-count data type option, with a zero type count value field followed by user data as a blob.
vendor-class	16	Used by a client to identify the vendor that manufactured the hardware on which client is running.
vendor-options	17	Clients and servers use this to exchange vendor-specific information.
interface-id	18	Used by the relay agent to identify the interface on which the client message is received.
reconfigure-message	19	The server includes this in a RECONFIGURE message to indicate whether the client should respond with a RENEW or INFORMATION-REQUEST message.
reconfigure-accept	20	The client uses this to announce to the server whether the client is willing to accept RECONFIGURE messages.
sip-servers-name	21	Domain names of the SIP outbound proxy servers for the client to use.
sip-servers-address	22	IPv6 addresses of the SIP outbound proxy servers for the client to use.
dns-servers	23	IPv6 addresses of DNS recursive name servers.
domain-list	24	Domain names in the domain search list.
ia-pd	25	IPv6 prefix delegation identity association and its associated parameters and prefixes. Parameters are the unique ID, time the client contacts the addresses in the IA to extend the lifetime, and time the client contacts any available server to extend the lifetime of the addresses.
iaprefix	26	IPv6 prefixes associated with an IA_PD. The prefix must be encapsulated in the options field of an IA_PD option. Parameters are the valid and preferred lifetimes, prefix length, and the prefix.

**Table B-8** DHCPv6 Options (continued)

Network Registrar Name	No.	Description
nis-servers	27	List of IPv6 addresses of NIS servers available to the client.
nisp-servers	28	List of IPv6 addresses of NIS+ servers available to the client.
nis-domain-name	29	NIS domain name for the client.
nisp-domain-name	30	NIS+ domain name for the client.

## Microsoft Client Options

Table B-9 lists the standard Microsoft client options.

**Table B-9** Microsoft DHCP Client Options

Option Name	No.	Description
dhcp-lease-time	51	14 days
domain-name	15	A domain name such as cisco.com
domain-name-servers	6	IP address of the name servers
netbios-name-servers	44	WINS server address
netbios-node-type	46	Identifies the NetBIOS client type; note that Network Registrar displays a warning if it is not present
routers	3	IP address of the router for this subnet

## Option Tables

The following tables display the DHCP options in various ways. They show the options sorted numerically, by Network Registrar name, and by category.

DHCP options have a prescribed format and allowed values for their option parameters. Table B-10 lists each DHCP option and parameter type (in the Validation column). The parameter formats and allowed values come from the DHCP and Internet RFCs. All the DHCP options appear, but clients control only some, and the CLI only others.

## Options by Number

Table B-10 shows the DHCPv4 options sorted by option number, and includes the validation type. (See Table B-12 on page B-21 for details on the option validation types found in the Validation column.) A **0+** in the Comments column means a repeat count of zero or more occurrences, **1+** means one or more occurrences, **2n** means multiple occurrences in multiples of 2. Comments also indicate whether the option includes suboptions, and, if so, how many.

**Table B-10** DHCPv4 Options by Number

No.	Network Registrar Name	Protocol Name	Validation	Comments
--	packet-file-name	--	AT_STRING	
--	packet-server-name	--	AT_STRING	
--	packet-siaddr	--	AT_IPADDR	
0	pad	Pad		
1	subnet-mask	Subnet Mask	AT_IPADDR	
2	time-offset	Time Offset	AT_STIME	
3	routers	Router	AT_IPADDR	1+
4	time-servers	Time Server	AT_IPADDR	1+
5	name-servers	Name Server	AT_IPADDR	1+
6	domain-name-servers	Domain Server	AT_IPADDR	1+
7	log-servers	Log Server	AT_IPADDR	1+
8	cookie-servers	Quotes Server	AT_IPADDR	1+
9	lpr-servers	LPR Server	AT_IPADDR	1+
10	impress-servers	Impress Server	AT_IPADDR	1+
11	resource-location-servers	RLP Server	AT_IPADDR	1+
12	host-name	Host Name	AT_NSTRING	
13	boot-size	Boot File Size	AT_SHORT	
14	merit-dump	Merit Dump File	AT_NSTRING	
15	domain-name	Domain Name	AT_NSTRING	
16	swap-server	Swap Server	AT_IPADDR	
17	root-path	Root Path	AT_NSTRING	
18	extensions-path	Extension File	AT_NSTRING	
19	ip-forwarding	Forward On/Off	AT_BOOL	
20	non-local-source-routing	SrcRte On/Off	AT_BOOL	
21	policy-filters	Policy Filter	AT_IPADDR	2n
22	max-dgram-reassembly	Maximum DG Assembly	AT_SHORT	
23	default-ip-ttl	Default IP TTL	AT_RANGEBYTE	
24	path-mtu-aging-timeout	MTU Timeout	AT_TIME	
25	path-mtu-plateau-tables	MTU Plateau	AT_RANGESHORT	2n
26	interface-mtu	MTU Interface	AT_RANGESHORT	
27	all-subnets-local	MTU Subnet	AT_BOOL	
28	broadcast-address	Broadcast Address	AT_IPADDR	
29	perform-mask-discovery	Mask Discovery	AT_BOOL	
30	mask-supplier	Mask Supplier	AT_BOOL	
31	router-discovery	Router Discovery	AT_BOOL	

**Table B-10 DHCPv4 Options by Number (continued)**

No.	Network Registrar Name	Protocol Name	Validation	Comments
32	router-solicitation-address	Router Request	AT_IPADDR	
33	static-routes	Static Route	AT_IPADDR	2n
34	trailer-encapsulation	Trailers	AT_BOOL	
35	arp-cache-timeout	ARP Timeout	AT_TIME	
36	ieee802.3-encapsulation	Ethernet	AT_BOOL	
37	default-tcp-ttl	Default TCP TTL	AT_RANGEBYTE	
38	tcp-keepalive-interval	Keepalive Time	AT_TIME	
39	tcp-keepalive-garbage	Keepalive Data	AT_BOOL	
40	nis-domain	NIS Domain	AT_STRING	
41	nis-servers	NIS Servers	AT_IPADDR	1+
42	ntp-servers	NTP Servers	AT_IPADDR	1+
43	vendor-encapsulated-options	Vendor Specific	AT_BLOB	
44	netbios-name-servers	NetBIOS Name Server	AT_IPADDR	1+
45	netbios-dd-servers	NetBIOS Distribution Server	AT_IPADDR	1+
46	netbios-node-type	NetBIOS Node Type	AT_RANGEBYTE	
47	netbios-scope	NetBIOS Scope	AT_NSTRING	
48	font-servers	X Window Font	AT_IPADDR	1+
49	x-display-managers	X Window Manager	AT_IPADDR	1+
50	dhcp-requested-address	Address Request	AT_IPADDR	
51	dhcp-lease-time	Address Time	AT_TIME	
52	dhcp-option-overload	Overload	AT_OVERLOAD	
53	dhcp-message-type	DHCP Message Type	AT_MESSAGE	(See the <a href="#">DHCP Message Type</a> option in <a href="#">Table B-7</a> on <a href="#">page B-8</a> )
54	dhcp-server-identifier	DHCP Server ID	AT_IPADDR	
55	dhcp-parameter-request-list	Parameter List	AT_INT8	0+
56	dhcp-message	DHCP Message	AT_NSTRING	
57	dhcp-max-message-size	DHCP Maximum Message Size	AT_SHORT	
58	dhcp-renewal-time	Renewing Time	AT_TIME	
59	dhcp-rebinding-time	Rebinding Time	AT_TIME	
60	dhcp-class-identifier	Class Identifier	AT_NSTRING	
61	dhcp-client-identifier	Client Identifier	AT_BLOB	

**Table B-10 DHCPv4 Options by Number (continued)**

No.	Network Registrar Name	Protocol Name	Validation	Comments
62	netwareip-domain	NetWare/IP Domain	AT_NSTRING	
63	netwareip-information	NetWare/IP Option	AT_BLOB	
64	nis+-domain	NIS Domain Name	AT_NSTRING	
65	nis+-servers	NIS Server Address	AT_IPADDR	1+
66	tftp-server	TFTP Server Name	AT_NSTRING	
67	boot-file	Bootfile Name	AT_NSTRING	
68	mobile-ip-home-agents	Mobile IP Home Agent	AT_IPADDR	0+
69	smtp-servers	SMTP Server	AT_IPADDR	1+
70	pop3-servers	POP3 Server	AT_IPADDR	1+
71	nnntp-servers	NNTP Server	AT_IPADDR	1+
72	www-servers	WWW Server	AT_IPADDR	1+
73	finger-servers	Finger Server	AT_IPADDR	1+
74	irc-servers	IRC Server	AT_IPADDR	1+
75	streetwork-servers	StreetTalk Server	AT_IPADDR	1+
76	streetwork-directory-assistance-servers	STDA Server	AT_IPADDR	1+
77	dhcp-user-class-id	User Class ID	Array of blobs	Suboptions (2)
78	slp-directory-agent	Service Location Protocol Directory Agent	AT_BLOB	Suboptions (2)
79	slp-service-scope	SLP Service Scope	AT_BLOB	Suboptions (2)
80	rapid-commit	Rapid Commit	AT_ZEROSIZE	
81	client-fqdn	Client FQDN	AT_BLOB	Suboptions (4)
82	relay-agent-info	Relay Agent Information	AT_BLOB	Suboptions (14)
85	nds-servers	NDS Servers	AT_IPADDR	1+
86	nds-tree	NDS Tree Name	AT_NSTRING	
87	nds-context	NDS Context	AT_NSTRING	
90	authentication	Authentication	AT_BLOB	Suboptions (5)
93	pxe-client-arch		AT_SHORT	
94	pxe-client-network-id		AT_BLOB	Suboptions (2)
95	ldap-url		AT_NSTRING	
97	pxe-client-machine-id		AT_BLOB	Suboptions (2)
98	user-auth	User Authentication	AT_NSTRING	
112	netinfo-parent-server-addr		AT_IPADDR	
113	netinfo-parent-server-tag		AT_NSTRING	
114	initial-url		AT_NSTRING	

**Table B-10** DHCPv4 Options by Number (continued)

No.	Network Registrar Name	Protocol Name	Validation	Comments
116	auto-configure	Autoconfiguration	AT_RANGEBYTE	
117	name-service-search	Name Service Search	AT_SHORT	1+
118	subnet-selection	Subnet Selection	AT_IPADDR	
119	domain-search	Domain Search	AT_BLOB	
120	sip-servers	SIP Servers	AT_BLOB	Suboptions (2)
121	classless-static-route	Classless Static Route	AT_BLOB	
122	cablelabs-client-configuration)	CableLabs Client Configuration	AT_BLOB	Suboptions (10) (see <a href="#">cablelabs-client-configuration</a> , page C-2)
123	geo-conf	GeoConf Option	AT_BLOB	
124	v-i-vendor-class	Vendor-Identifying Vendor Class	AT_VENDOR_CLASS	
125	v-i-vendor-info	Vendor-Identifying Vendor-Specific Info	AT_VENDOR_OPTS	
128	mcns-security-server	--	AT_IPADDR	
161	cisco-leased-ip	Cisco	AT_IPADDR	
162	cisco-client-requested-host-name	Cisco	AT_NSTRING	
163	cisco-client-last-transaction-time	Cisco	AT_INT	
185	vpn-id	VPN Identifier	AT_BLOB	Suboptions (2)
220	subnet-alloc	Subnet Allocation	AT_BLOB	Suboptions (5)
221	cisco-vpn-id	Cisco VPN Identifier	AT_BLOB	Suboptions (2)
251	cisco-auto-configure	Cisco Autoconfiguration	AT_RANGEBYTE	
255	end	End	AT_ZEROSIZE	

## Options by Network Registrar Name

[Table B-11](#) lists the DHCP options by Network Registrar name. (For each option's validation type, cross-reference it by number to [Table B-10](#) and check the Validation column.)

**Table B-11** DHCP Options by Network Registrar Name

Network Registrar Name	Number	Option Name	Category
auto-configuration	116	Auto-Configuration	--
all-subnets-local	27	All Subnets Are Local	Interface
arp-cache-timeout	35	ARP Cache Timeout	Interface

**Table B-11** DHCP Options by Network Registrar Name (continued)

Network Registrar Name	Number	Option Name	Category
authentication	90	Authentication	--
authentication	11	Authentication	DHCPv6
boot-file	67	Bootfile Name	BOOTP
boot-size	13	Boot File Size	BOOTP
broadcast-address	28	Broadcast Address	Interface
cablelabs-client-configuration	122	CableLabs Client Configuration	Interface
cisco-autoconfigure	251	Cisco Autoconfiguration	--
cisco-client-last-transaction-time	163	Cisco Client Last Transaction Time	--
cisco-client-requested-host-name	162	Cisco Client Requested Host Name	--
cisco-leased-ip	161	Cisco Leased IP Address	--
cisco-vpn-id	221	Cisco VPN Identifier	--
classless-static-route	121	Classless Static Route	--
client-fqdn	81	DHCP Client FQDN	(proposed)
client-identifier	1	Client Identifier	DHCPv6
cookie-servers	8	Cookie Server	BOOTP
default-ip-ttl	23	Default IP Time-to-Live	Host IP
default-tcp-ttl	37	TCP Default TTL	Interface
dhcp-class-identifier	60	Vendor Class Identifier	--
dhcp-client-identifier	61	Client-Identifier	Basic
dhcp-lease-time	51	IP Address Lease Time	Lease Information, MS DHCP Client
dhcp-max-message-size	57	Maximum DHCP Message Size	--
dhcp-message-type	53	DHCP Message Type	--
dhcp-message	56	Message	--
dhcp-option-overload	52	Option Overload	--
dhcp-parameter-request-list	55	Parameter Request List	--
dhcp-rebinding-time	59	Rebinding (T2) Time Value	Lease Information, MS DHCP Client
dhcp-renewal-time	58	Renewing (T1) Time Value	Lease Information, MS DHCP Client
dhcp-requested-address	50	Requested IP Address	--
dhcp-server-identifier	54	Server Identifier	--
dhcp-user-class-id	77	--	--
dns-servers	23	DNS Servers	DHCPv6

**Table B-11** DHCP Options by Network Registrar Name (continued)

Network Registrar Name	Number	Option Name	Category
domain-list	24	Domain List	DHCPv6
domain-name	15	Domain Name	Basic, MS DHCP Client
domain-name-servers	6	Domain Name Server	Basic, MS DHCP Client
domain-search	119	Domain Search	--
end	255	End	--
extensions-path	18	Extensions Path	BOOTP
finger-servers	73	Finger Server	Servers
font-servers	48	X Window System Font Server	Servers
geo-conf	123	GeoConf Option	--
host-name	12	Host Name	Basic
ia-na	3	Nontemporary Addresses	DHCPv6
ia-pd	25	Prefix Delegation	DHCPv6
ia-ta	4	Temporary Addresses	DHCPv6
iaaddr	5	IAADDR	DHCPv6
iaprefix	26	IA Prefix	DHCPv6
ieee802.3-encapsulation	36	Ethernet Encapsulation	Interface
impress-servers	10	Impress Server	BOOTP
interface-id	18	Interface Identifier	DHCPv6
interface-mtu	26	Interface MTU	Interface
ip-forwarding	19	IP Forwarding Enable/Disable	Host IP
irc-servers	74	IRC Server	Servers
log-servers	7	Log Server	Servers
lpr-servers	9	LPR Server	Servers
mask-supplier	30	Mask Supplier	Interface
max-dgram-reassembly	22	Maximum Datagram Reassembly Size	Host IP
mcns-security-server	128	--	Servers
merit-dump	14	Merit Dump File	BOOTP
mobile-ip-home-agents	68	Mobile IP Home Agent	Servers
name-servers	5	Name Server	BOOTP
name-service-search	117	Name Service Search	--
nds-context	87	NDS Context	NetWare Client
nds-servers	85	NDS Servers	NetWare Client
nds-tree	86	NDS Tree Name	NetWare Client

**Table B-11** DHCP Options by Network Registrar Name (continued)

Network Registrar Name	Number	Option Name	Category
netbios-dd-servers	45	NetBIOS over TCP/IP Datagram Distribution Server	WINS/NetBIOS
netbios-name-servers	44	NetBIOS over TCP/IP Name Server	WINS/NetBIOS, MS DHCP Client
netbios-node-type	46	NetBIOS over TCP/IP Node Type	WINS/NetBIOS, MS DHCP Client
netbios-scope	47	NetBIOS over TCP/IP Scope	WINS/NetBIOS, MS DHCP Client
netwareip-domain	62	NetWare/IP Domain Name	NetWare Client
netwareip-information	63	NetWare/IP Information	NetWare Client
nis+-domain	64	NIS+ Domain	Servers
nis+-servers	65	Network Information Service (NIS+) Servers	Servers
nis-domain	40	NIS Domain	Servers
nis-domain-name	29	NIS Domain Name	DHCPv6
nis-servers	41	Network Information Service (NIS) Servers	Servers
nis-servers	27	NIS Servers	DHCPv6
nisp-domain-name	30	NIS+ Domain Name	DHCPv6
nisp-servers	28	NIS+ Servers	DHCPv6
nntp-servers	71	NNTP Server	Servers
non-local-source-routing	20	Non-Local Source Routing	Host IP
ntp-servers	42	NTP Servers	Servers
option-time	8	Option Time	DHCPv6
oro	6	Option Request Option	DHCPv6
packet-file-name	--	--	DHCP Packet Fields
packet-server-name	--	--	DHCP Packet Fields
packet-siaddr	--	--	DHCP Packet Fields
pad	0	Pad	--
path-mtu-aging-timeout	24	Path MTU Aging Timeout	Host IP
path-mtu-plateau-tables	25	Path MTU Plateau Table	Host IP
perform-mask-discovery	29	Perform Mask Discovery	Interface
policy-filters	21	Policy Filter	Host IP
pop3-servers	70	POP3 Server	Servers
preference	7	Preference	DHCPv6
rapid-commit	80	Rapid Commit	--
rapid-commit	14	Rapid Commit	DHCPv6
reconfigure-accept	20	Reconfigure Accept	DHCPv6

**Table B-11** DHCP Options by Network Registrar Name (continued)

Network Registrar Name	Number	Option Name	Category
reconfigure-message	19	Reconfigure Message	DHCPv6
relay-agent-info	82	DHCP Relay Agent Information	--
relay-message	9	Relay Message	DHCPv6
resource-location-servers	11	Resource Location Server	BOOTP
root-path	17	Root Path	BOOTP
router-discovery	31	Perform Router Discovery	Interface
router-solicitation-address	32	Router Solicitation Address	Interface
routers	3	Router	Basic, MS DHCP Client
server-identifier	2	DHCPv6 Server Identifier	DHCPv6
server-unicast	12	Server Unicast	DHCPv6
sip-servers	120	SIP Servers	--
sip-servers-name	21	SIP Servers Name	DHCPv6
sip-servers-address	22	SIP Servers Address	DHCPv6
slp-directory agent	78	SLP Directory Agent	--
slp-service-scope	79	SLP Service Scope	--
smtp-servers	69	SMTP Server	Servers
static-route	33	Static Route	Interface
status-code	13	Status Code	DHCPv6
streettalk-directory-assistance-servers	76	STDA Server	Servers
streettalk-servers	75	StreetTalk Server	Servers
subnet-mask	1	Subnet Mask	Basic
subnet-selection	118	Subnet Selection	--
swap-server	16	Swap Server	BOOTP
tcp-keepalive-garbage	39	TCP Keepalive Garbage	Interface
tcp-keepalive-interval	38	TCP Keepalive Interval	Interface
tftp-server	66	TFTP Server Name	Servers
time-offset	2	Time Offset	BOOTP
time-servers	4	Time Server	BOOTP
trailer-encapsulation	34	Trailer Encapsulation	Interface
user-auth	98	User Authentication	--
user-class	15	User Class	DHCPv6
vendor-class	16	Vendor Class	DHCPv6
vendor-options	17	Vendor Options	DHCPv6
vendor-encapsulated-options	43	Vendor Specific Information	--

**Table B-11** DHCP Options by Network Registrar Name (continued)

Network Registrar Name	Number	Option Name	Category
v-i-vendor-class	124	Vendor Identifying Vendor Class	--
v-i-vendor-opts	125	Vendor Identifying Vendor Options	--
vpn-id	185	VPN Identifier	--
www-servers	72	WWW Server	Servers
x-display-managers	49	X Window System Display Manager	Servers

## Option Validation Types

Table B-12 defines the DHCP option validation types.

**Table B-12** Validation Types

Validation	Description
AT_BLOB	List of binary bytes
AT_BOOL	Boolean
AT_BYTE	Unrestricted sequence of 8-bit integers
AT_DATE	Bytes representing a date
AT_DNSNAME	DNS name
AT_INT	Unsigned 32-bit integer
AT_INT8	8-bit integer
AT_INTI	Unsigned 32-bit integer (Intel)
AT_IPADDR	32-bit IP address
AT_IP6ADDR	32-bit IPv6 address
AT_MACADDR	Bytes representing a MAC address
AT_MESSAGE	Unsigned 8-bit message (not usable for custom options)
AT_NSTRING	AT_STRING except with no termination
AT_OVERLOAD	8-bit unsigned integer (not usable for custom options)
AT_RANGEBYTE	Bounded sequence of 8-bit (not usable for custom options)
AT_RANGESHORT	Bounded sequence of 16-bit (not usable for custom options)
AT_RDNSNAME	Relative DNS name
AT_SHORT	Unsigned 16-bit integer
AT_SHRTI	Unsigned 16-bit integer (Intel)
AT_SINT	Signed 32-bit integer
AT_SINTI	Signed 32-bit integer (Intel)
AT_SSHORT	Signed 16-bit integer

**Table B-12** *Validation Types (continued)*

<b>Validation</b>	<b>Description</b>
AT_SSHRTI	Signed 16-bit integer (Intel)
AT_STIME	Signed 32-bit signed integer representing time
AT_STRING	Unrestricted sequence of ASCII characters
AT_TIME	Unsigned 32-bit integer representing time
AT_VENDOR_CLASS	Vendor class
AT_VENDOR_NOLEN	Vendor no length
AT_VENDOR_OPTS	Vendor options
AT_ZEROSIZE	32 bits of zero size