```
**********************************************************
    6816 Fri Feb 14 07:59:16 2020
new/usr/src/man/man1/dhcpinfo.1
12305 typos in dhcp man pages
**********************************************************
'\" te
.\"  Copyright (c) 1992-1996 Competitive Automation, Inc.
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.\" Copyright (c) 2020 Peter Tribble
.\" The contents of this file are subject to the terms of the Common Development
.\"  See the License for the specific language governing permissions and limitat
.\" fields enclosed by brackets "[]" replaced with your own identifying informat
.TH DHCPINFO 1 "Feb 13, 2020"
.TH DHCPINFO 1 "May 15, 2009"
.SH NAME
dhcpinfo \- display values of parameters received through DHCP
.SH SYNOPSIS
.LP
.nf
\fBdhcpinfo\fR [\fB-c\fR] [\fB-i\fR \fIinterface\fR] [\fB-n\fR \fIlimit\fR] [\fB
.fi

.LP
.nf
\fBdhcpinfo\fR [\fB-c\fR] [\fB-i\fR \fIinterface\fR] [\fB-n\fR \fIlimit\fR] [\fB
.fi

.SH DESCRIPTION
.sp
.LP
The \fBdhcpinfo\fR utility prints the \fBDHCP\fR-supplied value(s) of the
parameter requested on the command line. The parameter can be identified either
by its numeric code in the \fBDHCP\fR specification, or by its mnemonic
identifier, as listed in \fBdhcp_inittab\fR(4). This command is intended to be
used in command substitutions in the shell scripts invoked at system boot or
used in command substitutions in the shell scripts invoked by \fBinit\fR(1M) at
system boot. It first contacts the \fBDHCP\fR client daemon at system boot or
in event scripts as described in \fBdhcpagent\fR(1M). It first contacts the
DHCP client daemon \fBdhcpagent\fR(1M) to verify that \fBDHCP\fR has
successfully completed on the requested interface. If \fBDHCP\fR has
successfully completed on the requested interface, \fBdhcpinfo\fR retrieves the
values for the requested parameter. Parameter values echoed by \fBdhcpinfo\fR
should not be used without checking its exit status. See \fBexit\fR(1).
.sp
.LP
See \fBdhcp_inittab\fR(4) for the list of mnemonic identifier codes for all
\fBDHCP\fR parameters. See \fIRFC 2132, DHCP Options and BOOTP Vendor
Extensions\fR for more details on DHCPv4 parameters, and RFC 3315, Dynamic Host
Configuration Protocol for IPv6 (DHCPv6), for more details on DHCPv6
parameters.
.SS "Output Format"
.sp
.LP
The output from \fBdhcpinfo\fR consists of one or more lines of \fBASCII\fR
text; the format of the output depends upon the requested parameter. The number
of values returned per line and the total number of lines output for a given
parameter are determined by the parameter's \fBgranularity\fR and \fBmaximum\fR
values, respectively, as defined by \fBdhcp_inittab\fR(4).
.sp
.LP
The format of each individual value is determined by the data type of the
option, as determined by \fBdhcp_inittab\fR(4). The possible data types and
their formats are listed below:
.sp

.sp
```



```
.TS
c c c
l l l .
Data Type       Format  \fBdhcp_inittab\fR(4) type
Unsigned Number One or more decimal digits      T{
\fBUNUMBER8\fR, \fBUNUMBER16\fR, \fBUNUMBER32\fR, \fBUNUMBER64\fR
T}
Signed Number   T{
One or more decimal digits, optionally preceded by a minus sign
T}      T{
\fBSNUMBER8\fR, \fBSNUMBER16\fR, \fBSNUMBER32\fR, \fBSNUMBER64\fR
T}
\fBIP\fR Address        Dotted-decimal notation \fBIP\fR
IPv6 Address    Colon-separated notation        \fBIPv6\fR
Octet   T{
The string \fB0x\fR followed by a two-digit hexadecimal value
T}      \fBOCTET\fR
String  Zero or more \fBASCII\fR characters     \fBASCII\fR
DUID    DHCP Unique Identifier text     \fBDUID\fR
Domain Name     T{
Standard dot-separated domain name, RFC 1035 format
T}      \fBDOMAIN\fR
.TE

.SH OPTIONS
.sp
.LP
The following options are supported:
.sp
.ne 2
.na
\fB\fB-c\fR\fR
.ad
.RS 16n
Displays the output in a canonical format. This format is identical to the
\fBOCTET\fR format with a granularity of \fB1\fR.
.RE

.sp
.ne 2
.na
\fB\fB-i\fR \fIinterface\fR\fR
.ad
.RS 16n
Specifies the interface to retrieve values for \fBDHCP\fR parameters from. If
this option is not specified, the primary interface is used.
.sp
If a primary interface has not been selected for the system by
\fBifconfig\fR(1M) or for this command by \fB-i\fR, the system automatically
selects an interface to consider as primary for the current command invocation.
The selection chooses the interface whose name sorts lexically first, and that
has DHCP parameters attached.  This selection does not affect system state. Use
\fBifconfig\fR(1M) to set a primary interface.
.sp
The recommended practice in the \fBdhcpagent\fR(1M) \fBeventhook\fR scripts is
to specify the desired interface with \fB-i\fR, rather than relying on primary
selection.
.sp
For DHCPv6, the interface name used should be the name of the physical
interface, not one of the logical interfaces created by \fBdhcpagent\fR.
.RE

.sp
.ne 2
.na
\fB\fB-n\fR \fIlimit\fR\fR
```

```
.ad
.RS 16n
Limits the list of values displayed to \fIlimit\fR lines.
.RE

.sp
.ne 2
.na
\fB\fB-v 4|6\fR\fR
\fI\fB-v\fR\fB4 | 6\fR\fR
.ad
.RS 16n
Specifies the DHCP version to query. Use \fB-v 4\fR for DHCPv4 and \fB-v 6\fR
for DHCPv6.
Specifies the DHCP version to query. Use \fB-v4\fRfor DHCPv4 and \fB-v6\fR for
DHCPv6.
.RE

.SH OPERANDS
.sp
.LP
The following operands are supported:
.sp
.ne 2
.na
\fB\fIcode\fR\fR
.ad
.RS 14n
Numeric code for the requested \fBDHCP\fR parameter, as defined by the
\fBDHCP\fR specification. Vendor options are specified by adding \fB256\fR to
the actual vendor code for DHCPv4, and \fB65536\fR for DHCPv6.
.RE

.sp
.ne 2
.na
\fB\fIidentifier\fR\fR
.ad
.RS 14n
Mnemonic symbol for the requested \fBDHCP\fR parameter, as listed in
\fBdhcp_inittab\fR(4).
.RE

.SH EXIT STATUS
.sp
.LP
The following exit values are returned:
.sp
.ne 2
.na
\fB\fB0\fR\fR
.ad
.RS 5n
Successful operation.
.RE

.sp
.ne 2
.na
\fB\fB2\fR\fR
.ad
.RS 5n
The operation was not successful. The \fBDHCP\fR client daemon might not be
running, the interface might have failed to configure, or no satisfactory
\fBDHCP\fR responses were received.
.RE
```



```
.sp
.ne 2
.na
\fB\fB3\fR\fR
.ad
.RS 5n
Bad arguments.
.RE

.sp
.ne 2
.na
\fB\fB4\fR\fR
.ad
.RS 5n
The operation timed out.
.RE

.sp
.ne 2
.na
\fB\fB6\fR\fR
.ad
.RS 5n
System error (should never occur).
.RE

.SH ATTRIBUTES
.sp
.LP
See \fBattributes\fR(5) for descriptions of the following attributes:
.sp

.sp
.TS
box;
c | c
l | l .
ATTRIBUTE TYPE  ATTRIBUTE VALUE
_
Interface Stability     Committed
.TE

.SH SEE ALSO
\fBdhcpagent\fR(1M), \fBifconfig\fR(1M), \fBdhcp_inittab\fR(4),
.sp
.LP
\fI\fBdhcpagent\fR(1M), \fBifconfig\fR(1M), \fBinit\fR(1M), \fBdhcp_inittab\fR(4),
\fBattributes\fR(5)
.sp
.LP
Alexander, S., and R. Droms, \fIRFC 2132, DHCP Options and BOOTP Vendor
Extensions\fR, Silicon Graphics, Inc., Bucknell University, March 1997.
.sp
.LP
Droms, R. , \fIRFC 3315, Dynamic Host Configuration Protocol for IPv6
(DHCPv6)\fR, Cisco Systems, July 2003.
.sp
.LP
Mockapetris, P.V. , \fIRFC 1035, Domain names - implementation and
specification\fR, ISI, November 1987.
```

```
**********************************************************
   29321 Fri Feb 14 07:59:16 2020
new/usr/src/man/man1m/dhcpagent.1m
12305 typos in dhcp man pages
**********************************************************
'\" te
.\"  Copyright (c) 1992-1996 Competitive Automation, Inc. Copyright (c) 2009 Sun
.\"  Copyright (c) 2016-2017, Chris Fraire <cfraire@me.com>.
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.\" See the License for the specific language governing permissions and limitati
.\" fields enclosed by brackets "[]" replaced with your own identifying informat
.TH DHCPAGENT 1M "Feb 13, 2020"
.TH DHCPAGENT 1M "Jun 30, 2017"
.SH NAME
dhcpagent \- Dynamic Host Configuration Protocol (DHCP) client daemon
.SH SYNOPSIS
.LP
.nf
\fBdhcpagent\fR [\fB-a\fR] [ \fB-d\fR \fIn\fR] [\fB-f\fR] [\fB-v\fR]
.fi

.SH DESCRIPTION
.LP
\fBdhcpagent\fR implements the client half of the Dynamic Host Configuration
Protocol \fB(DHCP)\fR for machines running illumos software.
.sp
.LP
The \fBdhcpagent\fR daemon obtains configuration parameters for the client
(local) machine's network interfaces from a \fBDHCP\fR server. These parameters
may include a lease on an \fBIP\fR address, which gives the client machine use
of the address for the period of the lease, which may be infinite. If the
client wishes to use the \fBIP\fR address for a period longer than the lease,
it must negotiate an extension using \fBDHCP\fR. For this reason,
\fBdhcpagent\fR must run as a daemon, terminating only when the client machine
powers down.
.sp
.LP
For IPv4, the \fBdhcpagent\fR daemon is controlled through \fBipadm\fR(1M),
\fBnwamcfg\fR(1M), or \fBifconfig\fR(1M) in much the same way that the
\fBinit\fR(1M) daemon is controlled by \fBtelinit\fR(1M). \fBdhcpagent\fR can
be invoked as a user process, albeit one requiring root privileges, but this is
not necessary, as \fBipadm\fR(1M), \fBnwamcfg\fR(1M), or \fBifconfig\fR(1M)
will start \fBdhcpagent\fR automatically.
.sp
.LP
For IPv6, the \fBdhcpagent\fR daemon is invoked automatically by
\fBin.ndpd\fR(1M). It can also be controlled through \fBifconfig\fR(1M), if
necessary.
.sp
.LP
When invoked, \fBdhcpagent\fR enters a passive state while it awaits
instructions from \fBipadm\fR(1M), \fBnwamcfg\fR(1M), \fBifconfig\fR(1M), or
\fBin.ndpd\fR(1M). When \fBdhcpagent\fR receives a command to configure an
interface, \fBdhcpagent\fR brings up the interface (if necessary) and starts
DHCP. Once DHCP is complete, \fBdhcpagent\fR can be queried for the values of
the various network parameters. In addition, if DHCP was used to obtain a lease
on an address for an interface, \fBdhcpagent\fR configures the address for use.
When a lease is obtained, it is automatically renewed as necessary. If the
lease cannot be renewed, \fBdhcpagent\fR will unconfigure the address, but the
interface will be left up, and \fBdhcpagent\fR will attempt to acquire a new
address lease.
.sp
.LP
\fBdhcpagent\fR monitors system suspend/resume events and will validate any
non-permanent leases with the DHCP server upon resume. Similarly,
\fBdhcpagent\fR monitors link up/down events and will validate any
```



```
non-permanent leases with the DHCP server when the downed link is brought back
up. The lease validation mechanism will restart DHCP if the server indicates
that the existing lease is no longer valid. If the server cannot be contacted,
then the existing lease will continue. This behavior can be modified with the
\fBVERIFIED_LEASE_ONLY\fR parameter in the \fB/etc/default/dhcpagent\fR file.
See the description of this parameter below.
.sp
.LP
For IPv4, if the configured interface is found to be unplumbed, or to have a
different IP address, subnet mask, or broadcast address from those obtained
from DHCP, the interface is abandoned from DHCP control.
.sp
.LP
For IPv6, \fBdhcpagent\fR automatically plumbs and unplumbs logical interfaces
as necessary for the IPv6 addresses supplied by the server. The IPv6 prefix
length (netmask) is not set by the DHCPv6 protocol, but is instead set by
\fBin.ndpd\fR(1M) using prefix information obtained by Router Advertisements.
If any of the logical interfaces created by \fBdhcpagent\fR is unplumbed, or
configured with a different IP address, it will be abandoned from DHCP control.
If the link-local interface is unplumbed, then all addresses configured by DHCP
on that physical interface will be removed.
.sp
.LP
In addition to \fBDHCP\fR, \fBdhcpagent\fR also supports \fBBOOTP\fR (IPv4
only). See \fIRFC 951, Bootstrap Protocol\fR. Configuration parameters obtained
from a \fBBOOTP\fR server are treated identically to those received from a
\fBDHCP\fR server, except that the \fBIP\fR address received from a \fBBOOTP\fR
server always has an infinite lease.
.sp
.LP
\fBDHCP\fR also acts as a mechanism to configure other information needed by
the client, for example, the domain name and addresses of routers. Aside from
the IP address, and for IPv4 alone, the netmask, broadcast address, and default
router, the agent does not directly configure the workstation, but instead acts
as a database which may be interrogated by other programs, and in particular by
\fBdhcpinfo\fR(1).
.sp
.LP
On clients with a single interface, this is quite straightforward. Clients with
multiple interfaces may present difficulties, as it is possible that some
information arriving on different interfaces may need to be merged, or may be
inconsistent. Furthermore, the configuration of the interfaces is asynchronous,
so requests may arrive while some or all of the interfaces are still
unconfigured. To handle these cases, one interface may be designated as
primary, which makes it the authoritative source for the values of \fBDHCP\fR
parameters in the case where no specific interface is requested. See
\fBdhcpinfo\fR(1) and \fBifconfig\fR(1M) for details.
.sp
.LP
For IPv4, the \fBdhcpagent\fR daemon can be configured to request a particular
Fully Qualified Domain Name (FQDN) or host name. See the \fBREQUEST_FQDN\fR or
\fBREQUEST_HOSTNAME\fR description in the \fBFILES\fR section. When first
configuring a client to request an FQDN or host name, you must perform the
following steps as root to ensure that the full DHCP negotiation takes place:
.sp
.in +2
.nf
# pkill dhcpagent
# rm /etc/dhcp/\fIinterface\fR.dhc
# reboot
.fi
.in -2
.sp

.sp
.LP
```

```
All DHCP packets sent by \fBdhcpagent\fR include a vendor class identifier (RFC
2132, option code 60; RFC 3315, option code 16). This identifier is the same as
the platform name returned by the \fBuname\fR \fB-i\fR command, except:
.RS +4
.TP
.ie t \(bu
.el o
Any commas in the platform name are changed to periods.
.RE
.RS +4
.TP
.ie t \(bu
.el o
If the name does not start with a stock symbol and a comma, it is automatically
prefixed with \fBSUNW\fR.
.RE
.SS "Messages"
.LP
The \fBdhcpagent\fR daemon writes information and error messages in five
categories:
.sp
.ne 2
.na
\fBcritical\fR
.ad
.sp .6
.RS 4n
Critical messages indicate severe conditions that prevent proper operation.
.RE

.sp
.ne 2
.na
\fBerrors\fR
.ad
.sp .6
.RS 4n
Error messages are important, sometimes unrecoverable events due to resource
exhaustion and other unexpected failure of system calls; ignoring errors may
lead to degraded functionality.
.RE

.sp
.ne 2
.na
\fBwarnings\fR
.ad
.sp .6
.RS 4n
Warnings indicate less severe problems, and in most cases, describe unusual or
incorrect datagrams received from servers, or requests for service that cannot
be provided.
.RE

.sp
.ne 2
.na
\fBinformational\fR
.ad
.sp .6
.RS 4n
Informational messages provide key pieces of information that can be useful to
debugging a \fBDHCP\fR configuration at a site. Informational messages are
generally controlled by the \fB-v\fR option. However, certain critical pieces
of information, such as the IP address obtained, are always provided.
.RE
```



```
.sp
.ne 2
.na
\fBdebug\fR
.ad
.sp .6
.RS 4n
Debugging messages, which may be generated at two different levels of
verbosity, are chiefly of benefit to persons having access to source code, but
may be useful as well in debugging difficult DHCP configuration problems.
Debugging messages are only generated when using the \fB-d\fR option.
.RE

.sp
.LP
When \fBdhcpagent\fR is run without the \fB-f\fR option, all messages are sent
to the system logger \fBsyslog\fR(3C) at the appropriate matching priority and
with a facility identifier \fBLOG_DAEMON\fR. When \fBdhcpagent\fR is run with
the \fB-f\fR option, all messages are directed to standard error.
.SS "DHCP Events and User-Defined Actions"
.LP
If an executable (binary or script) is placed at \fB/etc/dhcp/eventhook\fR, the
\fBdhcpagent\fR daemon will automatically run that program when any of the
following events occur:
.sp
.ne 2
.na
\fB\fBBOUND\fR and \fBBOUND6\fR\fR
.ad
.sp .6
.RS 4n
These events occur during interface configuration. The event program is invoked
when \fBdhcpagent\fR receives the DHCPv4 ACK or DHCPv6 Reply message from the
DHCP server for the lease request of an address, indicating successful initial
configuration of the interface. (See also the \fBINFORM\fR and \fBINFORM6\fR
events, which occur when configuration parameters are obtained without address
leases.)
.RE

.sp
.ne 2
.na
\fB\fBEXTEND\fR and \fBEXTEND6\fR\fR
.ad
.sp .6
.RS 4n
These events occur during lease extension. The event program is invoked just
after \fBdhcpagent\fR receives the DHCPv4 ACK or DHCPv6 Reply from the DHCP
server for the DHCPv4 REQUEST (renew) message or the DHCPv6 Renew or Rebind
message.
.sp
Note that with DHCPv6, the server might choose to remove some addresses, add
new address leases, and ignore (allow to expire) still other addresses in a
given Reply message. The \fBEXTEND6\fR event occurs when a Reply is received
that leaves one or more address leases still valid, even if the Reply message
does not extend the lease for any address. The event program is invoked just
before any addresses are removed, but just after any new addresses are added.
Those to be removed will be marked with the \fBIFF_DEPRECATED\fR flag.
.RE

.sp
.ne 2
.na
\fB\fBEXPIRE\fR and \fBEXPIRE6\fR\fR
.ad
```

```
255 .sp .6
256 .RS 4n
257 These events occur during lease expiration. For DHCPv4, the event program is
258 invoked just before the leased address is removed from an interface. For
259 DHCPv6, the event program is invoked just before the last remaining leased
260 addresses are removed from the interface.
261 .RE

263 .sp
264 .ne 2
265 .na
266 \fB\fBDROP\fR and \fBDROP6\fR\fR
267 .ad
268 .sp .6
269 .RS 4n
270 These events occur during the period when an interface is dropped. The event
271 program is invoked just before the interface is removed from DHCP control. If
272 the interface has been abandoned due the user unplumbing the interface, then
273 this event will occur after the user's action has taken place. The interface
274 might not be present.
275 .RE

277 .sp
278 .ne 2
279 .na
280 \fB\fBINFORM\fR and \fBINFORM6\fR\fR
281 .ad
282 .sp .6
283 .RS 4n
284 These events occur when an interface acquires new or updated configuration
285 information from a DHCP server by means of the DHCPv4 \fBINFORM\fR or the
286 DHCPv6 Information-Request message. These messages are sent using an
287 \fBifconfig\fR(1M) \fBdhcp inform\fR command or when the DHCPv6 Router
288 Advertisement \fBO\fR (letter 0) bit is set and the \fBM\fR bit is not set.
289 Thus, these events occur when the DHCP client does not obtain an IP address
290 lease from the server, and instead obtains only configuration parameters.
291 .RE

293 .sp
294 .ne 2
295 .na
296 \fB\fBLOSS6\fR\fR
297 .ad
298 .sp .6
299 .RS 4n
300 This event occurs during lease expiration when one or more valid leases still
301 remain. The event program is invoked just before expired addresses are removed.
302 Those being removed will be marked with the \fBIFF_DEPRECATED\fR flag.
303 .sp
304 Note that this event is not associated with the receipt of the Reply message,
305 which occurs only when one or more valid leases remain, and occurs only with
306 DHCPv6. If all leases have expired, then the EXPIRE6 event occurs instead.
307 .RE

309 .sp
310 .ne 2
311 .na
312 \fB\fBRELEASE\fR and \fBRELEASE6\fR\fR
313 .ad
314 .sp .6
315 .RS 4n
316 This event occurs during the period when a leased address is released. The
317 event program is invoked just before \fBdhcpagent\fR relinquishes the address
318 on an interface and sends the DHCPv4 \fBRELEASE\fR or DHCPv6 Release packet to
319 the DHCP server.
320 .RE
```



```
322 .sp
323 .LP
324 The system does not provide a default event program. The file
325 \fB/etc/dhcp/eventhook\fR is expected to be owned by root and have a mode of
326 755.
327 .sp
328 .LP
329 The event program will be passed two arguments, the interface name and the
330 event name, respectively. For DHCPv6, the interface name is the name of the
331 physical interface.
332 .sp
333 .LP
334 The event program can use the \fBdhcpinfo\fR(1) utility to fetch additional
335 information about the interface. While the event program is invoked on every
336 event defined above, it can ignore those events in which it is not interested.
337 The event program runs with the same privileges and environment as
338 \fBdhcpagent\fR itself, except that \fBstdin\fR, \fBstdout\fR, and \fBstderr\fR
339 are redirected to \fB/dev/null\fR. Note that this means that the event program
340 runs with root privileges.
341 .sp
342 .LP
343 If an invocation of the event program does not exit after 55 seconds, it is
344 sent a \fBSIGTERM\fR signal. If does not exit within the next three seconds, it
345 is terminated by a \fBSIGKILL\fR signal.
346 .sp
347 .LP
348 See EXAMPLES for an example event program.
349 .SH OPTIONS
354 .LP
350 The following options are supported:
351 .sp
352 .ne 2
353 .na
354 \fB\fB-a\fR\fR
355 .ad
356 .sp .6
357 .RS 4n
358 Adopt a configured IPv4 interface. This option is for use with diskless
359 \fBDHCP\fR clients. In the case of diskless \fBDHCP\fR, \fBDHCP\fR has already
360 been performed on the network interface providing the operating system image
361 prior to running \fBdhcpagent\fR. This option instructs the agent to take over
362 control of the interface. It is intended primarily for use in boot scripts.
363 .sp
364 The effect of this option depends on whether the interface is being adopted.
365 .sp
366 If the interface is being adopted, the following conditions apply:
367 .sp
368 \fBdhcpagent\fR uses the client id specified in
369 \fB/chosen\fR:\fI<client_id>\fR, as published by the PROM or as specified on a
370 \fBboot\fR(1M) command line. If this value is not present, the client id is
371 undefined. The DHCP server then determines what to use as a client id. It is an
372 error condition if the interface is an Infiniband interface and the PROM value
373 is not present.
374 .sp
375 If the interface is not being adopted:
376 .sp
377 \fBdhcpagent\fR uses the value stored in \fB/etc/default/dhcpagent\fR. If this
378 value is not present, the client id is undefined. If the interface is
379 Infiniband and there is no value in \fB/etc/default/dhcpagent\fR, a client id
380 is generated as described by the draft document on DHCP over Infiniband,
381 available at:
382 .sp
383 .in +2
384 .nf
385 http://www.ietf.org
```

```
386 .fi
387 .in -2

389 .RE

391 .sp
392 .ne 2
393 .na
394 \fB\fB-d\fR \fIn\fR\fR
395 .ad
396 .sp .6
397 .RS 4n
398 Set debug level to \fIn\fR. Two levels of debugging are currently available, 1
399 and 2; the latter is more verbose.
400 .RE

402 .sp
403 .ne 2
404 .na
405 \fB\fB-f\fR\fR
406 .ad
407 .sp .6
408 .RS 4n
409 Run in the foreground instead of as a daemon process. When this option is used,
410 messages are sent to standard error instead of to \fBsyslog\fR(3C).
411 .RE

413 .sp
414 .ne 2
415 .na
416 \fB\fB-v\fR\fR
417 .ad
418 .sp .6
419 .RS 4n
420 Provide verbose output useful for debugging site configuration problems.
421 .RE

423 .SH EXAMPLES
429 .LP
424 \fBExample 1 \fRExample Event Program
425 .sp
426 .LP
427 The following script is stored in the file \fB/etc/dhcp/eventhook\fR, owned by
428 root with a mode of 755. It is invoked upon the occurrence of the events listed
429 in the file.

431 .sp
432 .in +2
433 .nf
434 #!/bin/sh

436 (
437 echo "Interface name: " $1
438 echo "Event: " $2

440 case $2 in
441 "BOUND")
442      echo "Address acquired from server "\e
443          `/sbin/dhcpinfo -i $1 ServerID`
444      ;;
445 "BOUND6")
446      echo "Addresses acquired from server " \e
447          `/sbin/dhcpinfo -v6 -i $1 ServerID`
448      ;;
449 "EXTEND")
450     echo "Lease extended for " \e
```



```
451          `/sbin/dhcpinfo -i $1 LeaseTim`" seconds"
457          `sbin/dhcpinfo -i $1 LeaseTim`" seconds"
452      ;;
453 "EXTEND6")
454     echo "New lease information obtained on $i"
455      ;;
456 "EXPIRE" | "DROP" | "RELEASE")
457      ;;

459 esac
460 ) >/var/run/dhcp_eventhook_output 2>&1
461 .fi
462 .in -2
463 .sp

465 .sp
466 .LP
467 Note the redirection of stdout and stderr to a file.

469 .SH FILES
470 .ne 2
471 .na
472 \fB\fB/etc/dhcp/\fIif\fR.dhc\fR\fR
473 .ad
474 .br
475 .na
476 \fB\fB/etc/dhcp/\fIif\fR.dh6\fR\fR
477 .ad
478 .sp .6
479 .RS 4n
480 Contains the configuration for interface. The mere existence of this file does
481 not imply that the configuration is correct, since the lease might have
482 expired. On start-up, \fBdhcpagent\fR confirms the validity of the address
483 using REQUEST (for DHCPv4) or Confirm (DHCPv6).
484 .RE

486 .sp
487 .ne 2
488 .na
489 \fB\fB/etc/dhcp/duid\fR\fR
490 .ad
491 .br
492 .na
493 \fB\fB/etc/dhcp/iaid\fR\fR
494 .ad
495 .sp .6
496 .RS 4n
497 Contains persistent storage for system-generated DUID (DHCP Unique Identifier)
498 and interface-specific IAID (Identity Association Identifier) values which are
499 used if no \fBCLIENT_ID\fR is defined (see below). The format of these files is
500 undocumented, and applications should not read from or write to them.  Instead,
501 \fBdhcpinfo\fR(1) can be used to query the \fBdhcpagent\fR for \fIClientID\fR.
502 For DHCPv6 interfaces, the result will contain the DUID. For DHCPv4 interfaces
503 with \fBV4_DEFAULT_IAID_DUID\fR enabled (see below), the result will contain
504 the IAID and DUID.
505 .RE

507 .sp
508 .ne 2
509 .na
510 \fB\fB/etc/default/dhcpagent\fR\fR
511 .ad
512 .sp .6
513 .RS 4n
514 Contains default values for tunable parameters. All values may be qualified
515 with the interface they apply to by prepending the interface name and a period
```

("."") to the interface parameter name. The parameters include: the interface parameter name.

.sp

To configure IPv6 parameters, place the string \fB\&.v6\fR between the interface name (if any) and the parameter name. For example, to set the global IPv6 parameter request list, use \fB\&.v6.PARAM_REQUEST_LIST\fR. To set the \fBCLIENT_ID\fR (\fBDUID\fR) on \fBhme0\fR, use \fBhme0.v6.CLIENT_ID\fR.

.sp

The parameters include:

.sp

.ne 2

.na

\fB\fBVERIFIED_LEASE_ONLY\fR\fR

.ad

.sp .6

.RS 4n

Indicates that a \fBRELEASE\fR rather than a \fBDROP\fR should be performed on managed interfaces when the agent terminates. Release causes the client to discard the lease, and the server to make the address available again. Drop causes the client to record the lease in \fB/etc/dhcp/\fIinterface\fR.dhc\fR or \fB/etc/dhcp/\fIinterface\fR.dh6\fR for later use. In addition, when the link status changes to \fBup\fR or when the system is resumed after a suspend, the client will verify the lease with the server. If the server is unreachable for verification, then the old lease will be discarded (even if it has time remaining) and a new one obtained.

.sp

Enabling this option is often desirable on mobile systems, such as laptops, to allow the system to recover quickly from moves.

.sp

Default value of this option is \fIno\fR.

.RE

.sp

.ne 2

.na

\fB\fBOFFER_WAIT\fR\fR

.ad

.sp .6

.RS 4n

Indicates how long to wait in seconds between checking for valid \fBOFFER\fRs after sending a \fBDISCOVER\fR. For DHCPv6, sets the time to wait between checking for valid Advertisements after sending a Solicit.

.sp

Default value of this option is \fI3\fR.

.RE

.sp

.ne 2

.na

\fB\fBCLIENT_ID\fR\fR

.ad

.sp .6

.RS 4n

Indicates the value that should be used to uniquely identify the client to the server. This value can take one of three basic forms:

.sp

.in +2

.nf

\fIdecimal\fR,\fIdata\fR...

0xHHHHH...

"\fIstring\fR...."

.fi

.in -2

.sp

The first form is an RFC 3315 DUID. This is legal for both IPv4 DHCP and

DHCPv6. For IPv4, an RFC 4361 Client ID is constructed from this value. In this first form, the format of \fIdata\fR... depends on the decimal value. The following formats are defined for this first form:

.sp

.ne 2

.na

\fB1,\fIhwtype\fR,\fItime\fR,\fIlla\fR\fR

.ad

.sp .6

.RS 4n

Type 1, DUID-LLT. The \fIhwtype\fR value is an integer in the range 0-65535, and indicates the type of hardware. The \fItime\fR value is the number of seconds since midnight, January 1st, 2000 UTC, and can be omitted to use the current system time. The \fIlla\fR value is either a colon-separated MAC address or the name of a physical interface. If the name of an interface is used, the \fIhwtype\fR value can be omitted. For example: \fB1,,,hme0\fR

.RE

.sp

.ne 2

.na

\fB2,\fIenterprise\fR,\fIhex\fR...\fR

.ad

.sp .6

.RS 4n

Type 2, DUID-EN. The \fIenterprise\fR value is an integer in the range 0-4294967295 and represents the SMI Enterprise number for an organization. The \fIhex\fR string is an even-length sequence of hexadecimal digits.

.RE

.sp

.ne 2

.na

\fB3,\fIhwtype\fR,\fIlla\fR\fR

.ad

.sp .6

.RS 4n

Type 3, DUID-LL. This is the same as DUID-LLT (type 1), except that a time stamp is not used.

.RE

.sp

.ne 2

.na

\fB*,\fIhex\fR\fR

.ad

.sp .6

.RS 4n

Any other type value (0 or 4-65535) can be used with an even-length hexadecimal string.

.RE

The second and third forms of \fBCLIENT_ID\fR are legal for IPv4 only. These both represent raw Client ID (without RFC 4361), in hex, or NVT ASCII string format. Thus, "\fBSun\fR" and \fB0x53756E\fR are equivalent.

.RE

.sp

.ne 2

.na

\fB\fBV4_DEFAULT_IAID_DUID\fR\fR

.ad

.sp .6

.RS 4n

Indicates whether to use, when CLIENT_ID is not defined, a system-managed, RFC 3315-style (i.e., DHCPv6-style) binding identifier as documented in

RFC 4361, "Node-specific Client Identifiers for DHCPv4," for IPv4 interfaces which for purposes of backward compatibility do not normally get default binding identifiers.

An IPv4 interface that is not in an IP network multipathing (IPMP) group, that is not IP over InfiniBand (IPoIB), and that is not a logical interface does not normally get a default binding identifier.

Default value of this option is \fIno\fR.

\fB\fBPARAM_REQUEST_LIST\fR\fR

Specifies a list of comma-separated integer values of options for which the client would like values, or symbolic \fBSite\fR or \fBOption\fR option names. Symbolic option names for IPv4 are resolved through \fB/etc/dhcp/inittab\fR. Option names for IPv6 are resolved by means of \fB/etc/dhcp/inittab6\fR.

\fB\fBPARAM_IGNORE_LIST\fR\fR

Specifies a list of options (constructed in the same manner as \fBPARAM_REQUEST_LIST\fR) that the DHCP client will ignore. Ignored options are treated as though the server did not return the options specified. Ignored options are not visible using \fBdhcpinfo\fR(1) or acted on by the client. This parameter can be used, for example, to disable an unwanted client name or default router.

\fB\fBREQUEST_FQDN\fR\fR

Indicates the client requests the DHCP server to map the client’s leased IPv4 address to the Fully Qualified Domain Name (FQDN) associated with the network interface that performs DHCP on the client and to collaborate with a compatible DNS server to manage A and PTR resource records for the FQDN for the life of the lease.

The \fIhostname\fR in the FQDN is determined from the following possible configurations:

1. \fBipadm\fR(1M): include the \fB-1,--primary\fR flag when creating an address that uses DHCP so that \fBnodename\fR(4) is used as the \fIhostname\fR.

2. \fBipadm\fR(1M): include the \fB-h,--reqhost\fR \fIhostname\fR switch when executing the \fBcreate-addr -T dhcp\fR subcommand, or use the

\fBset-addrprop -p reqhost=\fR\fIhostname\fR subcommand for any existing DHCP address.

3. \fBnwamcfg\fR(1M): set a property, \fBip-primary=\fR\fIon\fR, for an ncu ip that uses DHCP so that \fBnodename\fR(4) is used as the \fIhostname\fR.

4. \fBnwamcfg\fR(1M): set a property, \fBip-reqhost=\fR\fIhostname\fR, for an ncu ip that uses DHCP.

The \fIhostname\fR value is either a Partially Qualified Domain Name (PQDN) or an FQDN (i.e., a "rooted" domain name ending with a ’.’ or one inferred to be an FQDN if it contains at least three DNS labels such as srv.example.com). If a PQDN is specified, then an FQDN is constructed if \fBDNS_DOMAINNAME\fR is defined or if \fBADOPT_DOMAINNAME\fR is set to \fIyes\fR and an eligible domain name (as described below) is available.

If an FQDN is sent, \fBREQUEST_HOSTNAME\fR processing will not be done, per RFC 4702 (3.1): "clients that send the Client FQDN option in their messages MUST NOT also send the Host Name."

Default value of this option is \fIyes\fR.

\fB\fBDNS_DOMAINNAME\fR\fR

Indicates the value that should be appended to a PQDN specified by the \fB-h,--reqhost\fR option of \fBipadm\fR(1M), by the ncu \fBip-reqhost\fR property of \fBnwamcfg\fR(1M), or by \fBnodename\fR(4) to construct an FQDN for \fBREQUEST_FQDN\fR processing. If the \fIhostname\fR value is already an FQDN, then the value of this option is not used.

\fB\fBADOPT_DOMAINNAME\fR\fR

Indicates that a domain name returned by the DHCP server or the \fBdomain\fR from \fBresolv.conf\fR(4) should be adopted if needed to construct an FQDN from a PQDN specified by the \fB-h,--reqhost\fR option of \fBipadm\fR(1M), by the ncu \fBip-reqhost\fR property of \fBnwamcfg\fR(1M), or by \fBnodename\fR(4). If the \fIhostname\fR value is already an FQDN, then the value of this option is not applicable. The eligible DHCP option for domain name is DHCPv4 \fBDNSdmain\fR.

Default value of this option is \fIno\fR.

```
780 .ne 2
781 .na
782 \fB\fBREQUEST_HOSTNAME\fR\fR
783 .ad
784 .sp .6
785 .RS 4n
786 Indicates the client requests the DHCP server to map the client's leased IPv4
787 address to the host name associated with the network interface that performs
788 DHCP on the client. The host name must be specified as documented for a
789 PQDN in \fBREQUEST_FQDN\fR above or specified in the
790 \fB/etc/hostname.\fIinterface\fR\fR file for the relevant interface on a line
791 of the form
792 .sp
793 .in +2
794 .nf
795 inet \fIhostname\fR
796 .fi
797 .in -2
798 .sp

800 where \fIhostname\fR is the host name requested.
801 .sp
802 This option works with DHCPv4 only.
803 .sp
804 Default value of this option is \fIyes\fR.
805 .RE

807 .RE

809 .sp
810 .ne 2
811 .na
812 \fB\fB/etc/dhcp/eventhook\fR\fR
813 .ad
814 .sp .6
815 .RS 4n
816 Location of a DHCP event program.
817 .RE

819 .SH ATTRIBUTES
826 .LP
820 See \fBattributes\fR(5) for descriptions of the following attributes:
821 .sp

823 .sp
824 .TS
825 box;
826 c | c
827 l | l .
828 ATTRIBUTE TYPE  ATTRIBUTE VALUE
829 _
830 Interface Stability     Committed
831 .TE

833 .SH SEE ALSO
841 .LP
834 \fBdhcpinfo\fR(1), \fBifconfig\fR(1M), \fBinit\fR(1M), \fBin.mpathd\fR(1M),
835 \fBin.ndpd\fR(1M), \fBipadm\fR(1M), \fBnwamcfg\fR(1M), \fBsyslog\fR(3C),
836 \fBnodename\fR(4), \fBresolv.conf\fR(4), \fBattributes\fR(5), \fBdhcp\fR(5)
837 .sp
838 .LP
839 \fI\fR
840 .sp
841 .LP
842 Croft, B. and Gilmore, J. \fIRFC 951, Bootstrap Protocol (BOOTP)\fR, Network
843 Working Group, September 1985.
```



```
844 .sp
845 .LP
846 Droms, R. \fIRFC 2131, Dynamic Host Configuration Protocol\fR, Network Working
847 Group, March 1997.
848 .sp
849 .LP
850 Lemon, T. and B. Sommerfeld. \fIRFC 4361, Node-specific Client Identifiers for
851 Dynamic Host Configuration Protocol Version Four (DHCPv4)\fR. Nominum and Sun
852 Microsystems. February 2006.
853 .sp
854 .LP
855 Droms, R. \fIRFC 3315, Dynamic Host Configuration Protocol for IPv6
856 (DHCPv6)\fR. Cisco Systems. July 2003.
857 .SH NOTES
866 .LP
858 The \fBdhcpagent\fR daemon can be used on IPv4 logical interfaces, just as with
859 physical interfaces. When used on a logical interface, the daemon automatically
860 constructs a Client ID value based on the DUID and IAID values, according to
861 RFC 4361. The  \fB/etc/default/dhcpagent\fR \fBCLIENT_ID\fR value, if any,
862 overrides this automatic identifier.
863 .sp
864 .LP
865 As with physical IPv4 interfaces, the \fB/etc/hostname.hme0:1\fR and
866 \fB/etc/dhcp.hme0:1\fR files must also be created in order for \fBhme0:1\fR to
867 be automatically plumbed and configured at boot. In addition, unlike physical
868 IPv4 interfaces, \fBdhcpagent\fR does not add or remove default routes
869 associated with logical interfaces.
870 .sp
871 .LP
872 DHCP can be performed on IPMP IP interfaces to acquire and maintain IPMP data
873 addresses. Because an IPMP IP interface has no hardware address, the daemon
874 automatically constructs a Client ID using the same approach described above
875 for IPv4 logical interfaces. In addition, the lack of a hardware address means
876 the daemon must set the "broadcast" flag in all \fBDISCOVER\fR and
877 \fBREQUEST\fR messages on IPMP IP interfaces. Some DHCP servers may refuse such
878 requests.
879 .sp
880 .LP
881 DHCP can be performed on IP interfaces that are part of an IPMP group (to
882 acquire and maintain test addresses). The daemon will automatically set the
883 \fBNOFAILOVER\fR and \fBDEPRECATED\fR flags on each test address. Additionally,
884 the daemon will not add or remove default routes in this case. Note that the
885 actual DHCP packet exchange may be performed over any active IP interface in
886 the IPMP group. It is strongly recommended that test addresses have infinite
887 leases. Otherwise, an extended network outage detectable only by probes may
888 cause test address leases to expire, causing \fBin.mpathd\fR(1M) to revert to
889 link-based failure detection and trigger an erroneous repair.
890 .sp
891 .LP
892 With DHCPv6, the link-local interface must be configured using
893 \fB/etc/hostname6.hme0\fR in order for DHCPv6 to run on \fBhme0\fR at boot
894 time. The logical interfaces for each address are plumbed by \fBdhcpagent\fR
895 automatically.
```

```
**********************************************************
    3521 Fri Feb 14 07:59:16 2020
new/usr/src/man/man5/dhcp.5
12305 typos in dhcp man pages
**********************************************************
```

```
'\" te
.\" Copyright 2014 Garrett D'Amore <garrett@damore.org>
.\" Copyright (c) 2001, Sun Microsystems, Inc. All Rights Reserved.
.\" The contents of this file are subject to the terms of the Common Development
.\" You can obtain a copy of the license at usr/src/OPENSOLARIS.LICENSE or http:
.\" When distributing Covered Code, include this CDDL HEADER in each file and in
.TH DHCP 5 "Feb 13, 2020"
.TH DHCP 5 "Aug 15, 2014"
.SH NAME
dhcp \- Dynamic Host Configuration Protocol
.SH DESCRIPTION
.LP
Dynamic Host Configuration Protocol (\fBDHCP\fR) enables host systems in a
\fBTCP/IP\fR network to be configured automatically for the network as they
boot. \fBDHCP\fR uses a client/server mechanism: servers store configuration
information for clients, and provide that information upon a client's request.
The information can include the client's \fBIP\fR address and information about
network services available to the client.
.LP
This manual page provides a brief summary of the \fBDHCP\fR
implementation.
.SS "DHCP Client"
.LP
The DHCP client is implemented as background daemon,
\fBdhcpagent\fR(1M).
.LP
For IPv4, this daemon is started automatically during bootup if there exists at
least one \fBdhcp.\fR\fIinterface\fR file in \fB/etc\fR. Only interfaces with a
corresponding \fB\fR\fB/etc/dhcp.\fR\fB\fIinterface\fR\fR file are
automatically configured during boot.
.LP
For IPv6, this daemon is started automatically when commanded by \fBin.ndpd\fR
(based on IPv6 Routing Advertisement messages). No
\fB/etc/dhcp\fR.\fIinterface\fR file is necessary, but such a file can be used
to specify an interface as "primary," provided that IPv4 DHCP is also in use.
.LP
Network parameters needed for system configuration during bootup are extracted
from the information received by the daemon through the use of the
\fBdhcpinfo\fR(1) command. The daemon's default behavior can be altered by
changing the tunables in the \fB/etc/default/dhcpagent\fR file. The daemon is
controlled by the \fBifconfig\fR(1M) utility. Check the status of the daemon
using the \fBnetstat\fR(1M) and \fBifconfig\fR(1M) commands.
.SH SEE ALSO
.LP
\fBdhcpinfo\fR(1), \fBdhcpagent\fR(1M),
\fBifconfig\fR(1M),
\fBin.ndpd\fR(1M), \fBnetstat\fR(1M),
\fBsyslog\fR(3C),
\fBdhcp_inittab\fR(4), \fBndpd.conf\fR(4)
\fBdhcp_network\fR(4), \fBdhcptab\fR(4), \fBdhcpsvc.conf\fR(4),
\fBdhcp_inittab\fR(4), \fBndpd.conf\fR(4), \fBdhcp_modules\fR(5)
.LP
Alexander, S., and R. Droms. \fIRFC 2132, DHCP Options and BOOTP Vendor
Extensions\fR. Silicon Graphics, Inc. Bucknell University. March 1997.
.LP
Droms, R. \fIRFC 1534, Interoperation Between DHCP and BOOTP\fR. Bucknell
University. October 1993.
.LP
Droms, R. \fIRFC 2131, Dynamic Host Configuration Protocol\fR. Bucknell
University. March 1997.
.LP
```



```
Wimer, W. \fIRFC 1542, Clarifications and Extensions for the Bootstrap
Protocol\fR. Carnegie Mellon University. October 1993.
.LP
Lemon, T. and B. Sommerfeld. \fIRFC 4361, Node-specific Client Identifiers for
Dynamic Host Configuration Protocol Version Four (DHCPv4)\fR. Nominum and Sun
Microsystems. February 2006.
.LP
Droms, R. \fIRFC 3315, Dynamic Host Configuration Protocol for IPv6
(DHCPv6)\fR. Cisco Systems. July 2003.
```