NAME

dhcrelay - Dynamic Host Configuration Protocol Relay Agent

SYNOPSIS

dhcrelay [**-p** *port*] [**-d**] [**-q**] [**-i** *if0* [**... -i** *ifN*]] [**-a**] [**-c** *count*] [**-A** *length*] [**-D**] [**-m** *append* | *replace* | *forward* | *discard*] *server0* [*...serverN*]

DESCRIPTION

The Internet Systems Consortium DHCP Relay Agent, dhcrelay, provides a means for relaying DHCP and BOOTP requests from a subnet to which no DHCP server is directly connected to one or more DHCP servers on other subnets.

OPERATION

The DHCP Relay Agent listens for DHCP and BOOTP queries and responses. When a query is received from a client, dhcrelay forwards it to the list of DHCP servers specified on the command line. When a reply is received from a server, it is broadcast or unicast (according to the relay agent's ability or the client's request) on the network from which the original request came.

COMMAND LINE

The names of the network interfaces that dhcrelay should attempt to configure may be specified on the command line using the **-i** option. If no interface names are specified on the command line dhcrelay will identify all network interfaces, elimininating non-broadcast interfaces if possible, and attempt to configure each interface.

The **-i** flag can be used to specify the network interfaces on which the relay agent should listen. In general, it must listen not only on those network interfaces to which clients are attached, but also on those network interfaces to which the server (or the router that reaches the server) is attached. However, in some cases it may be necessary to exclude some networks; in this case, you must list all those network interfaces that should *not* be excluded using the **-i** flag.

In some cases it *is* helpful for the relay agent to forward requests from networks on which a DHCP server is running to other DHCP servers. This would be the case if two DHCP servers on different networks were being used to provide backup service for each other's networks.

If dhcrelay should listen and transmit on a port other than the standard (port 67), the **-p** flag may used. It should be followed by the udp port number that dhcrelay should use. This is mostly useful for debugging purposes.

Dhcrelay will normally run in the foreground until it has configured an interface, and then will revert to running in the background. To force dhcrelay to always run as a foreground process, the **-d** flag should be specified. This is useful when running dhcrelay under a debugger, or when running it out of inittab on System V systems.

Dhcrelay will normally print its network configuration on startup. This can be unhelpful in a system startup script - to disable this behaviour, specify the **-q** flag.

RELAY AGENT INFORMATION OPTIONS

If the **-a** flag is set the relay agent will append an agent option field to each request before forwarding it to the server. Agent option fields in responses sent from servers to clients will be stripped before forwarding such responses back to the client.

The agent option field will contain two agent options: the Circuit ID suboption and the Agent ID suboption. Currently, the Circuit ID will be the printable name of the interface on which the client request was received. The Agent ID will be the value that the relay agent stores in the DHCP packet's giaddr field. The client supports inclusion of a Remote ID suboption as well, but this is not used by default.

Note: The Agent ID suboption is not defined in the current Relay Agent Information Option draft (draft-ietf-dhc-agent-options-03.txt), but has been proposed for inclusion in the next draft.

When forwarding packets, dhcrelay discards packets which have reached a hop count of 10. If a lower or higher threshold (up to 255) is desired, depending on your environment, you can specify the max hop count threshold as a number following the **-c** option.

Relay Agent options are added to a DHCP packet without the knowledge of the DHCP client. The client may have filled the DHCP packet option buffer completely, in which case there theoretically isn't any space to add Agent options. However, the DHCP server may be able to handle a much larger packet than most DHCP clients would send. The current Agent Options draft requires that the relay agent use a maximum packet size of 576 bytes.

It is recommended that with the Internet Systems Consortium DHCP server, the maximum packet size be set to about 1400, allowing plenty of extra space in which the relay agent can put the agent option field, while still fitting into the Ethernet MTU size. This can be done by specifying the **-A** flag, followed by the desired maximum packet size (e.g., 1400).

Note that this is reasonably safe to do even if the MTU between the server and the client is less than 1500, as long as the hosts on which the server and client are running support IP fragmentation (and they should). With some knowledge as to how large the agent options might get in a particular configuration, this parameter can be tuned as finely as necessary.

It is possible for a relay agent to receive a packet which already contains an agent option field. If this packet does not have a giaddr set, the standard requires that the packet be discarded.

If giaddr is set, the server may handle the situation in one of four ways: it may *append* its own set of relay options to the packet, leaving the supplied option field intact. It may *replace* the existing agent option field. It may *forward* the packet unchanged. Or, it may *discard* it.

Which of these behaviours is followed by the Internet Systems Consortium DHCP Relay Agent may be configured with the **-m** flag, followed by one of the four keywords specified in *italics* above.

When the relay agent receives a reply from a server that it's supposed to forward to a client, and Relay Agent Information option processing is enabled, the relay agent scans the packet for Relay Agent Information options and removes them. As it's scanning, if it finds a Relay Agent Information option field containing an Agent ID suboption that matches one of its IP addresses, that option is recognized as its own. If no such option is found, the relay agent can either drop the packet, or relay it anyway. If the **-D** option is specified, all packets that don't contain a match will be dropped.

SPECIFYING DHCP SERVERS

The name or IP address of at least one DHCP server to which DHCP and BOOTP requests should be relayed must be specified on the command line.

SEE ALSO

dhclient(8), dhcpd(8), RFC2132, RFC2131, draft-ietf-dhc-agent-options-03.txt.

BUGS

It should be possible for the user to define the Circuit ID and Remote ID values on a per-interface basis.

The relay agent should not relay packets received on a physical network to DHCP servers on the same physical network - if they do, the server will receive duplicate packets. In order to fix this, however, the relay agent needs to be able to learn about the network topology, which requires that it have a configuration file.

AUTHOR

dhcrelay(8) has been written for Internet Systems Consortium by Ted Lemon in cooperation with Vixie Enterprises. To learn more about Internet Systems Consortium, see **http://www.isc.org/isc.** To learn more about Vixie Enterprises, see **http://www.vix.com.**