

Forcerenew Reconfiguration Extensions for DHCPv4 draft-fang-dhc-dhcpv4-forcerenew-extensions-02

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Problem Statement

- DHCP is used by cloud and network providers to distribute not just IP addresses, but also other configuration parameters
- In DHCP reconfiguration, it is desirable:
 - DHCP Client be able to distinguish whether reconfiguration includes IP address or only pertains to other configuration information
- This is achieved in DHCPv6 [draft-ietf-dhc-rfc3315bis-02], but not in DHCPv4
 - DHCPv6 is getting deployed, but the reality is that DHCPv4 will also continue to be used in the network for the next many years

What do we want?

- For Server initiated DHCPv4 lease renew and configuration update:
 - Distinguish IP address renew/rebind from other config. parameter update
 - Client should not enter renew state if it is config. update only without IP addr change
- Existing protocol limitation
 - FORCERENEW provides the capability for server triggered renew, but client has to start the release renew process even with IP address change
 - DHCPv6 reconfiguration is desirable, but no equivalent support in DHCPv4
- What is the problem?
 - Renew process runs the risk of losing the session, e.g. time out
 - Extra resources are consumed by the renew process
 - Cloud scale and elasticity motivate us to resolve the problem - any issues are multiplied, so does the savings, from machine cycles, bandwidth, controller, to troubleshooting time... so we care.

Purpose of This Draft

- Align DHCPv4 reconfiguration procedure with DHCPv6 reconfiguration procedure, to make it possible for the client to distinguish reconfiguration of information parameters other than IP address (i.e., without IP address renew) from reconfiguration involving IP address.

Aligning DHCPv4 to DHCPv6 Reconfiguration

- In DHCPv6 [draft-ietf-dhc-rfc3315bis-02], the “server includes a Reconfigure Message option in a Reconfigure message to indicate to the client whether the client responds with a Renew message, a Rebind message, or an Information-request message.”
- In DHCPv4, when receiving DHCPFORCERENEW message [RFC 3203], the client is forced into the RENEW state, and thus initiates a Renew/Reply procedure
 - The DHCPFORCERENEW mechanism is really meant to force a reconfiguration of the client’s IP Address, and should be extended to better handle the case of reconfiguration of only parameters other than IP address
 - Renewing configuration parameters vs. renewing IP addresses are most often two logically distinct operations. Combining them together is not desirable as it unnecessarily increases the risk of service interruptions and reduces efficiency

DHCPFORCEINFORENEW for DHCPv4

- Introduce a new DHCPFORCEINFORENEW message
 - DHCP message type 53, value = DHCPFORCEINFORENEW (Ask IANA)
 - DHCP Client responds with DHCPINFORM message
 - DHCP Server abandons reconfiguration if it does not receive any response from client after exponential backoff
- Security considerations
 - Same as for the DHCPFORCERENEW ([RFC3203], [RFC6704])
 - Authentication as described in [RFC3118], [RFC6704]

Changes from -00

- Updated draft to incorporate comments from Christian Huitema and Bernie Volz

Next Step

- Clarify the deployment needs for the proposal
- Gather more feedback from the WG
- Update draft to address comments from WG
- Welcome contributions from WG