DHCPv4 Leasequery by relay agent remote ID and circuit ID

draft-kurapati-dhc-query-by-remote-id-00.txt

DHC Working Group

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Motivation

- Existing Leasequery mechanism is data driven:
  - Leasequery can be initiated only when Access Concentrators receives data
  - Existing method suggests the use of negative caching. Negative Caching consumes lot of resources under spoof attacks.
  - Results in increased Service outage time for the clients.
- Getting consolidated lease information per connection is not possible:
  - Multiple clients can reside in a given connection/circuit and existing mechanism doesn't provide any methods to get consolidated lease information for all the clients belonging to a connection/circuit.
  - If Access concentrator has lease information of all the clients for a given connection/circuit, anti-spoofing can be done in data plane (fast path)

Why Query by remote-id and circuit-id?

- They identify a connection/circuit uniquely.
  - Remote ID is globally unique
  - Circuit ID along with giaddr (Relay Agent Identifier) is also globally unique
- They can be trusted as they are created by Relay Agent.
- Access Concentrator need not wait for the traffic to arrive and can generate LeaseQuery as soon as it comes up after a reboot.
- DHCP Server can provide consolidated Lease Information for a specific connection/circuit.
- Once all the lease information for a given connection/circuit is obtained, anti-spoofing can be done in data plane (fast path).
- No need for Negative Caching.

Query by remote-id and circuit-id

- Server identifies a Leasequery by remote-id/circuit-id when
  - Ciaddr, htype, hlen and chaddr is zero and
  - Client idenfier option is not present and
  - Option 82 with either Circuit-Id sub-option or Remote-Id sub-option is present.
- If DHCP Server has an Active Lease for a Connection/Circuit, it returns a DHCPLEASEACTIVE messsage.
- In DHCPLEASEACTIVE message, 'ciaddr is populated with the IP address that was most recently accessed by the client and also all other IP addresses associated with this connection/circuit are returned in Associated-IP option.
- Relay agent then sends a Leasequery with “Query by IP Address” for all the additional IP addresses returned in Associated-ip option.

Query by remote-id and circuit-id

- Server may return a LEASEUNASSIGNED if it knows it manages the lease for the connection/circuit identified by Circuit-Id or Remote-Id but no lease is assigned yet.
- Server may return LEASEUNKNOWN if it does not know the corresponding connection.

Next Step

- Review in Working Group Mailing List
- Working Group Item?