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# **DHCPv6 Leasequery**

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## Overview

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- Based on RFC3315
- Leverage RFC for DHCPv4 Leasequery, where applicable
- Support for stateless and stateful data
- DHCPv6 Leasequery packet structure
- New status codes
- New options
- Explicit nature of DHCPv6 Leasequery

## Drivers

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- Specified by DOCSIS 3.0
- Specification required to facilitate the retrieval of IP lease information from DHCPv6 servers
  - For routing table reconstruction associated with DHCP PD
  - For access control or dynamic filter creation
  - For external access to IP lease data

## Client

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- Requests transmitted using DHCPv6
- Requests can be unicast, relayed, or multicast to DHCPv6 server
- Client specifies message size supported in request
- Query types are as follows:
  - By IP address
  - By delegated prefix
  - By DUID
  - By link-address
- No multi-criteria requests
- Use ORO to specify data desired in server response
- Data returned from each query type may vary
  - Individual replies
  - Bulk replies

## Server

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- Definition of default response data
- Managing responses to Leasequery requests
  - Using “cookies” to allow for the segmenting of replies with larger amounts of lease data
- Organization of lease data in query responses

# Example

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- Client request:
  - Query for link-address 2000::0
  - Maximum-message-size 8192 bytes
- Server response:
  - Server Identifier option
    - LQ Client data option (for client #1)
      - Client Identifier
      - IAADDR #1
      - IAADDR #2
      - IAPREFIX #1
      - Other client related options
      - Relay agent information option
        - » header - link address/peer-address
        - » Options (May encapsulate other relay agent information options)
    - LQ Client data option (for client #2)
      - Client Identifier
      - IAPREFIX #1
      - Other client related options
      - relay agent ...
      - ...
    - Cookie Option w/cookie data

## Example (continued)

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- LQ Client requests next part of data, includes:
  - Same query as original request (above)
  - Server Identifier option (so only that server will respond)
  - Cookie from above LQ server response
- LQ Server returns (second batch of data)
  - Server Identifier option
- LQ Client data option (for client #10)
  - ...
  - LQ Client data option (for client #11)
    - ...

## Open Items/Next Steps

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- Define lease data and options to be returned
  - IA\_NA, IA\_PD, IA\_TA or just IAADDR/IAPREFIX
- Concerns
  - Bulked messages over DHCPv6
- Leasequery message identification
  - Unique ID for each type vs use options to specify type
- Implications of Rapid Commit
  - Introduction of multiple, overlapping replies
- Use reply message or define new LQ Reply message
- Status codes
  - Message too small
  - No data available
- Securing Leasequery exchanges
- I-D is being prepared
- Accept as WG work item or wait until after I-D published before making that decision?

## Conclusion

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- Thank you
- Questions, comments, suggestions
- Participated in discussions/design to date:
  - John Jason Brzozowski
  - Ralph Droms
  - Richard Johnson
  - Kim Kinnear
  - Josh Littlefield
  - Hemant Singh
  - Pak Siripunkaw
  - Bernie Volz
  - Shengyou Zeng
- Discussion taken to the DHC WG mailing list