DHCPv6 Leasequery

John Jason Brzozowski
Kim Kinnear
Overview

- 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

- 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

• 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

- 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

• 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)

• 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

• 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

• 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