Secure DHCPv6

draft-ietf-dhc-sedhcpv6-13

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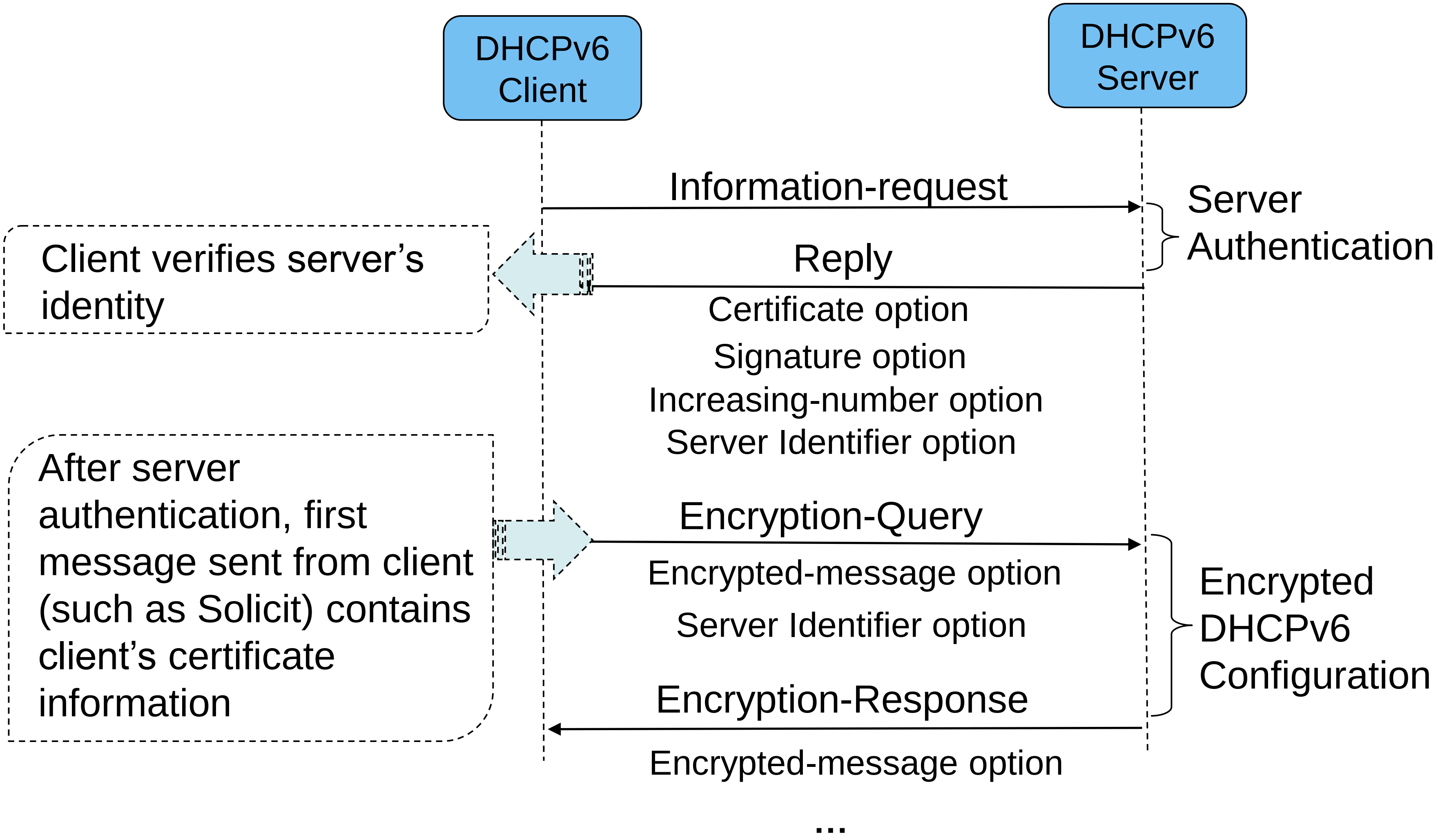
Secure DHCPv6 Overview



DHCPv6 Client

DHCPv6 Server

Information-request

Server Authentication

Client verifies server's identity

Reply

Certificate option

Signature option

Increasing-number option

Server Identifier option

After server authentication, first message sent from client (such as Solicit) contains client's certificate information

Encryption-Query

Encrypted-message option

Server Identifier option

Encrypted DHCPv6 Configuration

Encryption-Response

Encrypted-message option

...

Comments from Stephen Farrell

- It is something where we should be able to make progress and this is getting there
- Why TOFU is out of scope and whether requiring certificate is a good idea?
  - Add opportunistic security for deployment
  - Provide encryption in all case
  - Provide authentication based either on pre-sharing of authorized certificates, or else using trust-on-first-use

Comments from Stephen Farrell

- The client authentication is optional
  - For cases like hotspot or home network, no need for client authentication
  - For cases like data center, client authentication needed
- Add scenario where hash and signature algorithms cannot be separated

Comment from Stephen Farrell

- Add the comparison with related works
  - RFC7824 (Privacy consideration for DHCPv6)
  - RFC7844 (Anonymity Profiles for DHCP clients)
- supply the encryption text format
  - Add reference of RFC5652 (cryptographic message syntax)

Additional Revision

- Change Timestamp option into Increasing-number option for replay attack detection
  - Increasing-number is easy to check compared with Timestamp
  - Client and Server have one stable stored number for increasing-number check
  - Timestamp is one of the possible implementation choice

Additional Revision

- Add the consideration where multiple DHCPv6 servers share one common cert
  - Caused change: Encrypted-Query message contains Server Identifier option when if it is in the original message to avoid the extra decryption for servers not for it
  - Compatible with server selection method in RFC3315 by sharing one common cert

Additional Revision

- Add the statement that Encrypted-Query and Encrypted-Response messages can only contain certain options: Server Identifier option and Encrypted- message option
- Add the relay agent cache function for the quick response when there is no authenticated server

Additional Revision

- The Reply message with error status code may contain client identifier option, then the client's privacy information may be disclosed
  - Possible solution: encrypt the Reply message
  - Encrypt the Reply message with the mandatory algorithm If the error is AlogorithmNotSupported

Next Step

- Next Step?
- Thanks!