Secure DHCPv6

draft-ietf-dhc-sedhcpv6-09

Ted Lemon, Randy Bush

Sheng Jiang, Sean Shen, Dacheng Zhang, Tatuya Jinmei

Lishan Li, Yong Cui, Yiu Lee, Jianping Wu

Bernie Volz, Tomek Mrugalski

Motivation

- Current secure DHCPv6 drafts
  - Secure DHCPv6: DHCPv6 authentication of server and client
  - DHCPv6 Encryption: DHCPv6 encryption between client and server
    - Protect DHCPv6 from passive attack, such as pervasive monitoring attack
    - IETF has expressed that PM attack should be mitigated where possible
- If two drafts: Vendors may implement authentication but ignore encryption
- The document merges the two drafts and achieves the DHCPv6 authentication and encryption

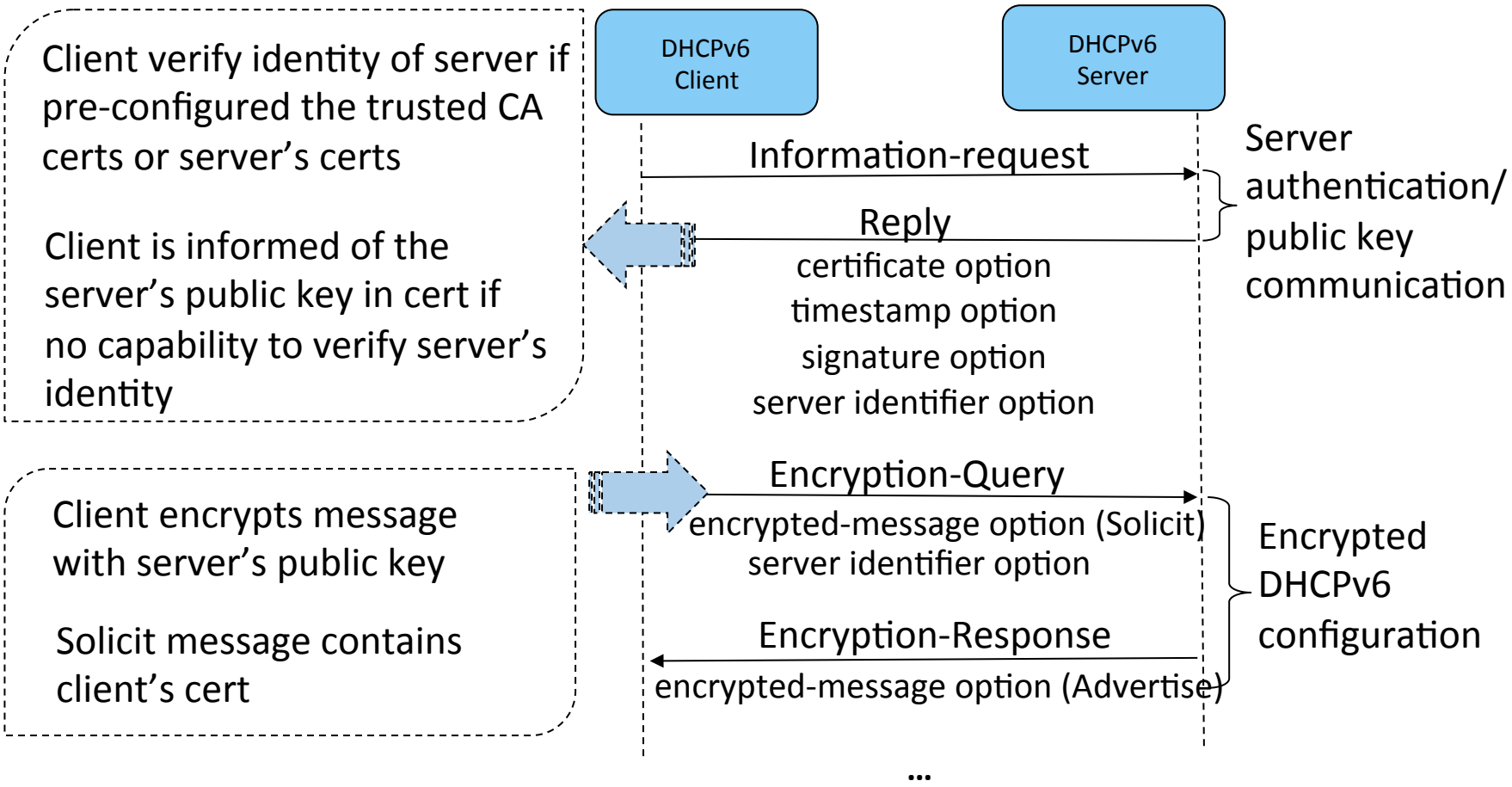
Opportunistic Security for DHCPv6

- Opportunistic security for DHCPv6
  - Provide privacy protection as much as possible
  - Encryption even when the authentication is not available
- Default OS policy
  - Authentication available
    - Authenticated and encrypted communication
  - Authentication not available but public keys exchange
    - Non-authenticated and encrypted communication

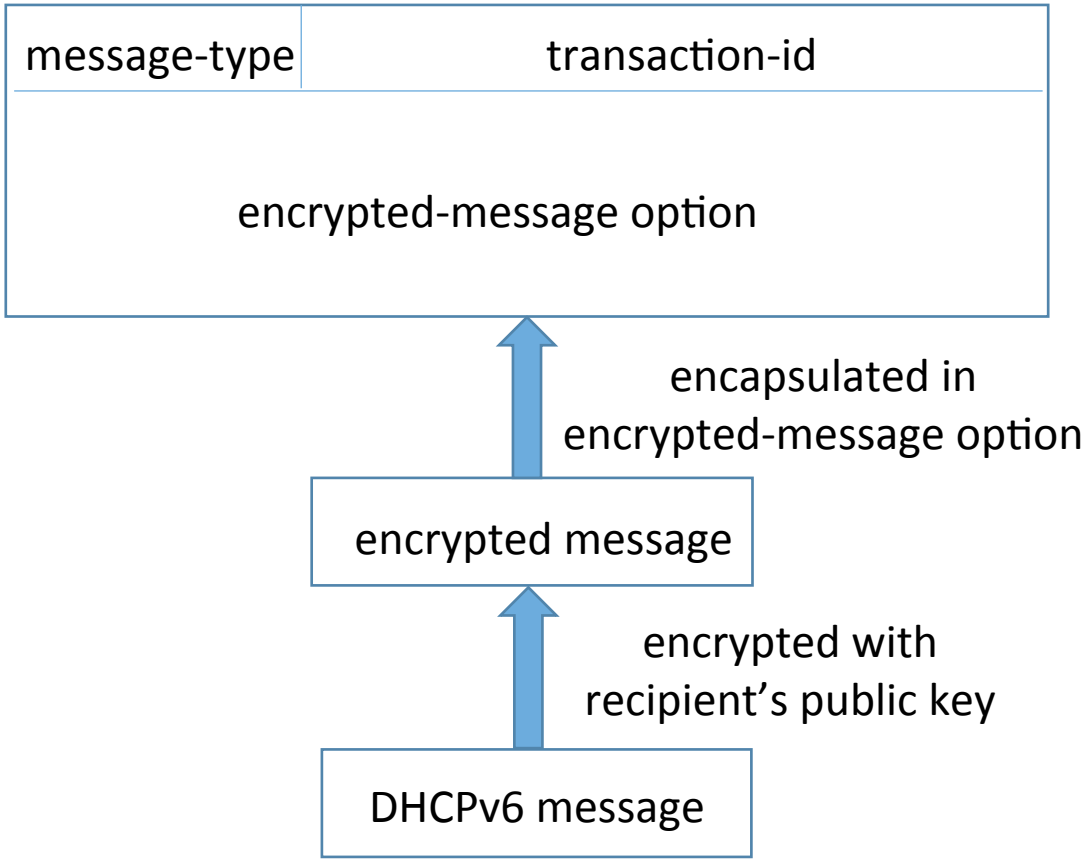
Opportunistic Security for DHCPv6

- Scenario: strict security policy
  - Scenario: enterprise network where security policy is strict
  - Local explicit security policy: authentication and encryption all needed
  - Local explicit security policy supersedes the default OS policy
  - DHCPv6 configuration process must be authenticated and encrypted

Secure DHCPv6 Overview



Format of Encrypted Message



New Defined Options and Messages

Secure DHCPv6
DHCPv6 Encryption

- Five new DHCPv6 options
  - certificate option: sender's certificate
  - public key option: sender's public key
  - signature option: signature signed by the private key
  - timestamp option: sender's current time
  - encrypted-message option: encrypted DHCPv6 message
- Two new DHCPv6 messages
  - Encrypted-Query message: from client to server
    - encrypted-message option
  - Encrypted-Response message: from server to client
    - encrypted-message option, server identifier option

Companion document

- Secure DHCPv6 deployment
  - Threat Model
  - Deployment Consideration

Next Step

- Any Comments?
- Thanks!