DHCPv4 over DHCPv6 Implementation by Tsinghua University

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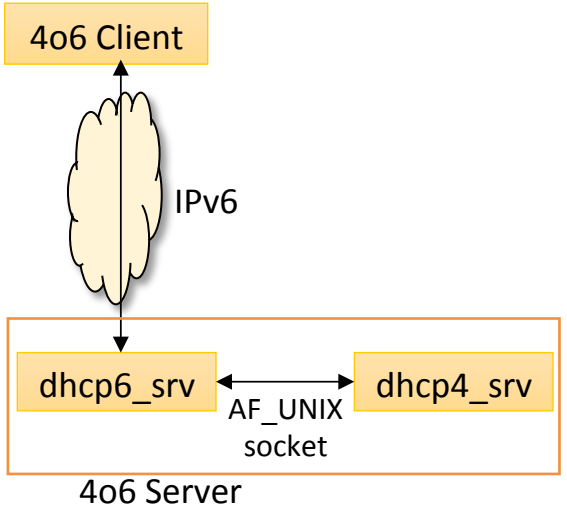
Introduction

- DHCPv4 over DHCPv6 Transport
  - draft-ietf-dhc-dhcpv4-over-dhcpv6
  - Carry DHCPv4 messages over DHCPv6 transport
- Early implementation on Linux
  - Client: *thclient*, a lite DHCPv4 client
  - Server: modified ISC *bind10-1.1.0* (“Kea”), added 150 lines of C++ code on both v6/v4 server engine
    - Thanks to Tomek and Marcin for the guide on isc-bind10/Kea

Implementation

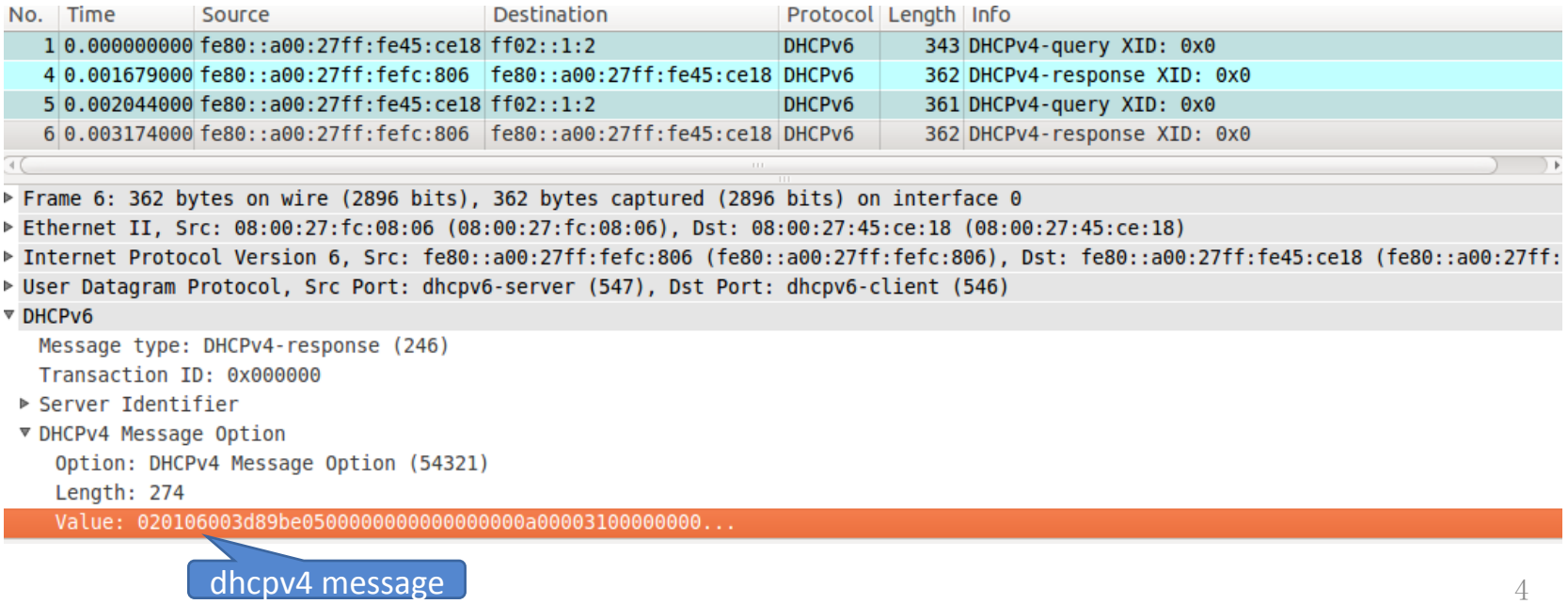
- Client: Do encapsulation before socket send, do decapsulation after socket recv
- Server: Support new messages & DHCPv4 message option
  - Run both dhcp6_srv and dhcp4_srv
  - Use AF_UNIX socket to communicate between 6/4 server processes
  - dhcp6_srv acts as a "relay": send DHCPv4 message to dhcp4_srv, store original DHCPv6 packet states in memory, wait for response from dhcpv4_srv
  - AF_UNIX sockets are added into select() list
- Normal DHCPv4/v6 server functions are not affected
  - All 3 functions (dhcp4,dhcp6,dhcp4o6) can run at the same time



Resources

- Source code URL:
  - Client - https://github.com/gnocuil/thudhcp
  - Server - https://github.com/gnocuil/DHCPv4oDHCPv6

    packet capture data by wireshark



Conclusion

- It works
- Require modifications on both v4 & v6 part
- Modifications are lightweight
- No conflict with normal DHCPv4/DHCPv6 functions