Virtual RFC 8415(bis) Plugfest Results Summary

Spencer Couture & Ben Patton
UNH InterOperability Lab

Background

- UNH-IOL has been helping to develop updated DHCPv6 conformance and interoperability test specifications for use with the IPv6 Forum's Ready Logo/USGv6 test programs
    - Current ones still point to RFC 3315 and friends
    - Draft test specifications now reference latest RFC 8415bis
        - Both will be posted for public comment at ipv6ready.org

- Purpose of the event was to test various client, server, and relay-agent implementations against each other, for a couple reasons:
    - Proof of concept testing for the draft interop specification
    - Finding implementations to use for building interop testbeds
    - Understanding how well DHCPv6-enabled devices implement RFC 8415

- Collected results from 4 sets of client/server/relay groups over the course of ~1 week

Client statistics/results

	Client A	Client B	Client C	Client D
IA_NA Exchange	PASS	PASS	PASS	PASS
IA_PD Exchange	Not Supported	Not Supported	Not Supported	PASS
Transmission of Decline	FAIL (no Decline)	PASS	FAIL (no Decline)	FAIL (no Decline)
Transmission of Renew at T1	FAIL (too early)	FAIL (no Renew)	PASS	PASS
Transmission of Rebind at T2	FAIL (too early)	FAIL (too late)	PASS	PASS
Transmission of Confirm	Not Supported	PASS	Not Supported	Not Supported
Reception of NoAddrsAvail	FAIL (sent Request)	PASS	FAIL (sent Request)	PASS
Exchange with a single Relay	PASS	PASS	PASS	PASS
Reception of Rebind from other Server	PASS	Not Tested/Unable to test	PASS	Not Tested/Unable to test
IA_NA Lifetime Expiration	FAIL (IA_NA use after expiration)	PASS	PASS	PASS
Reception of new address in Renew	PASS	Not Tested/Unable to test	FAIL (old IA_NA use)	Not Tested/Unable to test
Reception of Reconfigure	Not Supported	Not Supported	Not Supported	Not Tested/Unable to test
Rapid Commit Exchange	Not Supported	Not Supported	Not Supported	Not Supported
Release Transmission	Not Supported	PASS	PASS	PASS
Reception of DNS Recursive Name Server	PASS	PASS	PASS	PASS
Reception of DNS Domain Search List	Not Tested/Unable to test	PASS	Not Tested/Unable to test	PASS
DNS Options updated with Renew	FAIL (used old DNS options)	Not Tested/Unable to Test	FAIL (used old DNS options)	Not Tested/Unable to test
DNS Options updated with Rebind	FAIL (used old DNS options)	PASS	FAIL (used old DNS options)	Not Tested/Unable to test

- Not Tested/Unable to test - due to either limitations of the client or relay tested against or time restrictions

Client results summary

- 3 / 4 clients tested did not request IA_PD
- 3 / 4 clients did not transmit Decline messages
- Rapid Commit options were not supported or not tested
- Reconfigure messages were not supported or not tested
- Some issues observed regarding Renew/Rebinds
  - T1/T2 not being honored properly, more on this in a later slide
  - DNS option changes not used by clients after Renew or Rebind

Server statistics/results

	Server A	Server B	Server C	Server D
IA_NA Exchange	PASS	PASS	PASS	PASS
IA_PD Exchange	Not Supported	Not Tested/Unable to test	Not Tested/Unable to test	Not Supported
Reception of Rebind	PASS	PASS	PASS	FAIL (did not send Reply)
Transmission of NoAddrsAvail	PASS	FAIL (did not send NoAddrsAvail)	PASS	PASS
Exchange with a single Relay	PASS	PASS	PASS	PASS
Exchange with layered Relays	PASS	PASS	PASS	PASS
Transmission of Reconfigure	Not Supported	Not Supported	Not Tested/Unable to test	Not Supported
Rapid Commit Exchange	Not Supported	Not Tested/Unable to test	Not Tested/Unable to test	NT/UA
Transmission of DNS Recursive Name Server	PASS	PASS	PASS	PASS
Transmission of DNS Domain Search List	Not Supported	PASS	Not Tested/Unable to test	PASS

- Not Tested/Unable to test - due to either limitations of the client or relay tested against or time restrictions
- 3 / 4 servers did not support Reconfigure transmission
- 2 / 4 servers did not support delegating prefixes

Relay-Agent statistics/results

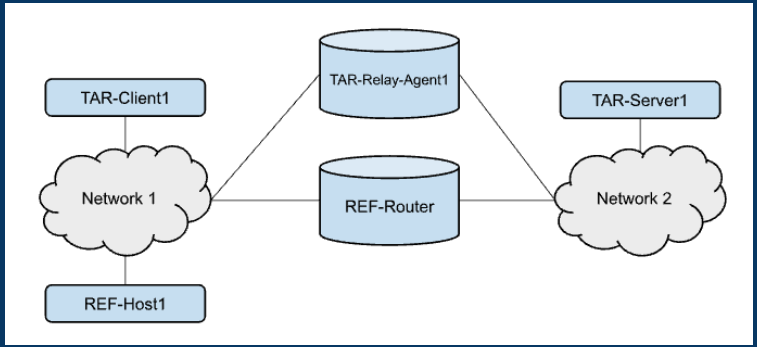
	Relay A	Relay B	Relay C	Relay D
Exchange with a single Relay	PASS	PASS	PASS	PASS
Exchange with layered Relays	PASS	PASS	PASS	PASS

- One notable result with one Relay-agent, will be discussed in a moment
  - otherwise nothing unexpected
- Layered relay exchanges included relaying messages between client and relay, and relaying between relay and server

Discoveries

Notable issue with source address selection for Relay-forward messages from one Relay agent

- Used global unicast address from Network1 as its IPv6 source address in Relay-forward messages to Server
- Server required static route for this Network1 address in order to transmit Relay-reply messages back to Relay Agent
- Section 19 of 8415bis does not currently have guidance on source address selection for Relay-forward messages



T1/T2 Timers

- 2 / 4 Client implementations chose their own values for T1/T2
- 1 Client implementation did not automatically transmit Renew
- 1 Server implementation did not directly support setting T1/T2 values
- No Servers supported setting T1/T2 values to 0

Next steps and questions

- Next steps:
  - Planned updates to the draft interoperability specification used during the event
  - Building more stable interop testbeds to use for certification testing
  - Lots more testing!

- Questions/comments from the WG?