DTN Neighbor Discovery

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Motivations

- One of the WG charter milestones is Neighbor Discovery.

- Result from IETF 104 hackathon: IETF-104-Prague-DTN.pdf

  - Recommendation is to generalize from IP-only discovery to DTN-general discovery. Discovery does not care if transport is over UDP/IP.

  - Recommendation to use CBOR encoding instead of custom TLV.

Existing Work

- Drafted DTN discovery mechanisms:

  - draft-wyllie-dtnrg-badisc defines a BP block type (which augments bundle payload interpretation) and carries own-node data.

  - draft-irtf-dtnrg-ipnd defines an IP-only packet to distribute both own-node and 1-hop neighborhood data.

- Existing OLSRv2 and MANET Neighborhood Discovery Protocol (NHDP) of RFC 7181 and RFC 6130 respectively.

  - NHDP discovers 1-hop and 2-hop routable peer IP subnetworks.

  - OLSR TC distributes topology information two 2-hop neighborhood.

  - Lower-level messaging and data contents tied to IP addressing and subnetwork (IP address block) concepts.

Potential DTN-NHDP

- (IP) NHDP protocol discovers IP subnets by IP multicast packets.

- DTN-NHDP could use Bundles to broadcast/multicast state to discover DTN peers.

  - Would make use of existing Bundle framing and BPSec for authentication.

  - Would add a well-known multicast EID "dtn:neighbor"

  - Would update RFC 7122 to re-allocate UDP port 4556 for BPv7 use, also define UDP multicast requirements (and other BCPs).

  - Would add new administrative record type to hold DTN-NHDP data as a payload.

    - The NHDP would be a CBOR encoding for simplicity and consistency.

- DTN-NHDP bundles would then be addressed to the "dtn:neighbor" multicast peer and transported to peers.

  - Either UDP multicast/broadcast CL or a known-neighbor CL.

  - Using BP/UDP re-uses existing UDP port assignment and avoids separate ports/encodings.

Desired WG Direction

- If the intent really is for IPND, then the NHDP encoding of [RFC 6130](#) could be extended with a message type specific for expressing DTN Node IDs and CL capabilities.

- Is there any benefit in tighter integration with IP NHDP?

- Is there a desire for general DTN-NHDP over any convergence layer?