CCNx over UDP
Status

Initial discussion
Interest/authors

draft
Mailing list discussion
Tracker submission
IETF 94 proposal / adoption
Scope

A way to transport CCNx messages between 2 nodes over UDP.
Basic Model

CCNx Forwarder

CCNx Forwarder
Basic Model

CCNx Forwarder  virtual link  CCNx Forwarder
Basic Model

CCNx Forwarder  udp  CCNx Forwarder
## Packets

<table>
<thead>
<tr>
<th>IP</th>
<th>UDP</th>
<th>CCNx Packet</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Static Header</td>
</tr>
</tbody>
</table>

- **Static Header**
- **Per-hop Headers**
- **CCNx Message**
- **Validation Information**
What else?

A trivial link is not trivial
CCNx-over-UDP requirements

1. Protocol or mechanism to set up the link
2. Protocol to control the link (later)
Bootstrapping a Link

**Problem**: how do I discover my first-hop forwarder to connect to a CCN network?

Two approaches:
- Zero-configuration setup
  - mDNS
  - DHCP
  - …?
- Manual configuration
DNS-based Discovery

Create a DNS service record for the local CCNx forwarder

SRV
_ccnx._udp.local. 86400 IN SRV 0 3 9596 ccnx.parc.com.

CNAME
ccnx.parc.com. A 1.2.3.4
DNS-based Protocol

1. Query the DNS for the service with the name `_ccnx._udp.local` and retrieve the corresponding SRV record.
2. Query the DNS for the IP address (CNAME record) associated with the target name specified in the SRV record.
DNS Problem

What if you can’t install SRV records?…
DHCP

- Use DHCP to offer the local CCNx forwarder information
- Format of the offer message is TBD
- … is that it?
Manual Configuration

- Stack or local configuration has a “file” that maintains a list of possible forwarder addresses
  - a la the `hostname` file
  - Bake in fixed IP addresses
Manual Problems

• Configurations change as users move
• Manual entry and maintenance is painful
Status

• Need to determine what solution works for what network configuration
• This is ongoing work in the CCNx-TWG
Discussion

Needs continued discussion and design exploration

Interaction with ICN LLC (?)