CCNx over UDP

Status

Initial discussion

Interest/authors
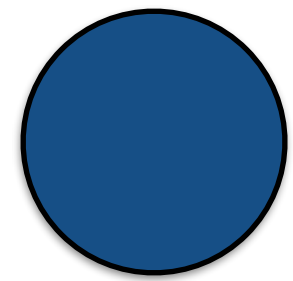
➤ draft

Mailing list discussion

Tracker submission

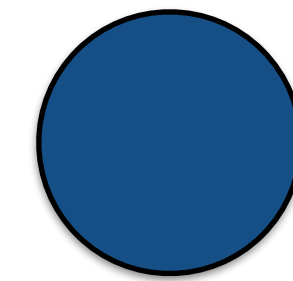IETF 94 proposal / adoption

Scope

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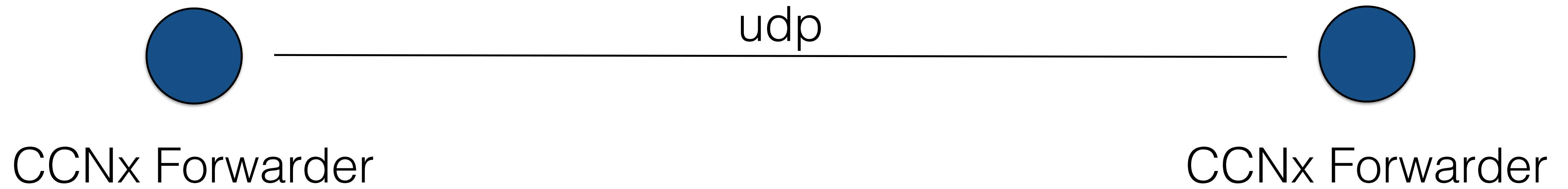
Basic Model

CCNx Forwarder

CCNx Forwarder

Basic Model

virtual link

CCNx Forwarder

CCNx Forwarder

Basic Model

udp

CCNx Forwarder   CCNx Forwarder

Packets

IP	UDP	CCNx Packet

Static Header	Per-hop Headers	CCNx Message	Validation Information

parc
A Xerox Company
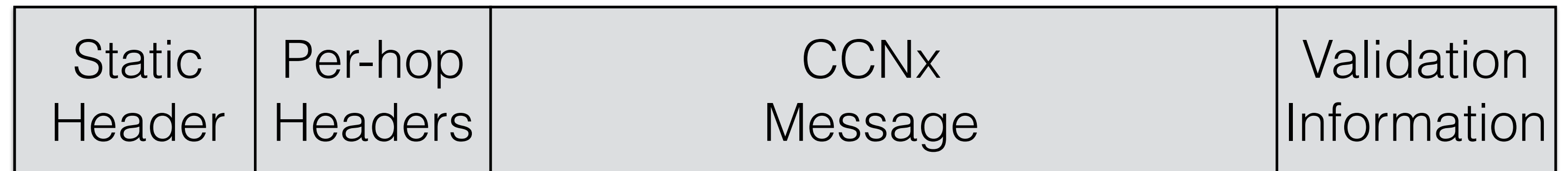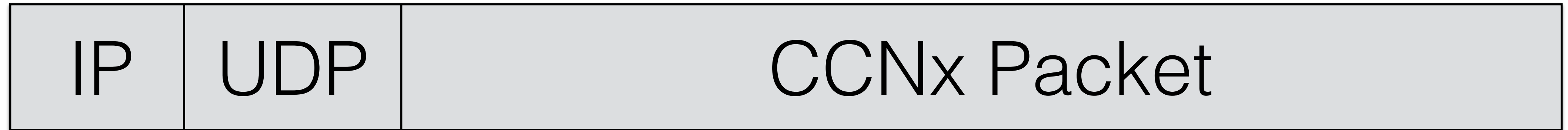
What else?

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 (?)