

# CCN lite

**Update (v0.2.0 release, Dec 2014)**

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# CCN-lite v0.2.0 – what is in the box

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- CCN-lite is a forwarder (ccn-lite-relay):
  - pure C, still light in code size, modular
  - runs in user space and as a Linux kernel module
  - ICN mgmt channel (using the old ccnb methods)
- CCN-lite is a toolset:
  - peek, fetch, mkContent, mkInterest, chunkify
  - the tools work with the ccn-lite relay, but also with the NDN testbed
  - “universal” `pktDump`, autodetects encoding
- Incomplete at crucial places:
  - signature validation (except for mgmt channel)
  - routing protocol
  - selectors

# CCN-lite – unique selling points

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- CCN-lite is multi-protocol:
  - ccnb, ndn2013 , ccnx2014, iot2014, cisco2015, rpc
  - name space bridging (access NDN content through CCNx)
- includes a fully functional Named-Function-Networking (NFN)
  - proof-of-concept, hard-core Lambda expression reduction
  - NFN-over-ccnb, NFN-over-ndntlv, NFN-over-ccntlv, . . .
- BSD-style license

CCN-lite is also used, or studied, by:

- RIOT (HAW Hamburg, FUBerlin, INRIA) (not yet moved to v0.2.0),
- Orange, Ericsson research, Cisco
- in a UCLA collaboration in the mobile health area

# CCN-lite – roadmap 2015

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- soon: v0.2.1-release (with a “Boston packet format”?)
- Apr/May 2015: Interop (NDN done, CCNx1.0 forthcoming)
- Packet tap and reinjection interfaces, Python binding
- TLV encodings for higher level stuff:
  - Rivest’s S-expressions? (1999, part of SPKI, see RFC 2693)
- Rework the “NFN reduction machine”:
  - data structures, memory leaks, interactions with “routing machine”
  - from untyped Lambda-Calculus to list-aware NFN
  - other query languages, Datalog?
- An IoT gateway?

# CCN-lite – What is your wishlist?

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# CCN-lite – and the multi-protocol demux problem

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Given: One channel to ship different packet flavors.

Question: How to reliably detect the encoding scheme?

It's a forwarder problem, but also shared by ccn-lite-pktdump

- So far this demux *was* possible, “magic bytes”-style
- But the IOT-TLV encoding destroys this: dense code pt space
- Solution in CCN-lite: a “switch encoding code” (SEC)

`<0x80> <INT(encodingID)> [pkt1 ...] [pkt2 ...]`

A SEC can be inserted into a stream of packets  
(it **MUST** be injected in case of IOT-TLV packets)