



Non-Application messages for ICN

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Problem Statement

- Need ways to bootstrap ICN nodes
 - Need this to be secure without presuming a globally available keying service
- Need link and neighbor/adjacency initialization and maintenance
 - In IP this was custom per routing protocol, we can do better
- Need localized error reporting over single hop
- Do not need (IMO):
 - “ICMP” equivalent – Interest-Return in CCN or NAK in NDN does this
 - Some kind of “Push” to proactively report errors



Toolkit we can use

- Local/custom Namespaces
 - Explicitly scoped via the name
 - Implicitly scope via forwarding behaviors
- Propagation/Scope Control
 - Via Hop Limit
 - HL=0 -> Local forwarder only
 - HL=1 -> neighbor forwarder
 - (Note: CCNx has a hop limit, NDN does not)
 - Via administrative scoping
 - Some kind of “link local”, “Site local” markers via new protocol machinery



Some issues

- Do we need a “different” propagation model for establishing and managing control state? (c.f. work of Schmidt et. al.)
- How do we securely bootstrap nodes and adjacencies without global keying
- What are interactions (if any) with L2 mapping/adaptation protocols
- Can/should we abandon Interest/Data exchanges for these functions?