

102nd IETF/IRTF, Jul. 2018, Montreal

# CCNinfo: Discovering Content and Network Information in Content-Centric Networks

---

draft-asaeda-icnrg-ccninfo-01

Hitoshi Asaeda (NICT)

Xun Shao (KIT)

# History

---

- Initial proposal: Contrace
  - “Contrace: Traceroute Facility for Content-Centric Network”
    - IEEE ComMag, Mar. 2015
    - <https://tools.ietf.org/html/draft-asaeda-icnrg-contrace-04>
- Revised with CCNinfo
  - “CCNinfo: Collecting Content and Network Information in Content-Centric Networks”
    - <https://tools.ietf.org/html/draft-asaeda-icnrg-ccninfo-01>

# What CCNinfo Can Provide

---

- Reachability of caching routers and publishers
- Hop count and RTT for content retrieval
- Path stretch
- Multipath condition
- Content popularity or cache hit ratio
- Chunk lifetime or expiration time
- CS usage at router
- Num. of interests per content
- (Access control and policy configuration for information disclosure)

# Multipath Support

- Multipath support (Section 5.2)

- The Request messages can be forwarded to multiple neighbor routers. Some router may have strategy for multipath forwarding; when it sends Interest messages to multiple neighbor routers, it may delay or prioritize to send the message to the upstream routers. The CCNinfo Request, as the default, complies with such strategy; a CCNinfo user could trace the actual forwarding path based on the strategy.

Default

- On the other hand, there may be the case that a CCNinfo user wants to discover all potential forwarding paths based on routers' FIBs. If a CCNinfo user invokes a CCNinfo Request with the parallel request flag, the forwarding strategy will be ignored and the upstream router may send Requests to multiple upstream routers simultaneously, and the CCNinfo user could trace the all potential forwarding paths. Note that this flag may be ignored according to the router's policy."

Option

# Questions at the Last Meeting

---

- **Q:** The reason you depend on the timeout rather than the response, is that a single request can have multiple responses, right? Have you thought about how to allocate the link resources for these things?
- **A:** No special link allocation is made for the parallel request.
- **Q:** How far are you planning to distribute these Interest messages?
- **A:** There are hop limit and timeout options.
- **Q:** We need a way to trade off the resource expenses on the exploding amount of data that might be returned.
- **A:** Agreed

# Summary

---

- CCNinfo, which is compatible with CCNx-1.0 TLV format, is a powerful network tool providing various information
- Welcome comments and questions
- RG draft?
  - Then, more discussion about multipath support, etc.