

ICN Ping and Traceroute Update

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ICN Ping Draft Summary

- ICN Ping provides ability to ascertain reachability of names
 - Test the reachability and operational state of an ICN forwarder
 - Test the reachability of a producer or a data repository
 - Test whether a specific named object is cached in some on-path CS, and, if so, return the administrative name of the corresponding forwarder
 - Perform some simple network performance measurements
- Draft defines operations of ICN Ping clients and forwarders
- CCNx and NDN packet formats are defined

ICN Traceroute Draft Summary

- ICN Traceroute provides ability to ascertain characteristics (transit forwarders and delays) of at least one of the available routes to a name prefix
 - Trace one or more paths towards an ICN forwarder (for troubleshooting purposes)
 - Trace one or more paths along which a named data of an application can be reached
 - Test whether a specific named object is cached in some on-path CS, and, if so, trace the path towards it and return the identity of the corresponding forwarder
 - Perform transit delay network measurements
- Draft defines operations of ICN Traceroute clients and forwarders
- CCNx and NDN packet formats are defined

Current Status

- Both drafts were initially published in September 2015
 - Advanced to RG drafts in March 2020
- Both drafts completed RG Last Call in January
 - One set of comments received from Junxiao Shi (see next slides for details)
- Both drafts were updated on March 6, 2022
 - Comments from Junxiao Shi were addressed
 - ICN Ping draft latest version: <https://www.ietf.org/archive/id/draft-irtf-icnrg-icnping-04.html>
 - ICN Traceroute draft latest version: <https://www.ietf.org/archive/id/draft-irtf-icnrg-icntraceroute-04.html>

One Issue resolved after Last Call

- Should PathSteering TLV be part of the encoding of the base NDN protocol, or should it be included in NDNLv2?
 - In our current drafts, it is part of the base NDN protocol
 - Argument for inclusion in NDNLv2: PathSteering TLV might be modified in a hop-by-hop fashion
 - Argument for inclusion in the base NDN protocol: HopLimit field in NDN (which also changes in a hop-by-hop basis) is included in the base protocol
 - The authors concluded that the PathSteering TLV should remain part of the base NDN protocol in the drafts, since it is a hop-by-hop field independent of a particular single hop

Changes in Version -04

- Packet format was updated to follow the latest version of the NDN packet format and packet encoding syntax (IETF ABNF syntax)
- PathSteering TLV has been moved after the Signature TLV in the NDN packet format to ensure it is excluded from the security envelope
- Type KeywordNameComponent is used for suffixes “ping” and “traceroute” in the names of requests instead of type GenericNameComponent to align with NDN packet format v0.3 and indicate that such requests require “special” processing

Next Step

- Authors believe the current drafts are ready to be advanced to IRSG Review.
- Dirk will need to be Document Shepherd, since DaveO is a co-author.

Thank you very much for your
attention!

Q/A