ConEx Concepts and Abstract Mechanism

draft-mathis-conex-abstract-mech-00.txt

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www.trilogy-project.org
ConEx Concepts and Abstract Mechanism

- new individual draft: draft-mathis-conex-abstract-mech-00.txt
- intended status: informational
- immediate intent: request adoption as ConEx w-g item
- milestone target: Jul 2011

recall

- defer encoding to avoid obscuring underlying design
  - abstract design of algorithms & protocol
  - encoding in different protocol headers can follow (IPv6, v4)
- scope
  - loss-based (for incremental deployment), not just ECN
  - any transport, ConEx just using TCP as first concrete step
basic signals and functional units

- transport sender
- transport receiver
- SACK
- ECE
- congested network element
- policy
- audit
- ECN
- loss
- Re-Echo-ECN
- Re-Echo-Loss
- ACKS

DATA
ConEx signal requirements

• visible to internetwork layer
• useful under partial deployment
  • minimal deployment: transport sender-only
• accurate (auditable)
• timely

all SHOULDs not MUSTs
  in case compromises needed for encoding in headers
terminology for signalling states

max 5 states needed (white backgrounds)
as well as 3 markings, 2 types of non-marking

- Not-ConEx = ConEx not supported
- ConEx-Capable = ConEx supported
  - ConEx-Not-Marked: ConEx support but not marked (yet)
  - ConEx-Marked: one of:
    - Re-Echo-Loss
    - Re-Echo-ECN
    - Credit ...
      (see later talk)

also sets of states (blue backgrounds) given names

- all names can be bashed on list
combinations
five signals do not require five flags

- Not-ConEx mutually exclusive
- ConEx-Capable mutually exclusive
  - ConEx-Not-Marked mutually exclusive
  - ConEx-Marked mutually exclusive
- Re-Echo-Loss
- Re-Echo-ECN
- Credit …

- ideally completely orthogonal to ECN
  - Re-Echo-ECN with Not-ECN-capable could be redundant
  - but may need further compromises to encode within header space
relation to re-ECN

- re-ECN: original concrete candidate ConEx proposal
  
  <draft-briscoe-tsvwg-re-ecn-tcp-09> up-rev’d for reference only implemented, security analysed

- re-ECN required ECN-capable receiver
  - could severely constrain deployment

- re-ECN did not need any ECN in queues
  - re-echoed loss as proposed in ConEx
  - but had no distinction between Re-Echo-ECN and Re-Echo-Loss
congestion exposure components

modified transport sender

policy
police reroute downgrade report etc

audit

optionally modified transport receiver
audit function

• ECN-based audit
  • counting ECN markings
  • best near receiver

• loss-based audit
  • Not a generic solution but possibly good enough in two common cases:
    1. reconstruct losses by sniffing TCP seq numbers
      – Broken by IPsec, deviant TCPs
    2. single primary access bottleneck
      – Bottleneck device can also perform audit
status & plans

• 5 reviews on list so far – 1 more detailed [Bagnulo]
  • all agree Credit needs to be explained (see later presentation)
  • other places where too much reader knowledge assumed
  • fairly easy to fix

• plans
  • consensus on terminology (list)
  • text to explain Credit & reach consensus if disagreement
  • add normative design criteria for audit function
  • otherwise, looking in fairly good shape

• adopt as WG draft?
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Q&A