PCN

Congestion and Pre-congestion Notification

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Charter Review (1)

“The Congestion and Pre-congestion Notification (PCN) working group develops mechanisms to protect the quality-of-service of established inelastic flows within a Diffserv domain when congestion is imminent or existing.”

PCN Design Principles

- A simple, scalable set of mechanisms to support admissions control and pre-emption of inelastic, signaled flows within a single Diffserv domain.
  - Not e2e
  - Not focused on squeezing the last ounce of utilization out of the network.
- Interior nodes measure existing or incipient congestion and mark packets accordingly.
- Egress boundary nodes measure the congestion state of ingress-egress aggregates by metering the rate of packet congestion markings.
- Egress boundary nodes signal congestion state information to the ingress boundary nodes.

Charter Review (2)

- “The focus of the WG is on developing standards for the marking behavior of the interior nodes and the encoding and transport of the congestion information.”
- “Reaction mechanisms at the boundary consist of flow consist of flow admission and flow termination.”

Charter Review (3)

- PCN initial scope is restricted by the following assumptions:

  A) These components are deployed in a single Diffserv domain, where all boundary and interior nodes are PCN-enabled and trust each other for correct PCN marking, encoding, transport and aggregation

  B) All flows handled by these mechanisms are inelastic and constrained to a known maximum rate through policing or shaping

  C) The number of flows across any potential aggregation bottleneck is sufficiently large for stateless, statistical mechanisms to be effective

  D) Flows may have different precedence, but the applicability of the PCN mechanisms for emergency use (911, GETS, WPS, MLPP, etc.) is out of scope

Charter Review (4)

- PCN will specify the following components:

  (1) A general architecture for flow admission and termination based on aggregated (pre-)congestion information

  (2) A specification of conditions under which interior nodes generate (pre-)congestion information

  (3) Encoding and transport of (pre-)congestion information between the interior and domain egress

  (4) Metering of (pre-)congestion information at the domain egress

  (5) Encoding and transport of (pre-)congestion information between the egress and the controlling domain ingress

  (6) Ingress node control mechanisms for flow admission or termination, based on aggregated (pre-)congestion information