



PCN boundary for the HOSE mode of operation

draft-karagiannis-pcn-hose-edge-behaviour-00.txt

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Outline

- Overview of HOSE mode solution
- Next steps



Overview of HOSE mode solution

- Applied in a PCN domain.
- HOSE is referring to aggregation of incoming traffic from all ingress edges, which is associated with one traffic class, i.e., PHB, towards one egress edge. This type of HOSE model is equivalent to the Multiple Point to Point (MP2P) type of aggregation.
- Supports admission control and flow termination.
- Able to support ECMP handling during admission control and flow termination.



Overview of HOSE mode solution

- Main advantage of HOSE model:
 - no ingress-egress aggregated states have to be maintained between each ingress - egress pair, increasing scalability and deployability of PCN solution
- Applications areas:
 - similar to the ones where the ingress-egress-aggregate model can be used
 - example: a possible applicability scenario can be an UMTS (LTE, or Wi-Max) IP based access network, where many IP based base stations and only few Internet gateways are used.



Overview of HOSE mode solution

- Interior: perform threshold-marking and excess-traffic-marking of packets according to rules specified in [draft-ietf-pcn-marking-behaviour-05], and any additional rules specified in applicable encoding extension document, with following recommendations:
 - in situations that interior node is overloaded it is RECOMMENDED that interior nodes preferentially drop unmarked or Threshold Marked packets instead of Excess Marked packets. This is required since the marked packets are used at egress to calculate excess rate during flow termination; excess rate can be accurately calculated at egress when marked packets are not dropped in Core network;
 - encoding of PCN status within individual packets is based on [draft-ietf-pcn-3-state-encoding-00] (or on [draft-ietf-pcn-3-in-1-encoding-00], extended to provide a third PCN encoding state).



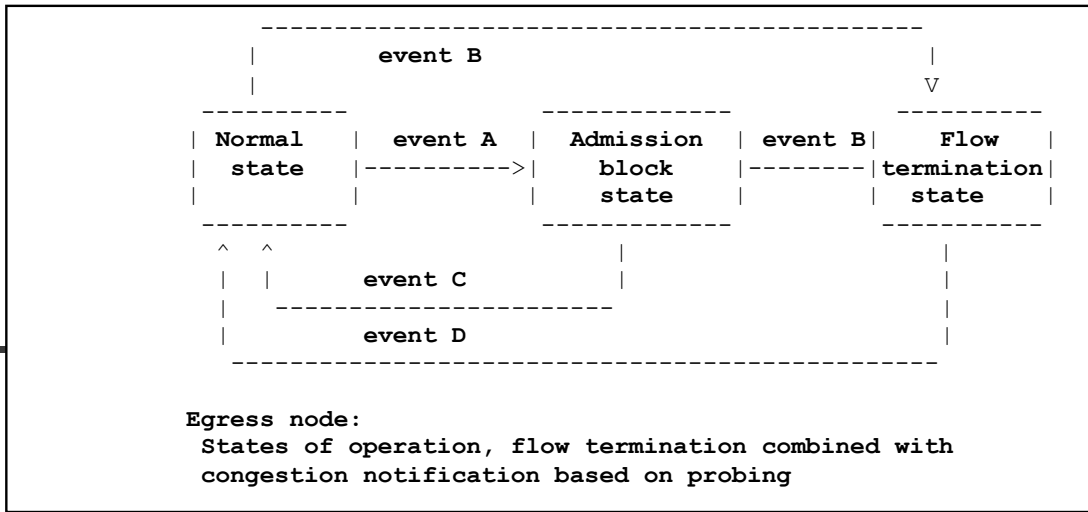
Overview of HOSE mode solution

■ Egress:

- Measures Threshold Marked (ThM) rate and defines which new flows should be rejected; Signaling messages are identified and used to notify to ingress whether new flows are admitted or rejected; New flow is only rejected when Egress operates in Admission block or flow termination state and signaling request message is ThM marked.
- Measures excess rate marked (ETM) packets and identifies which ongoing flows should be selected for termination and sends notification message to ingress specifying which flows should be terminated; Only these flows that are passing through severely overloaded PCN-interior-node(s), are candidates for termination (received ETM marked packets belong to such flows)

■ Ingress:

- sends signalling admission request messages and uses signalling admission reply messages from egress to reject/admit the new flow
- receives notification messages to stop selected on-going flows



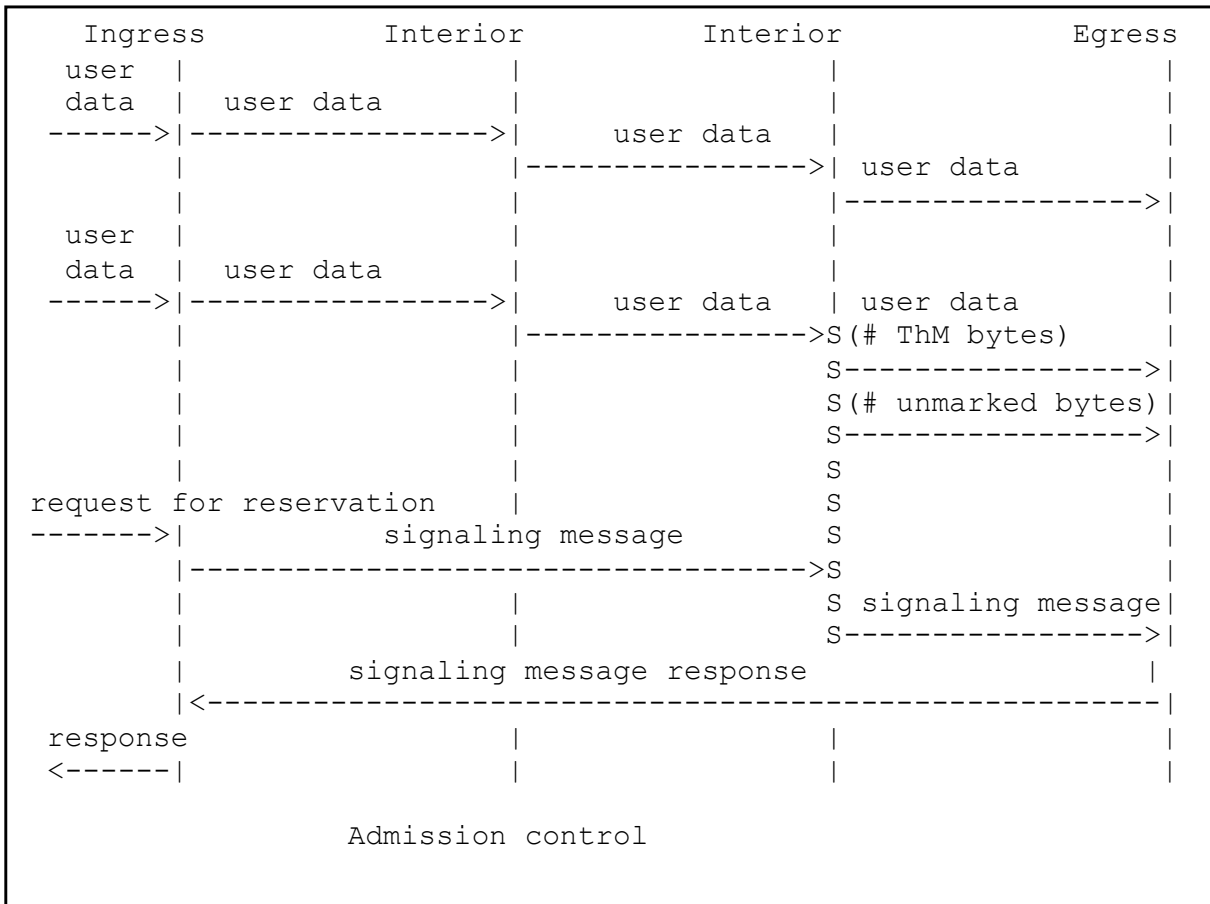
Egress Node

- Normal state: no congestion;
- Flow termination state = Flow Termination (FT) state;
- Admission block state = Admission block control (AC) state;

Events when one encoding state used for admission control and flow termination:

- Event A: when the PCN-egress-node receives a ThM rate that is higher or equal than the admission block detection threshold rate (Ablock_TH);
- Event B: occurs when the PCN-egress-node receives packets that are ETM marked;
- Event C: this event occurs when the rate of incoming ThM bytes/packets decreases below the Ablock_TH;
- event D: this event occurs when the egress, during an interval T, does not receive ETM marked packets. Note that in future version of draft, when this event occurs then egress operational state should change to Admission block state (comment from Michael Menth).

Overview of HOSE mode solution





Next steps

- We ask the support of the PCN working group such that the HOSE mode edge behaviour draft becomes a PCN working group draft