Encoding 3 PCN-States in the IP header using a single DSCP

draft-ietf-pcn-3-in-1-encoding-06.txt

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status

- Encoding 3 PCN-States in the IP header using a single DSCP
  - **mature draft:** [draft-ietf-pcn-3-in-1-encoding-06.txt](#)
  - **dependency:** RFC6040 (PS) not required but preferred
  - **intended status:** standards track
  - **exec summary:** rewritten to obsolete not just update RFC5696
    - superset of SM in baseline, but threshold marker cannot set 11
    - could not also accommodate PSDM
  - **immediate intent:** Summarise ML discussions. Another WGLC
    - 06bis written to fix some nits, but can process with WGLC

<table>
<thead>
<tr>
<th>DSCP</th>
<th>00</th>
<th>10</th>
<th>01</th>
<th>11</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline RFC 5696</td>
<td>DSCPn</td>
<td>Not-PCN</td>
<td>NM</td>
<td>EXP</td>
</tr>
<tr>
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<td>NM</td>
<td>ThM</td>
</tr>
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**Glossary**
- NM = Not Marked
- ThM = Threshold Marked
- ETM = Excess Traffic Marked
- SM = single marking
- PSDM = packet-specific dual marking
3-in-1 encoding rewritten

- in order to obsolete, not just update, baseline [RFC5696]
  - 3-in-1 has become superset of 3-in-1 and single marking in baseline
  - re-written not just pasted – clean text

- clarified applicability
  - particularly with respect to RFC6040 and pre-RFC6040 tunnels

- added section on backward compatibility with baseline

- imported relevant informative appendices from RFC5696 to 3-in-1

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              IP and in MPLS Shim Headers ........................................ 21
Summary of mailing list discussions

- in order to obsolete, not just update, baseline encoding [RFC5696]
  - 3-in-1 has become superset of 3-in-1 and single marking in baseline

- Cases where only one marking function throughout PCN domain
  - Only Excess-traffic-marking: (e.g. single-marking) straightforward
  - Only Threshold-marking: issues with pre-6040 tunnels (next slide)

- Could not accommodate PSDM
  - too many differences
  - has to continue on experimental track as alternate to 3-in-1

- tunnel half in a PCN-domain
  - problem with RFC5559 text. Fix in 3-in-1? Or erratum to 5559?
Threshold Marked (ThM) and pre-6040 tunnels

- 11 codepoint has become solely excess-traffic-marked (ETM)
  - no longer generic ‘PCN-marked’ (PM, ie ETM or ThM) codepoint
  - **ThM now defined, but MUST NOT use unless all tunnel endpoints are RFC6040**
  - a pre-6040 tunnel egress conflicts with using ThM (reverts to NM on decap)

Summary of mailing list discussion that led to this decision...

We want to define cases where pre-6040 tunnel endpoints can be used

- **Easy cases:**
  - if only excess-traffic-marking throughout domain (e.g. single-marking - SM)
    - just works with any tunnels
  - if both marking functions running (e.g. controlled load - CL)
    - all tunnel endpoints in PCN domain MUST comply with RFC6040

- **Harder case:** if only threshold marking throughout domain (no example use-cases)
  - We had two possibilities to choose between:
    1. threshold marking sets ThM but only in a pure 6040 PCN domain
    2. If pre-6040 tunnel endpoints present, allow ThM to set 11
  - Given no use-case, decided not to allow case #2 (avoids confusion)

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in this case, PCN arch [RFC5559] incorrectly says

the tunnel egress node clears any PCN-marking on the inner header. This rule is applied before the "copy on decapsulation" rule above

incorrect: would break e2e ECN by wiping CE on inner

where to fix this

- 3-in-1 appendix on interaction between e2e ECN and PCN
- Erratum to RFC5559?
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Q&A