

# 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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IETF-81 PCN Jul 2011



# status

## Glossary

NM = Not Marked

ThM = Threshold Marked

ETM = Excess Traffic Marked

SM = single marking

PSDM = packet-specific dual marking

- Encoding 3 PCN-States in the IP header using a single DSCP
  - **mature draft:** [draft-ietf-pcn-3-in-1-encoding-06.txt](https://datatracker.ietf.org/doc/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

	DSCP	00	10	01	11
Baseline RFC 5696	DSCPn	Not-PCN	NM	EXP	PM
3-in-1	DSCPn	Not-PCN	NM	ThM	ETM

# 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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# 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)

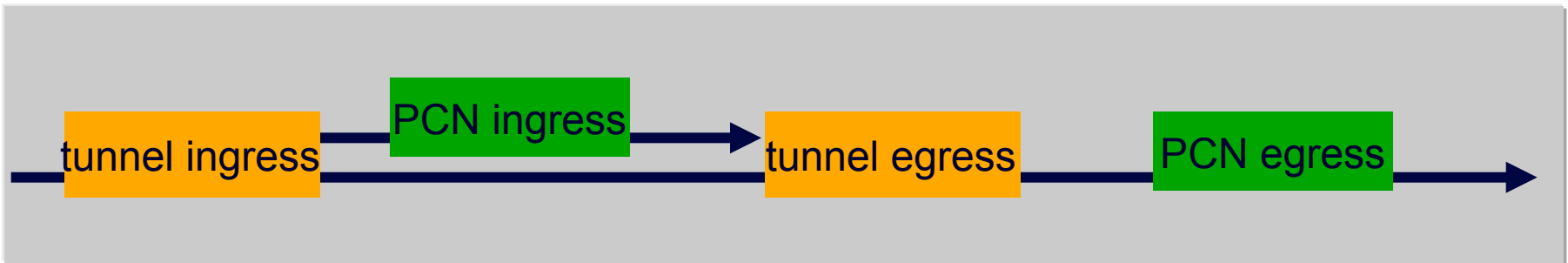
## Summary of mailing list discussion that led to this decision...

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)

	DSCP	00	10	01	11
Baseline RFC 5696	DSCPn	Not-PCN	NM	EXP	PM
3-in-1	<b>DSCPn</b>	<b>Not-PCN</b>	<b>NM</b>	<b>ThM</b>	<b>ETM</b>

# tunnel half in a PCN-domain



- 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

