Guidelines for Adding Congestion Notification to Protocols that Encapsulate IP

draft-ietf-tsvwg-ecn-encap-guidelines-01

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IETF-92 Mar 2015

R / T E
Reducing Internet Transport Latency

Bob Briscoe's work is part-funded by the European Community under its Seventh Framework Programme through the RITE (ICT-317700) project

aim of this draft

- guidelines for writing specs to propagate ECN up to IP from:
  - L2 protocols (e.g. IEEE802, TRILL)
  - tunnelling protocols (L2TP, PPTP, GRE, VXLAN, GTP,…)
- for authors who may not be ECN experts
- scope: wire protocol, not algorithms

draft status

- IETF WG item
- intended status: best current practice

ECN = explicit congestion notification
L2TP = layer 2 tunnelling protocol [RFC2661]
PPTP = Point-to-point Tunnelling Protocol [RFC2637]
GRE = generic routing encapsulation [RFC1701, RFC2784]
QCN = quantised congestion notification [IEEE 802.1Qau]
GTP = GPRS tunnelling protocol [3GPP TS 29.060]

Liaisons with other standards org'ns

- Liaison requests to SDO *x*
  1. which active working groups of x are interested?
  2. which specs of x could be are affected?
  3. invite review of the guidelines?
- *x* = IEEE:
  - 24-Nov-14 liaison sent to IEEE802 & IEEE802.1 chairs
  - http://datatracker.ietf.org/liaison/1364/
  - thanks to Dan Romascanu, Eric Gray, David Black for process help
  - no substantive feedback so far – no objections
- *x* = 3GPP: official liaison in progress
  - we have had some feedback anyway
  - want to know more clearly which 3GPP areas this applies to
  - John K (co-author) has suggested RAN3, CT3, CT4, SA2
    - new refs: Core network Overload (CNO), User-plane congestion mgmt (UPCON), etc.

RAN = radio access network
CT = core & terminals

SA = system architecture

RAN3 = architecture and certain protocols
CT3 = interworking with user equipment
CT4 = protocol steward for IP-related protocols
SA2 = Stage 2 architecture

Cross-area use within IETF

- trill (transparent interconnection of lots of links)
  - trill extensions using fixed length headers

    draft-ietf-trill-rfc7180bis
  - Donald Eastlake about to define ECN extension
  - replaces variable length trill extensions

    draft-ietf-trill-rbridge-options (died Jun 2012)
- L2TP, PPTP, NVO3 (GRE?, VXLAN?)
  - todo: essentially extend applicability of RFC6040

next steps – IETF review

- thanks to those volunteering to review, so far:
  - Andrew McGregor
  - Wei Xinpeng
  - Richard Scheffenegger
  - Dirk Kutscher
  - Ingemar Johansson
  - (already Gorry Fairhurst reviewed draft-01 & draft-03 Intro)

Guidelines for Adding Congestion Notification to Protocols that Encapsulate IP

draft-briscoe-tsvwg-ecn-encap-guidelines-04

Q&A

& spare slides

status of congestion notification
in protocols that encapsulate IP

- IETF

  done: MPLS-in-MPLS, IP-in-MPLS [RFC5129], IP-in-IP [RFC6040]

  to do: draft-ietf-trill-rfc7180bis (in progress),
  & pass ECN thru tunnel protocols, eg. L2TP PPTP, GRE, VXLAN

- Other standards bodies:

  done: QCN [802.1Qau], Frame Relay, ATM [I.371]
  (all subnet-local)

  todo: IEEE 802.1, (802.3, 802.11), …?
  & pass ECN thru tunnel protocols, eg. 3GPP GTP

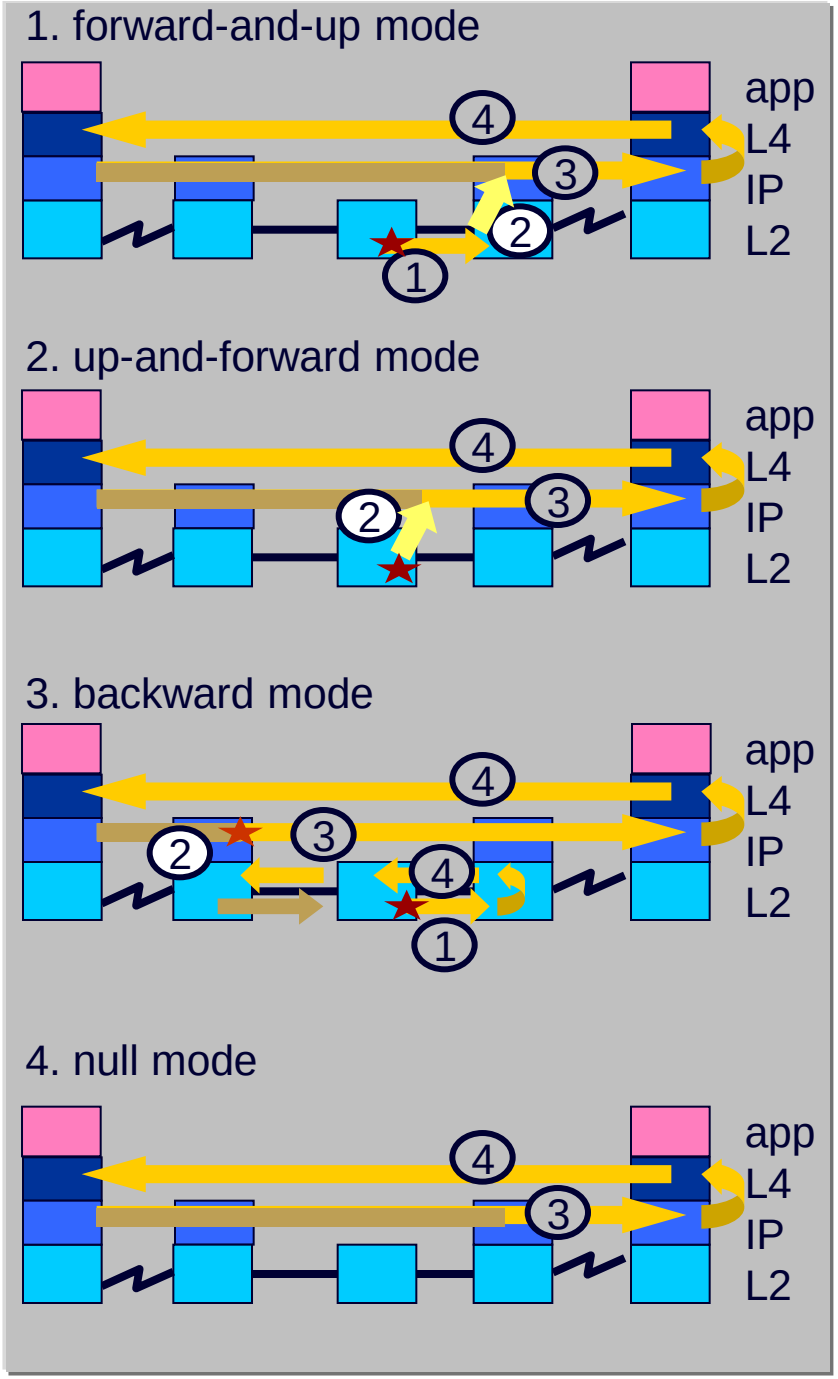
L2TP = layer 2 tunnelling protocol [RFC2661]
GRE = generic routing encapsulation [RFC1701, RFC2784]
QCN = quantised congestion notification
GTP = GPRS tunnelling protocol - user plane [3GPP TS 29.281]

a variety of arrangements

- avoid precluding L2 innovation
- must not be over-prescriptive

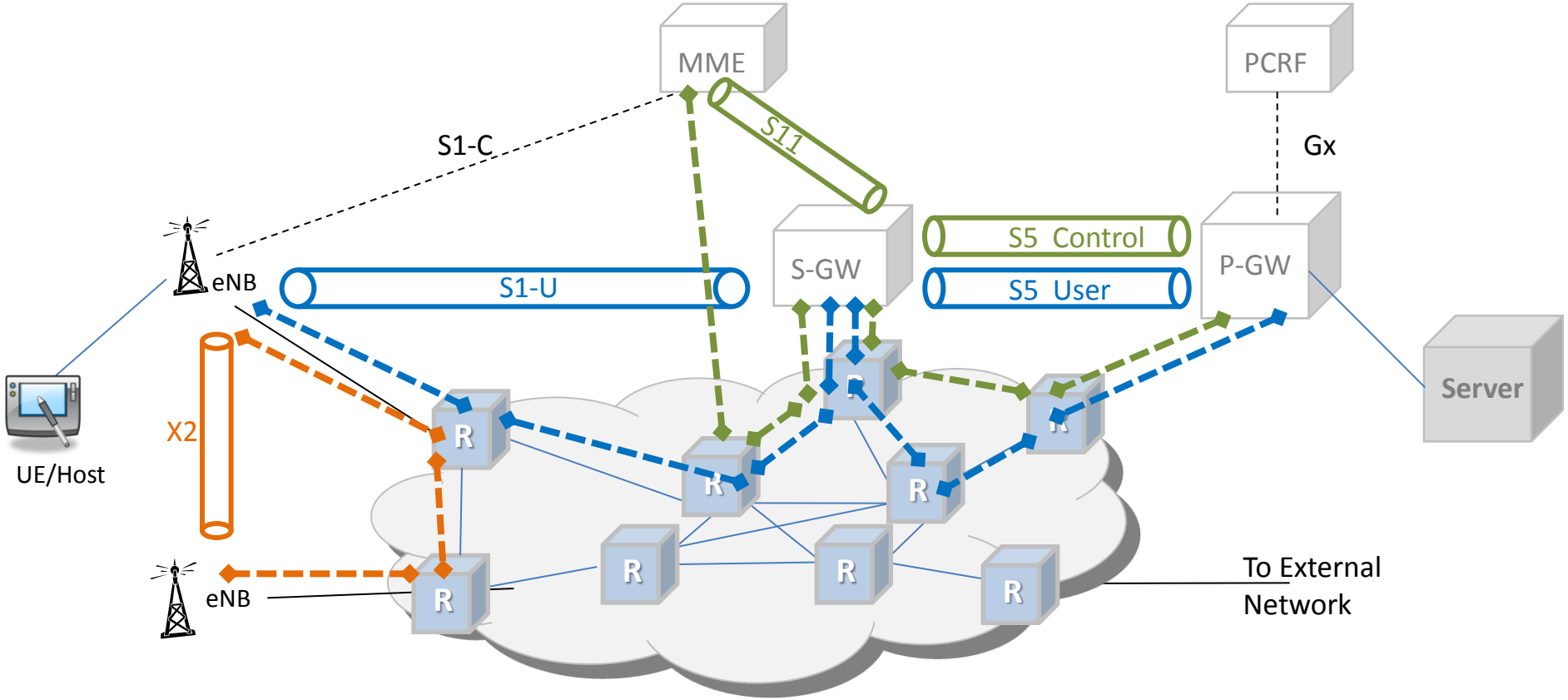
- guidelines for each mode
  - see draft (or spare slides)

- wide expertise needed for authoring & review



motivating example

3GPP LTE/SAE – sequence of tunnels



More than 1 tunnel between policy enforcement points.

Example: UE PDN connection traverses

[eNB] << S1-U >> [SGW] << S5/S8 >> [PGW].