Interaction between Low Latency Low Loss Scalable Throughput (L4S) and Diffserv

draft-briscoe-tsvwg-l4s-diffserv-02

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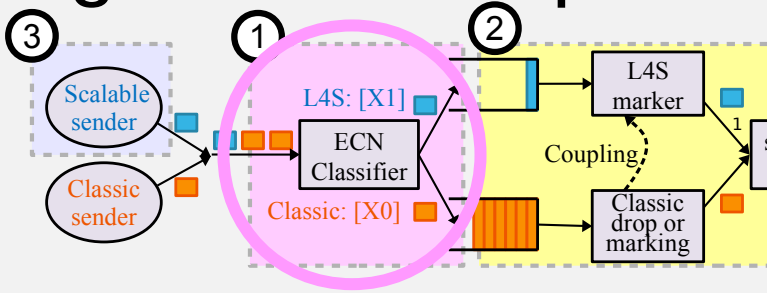
Other Identifiers Complementing L4S – recap #1

- Default classifier on 2-bit ECN field in IP header (v4 or v6)
  - if ECT(1) or CE, forward to L4S

Codepoint	ECN bits
Not-ECT	00
ECT(0)	10
ECT(1)	01
CE	11



- Eg.1) Inclusion

AND
optionally

- Add traffic into L queue
- MUST be compatible with L4S
- Classifier on any other field
  - source or dest. IP address, VLAN ID
  - L7 protocol (e.g. DNS, LDAP)
  - Local or Global DSCP (e.g. EF, VA, NQB)

- Eg.2) Exclusion

BEFORE
optionally

- Exclude traffic from L queue
- Depends on local policy
  - security: e.g. malicious hosts
  - commercial: e.g. lower-tier customers
- Local-use classifiers only
  - addresses, local-use DSCPs

Mapping Diffserv Service Classes [RFC4594] to L4S
(if operator solely offers Latency & Classic queues)

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Service Class Name	DSCP Name	DSCP Value	App example	AQM	LLD
Network Control	CS7	111000	(Resv'd for) Network routing	Y & N	L if ECT1
Network Control	CS6	110000	Internetwork routing	Y & N	L if ECT1
OAM	CS2	010000	Ops, admin, mgmt & provis'ng	Y & N	L if ECT1
Signalling	CS5	101000	IP telephony signalling	N	L[1] if ECT1
Telephony	EF	101110	IP telephony bearer	N	L
	Voice Admit[1]	101100	Admission-control'd IP telephony	N	L[1]
Real-Time Interactive	CS4	100000	Video conf & interactive gaming	N	L if ECT1
MM Conferencing	AF4x; x=1,2,3	100{01,10,11}0	H.323/V2 video conf. (adaptive)	Y	L if ECT1
Broadcast Video	CS3	011000	Broadcast TV & live events	N	L if ECT1
Multimedia Streaming	AF3x; x=1,2,3	011{01,10,11}0	Streamed video & audio	Y	L if ECT1
Low Latency Data	AF2x; x=1,2,3	010{01,10,11}0	Client-server transactions, Web	Y	L if ECT1
High Thrughput Data	AF1x; x=1,2,3	001{01,10,11}0	Store and forward applications	Y	L if ECT1[2]
Standard	DF (CS0)	000000	Undifferentiated applications	Y	L if ECT1
Low Priority Data	LE[3]	000001[3]	Any flow with no b/w assurance	Y	L if ECT1[4]

Mapping Diffserv Service Classes [RFC4594] to L4S (if operator solely offers Latency & Classic queues)

- footnotes for the previous table

- “L if ECT1” is not classified into L 'cos of its DSCP
- Non-Queue-Building (NQB) too early to include, but it would be 'L'

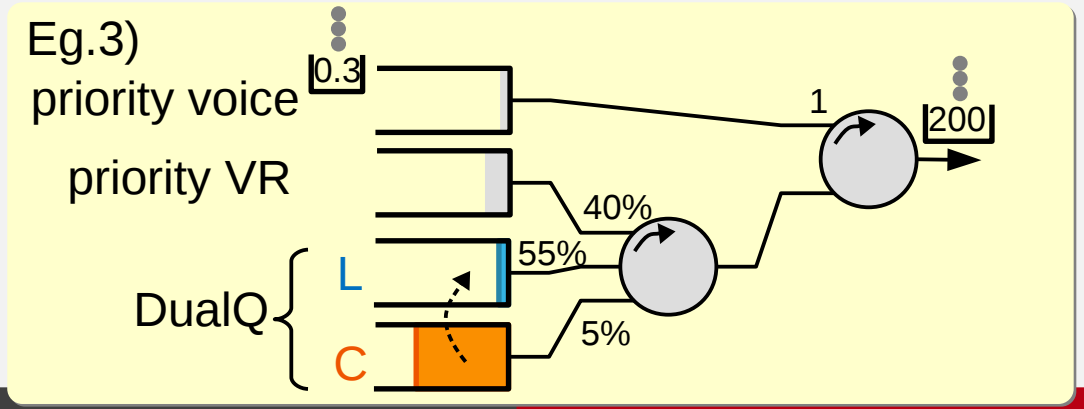
1. CS5 would be 'L' if not commonly mapped to b'cast video
2. RFC5865 gives Voice Admit priority over EF
3. To take advantage of scalable congestion control
4. Less Effort [draft-ietf-tsvwg-le-phb] update to RFC4594
5. Flows using LE SHOULD also use LE congestion ctrl

L4S within Diffserv queuing hierarchy – recap #2

- Previous examples split Default class (BE) into two
- Operator may want to offer additional bandwidth priority services
  - not usually necessary for public Internet
  - beyond scope of core L4S drafts

Later talk (l4s-diffserv)

- For ecn-l4s-id, the important points are:
  - Global or Local-use DSCPs
  - Two main classification types:
    - PHBs before DualQ (eg.3)
    - PHBs after one of the DualQs
    - or both



Mapping Diffserv Service Classes [RFC4594] to L4S
(if operator solely offers Latency & Classic queues)

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Service Class Name	DSCP Name	AQM	Mechanism	Latency Separation?
Network Control	CS7	Y & N	Fig 1 or 2	Y
Network Control	CS6	Y & N	Fig 1 or 2	Y
OAM	CS2	Y & N	Fig 1 or 2	Y
Signalling	CS5	N	Fig 1	N
Telephony	EF	N	Section 4.2	N
Voice Admit	VA	N	Section 4.2	N
Real-Time Interactive	CS4	N	Fig 2	Y
MM Conferencing	AF4x; x=1,2,3	Y	Section 5	Y
Broadcast Video	CS3	N	Fig 2	N
Multimedia Streaming	AF3x; x=1,2,3	Y	Section 5	Y
Low Latency Data	AF2x; x=1,2,3	Y	Section 5	Y
High Thrughput Data	AF1x; x=1,2,3	Y	Section 5	Y
Standard	DF (CS0)	Y	Section 3	Y
Low Priority Data	LE[3]	Y	Section 4.3	n/a?

Next Steps for l4s-diffserv

- Can now leave holding pattern
  - sufficient progress on TCP Prague requirements within the stable architecture
- Tidied up 3 years of piecemeal changes
- Invited reviews in progress – need more
- Ready for WGLC
  - target Dec'18 – or Jan'19