Non Queue Building (NQB) Per Hop Behavior
draft-ietf-tsvwg-nqb-01

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Status

- Adopted TSVWG following IETF105
- Draft-00 published Nov. 4, 2019
  - Restructured to align with other PHB specs
  - Addressed most comments made during IETF105 & on mailing list
    - Interaction with WiFi EDCA not sufficiently addressed
- Draft-01 published March 9, 2020
  - Rewrote section on WiFi interoperability, introduced new requirements to provide safeguards
  - Other minor editorial changes
- Remaining work
  - Examine impact of existing remarking pathologies
  - More detail on what happens if SHOULDs are not followed (incl. traffic protection)
  - Further alignment with PHB spec guidelines (RFC 2474 / RFC 2475)
    - Discussion of implications of tunneling
    - Configuration and Management issues
    - Impact on higher-layer protocols

Common remarking policies/pathologies[1,2]

Policy	Outcome for NQB (42/0x2A)	
Bleach (set DSCP=0)	0	No differentiation from other traffic
Set "Precedence" bits to 000	DSCP2	NQB indistinguishable from AF41, AF31, AF21, AF11 (as well as 2, 50, 58)
Set "Precedence" bits to 001	AF11	
Set "Precedence" bits to 010	AF21	
Set Low 3 bits to 000	CS5	NQB indistinguishable from CS5, VA, EF (41, 43, 45)
Remark all traffic to X*	X	No differentiation from other traffic

* No observations of X=42 in literature

None of the common remarking policies result in traffic being remarked as NQB

Refs:
1. Custura, Secchi, Fairhurst, "Exploring DSCP modification pathologies in the internet", CC, 2018.
2. Barik, Welzl, Elmokashfi, Driebholz, Gjessing, "Can WebRTC QoS Work? A DSCP Measurement Study", ITC30, September 2018.

Impact on higher layer protocols

- Use of NQB increases risk of out-of-order delivery by networks that implement Queue Protection algorithm
  - i.e. QP could re-direct a subset of a flow's packets to the QB queue

Next Steps

- Address above topics & revise draft
- Request for comments on mailing list:
  - Consensus on DSCP
    - 42/0x2A/0b101010 is proposed, any objections or concerns?