Non Queue Building (NQB) Per Hop Behavior

draft-ietf-tsvwg-nqb-03

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Status

- Adopted by TSVWG following IETF105 (July 2019)
- Draft-00 published Nov. 4, 2019
- Draft-01 published March 9, 2020
- Draft-02 published September 22, 2020
  - Added a section on DSCP remarking pathologies
  - Added a requirement for configurable DSCP classification
  - Added text to describe what happens if SHOULDs are not followed
  - Added a section on Impact to Higher Layer Protocols
  - Added a section on Configuration and Management
  - Improved Security Considerations
- Draft-03 published November 2, 2020
  - Added a section on the relationship of the NQB PHB to other PHBs
  - Added a subsection on aggregation of NQB traffic with other DiffServ service classes
  - Discusses re-marking NQB traffic at interconnection & mentions default bleaching at RFC8100 interconnects
  - Added a section on tunneling of NQB traffic
  - Added a mention of PHB compliance in WiFi gear
- Milestone: Submit as Proposed Standard RFC by Feb 2021

Remaining Work

1. Align terminology with RFC2474 (“standardized PHBs”, “recommended DSCPs”)
2. Eliminate implication that DiffServ was not intended to be used end-to-end
3. Clarify aggregation of NQB traffic with Default & discuss backbone nets
   - Networks that don’t support the PHB SHOULD aggregate NQB with Default, and SHOULD preserve the NQB marking.
   - Describe in more detail where full NQB support is needed vs. where aggregation with default is likely fine.
4. Discuss interworking with practices in place in some interconnects/backbones regarding DSCP aggregation
   - Use of a 000xxx DSCP in these locations makes compliance with #3 much easier.
5. Fix mention of aggregating Network Control with NQB
   - Either remove it, or provide sufficient context and warnings
6. Clean up WiFi section to recommend PHB compliance more strongly
   - Both for “default mapping” devices and RFC8325 devices
7. Do NQB & Default form a PHB Group?

DSCP Recommendation

- Rationale for recommending DSCP 42 (101010):
  - The end-host (i.e. the application) chooses DSCP for upstream traffic, with no DSCP remapping possible prior to WiFi link. Choosing a value that maps to AC_VI in existing WiFi networks is critical for adoption:
    - Some existing “NQB-compatible” applications already select AC_VI (or in some cases AC_VO) via use of EF/CS5/CS7. Recommending a DSCP that maps to AC_BE or AC_BK would result in de facto use of a non-recommended DSCP, fragmentation and confusion.
  - Existing Access Network technologies can easily classify/aggregate a lot of “NQB-compatible” traffic via a masked classifier (i.e. 101xx0)
- Rationale for recommending DSCP 000xxx
  - Some existing DSCP interconnections and backbone routers can easily aggregate NQB with Default, while carrying the DSCP through unbleached
- Proposal:
  - Continue with Recommended DSCP of 42 for end-hosts, since DSCP can be remapped prior to backbone/interconnection.
  - Discuss (and consider recommending?) using an 000xxx value at interconnections
    - “some” interconnections or “all” interconnections?

Next Steps

- Address above topics & revise draft by mid-December
- Start WGLC based on revised draft?