REPORT structure for the mL-ONU QoS Model

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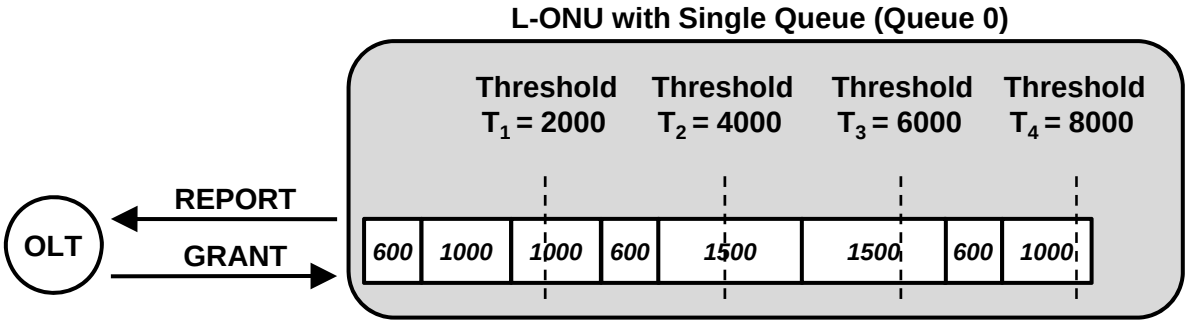
What is a Queue Set?

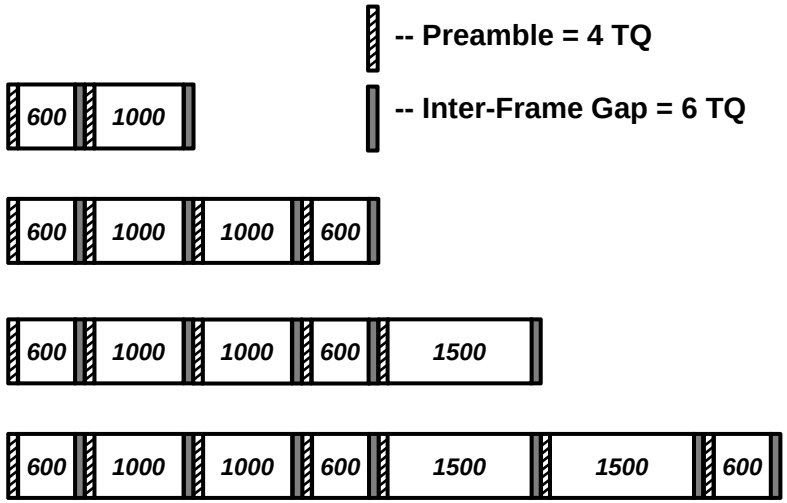
- A Queue Set represents a block of frames that fit within a defined threshold creating a “super” frame consisting of several Ethernet packets.
  - For example a Queue Set threshold of 4K may consist of 4 1K frame or 2 1.5K frames.
- Queue Sets are built from the head of the queue.
  - The first Queue Set is filed until the next frame will no longer fit within the threshold.
  - The next frame begins filing the second Queue Set. The second Queue Set is filled until the threshold is reached or the end of queue is met.

Example: Queues, Thresholds, & Reports



Queue Composition & Thresholds (bytes)

of Queue Sets = 4
Report Bitmap = 00000001_2
Queue #0 Report = 820 (1640 bytes)
Report Bitmap = 00000001_2
Queue #1 Report = 1640 (3280 bytes)
Report Bitmap = 00000001_2
Queue #2 Report = 2400 (4800 bytes)
Report Bitmap = 00000001_2
Queue #3 Report = 3470 (6940 bytes)



Reported Values

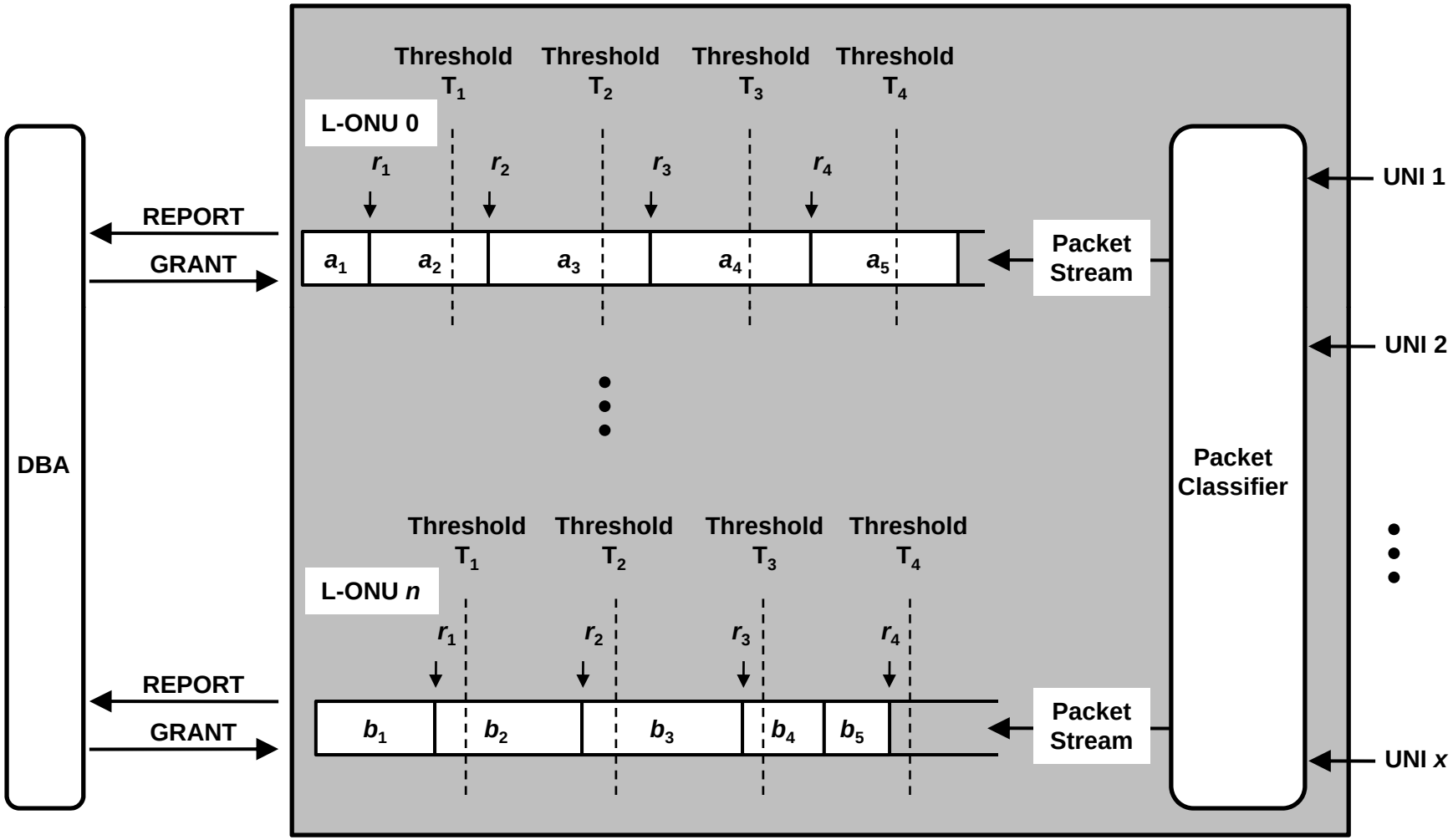
Why are Multiple Queues Sets (Thresholds) Needed?

- No end-of-burst penalty for unfilled grants
  - Queue Sets provide the OLT with a precise knowledge of the location of frame boundaries within the queue.
  - The OLT DBA can then grant on frame-length boundaries for maximum efficiency.
- Priority fields do not provide frame-length boundary locations.
  - Priority values change as new traffic is received.
  - Priority levels cannot be explicitly granted.
- Multiple Queue Sets give finer granularity to the DBA, thus allowing reduced latency and high bandwidth
  - A single Queue Set grant creates a small grant for fast reaction time
  - Multiple Queue Sets can be granted to create larger, high-BW grants for high efficiency
  - The DBA can rapidly adapt as the state of congestion changes.

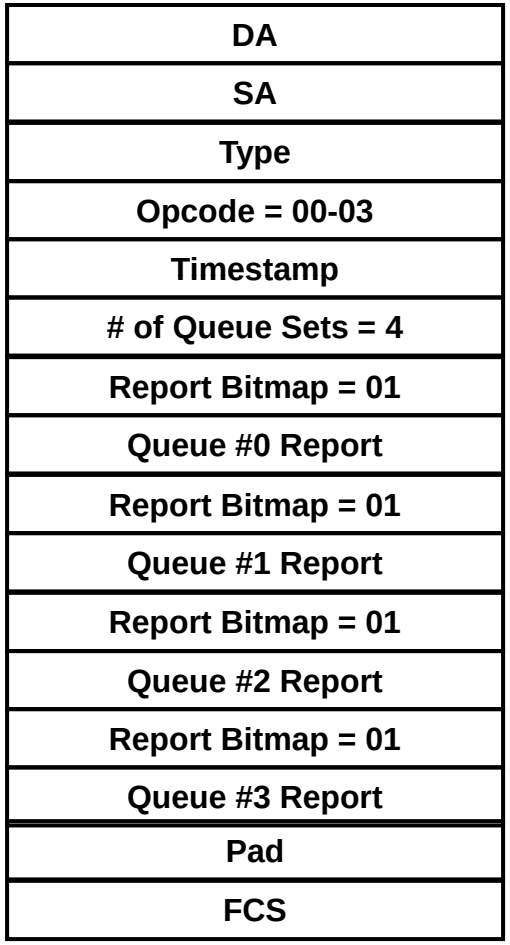
MPCP Report Format for Multiple L-ONUs (mL-ONU)

- **Multiple L-ONU Configuration provides priority per L-ONU**
  - **Allows individual services to be granted**
  - **Single Queue per L-ONU**
- **4 Queue Sets (4 Equally Spaced Thresholds)**
  - **For frame length optimization**

L-ONU ⟷ Queue ⟷ Service Class



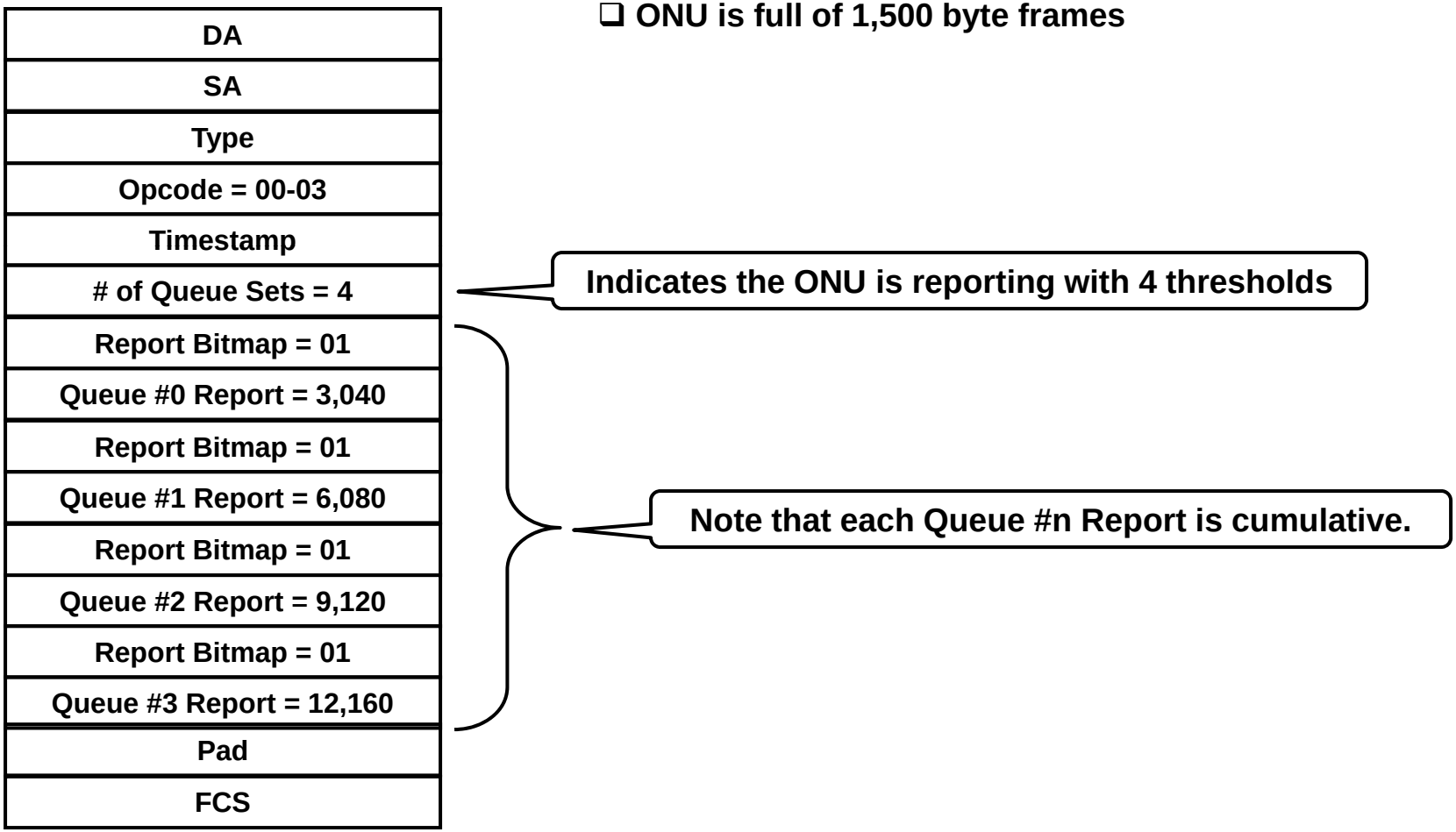
Report Format Description



- ❑ IEEE 802.3-2008 compliant
- ❑ Single queue L-ONU
- ❑ 4 queue sets

Example Reports

- ONU is full of 1,500 byte frames



Proposal

Accept slides 4-6 of siepon_1010_hirth_1.pdf as the baseline proposal for one of the profiles for the MPCP report format.

Moved: R. Hirth
Seconded:

Technical (75%)

Yes:
No:
Abstains:

Motion Passes/Fails