ARINC 664p7 Traffic Shaping Features

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Purpose

- Goal of Asynchronous Profile: “ARINC664 equivalent” shaping capability

- This presentation provides the details of the ARINC 664p7 traffic shaping to inform the group

ARINC 664 Part 7 Background Concepts

- Virtual Link – defines a logical unidirectional connection from one source end-system to one or more destination end-systems.

- Mapping ARINC 664p7 Constructs to 802.1Q
  - **A664p7 Construct to 802.1 Construct**
  - A664p7 Virtual Link ~ 802.1Q Stream
  - A664p7 End-system ~ 802.1Q End Station
  - A664p7 Switch ~ 802.1Q Bridge

ARINC 664 Part 7 Traffic Shaping

ARINC 664 Part 7 Traffic Shaping Features:

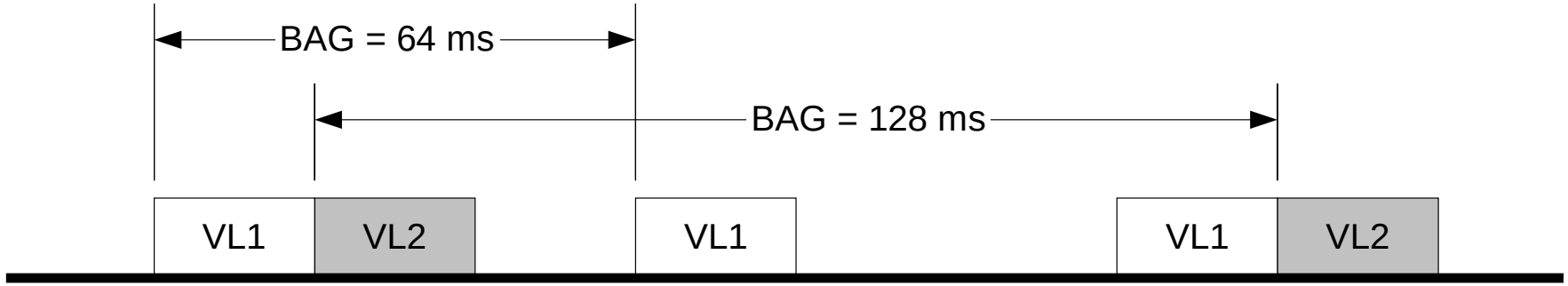
- Bandwidth Allocation Gap
- Virtual Link Priority
- Sub Virtual Link

Bandwidth Allocation Gap

Bandwidth Allocation Gap – On a per VL basis, the End System shapes output traffic by sending no more frame one frame per BAG interval

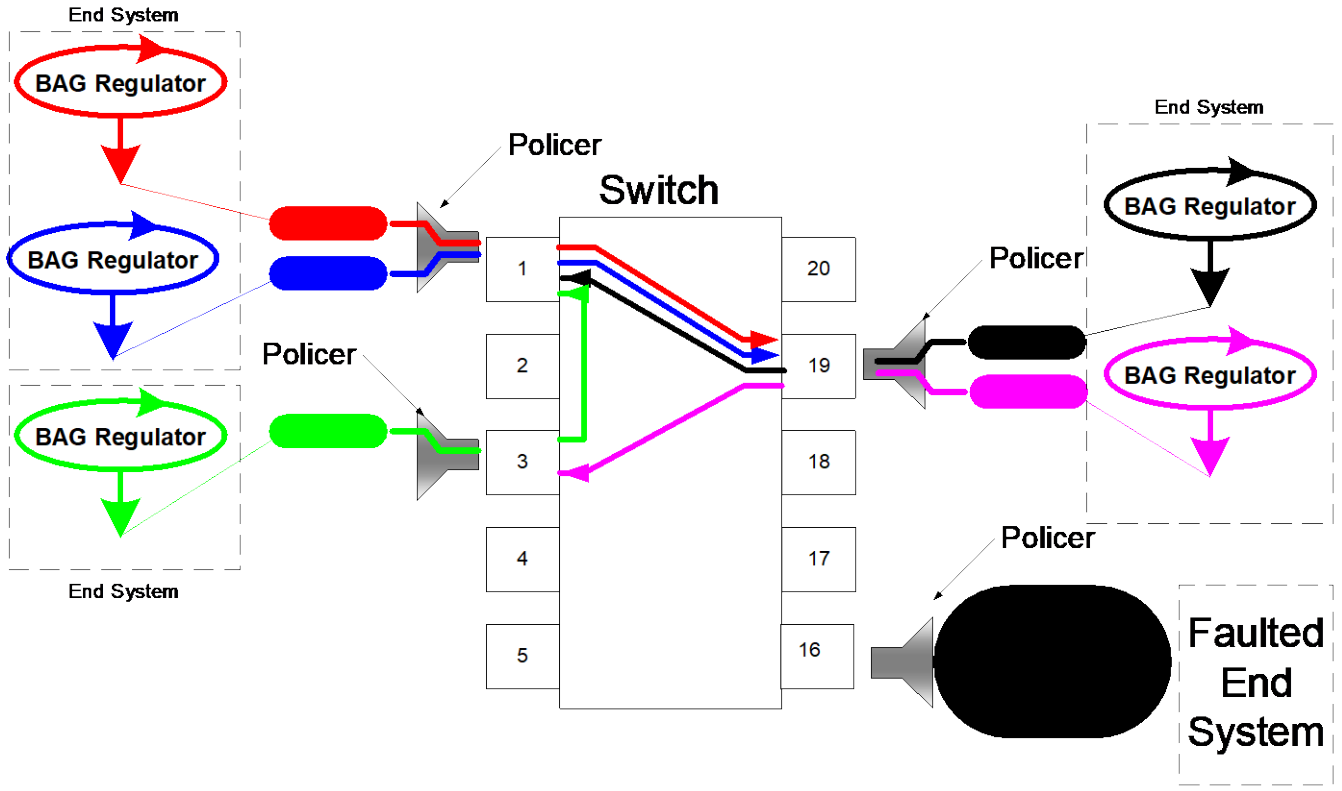
- Per ARINC 664p7, BAG values of 1, 2, 4, 8, 16, 32, 64, and 128 milliseconds are allowed

- Example of VL1 with BAG of 64 milliseconds and VL2 with BAG of 128 milliseconds



Bandwidth Allocation Gap - Continued

- Combined with “Maximum Frame Size” configured per VL, BAG limit amount of bandwidth permitted into network
- End Systems shape based on BAG
- Switches police traffic
  - Typical Token Bucket Policing
    - Byte based
    - Frame based



Virtual Link Priority

- For Switching function, ARINC 664p7 supports two priorities (High and Low)
  - Set via configuration table

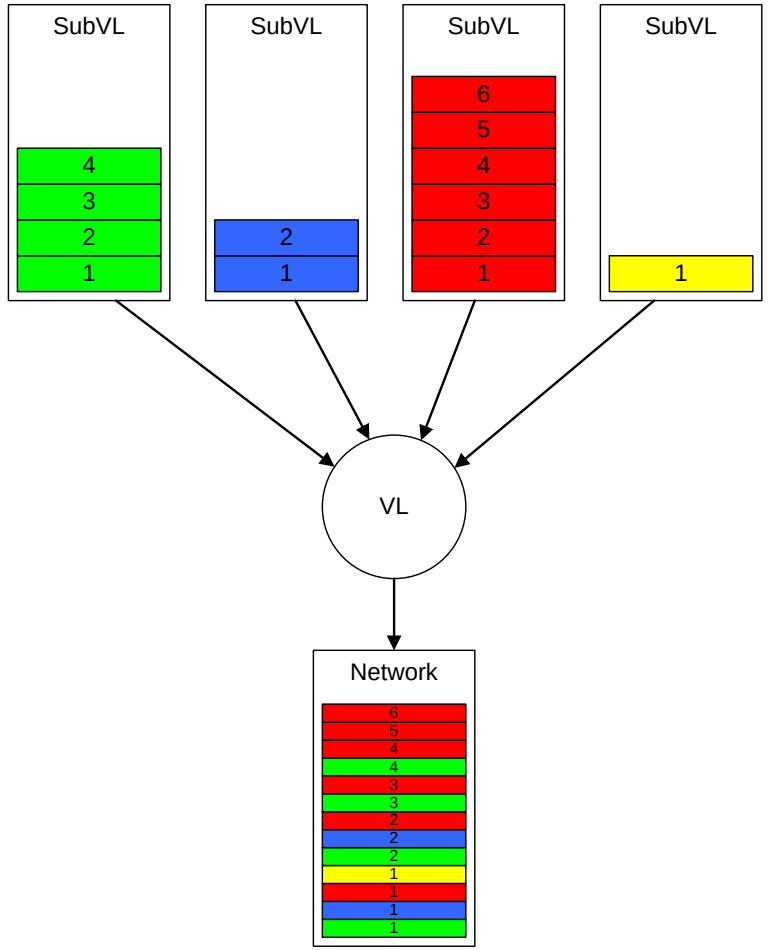
- At the output port of the switch, high priority frames are sent before low priority

Sub Virtual Link (SubVL)

- Within a VL at the source End System, the SubVL provides another level of traffic shaping.
  - Data sent by applications hosted on End System are queued in SubVL
  - VL service SubVL in Round Robin manner
  - If there is no data on a SubVL, its turn is skipped

- Allows fair access to the VLs allocated bandwidth for “flow” within the VL

- Guaranteed usage of the bandwidth by each SubVL can be no worse than 1/4th the bandwidth of the VL



Recap

- Bandwidth Allocation is the major traffic shaping feature of ARINC 664p7
- ARINC 664p7 Switches support 2 priorities / traffic classes
- Further traffic shaping / bandwidth allocation within VL offered by SubVL

Thank You!