Credit Based Shaper Configuration
YANG Model Requirement

Abdul Jabbar
GE Research

Objective

- ***Discuss requirements for CBS Configuration***

- ***Discuss options to develop CBS YANG model***

References:

- **P802.1DP Configuration - Open Issues**
  https://www.ieee802.org/1/files/public/docs2022/dp-jabbar-configuration-open-topics-0522-v01.pdf

- **IEEE Std 802.1Q-2018, IEEE Standard for Local and Metropolitan Area Networks — Bridges and Bridged Networks**

Credit Based Shaper – Configuration Requirements

1. Used by many industries (and profiles) including Pro Audio/Video, Automotive, Industrial Automation, and Aerospace

2. Enables egress shaping at the bridges

3. Enables shaping at the end stations. Includes both per-stream and per-class shaping

4. Engineered static networks in certain industries call for offline file base configuration. For example, see aerospace configuration model.

5. System integrators (of platforms, vehicles, etc) require configuration interoperability – calls for a standard IEEE YANG model.

6. Current projects do not have CBS YANG model in scope
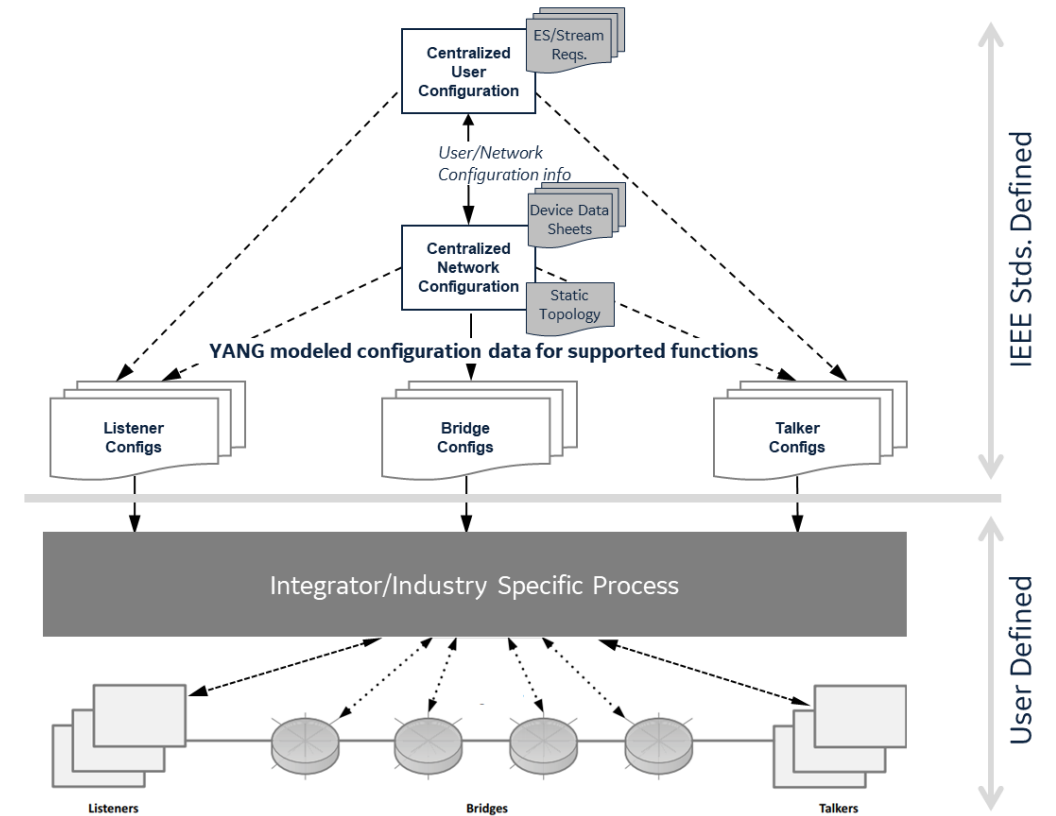
Example offline configuration model for aerospace

Credit Based Shaper- YANG Model Requirements

1. Need to address both end station and bridge configuration

2. Options to address end station configuration? In particular, per stream configuration?

    1. Interface configuration similar to Qbv YANG model?

    2. How to address offline talker configuration? Via UNI similar to TimeAwareOffset?
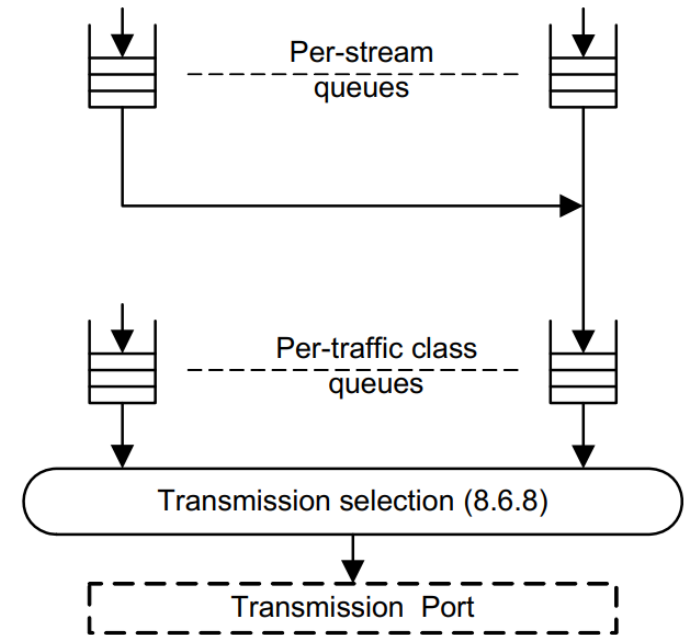
Credit Based Shaping for End Stations, IEEE 802.1Q-2018, Clause 34.6

CBS YANG model development: Process?

Which process should we use for CBS YANG development

1. Increased scope of an existing PAR?

2. New PAR for a group of TSN features?

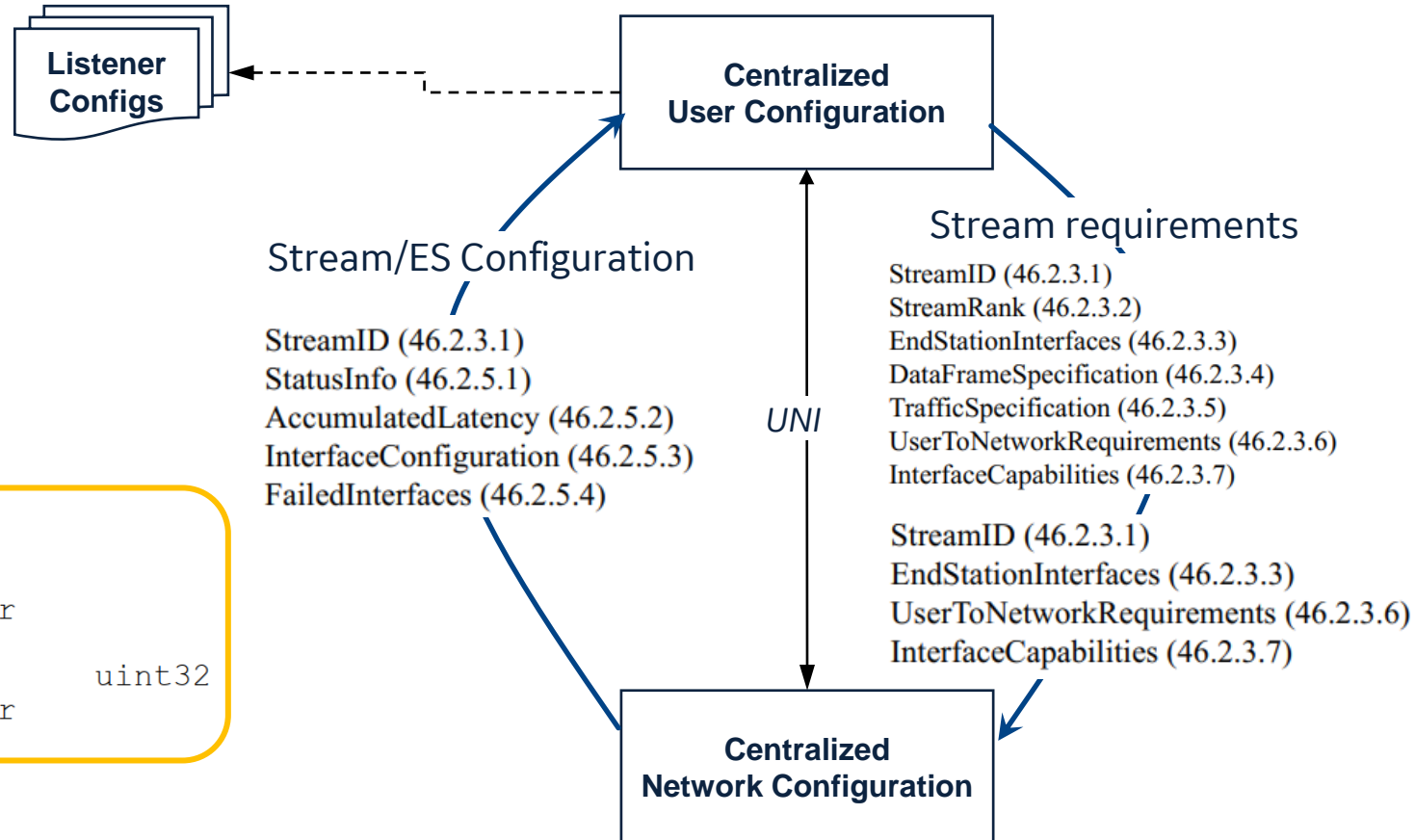3. New PAR just for CBS?

Reference

End Station Configuration of Streams and Interfaces

Compact View of UNI Yang model

```
module: ieee802-dot1q-tsn-config-uni
  +--rw tsn-uni
     +--rw stream-list* [stream-id]
        +--rw stream-id          tsn:stream-id-type
        +--rw request
        |  +--rw talker
        |  |  +---u tsn:group-talker
        |  +--rw listener-list* [index]
        |     +--rw index                    uint32
        |     +---u tsn:group-listener
        +--ro configuration!
           +---u tsn:group-status-stream
           +--ro talker
           |  +---u tsn:group-status-talker-listener
           +--ro listener-list* [index]
              +--ro index                    uint32
              +---u tsn:group-status-talker-listener
```

Listener Configs

Centralized User Configuration

Stream/ES Configuration

StreamID (46.2.3.1)
StatusInfo (46.2.5.1)
AccumulatedLatency (46.2.5.2)
InterfaceConfiguration (46.2.5.3)
FailedInterfaces (46.2.5.4)

Stream requirements

StreamID (46.2.3.1)
StreamRank (46.2.3.2)
EndStationInterfaces (46.2.3.3)
DataFrameSpecification (46.2.3.4)
TrafficSpecification (46.2.3.5)
UserToNetworkRequirements (46.2.3.6)
InterfaceCapabilities (46.2.3.7)

StreamID (46.2.3.1)
EndStationInterfaces (46.2.3.3)
UserToNetworkRequirements (46.2.3.6)
InterfaceCapabilities (46.2.3.7)

UNI

Centralized Network Configuration

References: 801.Qcc and P801.Qdj