



YANG for CBS | IEEE Interim, May 2023

# YANG Data Models for the Credit-Based Shaper

Steve Markham, Abdul Jabbar  
GE Research

# Objective



- ***Propose CBS YANG model***

## References:

- CBS Model Proposal – Nov Plenary 2022  
<https://www.ieee802.org/1/files/public/docs2022/dp-markham-CBS-YANG-Model-1122-v01.pdf>
- CBS Configuration YANG Model – Sept Interim 2022  
<https://www.ieee802.org/1/files/public/docs2022/dp-markham-CBS-YANG-Model-0922-v01.pdf>
- 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
- July Plenary 2022, <https://www.ieee802.org/1/files/public/docs2022/new-jabbar-YANG-for-CBS-0722-v01.pdf>

# IEEE P802.1Qdx: YANG Data Models for the Credit-Based Shaper



- **Project authorized during March 2023 plenary**
- **PAR:** <https://www.ieee802.org/1/files/public/docs2023/dx-PAR-0323-v02.pdf>
- **CSD:** <https://www.ieee802.org/1/files/public/docs2023/dx-CSD-0323-v01.pdf>
- **SCOPE:**  
5.2.b Scope of the project: This amendment specifies a Unified Modeling Language (UML)-based information model and YANG modules that allow configuration and status reporting for bridges and end stations (as specified by the base standard) with the capabilities currently specified for the credit-based shaper algorithm (8.6.8.2) of the base standard for the per-traffic class queues. It further defines the relationship between the information and data model, and models for the other management capabilities specified in this standard. Additionally, this amendment addresses errors or omissions related to the feature described above

# Proposed YANG model for CBS



- **Proposed Yang model is attached/embedded in the PDF**
- **Previous feedback was to include only the minimum required fields**
- **Separate -if and -bridge versions patterned after 802.1dc**
- **YANG Tree**

```
module: ieee802-dot1q-cbs-if
```

```
augment /ietf-interfaces:interfaces/ietf-interfaces:interface:
  +--rw cbs-parameters {credit-based-shaper}?
    +--rw class* [traffic-class]
      +--rw traffic-class                ieee802-dot1q-types:traffic-class-type
      +--rw idle-slope                    uint32
      +--rw class-measurement-interval    uint32
```

# CBS YANG Model – Example Instance Data (End Station)



```
<interfaces xmlns="urn:ietf:params:xml:ns:yang:ietf-interfaces">
  <interface>
    <name>0</name>
    <type xmlns:ianaift="urn:ietf:params:xml:ns:yang:iana-if-type">ianaift:ethernetCsmacd</type>
    <cbs-parameters xmlns="urn:ieee:std:802.1Q:yang:ieee802-dot1q-cbs-if">
      <class> <!-- Reserve 10% (100Mbps) for class 5, on 1ms interval -->
        <traffic-class>5</traffic-class>
        <idle-slope>100000000</idle-slope>
        <class-measurement-interval>1000000</class-measurement-interval>
      </class>
      <class> <!-- Reserve 5% (100Mbps) for class 4, on 1ms interval -->
        <traffic-class>4</traffic-class>
        <idle-slope>50000000</idle-slope>
        <class-measurement-interval>1000000</class-measurement-interval>
      </class>
    </cbs-parameters>
  </interface>
</interfaces>
```

# CBS YANG Model – Example Instance Data (Bridge)



```
<interfaces xmlns="urn:ietf:params:xml:ns:yang:ietf-interfaces">
  <interface>
    <name>0</name>
    <type xmlns:ianaift="urn:ietf:params:xml:ns:yang:iana-if-type">ianaift:ethernetCsmacd</type>
    <bridge-port xmlns="urn:ieee:std:802.1Q:yang:ieee802-dot1q-bridge">
      <cbs-parameters xmlns="urn:ieee:std:802.1Q:yang:ieee802-dot1q-cbs-if">
        <class <!-- Reserve 10% (100Mbps) for class 5, on 1ms interval -->
          <traffic-class>5</traffic-class>
          <idle-slope>100000000</idle-slope>
          <class-measurement-interval>1000000</class-measurement-interval>
        </class>
        <class <!-- Reserve 5% (100Mbps) for class 4, on 1ms interval -->
          <traffic-class>4</traffic-class>
          <idle-slope>50000000</idle-slope>
          <class-measurement-interval>1000000</class-measurement-interval>
        </class>
      </cbs-parameters>
    </bridge-port>
  </interface>
</interfaces>
```

# Summary



- P802.1Qdx is approved to develop a YANG model for CBS for per-traffic class queues
- A draft YANG model has been proposed...consistent with Qcw and Qdc
- Next Step: Create a draft for balloting
- Discussion: what type of ballot should we start with?



Building a world that works