



YANG for CBS | IEEE 802 Plenary, July 2023

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

Steve Markham, Abdul Jabbar
GE Research

Objective



- ***Propose CBS YANG model***

References:

- CBS Model Proposal – May Interim 2022
<https://www.ieee802.org/1/files/public/docs2023/dx-markham-CBS-YANG-Model-0523-v02.pdf>
- 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-bridge
  augment /ietf-interfaces:interfaces/ietf-interfaces:interface/ieee802-dot1q-bridge:bridge-port:
    +--rw cbs-parameters {credit-based-shaper}?
      +--rw class* [traffic-class]
        +--rw traffic-class          ieee802-dot1q-types:traffic-class-type
        +--rw idle-slope             uint32
```

```
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
```

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 100Mbps for class 5, on 1ms interval -->
        <traffic-class>5</traffic-class>
        <idle-slope>100000000</idle-slope>
      </class>
      <class> <!-- Reserve 50Mbps for class 4, on 1ms interval -->
        <traffic-class>4</traffic-class>
        <idle-slope>50000000</idle-slope>
      </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 100Mbps for class 5, on 1ms interval -->
          <traffic-class>5</traffic-class>
          <idle-slope>100000000</idle-slope>
        </class>
        <class> <!-- Reserve 50Mbps for class 4, on 1ms interval -->
          <traffic-class>4</traffic-class>
          <idle-slope>50000000</idle-slope>
        </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 DC
- Next Steps:
 - Motion for WG Ballot
 - Draft Specification. Need template.



Building a world that works