Joint IEEE 802 and ITU-T SG15 Workshop
"Building Tomorrow's Networks"

IEEE 802.1 YANG Data Modeling Overview

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Current Active 802.1 YANG Projects

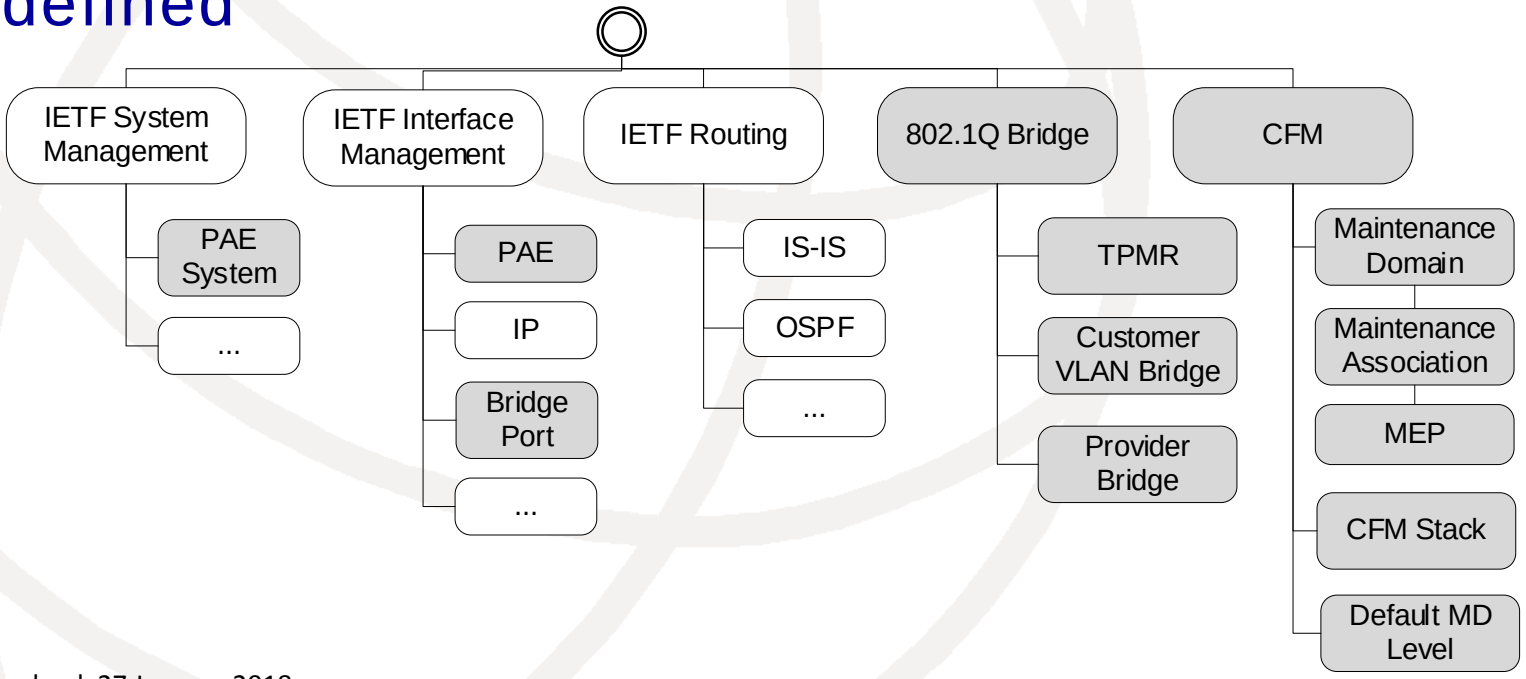
- Several active YANG data modeling projects in progress
  - **802.1Xck** — Port-Based Network Access Control Amendment: YANG Data Model
  - **802.1Qcp** — Bridges and Bridged Networks Amendment: YANG Data Model
  - **802.1Qcx** — YANG Data Model for Connectivity Fault Management
  - **802.1Qcw** — YANG Data Models for Scheduled Traffic, Frame Preemption, and Per-Stream Filtering and Policing
  - **802.1ABcu** — LLDP YANG Data Model

Modeling using UML

- In general, IEEE 802.1 YANG models are derived from the UML representation
- UML representations are based upon specification normative text (e.g., managed objects clause)
- UML representation have benefits of
  - Ease of communication to larger diverse group (that may or may not be YANG fluent)
  - A more generalized representation of the model. Since agnostic to a semantic language (e.g., YANG), facilitates future proofing of the model
  - Establishing [major] object relationships and structure is important, and can be more easily discussed and refined via a UML representation

YANG Model Relationships

- Understanding relationship of existing [foundational] YANG models (e.g., IETF Interface) to 802.1 YANG models is critical
- The following hi-level YANG relationships are defined

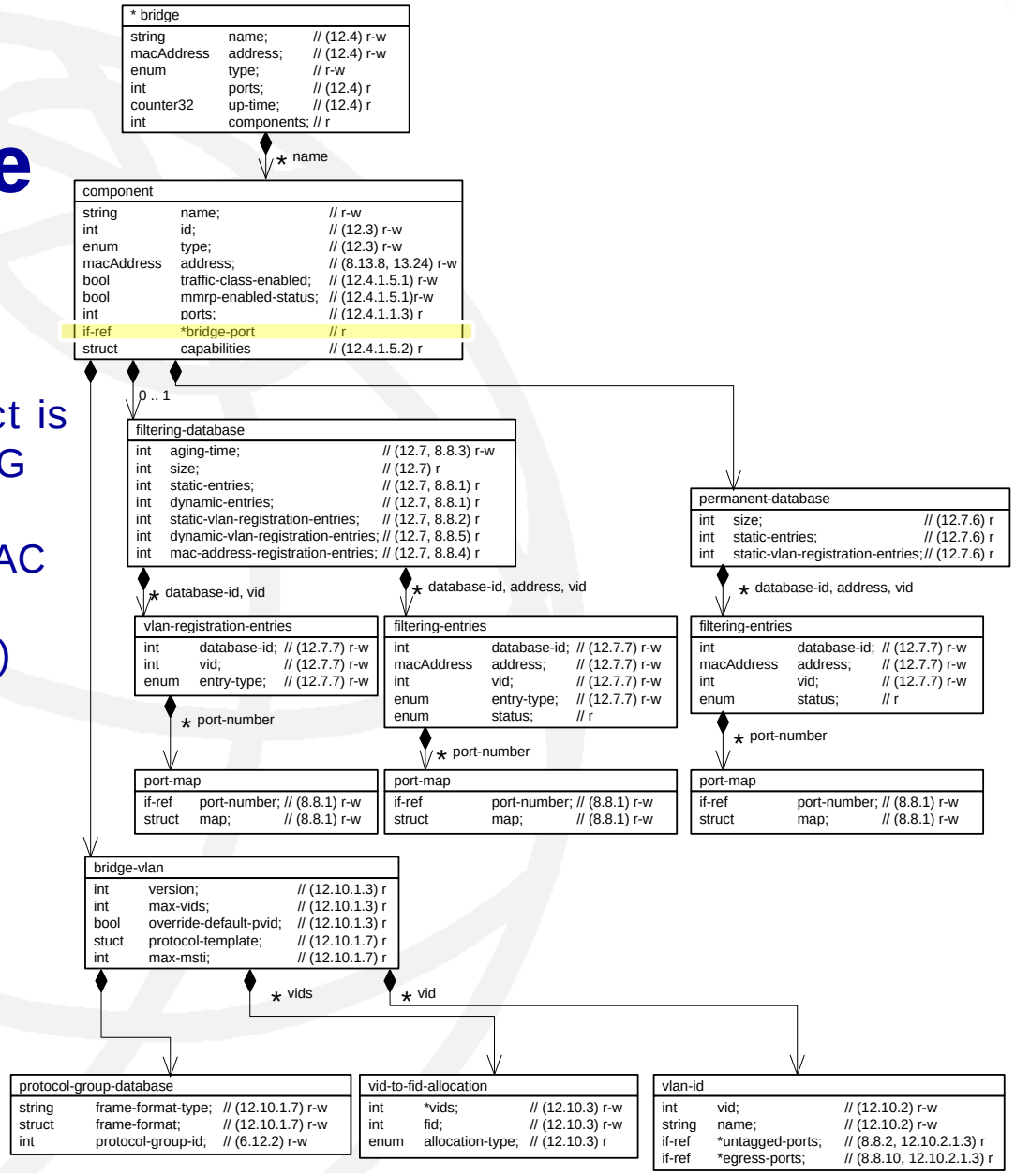


YANG Modeling

- Significant amount of focus directed at YANG modeling a seemly simple entity such as a Bridge Port
  - Analyzing the merits of augmentation versus referencing
  - We have many protocol entities (i.e., service shims) that can be stacked/inserted/etc. that our IEEE 802.1 Bridge model supports. Our YANG models need to gracefully accommodate this flexibility
  - Performing analysis of how YANG model can accommodate [complex] features such as CFM, LAG, etc.

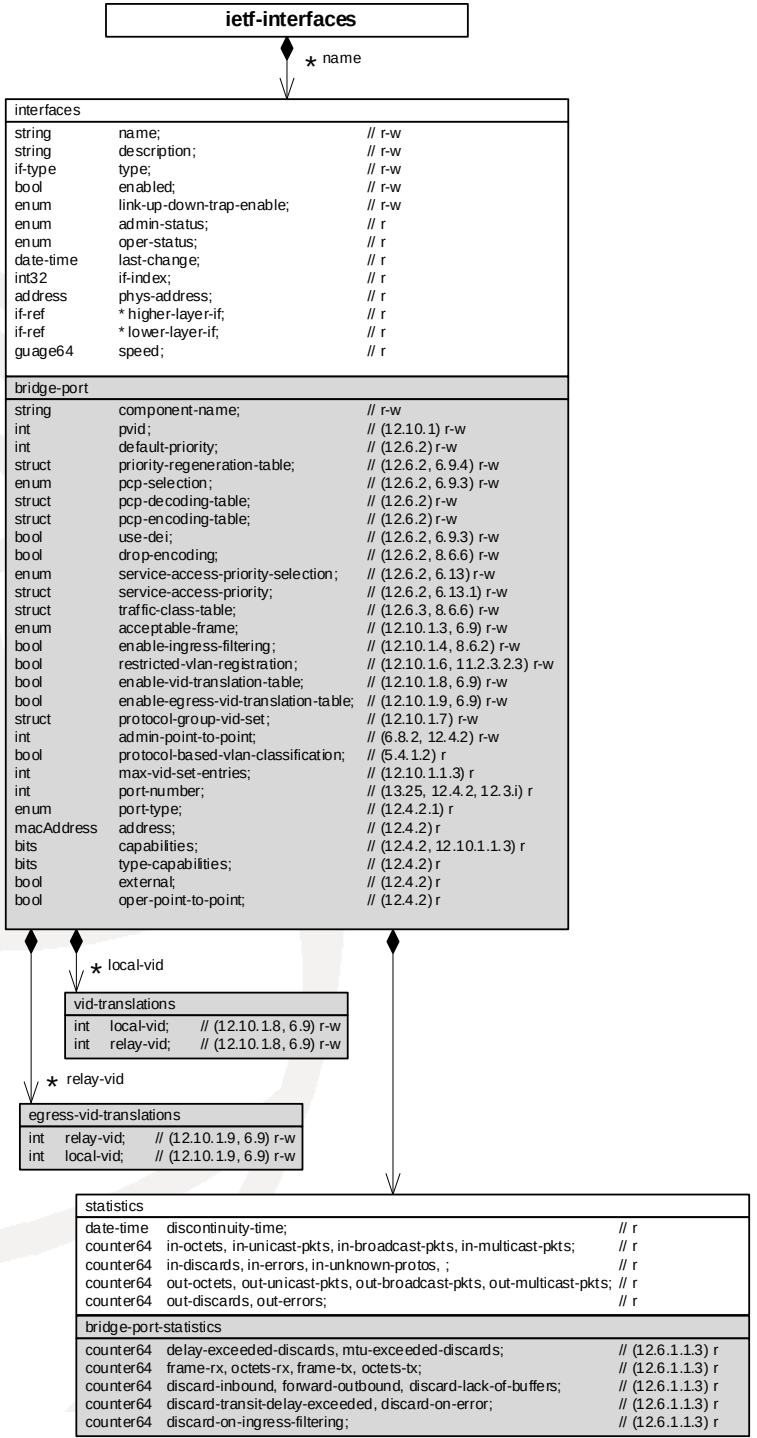
Generic IEEE 802.1Q Bridge Model

- Scope of 802.1Qcp project is contained to provide YANG data models for subset of Bridges (i.e., Two-Port MAC Relays, Customer VLAN Bridges, Provider Bridges)

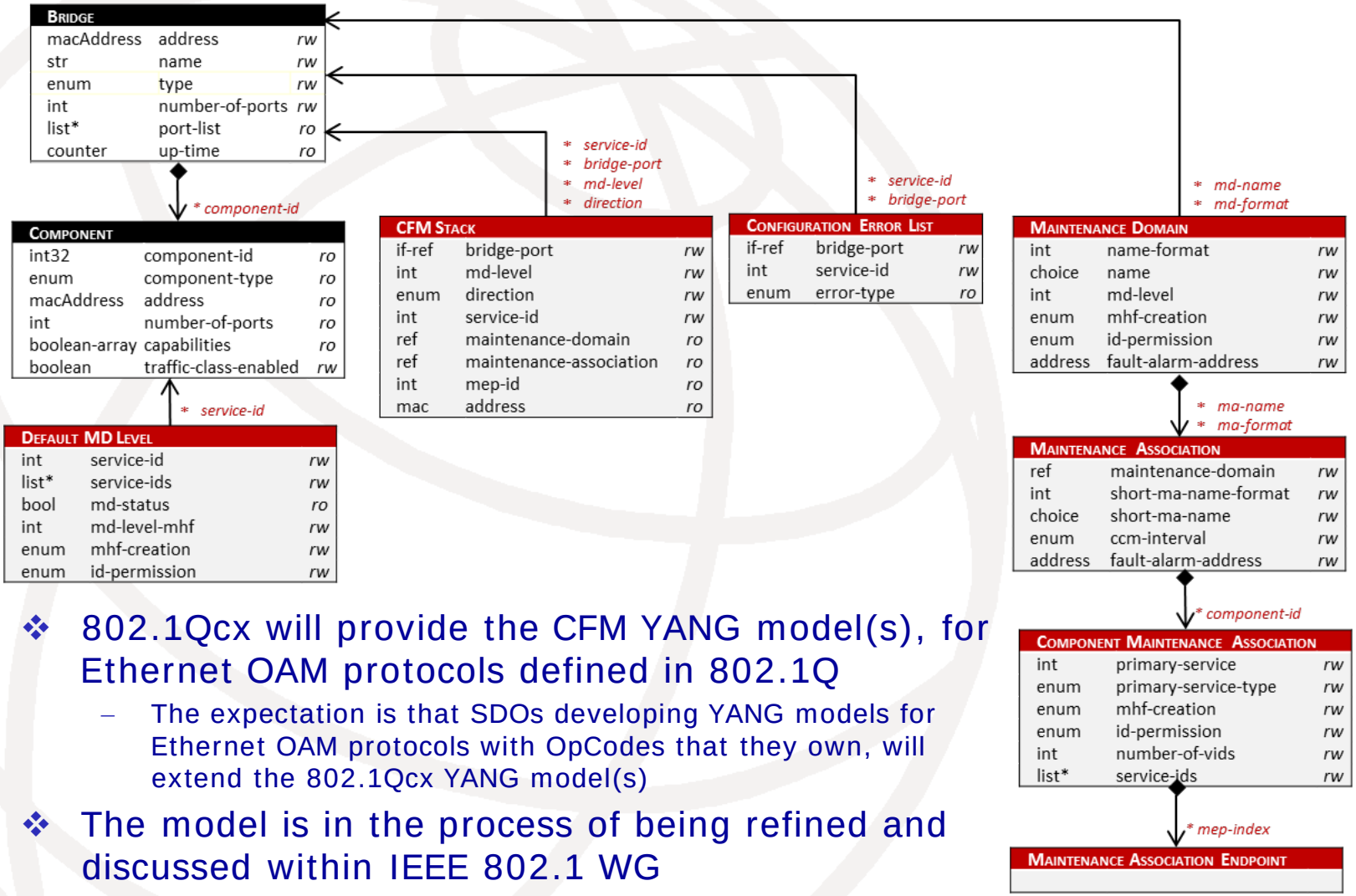


Generic IEEE 802.1Q Bridge Port Model

- Conforms to the IETF Network Management Datastore Architecture (defined in ietf-netmod-revised-datastores), and adopts draft-ietf-netmod-rfc7223bis

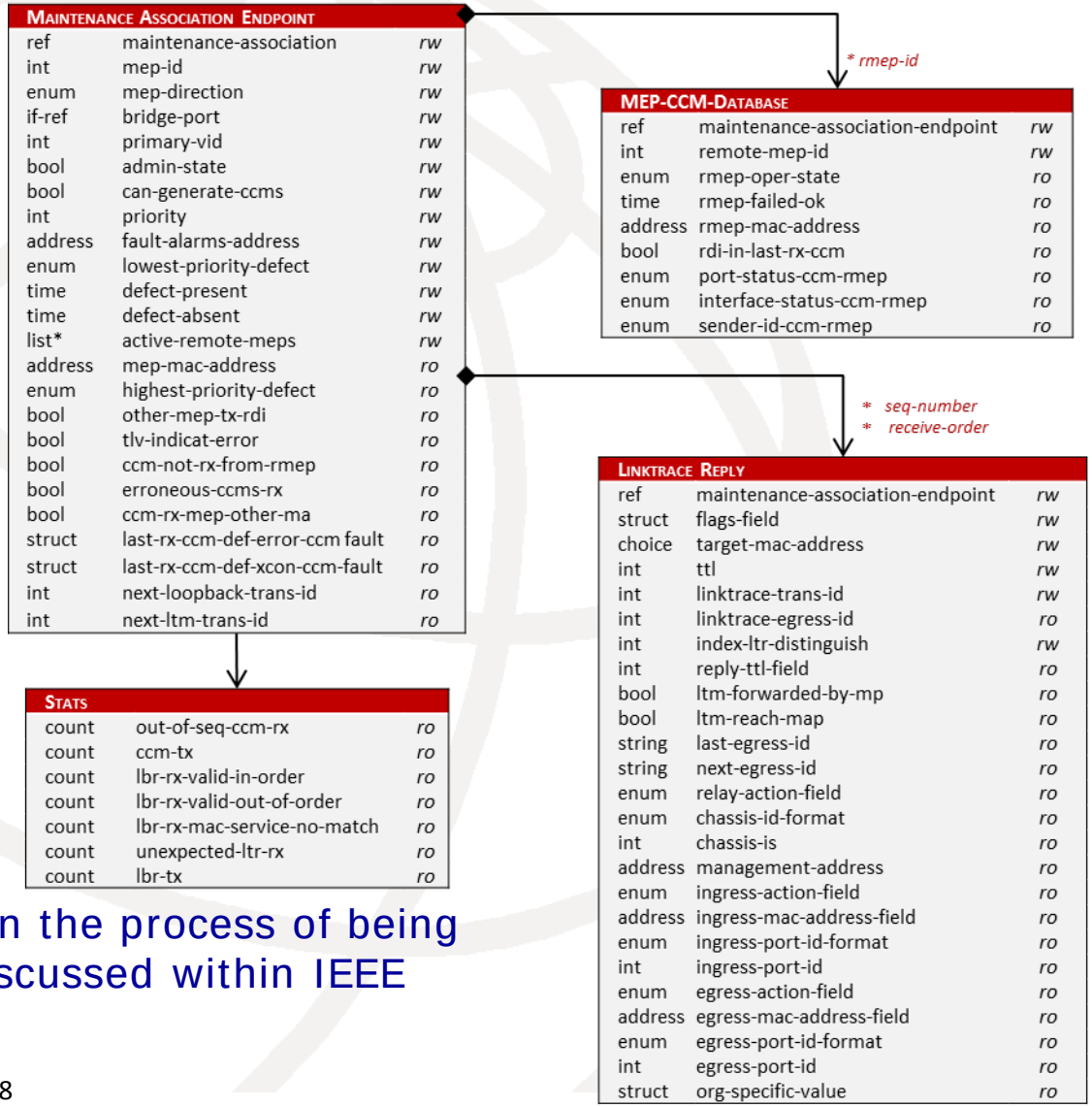


IEEE 802.1Qcx (CFM) Model



- 802.1Qcx will provide the CFM YANG model(s), for Ethernet OAM protocols defined in 802.1Q
  - The expectation is that SDOs developing YANG models for Ethernet OAM protocols with OpCodes that they own, will extend the 802.1Qcx YANG model(s)
- The model is in the process of being refined and discussed within IEEE 802.1 WG

IEEE 802.1Qcx (CFM) Model



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GitHub as a Repository

- Utilization of GitHub as a repository to store 802.1 YANG models
  - Provides a central repository where our YANG models can be stored
  - Allows other interested members to view (and review) the IEEE 802.1 YANG models

GitHub Structure

- https://github.com/YangModels/yang/tree/master/standard/ieee