IEEE 802.3 Clause 30
management, MIB, definitions for
Ethernet, registers and function

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IEEE 802.3 approach

• Protocol independent Management Clause
  – IEEE Std 802.3 Clause 30 Management
  – Referenced by protocol dependent MIBs

• Protocol dependent Management Information Base (MIB)
  – Guidelines for the Definition of Managed Objects (GDMO)
    • Deprecated except object branch and leaf assignments
      – Used in variable descriptors in IEEE Std 802.3 Variable Request operations, administration, and maintenance protocol data unit (OAMPDU)
  – Structure of Management Information Version 2 (SMIv2) MIBs
    • IEEE Std 802.3.1-2013 MIB Definitions for Ethernet
  – YANG models
    • IEEE Std 802.3.2-2019 YANG Data Model Definitions
Clause 30 Management elements

• Objects, attributes, actions or notifications
• Generally only provide elements that are associated with hardware function
  – Behaviours references functions and registers within the relevant Clause of IEEE 802.3
• Generally don’t provide elements if it doesn’t require hardware support
  – Examples
    • Attributes that could be calculated from other attributes
  – These may be provided in protocol dependent MIB
References to and from IEEE Std 802.3 Clause 30

- YANG Models
  IEEE Std 802.3.2

- SMIv2 MIB
  IEEE Std 802.3.1

- GDMO MIB
  Deprecated
  Last published in IEEE Std 802.3.1-2011

- Clause 30 Protocol Independent

- All Clauses Functions, State Machines

- Clauses 22 & 45 PHY/MMD Registers
**Management model**

DATA LINK

- Higher layers
  - MAC Control (optional)
- MAC
  - Reconciliation Sublayer
- PHY
  - MDC/MDIO registers
- MDI/PI
- Medium

PHYSICAL

- DATA LINK

**IEEE 802.3 scope**

- Management entity
  - Other SNMP MIBs
  - Ethernet MIBs*
    - Clause 30 Objects
  - MDC/MDIO I/F

**Managing model**: PHYSICAL to DATA LINK

- xMII (Optional)
- MDC/MDIO (Optional) Clause 22
  - (Clause 45 for 10Gb/s)
- Pervasive access

* IEEE Std 802.3-2013, IEEE Std 802.3-2019
MIB, Registers and Function

Function in PHY needs register access to make it manageable across xMII
MIB, Registers and Function

Can have a register but no MIB attribute. Example: PHY test mode
MIB, Registers and Function

Can have a MIB attribute but no register. Example: MAC packet counters

MIB definition

Function
MIB, Registers and Function

Can have a function but no register or MIB attribute
Summary

• Protocol independent Clause 30
  – Generally, hardware related objects
    • References functions and/or registers in other clauses

• Protocol dependant MIBs
  – GDMO
    • Deprecated (last published in IEEE Std 802.3.1-2011)
    • GDMO object branch and leaf assignments kept for OAM
  – SMIv2
    • IEEE Std 802.3.1-2013 MIB Definitions for Ethernet
  – YANG
    • IEEE Std 802.3.2-2019 YANG Data Model Definitions
Thank You!