

Control of FEC in Multidrop: Introducing the MSL Client

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Overview

- [huszak_zimmerman_fec_3da_06162021.pdf](#) introduced a method for backwards-compatible FEC which would not propagate garbage frames into Clause 147 PHYs
 - Requires: all PHYs to be able to transmit and receive per Clause 147
 - Method: FEC-encode data while avoiding “Forbidden Symbols” in the 5B DME symbol stream on the mixing segment
 - Enabled by: signaling in preamble if alternate encoding is to be used
 - Knowledge (above the PHY) of whether receiving MAC is on a FEC-enabled node
- This presentation describes how that knowledge may be obtained and passed to the PHY

Information comes from above PHY

- Receiving MAC address is within packet
- PHY can't decode MAC address without layer violation
 - Therefore information must come from above PHY
 - Out of scope of 802.3da?
- BUT: we don't have to specify the method used to identify which frame to use, only that the PHY gets it!

How EEE Works

- EEE is controlled by the Low Power Idle (LPI) client
 - Physical layer only knows it is in LPI state and is quiet most of the time
- LPI client signals and controls the transition in/out of Low Power Idle state
- Signalling is defined to/from LPI client via primitives

- **OPERATION AND CONTROL OF THE CLIENT IS OUTSIDE OF 802.3 SPECIFICATION**
 - Only the primitives need to be defined
- What the client knows and how it knows it are outside 802.3's scope!

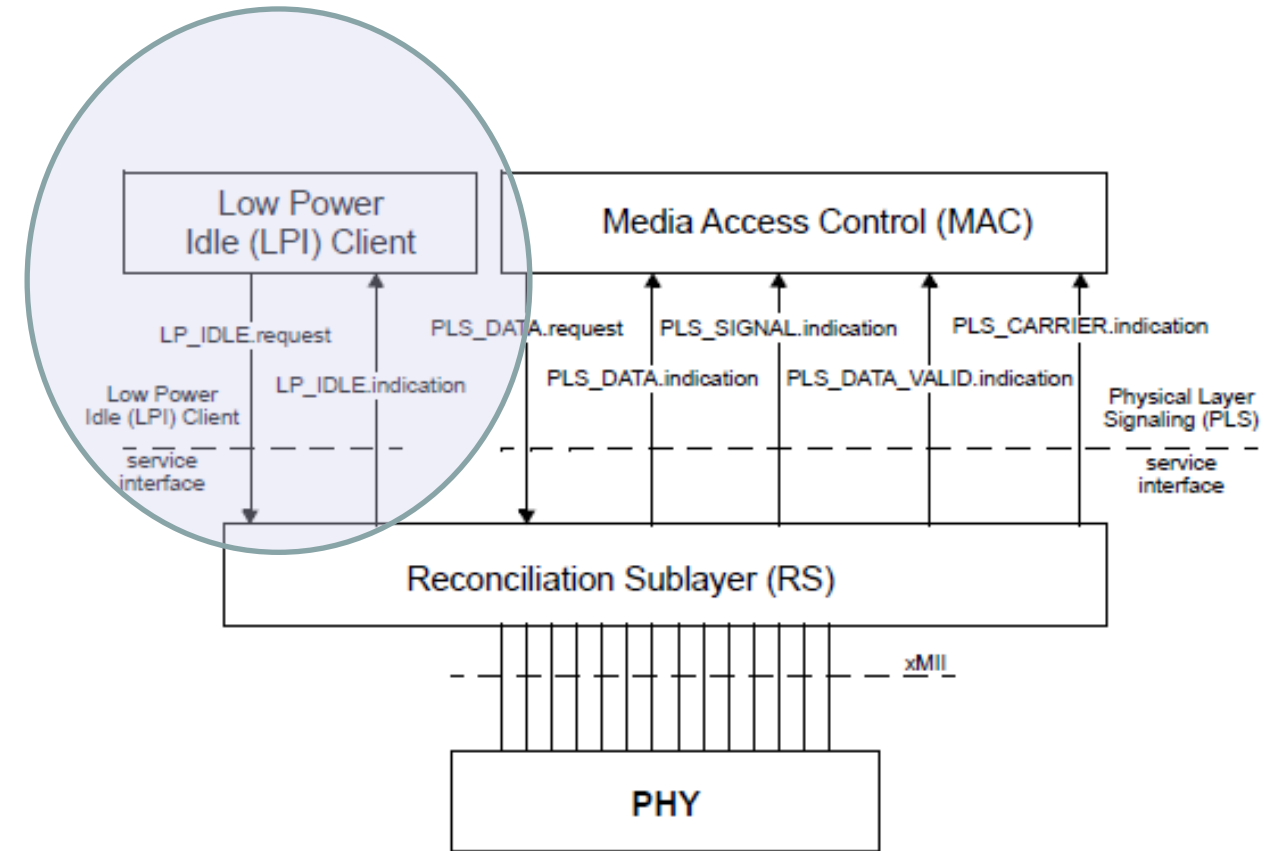
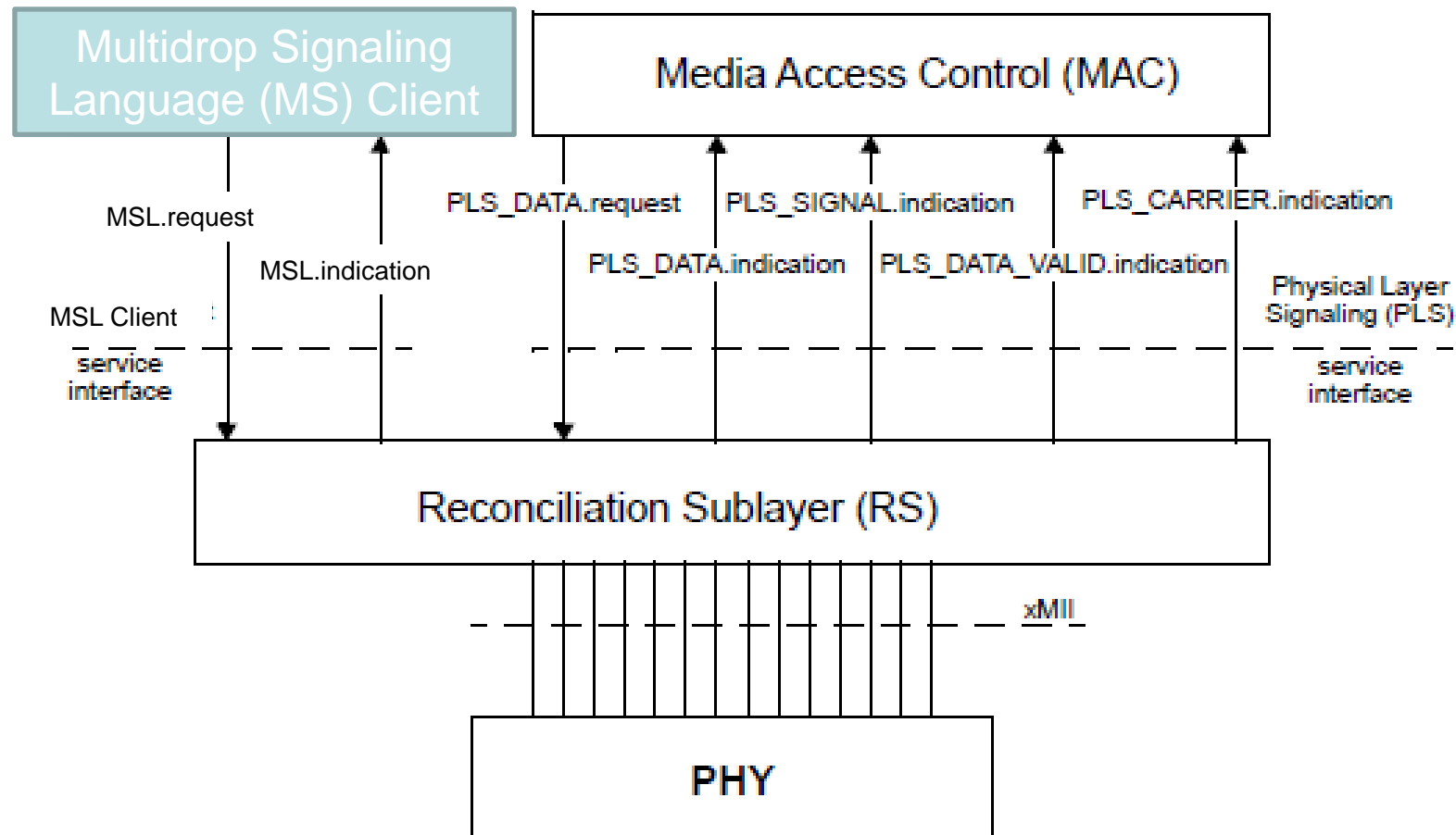


Figure 78-1—LPI Client and RS interlayer service interfaces

Multidrop Signaling Client



MSL Client Definition

- Primitive is “MSL.request” and “MSL.indication” These have values indicating what “language” (e.g., FEC or not) to use on the frame about to be sent, and what is used on the received frame
- Client asserts a request with values “Normal” or “FEC”
 - Default is “Normal”
- Doesn't really need for indication in the reverse direction, but can use it to build the table
 - Don't have to define how the table is built
 - Need to define constraints on when primitives can be sent

802.3da defines the RS & Primitives, not how they are determined

- MSL Client needs access to frame destination address
 - Control-plane, but doesn't control access the medium
 - So it isn't "MAC" layer
 - Practically, would probably need access to data stream
 - Like LPI Client, 802.3 doesn't need to define the inputs to the client...
- Provision for multi-valued primitives allows for future expansion of capability
- All frame information stays above the PHY
 - We need a reserved code(s) on the MII for request, e.g., tells whether the frame is sent via FEC, and likewise, if the received frame ends with a FEC_ESD, use a reserved code for the indication
 - Need to rules for codes at the MII, when primitives are sent/encoded

Discussion?
