

Refinement of P2MP layering model

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Preface

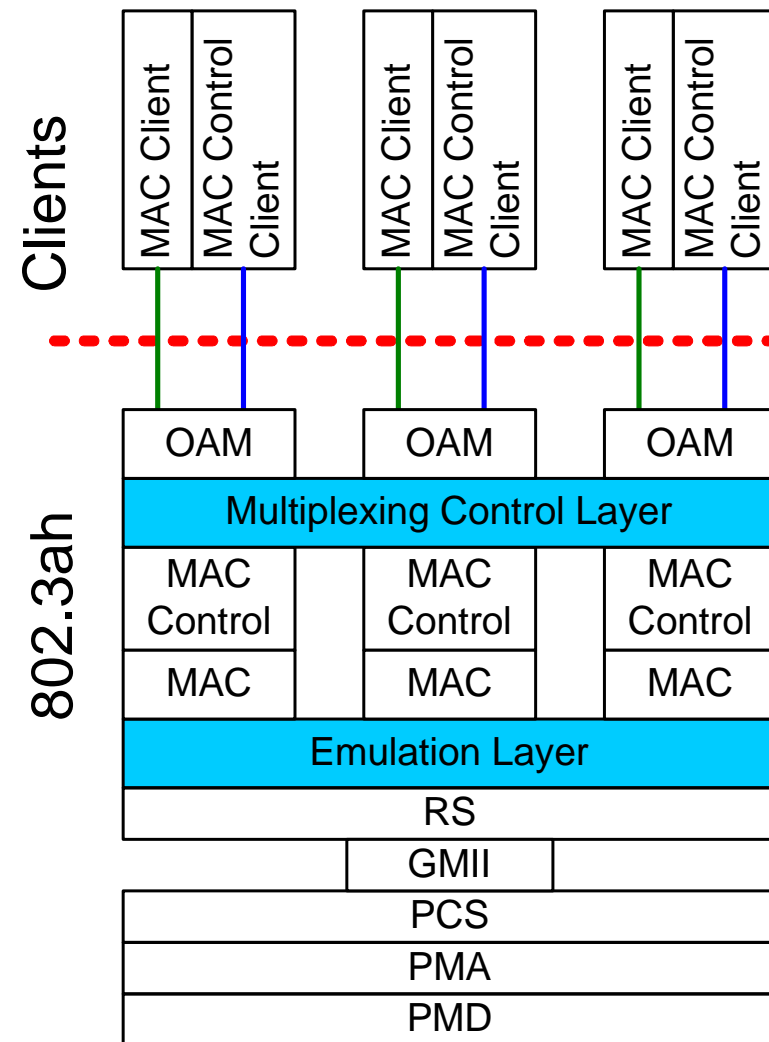
After several conference calls and numerous e-mail exchanges, the P2MP STF has identified two P2MP layering models which are good candidates for the standard.

- Both models require the same amount of editorial work
- **Model 2** matches baseline layering model adopted in Vancouver (http://grouper.ieee.org/groups/802/3/efm/baseline/haran-sala_p2mp_1_0702.pdf).
- **Model 4** is a proposed refinement. It provides simpler layering diagram and eliminates some shortcomings of model 2.

Model 2: Voted Baseline Layering

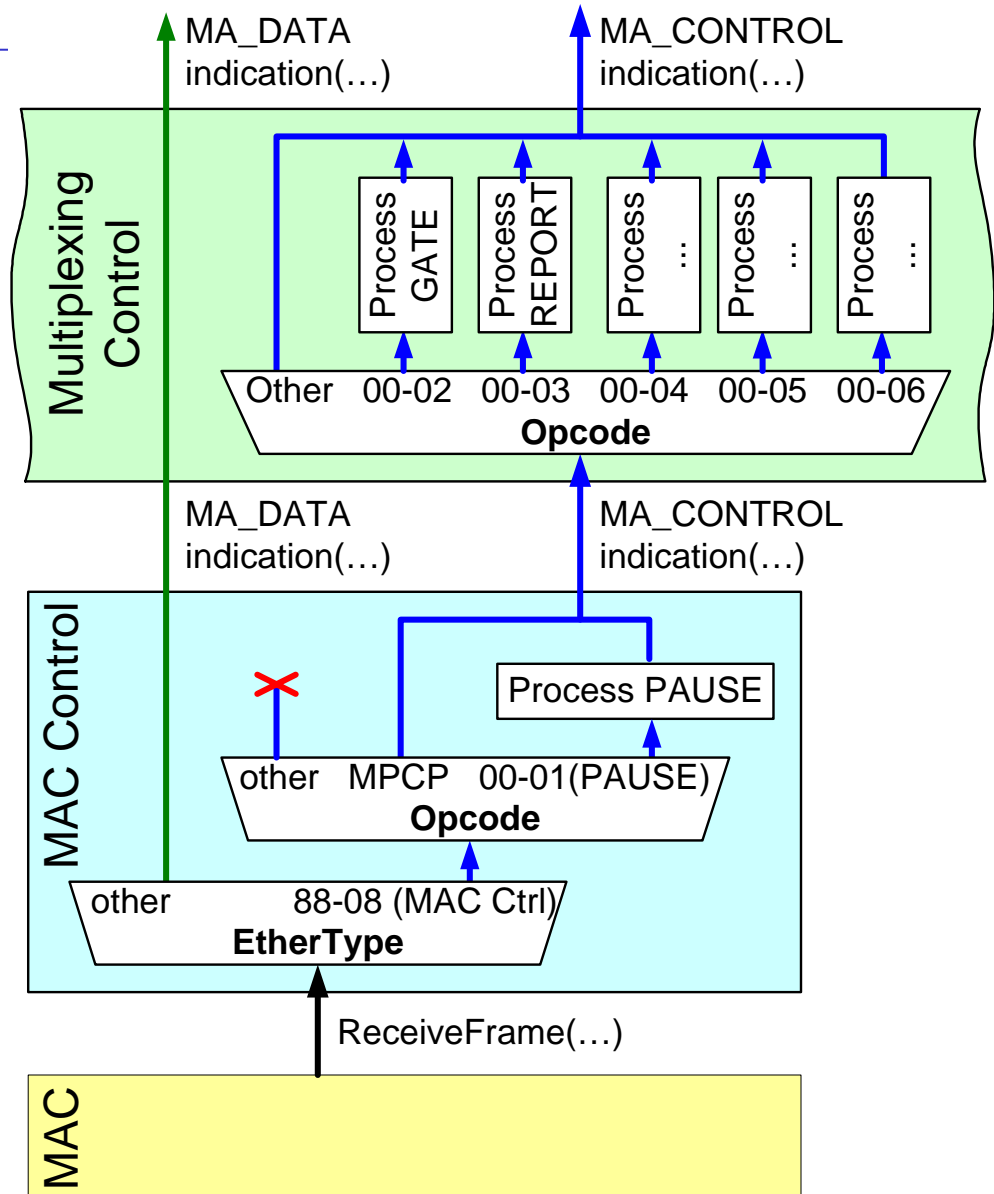
Multiplexing Control Sublayer provides multiple MA_DATA and MA_CONTROL interfaces to the multiple MAC Clients and MAC Control Clients above

All MPCP state machines are in Multiplexing Control Sublayer



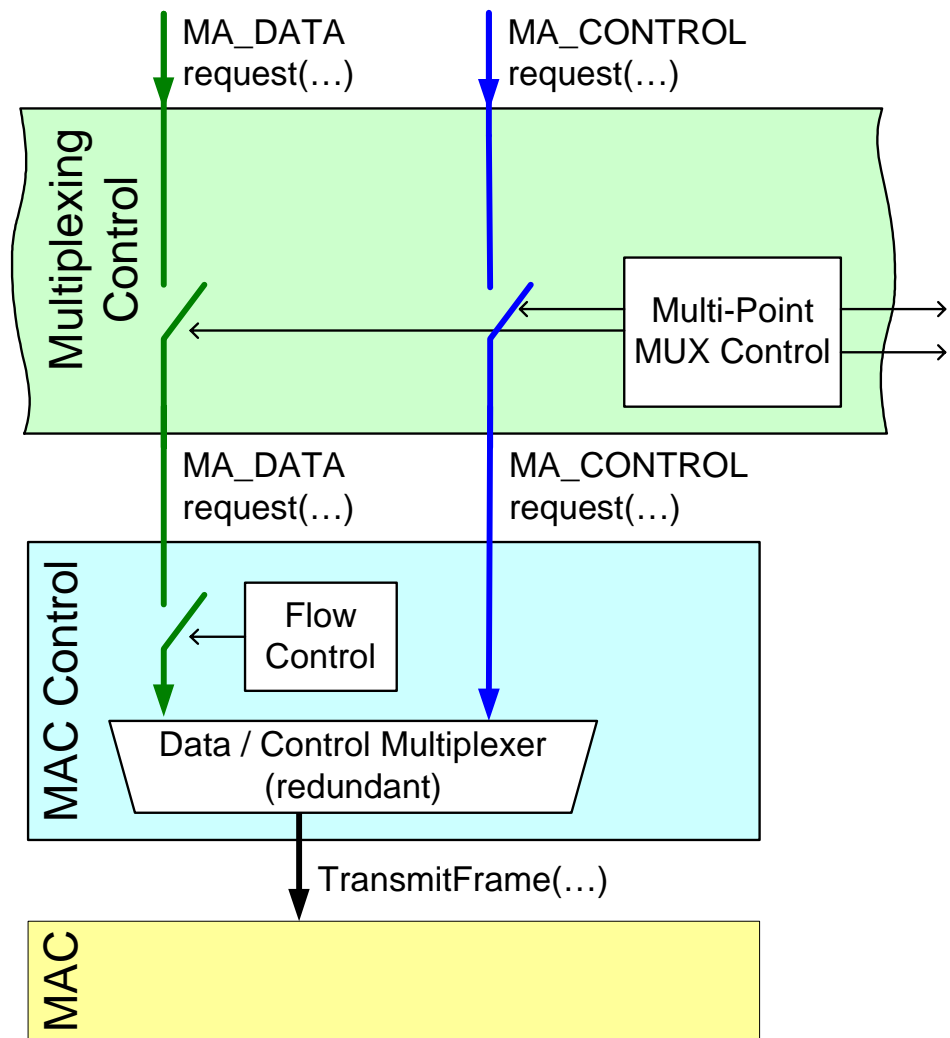
Model 2: Frame reception

- MPCP messages are MAC Control messages (Type 88-08)
- MAC Control recognizes MPCP opcodes (00-02, 00-03, 00-04, 00-05, 00-06)
- Upon receiving MAC Control message with one of MPCP opcodes, MAC Control generates corresponding MA_CONTROL.indication
- Multiplexing Control sublayer processes MPCP messages and generates MA_CONTROL.indication to MAC Control Client



Model 2: Frame transmission

- Multiplexing Control sublayer ensures that at any time only one frame exists below (one MA_....request at a time)
- No modifications made to MAC Control
- Data/Control Multiplexer in MAC Control is redundant



Model 2: Pros and Cons

Pros

- IEEE 802.3 layer diagram of this approach matches baseline 'Layer diagram'

Cons

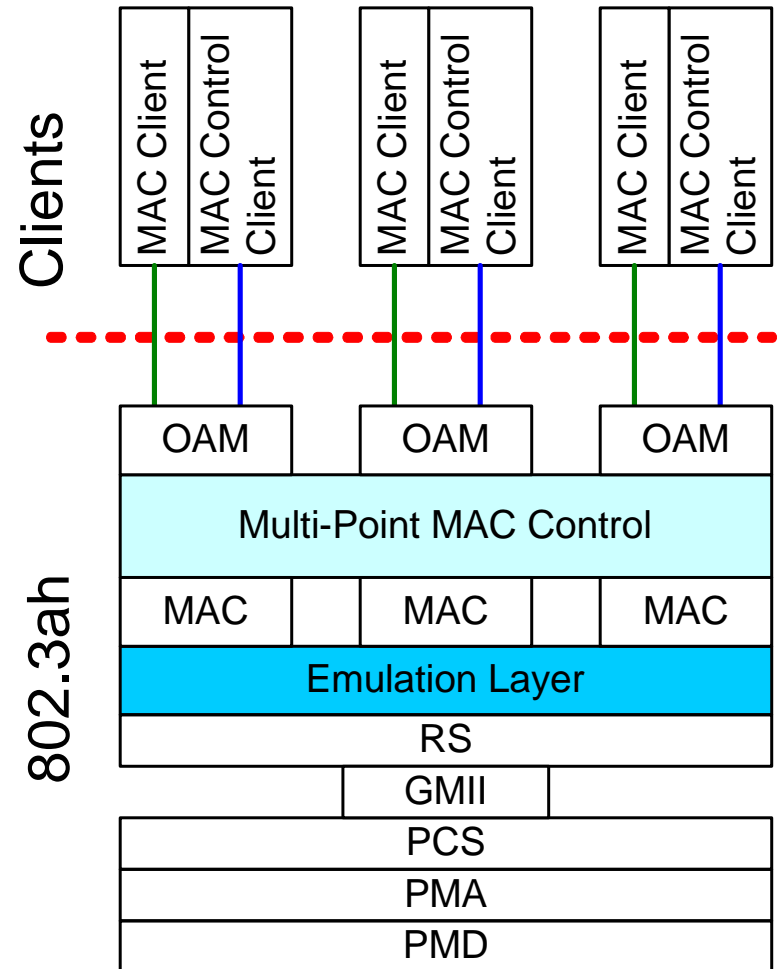
- No future extensions may allow MAC Control to generate frames without MA_CONTROL.request primitive
- Data/Control Multiplexer in MAC Control becomes redundant
- A lot of duplicated functionality between MAC Control and Multiplexing Control sublayers

Model 4: Refined Layering Model

Multiplexing Control is a function of the MAC Control, rather than a separate sublayer

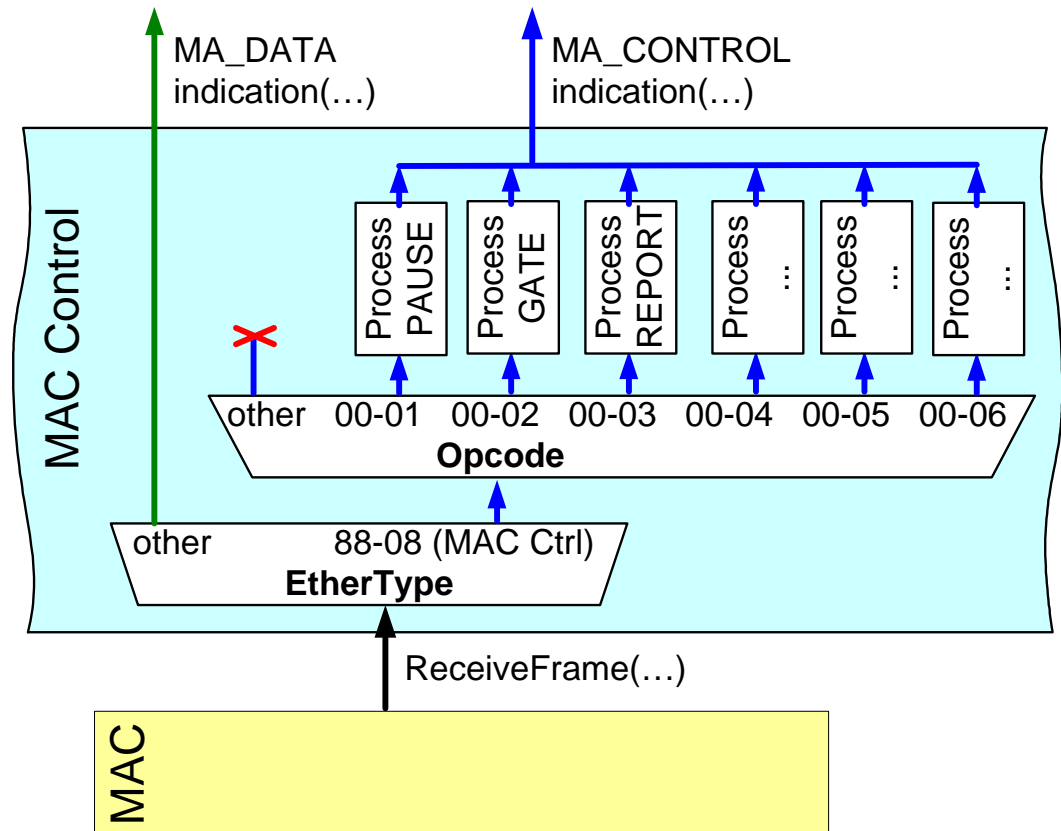
This is an extension of MAC Control (called **Multi-Point MAC Control**)

- Has **many-to-many** relationship
- Points to existing MAC control functions
- Defines a **new clause** with additional MAC control functionality mandatory for P2MP (i.e. multiplexing, MPCP)



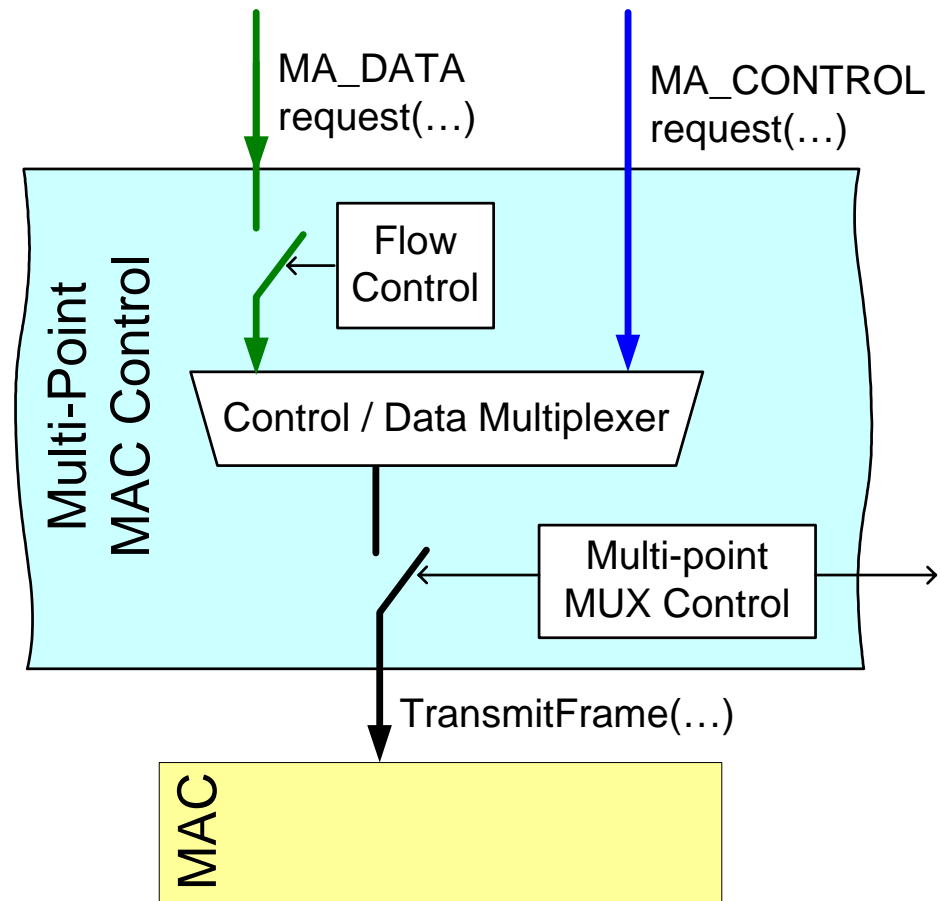
Model 4: Frame reception

- MAC Control Sublayer processes all MAC Control messages
 - Flow Control Protocol (PAUSE)
 - Multi-Point Control Protocol (GATE, REPORT, etc)



Model 4: Frame transmission

- Multi-Point MAC Control sublayer (Multiplexing Control function) ensures that at any time only one frame exists below



Model 4: Pros and Cons

Pros

- Simple layering diagram
- All gating is done in one sublayer

Cons

- IEEE 802.3 layer diagram of this approach does not match baseline 'Layer diagram'