

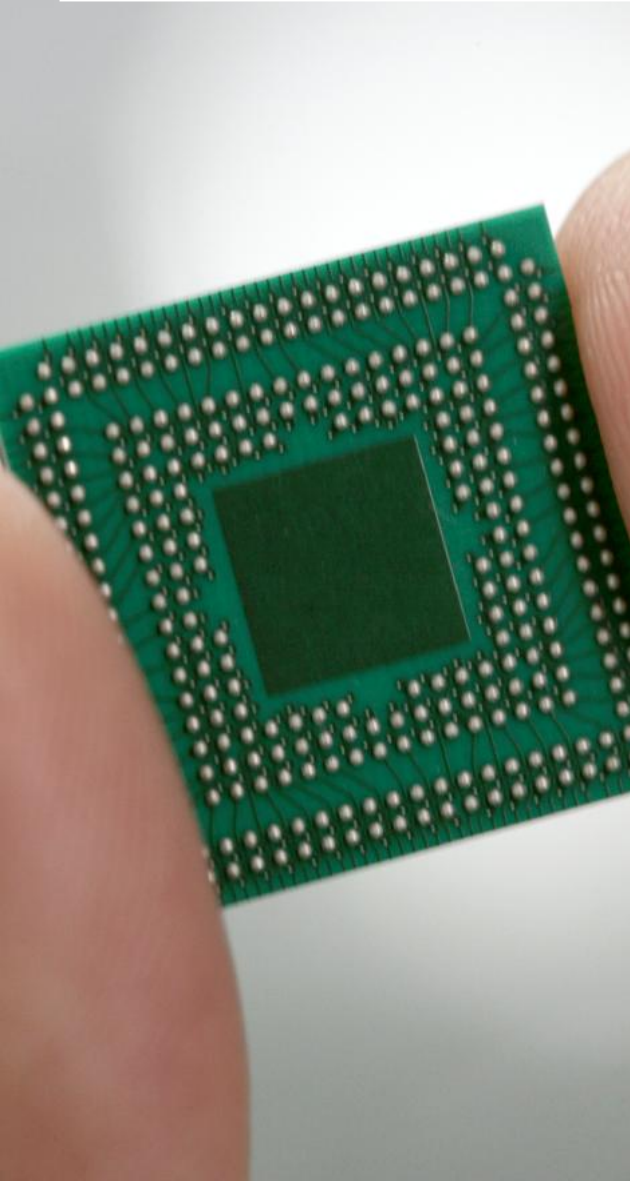
Preemption

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IEEE 802.3 TF Interspersing Express Traffic

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- Proposal of a possible solution
- Proposal for negotiation between the two peers after LinkUp

Expected Features

- Preemption shall operate on a link basis
- Preemption should only be active if both sides of the link supports preemption
- A preemptable frame can be preempted one or more times
- Support only one level of preemption
- No preemption overhead for Express Traffic
- Minimized overhead at each fragment

Objective: Support full duplex operation only

- Means no CSMA/CD at MAC level
- With this assumption it may be possible to add an additional MAC which supports preemption.
 - Simple MAC, supports only full duplex operation, maybe we can skip further not required features (Carrier extension, ...)
 - Provides the required service interfaces for preemption, like:
 - StartPacket
 - ContinuePacket
 - PreemptPacket
 - ResumePacket
 - EndOfPacket
- If it is possible we could achieve that preemption packets are "valid" Ethernet packets

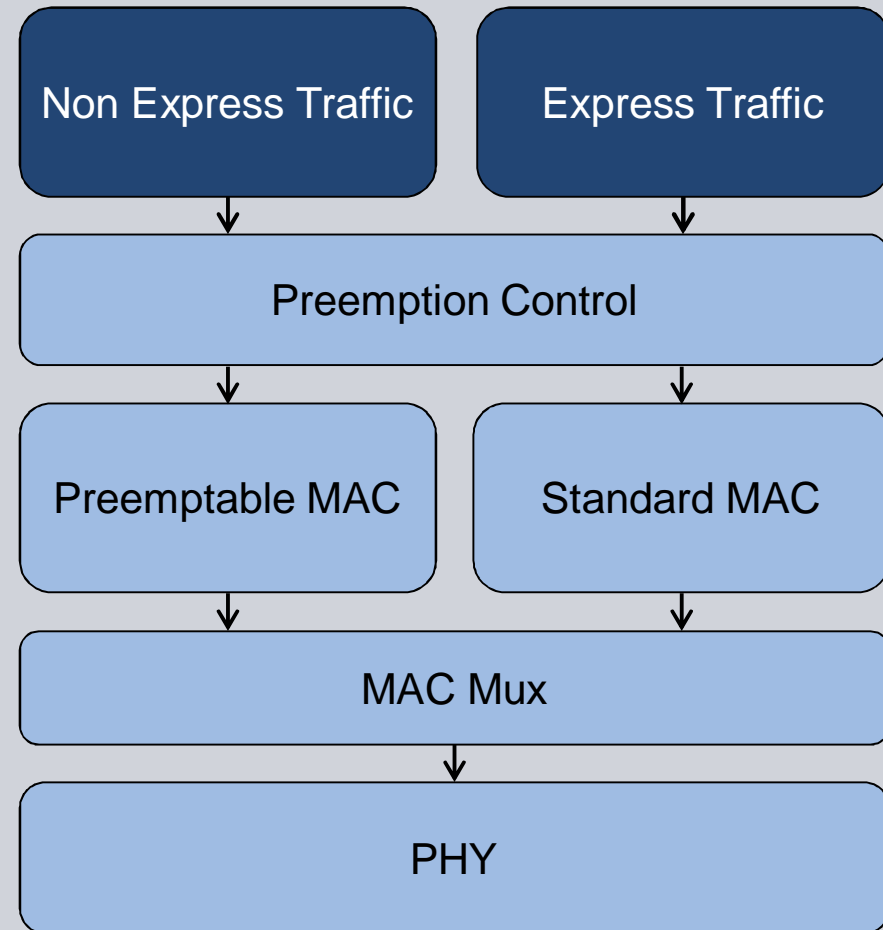
Proposal with an additional Preemptable MAC

Non Express Traffic :

- Traffic which comes from the transmission selection of the Non Express Traffic queues

Express Traffic :

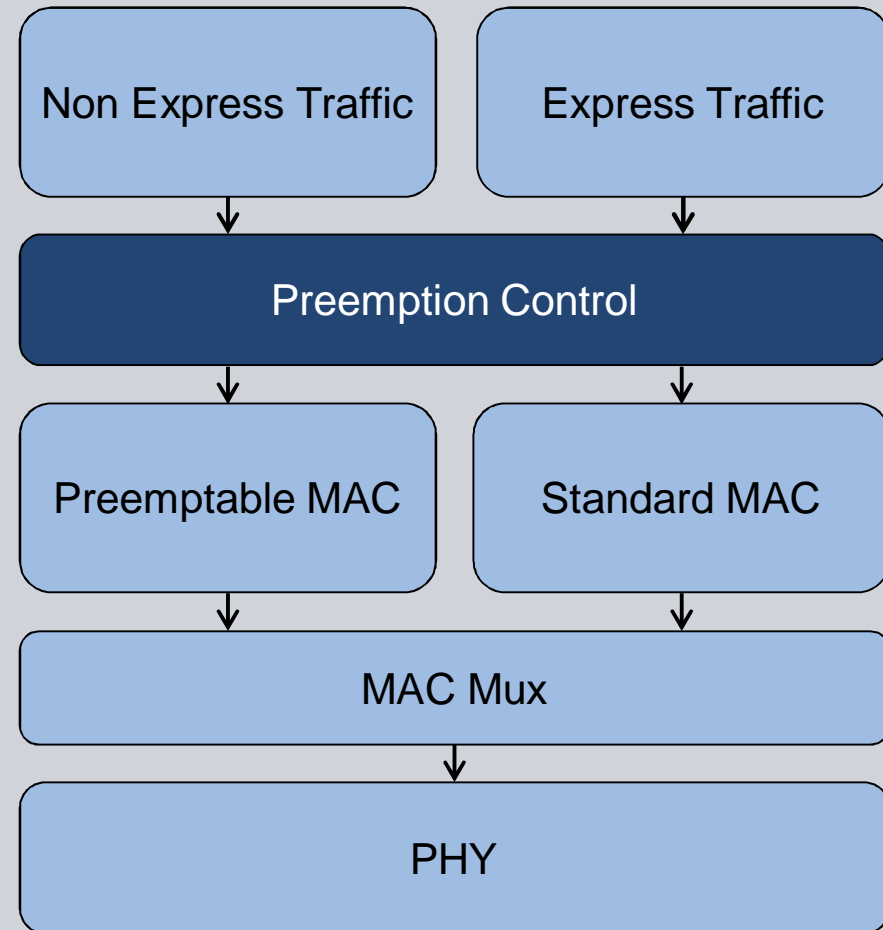
- Traffic which comes from the transmission selection of the Express Traffic queues



Proposal with an additional Preemptable MAC

Preemption Control:

- Serves both MAC interfaces
- Controls preemption at the Preemptable MAC



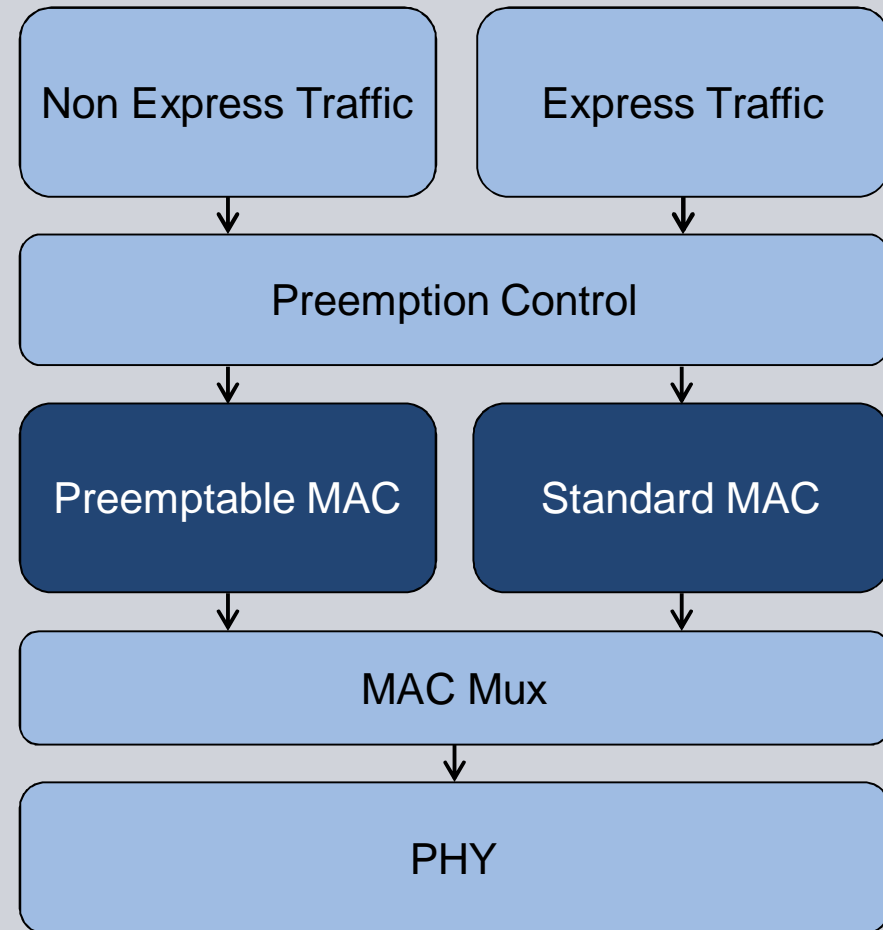
Proposal with an additional Preemptable MAC

Standard MAC:

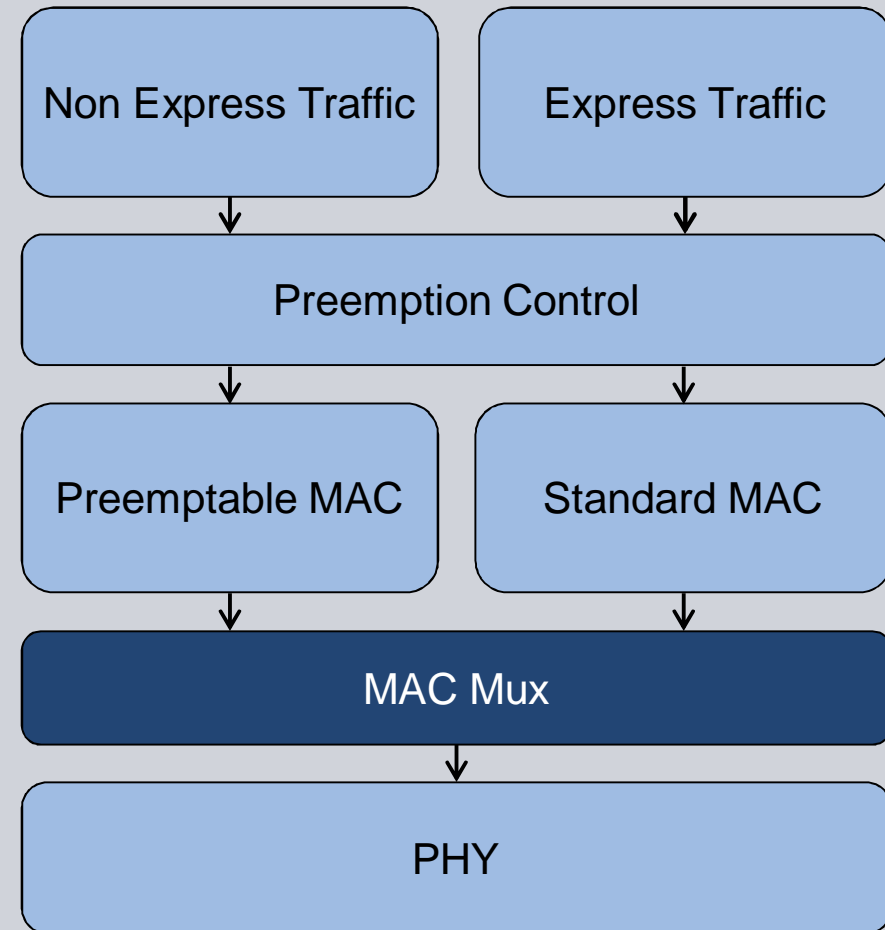
- No changes at the MAC Interface of this MAC required (I hope)
- This is a standard MAC, responsible to send the Express Traffic

Preemptable MAC

- Simple MAC, supports only full duplex operation, maybe we skip further not required features (Carrier extension, ...)
- Provides the required service interfaces for preemption, like:
 - StartPacket
 - ContinuePacket
 - PreemptPacket
 - ResumePacket
 - EndOfPacket



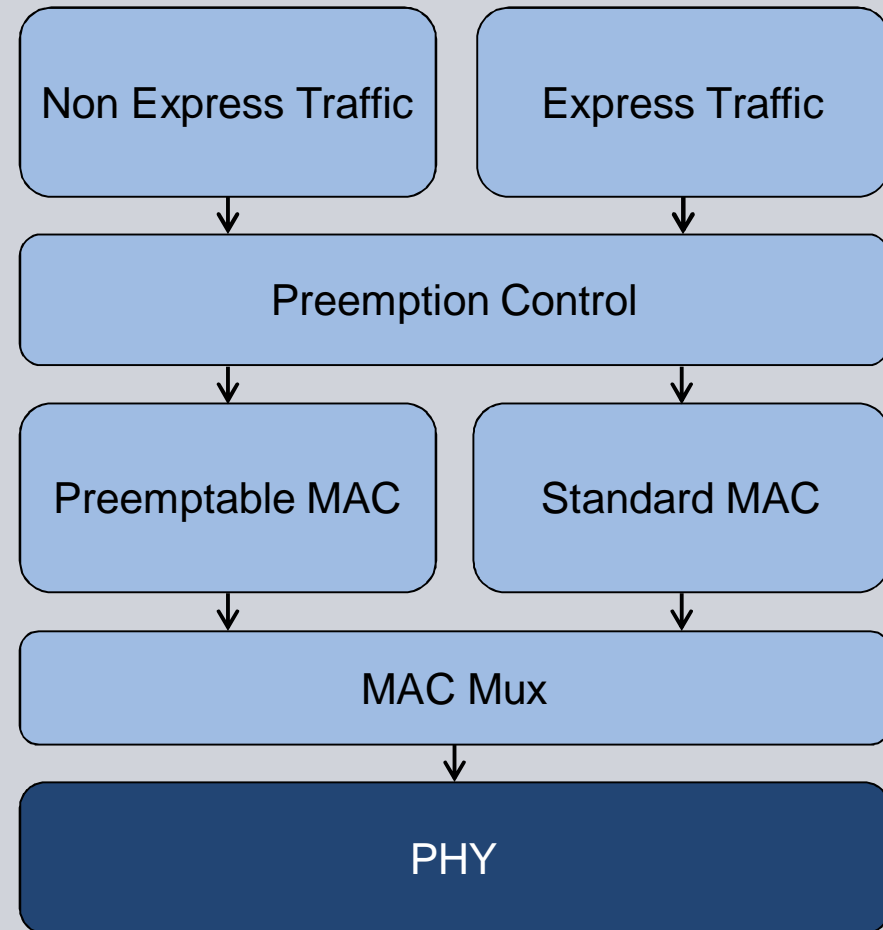
Proposal with an additional Preemptable MAC



MAC Mux:

- This is only a simple multiplexer between both MACs
- Assumption: Both MACs are never active at the same time

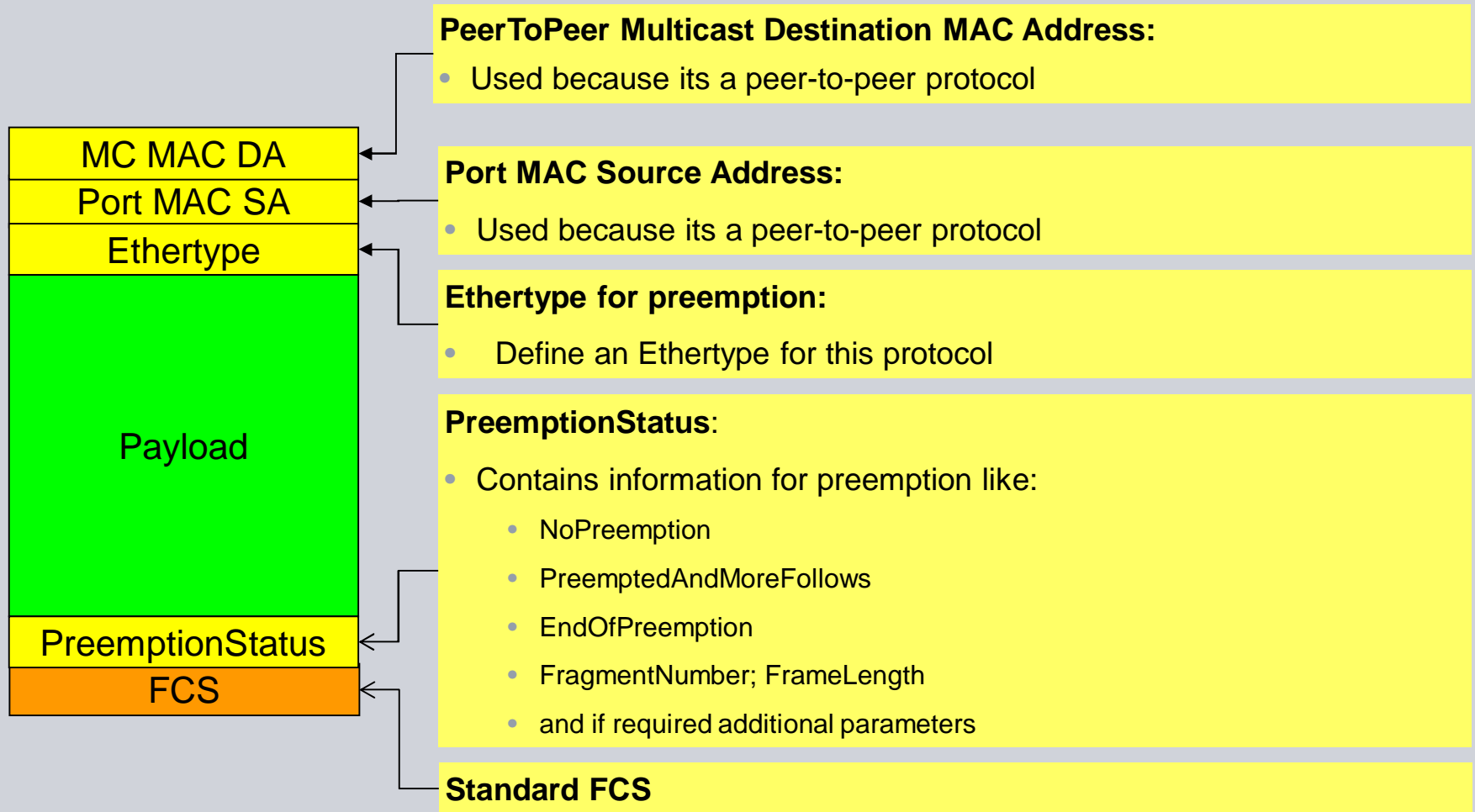
Proposal with an additional Preemptable MAC



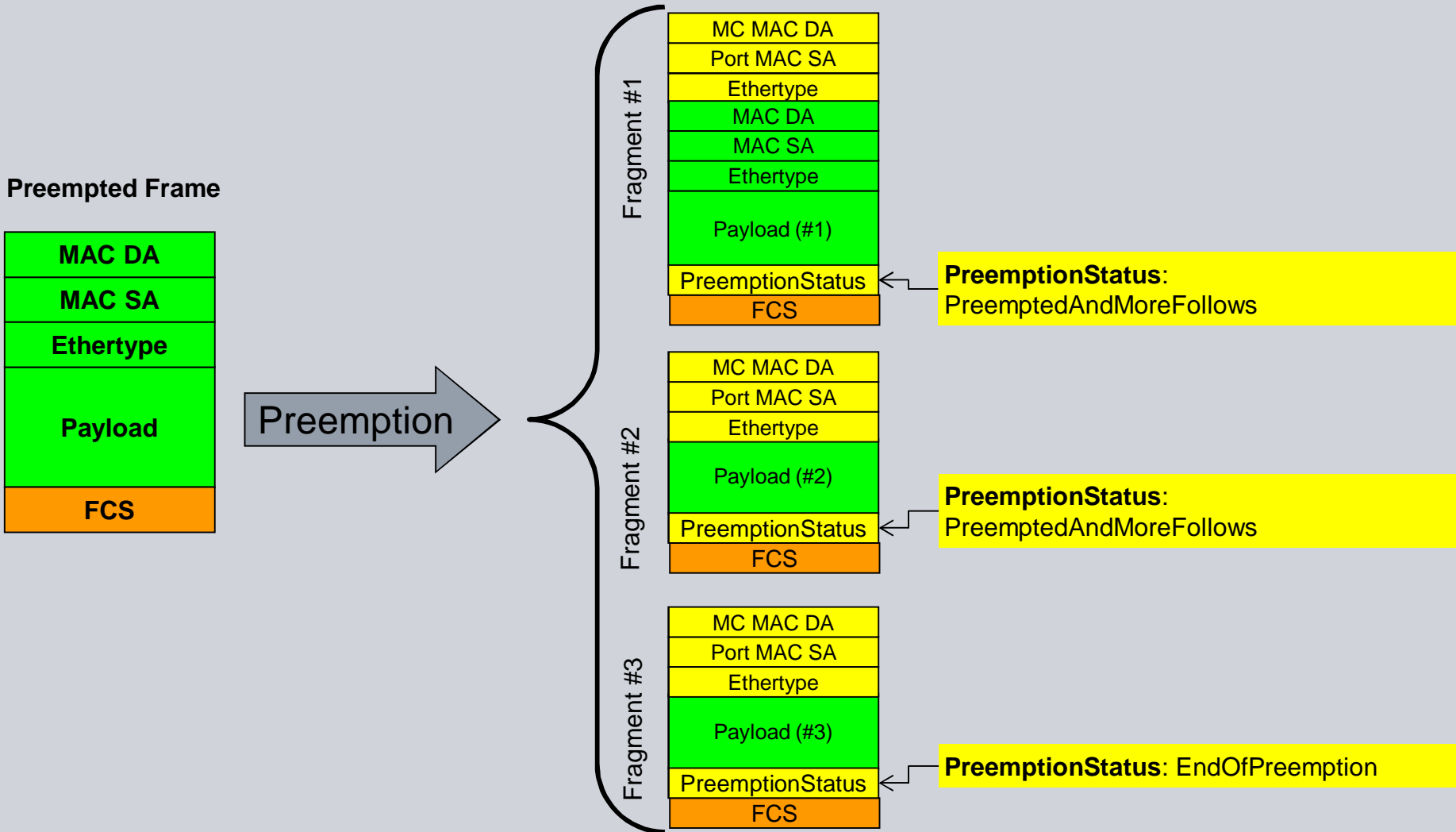
PHY:

- Standard PHY interface
- No change of the PHYs required

Possible Coding



Possible Coding of preempted Frames



Attributes of this proposal

- Preempted packets are valid Ethernet packets
 - Existing diagnostic tools are usable, only protocol changes are necessary
- "Non Express Traffic" are always transferred with the preemption protocol
 - This may be penalty for short frames
 - I'm not sure if we get a problem with the maximum frames size?
- The length of the minimum preempted packet of 64 bytes should be possible, depends on the (tbd) PreemptionStatus
- Support of GuardBand signaling should be possible
- Objective: *IET frames will be constructed such that they will not be recognized as valid MAC frames by a non-IET-capable device.*
 - Is it sufficient if we use a "PeerToPeer Multicast Destination MAC Address"?
 - If not we may use a "somehow" altered FCS to mark a fragment? In this case we lose the advantage of this proposal.

Questions or Comments?

Negotiation between the two peers after LinkUp

- Objective:
 - *Assure that both ends of the link support Interspersing Express Traffic (IET) mode before enabling it.*
- Proposal:
 - We propose to use LLDP to exchange the capabilities for preemption
 - Receive path:
 - If a device supports preemption it should be possible to activate the reassembly instance quite after LinkUp
 - Transmit path:
 - After LinkUp the sender has to wait till it receives the preemption capabilities of the link partner via LLDP

Thank You