
Multi-Point Control Protocol (MPCP) Common Framework

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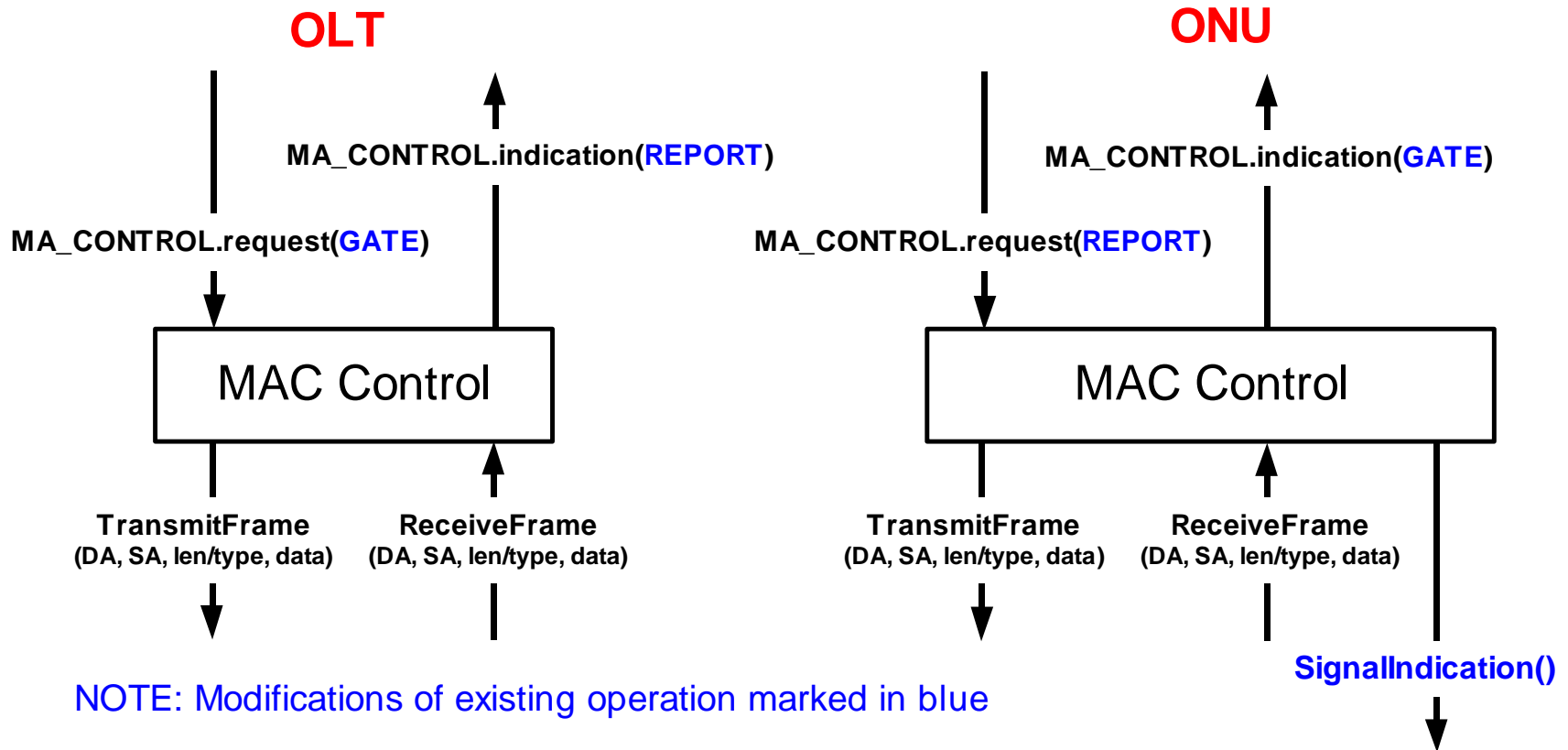
Scope of MPCP

- The **Multi-Point Control Protocol (MPCP)** specifies a control mechanism between a Master and Slaves units connected to a Point-to-Multi-Point (P2MP) segment to allow efficient transmission of data
- MPCP is defined within the MAC Control layer

Basic Characteristics

- Augment MAC-control interface for required functionality
 - Additional interface in MAC-control to enable/disable PHY transmission
- GATE/REPORT mechanism modeled similar to PAUSE
- Derive timing reference for the GATE start time
- Delay compensation mechanism
- AutoDiscovery done in shared regions

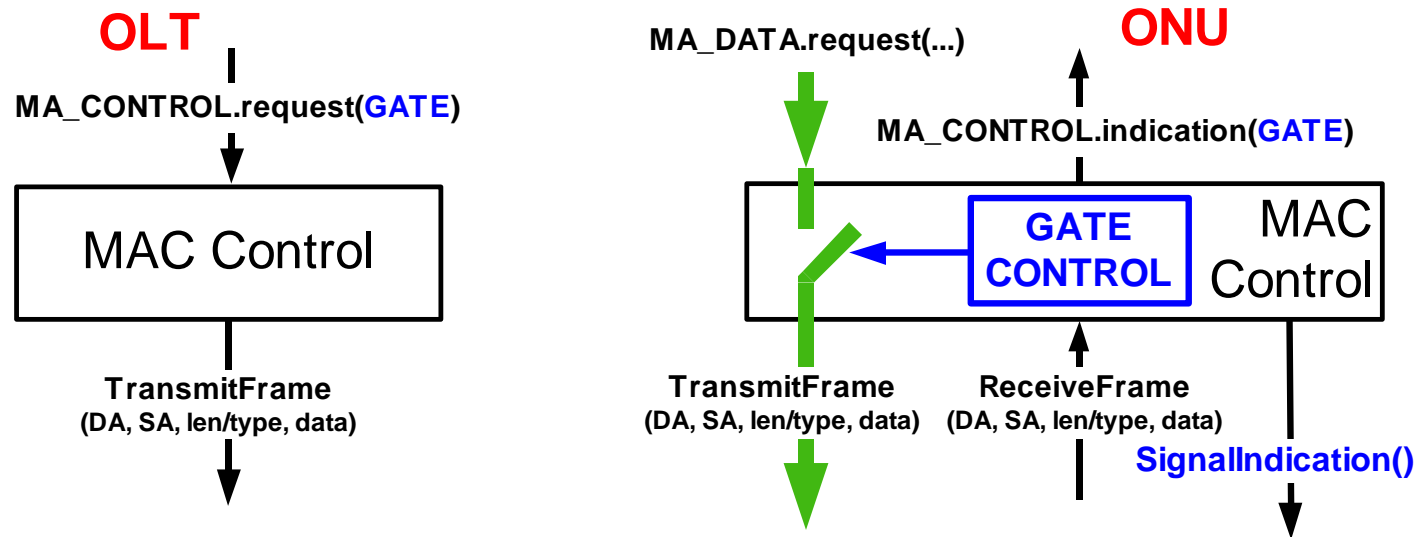
Basic Operation



NOTE: Modifications of existing operation marked in blue

- GATE and REPORT are control frames
- OLT sends GATE messages to ONU and guarantees no overlaps

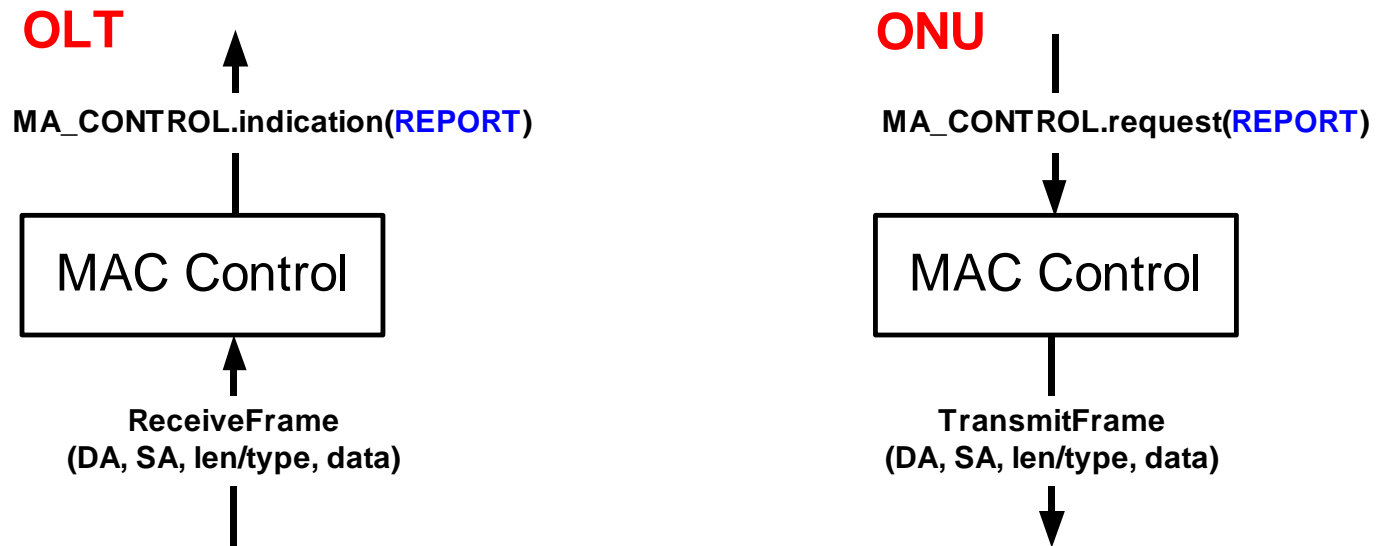
GATE Operation



NOTE: Data path is shown in green;
Modifications of existing operation marked in blue;

- GATE message gates MAC-client delivery of frames.
- GATE operates exactly like PAUSE mechanism (generated in client and interpreted in MAC-control with indication to client at timeout time)
- ONU transmits only during the time indicated in the GATE
- ONU MAC-control enables PHY transmission at the start of a GATE duration and disables it at the end of the GATE duration

REPORT Operation



NOTE: Modifications of existing operation marked in blue

- REPORTs are generated in ONU MAC control client
 - Indicate local conditions to OLT
- REPORTs pass through the MAC-control
- REPORTs are optional

Design In Progress

- Details of timing mechanism
 - Relative timing vs. absolute timing
- Details of delay compensation
 - Compensate at OLT vs. compensate at ONU
- Details of Auto Discovery mechanism

Conclusion

- MPCP functionality and protocol layer is defined
 - Functionality belongs to MAC-control layer following the 802.3 architecture specification
- Significant progress has been made
 - Layer Architecture is defined
 - Details of the mechanisms are next step
- MPCP design and specification can be done in a timely manner

Presentations to follow...

- **MPCP: Timing alternatives.** Describes timing issues and compares absolute timing versus relative timing.
- **MPCP: Time markers in the PHY.** Describes advantages of using synchronization markers in PHY.
- **MPCP: Non-intrusive synchronization in PHY.** Describes a method of delivering timing and synchronization information without affecting data traffic.
- **MPCP: A simple protocol specification.** Specification of service interface and augmentation needed to define a simple protocol.
- **MPCP: an EPON system II.** This presentation covers the protocol proposal for a P2MP network with relative timing reference.