

# A Reference Model for 802.17

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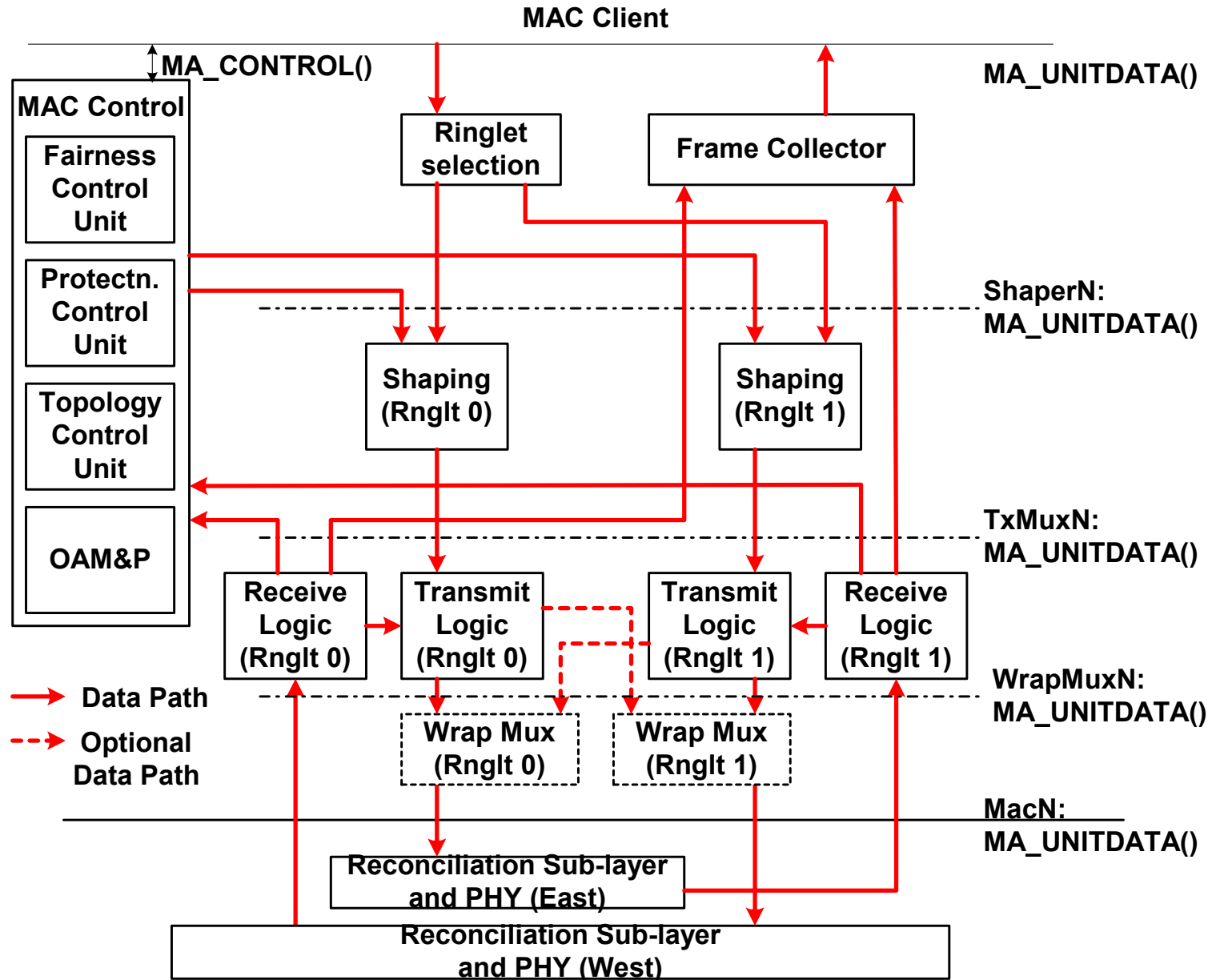
# Motivation for a Reference Model

- Provides a clear, consistent picture to guide us through the development of the standard
  - Provides a “big picture” view of the standard
  - What we have now is inadequate, and often inconsistent
- Provides a reference for developing state machines
- All features that are part of the standard must be explicable using the block diagram
- The reference model is not necessarily representative of implementations

# Reference Model Requirements

- The RPR MAC is a fairly complex MAC (fairness, protection, topology, etc.)
- The reference model must capture all of the features and their interworking
  - 2 PHYs
  - Dual ringlets
  - Protection using steering and wrapping
  - Topology
  - Ringlet selection
  - Bandwidth management
  - Media access control

# A Reference Model



# Reference Model Description (1)

- Ringlet Selection
  - Uses information provided by the client or information from topology and protection components
  - Able to handle transmission on multiple ringlets
- Shaping
  - Implements a shaper based on provisioning and fairness
- Receive Logic
  - Decides whether to receive, receive and transit, strip the frame, etc.
- Transmit Logic
  - Arbitrates between client, transit, and control packets
  - Monitors activity on the output link for fairness
  - Holds transit frames as they wait to be scheduled for transmission
- Wrap Multiplexer (Optional)
  - Decides which transmit path to accept frames from based on the status of the PHY
- Frame collector
  - Gathers frames from both ringlets and passes them up to the client

# Reference Model Description (2) – Control Units

- Fairness Control Unit
  - Performs the fairness computations, consumes received messages and sends fairness messages
- Protection Control Unit
  - Consumes/transmits protection messages and communicates with entities within the MAC to implement protection
- Topology Control Unit
  - Participates in the topology discovery and provides the necessary information to other components
- OAM&P
  - Sources/sinks OAM&P frames from/to the MAC
- The control units communicate with one another, with other components of the MAC (e.g. shaper), and with the client

# Service Interfaces

- *ShaperN*
  - For primitives issued on the interface between the ring selector and the shapers for each ringlet
- *TxMuxN*
  - Used for primitives between the shaper and the transmit logic for each ringlet
- *WrapMuxN*
  - Used for primitives between the transit logic of one ringlet and the Wrap Multiplexer of the other ringlet during wrapping
- *MacN*
  - Used for primitives between the receive logic/transmit logic and the reconciliation sub-layer

# State Machines

- State machines should be developed describing each block in the reference model
- The state machine:
  - Shows the states that each block can be in
  - Describes the transitions between the states
- Also need to have a diagram that shows the relationship between related state machines



# Conclusions

- This presentation discussed a reference model for 802.17
- The model covers all features that the standard discusses
- The next step is using the model to develop state machines for the standard