EFM OAM Transport Methodology Baseline Proposal

22 Apr 2002

EFM OAM Track

Purpose

- Create baseline OAM Transport proposal
- Gather widespread support

Re-state EFM OAM Objective

- Support far-end OAM for subscriber access networks:
  - Remote Failure Indication
  - Remote Loopback
  - Link Monitoring

OAM Problem

- Provide OAM for wide range of networks:
  - Existing PHYs
    - 100BASE-X
    - 1000BASE-X
    - 1000BASE-T
    - Upwardly compatible to 10 Gigabit Ethernet
  - New EFM PHYs
    - P2P
    - P2MP
    - Copper

OAM Transport Solution

	P2P	P2MP	Copper
Class A (Mandatory)	Frames		
Class B (Optional)	Preamble		IB/VOC/eoc

Class A - Includes basic failure indication, MAC layer ping and loopback control and link monitoring functions

Class B – Includes enhanced failure indication and PHY layer ping and loopback control

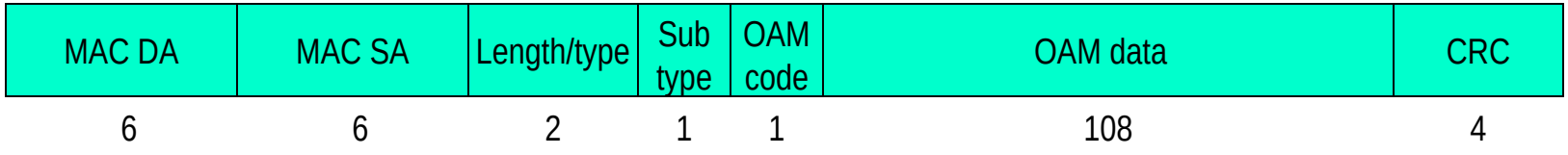
OAM Transport: Key Points

- Class A
  - Frames
    - Mandatory for P2P, P2MP and Copper
    - Includes basic failure indication, MAC layer ping and loopback control and link monitoring functions
    - Uses 128 byte frames
- Class B (extensions to Class A)
  - Usage negotiated via Frames
  - Preamble
    - Optional for P2P and P2MP. *Not applicable to Copper.*
    - Includes enhanced failure indication and PHY layer ping and loopback control
    - Uses 1 byte within preamble
  - IB/VOC/eoc operation channel(s)
    - Optional for Copper. *Not applicable to P2P and P2MP.*
    - Includes enhanced failure indications and enhanced link monitoring

Class A Transport: Frames

- Key Points (based on gentry_1_0302.pdf)
  - Uses 128 byte Frames
  - Provides:
    - Asynchronous Autonomous Reporting of Events
      - Failure Indications
    - MAC Layer Ping and Loopback Control
    - Extensible Management Control Channel
      - Link Monitoring
      - Performance Monitoring
      - Clause 30 Statistics
      - Vendor Extension Mechanism
  - Both fixed interval reporting and query response supported
  - Provides hook(s) for authentication

Class A Transport: Frames

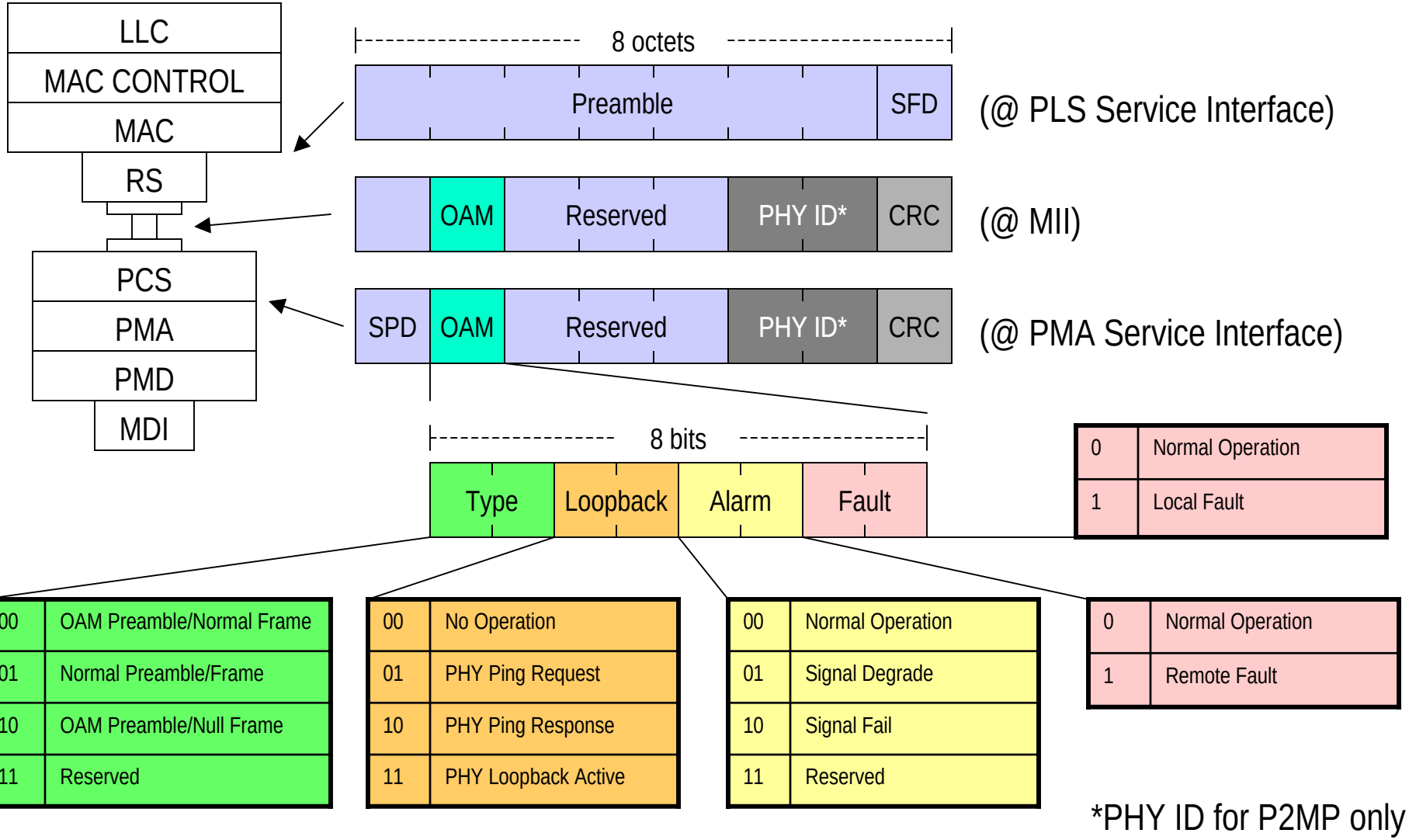


Field	Description	Value
MAC DA	Slow_Protocols_Multicast Address	01-80-c1-00-00-02
MAC SA	Station's MAC Address	48-bit individual address of the station (egress port) sending the frame
Length/type	Slow_Protocols_Type	88-09
Subtype	Protocol Subtype value for EFM OAM	03 is next available
OAM Code	01 = Ping Request 02 = Ping Response 03 = Link Monitor etc	
OAM Data	Up to 108 octets	Data/Pad
FCS	Frame Check Sequence	32-bit CRC

Class B Transport: Preamble

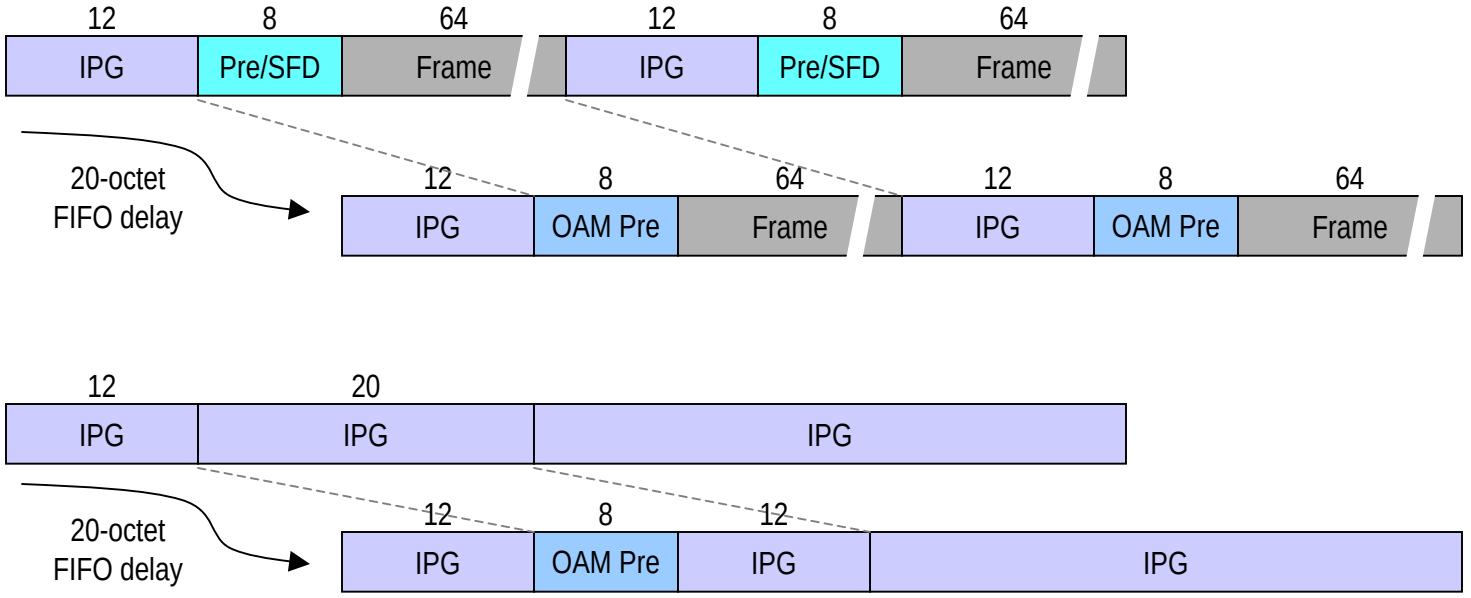
- Key points (based on suzuki_2_0302.pdf)
  - Uses 1 byte of Preamble
  - Provides:
    - PHY Layer Ping and Loopback Control
    - Alarm Indications
    - Local/Remote Fault Indications

Class B Transport: Preamble



*PHY ID for P2MP only

Class B Transport: Preamble



Class B Transport: IB/VOC/eoc

- Key points
  - TBD