

OAM Clauses Satisfy PAR

- **Title:** Clause 57 defines the Operations, Administration, and Maintenance (OAM) sublayer to reduce operational expense of Ethernet subscriber access networks.
- **Scope:** Clause 57 OAM sublayer is compatible with new EFM PHYs and all legacy point-to-point 802.3 PHYs. Changes to 30 and Annexes 30A and 30B provide new EFM 802.3 MIB definitions. Changes to 24, 36, and 46 provide the ability to send fault information over optical unidirectional links. Changes to Clause 22 and the addition of 45B provide indirect access of MMD address space via legacy Clause 22 MII Management interface.
- **Purpose:** Clause 57 OAM provides methods to minimize operation and maintenance costs by providing enhanced link failure detection and isolation mechanisms such as remote loopback and event notifications.

OAM Clauses Satisfy 5 Criteria

- Broad Market Potential:
 - Broad sets of applicability
 - Multiple vendors and numerous users
 - Balanced costs (LAN versus attached stations)
- ✓ **OAM has applicability with all 802.3ah PHYs for complete subscriber access network potential.**
- ✓ **Most OAM features are compatible with existing 802.3 PHYs for added applicability to metro/carrier and enterprise markets.**
- ✓ **OAM implemented by multiple vendors today, will be used by millions of users.**
- ✓ **OAM implementations require similar functionality at either end of the link, thus balancing the cost of DTEs.**

OAM Clauses Satisfy 5 Criteria

- Compatibility:
 - Conformance with 802 Overview and Architecture
 - Conformance with 802.1D, 802.1Q, 802.1f
 - Conformance with managed object definitions
- ✓ **The OAM sublayer presents standard 802.3 service interfaces to adjacent sublayers.**
- ✓ **Much like 802.3ad Link Ag, optional OAM sublayer added to layer stack above MAC and below MAC client.**
- ✓ **OAM uses the 802.3 standard frame format and is compatible with 802.1.**

OAM Clauses Satisfy 5 Criteria

- Distinct Identity:
 - Substantially different from other IEEE 802 standards
 - One unique solution for problem (not two solutions to a problem)
 - Easy for document reader to select the relevant specification
- ✓ **OAM's comprehensive set of mechanisms for alerting the far-end DTE of events and conditions potentially impacting link operation and health, regardless of media type, are unique to 802.3.**
- ✓ **OAM is organized in a manner consistent with 802.3 specifications.**

OAM Clauses Satisfy 5 Criteria

- Technical Feasibility:
 - Demonstrated system feasibility
 - Proven technology, reasonable testing
 - Confidence in reliability
- ✓ **OAM specifications contain sufficient detail to facilitate interoperability.**
- ✓ **Public demonstrations of OAM implementations have been shown and interoperability announcements have been made.**
- ✓ **Extension mechanisms included to provide future hooks.**

OAM Clauses Satisfy 5 Criteria

- Economic Feasibility:
 - Known cost factors, reliable data
 - Reasonable cost for performance
 - Consideration of installation costs
- ✓ **OAM may be implemented in software with reasonable expectations that existing equipment be upgradeable.**
- ✓ **OAM may also be implemented in hardware for maximal integration.**
- ✓ **A subset of appropriate features within OAM may be enabled or implemented per the desired application.**
- ✓ **OAM's fault detection and isolation mechanisms may lower operational expenses.**

OAM Clauses Satisfy Objectives

- **Support far-end OAM for subscriber access networks:**
 - **Remote Failure Indication**
Clause 57.2.7 – Critical Link Event flags
 - E.g., Dying Gasp, Link Fault, Critical Event
 - **Remote Loopback:**
Clause 57.2.8 – OAM Remote Loopback
 - **Link Monitoring:**
Clause 57.5.3 – Link Events
Clause 57.6 – Variable Retrieval

Summary

**OAM clauses are ready for
Working Group Ballot!**



Ethernet in the First Mile
IEEE 802.3ah Task Force

