EFM 802.3ah P2MP Recap

Gerry Pesavento, gerry.pesavento@alloptic.com

P2MP Issues

This presentation summarizes P2MP issues. It does not offer any recommendations; but rather attempts to summarize issues with wide support and those to be resolved.

PMD, OSP	**(1) General Consensus**	**(2) Open Issues**
System, Protocol	**(3) General Consensus**	**(4) Open Issues**

(1) P2MP PMD/OSP General Consensus

- Distance: >=10 km (20 km desired)
- 1000 Mbps (upstream and downstream)
- 1:16 split minimum
- Singlemode fiber
- Single (1) fiber
- Wavelengths: open C band (ex. 1490/1310 nm)
- Terminology: G.983 defined: OLT, ONU, ONT, etc.
  Four new terms: EPON, P2MP, P2P, EAN

(2) P2MP PMD/OSP Open Issues

- Temperature range of ONT (is -40 to +85C necessary)
- Distance support of 20 km (ILEC)
- Splits to satisfy ILECs (1:64) and MSOs (1:128)
- Power budget class concept
- Unification of P2P and P2MP: Consider single fiber P2P as a special case of P2MP with one ONT deployed?
- Burst mode transceiver – detailed parameters
- Link budget model: modify 802.3ae
- FEC – is it worth it?

(3) P2MP System General Consensus

- ONUs use time-shared access (no WDM, CDM, FDM)
- No collision in normal operation
- Frames must not be fragmented, keep 802.3 frame format
- Plug and Play initialization of ONUs
- ONUs shall be able to communicate local conditions to OLT
- Support flow control of particular ONU in upstream
- Support ranging of ONU round trip time

Standard shall not preclude (may be done in higher layers):

- Flexible bandwidth assignments among ONUs
- Statistical multiplexing among ONUs
- Support for jitter and delay sensitive traffic

(4) P2MP System Open Issues

Forwarding Requirements:

Option 1: P2MP behaves like a set of P2P links – unmodified MAC, requires higher layers (modified bridge, router) for ONU-to-ONU communication

Option 2: P2MP behaves like a shared segment – Existing higher layers (bridge, router) may operate on top of augmented MAC.

Compliance Issues:

802.3x Flow control – Use pause vs. grants for flow control?

802.1d Bridging – requirement?

802.3ad Link aggregation – requirement?

Peer-to-peer: does it make sense in an access network?

Liaison Issues: APON/EPON coexistence?

(4) P2MP System Open Issues (cont.)

In EFM 802.3ah standard scope?

- Protection/Redundancy
- Security/Encryption
- QoS
- Prioritization
- DBA
- SLA
- WDM overlay

Network requirements

- ILEC, CLEC, MSO – different requirements
- FTTB, FTTH, FTTC – different requirements

P2MP Fiber: Presentations

Glen Kramer	**Alloptic**	**4 Alternative Methods of Building P2MP**
Dolors Sala	**Broadcom**	**Scope, Functional and Performance Req.**
Walt Soto	**Agere**	**P2MP Fiber General Architecture**
Anh Ly	**Agere**	**Protocol Independent PHY Layer for PON**
Glen Kramer	**Alloptic**	**3 Layer EPON Protocol Proposal**
Dolors Sala	**Broadcom**	**A Flexible Architecture for EPON**
Ryan Hirth	**Terawave**	**An EPON System**
Wenjia Wang	**Quantum Bridge**	**EPON Dynamic Bandwidth Allocation**
Hiroshi Suzuki	**Cisco Systems**	**Point to Point Emulation**
Osamu Yoshihara	**NTT**	**Flexible Grant/Request Method for EPON**
Onn Haran	**Passave**	**Security Threats and Mechanisms**
Lior Khermosh	**Passave**	**FEC Framing Considerations for EPON**
Raanan Ivry	**BroadLight**	**FEC and Line Coding for EFM**

P2MP Fiber: P2MP Reflector

To subscribe to the P2MP Reflector:

subscribe stds-802-3-efm-p2mp <your email address>

to majordomo@majordomo.ieee.org

To Post a message to P2MP, send your message to:

stds-802-3-efm-p2mp@majordomo.ieee.org

P2MP Fiber: Friday Summary

(#1) Austin Presentation Suggestions

Presentation Topic	**Editor / Lead**
1. EFM 802.1 Compliance	Dolors, Hiroshi, Glen, Onn
2. Scope Matrix	Jonathan, Ryan, Ajay
3. Requirements II	Dolors
4. Protocol Refinements (n)	~4 (all protocol leads)
5. Terms and Definitions II	JC (on EFM website)
6. Standards framework	Ariel, John

(#2) Liaison Letter to 802.16 - completed

(#3) Protocol summary matrix - in progress

(#4) Motion: Objective refinement to “single SM fiber”