

# 802.3 Frame Expansion Study Group

## *Open issues*

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# *Agenda*

- **Review of plan going into September interim**
- **Review of open issues**
  - **Block coding/delimiters**
  - **Links with FEC (EPON)**
  - **Use of discovery**
  - **New maximum frame size**

# *Plan for September interim*

- Research following topics:
  - Frame size limitations of:
    - Existing equipment – below MAC (elasticity buffers, **block coding, delimiters**)
    - Existing equipment – above MAC (FIFO, fabric)
    - **Links with FEC (EPON)**
    - Rate compensation (WAN PHY, **EFM Copper**)
  - Effect of increased overhead on performance, especially in aggregation
  - Feasibility of reducing MTU of installed base of clients
  - Tutorial on 802.1AB
  - Straw man frame format modifications
- Finalize PAR/5 criteria
- Draft TF objectives

*Items in red have not had presentations or significant discussion*

# *Open issues*

- **Frame size limitations of:**
  - Existing equipment – below MAC (block coding, delimiters)
  - Links with FEC (EPON)
  - Rate compensation (EFM Copper)
- **Use of “discovery mechanism” to enable larger frames on some links**
- **New maximum frame size**

# *Block coding/delimiters*

- “As I thought, one of the papers I have has data on double burst detection for our CRC. The paper is:
  - T. Fujiwara et al, "Error Detecting Capabilities of the Shortened Hamming Codes Adopted for Error Detection in IEEE Standard 802.3" IEEE Transactions on Communications, Vol. 37, No. 9, pp 986-989, September 1989.
- “It has a table for Double-Burst Error Detecting Capability listing the message length (code length) that ensures detectability for two bursts of various lengths. Unfortunately, the shortest burst length in the table is 9 bits. Any two 9-bit bursts can be detected up to the message size 13000 bits or 1625 bytes. 8-bit bursts will be detected to at least this message size and probably something larger.”
- **Source: Pat Thaler, private e-mail, 11 November 2004**

# *Links with FEC (EPON)*

- “From the standard point of view, we probably only need to worry about FEC specification - FEC should buffer entire frame before correction could begin.
- “If MPCPDU are to be encrypted, there will be additional small changes throughout several state machines.
- “From implementation point of view, I think UNH mentioned they could test existing devices.”
- **Source: Glen Kramer, private e-mail, 24 September 2004**

# Use of discovery

- Heard tutorial on LLDP at September interim
  - Considered highly useful for “topology discovery”
  - Operates with all IEEE 802 access protocols and network media
  - One-way protocol with periodic transmissions out each port
  - 802.3 TLV identified in latest draft 802.1AB/D11/Figure G-4

Extension TLV type	TLV information string length	802.3 OUI	802.3 TLV	Maximum 802.3 frame size
<b>111 1111</b>	<b>0 0000 0110</b>	<b>00-12-0F</b>	<b>subtype=04</b>	
7 bits	9 bits	3 octets	1 octet	2 octets

- However, no mechanism exists within 802.3 to determine maximum frame size support of individual layers (MAC, PCS, PMA, PMD, etc)
- Therefore, no attribute within 802.3 to connect to 802.1AB MIB

# *New maximum frame size*

- “802.1 is requesting 802.3 ... define a larger 802.3 maximum frame size with the new size being in the range of 1650 to 2048 octets.” (802.1 request)
- 1850 emerged as a possibility
  - Based on assumption of integral number of bits used in repeater elasticity buffer (see Pat Thaler’s presentation here: [http://www.ieee802.org/3/frame\\_study/0407.html](http://www.ieee802.org/3/frame_study/0407.html))
- 2048 less “switch header” emerged as a possibility
- UNH IOL tested 140 devices in lab and reviewed 339 test reports
- Need to determine method for selecting new size
- Size needs to be chosen by March 2005
  - Earliest date to kickoff Working Group ballot