
IEEE 802.3 Closing Plenary Report

IEEE 802.3 Gigabit Ethernet over Plastic Optical Fiber
Study Group

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Reflector and web

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- Study Group web page URL:
http://www.ieee802.org/3/GEPOFSG/index.html

Activity this week (1)

- 14 presentations on market requirements and technology and testing for GEPOF
 - More information on current and planned POF use
 - Vibration tests
 - Link tests
- Responded to questions on PAR and CSD
 - Comments received from 802.11
 - Responses generated to these comments
 - “We have a failure to communicate”

Activity this week (2)

- Multiple presentations described VDE 0885-763 technical specifications (presented by the VDE Editor
 - This document specified a POF PHY for use with Ethernet
 - The document was approved but shortly after withdrawn at the request of IEEE (copyright issues)
 - Some of the testing presented was testing of VDE implementation

Motions

- PAR, CSD, and Objectives motions were passed in May.
- Approved responses to 802.11 comments
- Approved modification to CSD
- Approved modification to PAR
- Authorize WG Chair and SG Chair to make appropriate PAR modifications per NesCom comments
- Request extension of SG

Objectives for WG approval

- Preserve the IEEE 802.3/Ethernet frame format utilizing the IEEE 802.3 MAC
 - Preserve minimum and maximum frame size of the current IEEE 802.3 standard
 - Support full duplex operation only
 - Support a data rate of 1000 Mb/s at the MAC/PLS service interface
 - For the automotive environment:
 - ~~Specify operation over at least 15m of POF with 4 in-line connectors~~
 - ~~Specify operation over at least 40m of POF with no in-line connectors~~
 - ~~For the home and industrial environment specify operation over at least 50m of POF with 1 in-line connector~~
 - Maintain a bit error ratio (BER) better than or equal to 10^{-12} at the MAC/PLS service interface
 - Specify optional Energy-Efficient Ethernet for 1000 Mb/s over POF
- [Strikethrough objectives were amended as per next slide.]

Length objectives as amended

- For the automotive environment:
 - Specify operation over at least 15m of POF with 4 ~~in-line connectors~~ POF connections
 - Specify operation over at least 40m of POF with no ~~in-line connectors~~ POF connections
- For the home and industrial environment specify operation over at least 50m of POF with 1 ~~in-line connector~~ POF connection

Motion 1 – GEPOF Objectives

Move that 802.3 approve the IEEE P802.3bv
GEPOF objectives, as per
0714_GEPOF_closing_report.pdf

Technical ($\geq 75\%$)

Moved: Bob Grow

Second: from SG

Managed Objects

Describe the plan for developing a definition of managed objects. The plan shall specify one of the following:

- a) The definitions will be part of this project.
 - b) The definitions will be part of a different project and provide the plan for that project or anticipated future project.
 - c) The definitions will not be developed and explain why such definitions are not needed.
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- The definition of protocol independent managed objects and/or extension of existing managed objects will be part of this project.
 - In addition it is expected that the definition and/or extension of SNMP managed objects, through reference to the protocol independent managed objects provided by this project, will be added in a future amendment to, or revision of, IEEE Std 802.3.1 IEEE Standard for Management Information Base (MIB) Definitions for Ethernet.

Motion 2 – Managed Objects

Move to approve the Managed Objects
response of the Criteria for Standards
Development (CSD) of
0714_GEPOF_closing_report.pdf

Technical ($\geq 75\%$)

Moved: Bob Grow

Second: from SG

Broad Market Potential

Each proposed IEEE 802 LMSC standard shall have broad market potential. At a minimum, address the following areas:

- a) Broad sets of applicability.
 - b) Multiple vendors and numerous users.
 - c) **Balanced Costs (LAN versus attached stations) [Removed from IEEE 802 5 Criteria Nov 2012]**
- IEEE 802.3 specifications for Gigabit Ethernet operation over plastic optical fiber has broad support from industry, representing multiple market applications. This includes application in home networking, automotive, industrial, medical and other market segments where harsh environmental requirements exist and/or use of long link lengths is not required.
 - Study group presentations and participation reflects the breadth of this support and includes component, and system manufacturers from networking, automotive and other markets.
 - As a PHY project, no significant change to the existing balance of costs between LAN and stations is anticipated.
 - It is anticipated that there will be sufficient participation to effectively complete a standards project.

Motion 3 – Broad Market Potential

Move to approve the Broad Market Potential response of the Criteria for Standards Development (CSD) of 0714_GEPOF_closing_report.pdf

Technical ($\geq 75\%$)

Moved: Bob Grow

Second: from SG

[Motion failed, general discussion of other criteria, but next motion was extension of the SG motion]

Compatibility

Each proposed IEEE 802 LMSC standard should be in conformance with IEEE Std 802, IEEE 802.1AC, and IEEE 802.1Q. If any variances in conformance emerge, they shall be thoroughly disclosed and reviewed with IEEE 802.1 WG prior to submitting a PAR to the Sponsor.

- a) Will the proposed standard comply with IEEE Std 802, IEEE Std 802.1AC and IEEE Std 802.1Q?
 - b) If the answer to a) is “no”, supply the response from the IEEE 802.1 WG.
 - c) **Compatibility with IEEE Std 802.3**
 - d) **Conformance with the IEEE Std 802.3 MAC**
 - e) **Managed object definitions compatible with SNMP (see Managed Objects)**
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- As an amendment to IEEE Std 802.3, the proposed project shall comply with IEEE Std 802, IEEE Std 802.1AC and IEEE Std 802.1Q.
 - The proposed project will utilize existing IEEE Std 802.3 compatibility interfaces and an architecture consistent with existing Ethernet PHYs.
 - The proposed project will conform to the full-duplex operating mode of the IEEE 802.3 MAC.
 - As a new PHY, most, if not all, management capability will be additions (e.g., new enumeration(s)) to existing managed objects. If any new objects are required, they will be compatible with SNMP management.

Motion 4 – Compatibility

Move to approve the Compatibility response of the Criteria for Standards Development (CSD) of 0714_GEPOF_closing_report.pdf

Technical ($\geq 75\%$)

Moved: Bob Grow

Second: from SG

Distinct Identity

Each proposed IEEE 802 LMSC standard shall provide evidence of a distinct identity. Identify standards and standards projects with similar scopes and for each one describe why the proposed project is substantially different.

Substantially different from other IEEE 802.3 specifications / solutions.

- The proposed amendment will be the first IEEE 802.3 PHY for use of plastic optical fiber (POF) as the medium.
- There are standardized specifications for data transmission over POF (VDE V 0885-763, withdrawn at request of IEEE). The project will be able to consider leveraging those specifications in adding IEEE Std 802.3 specifications for such transmission.

Motion 5 – Distinct Identity

Move to approve the Distinct Identity response of the Criteria for Standards Development (CSD) of 0714_GEPOF_closing_report.pdf (as amended by the GEPOF study group in response to comments)

Technical ($\geq 75\%$)

Moved: Bob Grow

Second: from SG

Y: N: A:

Technical Feasibility

Each proposed IEEE 802 LMSC standard shall provide evidence that the project is technically feasible within the time frame of the project. At a minimum, address the following items to demonstrate technical feasibility:

a) Demonstrated system feasibility.

~~b) Proven similar technology via testing, modeling, simulation, etc.~~

c) **Confidence in reliability.** [Removed from IEEE 802 CSD Nov 2013]

- Technical feasibility is demonstrated by products providing Gigabit Ethernet compatible operation over plastic optical fiber (POF).
- Presentations to the study group reinforce the technical feasibility of Gigabit data communication over POF.
- The bandwidth and attenuation characteristics of POF and the characteristics of optical transmission elements are well understood and can be integrated into a channel model for 802.3 specifications.
- The reliable use of POF cabling and optical components in harsh environments (e.g., industrial and automotive) is well established.

Motion 7 – Technical Feasibility

Move to approve the Technical Feasibility
response of the Criteria for Standards
Development (CSD) of
0714_GEPOF_closing_report.pdf

Technical ($\geq 75\%$)

Moved: Bob Grow

Second: from SG

Economic Feasibility

Each proposed IEEE 802 LMSC standard shall provide evidence of economic feasibility. Demonstrate, as far as can reasonably be estimated, the economic feasibility of the proposed project for its intended applications.

Among the areas that may be addressed in the cost for performance analysis are the following:

- ~~a) **Balanced costs (infrastructure versus attached stations).**~~
 - b) Known cost factors.
 - c) Consideration of installation costs.
 - d) Consideration of operational costs (e.g. energy consumption).
 - e) Other areas, as appropriate.
-
- A plastic optical fiber (POF) PHY is not expected to significantly change the balance between infrastructure and stations.
 - Costs of transmitters and receivers, supporting logic and medium are well understood.
 - POF provides significant installation advantages compared to glass optical fiber, both for termination of fiber and the minimal training required of installers.
 - The project will specify optional Energy Efficient Ethernet capability to reduced energy consumption.

Motion 8 – Economic Feasibility

Moved to approve the Economic Feasibility
response of the Criteria for Standards
Development (CSD) of
0714_GEPOF_closing_report.pdf

Technical ($\geq 75\%$)

Moved: Bob Grow

Second: from SG

Draft PAR

[http://www.ieee802.org/3/GEPOFSG/DraftPAR
GEPOF 1b 0514.pdf](http://www.ieee802.org/3/GEPOFSG/DraftPAR/GEPOF_1b_0514.pdf)

SG PAR change motion

Moved to amend the 802.3bv Project Authorization Request (PAR), to add expansion of “VDE Verband der Elektrotechnik Elektronik Informationstechnik (Association for Electrical, Electronic & Information Technologies)” to 8.1 note on 7.1.

Moved: Perez-Aranda

Seconded: L. Thorne

Y: 13, N: 0, A: 0

Motion 9 – PAR

Move that 802.3 approve the IEEE P802.3bv Project Authorization Request as amended by the GEPOF Study Group in response to comments.

Technical ($\geq 75\%$)

Moved: Bob Grow

Second:

Motion 10 – Study Group extension

Move that 802.3 approve a first extension of the GEPOF Study Group.

Procedural ($\geq 50\%$)

Moved: Bob Grow

Second: from SG

Thank You!