P802.3cc 25GSMF: CSD Responses

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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.

- The definition of protocol independent managed objects, to be included in Clause 30 of IEEE Std 802.3, will be part of this project.
- In addition it is expected that the definition of Simple Network Management Protocol (SNMP) managed objects, written using the Structure of Management Information version 2 (SMIv2), and making 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.

Coexistence

A WG proposing a wireless project shall demonstrate coexistence through the preparation of a Coexistence Assurance (CA) document unless it is not applicable.

a) Will the WG create a CA document as part of the WG balloting process as described in Clause 13?
b) If not, explain why the CA document is not applicable

- N/A since this is not a wireless project.

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.

- Ethernet is widely deployed for access switch to switch applications in enterprise applications. As access switch downlink speeds increase from 1 Gb/s to 2.5 Gb/s the corresponding uplink speeds will increase from 10 Gb/s to 25 Gb/s. This higher speed is needed throughout the enterprise campus network, including for reaches greater than those developed in P802.3by.
- 10 km reach addresses the needs of enterprise campus and other adjacent applications.
- 10 km and 40 km reaches address the needs of metro and other adjacent applications.
- In metropolitan networks the core operates at 100 Gb/s and requires tributary feeds at rates higher than 10 Gb/s. The natural next step is 25 Gb/s, which matches the per-lane rate of several 100 Gb/s PMDs used for these networks.

- 113 participants attended the “25 Gb/s SMF Ethernet PMD” Call-For-Interest. 66 individuals representing at least 48 companies indicated that they would support the standardization process. It is anticipated that there will be sufficient participation to effectively complete the standardization process including representatives from end-users, equipment manufacturers and component suppliers.

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

- As an amendment to IEEE Std 802.3 as amended by the IEEE P802.3by project, the proposed project will remain in conformance with the IEEE 802 Overview and Architecture, the bridging standards IEEE Std 802.1D and IEEE Std 802.1Q and clause 105 introduced by IEEE P802.3by.
- As an amendment to IEEE Std 802.3 as amended by the IEEE P802.3by project, the proposed project will follow the existing format and structure of IEEE 802.3 MIB definitions by providing a protocol-independent specification of managed objects.
- Utilizing the 25GBASE-R MAC, PCS, and PMA the new PMD(s) maintain the same relationship to IEEE Std 802.3 as IEEE P802.3by 25 Gb/s PMDs.
- The proposed amendment will conform to the full-duplex operating mode of the IEEE 802.3 MAC.
- The project will include a protocol independent specification of managed objects with SNMP management capability to be provided in the future by an amendment to or revision of IEEE Std. 802.3.1.

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.

- There is no standard or project developing a standard that supports point-to-point Ethernet at 25 Gb/s for reaches greater than 100 m.
- There is no standard or project developing a standard that supports point-to-point Ethernet over single-mode fiber cabling at a data rate of 25 Gb/s.

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.

- The initial 25 Gb/s Ethernet specifications are nearing completion and 100 Gb/s Ethernet systems based on 25 Gb/s technologies are already shipping.
- Component vendors are currently delivering 100 Gb/s PMDs organized as 25 Gb/s per lane including: 100GBASE-LR4 and 100GBASE-ER4. Subcomponents from these PMDs can be re-used for the proposed 25 Gb/s single-mode PMD(s).
- Other standards bodies including ITU-T is standardizing 100 Gb/s applications based on 25 Gb/s lane rates including reaches up to 40 km. Subcomponents from those applications can be re-used for 25 Gb/s PMDs.
- Fibre Channel has standardized a 10 km SMF optical transceiver for 32GFC with similar characteristics to those required by this project.

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.

- The cost factors for Ethernet components and systems are well known.
- Prior experience in the development of 100 Gb/s specifications for Ethernet and 32G Fibre Channel establishes that the new specifications developed by this project will entail a reasonable cost for the resulting performance.
- In consideration of installation costs, the project is expected to use proven and familiar media.
- Network design, installation and maintenance costs are minimized by preserving network architecture, management, and software.
- Energy Efficient Ethernet will reduce the operational costs and the environmental footprint.