

The 5 Criteria for EPoC



Broad
Market
Potential



Compatibility



Distinct
Identity



Technical
Feasibility



Economic
Feasibility

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Broad Market Potential

I. Broad sets of applicability

- Given the success of DOCSIS-based services, service providers are looking for cost-effective, high performance means to provide higher data capacity, addressing their growing CapEx and OpEx, market competition and future-proofing their existing coaxial plant, while expanding service portfolios for business and residential customers.
- Service providers have seen an unabated growth in both offered capacity and consumption of broadband IP services over the course of over 15 years for residential and recently business services
- The proposed project would result in a new PHY for each media type with the widest possible applicability

II. Multiple vendors and numerous users

- Interest and support from a worldwide array of operators, system vendors, optical and RF component manufacturers, and silicon suppliers has already been demonstrated at CFI and SG stages

III. Balanced costs (LAN versus attached stations)

- The proposed project will result in the use of the existing EPON architecture by extending its capabilities to support point-to-multipoint access networks using mixed fiber-optic and coaxial cabling technologies.
- This approach will allow the project to optimize the cost balance between the network infrastructure components and attached stations in the cable network.

Compatibility

IEEE 802 defines a family of standards. All standards should be in conformance with the IEEE 802.1 Architecture, Management, and Interworking documents as follows: IEEE 802. Overview and Architecture, IEEE 802.1D, IEEE 802.1Q, and parts of IEEE 802.1F. If any variances in conformance emerge, they shall be thoroughly disclosed and reviewed with IEEE 802.1.

Each standard in the IEEE 802 family of standards shall include a definition of managed objects that are compatible with systems management standards.

I. Compatibility with IEEE Std 802.3

- As an amendment to current IEEE Std 802.3, the proposed project will remain in conformance with the IEEE 802 Overview and Architecture, as well as the bridging standards IEEE Std 802.1D and IEEE Std 802.1Q.
- Moreover, the proposed project will build on 1G-EPON and 10G-EPON architecture, extending coverage of Multi Point Control Protocol (MPCP) to mixed outside plant, comprising optical fiber and coaxial cable.

II. Conformance with the IEEE Std 802.3 MAC

- The proposed amendment will conform to the full-duplex operating mode of the IEEE 802.3 MAC, as defined in Annex 4A.
- EPoC will reuse the MAC Control and OAM as defined in the current IEEE Std 802.3 for EPON, with minimal augmentation if necessary, while developing new PHY specifications.

III. Managed object definitions compatible with SNMP

- The project will include a protocol independent specification of managed objects with SNMP management capability to be provided in the future by an amendment or revision to IEEE Std 802.3.1.

Distinct Identity

- I. Substantially different from other IEEE 802 standards
 - There is no existing 802 standard or approved project appropriate for operation up to 10 Gb/s over point-to-multipoint active and passive coax plants in symmetric and asymmetric configurations.
- II. One unique solution per problem (not two solutions to a problem)
 - The proposed project is an evolutionary extension of the coverage of Multi Point Control Protocol (MPCP) and OAM, specified for IEEE Std 802.3 EPON, onto coax medium.
 - The solution may include at most one PMD specification for each coax media type (active and passive)
- III. Easy for the document reader to select the relevant specification
 - The proposed amendment to the existing IEEE Std 802.3 will be formatted as a set of new clauses and changes to existing clauses, making it easy for the document reader to select the relevant specification.
- IV. Substantially different from other IEEE 802.3 specifications/solutions.
 - See I. above

Technical Feasibility

I. Demonstrated System Feasibility

- Widely deployed data transport technology in the form of DOCSIS & Digital Video services demonstrates the capacity of coaxial networks to support multi-gigabit/second data rates over existing infrastructure when sufficient spectrum is allocated.
- Wideband communication techniques can provide necessary granularity and flexibility of bandwidth assignment in upstream and downstream.

II. Proven Technology

- See I. above

III. Confidence in reliability

- Millions of successfully deployed and operating 1G-EPON & 10G-EPON devices clearly demonstrate the reliability factor of MAC and PHY layers standardized by 802.3.
- Millions of Cable Modems deployed and operating demonstrate the reliability of high speed data over access cable plants.

Economic Feasibility

I. Known cost factors, reliable data

- The cost factors for EPON components and systems are well known and there is a broad and healthy industry ecosystem associated with these technologies.
- EPoC components are expected to be similar to those used in EPON and CNU's developed for RF networks should have comparable cost structure as EPON ONUs
- The proposed project might introduce new cost factors which can be quantified and accounted for during the course of the project.

II. Reasonable cost for performance

- EPON has been established as an attractive access technology in terms of cost/performance.
- This project is intended to bring these benefits to RF access networks comprising a combination of fiber and coax cable.
- EPoC is expected to follow the same cost/performance trend line, established for all major Ethernet technologies developed by 802.3 in the past.

III. Consideration of installation costs

- Installation, maintenance and operations costs for the new technology are expected to be similar to those of DOCSIS equipment.
 - OLT installation costs should be comparable to the DOCSIS CMTS
 - CNU installation costs should be comparable to the cable modem
 - New optical-to-RF equipment installation costs should be comparable to other hybrid fiber-coax amplifier or node installation costs

Motion

Approve the response to Broad Market Potential criteria as shown on slide 3 in NAME.pdf

Moved by: Jorge Salinger

Seconded by:

Yes:

No:

Abstain:

Motion

Approve responses to Compatibility criteria as shown on slide 4 in NAME.pdf

Moved by: Marek Hajduczenia

Seconded by:

Yes:

No:

Abstain:

Motion

Approve the response to Distinct Identity criteria as shown on slide 5 in NAME.pdf

Moved by: Marek Hajduczenia

Seconded by:

Yes:

No:

Abstain:

Motion

Approve the response to Technical Feasibility criteria as shown on slide 6 in NAME.pdf

Moved by: Ed Boyd

Seconded by:

Yes:

No:

Abstain:

Motion

Approve the response to Economic Feasibility criteria as shown on slides 7 in NAME.pdf

Moved by: Jorge Salinger

Seconded by:

Yes:

No:

Abstain: