“Distinguished minimum latency traffic in a converged traffic environment”
DMLT

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IEEE 802.3 Ethernet Working Group

IEEE 802.3 Closing Plenary, SG report
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Reflector and Web

- CFI information posted at page <http://www.ieee802.org/3/cfi/request_1112_1.html> with a link to the presentation - the presentation itself can be found at the link <http://www.ieee802.org/3/cfi/1112_1/CFI_01_1112.pdf>
- SG reflector

  stds-802-3-DMLT@listserv.ieee.org
- Study Group web page URL:

  http://www.ieee802.org/3/DMLT/

Activities this week

- Met Tuesday and Wednesday morning;
- Created a comment resolution to 802.11 comments.
- Revised draft PAR and 5C based on comments of IEEE 802.11 and Paul Nikolich.
  - Updated vice chair information.
  - Deleted the text in PAR 8.1.
  - Updated the Compatibility response to cover the sentence in PAR 8.1.

Status of SG

- Draft PAR and 5C were agreed unanimously by the SG DMLT to forward these to 802.3 for approval.
  - PAR:http://www.ieee802.org/3/DMLT/P802_3br_PAR_030913.pdf
  - 5C: http://www.ieee802.org/3/DMLT/8023-DMLT-SG-1309-Winkel-5C-v2.2.pdf
- Objectives are unchanged since York.
  - 13 objectives were unanimously approved
    - Objectives: http://www.ieee802.org/3/DMLT/8023-DMLT-SG-1309-Winkel-Objectives-v2.3.pdf
- IEEE P802.3br PAR selected designation

PAR title

- SG DMLT proposes a PAR title:

IEEE Standard for Ethernet

Amendment Specification and Management Parameters for

Interspersing Express Traffic.

- Scope:
  - The scope of this project is to specify additions to and appropriate modifications of IEEE Std 802.3 to add a support for interspersed express traffic.

Broad Market Potential

A standards project authorized by IEEE 802 LMSC shall have a broad market potential. Specifically, it shall have the potential for:

a) Broad sets of applicability

b) Multiple vendors and numerous users

a) In an automotive environment, there is a need to support streaming, data, and control over single converged LAN segment. This capability supports lower-latency control traffic coexisting with infotainment, driver assist, and diagnostics traffic.

In an industrial environment, there is a need to support sensor data, closed loop control, Image streaming, and data over single converged LAN segment. This capability supports lower-latency control traffic coexisting with other traffic.

b) At the Call for Interest, held in 2012 Nov Plenary, 23 individuals from 22 companies indicated they would support this project. These included automotive companies, automotive OEMs, silicon and cabling vendors.

Data presented indicates 100's of millions ports/year for Ethernet in automotive by 2018~2022.

40 million industrial Ethernet ports were sold worldwide in 2012. This is expected to grow to over 80 million ports per year in 2015. Potential additional markets served with this standard are medical control systems (e.g. MRI), energy automation (e.g. power substation controllers and protection equipment), automation of traffic systems, avionics and other critical infrastructure.

Compatibility

IEEE 802 LMSC defines a family of standards. All standards should be in conformance : IEEE Std 802, IEEE 802.1D, and IEEE 802.1Q. If any variances in conformance emerge, they shall be thoroughly disclosed and reviewed with IEEE 802.1 WG. In order to demonstrate compatibility with this criterion, the Five Criteria statement must answer the following questions.

a) Does the PAR mandate that the standard shall comply with IEEE Std 802, IEEE Std 802.1D and IEEE Std 802.1Q?

b) If not, how will the WG ensure that the resulting draft standard is compliant, or if not, receives appropriate review 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

a) No.

b) As an amendment to IEEE Std. 802.3, the proposed project will remain in conformance with the IEEE Std 802 Overview and Architecture, and bridging standards IEEE Std 802.1D, and IEEE Std 802.1Q.
The proposed project will remain in conformance with the MAC client interface, and the additional capabilities provided by this project are intended to be utilized by IEEE P802.1Qbu and IEEE P802.1Qbv.
This standard will conform to the above architectures, and specifically 802.1Q bridge framework for forwarding and receiving compatibility at the ISS (Internal Sub-layer Service) .

c) As an amendment to IEEE Std 802.3, 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, including IEEE 802.Qbu when it is approved.

d) The proposed amendment will conform to the full-duplex operating mode of the IEEE 802.3 MAC

e) 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 IEEE 802 LMSC standard shall have a distinct identity. To achieve this, each authorized project shall be:

- **a) Substantially different from other IEEE 802 standards**
- **b) One unique solution per problem (not two solutions to a problem)**
- **c) Easy for the document reader to select the relevant specification**
- **d) Substantially different from other IEEE 802.3 specifications/solutions.**

a) There is no existing 802 wireline standard or approved project that provides lower-latency transmit and receive paths for interspersed express traffic.

b) There is no IEEE 802 wireline based solution that significantly improves latency to be as close to zero as practically achievable on a converged network.

c) The proposed amendment to the existing IEEE 802.3 standard will include a new clause to specify the new capability, as well as amendments to existing clauses as necessary, making it easy for the reader to select the relevant specification.

d) There is no IEEE 802.3 based solution that provides this service.

Technical Feasibility

For a project to be authorized, it shall be able to show its technical feasibility. At a minimum, the proposed project shall show:

a) Demonstrated system feasibility.

b) Proven technology, reasonable testing.

c) Confidence in reliability.

a) The proposed project will build on the array of Ethernet component and system design experience, and the broad knowledge base of Ethernet network operation.

b) System and component vendors have applied similar capabilities based on proprietary and segment-specific standards in production systems.

c) The reliability of Ethernet components and systems can be projected in the target environments with a high degree of confidence.

Economic Feasibility

For a project to be authorized, it shall be able to show economic feasibility (so far as can reasonably be estimated) for its intended applications. At a minimum, the proposed project shall show:

a) Known cost factors, reliable data.

b) Reasonable cost for performance.

c) Consideration of installation costs.

a) The cost factors for Ethernet components and systems are well known. It is expected that this standard would add small and contained incremental cost to Ethernet bridge and end station implementations.

b) Reasonable cost for performance, widely accepted today in the IT segment, will be consistent in this standard. In addition, this standard will enable convergence of low-latency control application over Time Sensitive Networking (802.1 TSN TG) and virtual LAN (802.1Q) bridging, thereby avoiding the need for parallel LANs .

c) Installation cost is expected to be not different than installation cost of existing Ethernet bridges and end stations. Installation cost is expected to be lower compared to installation cost of parallel LANs.

Objectives (1) – Approved in SG

1. Preserve the IEEE 802.3 Ethernet frame format at the MAC.
2. Preserve minimum and maximum MAC frame size of the current IEEE 802.3 standard.
3. Use the Clause 4/Annex 4A MAC without alteration.
4. Require no changes to PHYs.
5. Support full duplex operation only.
6. Preserve MAC/PLS service interface.
7. Do not degrade Mean Time to False Packet Acceptance (MTTFPA) at the MAC Service Interface.
8. The latency to initiate the transmission of an express frame shall be less than two times the minimum packet size plus IPG.

Objectives (2) – Approved in SG

9. Assure that both ends of the link support Interspersing Express Traffic (IET) mode before enabling it.
10. Provide a primitive at the MAC client service interface to inhibit the transmission of non-express frames.
11. Provide two MAC client service interfaces at each end of the IET link, as the means to distinguish between the express and the non-express frames.
12. Minimum IET frame size shall be greater than or equal to 64 bytes.
13. IET frames will be constructed such that they will not be recognized as valid MAC frames by a non-IET-capable device.

Motion

Approve the IEEE P802.3br project Objectives

M: Ludwig Winkel on behalf of the Study Group

Technical (>=75%)

Y: N: A:

Passes by voice without opposition

Motion

- Approve the IEEE P802.3br project 5C-Broad Market Potential

M: Ludwig Winkel on behalf of the Study Group

Technical (>=75%)

Y: 57 N: 4 A: 23

Passes

Motion

- Approve the IEEE P802.3br project 5C-Compatibility

M: Ludwig Winkel on behalf of the Study Group

Technical (>=75%)

Y: 57 N: 4 A: 19

Passes

Motion

- Approve the IEEE P802.3br project 5C-Distinct Identity

M: Ludwig Winkel on behalf of the Study Group

Technical (>=75%)

64 N: 0 A: 15

Passes

Motion

- Approve the IEEE P802.3br project 5C-Technical Feasibility

M: Ludwig Winkel on behalf of the Study Group

Technical (>=75%)

Y: 59 N: 0 A: 20

Passes

Motion

- Approve the IEEE P802.3br project 5C-Economic Feasibility

M: Ludwig Winkel on behalf of the Study Group

Technical (>=75%)

Y: 61 N: 0 A: 20

Passes

Motion

- Approve the IEEE P802.3br project PAR

M: Ludwig Winkel on behalf of the Study Group

Technical (>=75%)

Y: 59 N: 3 A: 18

Passes

Motion

Extend the DMLT Study Group until the next plenary session.

Moved by L.Winkel on behalf of the Study Group

(>50%)

Y: 75 N: 0 A: 9

Passes

Next Steps

- Meet in Indian Wells, CA, USA at Jan 2014 interim meeting (two days).
- Work on proposals for interspersed express traffic.

THANK YOU

for your attention