Closing Report

IEEE 802.3 Next Generation Enterprise Access BASE-T PHY Study Group (NGEABT)

David Chalupsky, Intel

Berlin, DE

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IEEE 802.3 NGEABT Study Group Project Information

- Study Group Organization
  - David Chalupsky, Chair
  - Peter Jones, Chair, Architecture ad hoc
  - Chris DiMinico, Chair, Use Case ad hoc
  - German Feyh, Chair, Impulse Noise and Use Case Analysis ad hoc
- Study Group charter
  - Develop a PAR and CSD for “Next Generation Enterprise BASE-T Access”
  - Motion passed November 2014 in 802.3 closing plenary
- Study Group web and reflector information
  - Reflector information: http://ieee802.org/3/NGBASET/reflector.html
    - Shares reflector with P802.3bq and 25GBASE-T study group
  - Home page: http://ieee802.org/3/NGEBASET/index.html
  - Draft PAR http://www.ieee802.org/3/NGEBASET/NGEABT_PAR_DRAFTa_15-Jan-15.pdf
  - Draft CSD http://www.ieee802.org/3/NGEBASET/802d3_NGEABT_CSD_SG_approved.pdf
  - Draft Objectives http://www.ieee802.org/3/NGEBASET/ngeabt_objectives_draft_SG_approved.pdf

Activities This Week

- **1.5-day joint meeting with P802.3bq and 25GBASE-T SG**
- **Heard 7 of 11 planned contributions (out of time)**
- **Responded to liaison letters from TIA and ISO**
- **Modified draft PAR in response to comments**

Next Generation Enterprise Access BASE-T PHY Objectives

- Support full duplex operation only
- Preserve the 802.3 / Ethernet frame format utilizing the 802.3 MAC
- Preserve minimum and maximum Frame Size of current 802.3 standard
- Support Auto-Negotiation (Clause 28)
- Support optional Energy Efficient Ethernet (Clause 78)
- Support local area networks using point-to-point links over structured cabling topologies
- Do not preclude meeting FCC and CISPR EMC requirements
- Support PoE (Clause 33)
  - including amendments made by 802.3bt “DTE Power via MDI over 4-Pair Task Force”
- Support MAC data rates of 2.5 Gb/s and 5 Gb/s
- Support a BER better than or equal to 10^{-12} at the MAC/PLS service interface (or the frame loss ratio equivalent)
- Select copper media from ISO/IEC 11801:2002, with any appropriate augmentation to be developed through work of 802.3 in conjunction with ISO/IEC JTC 1/SC 25/WG3 and TIA TR42
- Define a 2.5 Gb/s PHY for operation over
  - Up to at least 100m on four-pair Class D (Cat5e) balanced copper cabling on defined use cases and deployment configurations
- Define a 5 Gb/s PHY for operation over
  - Up to at least 100m on four-pair Class E (Cat6) balanced copper cabling on defined use cases and deployment configurations
  - Up to 100m on four-pair Class D (Cat5e) balanced copper cabling on defined use cases and deployment configurations

WG Motion

- Move that 802.3 approve the NGEABT objectives as in 0315_ngeabt_close_report.pdf
- M: D Chalupsky
- S: G Zimmerman
- Technical >=75%
- Y 26+31+20 =77 N 0+0+1 A 3+9+1
- MOTION PASSES

WG Motion

- Move that 802.3 approve the P802.3bz PAR in P802_3bz_PAR_Detail_110315_ver_1.pdf
- M: D Chalupsky
- S: G Zimmerman
- Technical >=75%
- Y 22+24+19 N 0+0+0 A 5+8+3
- MOTION PASSES

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

- A CA document is not applicable because the proposed project is not a wireless project.

WG Motion

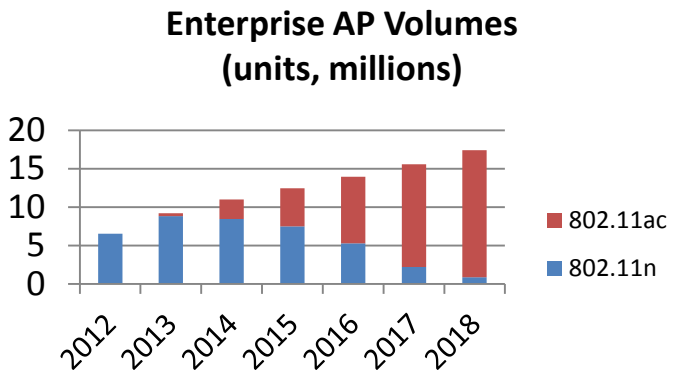
- Move that 802.3 approve the P802.3bz project process requirements in 0315_ngeabt_close_report.pdf
- M: D Chalupsky
- S: G Zimmerman
- Technical >=75%
- Y 23+26+19 N 0+0+0 A 2+7+2
- MOTION PASSES

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 enterprise access. The most popular BASE-T PHY is 1000BASE-T.
- There is a significant market for higher speed Ethernet BASE-T PHY interfaces beyond 1 Gb/s that operates over structured wiring, i.e. Cat 5e, or better, up to 100 meters, and meets the bandwidth needs of 802.11ac based enterprise access point.
- Two speeds of next generation enterprise access BASE-T are needed to support 802.11ac technologies, with 2.5 Gb/s supporting Wave 1 and 5 Gb/s supporting Wave 2.
- There is a significant market potential for other enterprise clients on structured wiring, e.g. high performance compute nodes (e.g. desktops and distributed enterprise servers) on horizontal wires.
- 131 participants attended the “Next Generation Enterprise access BASE-T” Call-For-Interest, 41 individuals representing at least 24 companies indicated that they would support the standardization efforts. 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.

WG Motion

- Move that 802.3 approve the P802.3bz Broad Market Potential criterion in 0315_ngeabt_close_report.pdf
- M: D Chalupsky
- S: G Zimmerman
- Technical >=75%
- Y 48 N 4 A 19
- MOTION PASSES

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, the proposed project shall comply with IEEE Std 802, IEEE Std 802.1AC and IEEE Std 802.1Q.
- As was the case in other IEEE Std 802.3 amendments, this amendment will define new physical layers
- As an amendment to IEEE Std 802.3, the proposed amendment will conform to the full-duplex operating mode of the IEEE 802.3 MAC.
- By using the existing IEEE Std 802.3 MAC protocol, the proposed amendment will maintain compatibility with the installed base of Ethernet nodes.
- 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.

WG Motion

- Move that 802.3 approve the P802.3bz Compatibility criterion in 0315_ngeabt_close_report.pdf
- M: D Chalupsky
- S: G Zimmerman
- Technical >=75%
- Y 29+25+18 N 0 A 1+1+8
- MOTION PASSES

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 define Ethernet operation at 2.5 Gb/s and 5 Gb/s MAC rates. There are no existing standards, or projects developing standards, addressing the specification of Ethernet PHY operation over Cat 5e and Cat 6 balanced unshielded twisted pair cables at 2.5 Gb/s and 5 Gb/s speeds.

WG Motion

- Move that 802.3 approve the P802.3bz Distinct Identity criterion in 0315_ngeabt_close_report.pdf
- M: D Chalupsky
- S: G Zimmerman
- Technical >=75%
- Y 20+23+17 N 1 A 3+2+10
- MOTION PASSES

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.

- Systems based upon 2.5 Gb/s and 5 Gb/s technology have been demonstrated in operational networks.
- The proposed project will build on the array of Ethernet component and system design experience, and the broad knowledge base of Ethernet network operation.
- 10GBASE-T has demonstrated sufficient implementation feasibility in volume production
- The reliability of components for 1G, and 10G Ethernet has been established in the target environments with a high degree of confidence

WG Motion

- Move that 802.3 approve the P802.3bz Technical Feasibility criterion in 0315_ngeabt_close_report.pdf
- M: D Chalupsky
- S: G Zimmerman
- Technical >=75%
- Y 25+25+19 N 0 A 3+1+7
- MOTION PASSES

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 10 Gb/s technology for Ethernet, and maturity observed in 1Gb/s technology establishes that the 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.
- These BASE-T PHY interfaces will maintain a favorable cost balance between the switch and wireless access point and other Ethernet clients on structured wiring.
- Energy Efficient Ethernet will reduce the operational costs and the environmental footprint

WG Motion

- Move that 802.3 approve the P802.3bz Economic Feasibility criterion in 0315_ngeabt_close_report.pdf
- M: D Chalupsky
- S: G Zimmerman
- Technical/procedural
- Y 20+22+14 N 1+2+0 A 5+8+2
- MOTION PASSES

Liaisons and Communications

Incoming

- Liaison from TIA TR-42 regarding a new project in support of (proposed) 2.5GBASE-T and 5GBASE-T.
- Liaison from ISO/IEC JTC 1/SC 25 to IEEE 802.3 on copper qualification

- Draft responses approved by SG

(NGEABT SG) Motion #16

- Move to adopt <ngeabt_to_iso_0315.pdf>, giving license to the study group chair to format, and that the NGEABT Study Group Chair submit the following motion to the IEEE 802.3 Working Group:
  - Move that IEEE 802.3 approve the text in IEEE_802d3_to_ISO_0315_draft.pdf with editorial license granted to the Chair (or the Chair's appointed agent) as a liaison communication from the IEEE 802.3 Working Group to ISO/IEC JTC1/SC25/WG3.

- M: Chris DiMinico S: George Zimmerman
- Technical >= 75%
  - Y: 39 N:0 A:2
- Motion passes

WG Motion

Move that IEEE 802.3 approve the text in IEEE_802d3_to_ISO_0315_draft.pdf with editorial license granted to the Chair (or the Chair's appointed agent) as a liaison communication from the IEEE 802.3 Working Group to ISO/IEC JTC1/SC25/WG3.

- M: David Chalupsky on behalf of the study group
- Technical >=75%
  - Y: 20+12+23= 55 N: 0 A: 2+1+4=7
- Motion passes

(NGEABT SG) Motion #17

- Move to adopt <ngeabt_to_tia_0315.pdf>, giving license to the study group chair to format, and that the NGEABT Study Group Chair submit the following motion to the IEEE 802.3 Working Group:
  - Move that IEEE 802.3 approve the text in IEEE_802d3_to_TIA_0315_draft.pdf with editorial license granted to the Chair (or the Chair's appointed agent) as a liaison communication from the IEEE 802.3 Working Group to TIA TR42.

- M: Chris DiMinico S: George Zimmerman
- Technical >= 75%
  - Y: 15+21=36 N:0 A: 2
- Motion passes

WG Motion

Move that IEEE 802.3 approve the text in IEEE_802d3_to_TIA_0315_draft.pdf with editorial license granted to the Chair (or the Chair's appointed agent) as a liaison communication from the IEEE 802.3 Working Group to TIA TR42.

- M: David Chalupsky on behalf of the study group
- Technical
  - Y: N: A:
- Motion passes by voice vote without objection

(NGEABT SG) Motion #20

Request 802.3 to provide an extension of the Next Generation Enterprise Access BASE-T Study Group

- M: Peter Jones S: Yong Kim
- procedural >= 50%
  - Y: 46 N:0 A:1
- Motion passes

WG Motion

Request 802.3 to provide an extension of the Next Generation Enterprise Access BASE-T Study Group

- M: David Chalupsky on behalf of the study group
- by >50%
  - Y: 19+12+25 N: 0 A: 2
- Motion passes

Thank You!