Power over Ethernet Plus 802.3 Study Group Closing Plenary Report

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Presentation Outline

- Review the work of the week

- Request approval of the SG's Objectives, 5 Criteria and PAR

- Request 802.3 WG submit above materials to become a TF.

- Request extension of the SG and approval to meet.

Events of the Week

- Reviewed PAR, 5 Criteria, Objectives Changed one Objective, confirmed all else

- Presentations

- Motion Madness

Presentations

- DTE Power via MDI and related isolation requirements - David Law
- 4P HP vs 2P HP what is the best system decision- Yair Darshan
- Bias Current Capability versus Differential Performance in a LAN Transformer- Hank Hinrichs
- Adhoc Presentations
  - Revision of IEEE802.3af Isolation requirements - Arkadiy Peker , Yair Darshan
  - Proposal for Update of Clause 33.4.1 - Martin Patoka
- Acheiving Maximum Power for PoE Plus - Steve Robbins
- PoE+ Cost Effective Detection and Classification - Matt Landry
- An Extended Classification Protocol for PoE Plus - Steve Robbins
- 802.3 PoEPlus Classification - Derek Koonce
- Class Resolution Requirement Analysis - Yair Darshan
- Classification Resolution Analysis - Yair Darshan
- 802.3 PoEPlus Maximum Power – Derek Koonce

SG Motion 1

- Motion to add in text ("/ EN" in Objective 8)
  M: Boris, S: Yair.
  No discussion.
  Y: 19, N: 0, A: 6
  Motion passed.

SG Motion 2

- Motion to instruct the Chair to present the
  PoEPlus Study Group PAR, 5 Criteria, and
  Objectives to the Working Group in order to
  form an 802.3 Task Force
  M: Chad Jones, S: Yair Darshan.
  No Discussion.
    All: Y: 32, N: 0, A: 0
    .3 voters: Y: 16, N: 0, A: 0
  Motion passed

SG Motion 3

- Motion to instruct the Chair to request an extension of the PoEPlus Study Group through the next Plenary
  M: Derek Koonce, S: Daniel Feldman.
  Y: 31, N: 0, A: 0.
  Motion passed.

SG Motion 4

- Motion to instruct the Chair to request a meeting of the PoEPlus Study Group at the 802.3 September Interim
  M: Martin Patoka, S: Kevin Brown.
  Y: 29, N: 0, A: 0.
  Motion passed.

Objectives

- PoePlus will enhance 802.3af and work within its framework – there will be no new clause.

- The target infrastructure for PoEPlus will be ISO/IEC 11801-1995 Class D or higher systems. Further we will not cause a safety issue for a legacy installation conformant to ISO/IEC 60950.

- IEEE STD 802.3 will continue to comply to the limited power source and SELV requirements as defined in ISO/IEC 60950.

- The PoE Plus PSE shall operate in modes compatible with the existing requirements of IEEE STD 802.3af as well as enhanced modes.

Objectives, pg 2

- The enhanced standard will provide the maximum power to the PD as allowed within practical limits.

- PoEPlus shall support a minimum of 30 Watts of power at the PD PI.

- PoEPlus PDs, which require a PoEPlus PSE, shall provide the user an active indication when connected to a legacy 802.3af PSE. This indication is in addition to any optional management indication that may be provided.

- The standard shall not preclude the ability to meet FCC / CISPR / EN Class A, Class B, Performance Criteria A and Performance Criteria B with data for all supported PHYs.

Objectives, pg 3

- Research potential extension of power classification to support PoEPlus modes.
- PoE Plus will vigorously pursue supporting the operation of midspan PSEs for 1000BASE-T.
- Research the operations of midspan and endpoint PSEs for 10GBASE-T including providing cable heating data for evaluation by IEEE P802.3an.
- That IEEE 802.3af power over the MDI isolation requirements be revisited as part of the PoE Plus work.
- PoE Plus PDs within the power range of 802.3af will work properly with 802.3af PSEs.

Objectives, pg 4

PD Operation based on PSE

	IEEE Std 802.3af PSE	PoEP PSE
IEEE Std 802.3af PD	Operates	Operates
PoEP PD < 12.95W	Operates	Operates [Note 1]
PoEP PD > 12.95W	PD shall provide user active indication	Operates [Note 1]

Note 1: Operates with extended power classification

Objectives

- Move that 802.3 approve the PoE Plus set of Objectives as recorded above.

  Made on behalf of the PoEP SG:

  Y: N: A:

Criteria 1 – Broad Market Potential

- ***Broad sets of applicability***
- ***Multiple vendors and numerous users***
- ***Balanced costs (LAN versus attached stations)***
- In 2005, VDC market predictions claim that 45% of all Ethernet ports shipped will support 802.3af. There is a demonstrated need for more power to support Pan/Tilt/Zoom security cameras, IP videophones, POS terminals, thin client, 802 multiband wireless nodes and access points, laptop computers and RFID readers. The proposed increase in the supplied power will result in a potential doubling or tripling of the PoE market.
- At the Call for Interest, 43 individuals from 22 companies supported this initiative, and 27 organizations stated an intention to work on the development of such a standard and Study Group participation has been consistent with this. There are existing proprietary solutions in the market demonstrating an active demand. The goal of the standard is to reduce the issue of interoperability in the powered LAN market.
- For some markets the cost of providing AC power is a barrier to the use of a LAN solution. Increasing the power available at the MDI will increase the market potential and station functionality.

Criteria 1 – Broad Market Potential

- Move that 802.3 approve the PoE Plus Criteria 1 - Broad Market Potential, per 802_3_poep_5criteria.pdf

  Made on behalf of the PoEP SG:

  Y: N: A:

Criteria 2 – Compatibility

- ***IEEE 802 defines a family of standards. All standards shall be in conformance with the IEEE 802.1 Architecture, Management and Interworking documents as follows: 802. Overview and Architecture, 802.1D, 802.1Q and parts of 802.1f. If any variances in conformance emerge, they shall be thoroughly disclosed and reviewed with 802.***
- ***Each standard in the IEEE 802 family of standards shall include a definition of managed objects which are compatible with systems management standards.***
- All enhancements will be backward compatible with 802.3af.
- These enhancements will be compatible with 10BASE-T, 100BASE-TX, 1000BASE-T with no changes to the existing MAC.
- 10GBASE-T will not be precluded.
- There will be no changes to the current MAC client interface
- The proposed standard will conform to the 802.1D, 802.1Q and 802.

Criteria 2 – Compatibility

- Move that 802.3 approve the PoE Plus Criteria 2 – Compatibility, per 802_3_poep_5criteria.pdf

  Made on behalf of the PoEP SG:

  Y: N: A:

Criteria 3 – Distinct Identity

- *Each IEEE 802 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.*
- The project will increase the PD load from 12.95W to a minimum of 30W which represents a substantial change to the capabilities of Ethernet. The power classification information exchanged during negotiation will increase to allow meaningful power management capability. Together these enhancements will make the project substantially different from existing IEEE 802 standards.
- The project will edit and enhance Clause 33 which is the only 802.3 clause that provides power over the MDI; which will ensure that the power specification is unique. The resulting standard will create one definition of power via the MDI while allowing current 802.3af compliant devices to remain compliant and adding optional enhanced devices.
- As Clause 33 will remain the only power related clause within 802.3, it will be easy for a reader to find the relevant specification within the 802.3 document.

Criteria 3 – Distinct Identity

- Move that 802.3 approve the PoE Plus Criteria 3 – Distinct Identity, per 802_3_poep_5criteria.pdf

  Made on behalf of the PoEP SG:

  Y: N: A:

Criteria 4 – 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:***
- ***Demonstrated system feasibility.***
- ***Proven technology, reasonable testing.***
- ***Confidence in reliability.***
- At least five vendors are shipping products, based on proprietary schemes, which exceed the power limits of 802.3af specification. Numerous studies indicate methods for increasing power are viable for standardization.
- PoE technology has been used in the field for at least six years; 802.3af has been published for over two years. In 2004 an estimated 28 million PSE ports shipped according to IDC and VDC. Significant laboratory study was also done during the development of 802.3af. Market feedback has provided new insights into market needs and technical capabilities.
- Laboratory testing on extended power has been performed and reported to the Study Group. Proposals presented to the Study Group have been well documented and based on sound engineering practices.
- All of this proves the technology involved has been reasonably tested in the field and in the laboratory.

Criteria 4 – Technical Feasibility

- Move that 802.3 approve the PoE Plus Criteria 4 – Technical Feasibility, per 802_3_poep_5criteria.pdf

  Made on behalf of the PoEP SG:

  Y: N: A:

Criteria 5 – 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:***
- ***Known cost factors, reliable data.***
- ***Reasonable cost for performance.***
- ***Consideration of installation costs.***
- Extrapolation from the experience of 802.3af provides a reliable baseline. The power supply industry is well established and has many years of practice. The cost factors are well known.
- In the expected range of increased power capability, the cost increase is a declining curve of cost per watt. Intelligent power management will further reduce the cost of the increased capability.
- For engineered deployments of security and radio devices, PoE installation costs vs. traditional powering methods have been demonstrated to be significantly lower in most cases. For many applications that require enhanced power services, such as power management or UPS, PoE is demonstrably less expensive than distributed services. There is every reason to believe that the relative cost of power over Ethernet versus installation of primary power service outlets will remain unchanged.

Criteria 5 – Economic Feasibility

- Move that 802.3 approve the PoE Plus Criteria 5 – Economic Feasibility, per 802_3_poep_5criteria.pdf

  Made on behalf of the PoEP SG:

  Y: N: A:

Project Authorization Request

- Break in presentation,
- Display 802_3_poep_par.pdf
- Let the minutes reflect that the file was reviewed.

Project Authorization Request

- Move that 802.3 approve the PoE Plus PAR, per 802_3_poep_par.pdf

- Made on behalf of the PoEP SG:

Y: N: A:

Motion

- Move that 802.3 extend the PoE Plus Study Group through the next plenary meeting.

- Made on behalf of the PoEP SG:

Y: N: A:

Thank You

Motion

- Move that 802.3 authorize a PoE Plus to meet during the 802.3 WG interim meeting.

- Made on behalf of the PoEP SG:

Y: N: A: