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.

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.

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 24W 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.

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.

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.