Time Synchronization Study Group
DRAFT 5 Criteria

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The 5 Criteria

The DRAFT 5 Criteria and Objective were approved by the TSSG at the September 2009 802.3 Interim.

Broad Market Potential

- **Broad set of applications**
- **Multiple vendors, multiple users**
- **Balanced cost, LAN vs. attached stations**
- Ethernet can be applied in many new applications if a time synchronization capability is added. Audio-Video Bridging is well understood, as it started in 802.3 as the Residential Ethernet SG. Other potential new applications include, wireless backhaul, industrial control, and SmartGrid.
- The introduction of time synchronization protocols will not change the cost balance.

Compatibility

a) 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.

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

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 802.3 the proposed project will remain in conformance with IEEE 802.1 Overview and Architecture as well as the bridging standards IEEE Std 802.1D and IEEE 802.1Q, and supports of IEEE P802.1AS.
- As an amendment to IEEE 802.3, the proposed project will follow the existing format and structure of IEEE 802.3 MIB definitions by providing a protocol-independent specification of managed objects.
- Time synchronization capable interfaces will interoperate with legacy interfaces though the time synchronization capability will not be active.
- Support for the time synchronization will be limited to the full-duplex operation mode of the IEEE Std 802.3 MAC.
- 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 the yet-to-be-approved IEEE P802.3.1.

Distinct Identity

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

- Ethernet currently has no time synchronization capability. This project does not overlap IEEE 802.1AS but in fact complements it.
- We will pick a single solution.
- Time synchronization will be defined as an optional extension to existing interfaces and management.

Technical Feasibility

- **Demonstrated system feasibility**
- **Proven technology, reasonable testing**
- **Confidence in reliability**

- This functionality has been successfully implemented and demonstrated by numerous parties for a number of years. The technology has been deployed with time synchronization capabilities.
- Nothing in the project is expected to decrease the reliability of Ethernet. Laboratory work and existing implementations demonstrate the testability of time synchronization. (Cite to MT journal article)

Economic Feasibility

- **Known cost factors, reliable data**
- **Reasonable cost for performance**
- **Consideration of installation costs**

- Time synchronization will require a small number of additional logic elements. The cost, reliability and performance are well understood. This project will not affect the installation cost of Ethernet.