IEEE provides Ethernet support for time distribution and synchronization protocols

IEEE responding to industry needs addresses the ever growing demand for Ethernet support of time distribution and synchronization protocols.

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PISCATAWAY, N.J., USA, xx May, 2011 -- IEEE, the world's leading professional association for the advancement of technology, today announced the ratification of IEEE Std 802.3bf^{TM}-2011, Ethernet support for time synchronization protocols. An amendment to the IEEE 802.3 Ethernet standard, IEEE Std 802.3bf provides the hardware support for time distribution and synchronization protocols, e.g., IEEE Std 1588 and IEEE 802.1AS-2011.This amendment to the IEEE 802.3 Ethernet standard paves the way for the rapid adoption of the IEEE 802.1 Audio/Video Bridging (AVB) protocol technologies in existing and future networks.

The IEEE 802.3bf standard, ratified May XX, 2011, and developed in close collaboration with the IEEE 802.1 Working Group, addresses the ever growing demand for an Ethernet physical layer (PHY) agnostic solution for the support of time distribution and synchronization protocols, while minimizing changes to existing Ethernet PHYs and maintaining the layering rules of Ethernet transport. IEEE Std 802.3bf™-2011 provides one of the critical pieces in the overall solution of synchronization over packet networks. The pervasive nature of Ethernet technology, covering copper and optical media, while providing transmission speeds of up to 100 Gb/s, will benefit substantially from native support for time distribution and synchronization protocols. This provides network operators with a uniform basis for solutions for advanced services, including mobile backhauling, audio and video distribution systems, Smart Grid applications, all relying on field-proven Ethernet to deliver reliable, scalable and ever evolving technologies to address new market needs.

Mobile backhauling for cellular data, served using point-to-point and point-to-multipoint ~~Ethernet Passive Optical Network (EPON)~~ technologies, is one of the highest-growth market segments for Ethernet networks. The explosive growth in global mobile data usage has pushed operators to deploy new, high capacity packet-based links, replacing existing T1/E1 lines. This requires Ethernet links to provide support for high-quality time distribution and

synchronization protocols, which requires hardware-level support. Similarly, Smart Grids are also embracing Ethernet links to provide data link communication between points in the power distribution system.

"The audio and video communities have been using Ethernet technologies for years as a high-performance, low-cost transport. IEEE 802.3bf™-2011 and the IEEE 802.1 AVB protocol suite allow for precise timing across the network---a critical function for delivery of high-quality audio and video in real time. For the first time, this can be accomplished using interoperable IEEE 802 technologies, rather than many proprietary and incompatible solutions," said Steve Carlson, Chair, IEEE 802.3bf Task Force, President, High Speed Design, Inc.

"The open and scalable nature of the solution specified in IEEE Std 802.3bf™-2011 fits very well into the specific nature of Ethernet networks. We are especially excited about the outlook of using this technology in ~~EPON~~ Ethernet Passive Optical Networks~~systems~~, where hardware support for time-of-day distribution and synchronization protocols is of key importance for mobile backhauling, video distribution applications as well as Metro Ethernet centric business services." said Marek Hajduczenia, Ph.D, Chief Editor for IEEE 802.3bf-2011, xPON Standardization Director for ZTE Corporation. "The ratification of this standard, its rapid development and PHY agnostic character clearly demonstrate the dominance of Ethernet as the packet technology of choice for existing and future networks, no matter what the end application is."

Patrick Diamond, Ph.D, member of the ITU-T SG15 Q13 study group and Senior Director of Systems Engineering at Semtech Corporation said, "With many networked applications requiring sub-microsecond time synchronization, standards bodies (ITU-T for example), have struggled to identify mechanisms that can meet this requirement. The creation of IEEE Std 802.3bf established (for the first time) a standardized means to determine exactly when an Ethernet frame is ingressing or egressing a port. This starting and ending "time" point exact knowledge is the catalyst for highly accurate "residence" time measurements for packets traversing Ethernet nodes. This measurement capability is critical to delivering "Time and Frequency" over packet networks to those application endpoints demanding sub-microsecond time and sub-10ppb frequency accuracy,"

"The 802.3bf-2011 standard is an excellent example of the cooperation that occurs between various IEEE 802 Working Groups," said David Law, Distinguished Engineer, HP Networking, and Chair of the IEEE 802.3 Working Group. "The project originated in IEEE 802.3 in 2005 as the "Residential Ethernet" Study group. The Study Group determined that the work would be

best performed in the IEEE 802.1 High Level Interface Working Group. IEEE 802.1 created the Audio/Video Bridging group, which has created the entire AVB protocol suite. It was known that an IEEE 802.3 component would be required, and 802.3bf-2011 was the result."

Paul Nikolich, Chairman, IEEE 802 LAN/MAN Standards Committee, stated: "I wish to extend my congratulations to the IEEE 802.3 Working Group and the IEEE 802.3bf Task Force on the success of this project. It is yet another example of the industry coming together in IEEE 802 and quickly reaching consensus that will benefit all users and providers of Ethernet network-based services and products."

For additional information please visit: http://www.ieee802.org/3/bf/index.html or http://standards.ieee.org/develop/project/802.3bf.html. The approved standard is available for purchase at add store link.

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