EXCLUSIVE ARTICLES ONLINE: ABSTRACTS

For expanded coverage of this month's topic on "IT-Based Systems" the following articles are available only in the Digital Edition of this issue. Visit the SMPTE digital library at http://journal.smpte.org to access the issue and to read these papers.

Efficient Monitoring of ST 2059-2-Based Time Transfer Performance

By Nikolaus Kerö, Thomas Kernen, and Tobias Müller

In any mission critical-broadcasting application, reliable synchronization is mandatory. For traditional black burst or trilevel-based synchronization, redundant sync signal generators are used, whose quality is monitored together with their respective switchover units. To make the best use of a single shared communication medium within an all-IP studio, synchronization is accomplished using the IEEE 1588 Precision Time Protocol (PTP). Although multiple sync sources are deployed for redundancy purposes, the monitoring of their availability and precision is not sufficient to guarantee the defined level of accuracy. Additional data has to be gathered and analyzed by every node prior to deployment and as part of its ongoing operation. After briefly describing the main effects influencing PTP accuracy, several monitoring methods using both in-band and out-of-band are described, including how this benefits operations in the broadcast plant. Finally, we verify their respective merits through a series of measurements in a datacenter class multihop network architecture.

Large-Scale PTP: How Big Can It Get?

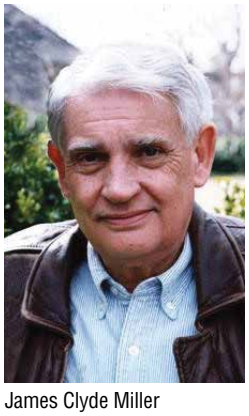
By Nicholas Ciarleglio, Thomas Edwards, and Robert Welch

Precision Time Protocol (PTP) is a standard to synchronize clocks across a network with submicrosecond accuracy. In the area of professional media networking, PTP is poised to replace traditional black burst sync methods, allowing both media and synchronization to be carried over the same network connection. To be useful, vendor PTP protocol implementations must scale to the size of the largest broadcast plants. This paper describes the results of PTP tests with more than 1,000 "slave" clocks, including an examination of scaling performance with both boundary and transparent modes of operation on the network devices. It also discusses the pros and cons of the end-to-end delay and peer delay mechanisms, and provides details on the performance seen using a range of sync message intervals and delay request intervals. These tests suggest several best practices for large-scale PTP installations using commercial-off-the-shelf equipment, and provide real-world data to assist in planning and implementing a professional media Ethernet network leveraging PTP synchronization. SMPTE

IN MEMORIAM

James Clyde Miller

James Clyde Miller of Irving, TX, USA, passed away on 11 February 2017 at the age of 84. Born in Winslow, AR, on 31 January 1933, Miller was the son of James Oscar and Blanche Lyons Miller. He graduated from the West Fork High School (West Fork, AR), and the Draughon's School of Radio (Little Rock, AR), and attended Oklahoma University. Miller worked for KBIX AM Muskogee, KTUL-TV Tulsa, and KOKH-TV/FM. He moved to Irving in 1968, where he worked for KERA-TV/FM, Dallas as chief engineer for 31 years, retiring in 1999.


James Clyde Miller

Miller was actively involved in the Dallas Fort Worth Section of SMPTE for many years, serving as Section Chair during his tenure.

Miller is survived by his beloved wife, Saundra (Sandy), to whom he was married for 53 years; his son James Brian (J. B.) Miller and his wife Renee, and their sons Bryan and Jacob; his daughter Carol Miller Bowers and her husband Eddie Bowers; and his brother Conrad Miller and his wife Linda, of Arkansas. SMPTE

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