TECHNOLOGY

System Level Synchronization in Communication Systems

OVERVIEW

Cyclone technology, developed by Professor Ashok Agrawala et. al, of the University of Maryland at College Park, is a revolutionary approach based on end-to-end protocols to maximize computer-network performance with high stability and efficiency. Utilizing the concept of temporal operations to carry out an end-to-end resource-time allocation, Cyclone network schemes can specify with great accuracy the temporal profiles to successfully complete communication tasks. All "store" and "forward" operations in the network are carried out in assigned time intervals. All temporal variability of the host interfaces is handled by regulators containing a buffer to carry out the temporal matching.

See US patent No. 6,320,865 licensed to AlphaSight Networks, Inc.

To achieve the behavior indicted above one uses accurate clocks or clocks that have very little drift relative to one another. Such clocks are prohibitive in price.

Professor Agrawala and team now present a Cyclone Network Synchronization (CNS) algorithm. CNS does not depend on highly stable clocks or hardware, yet it can synchronize nodes in a network with a very high degree of accuracy. It is very lightweight since no explicit clock synchronization is performed, and subsequently does not incur any overhead in message passing. Instead, synchronization us done solely by listening to the regular network traffic. Finally, the amount of padding or time overhead incurred by the algorithm is extremely small, even when used with system clocks that have high drift rates. (e.g. 1000 PPM or more).

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LICENSE STATUS

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CATEGORIES

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EXTERNAL RESOURCES