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Timing-sync Protocol for Sensor Networks

In the previous paper we read we about a time sync protocol called Reference Broadcast Synchronization (RBS). In this paper a new time sync protocol is presented called Timing-sync Protocol for Sensor Networks (TPSN). The protocol takes the work done on RBS and delivered a 2x better performance.

The first major difference was the style of synchronization. In TPSN they use a sender-receiver synchronization, whereas the RBS protocol uses receiver-receiver synchronization. RBS introduced the idea of time stamping the packets at the MAC layer upon receipt. The TPSN protocol provides the time stamping at send.

TPSN starts by building a hierarchy of nodes with a root node and then layers of nodes. These nodes then create pair-wise links and synchronization. The method of combining and verifying the sync pulse, ack packet to generate a accurate time stamp was particularly clever.

It is hard to say too much about this paper because I have already read the Flooding Time Synchronization Protocol (FTSP) paper which further refines this work. This paper is well written, the work seems solid and clearly progresses beyond the previous papers work. I really liked their coverage of the issues about deterministic and non-deterministic portions of the network transmission.