

INVITED PAPER

Scalability and Performance Issues in Deeply Embedded Sensor Systems

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Abstract- The property of scalability for a given system indicates the ability of a system or a subsystem to be modified with changing load on the system. For a sufficiently large complex system, there are several factors that influence the ability of the system to scale. It is necessary to incorporate solutions to these factors (or bottlenecks) in the design for scalability of a given system. In this paper, we discuss such design principles to handle the key factors that influence the scalability of large complex systems. Specifically, we demonstrate design and implementation of simple, innovative, and relatively less expensive methodology to guarantee that a large complex system (such as network of sensors) is scalable under varying load conditions.

Index terms: Wireless sensor networks, scalability and performance, sensor calibration, data summarization and aggregation.