

Invited Talk

US Navy Seaweb Development

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Abstract

This talk traces the development of Seaweb through-water networking from 1995 to the present day. Encompassing the physical, link, network, transport, and session layers of the open-systems interconnect (ISO/OSI) stack, Seaweb technology enables undersea sensor networks, autonomous/unmanned underwater vehicle (AUV/UUV) communication & navigation, and submarine communications at speed & depth (CSD). Given the severely constrained physical layer, we examine the benefits of hierarchical network topologies and the need for adaptation to prevailing environmental conditions and mission requirements. With results derived from an aggressive experimental program, we consider the quality of service (QoS) trade-offs of underwater networks in terms of reliability, availability, throughput, area coverage, security, and latency.

Categories & Subject Descriptors: Data communications; Open Systems Interconnection reference model (OSI); Distributed networks; Store and forward networks; Reliability, Testing, and Fault-Tolerance.

General Terms: Algorithms; Measurement; Performance; Design; Reliability; Experimentation; Security; Standardization; Theory.

Bio

The speaker is a Research Professor of Physics at the Naval Postgraduate School. He conducts research in undersea acoustic propagation, digital communications, and underwater sensor networks.