UPS: Unified Protocol Stack for Wireless Sensor Networks

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- UPS enables the co-existence of multiple modules in same stack layer
- UPS provides unified access to cross-layer data
- Implementation using Tmote Sky motes
- Simulation using the TOSSIM simulator
- Experiments
  - XLM cross-layer WSN protocol
  - Network layer multicast protocol (called RBMulticast)
  - Results shows that the network layer traffic co-exists and shares the same MAC layer without extra overhead
Input Output Function Calls

- Multiplexing packets is the key to co-existence of multiple protocols in the same layer
- In UPS, the first byte of the packet header of each layer is reserved for Logical Control packet switching
UPS Experimental Results

- Protocols that share modules behave similarly.
- The total number of packets sent also clearly show benefits.
- The UPS-enabled mixed multicast-unicast case provides the same functionality with fewer packets sent.