PLCA Prototype Validation with Existing Hardware

Martin Miller

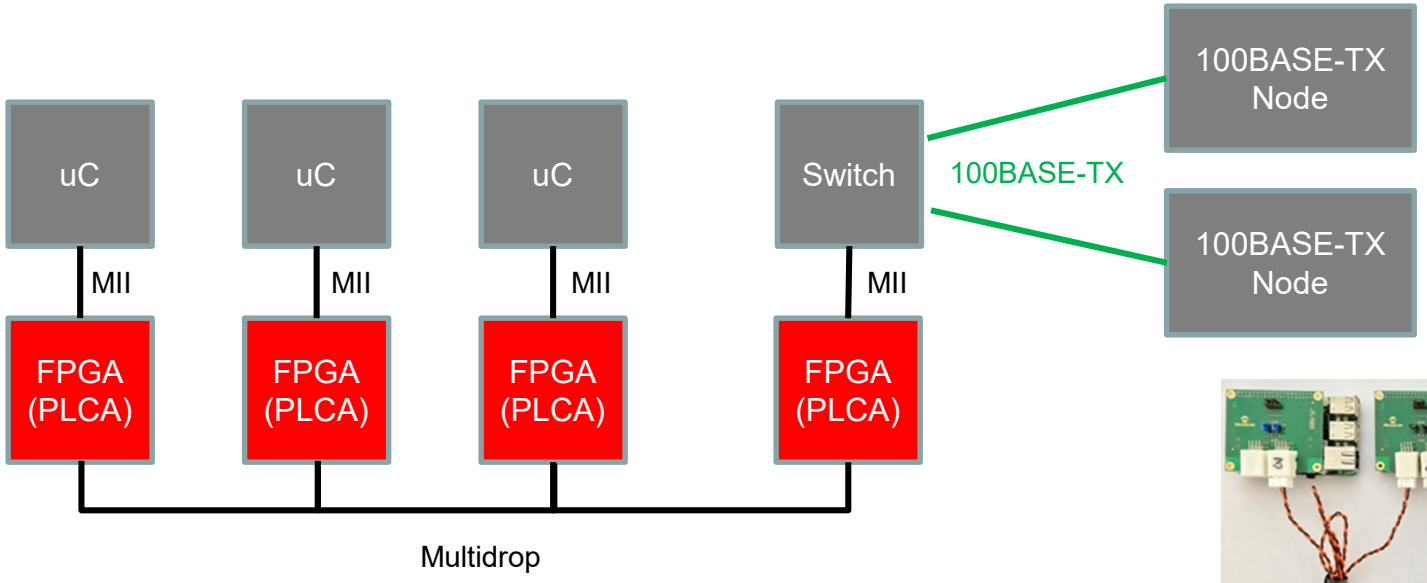
Tim Baggett

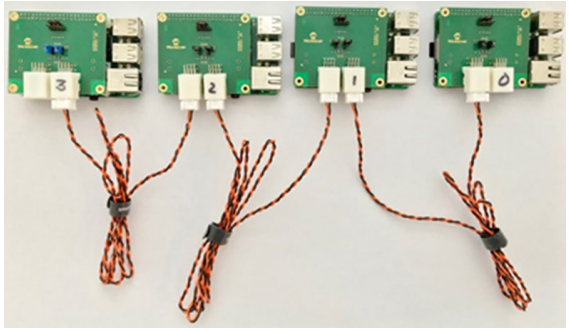
Hongming An

IEEE 802.3cg Task Force – Long Beach – January 2019

Example Configuration

- Tested PLCA in an FPGA implementation
- Connected the FPGA via standard MII to multiple microcontrollers
- Connected via standard MII to Ethernet switches





Test Results

- Verified with all MACs tested
  - Very old MACs
  - Very new MACs using latest available IPs
- Verified in mixed environment with 100BASE-TX
- High bandwidth utilization as theoretically expected
  - Used iperf3 between multiple pairs of stations
  - ~95% throughput
    - Remaining ~5% due to PLCA and protocol overhead
    - Collisions avoided
  - No packet loss
- Equal transmit opportunities among stations under high network load
  - Equal bandwidth among stations stressed with iperf3

Thanks!