



David Riddoch

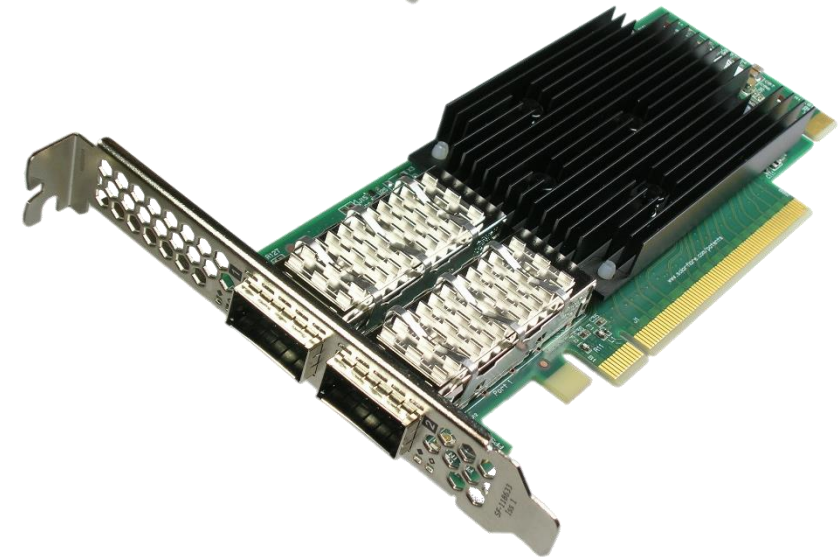
FEC off

November 15th 2018

ExtremeScale™ X2 Highlights



- Next Generation Adapter
 - 10, **25**, 40, **50**, **100G** Ethernet
 - 25% latency reduction
 - 23% frame rate increase
- Precision time on all adapter SKUs
 - Stable Stratum 3E oscillator
 - Hardware time stamps every frame
 - Time synchronization via PTP and PPS
 - Synchronizes host clock and adapter clocks
 - Improved hardware timestamp precision
- Security
 - Tamper resistant, signed firmware
 - Integrated firewall
- Overlay network acceleration
 - VXLAN, NVGRE, Geneve, OVS

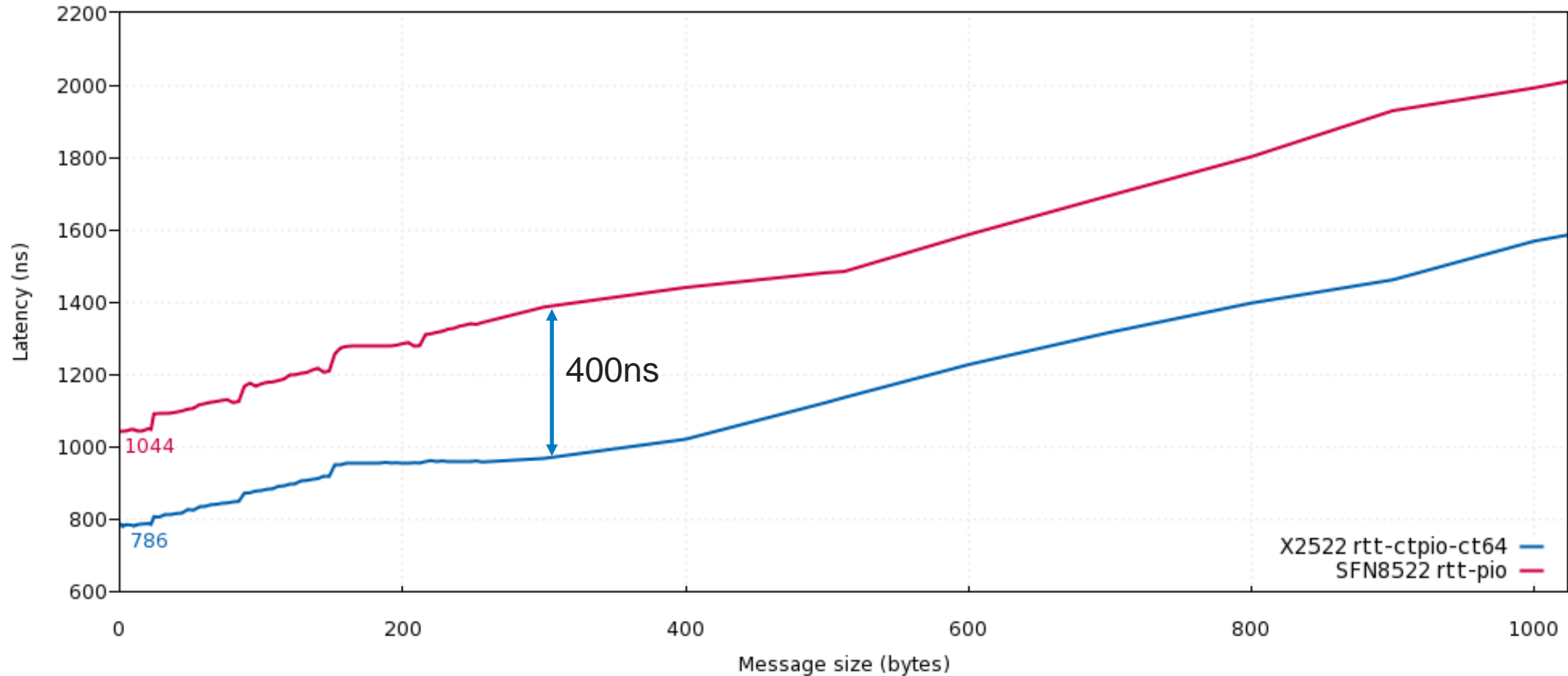


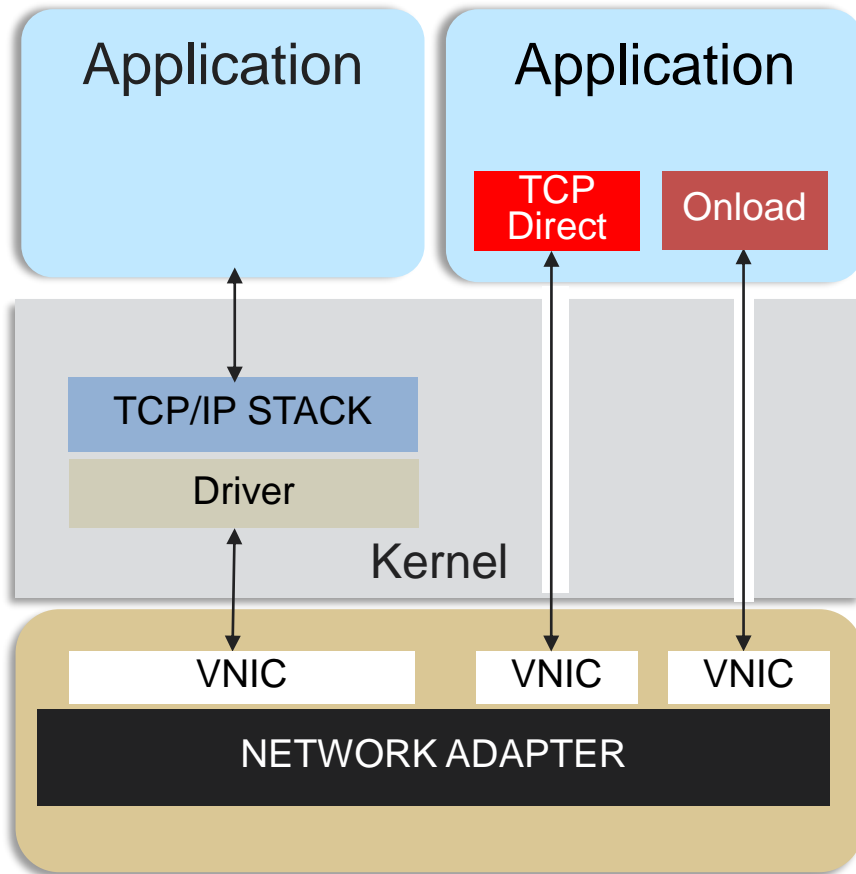
X2522 hardware latency improvement



Not a STAC Benchmark

Mean layer 2 latency: Skylake Intel Xeon CPU E3-1270 v5 3.60GHz





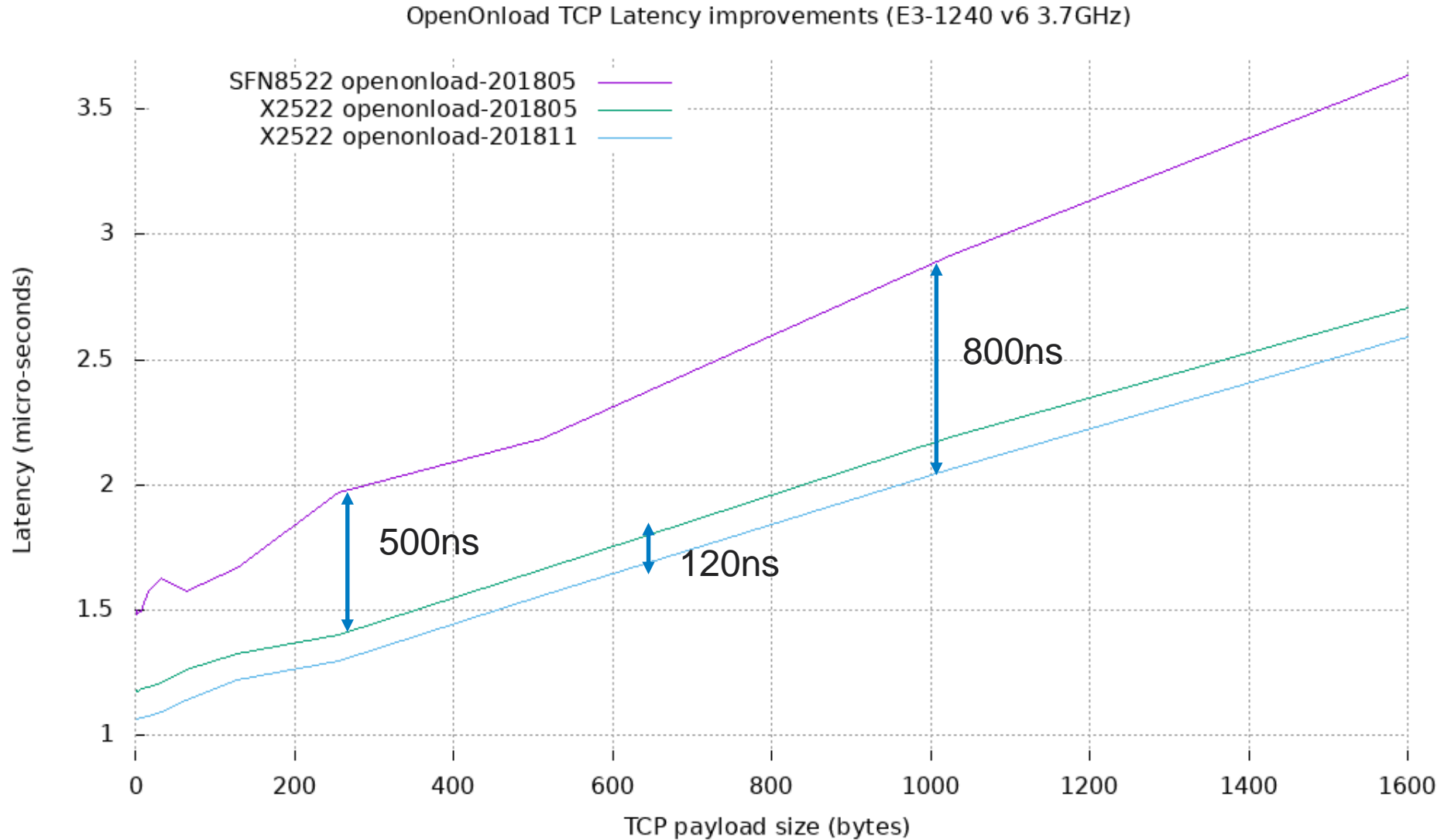
New features in openonload-201811

- Reduced latency for BSD sockets API
 - TCP latency reduced by ~130ns
- TCPDirect bonding
 - Up to 4 interfaces
 - Active-backup
 - LACP with layer2, layer2+3 and layer3+4
- TCP improvements
 - Congestion control, loss recovery, scaling

Latency improvements this year

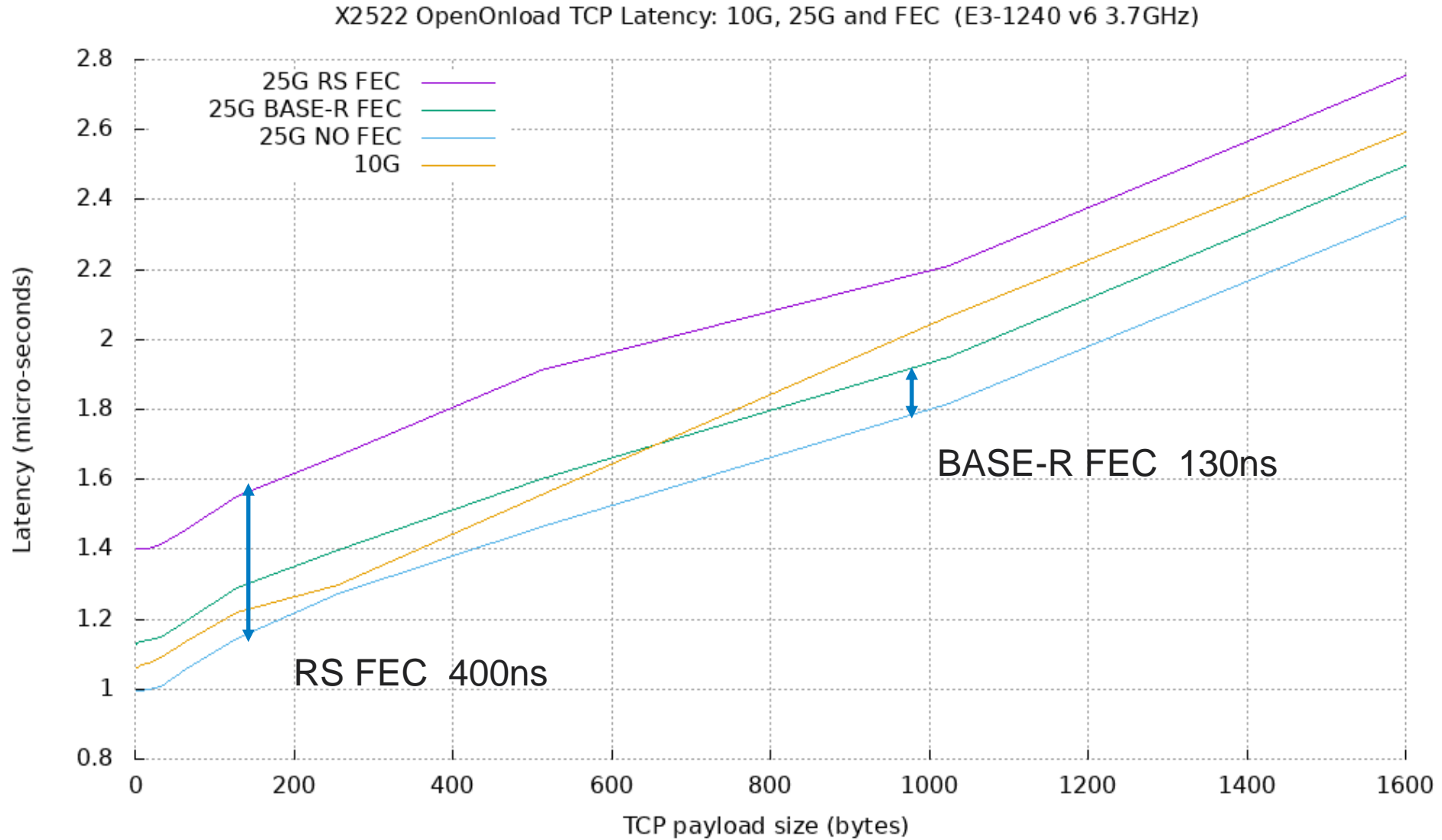


Not a STAC Benchmark



25G Latency

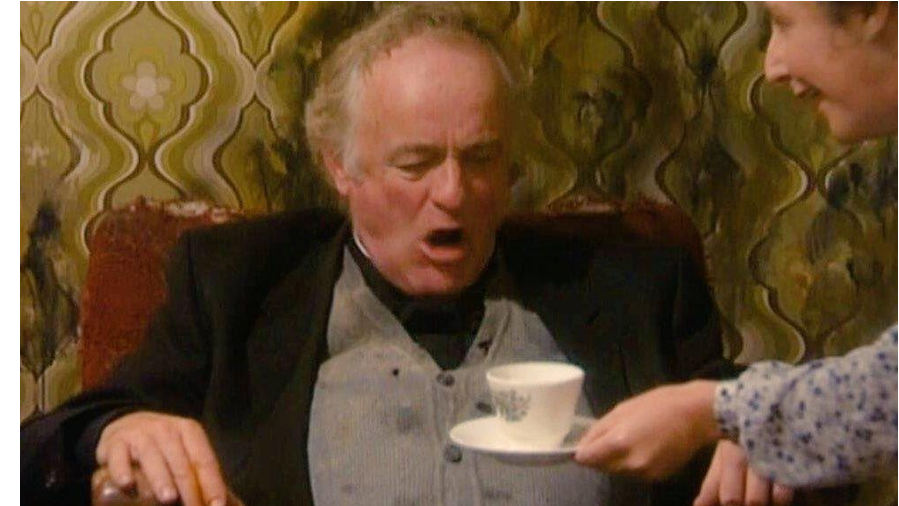
Not a STAC Benchmark



25G Cabling

Forward Error Correction (FEC)

- Reduces bit error rate
- Types of FEC
 - 25G: BASE-R FEC (Firecode) and RS-FEC (Reed Solomon)
 - 100G: RS-FEC only
- FEC increases latency
 - RS FEC $\geq 250\text{ns}$ and BASE-R FEC $\geq 80\text{ns}$ (at 25G)



3 types of DAC cables

- CA-25G-L: up to 5m, requires RS-FEC
- CA-25G-S: up to 3m, lower loss requires either RS-FEC or BASE-R FEC
- **CA-25G-N**: up to 3m, even lower loss can work with RS-FEC, BASE-R FEC, or **FEC off**



USE THIS

Length	AWG	Type
0.5	30	CA-N
1	30	CA-N
2	30	CA-S
2	26	CA-N
3	30	CA-L
3	26	CA-N
5	26	CA-L

Solarflare ANTS Technology



Algo-Logic's Trading Solutions:

- Detect a trigger event and send out an order in nanoseconds
- Significantly reduce time to market with pre-built solutions allowing trading firms to instantly start trading



ULTRA-LOW LATENCY SOLUTIONS FOR TRADING BASED ON LDA LIGHTSPEED TCP



NOVAsPARKS and SOLARFLARE: A Full FPGA Tick-to-Trade Development Platform