



Solarflare Update

TCPDirect, sfptpd and ANTS

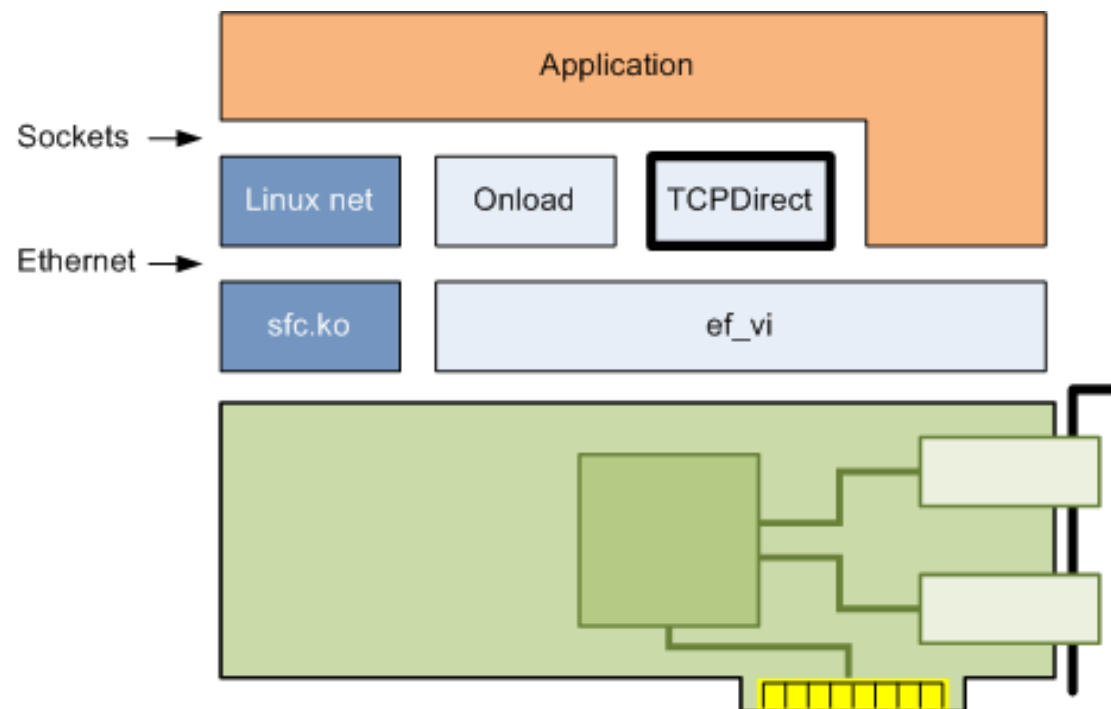
Davor Frank

June 2017

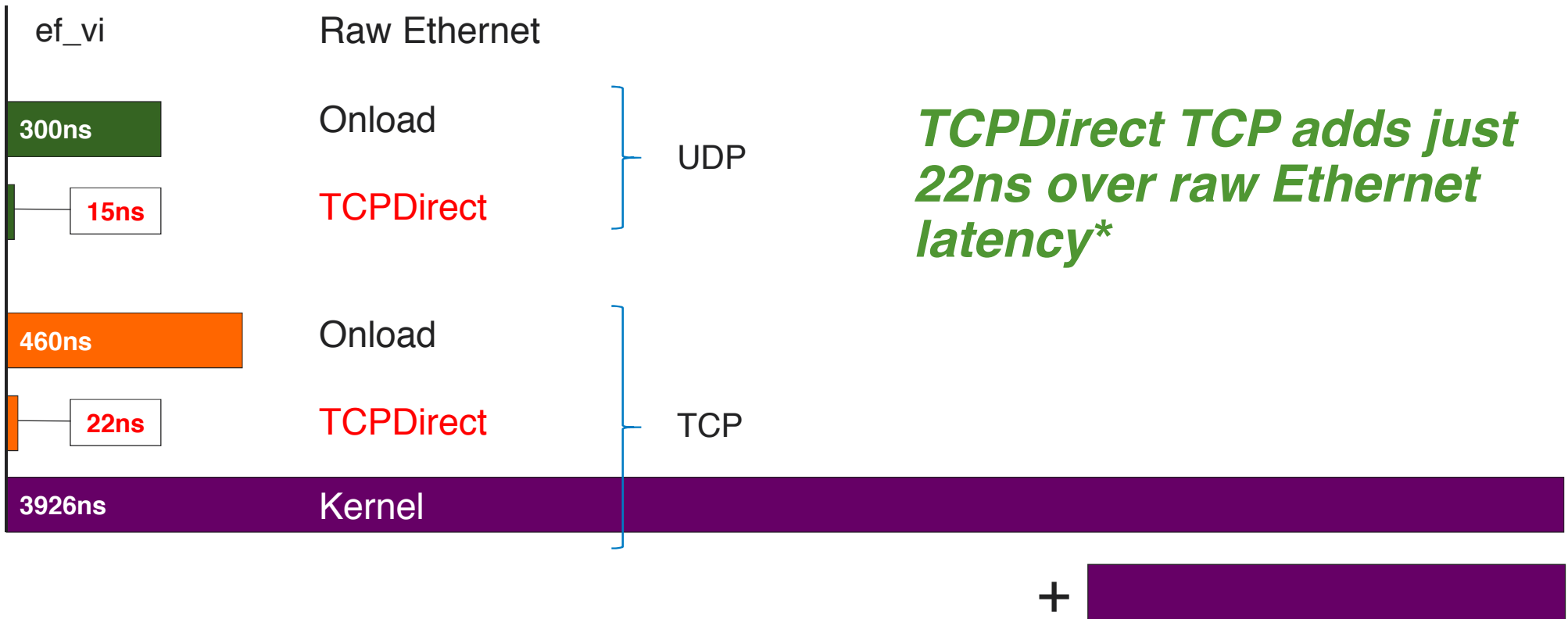
TCPDirect



- Sockets-like API supporting TCP and UDP (unicast, multicast)
- Much lower latency than Onload
- Much easier to use than ef_vi
- Stable API and ABI
- Included with SFN85x2-Onload and SFN85x2-PLUS



Latency Contribution (half round-trip)





TCPDirect features

- Easy to adapt code from BSD sockets API
 - Analogues for standard calls: socket, bind, listen, accept, send, recv, epoll
- Almost all data-path calls are non-blocking
 - Suitable for event-driven programming models
- Zero-copy receive
 - Maximum efficiency, especially when filtering
- Integrated with OS control plane
 - Supports VLAN interfaces
- Multiplexer to support multiple sockets
- 'Waitable FD' for integration with select/poll/epoll

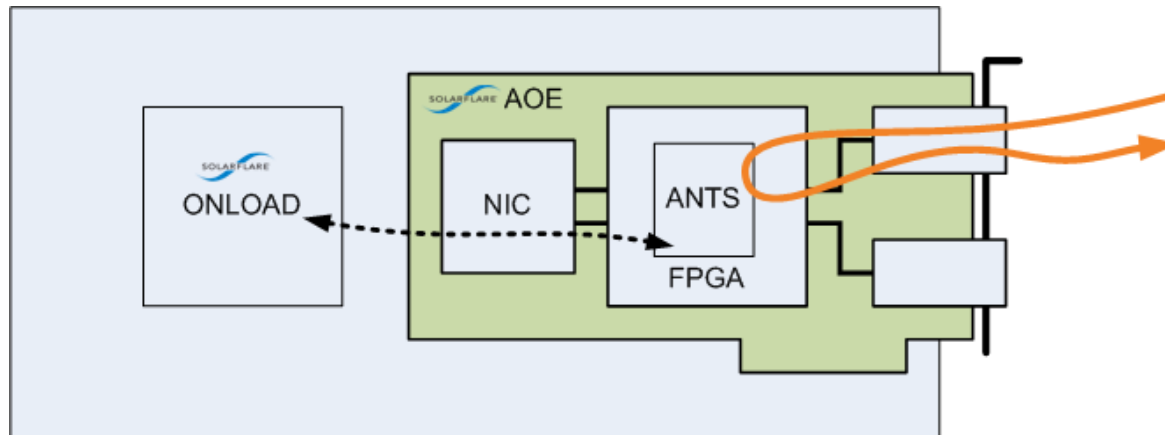
sfptpd v3.1 High accuracy time synchronisation



- Supports multiple active time sources: PTP, NTP, PPS, free-run
- Manual or automatic time source selection, with fall-back
- Much improved timestamp filtering and rejection
 - Improves accuracy on networks with jitter
- Hardware timestamps supported over bonded network interfaces

Solarflare ANTS: TCP stack for FPGA

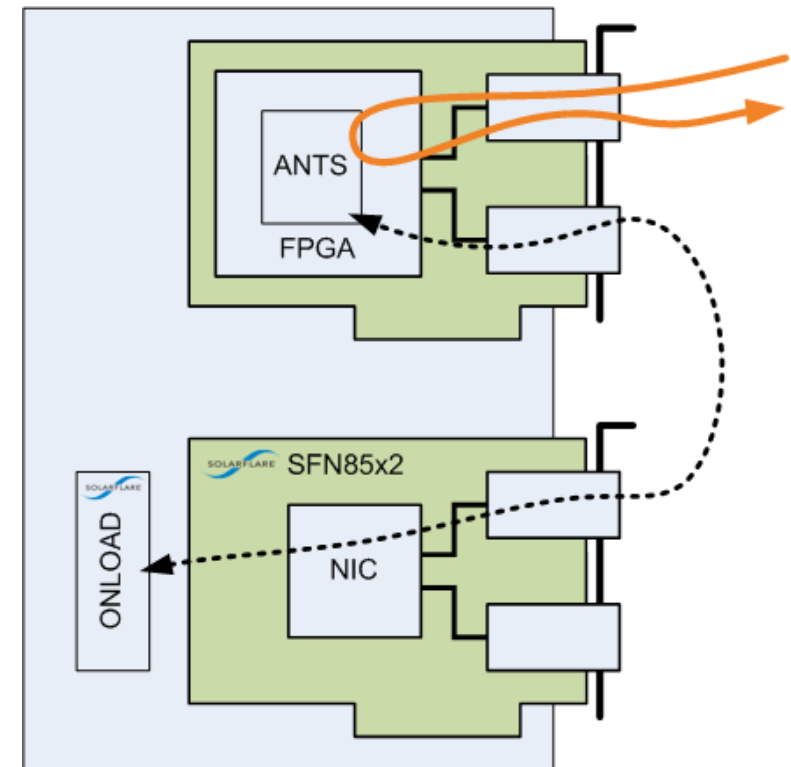
- Extreme low latency TCP solution for FPGA
- Available on Solarflare's AOE2 FPGA adapter
- TCP fast path in FPGA, with control paths handled by Onload in software



ANTS technology now available from LDA



- LDA Lightspeed TCP™
 - Supporting a variety of FPGA platforms
 - TCP transmit and receive fast paths in FPGA
 - Lightweight:
 - Scales to many TCP connections
 - Uses few FPGA resources
 - Does not require DDR or QDR
 - Feature-rich TCP implementation



Summary



- **TCPDirect** Lowest-latency software TCP and UDP stack
- **ANTS** Lowest latency TCP on FPGA
now available from LDA
- **sfptpd** High accuracy time synchronisation
now with multiple time sources and
NTP fall-back