



Shaving nanoseconds: pushing the frontiers of low- latency networking

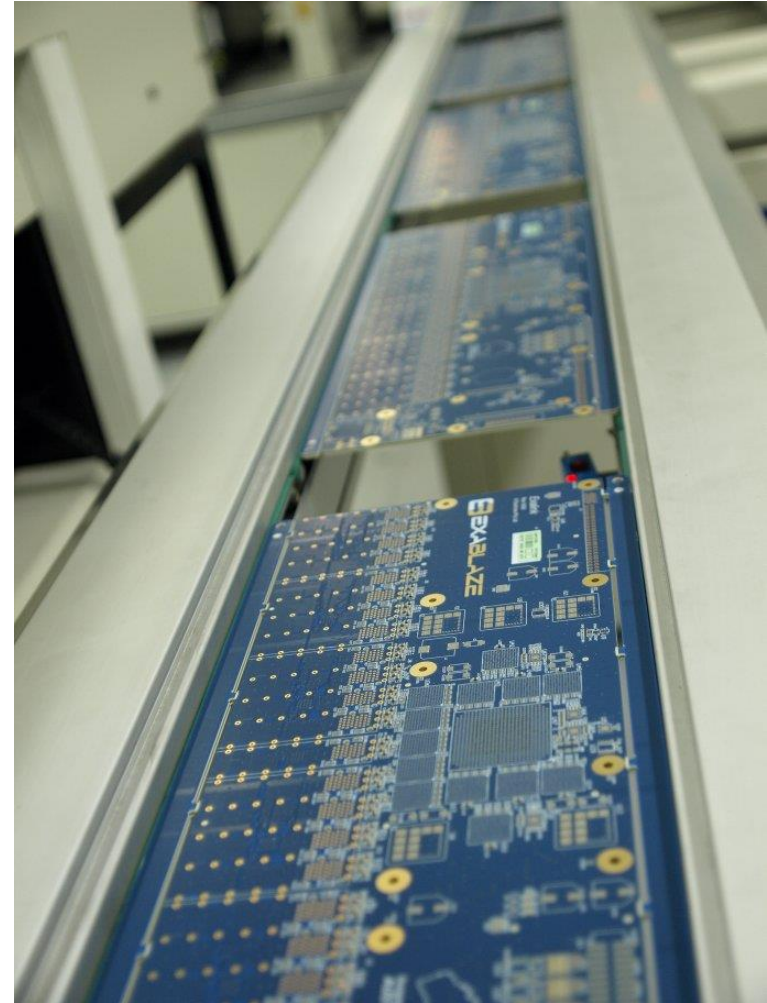
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STAC Innovation Roundup, Fall 2013

EXABLAZE

- Introduction
 - Who we are
- Products and use cases
 - ExaLINK
 - ExaNIC



ExaLINK 50

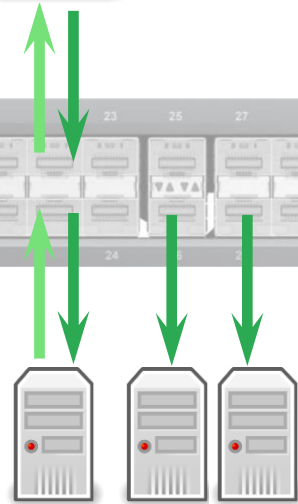
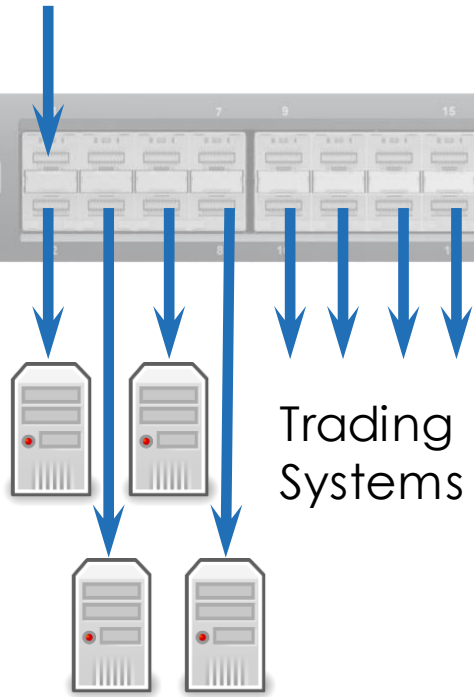
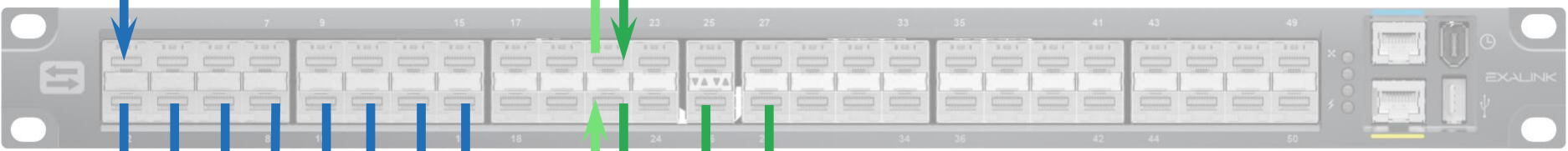
Low latency Layer 1 circuit switch



- Any to any / any to many
- Less than 5ns latency

ExaLINK Use Case 1

Market data distribution



ExaLINK Use Case 2

Electronic patch panel



Exchange



Switch



Primary server



Backup server

ExaLINK Use Case 3

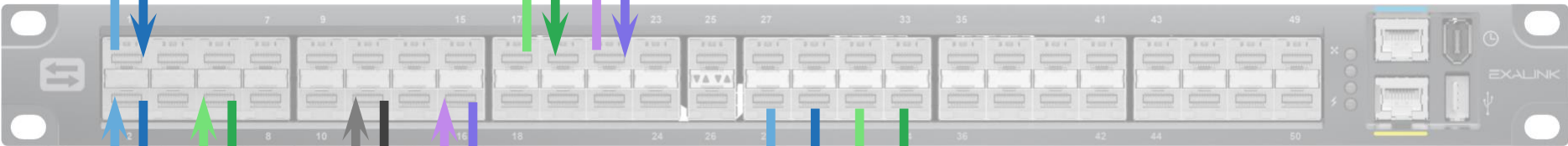
Network monitoring



Exchange



Switch



Primary server



Backup server



Monitoring server

ExaNIC X4

Low latency network interface card



- Latency as low as 950ns*
(wire to application to wire, or application to wire to application)
- Built-in time stamping, port mirroring and bridging

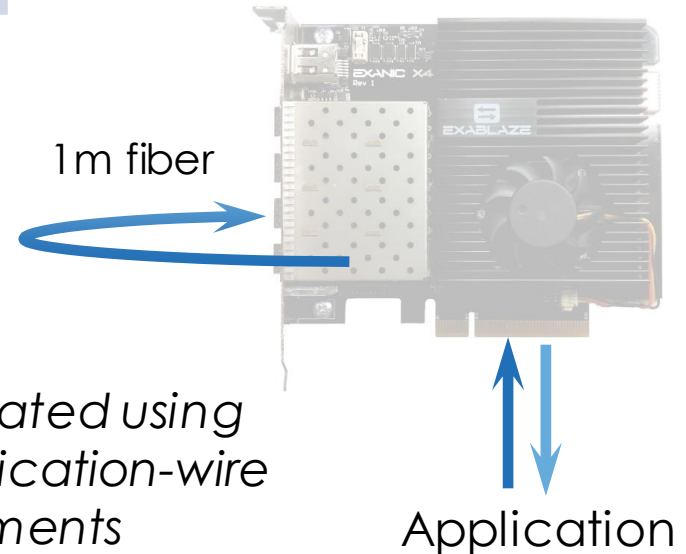
* NOT STAC BENCHMARKS

ExaNIC Performance

Breaking one microsecond



Basic test setup



Test*	Small frames	Large frames
Raw (libexanic)	0.95 μ s	2.66 μ s
UDP (libzip)	1.06 μ s	2.86 μ s
TCP (libzip)	1.10 μ s	2.90 μ s
	(~64 bytes)	(~1500 bytes)

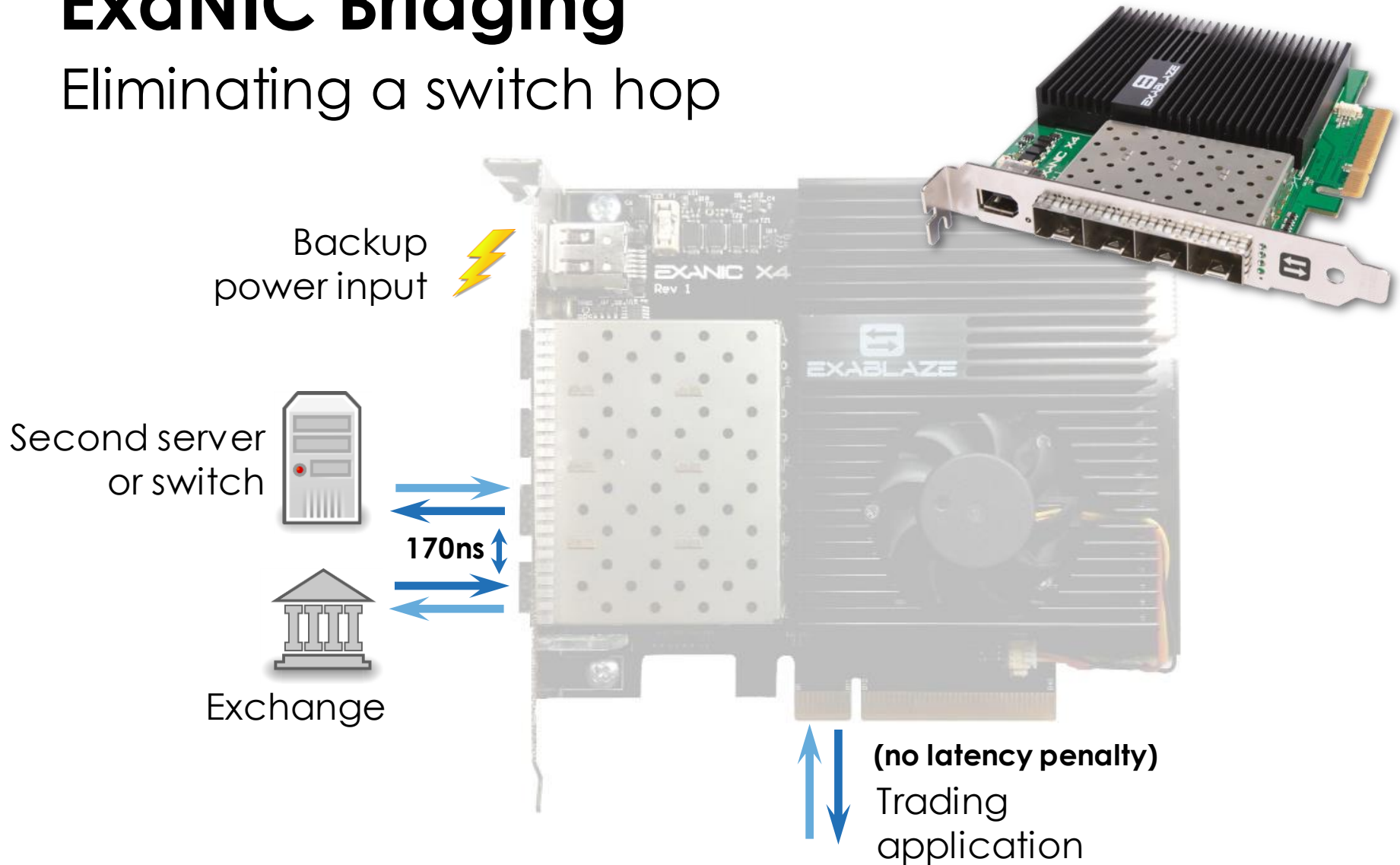
Processor: Intel Sandy Bridge EP 2.90 Ghz
 All checksums generated and verified
 More details available on request

Also validated using wire-application-wire measurements

* NOT STAC BENCHMARKS

ExaNIC Bridging

Eliminating a switch hop



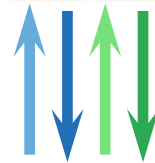
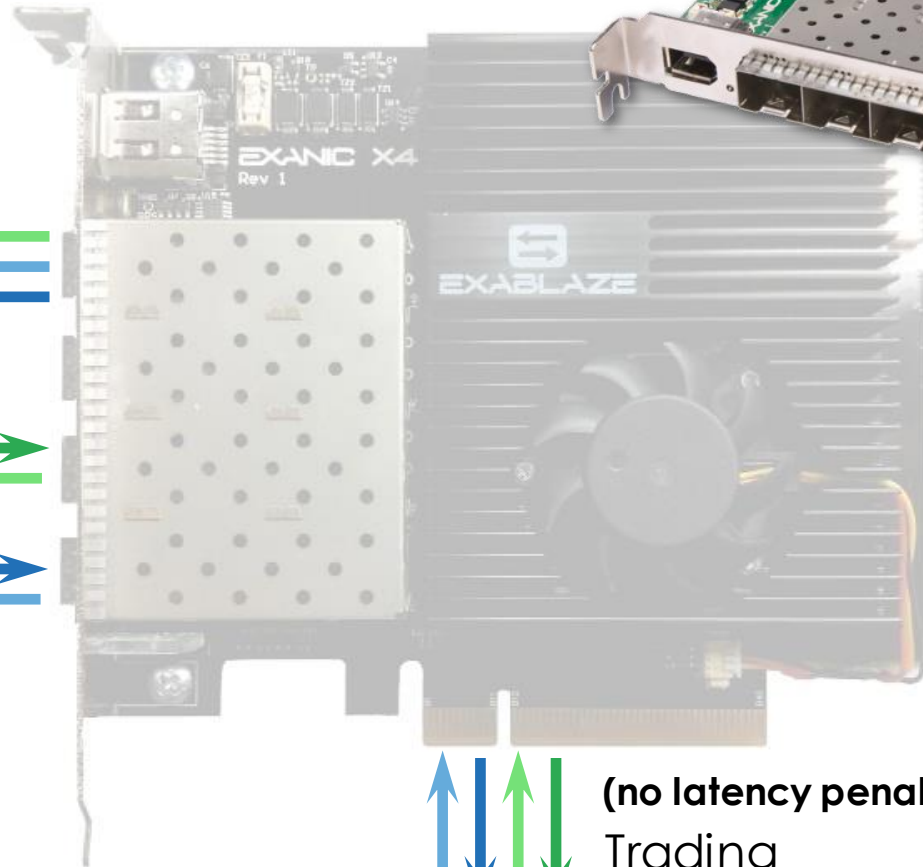
ExaNIC Port Mirroring

Monitoring selected streams

Monitoring server



Switch



(no latency penalty)
Trading application

Thank you

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