The bridge to possible

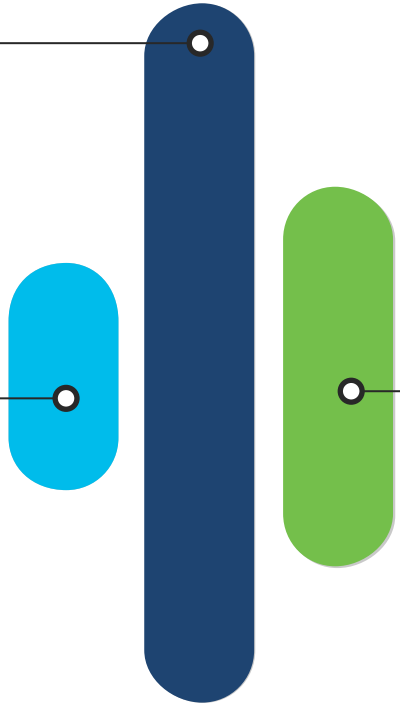
Nexus 3550 & Nexus SmartNIC

Solution Overview

Daniel Brown
Technical Solutions Architect, Nexus ULL

May 2021

Nexus Ultra Low Latency Portfolio



Network Interface Cards

- <600ns Wire-Application-Wire Latency
- Raw Interface API

HP Timestamping

- ~ picosecond resolution

L1 and L2 switching

- ~3-5ns Latency
- Highest Density L1 Switch

L3 switching

- FPGA Programable Platform

FPGA Development Platform

- Firmware Development Kit
  - ✓ Programmable platform and SmartNICs

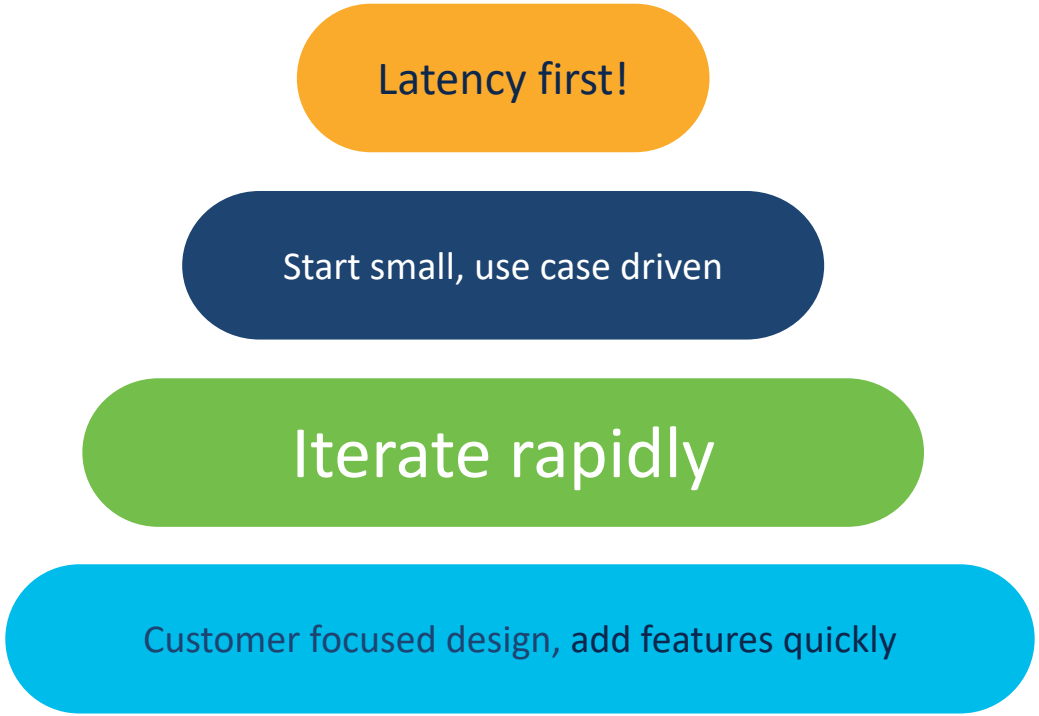
Not a STAC Benchmark

Addressing the Race to Zero in Financial Networking

Single ULL platform for HFTs with Nexus 3548 (L3) and Nexus 3550 (L1/Mux) capabilities	• L3 <200ns • L1 <5ns • Mux <40ns
The next gen L3 switch for Exchanges & Financial enterprises	• L3 <200ns • Fairness • Multicast Scale
Next-decade's 25/50G ASIC	• 10G -> 25G/50G
Low Latency	• Main competitive factor in financial infrastructure

Not a STAC Benchmark

Nexus 3550-T Design Philosophy



Applications	Key Features	Use Cases
 ULL Layer 3 Router	• Static Routing • BGP • PIM • OSPF	• Exchange Facing handoff • Top-of-Rack Colo switch
 ULL Layer 2 Switch	• MAC learning • VLAN tagging/trunking • LLDP • IGMP • STP	• Ultra Low Latency Layer 2 Fabric • Many to Many (N:N)
 Simulated L1	• Low Latency Data Distribution • 1G,10G,25G Support	• Data Distribution in Colo • One to Many (1:N)
 FastMux	• Low Latency L2 Packet aggregation • 1G,10G,25G Support	• L2 Packet aggregation in Colo • Many to one (N:1)
 Security	• Per Port RACL Filtering • Unicast NAT/PAT • Multicast NAT	• Low latency firewall • Exchange distribution to trading floor
 High Availability	• Link Aggregation (LAG) • MC LAG • VPC	• Exchange Facing Handoff Redundancy • Top-of-Rack Colo switch

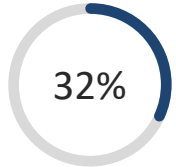
Not a STAC Benchmark

Applications	Key Features	Use Cases
 Exchange Gateway	• Precise Timestamping (RX and TX) • <250 ps High • 8GB Deep Buffer	• Timestamping at Exchange Gateway • Fairness in Exchange
 Data Broker	• Packet De-duplication • SSL/TLS Encryption	• Used with Nexus Data Broker to detect and drop duplicated packets
 Wan Extension	• Wan Link Policing • 1G support	• Low latency link aggregation for long-haul link sharing • VLAN tagging and trunking
 Grand Master	• Rubidium Oscillator • Time Sync (Inc GPS, PPS) • PTP (GM/Boundary)	• Grand Master clock
 Tap Agg	• Precise Timestamping (RX and TX) • Time Sync (Inc GPS, PPS) • PTP (GM/Boundary) • <250 ps High • 8GB Deep Buffer	• Network Visibility • Market data capture and aggregation
 Customizable	• FDK (Firmware Development Kit)	• Deep Packet inspection • Custom trading application

Not a STAC Benchmark

Nexus 3550-T Performance Highlights

- Minimum latency 96ns
- Maximum 159ns
- Speedup vs 3548 - 16-48%. On average 32% quicker
- The only way is down



Not a STAC Benchmark

The bridge to possible