Toward Research Commodity 100Gb/s

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NetFPGA = Networked FPGA

A line-rate, flexible, open networking platform for teaching and research

- Network Interface Card
- Hardware Accelerated Linux Router
- IPv4 Reference Router
- Traffic Generator
- Openflow Switch
- More Projects
- Add Your Project
NetFPGA Family of Boards


NetFPGA-10G (2010)

NetFPGA-1G-CML (2014)

NetFPGA SUME (2014)
Introducing NetFPGA SUME

- FPGA Xilinx Virtex7
- 4 SFP+ Cages
- 18x13.1Gb/s Additional Serial Links
- PCIe Gen.3 x8
- QDRII+-SRAM, 3x72Mb, 500MHz
- DDR3 SoDIMM, 2x4GB, 1866MT/s
- Expansion Slot
- Micro-SD
NetFPGA SUME
A Technology Enabler

Stand Alone Device

100Gb/s Switch

PHY & MAC

PCle Host Interface

Interconnect
100Gb/s Aggregation

• A development platform that can aggregate 100Gb/s for:
  – Operating systems
  – Protocols Testing
  – Measurements

• NetFPGA SUME can:
  – Aggregate 100Gb/s as Host Bus Adapter
  – Be used to create large scale switches

Non-Blocking 300Gb/s Switch

Cost: ~$5000
Physical Interface Design

- A deployment and interoperability test platform
  - Permits replacement of physical-layer
  - Provides high-speed expansion interfaces with standardised interfaces
- Allows researchers to design custom daughterboards
- Permits closer integration
Power Efficient MAC

• A Platform for 100Gb/s power-saving MAC design (e.g. lights-out MAC)
• Porting MAC design to SUME permits:
  – Power measurements
  – Testing protocol’s response
  – Reconsideration of power-saving mechanisms
  – Evaluating suitability for complex architectures and systems
Interconnect

- **Novel Architectures with line-rate performance**
  - A lot of networking equipment
  - Extremely complex

- **NetFPGA SUME allows prototyping a complete solution**
Summary

• Board is now prototyping, expected to be available H2/14

• Part of a large NetFPGA package
  – Reference projects, drivers, apps, wiki, etc.

• Want to gain early access? Become a beta tester?
  – Let me know!
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