IDC HPC USER FORUM
APRIL 7, 2014

Eric Hayes
Vice President Platform Marketing
Infrastructure Networking Group
ABOUT BROADCOM

2013 Net Revenue of $8.31 Billion

Founded in 1991

Initial Public Offering in April 1998 (NASDAQ-BRCM)

A Global Leader in Semiconductors for Wired and Wireless Communications

Broad IP Portfolio with More than 19,850 U.S. and Foreign Patents and Applications

One of the Largest Volume Fabless Semiconductor Suppliers

~12,050 Employees Worldwide
BROADCOM IS INVESTING IN PROCESSORS FOR EVERY BUSINESS

**Home**
- BCM7445: World's Best Gateway
  - Quad Core 1.5GHz
  - 28nm, 1.8 Billion Transistors

**Hand**
- 4G LTE SoCs
  - Application Processors
    - ARM 64 bit V8 Lead Licensee

**Infrastructure**
- Technology Leadership
  - Highest performance SoC
    - 20 Quad Threaded CPUs
    - 300Gbps Multi-Chip Coherency
    - 180Gbps I/O

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1,060 Processor licenses
350 Semiconductor partners
5+ Foundry partners
1100+ Connected community members

http://www.50billionchips.com
VULCAN – 1ST 16 NANOMETER ARMV8 SERVER CLASS CORE

Intel Xeon Haswell x86 – Microarchitecture

- Branch Prediction Unit
- Pre-Decode
- Instruction Queue
- X86 Decoder
- Rename

- 192 Entry ROB
- 32 KB L1I
- Loop Buffer + Predictor

- ALU
- ALU
- ALU/BR
- LD
- LD/ST
- LD/ST
- ST Data
- 256 KB 8 Way L2
- 32 KB 8 Way L1D

Scheduler

- 1024 Entry L2 TLB

Broadcom Vulcan ARM v8 - Microarchitecture

- Multi-history Branch Predictor
- RAS
- IND
- Fetch

- 180 Entry ROB
- ARMv8 Decode

- 60 Entry Unified Scheduler
- 4 uops

- ALU
- ALU
- ALU/BR
- LD/ST
- LD/ST
- ST Data
- 256 KB 8 Way L2
- 32 KB 8 Way L1D

Fetch

- 8 instructions

Projected Socket Level Throughput

- Vulcan is highest performance ARMv8 CPU
- 90% of Haswell per thread performance
- Will exceed competitive server platforms on a socket level

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WHAT IS THE RIGHT BALANCE FOR YOUR APPLICATION?

Memory Bandwidth

Core Performance

I/O Throughput
PLEASE MEET WITH US TO DISCUSS YOUR NEEDS

- Chuck Tato – Vulcan Product Management
- Kumaran Siva – HPC Product Marketing
- Mark Litvack – Ecosystem Partnerships
- Nick Ilyadis – CTO Infrastructure Networking Group

Ethernet Networking Leadership

ARM Processor Leadership
THANK YOU