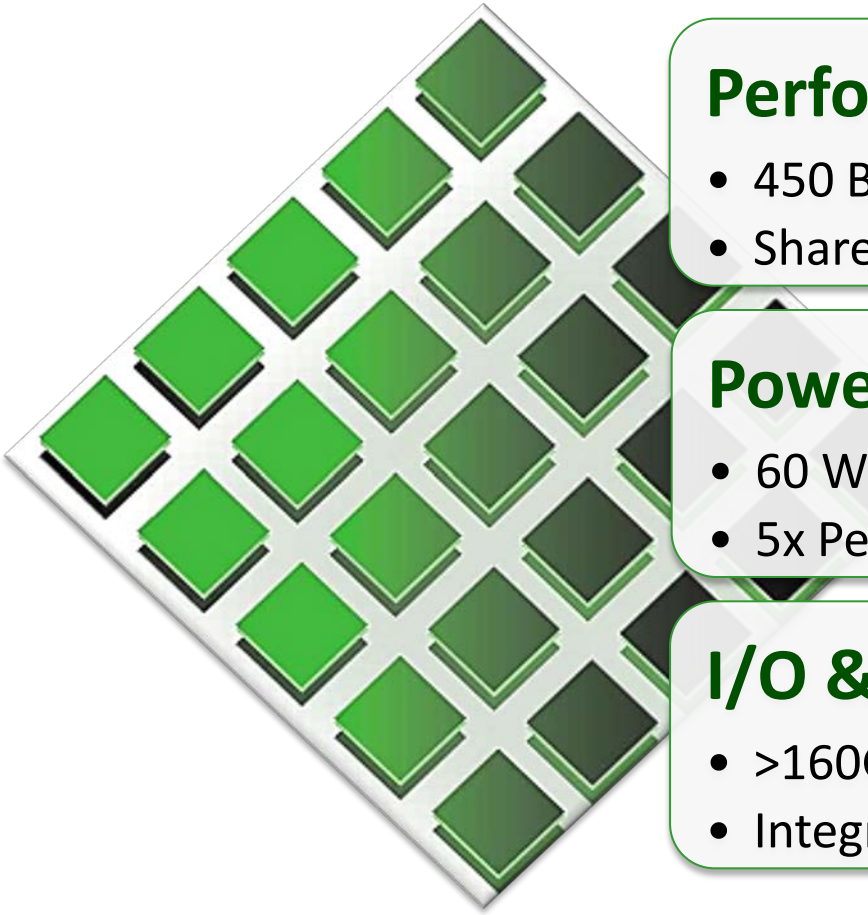
The TILE-Gx Processor: Enabling HPC through Massive-Scale Manycore

Bob Doud
Director of Processor Strategy, Tilera Corp.

HPEC, September 2011

Tilera TILE-Gx Family

Manycore Processors with up to 100 Cores



Performance

- 450 BOPS on a single TILE-Gx processor
- Shared, coherent cache across all cores

Power Efficiency

- 60 Watts typical power dissipation
- 5x Performance-per-Watt of x86 class CPUs

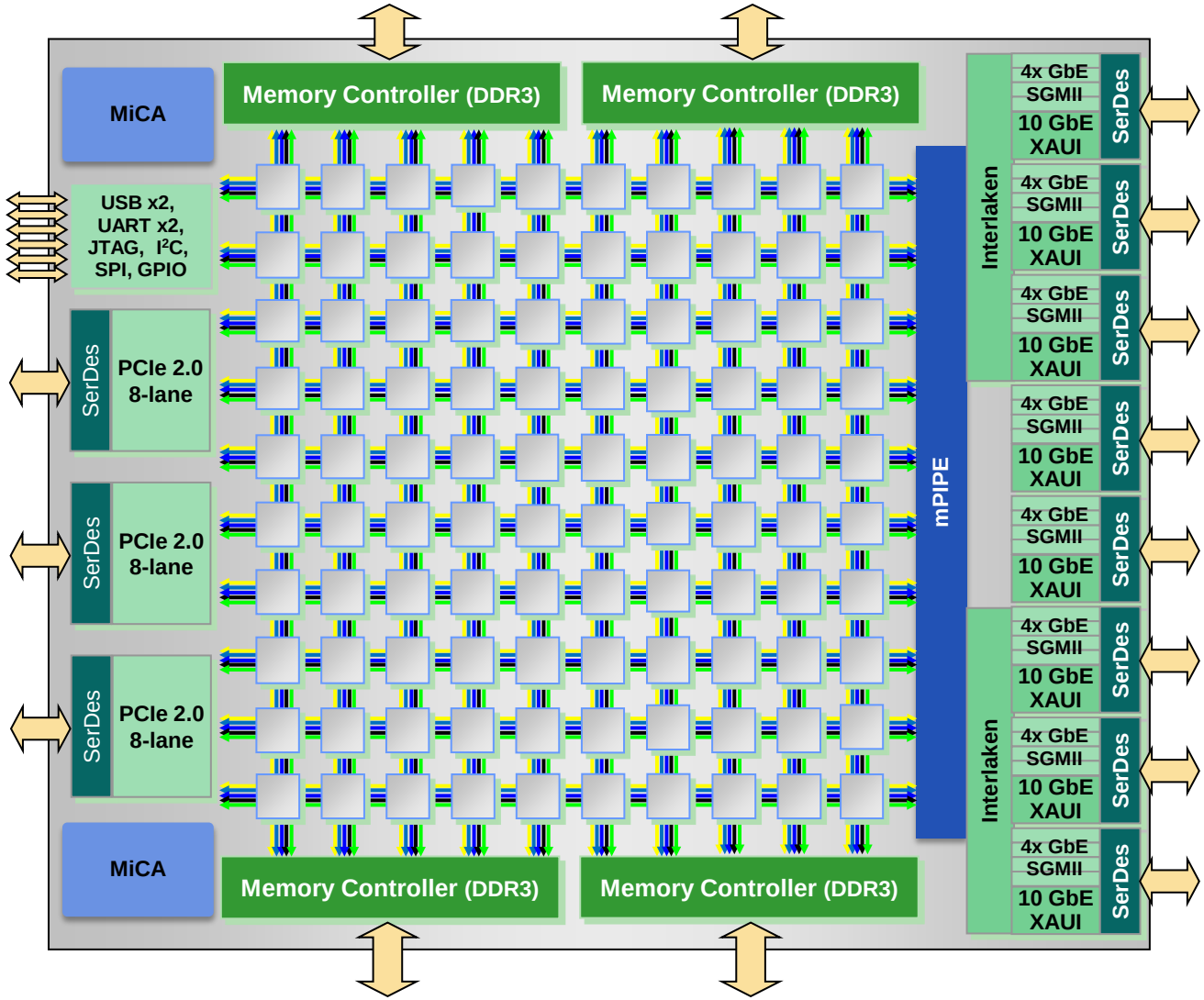
I/O & Connectivity

- >160G of I/O on the processor
- Integrated quad DDR3 memory controllers

© 2011 Tilera Corporation

The TILE-Gx8100™ Processor:

System-on-a-Chip with 100 64-bit cores



450 BOPS

32MBytes Coherent Cache

~60 Watts

Runs SMP Linux

© 2011 Tilera Corporation

Peta-Op Integer Compute at <500KW

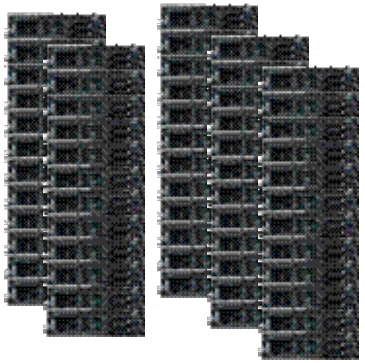
2250 Tile Processors = 1.012 Peta-Ops

- TILE-Gx100 Processor:
  - 3-way core, 1.5GHz, 100 cores = 450 BOPS per chip

- 1 Tilera Server Shelf:
  - 3U rack space; 12 blades, 3 processors/blade

- 1 Tilera Rack;
  - 13 Shelves, 468 processors, 46,800 cores

- 5 Tilera Racks;
  - 2250 processors, 225,000 cores; ~450 Kilowatts



5 Racks

Up to 180 Tbps of I/O
288 TBytes DDR3 Memory

© 2011 Tilera Corporation

TILE-Gx Enables a Range of HPC Applications

Real-Time Informatics

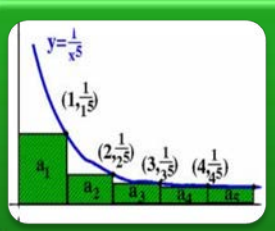
- Cyber Security Data Harvesting
- Threat Analysis / Forensics

Video Surveillance & Analysis

- Image compression/decompression
- Target Tracking / Pattern Recognition

Network Security Processing

- Intrusion Prevention (IPS/IDS)
- Data Leakage Protection (DLP)



Integer Compute

- Hyper-Scale Integer Computing
- Compute-Intensive SIMD & DSP

© 2011 Tilera Corporation

Thank You

- Please stop by our table outside the auditorium
- TILE-Gx processor solutions on display
- We'll be happy to discuss your HPC requirements

© 2011 Tilera Corporation