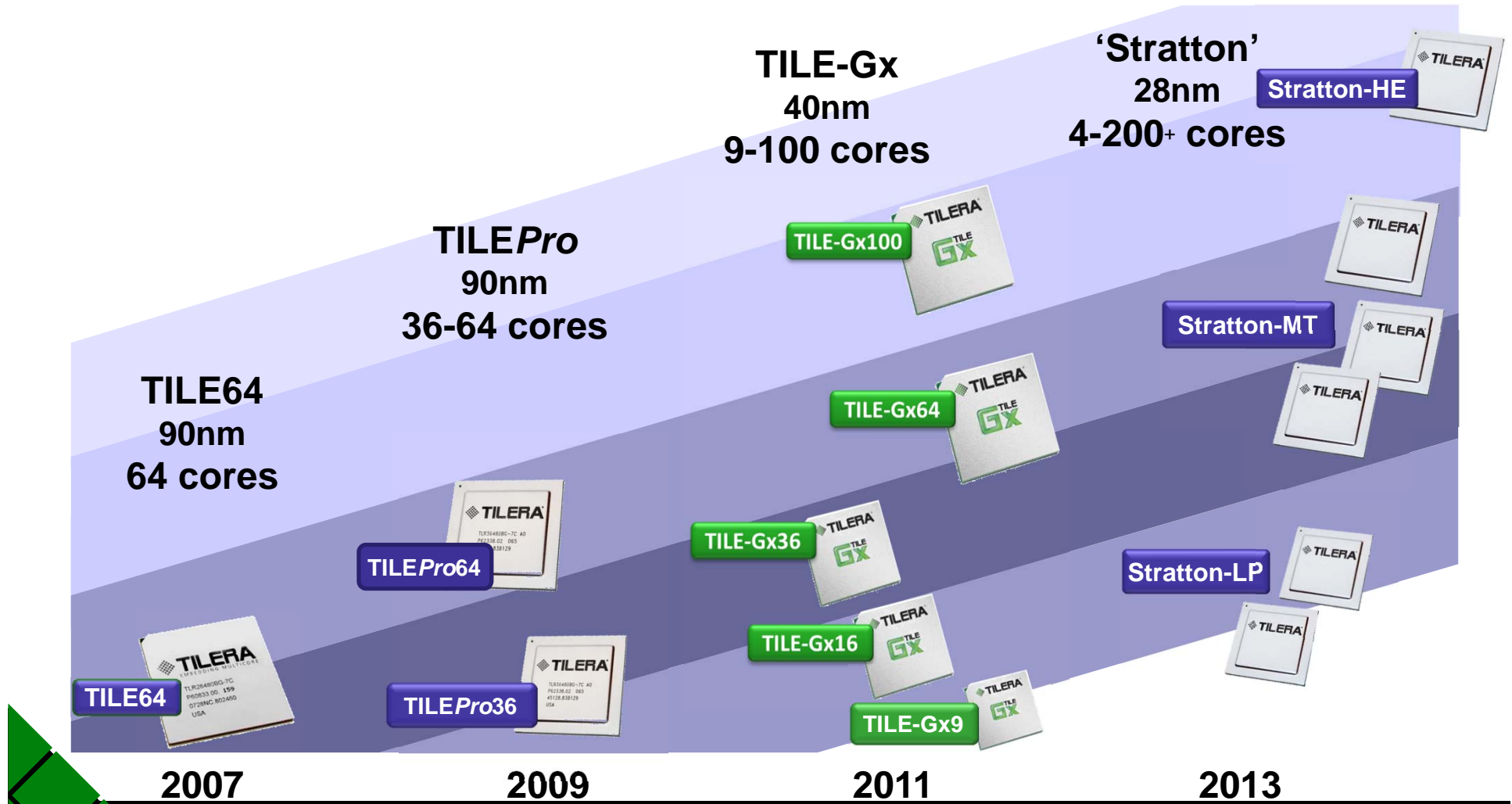

Tile Architecture Many Core CPU

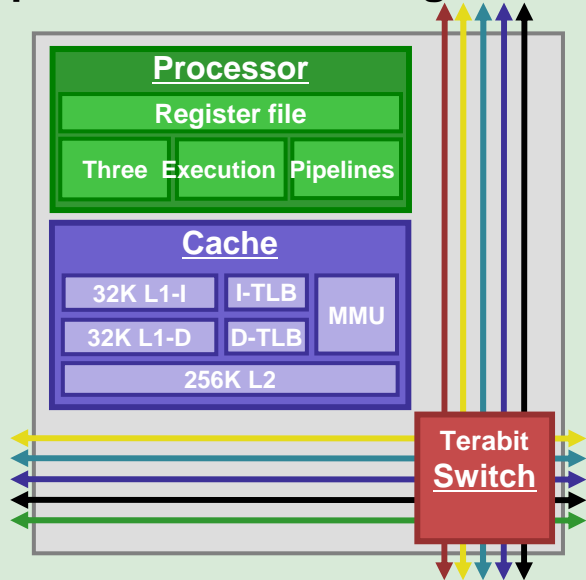
Leadership in Performance-per-Watt



Scalable performance and power efficiency through distributed architecture using iMesh

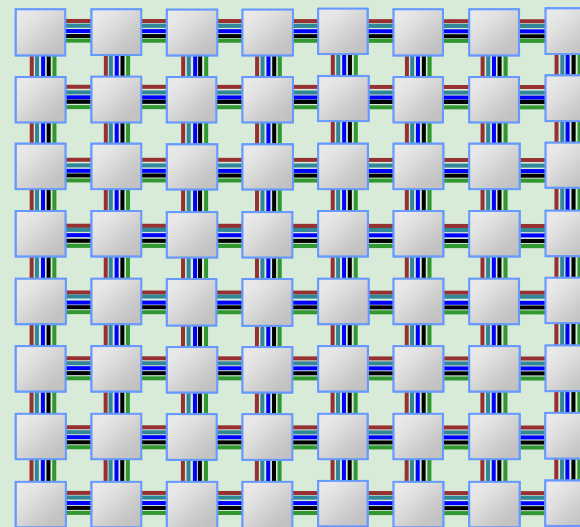
TILE Architecture

Complete cores with integrated cache



Tile = Core + Switch

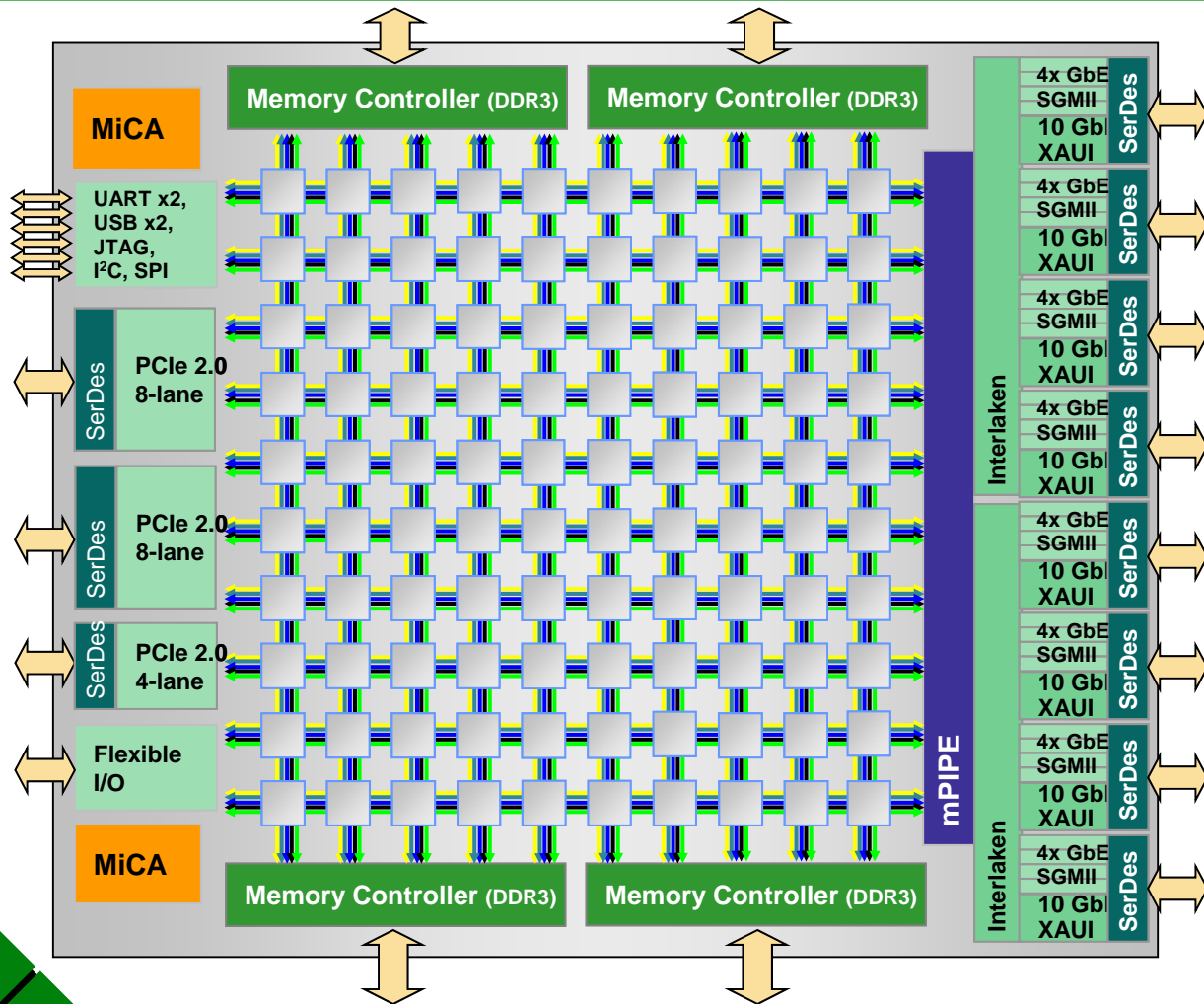
2 Dimensional on-chip mesh network



iMesh = 200 Tbps* on-chip bandwidth

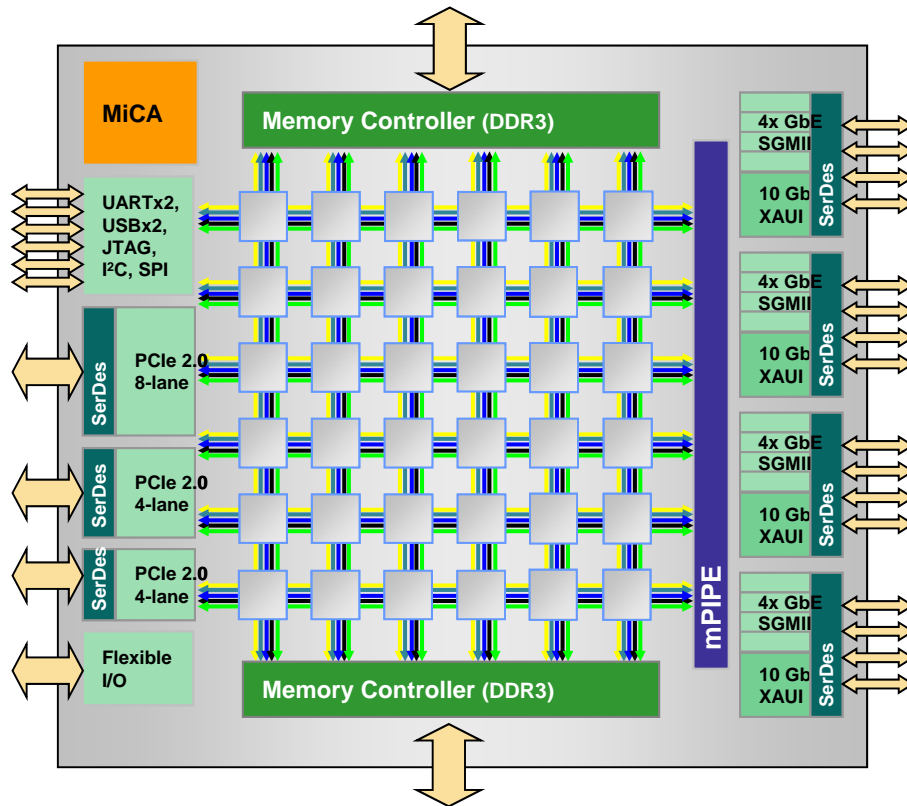
*Based on TILE-Gx100

TILE-Gx100: High end system-on-a-chip



- ◆ 100 Processor Cores
- ◆ 1.25GHz – 1.5GHz
- ◆ Full 64-bit processors
- ◆ 32 MBytes total cache
- ◆ 546 Gbps memory BW
- ◆ 200 Tbps iMesh BW
- ◆ 80-120 Gbps packet I/O
 - 8 ports XAUI / double XAUI
 - 2 10-lane Interlaken
 - 32 ports 1GbE (SGMII)
- ◆ 80 Gbps PCIe I/O
- ◆ Wire-speed packet engine
 - 120Mpps
- ◆ MiCA engines:
 - 40 Gbps crypto
 - 20 Gbps compress & 20 Gbps decompress

TILE-Gx36™ : Midrange system-on-a-chip



- ◆ 36 Processor Cores
- ◆ 1.0, 1.25GHz, 1.5GHz speeds
- ◆ Full 64-bit processors
- ◆ 12 MBytes total cache
- ◆ 200 Gbps memory BW
- ◆ 66 Tbps iMesh BW
- ◆ 40 Gbps total packet I/O
 - 4 ports 10GbE (XAUI)
 - 16 ports 1GbE (SGMII)
- ◆ 48 Gbps PCIe I/O
 - 2 16Gbps Stream IO ports
- ◆ Wire-speed packet engine
 - 60Mpps
- ◆ MiCA engine:
 - 20 Gbps crypto
 - 10 Gbps compress & 10 Gbps decompress

Tilera S2Q Server

Highest compute density

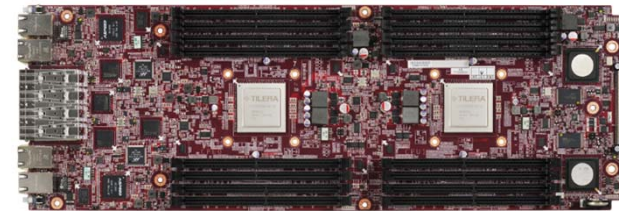
- ◆ 2U form factor
- ◆ 4 hot pluggable modules
- ◆ 8 Tilera TILEPro processors
- ◆ 512 general purpose cores
- ◆ 1.3 trillion operations /sec



Tilera S2Q Server

High I/O and storage density

- ◆ Ethernet
 - 176 Gbps of I/O bandwidth
 - Sixteen 10-GbE ports
 - Sixteen 1-GbE ports
- ◆ Memory
 - Up to 64 DIMM slots
 - up to 256GB
- ◆ Storage
 - Up to 24 2.5" SAS/SATA drives

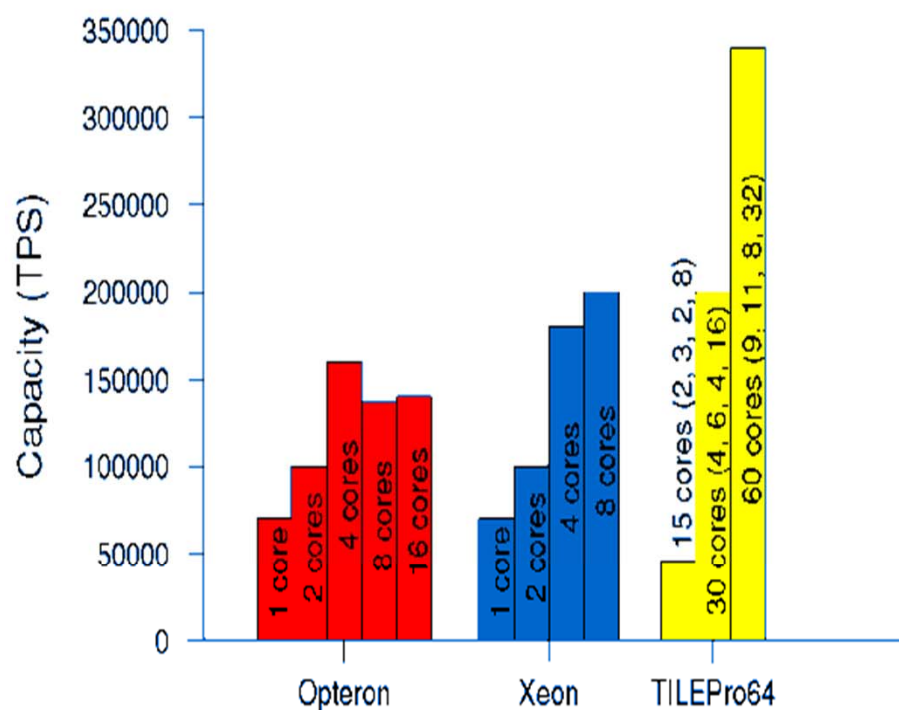


Tilera S2Q Server

Standard Software stack

Management Protocols	 Nagios	IPMI 2.0	 NET-SNMP	
Infrastructure Apps	 LIGHTTPD fly light.	 hadoop	 No SQL	 Network Monitoring Video Transcoding
Language Support	 php	 python [™]	 Ruby <i>A Programmer's Best Friend</i>	Perl   Java
Compiler, OS Hypervisor	 GNU gcc & g++	 KVM	Commercial Linux Distribution	

Memcached Performance Tile vs x86



Configuration	RAM (MB)	Capacity (TPS)	Power (Watt)
1 × TILEPro64 (one node)	32GB	335,000	90
2 × TILEPro64 (one PCB)	64GB	670,000	138
4 × TILEPro64 (one PSU)	128GB	1,340,000	231
Single Opteron	32	165,000	115
Single Opteron	64	165,000	121
Dual Opteron	32	160,000	165
Dual Opteron	64	160,000	182
Single Xeon	32	165,000	93
Single Xeon	64	188,000	100
Dual Xeon	32	200,000	132
Dual Xeon	64	200,000	140

Architecture	Nodes	Capacity	Power	TPS / Watt
TILEPro64	8 (1 S2Q)	2,680,000	462	5,801
Opteron	4	660,000	484	1,363
Xeon	4	752,000	400	1,880