One-Generation Lead over the Competition

Mellanox

20Gbs → 40Gbs → 56Gbs → 100Gbs → 200Gbs

Terascale

3rd

TOP500 2003
Virginia Tech

Petascale

1st

“Roadrunner”
Mellanox Connected

Exascale

Mega Supercomputers

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Join the conversation at #OpenPOWERSummit
Proud to Accelerate Future DOE Leadership Systems

"Summit" System

"Sierra" System

5X – 10X Higher Application Performance versus Current Systems
Mellanox EDR 100Gb/s InfiniBand, IBM POWER CPUs, NVIDIA GPUs

Mellanox EDR 100G Solutions Selected by the DOE for 2017 Leadership Systems
Deliver Superior Performance and Scalability over Current / Future Competition
The Future is Here

Entering the Era of 100Gb/s

Adapters

ConnectX-4
100Gb/s Adapter, 0.7us latency
150 million messages per second
(10 / 25 / 40 / 50 / 56 / 100Gb/s)

Switch

SwitchIB™
36 EDR (100Gb/s) Ports, <90ns Latency
Throughput of 7.2Tb/s

Interconnect

LinkX™
Copper (Passive, Active)  Optical Cables (VCSEL)  Silicon Photonics

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SwitchIB™ EDR 100Gb/s Switch

100Gb/s InfiniBand Switch

- 7th Generation InfiniBand Switch
- 36 EDR (100Gb/s) Ports, <130ns Latency
- Throughput of 7.2 Tb/s
- InfiniBand Router
- Adaptive Routing

Analyze → Store
ConnectX®-4 EDR 100Gb/s Adapter

100Gb/s InfiniBand Adapter

InfiniBand: SDR / DDR / QDR / FDR / EDR
Ethernet: 10 / 25 / 40 / 50 / 56 / 100GbE

OpenPOWER CAPI technology
CORE-Direct technology
GPUDirect RDMA
Dynamically Connected Transport (DCT)
Ethernet offloads (HDS, RSS, TSS, LRO, LSOv2)
Shattering The World of Interconnect Performance!

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<th>ConnectX®-4 EDR 100G InfiniBand</th>
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<td>InfiniBand Throughput</td>
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*First results, optimizations in progress*
ConnectX®-4 With CAPI Support

- Coherent Accelerator Processor Interface (CAPI)
  - Power / OpenPOWER Based Systems
  - Higher system performance
  - More applications, more virtual machines can be supported
  - Lower CAPEX and OPEX

- Enhancing connectivity for POWER8 based platforms
  - Integration with the POWER CPU at the local bus level
  - Access page tables with simplified memory registration
  - On Demand Paging (ODP) enabling higher efficiency of storage access

- Faster access between the Power CPU and ConnecX-4
  - High performance RDMA, Lower latency
Why OpenPOWER

- Mellanox solutions are based on open standards
- Open ecosystem of industry experts
- Promotes industry growth and innovation

- Collaborative environment that shares expertise to address customer needs
- Open development is key to rapid and continuous technology innovation
Enabling Power Based Platforms

Unleash the Power of IBM POWER

- Native PCIe Gen3 Support
  - Direct processor integration
  - Replaces proprietary GX/Bridge
  - Low latency
  - Gen3 x16
Utilizing high speed interconnect with RDMA (Ethernet, InfiniBand)

leveraging POWER8 high throughput low latency I/O

IBM Power Systems and Mellanox® Technologies partnering to simultaneously accelerate the network and compute for NoSQL workloads

Dramatically faster responsiveness to customers!

10x Higher Throughput
10x Lower Latency

Increasing your datacenter efficiency!

Data Analytics in Real Time
Elastic Storage, the Next Generation of Software Defined Storage

Customizable solution with integrated software optimized for Big Data & Analytics workloads

Built on Mellanox RDMA Infrastructure
“Turbo” LAMP Stack

- Born on the web business solutions leveraging high-optimized stack (Magento, Drupal, SugarCRM, others)
- Highly optimized SW and HW Stack
  - POWER-optimized PHP (Zend)
  - POWER-optimized Web Server (Ubuntu)
  - POWER-optimized DBMS (MariaDB)
  - POWER-optimized Operating System (Ubuntu)
  - POWER-optimized I/O (Mellanox)
  - POWER8 HW
Accelerating OpenPOWER-Based Platforms

- Native PCIe Gen3 Support
  - Direct processor integration
  - Replaces proprietary GX/Bridge
  - Low latency
  - Gen3 x16
- CAPI

Data Analytics in Real Time!

- IBM POWER Systems and Mellanox accelerate NoSQL workloads
  - 10X Higher Throughput
  - 10X Lower Latency
  - Faster responsiveness to customers!
Thank You