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SX2000

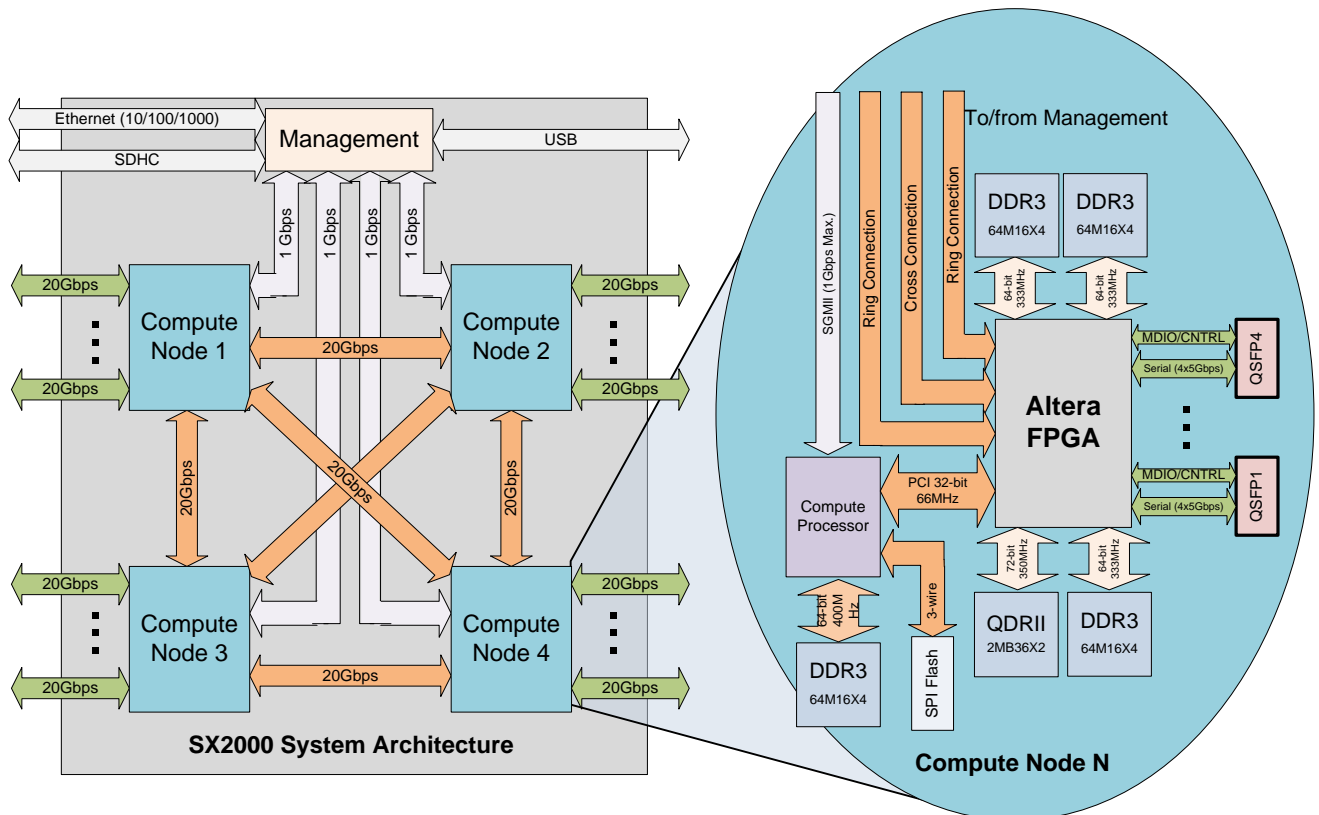
RECONFIGURABLE COMPUTING PLATFORM

SCALABLE, HIGH-PERFORMANCE RECONFIGURABLE COMPUTING

The siXis SX2000 scalable, Reconfigurable Computing Platform provides the industry’s leading I/O bandwidth combined with extensive computational capabilities. This computational capability is enabled by a heterogeneous mix of FPGA and microprocessors. A single SX2000 in a 1U rack can be stacked in unlimited fashion to provide expansion for any application. For those interested in an embedded computing module-based solution, the SX2000 provides an excellent proof-of-concept platform.

Key Features

- 4 fully-interconnected compute nodes, each featuring an Altera Stratix IV® EP4SGX230K FPGA with 2 Gbytes DDR3 memory, four QSPF high-speed serial ports, and a 1.5 GHz Freescale MPC8536E PowerQUICC® III processor with 512 Mbytes DDR3 memory
- 20 Gbps interconnects between all nodes
- Effectively unlimited expansion, with up to 42 systems per 6-foot rack, unlimited racks



SX2000 Technical Specifications

System Features

Interconnects:

- 20 Gbps full duplex between all Compute FPGAs
- Data-plane: 240 Gbps
- Control-plane: 12.5 Gbps
- Mgmt-plane: 4 Gbps

Power:

- -48 volts
- 270 Watts

Mechanical:

- 19" rack mount, 1U height
- Air-cooled, 0-30 C ambient
- 8 lbs

Memory Performance:

- Data-plane:
- Total bandwidth: 787.2 Gbps
- Total capacity: 24 Gbytes
- Control-plane:
- Total bandwidth: 272.9 Gbps
- Total capacity: 2 Gbytes

Compute Node Features

Compute FPGA

- Altera EP4SGX230K
 - 182K Registers
 - 13.9 Mbits Embedded memory
 - 1288 18-bit multipliers
 - 515 GMACs
- Three DDR3 interfaces
 - 64-bit 400 MHz
 - 51.2 Gbps bandwidth / bank
- One QDRII interface
 - 36-bit 300 MHz
 - 43.2 Gbps bandwidth

Compute Processor:

- Freescale MPC8536E
- 1.5 GHz performance
- PCI bus to FPGA (32-bit 66MHz)

I/O Performance:

- 16 QSFP High-speed serial ports, each up to 20 Gbps full duplex
- Total bandwidth: 320Gbps
- Each QSFP can run a unique protocol and/or data rate, including 10G Ethernet, PCIe x4 Gen1 or 2, Serial-RapidIO, Infiniband, others

Management Features

Management Processor

- Freescale MPC8536E
 - 1.5 GHz performance
 - Control of each Compute Processor via Gigabit Ethernet
 - Gigabit Ethernet port
 - SDHC local storage
 - USB 2.0 port for connecting external storage

User Interface:

- Linux
- SSH & Web interface

Applications Ideal for SX2000

A number of applications can benefit from the siXis SX2000 Reconfigurable Computing Platform including

- High-Speed Encryption/Decryption
- Mobile, High-Speed Video Processing/Analysis
- High-Bandwidth Video Compression
- Image Processing/Analysis
- Persistent Surveillance
- Image Recognition/Acquisition
- Multi-Core Systems Emulation
- Networking Infrastructure
- Acceleration of Large-Scale Simulation
- Hyperspectral Imaging
- Monte Carlo Modeling
- Data Analysis/Mining
- Wireless Baseband Processing Antenna Design and Analysis
- Software Defined Radio Algorithm Acceleration
- SIGINT/ELINT
- Bioinformatics Algorithm Acceleration
- Geophysical/Seismic Data Processing
- Aerodynamic/Hydrodynamic Systems Simulation
- Accelerating Financial Models
- Application Acceleration