Scalable Petaflop
in a Single Cabinet

SGI® Prism™ XL

HIGHLIGHTS

Open Accelerator Platform

25% Less Cost of x86

1/10 the Floor Space

Petaflop in a Cabinet

The SGI® Prism™ XL is SGI's latest entry into the exascale race, delivering up to a petaflop of computing operations in a single cabinet. The Prism platform was designed to reduce the number of racks and infrastructure required to solve the world's toughest computing problems, and has the ability to grow out to 10s or even 100s of petaflops of compute capability.

Best-of-Breed Platform for 100s to 1000s of PCIe Slots

SGI Prism XL's innovative platform leverages optimized PCIe infrastructure and is uniquely designed, starting with the PCI slot and is then crafted with enough I/O and memory for a complete system. This sets the platform apart from other accelerator and GPU-capable systems that are designed with a two-socket server motherboard in mind, with one or more PCIe slots populated with GPUs, or those that use an external chassis plugged into one or more standard rack mount servers.

SGI Prism XL is designed for customers wanting to commit to an accelerator-focused architecture for research or are already in production using accelerator technologies. The motherboard functions almost solely as a high-speed path to off-accelerator memory, I/O and networking.

STIX Architecture™—Accelerator—Agnostic and Future-Proofed

SGI Prism XL is built around SGI STIX architecture, an accelerator-agnostic system 'future-proofed' for the next wave of accelerator options and 'System on a Chip' (SoC) technologies anticipated in the future. Accelerators can be mixed and matched, ending the wasteful accelerator-specific infrastructures that often exist on the market today.

SGI Prism XL supports NVIDIA and AMD GPU-based accelerators, as well as Tilera's TILEncore™ cards. It is also ready to support any common accelerator in demand.

The system is built based upon a 'stick' as an integral unit and each stick contains two 'slices' that each consist of a full-length, full-height PCIe gen 2 x 16 slot and a single-socket AMD 4100-powered motherboard. Built-in fans and an auto-sensing power supply detect changes in the ambient conditions and keep the unit operating in almost any environment. Each 'slice' can hold up to two 2.5 inch SATA drives leading to 4 terabytes of storage on a single stick and up to two Solid State Drives (SSD's) for additional storage. There are two available GigE ports and each SGI Prism XL device is equipped with a fully-configured fat-tree GigE network.

Leading Open Software Architecture

SGI Accelerator Execution Environment (AEE) drives the run-time environment, bundling tools, libraries and drivers into a single package for greater ease of use. CUDA, OpenCL, and Tilera MDE programming environments are supported. SGI Prism XL is managed via SGI Management Center so that a hybrid computing environment made up of various different types of SGI platforms can be managed from a single interface. From a job management perspective, the system can be bundled with Altair PBS Professional 11.0 with specific GPU-acceleration features.

Storage and Service Options

SGI Prism XL has multiple storage options, including up to 4TB of standard 2.5 inch SATA drives local to the stick and Solid State Drive options as well. Block and file level storage options available are Lustre-, MCIS-, and iSCSI-based, all interfacing via high-bandwidth, low-latency InfiniBand to the SGI Prism XL.

SGI Prism XL ships with a standard three-year return-to-factory warranty. Warranty upgrades, and installation services are also available to complete the solution.

sgi®

SGI Prism XL

Prism XL System Specifications

www.sgi.com/prismxl

Compute Sticks	
Accelerators	NVIDIA M2050, M2070, AMD Firestream 9350, AMD FireStream 9370, Tilera TILEncore TLB-26400-7-PCIe-2X10-4-GC, TLB-36400-7-PCIe-2S10-2S1-4-GC
Processors	AMD Opteron™ 4100 series, two per stick
Memory, I/O and Storage	• 8 DDR3 DIMM slots per stick • 2, 4, 8, and 16GB 1333 MHz ECC reg. DIMM • Four 2.5 in. SATA2 drives per stick • 250GB, 500GB, or 1TB capacity • Two solid-state drives (SSDs) at least 60GB capacity • One PCIe x 16 slot per accelerator • One PCIe x 8 slot per InfiniBand interconnect
Power & Cooling	• Air-Cooled standard, 6 fans per stick • 1 kW power supply per stick

Networking	
Gigabit Ethernet	Four NIC's per stick; one pre-configured fat-tree GigE network
InfiniBand HBA	One PCIE x 8 slot supporting either one single port or one dual port Mellanox ConnectX-2 HBA
InfiniBand Network	Up to two planes of non-blocking fat-tree network

Racks and Enclosures	
Sticks	5.78 in. wide x 3.34 in. high x 37.125 in. deep (14.7cm x 8.5cm x 94.3cm) Max weight 21 lbs 1 kW power supply per stick
Racks	19 in. 42U rack
Enclosures	3-slot enclosure 17.65 in. wide x 3.497 in. high x 35.416 in. deep (44.8cm x 8.9cm x 90cm)
Rack Level Power	3-phase PDUs, 3 x 60A IEC 60309 Plugs at 208Vwith 21x C13 outlets; single-phase PDUs with NEMA L6-30R connectors, 4 sticks per single-phase PDUs, 32 sticks maximum per rack with single-phase PDUs

Software	
System Software	Red Hat Enterprise Linux 6; CentOS 6
Management Software	SGI Management Center
Load-balancing Software	Altair PBS Professional
Development Software: Programming Languages, Libraries and Debuggers	CUDA, OpenCL, Tilera MDE, Allinea DDT, TotalView Debugger, Portland Group PGI Accelerator, CAPS Enterprise HMPP, SGI Accelerator Execution Environment (AEE)

Fully populated SGI Prism XL cabinet

Corporate Office
46600 Landing Parkway
Fremont, CA 94538
tel 510.933.8300
fax 408.321.0293
www.sgi.com

North America +1 800.800.7441
Latin America +55 11.5185.2860
Europe +44 118.912.7500
Asia Pacific +61 2.9448.1463