SGI® RASC™ Appliance for Bioinformatics

Featuring Mitrion™-Accelerated BLAST-n

Breakthrough BLAST Performance.

The new SGI® RASC™ Appliance for Bioinformatics – Featuring Mitrion™-Accelerated BLAST is the world's first turnkey bioinformatics appliance based on Field Programmable Gate Array (FPGA) technology and open source software.

This solution is designed to break through BLAST-n query logjams that result from next-generation sequencing instruments and meta-genomics studies.

The SGI RASC Appliance for Bioinformatics achieves faster query times by combining SGI RASC (Reconfigurable Application Specific Computing) technology, an accelerated version of BLAST-n software developed by Mitrionics, and the acclaimed SGI® Altix® server platform.

Drive your results faster with your own SGI RASC Appliance for Bioinformatics with one or two SGI RASC RC100 blades powered by dual Xilinx Virtex™ 4 LX200 FPGAs with Mitrion™ Virtual Processors.

- The powerful combination of SGI RASC RC100 blades powered by dual Xilinx Virtex™ 4 LX200 FPGAs with Mitrion™ Virtual Processors and the SGI Altix server.
- Turbo-charged BLAST-n performance: completes complex BLAST-n queries up to 16x faster than a standard server based on Intel® Itanium® 2 processors, and 19.7x faster than a server based on 2.8GHz AMD Opteron™ processors.
- Simplified deployment with a pre-configured appliance while offering 'plug and solve' configuration flexibility with interchangeable compute, memory, I/O and special purpose blades for perfect system right-sizing.
- Expandable BLAST and general purpose capability with up to 16 FPGAs, 72 processor cores, 400GB of memory and GB/Sec of I/O performance.
- 1 Year of SGI warranty support and 1 year of BLAST-n support from Mitrionics.

Please call 1-800-800-SGI1 (7441), e-mail at eleads@sgi.com, or contact your authorized SGI channel partner.

SGI® RASC™ Appliance for Bioinformatics

Technical Specifications
- Dual SGI NUMAlink (4 ports)
- Dual Xilinx Virtex 4 LX200 FPGAs
- 200,000 Logic Cells per FPGA
- 80MB QDR SRAM

Supported Systems
- SGI® Altix® 4700 server
- SGI Altix 450 server
- SGI Altix 3700 Bx2 server*
- SGI Altix 350 server*

*May require an upgrade for RASC installation

Advanced Features
- 12.8GB/s peak bi-directional system NUMAlink-4 bandwidth (with simultaneous Read/Write operations across 2 NL-4 ports)
- 32.0 GB/s on-board QDR SRAM peak bandwidth
- SGI RASC library and core services

Dimensions
Blade Form Factor
- 1U Altix 4000 IRU
- Up to 10 blades per IRU

Rack-Mountable Form Factor
- 2 blade slot chassis
- EIA slide-mountable
- 3U (5.25˝H x 19˝W x 26˝D)

Software
Operating Systems (On Host Server)
- SGI® ProPack™ on SUSE® Linux Enterprise Server

RASC Solution Stack
- BLAST-n open source code developed as part of the Mitrionics Open Bio project
- BLAST-n bit stream
- Mitrion™ Virtual Processor
- GNU Debugger (GDB)
  An FPGA-aware version built on the current GDB command set, allowing simultaneous debugging of both the application and the FPGA
- RASC Abstraction Layer (RASCLib)
  Enables serial or parallel FPGA scaling
- RASC API and Core Services
  Provides tools to develop reconfigurable computing elements in a multi-user, multi-processing environment
- Verilog / VHDL Module Support
  Debugger for an integrated, high performance environment
- High Level Language Vendor Support
  Fully integrated third-party HLL development tools for advanced incremental design and modular design methodologies:
  - Celoxica Handel-C and DK Design Suite
  - Mitrionics Mitrion-C
  - Synplicity Synplify Pro Synthesis
  - Xilinx, Foundation SW and XST Synthesis

Environmental (Operating)
Temperature
- +5˚C to +35˚C, altitude 5,000 MSL
- +5˚C to +30˚C, altitude to 10,000 MSL

Humidity
- 10% to 85% non-condensing

Environmental (Non Operating)
Temperature
- -40˚C to +60˚C

Humidity
- 10% to 95% non-condensing

Other
- Complies with the EU RoHS regulation for elimination of toxic substances

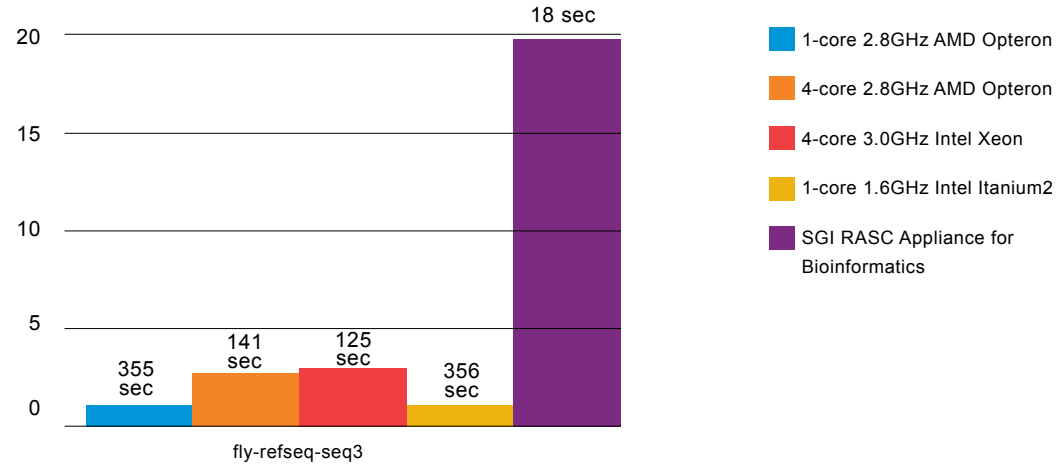
Altitude
- 40,000 MSL

Power Requirements (max)
- 150 Watts

Ordering Information
• RASC-C2V4LX-Z	SGI RASC Technology
• SC5-RASC-2.1	RASC Software Bundle
• RASC-QDRMEM-8MB	Memory

Support and Services
SGI provides full support for SGI RASC Technology and software. SGI offers services to implement and integrate RASC into your environment. For more information, please contact your SGI representative.

BLAST-n Performance



BLAST-n performance tests performed using the fly-refseq-seq3 query with 126,065 query length against the MouseEST Database with 4,720,060 sequences, 2,193794,199 letters and an average sequence length of 46. All performance tests completed by SGI.

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