AXISFlow

Performance Optimized Interprocessor Communications

Features

- High throughput, low latency communications. Concurrent data movement and processing for maximum application performance

- Inter-board or intra-board transfers transparent to the application. Independent of hardware and operating system*

- Seamless scalable from a single processor to multi-core and multiprocessor systems

- Enables control over core affinity in multi-core SMP architectures

- Integrated within the AXIS Advanced Multi-processor Integrated Software environment

- Supports the latest GE embedded multi-processing products, SBC products and switched fabrics

- InfiniBand and RDMA over 10GbE enabled.

- Supports generic x86 and PowerPC based platforms running VxWorks, Linux® or Microsoft® Windows® allowing early development and system modelling

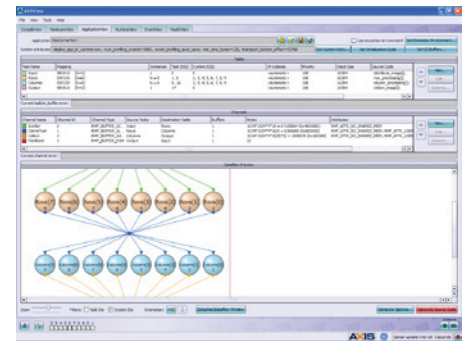*Contact GE for more details on supported board sets and configurations.*

Maximizing the performance of embedded real-time multiprocessor applications

AXISFlow Interprocessor Communication software provides high throughput, low latency, reconfigurable interconnects that facilitate data transport between tasks, processes, processor cores, boards and systems. Processing elements can be integrated for seamless scalability to meet the requirements of the most demanding of applications.

Newly added features enable control over task affinity in SMP architectures and partitioning of applications over multiple processes.
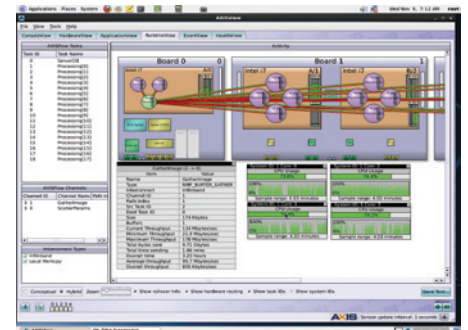
AXISFlow provides a user API which is independent of processor, operating system and fabric, insuring its future flexibility and viability. It can operate standalone or as an integral element within the AXIS Advanced Multiprocessor Integrated Software environment, a performance-optimized software framework designed to accelerate the development and deployment of complex multiprocessor signal processing applications. Its integrated modular architecture provides significant flexibility, allowing the engineer to select the specific functionality required, with the ability to reconfigure or scale the system to meet future application demands. AXIS comprises three integrated software elements:

AXISFlow Interprocessor Communications, AXISView Multiprocessor Productivity Tools and AXISLib Optimized High Performance Digital Signal Processing Libraries.

Define application data flow
Integration with AXISView allows application framework code to be automatically generated.

Determine bottlenecks
Locate and resolve bottlenecks in dataflow and task performance

AXISFlow – Performance Optimized Interprocessor Communications

AXISFlow - Interprocessor Communications

Simple to use
- API designed for rapid application development. 44 functions in total of which an application can be developed using only 10.

Channel-based communications
- Channel objects allow multiple communication end points and can be used for simple point-to-point connections or N-to-M connections between tasks. Channel synchronization completely hidden from the user.

Flexible
- Multi-buffer and FIFO channel types to suit different data flow requirements. Library can allocate and manage data buffers, or give control to the user.

DMA support
- High sustained data throughput with minimal processor overhead. Allows for fast concurrent data movement and processing, maximizing application performance.

No-copy transfers
- Pointer passing for ultrafast on-processor messaging.

Positionless methods
- Application is agnostic to inter/intra board transfers and underlying transport mechanisms.

Seamless integration
- Supports GE multiprocessor DSP boards and Single Board Computers.*
- Supports UP, AMP and SMP operating paradigms.

Data manipulation
- Data striding, scatter/gather and multicast channels supported. Easily integrates data reorganization into the appliction.

Hardware Fault tolerance
- Features such as Health mode and transfer time-outs enable application to be able to detect and manage hardware failures in the system.
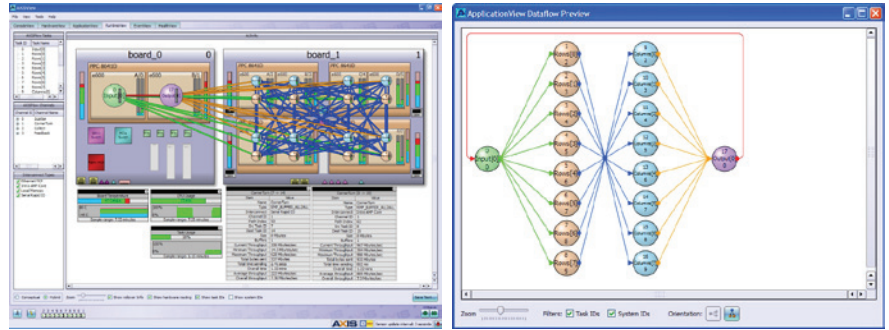
Scalable
- Positionless methods mean an application can be prototyped on a small system using multiple threads to simulate a larger system. Redeployment on a full-sized system just requires remapping of processes to nodes - the application need not be changed.

Standalone/integrated with AXIS
- Communication configuration and routing may be coded by the programmer or can be automatically generated by AXISView tools.

Contact factory for compatibility with other GE Intelligent Platforms products and operating systems.

Sample Screenshots of RuntimeView & ApplicationView Tools

AXIS Advanced Multiprocessor Integrated Software provides all the tools a developer needs to maximize performance, increase productivity and reduce time-to-solution under one integrated framework. All software modules can be used independently or in conjunction with each other.

Ordering Information
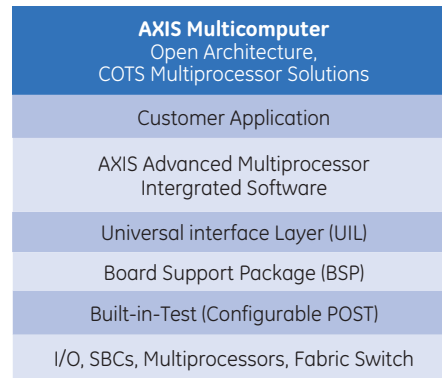
AXISFlow - 01M	Interprocessor Communications Library Includes 1 year license and maintenance. Annually renewable.
AXISPRO - 01M	AXISView tool suite and AXISFlow communication library bundle. 1 year license and maintenance. Annually renewable. (Note: AXISFlow run-time license required)
AXISFlow - 01R	Run-time license.

AXIS Multicomputer Open Architecture, COTS Multiprocessor Solutions
Customer Application
AXIS Advanced Multiprocessor Intergrated Software
Universal interface Layer (UIL)
Board Support Package (BSP)
Built-in-Test (Configurable POST)
I/O, SBCs, Multiprocessors, Fabric Switch

About GE Intelligent Platforms

GE Intelligent Platforms is a division of GE that offers software, control systems, services, and expertise in automation and embedded computing. We offer a unique foundation of agile and reliable technology providing customers a sustainable competitive advantage in the industries they serve, including energy, water, consumer packaged goods, oil and gas, government and defense, and telecommunications. GE Intelligent Platforms is headquartered in Charlottesville, VA. For more information, visit www.ge-ip.com.

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