

HyperX[®] Studio 6 Pro[™]

Description

HyperX[®] Studio 6 Pro is a powerful, Eclipse[®]-based integrated development environment (IDE) engineered to streamline the design, implementation and deployment of end-user applications on the massively parallel HyperX[®] Architecture.

Purpose-built for high-performance, parallel computing workflows, HyperX[®] Studio enables efficient development through robust support for C-programming based on the Message Passing Interface (MPI) standard. MPI is an industry-standard methodology to support expression of task parallelism and data exchange in high-performance computing (HPC) applications.



With capabilities such as automatic resource mapping, interactive source-level debugging, cycle accurate software simulation and tight integration with the underlying HyperX[®] platform, HyperX[®] Studio empowers developers to accelerate their design cycles and focus on algorithm development, rather than low-level implementation details.

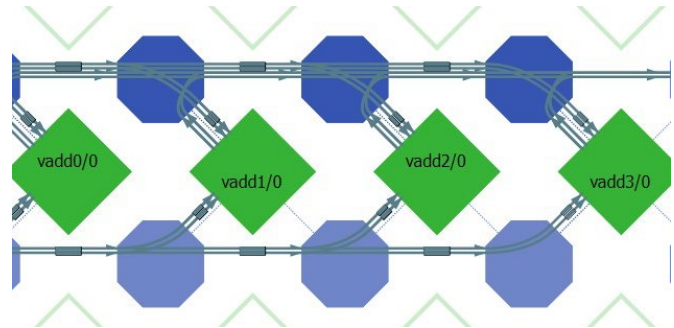
Whether the task is optimizing performance, debugging parallelized code, or managing resources across hundreds of processing elements (PEs), HyperX[®] Studio provides the tools developers need to easily harness the power of our most advanced architecture and enables greater than 75% faster development times.

Develop Applications in C

Programming in the C language allows developers to focus on algorithms and applications rather than low-level hardware details. HyperX[®] MPI-based API support enables scalable parallel programming using familiar high-level constructs. This makes it easier to develop, test, and deploy applications on HyperX[®] Architecture without needing expertise in RTL or hardware design.

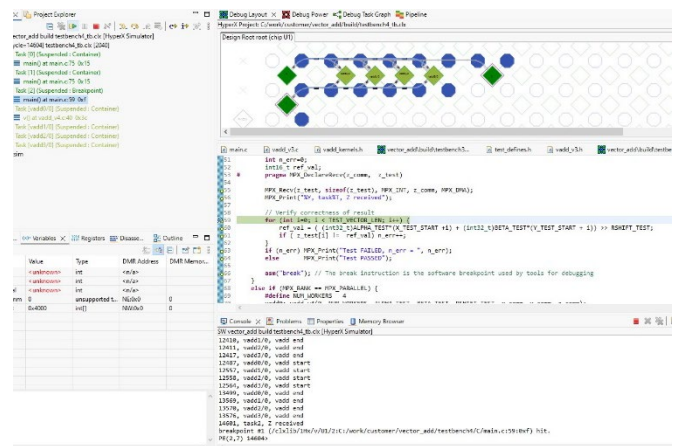
Automatic Resource Mapping

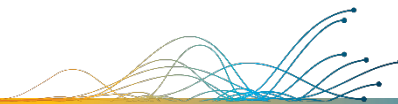
Automatic resource mapping further simplifies the development process by handling the complex task of assigning compute processes and communications to underlying hardware resources. It intelligently maps parallel tasks and data transfers across hundreds of PEs, without long build times or iterative timing closure processes.



Interactive debugging

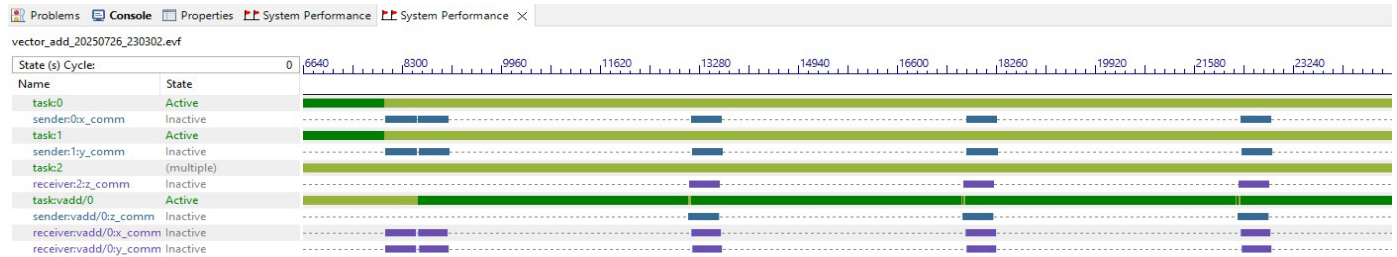
HyperX[®] Studio provides an interactive debugging environment that lets users debug their designs directly at the source code level, using familiar software-style tools like breakpoints, watchpoints, cycle stepping, and instruction stepping. Debugging can be performed seamlessly in the cycle-accurate software simulator or through a host-connected hardware debugger—all without impacting design performance. This enables efficient, non-intrusive diagnosis of complex parallel behavior.





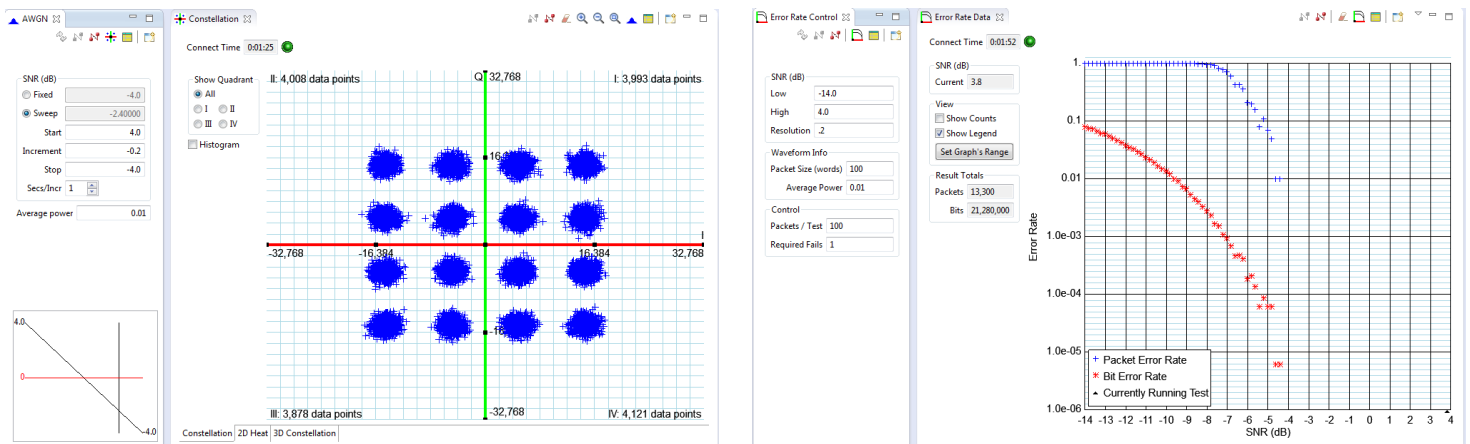
HyperX® System Performance View

The System Performance Viewer (SPV) in HyperX® Studio provides a detailed, cycle-by-cycle graphical view of task execution and communication activity across the HyperX® architecture. It enables deep inspection of design behavior and hardware state, allowing developers to pinpoint performance bottlenecks and validate system behavior. With fine-grained visibility into every cycle, SPV is an essential tool for debugging, performance tuning, and ensuring system correctness at the lowest levels.



HyperX® Real-time Analysis

The Real-time Analysis (RTA) tools provided by HyperX® Studio allow management and monitoring of the behavior and performance of an application while running on hardware in real-time without perturbing real-time operation of the application. Data can be sampled directly from a task or probed from a data communication. The sampled data can be displayed within HyperX® Studio using one of eight built-in views, including error rate analysis, AWGN/Constellation, Video source/display, and Plot.





Key Features

ANSI C Programming API

- Compilation optimization levels for code generation
- MPI-based API for defining parallel processes
- MPI-based API for describing data communications
- Comm API support for advanced DMR features
- Hierarchical design extensions
 - Create and re-use functionality in a “cell”
- Context sensitive source code editor
 - Syntax highlighting and code completion

Integrated Managed Build System

- MBE supports building without scripts or Makefiles

Automatic Resource Mapping

- Deterministic algorithm for placement and routing
 - Placement of processes to PEs
 - Routing of communications between DMRs
- Hierarchical floor-planning with rotate and flip
- Manual intervention in graphical layout editor
- Ability to lock down hardware mapping results
- I/O connection detection for chip input/output

Full-featured Debugging Capabilities

- Cycle-accurate software simulation
- Host-based hardware debugger
- Source-level debugging
 - Breakpoints and Watchpoints
 - Cycle and Instruction stepping
 - Set/get data memory and register values
- Scripting interface for automating testing tasks
- Disassembly view for inspecting ASM instructions
- Design navigation using layout or debug task graph
- Pipeline viewer
 - Show instructions in each PE pipeline stage
- System performance viewer
 - Shows the cycle-by-cycle behavior of all tasks and communications in the design

Power Reporting Tools

- Power estimation report
- Power heat-map view for cycle-by-cycle power usage shown on the physical layout

Security Feature Support

- Create and display secure cells with secure barriers to isolate process execution
- Support for distribution of IP-protected encrypted cells
- Support for encrypted mission-mode boot of some or all of the application
- Available API for data encryption/decryption using the on-chip AES engines

RISC-V Development Environment

- Supports Eclipse development environment for GPP co-development with HyperX® Studio

Multi-chip Development Support

- Support for partitioning applications across multiple connected devices
 - Automatic management of cross-chip communications
- Debug multi-chip applications as one design

I/O Server Libraries

- DDR4 memory server
- SERDES I/O interface server
- SpaceWire interface server
- CMOS I/O interface server

Real-time Analysis and Control

- Supports graphical display of data using real-time design output from hardware.
- Error Rate Control view
- Error Rate Data view
- AWGN view
- Constellation view
- Video Source view
- Video Display view
- Plot view
- Real-time Control view

HyperX Logic, Inc. is headquartered in Austin, TX. HyperX Logic is a full-service company that provides both an innovative semiconductor platform and engineering design services. We empower developers to stay at the forefront of their industries by making it faster, easier, and more cost-effective to bring their ideas to life. The first HyperX® Family of products were introduced in 2006. With proven success in the Aerospace and Military markets, the Company is expanding the availability of the HyperX® Platform to the general commercial marketplace, including Aerospace, Automotive, Communications, Consumer, Industrial, Media & Entertainment, Medical, and Military.

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