SpeedBridge Adapter for SAS

Rapid system-level verification deployment

Cadence® SpeedBridge® Adapters provide protocol interface solutions for an emulation platform that enables efficient driver and application-level testing, targeting validation of pre-silicon RTL of ASICs and systems on chip (SoCs) with a Cadence Palladium® emulation system or Cadence Protium™ prototyping system. SpeedBridge Adapters can also be leveraged to quickly and easily reproduce post-silicon bugs. The solution enables verification of emulated designs along with development, testing, and performance characterization of embedded software, system-level drivers, and final software applications.

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As SoC designs continue to increase in size and complexity, verification becomes increasingly time-consuming. Acceleration and emulation enable more comprehensive validation of a design than with simulation alone, and they allow engineers to develop firmware, device drivers, and software before final silicon availability.

Cadence provides a powerful in-circuit emulation solution for serial attached SCSI (SAS). The SpeedBridge Adapter for SAS interfaces with most existing SAS-capable hosts without requiring modification. It performs rate adaptation so that emulated SAS host designs can connect to a full disk enclosure without slowing it to emulation speed (see Figure 1).

The SAS environment typically consists of a host controller residing in the PC, a disk controller residing in the disk drive, and, optionally, a disk enclosure containing a SAS expander. The SpeedBridge Adapter for SAS connects directly to a Cadence emulator through standard emulation cables.

Figure 1: The SpeedBridge Adapter for SAS helps connect a Cadence emulation system to a full-speed enclosure.
It is designed to be functionally transparent to both the emulated designs and the target device.

With the high speed of Cadence in-circuit emulation, engineers can co-verify system hardware and software together with software drivers without the real silicon. Cadence emulators, such as the Palladium system, provide hardware and software debug technologies for ease of use, ease of debugging, and high speed.

Benefits
Offers rapid emulation deployment

Enables IP reuse
- Can be used across projects
- Eliminates the need for every user to re-invent the solution
- Improves productivity to get to the first test by eliminating the need to set up a complex FPGA-based environment

Ensures quality
- Provides a single-card solution
- Tested and verified by Cadence and many other user designs
- Verifies designs quickly and efficiently

Reduces system risk
- Checks SAS protocol and integrity errors
- Verifies the SAS design in a real environment
- Boots the operating system
- Runs real system software/drivers
- Performs disk discovery
- Provides a high level of confidence in the SAS device's quality
- Reduces time to market

Features
- Supports two full-speed disk enclosures, which can connect to full-speed SAS hard drives. Also, can be configured with a full-speed host connected to an emulated disk drive
- Enables engineers to test traffic in large number of disks and large data transfers
- Supports testing using SAS expanders
- Emulation speeds
  - Connects an emulated SAS host controller to a full-speed disk enclosure
  - Works with emulation speeds up to 1.5MHz
  - Supports SAS-3 speeds: 1.5Gbps, 3Gbps, 6Gbps, and 12Gbps
- Real SAS driver environment
- Comprehensive debugging
  - Fully static implementation supports key emulation debug features
  - Supports Logic Analyzer debug capabilities
- Supports SpeedBridge Configuration Manager for remote testing and debug

Specifications
- SAS 1.1 compliant

Requirements
- Palladium emulator
- Universal SpeedBridge chassis
- Device driver and/or application software are required by the emulated ASIC

Cadence Services and Support
- Cadence application engineers can answer your technical questions by telephone, email, or internet—they can also provide technical assistance and custom training.
- Cadence-certified instructors teach more than 70 courses and bring their real-world experience into the classroom.
- More than 25 Internet Learning Series (iLS) online courses allow you the flexibility of training at your own computer via the internet.
- Cadence Online Support gives you 24x7 online access to a knowledgebase of the latest solutions, technical documentation, software downloads, and more.
- For more information, please visit www.cadence.com/support for support and www.cadence.com/training for training.