

## Cadence SpeedBridge Adapter for Serial-Attached SCSI (SAS)

Serial-attached SCSI (SAS) leverages proven SCSI technologies for data transfer to and from computer storage devices (hard drives, tape drives). It is based on a serial interface, allowing for more devices and bandwidth scalability. SAS host controllers are generally used in Storage Area Network (SAN) and as disk controllers for workstations due to their scalability, reliability, and performance. The Cadence® SpeedBridge® Adapter for SAS allows an SCSI host controller emulated in a Cadence Incisive® Palladium® system to interface with full-speed disk enclosures. Engineers can perform system-level testing prior to silicon, increasing productivity and reducing system risk.

### Cadence SpeedBridge Adapter for SAS

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 SAS. The Cadence 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

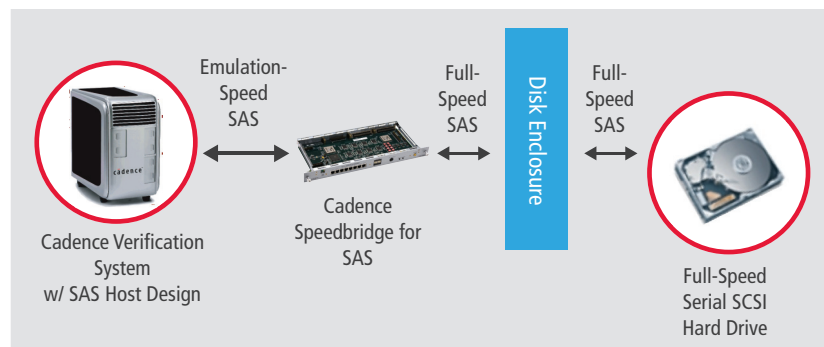


Figure 1: Cadence SpeedBridge Adapter for SAS helps connect a Cadence emulation system to a full disk enclosure

containing a SAS expander. The Cadence SpeedBridge Adapter for SAS connects directly to a Cadence emulator through standard emulation cables. 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 debug, and high speed, so engineers don't have to sacrifice quality.

## Benefits

- Enables rapid emulation deployment
- Enables IP reuse
  - Can be used from one project to another
  - 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
- Enables engineers to test traffic in large numbers of disks and large data transfer
- 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

- Real SAS driver environment
- Comprehensive debug
  - 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 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



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