cadence®

# Cadence SpeedBridge Adapter for Serial ATA

## System-level verification under real-world operating conditions

SATA devices are commonly used in SoCs, consumer products, and network storage areas due to their scalability, price, and performance. The Cadence® SpeedBridge® Adapter for Serial ATA disk drives allows a SATA disk controller emulated in a Cadence Incisive® Palladium® system to interface with full-speed host controllers. The SpeedBridge adapters allow designers to perform system-level testing prior to silicon, helping them increase productivity and reduce system risk.

## Cadence SpeedBridge Adapter for SATA

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 system-level emulation solution for SATA. The Cadence SpeedBridge Adapter for SATA interfaces with most existing SATA-capable hosts or disks without requiring modification. It performs rate adaptation so that emulated SATA designs can connect to full-speed devices (SATA host or SATA disk) without slowing them to emulation speed. (See Figure 1.)

The SATA environment consists of two components: the host controller, residing in the PC or consumer device, and a disk controller, residing in the disk drive. The Cadence SpeedBridge Adapter for SATA 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.

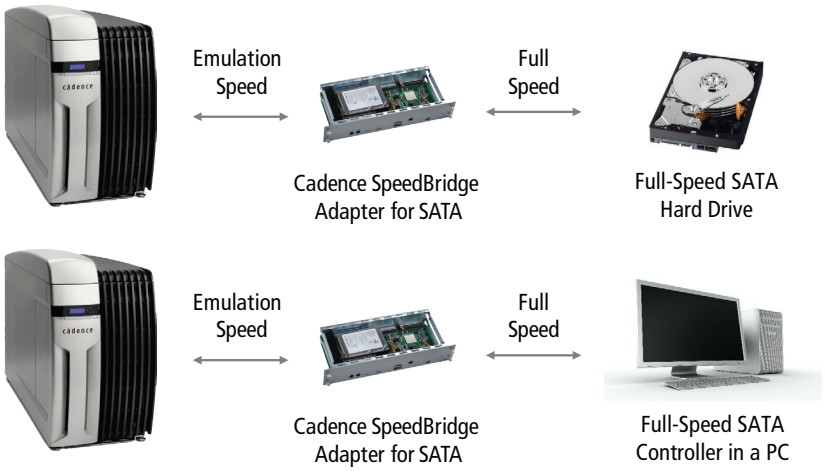


*Figure 1: Cadence SpeedBridge Adapter for SATA helps connect a Cadence emulation system to a full-speed disk drive or controller*

With the high speed of Cadence in-circuit emulation, you 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 you need for ease of use, ease of debug, and high speed, so you 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 your design quickly and efficiently
- Reduces system risk
  - Checks SATA protocol and integrity errors
  - Verifies the SATA design in a real environment
  - Boots the operating system
  - Runs real system software/drivers
  - Provides a high level of confidence in the SATA device's quality
  - Reduces time to market

## Features

- Supports any one of the following configurations:
  - Two connections to full-speed disk drives (one installed on the SpeedBridge adapter)
  - Two connections to full-speed host controllers
  - Connections to one host controller and one disk drive
- Supports 1.5Gbps (150 MBps), 3.0 Gbps (300 MBps), and 6.0 Gbps (600MBps) on the emulation interface of the DUT
- Emulation speeds
  - Connects an emulated SATA host controller to a full-speed SATA disk drive or an emulated disk controller to a full-speed SATA host controller
  - Works with emulation speeds up to 2MHz
- Completely transparent to software driver
- Real SATA driver environment
- Comprehensive debug
  - Fully static implementation supports key emulation debug features
  - Supports Allegro® System Architect and logic analyzers for debug capabilities
- Supports Native Command Queuing (NCQ)
- Support for high speed loopback mode that lets customers configure the full speed disk from a standard PC prior to running the emulated design, or retrieve data from disk after running the emulated design.
- Provides an efficient way to connect to large drives
- Provides comprehensive support for SATA command sets
- Fully supports remote operation

## Specifications

- SATA 3.0 compliant
- Supports SAPIS interface as well as other variations

## Requirements

- One Cadence SpeedBridge Adapter for up to two emulated host controllers or SATA disk drives
- Cadence Incisive 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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