

Acceleration Plug-In: Replay

OVERVIEW

Carbon Model Studio's Replay Plug-in allows enables software running on a Carbon Model to be rapidly iterated and debugged. Replay leverages the debug methods used by software engineers to accelerate system integration.

REPLAY HIGHLIGHTS

Replay provides these key benefits:

- Accelerates virtual prototype runtime iteration speeds
- Enables easy identification of software issues
- Automatically detects mismatch with previous run and switches to RTL model
- No manual coding required to implement

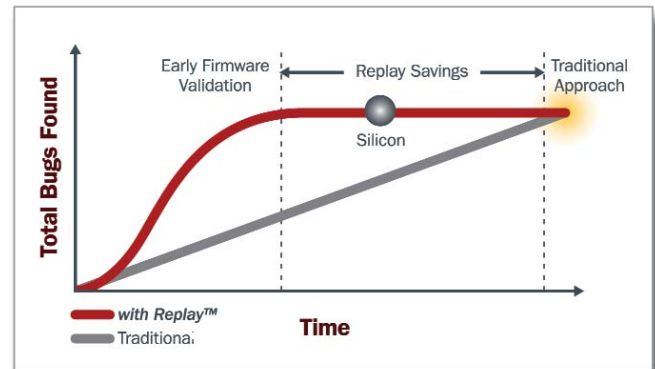
Hardware and software engineers debug problems differently. Hardware engineers may prefer waveform-based debugging, while software engineers prefer interactive software debug environments. In these debug environments, software engineers often iteratively execute the same section of code to identify problems and validate fixes. Replay takes advantage of this behavior by accelerating the speed of successive iterations. The first time code is run, it executes at normal speeds. Every subsequent execution of that same code is run using the saved responses from the first execution. Replaying the responses instead of recalculating the model's behavior means that the same code runs substantially faster.

REPLAY TECHNOLOGY

During the first simulation, when software is executing on Carbon Models, the Carbon Models record the incoming bus traffic and responses. The models' state information is also saved periodically at "checkpoints". In subsequent iterations, the Carbon Models replay their saved responses to the system at very high-speed. Replay monitors the model stimulus and detects any differences in from previous runs. If there is a change, a full Carbon Model is substituted for the Replay Model guaranteeing that the simulation can execute new code paths with the hardware's true behavior. Replay mode's high-performance enables interactive software debugging, while maintaining complete hardware accuracy.

ABOUT CARBON MODEL STUDIO

Carbon Model Studio is a complete solution for the automatic generation, validation, and execution of hardware-accurate software models. Carbon Model Studio enables you to begin the



Replay allows users rapidly find and isolate bugs.

development and debug of software before silicon is available. System architects can use Carbon Model Studio for architectural analysis and profiling. Software engineers can develop and debug embedded software, firmware, drivers and diagnostics concurrent with hardware development. Additionally, Carbon Models can be securely distributed to third parties to accelerate adoption of your technology in end devices.

ABOUT CARBON DESIGN SYSTEMS

Carbon is the leading supplier of system-level tools to automatically create, validate, and deploy software models generated from Verilog® and/or VHDL.

Carbon allows you to leverage your existing IP for architectural analysis and hardware / software validation. We give you the keys to guarantee first pass system success by accelerating hardware / software integration.

First pass silicon, first pass software: first pass system success.

For more information, visit us at:

www.carbondesignsystems.com

or contact us at: info@carbondesignsystems.com

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