

Complete Automatic Model Generation Solution

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 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-party partners to accelerate adoption of your technology their devices.

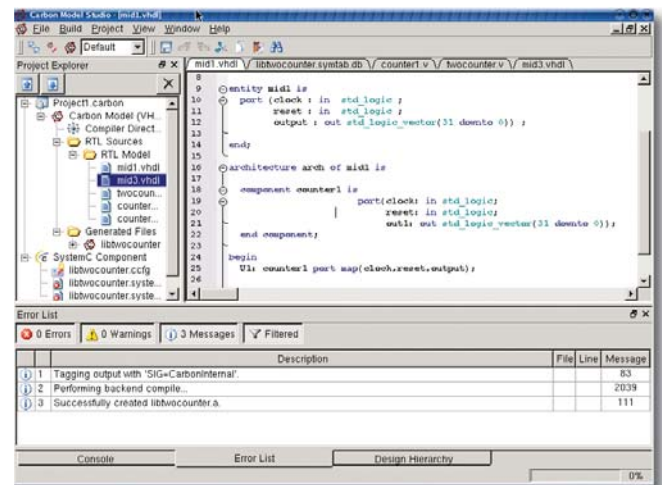
RAPID DEVELOPMENT OF IP MODELS

In a modern SoC, as much as 80% of the design is existing IP, either re-used from previous projects or provided by a third party. These blocks typically exist only as RTL with no corresponding model for use in virtual platforms. The development of high-level models of this IP, as well as of your own newly developed IP, presents a significant challenge to design teams. Significant resources must be allocated to hand developing and validating models for the virtual platform.

With Carbon Model Studio, there's no need to spend months hand-coding models of your hardware. Carbonized models of your IP are created directly from their VHDL and Verilog descriptions.

Carbon Model Studio's straight forward graphical interface makes creating these models simple and easy. The Model Studio development environment manages all of the data associated with your design files and build tasks. Source browsing, error navigation, and project management make it easy to pinpoint any problems with your models. Once an issue is isolated and fixed, you can rebuild with a single click.

Carbon Model Studio also manages different builds and configurations of your IP. Many devices come in different flavors. For instance, a device may have variants with different bus widths or memory sizes. For a complete modeling environment, each needs to be created and maintained. Carbon Model Studio can manage all of the options and parameters. When a change is made to the model, all of the variants can be regenerated from a single source with a single command.



Generating a Component with Carbon Model Studio

PLATFORM INTEGRATIONS

It is important to be able to use your hardware models in your choice of system environments. Carbon Model Studio was architected from the ground up to support any system simulation platform. There's no need to develop unique models for each platform. Carbon Model Studio provides drag-and-drop mapping from the cycle and pin level RTL to the transaction level interfaces of ESL environments. The result is a model that has the accuracy needed for analysis and debug and the interfaces required for drop-in access from system environments. Carbon Model Studio's existing platform integrations include ARM® RealView® SoC Designer, CoWare® Platform Architect, and OSCI SystemC™.

ONE MODEL - MANY USES

Carbon Model Studio's many platform integrations mean that you have the versatility to use Carbon Models in all of your development environments. Software engineers can focus on a "data-book" view of the device for programming. Architects have access to the buses, interfaces and transactions. Hardware engineers have full debugability and visibility into the RTL including waveform dumping. Because the model is common, all of your teams can work on solving problems, instead of porting issues across environments.

FIRST PASS SYSTEM SUCCESS

Having an accurate model is a prerequisite to success. Often, software teams will develop code based on a hand-written abstract model of the hardware device. Later, when the software is run on the actual hardware in the lab, bugs are inevitably uncovered. These bugs are the result of development based on an implementation that differs from the actual hardware. The result is long hours spent doing lab debug with limited resources and limited visibility.

When software is developed on the hardware-accurate model generated with Carbon Model Studio, you can be confident that the model matches the actual hardware. Debug throughput increases, because your model is not a black box like hardware. Developers can see the exact behavior of the device, inside and out. This visibility removes the guess work from debugging. When hardware is finally available in the lab, you don't have to worry about unpleasant surprises since the software has already been validated against the implementation model.

Performance profiling has equally stringent accuracy requirements. When you're measuring critical metrics like transaction latencies, or analyzing a tight loop of critical code, very small inefficiencies can quickly add up over time. What looks like a small bottleneck can multiply into a missed performance goal. When you send your device to production, you need to have the confidence that you will be hitting all of your targets. The implementation accurate model produced by Carbon Model Studio delivers the accuracy you need to perform accurate profiling and architectural analysis.

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:

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