

Virtuoso Mixed-Signal Behavioral Modeling Technology

Schematic model generation and model validation

Top-level full-chip verification has become the biggest challenge in bringing mixed-signal chips to production. Engineers have to generate behavioral models manually and validate their functionality and consistency against the original design. Cadence® Virtuoso® mixed-signal behavioral modeling technology provides the automation, visibility, and ease of use to speed and simplify the model generation and validation process.

Behavioral Modeling Challenges

Mixed-signal simulators support behavioral models of the analog portion of designs using Verilog-A and Verilog-AMS with real number models. But the bottleneck in mixed-signal verification still exists in generating the behavioral models and then validating their functionality and consistency against the original design.

Designers and verification engineers spend a lot of time and energy on writing these models by hand. Since this is a specialized and time-consuming skill, many teams lack the experience or the resources required to do it. Without a good workflow to communicate and manage changes, and without a graphical representation of the design that makes the changes transparent to all, model generation and validation can be a tedious process.

Cadence offers two technologies to fully resolve these challenges: Virtuoso Schematic Model Generator and Virtuoso AMS Design and Model Validator.

Virtuoso Schematic Model Generator

Virtuoso Schematic Model Generator (SMG) is tightly integrated into the Virtuoso design environment and enables the generation of analog/mixed-signal behavioral models using a schematic-like representation of the behavioral model. The schematic view is then processed to generate the behavioral model. With this approach, behavioral modeling is

easier to comprehend, it is communicated automatically to involved team members, and it is better managed compared to manual textual entry.

Virtuoso SMG is easy to use and leverages the Virtuoso Schematic Editor to assemble the blocks that are placed, wired and calibrated. Model-schematics can be reused, shared, configured, and easily maintained. The graphical representation of design functionality makes the modeling

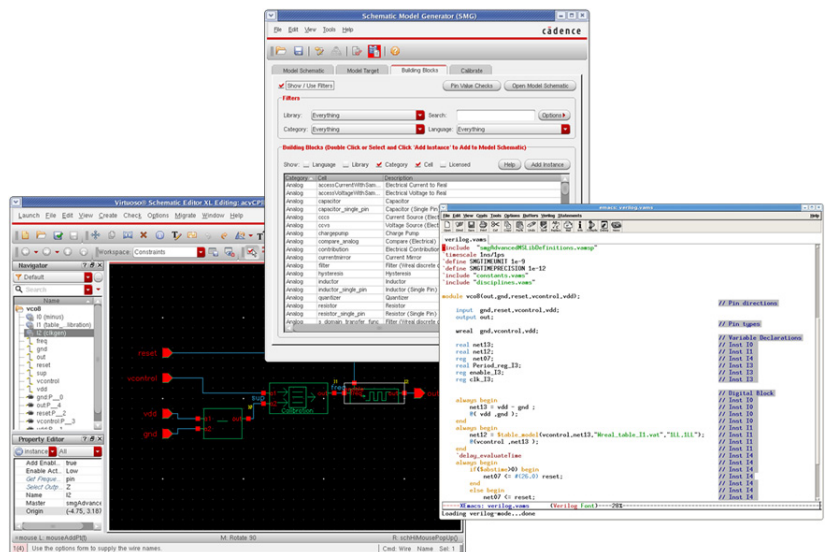


Figure 1: Virtuoso Schematic Model Generator

process very transparent and understandable for analog circuit designers and verification engineers.

Virtuoso AMS Design and Model Validator

Virtuoso AMS Design and Model Validator (amsDmv) provides an integrated model validation solution to verify behavioral models against the reference analog design using simulation. It is integrated with the Virtuoso design environment to provide an automated process for pass-fail output, reports, and extensive debugging capabilities to validate the behavioral models.

The tight integration of SMG and amsDmv within the Virtuoso design environment brings automation to the process of generating behavioral models and validating their consistency against the design.

Benefits

Virtuoso Schematic Model Generator

- Models are created from existing qualified building blocks library
- Building blocks are placed, wired, configured and calibrated using a standard schematic
- Support for Verilog-AMS and Wreal models with optional calibration from Virtuoso Analog Design Environment XL
- Improved consistency and model quality

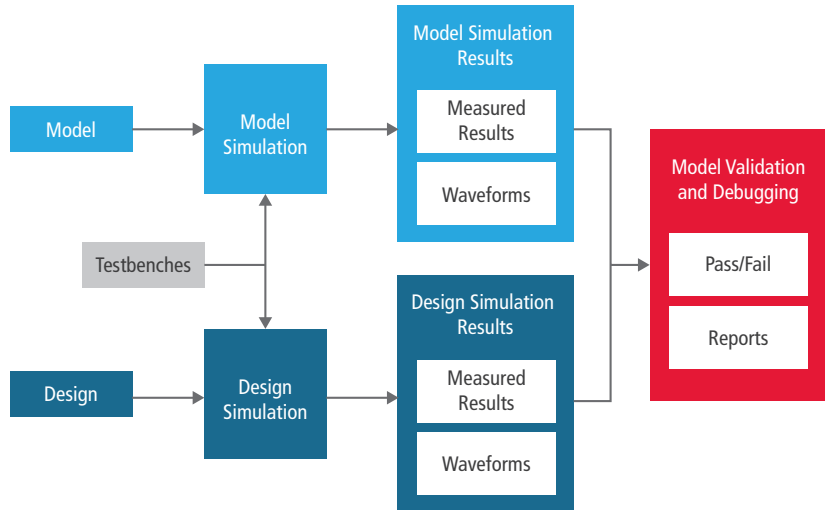


Figure 2: Virtuoso AMS Design and Model Validator

Virtuoso AMS Design and Model Validator

- Automated flow
- Easy-to-use GUI-based setup
- Auto-creation of batch commands for regression runs
- Support for Verilog-AMS, VHDL-AMS, SystemC™, and Wreal models
- Easy-to-read pass/fail reports with analog and digital waveform results

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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