

# Virtuoso Analog Design Environment L

Simulation and analysis of custom, analog, and RF IC designs

Cadence® Virtuoso® Analog Design Environment L, provides a simulator-independent environment to quickly explore a design's operation and performance against the desired intent. As more capabilities and analysis are required, users can easily move to Analog Design Environment XL and Analog Design Environment GXL.

## Virtuoso Analog Design Environment

The Virtuoso Analog Design Environment product suite provides all the capabilities required to fully explore, analyze, and verify a design against the user's desired goals, allowing designers to maintain design intent throughout the design cycle. As the industry's leading solution for analog simulation control and management, it allows users to flexibly select the tier that best supports their design goals as they move through the design flow. Analog Design Environment L provides a quick entry into the analysis process with easy execution of simulations. Analog Design Environment XL extends the L tier capabilities, providing multiple test support, analysis over sweeps, corners, and Monte Carlo; easy reviewing of all results directly; and generating spec-comparison sheets and datasheets as needed. Analog Design Environment GXL builds on L and XL capabilities by providing targeted tools that aid with key design challenges with early parasitic analysis, design centering, and designing in multi-technologies.

## Virtuoso Analog Design Environment L Overview

Virtuoso Analog Design Environment L is the entry-level analog design and simulation environment for the Virtuoso custom design platform. Analog Design Environment L is the industry's leading task-based environment for simulating and analyzing full-custom, analog, and RF IC designs. It features a graphical user interface, integrated waveform display, distributed processing, and interfaces to many third-party simulators. As part of the Analog Design Environment family, Analog Design Environment L provides the foundation to facilitate extended design analysis and validation into the XL and GXL products.

### Benefits

- Reduced learning curve with a simulator-independent environment
- Maximum efficiency in the script-driven mode
- Close integration with Virtuoso Schematic Editor for interactive analysis
- Easy design and test parameterization for fast circuit exploration

- Configurable window for optimum display of relevant data
- Integrated visualization cockpit for exploration of simulation results helps to maintain design intent
- Extract quantifiable results with built-in calculator and extensive list of functions

### Features

#### Easy-to-use interactive simulation environment

The interactive environment has everything users need to set-up, run, and analyze results with any integrated simulator. It offers a variety of tools for displaying and analyzing results, giving designers the flexibility to visualize and understand the many interdependencies of an analog, RF, or mixed-signal design. These tools allow users to quickly and easily pinpoint critical design parameters and their effect on circuit performance. The environment is flexible enough to take advantage of Virtuoso Multi-Mode Simulation technology, by making it easy to switch between different simulators without having to re-enter all measurements. Virtuoso Analog

Design Environment L has an extensive scripting language (OCEAN) built-in. OCEAN is based on the Cadence SKILL programming language for development of more complex analysis. It can be used to set up, run, and post-process results in a batch-oriented methodology. Lastly, Virtuoso Analog Design Environment L includes the capability to interface with other commercially available and in-house simulators through the integrator's kit.

### Built-in waveform display and signal analysis capabilities

The waveform display tool, coupled with an extensive waveform calculator, provides a comprehensive post-simulation analysis environment. The waveform window can handle all types of analog and mixed-signal data, including advanced displays such as noise, corner, statistical, and RF-specific plots. Additionally, it contains a variety of changeable display attributes for the axes, waveform colors, and labels so that you can make professional plots for your reports. Waveform markers and a built-in waveform calculator allow accurate measurement of signals in a variety of different modes, including transient, AC, and RF. The calculator's algebraic expressions can be composed of any combination of input or output voltages or currents.

### Integral part of the Virtuoso Custom Design Platform

Virtuoso Analog Design Environment L is an integral part of the Virtuoso custom design platform. It bridges the gap between schematic design and physical layout by providing a simulation environment where the designer can compare designs in both pre- and post-extracted forms, thereby completing the Cadence IC design flow. It supports analog system to IC design methods with complete access to behavioral modeling languages for both simulation and cross-probing for waveform display. Post-simulation operating condition can be easily annotated back to the schematic with net voltages, currents, and device operating information.

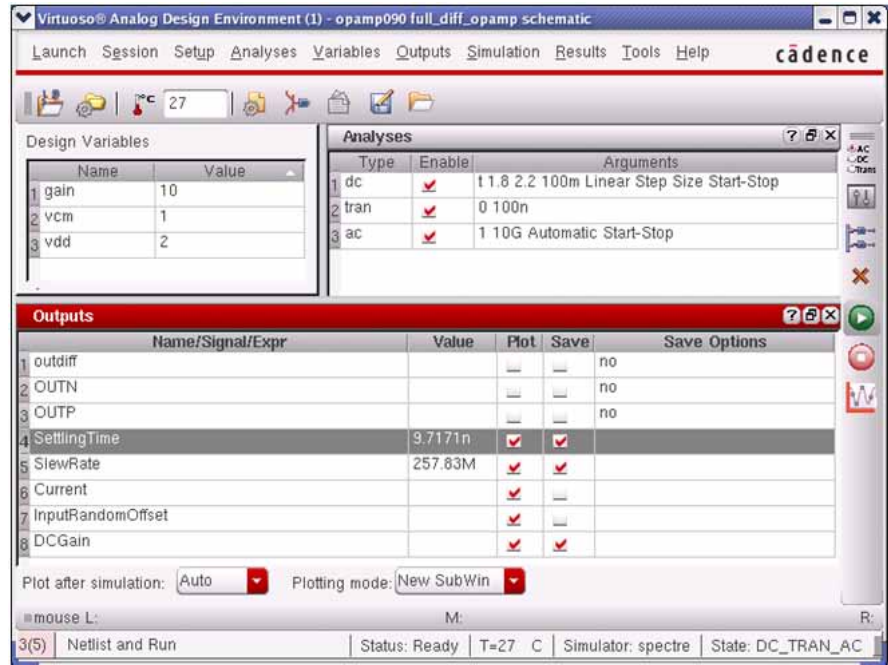


Figure 1: Virtuoso Analog Design Environment L: Single-test environment

## Specifications

### Interactive simulation environment

- Easy to learn and easy to enter data
- Easy reuse of simulation set-ups
- Clear displays of simulation information
- Cross-probing support for both schematics and layouts
- Design variable support with ability to create dependent expressions
- Auto-plotting and printing of simulation data
- Batch scripting
- Schematic annotation of node voltages and device information
- integration of a customer proprietary or third-party simulator
- Launch menu to directly open Analog Design Environment XL view with Analog Design Environment L test set-up

### Waveform display

- Supports multiple y-axes, strip plots, and Smith Charts
- Built-in waveform calculator

- Independent sub-window displays
- Horizontal and vertical measurement markers
- Independent pan and zoom capability
- User-defined labels and titles
- Color and line style controls
- Signal browser
- Color-coordinated cross-probing to schematics

### Distributed processing

- Distribution of multiple simulations
- Efficient use of computer farms
- Built-in basic load balancing and interface to other load-balancing tools
- Job monitoring and controlling functions
- Graphical user interfaces for set-up and viewing status

### Third-party support

Interface support for all commercial circuit simulators, including Synopsys Hspice, Mentor Graphics Eldo, Silvaco SmartSpice, and Agilent ADS. In addition, users can integrate their own proprietary circuit simulator.

### Design inputs

- OpenAccess data objects
- Cadence proprietary languages: OCEAN and MDL
- SPICE netlists
- Circuit design language (CDL)
- SPICE
- VHDL IEEE 1076-1993
- Verilog® IEEE1364
- SKILL
- PSF and PSF XL waveform formats
- SST2 waveform format
- Cadence SKILL

### Design outputs

- XML database
- PSF and PSF XL
- SST2
- Comma Separate Value
- Cadence proprietary script language: OCEAN

### Platform/OS

- X86 Linux
- Sun Solaris
- IBM AIX

### 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



Cadence is transforming the global electronics industry through a vision called EDA360. With an application-driven approach to design, our software, hardware, IP, and services help customers realize silicon, SoCs, and complete systems efficiently and profitably. [www.cadence.com](http://www.cadence.com)