

Virtuoso Analog Design Environment XL

Advanced simulation and analysis with extensive design exploration and verification

Cadence® Virtuoso® Analog Design Environment XL provides all the capabilities found in Analog Design Environment L, while adding all the tests needed to fully verify a design over all operational, process, and environmental conditions. As more analysis is required, users can take incremental advantage of Analog Design Environment GXL capabilities directly or from within Analog Design Environment XL.

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 XL Overview

Virtuoso Analog Design Environment XL is the advanced design and simulation environment for the Virtuoso platform. By supporting extensive exploration of multiple designs against their objective specifications, it sets the standard in thorough, fast, and accurate design analysis and verification.

Benefits

- Supports high fault coverage of designs with extensive verification over process environmental and operating conditions
- Analysis support of multiple simulators across multiple tests and multiple conditions for thorough design validation, compiling results in a single easy-to-use database
- Simulation and characterization of designs with behavioral models aids in design abstraction
- Support for corners, parametric sweeps, Monte Carlo, and reliability analysis

- Quick color-coded feedback of all results against target specifications helps maintain design intent
- Optimum analysis throughput with simulation distribution and multi-test management across user-preferred load balancing software
- Simplifies design reviews through integral documentation, specifications, measurement results, and waveforms
- Closely integrated with Virtuoso Schematic Editor for fast test development and debug

Features

Specification-driven design

To accelerate design verification, Virtuoso Analog Design Environment XL combines specification entry and design management in a single unified cockpit. A specification consists of all required tests, all required analyses, and all required operating conditions for validation against a measured set of goals. With Virtuoso Analog Design Environment XL, development of multiple tests is easy, along with

all the different conditions to validate a design's performance against the target specification.

Each Analog Design Environment XL session can be treated as a project, providing access to all the tests, sweeps, corners, scripts, and documentation needed to completely validate a design against the designer's intent.

Flexible simulation management

An overview of all the tests in development is available through the test assistant, which allows easy access to add, delete, and edit all required test configurations and analyses to fully validate a design. These defined tests can be further managed with test configurations that support different testing strategies at different points in the design development/validation flow.

Virtuoso Analog Design Environment XL provides users with an Analog Design Environment L-based debugging environment to make changes in the set-up for a point and simulate that point for debugging purposes.

By giving users the ability to create extensive testing, Virtuoso Analog Design Environment XL provides the ability to manage the parallelized simulations with either the internal load-balancing system or with an optional third-party solution.

Analog Design Environment XL provides a user interface for defining and specifying operating region expressions using the Operating Region assistant or the Operating Region Specification form. The Operating Region assistant enables users to quickly specify expressions, while the Operating Region Specification form provides advanced methods for specifying expressions.

Visual cockpit eases design verification

An overview of all the tests, simulators used and analysis conducted (along with any defined variables and corners) is listed in easy view on the Data View assistant screen. Results of the latest analysis appear in a tabular view on the right side, with color coding to show at a glance the simulation results that pass or fail against

Test	Output	Nominal	Spec	Weight	Pass/Fail	Min	Max	Slow	Slow Fast_0	Slow Fast_1	Fast
AC Current	7.131 mA	+ 10%	pass			6.237 mA	8.037 mA	6.237 mA	7.427 mA	5.682 mA	8.037 mA
AC InputRampOffset	754.7 fV	< 5n	pass			111 aV	1.424 pV	1.424 pV	111 aV	794.3 fV	583.3 fV
AC DCGain	26.61 dB	+ 25	pass			24.19 dB	29.55 dB	27.2 dB	29.55 dB	26.22 dB	26.19 dB
AC /INPUTS											
TRAN /OUTH											
TRAN /OUTH											
TRAN SettlingTime	13.93 nSec	+ 20n	pass			5.162 nSec	16.66 nSec	17.05 nSec	5.162 nSec	18.66 nSec	9.409 nSec
TRAN SlewRate	178.9 MV/Sec	+ 120%	pass			144.2 MV/Sec	204.7 MV/Sec	144.2 MV/Sec	151.8 MV/Sec	201.9 MV/Sec	204.7 MV/Sec

Virtuoso Analog Design Environment XL: Multi-test environment

the target specification. The results can be reordered or transposed for better visualization.

Users can easily explore results in more detail by right clicking on any single result or set of results that pop up in Virtuoso Visualization and Analysis XL, which is included in Analog Design Environment XL. In addition, a history of results is automatically maintained so users can quickly go back to look at previous results or even results from different test configurations.

Integral part of the virtuoso custom design platform

Virtuoso Analog Design Environment XL builds upon the features and infrastructure of Virtuoso Analog Design Environment L, providing cohesive operation for the user. As a result, Analog Design Environment XL is able to work closely with Virtuoso Schematic Editor and Virtuoso Layout Suite for a complete integrated design flow.

Specifications

Interactive simulation control

- Integrates Analog Design Environment L capabilities for single test operation
- Design exploration with sweeps, corners, and Monte Carlo analysis
- RelXpert integration for reliability analysis

- Supports matching and correlation constraints from Virtuoso Schematic Editor XL
- Incremental re-simulation
- Creation and tracking of parametric dependencies among tests for more complex analysis
- Integrated with Virtuoso Multi-Mode Simulation
- Ability to save different test configurations for different steps in the testing flow

Visualization and analysis of results

- Creation of specifications directly from simulation results
- Quick overview window of test results against target specification
- Cross-probing and annotation to schematics and layout
- Calculator, OCEAN, MDL, and MATLAB measurement strategies
- Integrated Virtuoso Visualization and Analysis XL for fast waveform analysis
- Integral documentation creation and support for Text, HTML, and PDF
- History of prior results with the ability to compare any two sets of data
- Measured results are saved along with the tests as a lib/cell/view for easy design management

Distributed and batch processing

- Built-in distributed processing, with support for external load balancing software
- Test-specific job policy for efficient use of hardware resources
- Parallel analysis over multiple tests and all required corners
- Batch scripting support through OCEAN XL

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