ANSYS Simplorer® 17
Unmatched Versatility for System Simulation

ANSYS Simplorer is a powerful platform for modeling, simulating, and analyzing virtual system prototypes. Simplorer enables product development teams to verify and optimize performance of their software-controlled, multi-domain systems designs.

With flexible modeling capabilities that include tight integrations with ANSYS solutions for 3-D multiphysics simulation and embedded software design, Simplorer helps product development organizations analyze design concepts, perform detailed analysis and verify full-system performance.

Multi-Domain System Modeling
Powerful Graphical Modeling
Create hierarchical schematics of complex power electronic circuits and multi-domain systems
• Model with standard languages and exchange formats, including:
  • VHDL-AMS (IEEE 1076.1)
  • Modelica
  • SML (Simplorer modeling language)
  • FMI (functional mock-up onterface)
  • C/C++
  • SPICE
• Use wizard-driven code editors to create VHDL-AMS, Modelica®, SML, C/C++ and SPICE models
• Combine conserved (acausal), signal-flow (causal), and discrete event system behaviors
• Use on-the-fly design checking tools to assure consistency of connection types and physical domains

Access to Extensive Model Libraries
• Model complete electrical/electronic systems with libraries of analog and power electronics components, digital and logic blocks, sensors, and transformers.
• Select from broad collections of characterized manufacturers, components, including power semiconductors, power management ICs, magnetic devices and ultracapacitors.
• Include multi-domain effects with mechanical, hydraulic, and thermal components.
• Use application-specific libraries for switch-mode power supplies, electric vehicle powertrains and aircraft electrical power systems.
• Create and manage user and corporate model libraries with built-in graphical tools.
Reduced-Order Model Generation from ANSYS 3-D
- Use reduced-order modeling (ROM) interfaces to generate accurate, compact models from detailed 2-D and 3-D physics simulations.
- Link to a variety of ANSYS tools to create high performing models for electromagnetic machines and actuators, circuit parasitics and cables, excitations for EMI/EMC, electronics thermal networks, signal integrity, general flow and heat transfer characteristics, and rigid-body dynamics.
- Multiple ROM generation techniques (including statespace, electrical circuit equivalent, SVD, modal response) support a range of analysis requirements.

Integrated with SCADE Suite® and SCADE Display® for Embedded Control Software and HMI Design
- Verify, optimize and calibrate performance of safety-critical software with the multi-domain physical system.
- Use SCADE Suite or SCADE Display to interactively monitor and debug embedded control software or HMI execution.

Power Electronic Device and Module Characterization
- Use wizard-driven graphical tools to create power MOSFET, IGBT and diode components from datasheet information.
- Characterize DC/DC converter models or choose from a library of behavioral models for manufacturers’ components.

Model Exchange with External Tools
- Compatible with the functional mock-up interface (FMI) for model exchange to import models from all FMI-compliant tools and export Modelica models as FMUs.
- Create or reuse C/C++ models with the Simplorer C interface.
- Import MathWorks® Simulink® models using Simulink Coder™.

Multi-Domain System Simulation
Robust Solvers
- Perform fast and accurate simulation of continuous-time, discrete-time, digital and analog/mixed-signal behaviors.
- Achieve high numerical efficiency with sophisticated solver synchronization and adaptive time-step control.
- Connect to high-performance compute resources to increase throughput of simulation runs.

Basic Simulation Experiments
- Calculate steady-state, time-domain and frequency-domain responses of the system.
- Create multiple analysis configurations with options for fine-grain control of solver settings.
- Replay simulations from existing results.
Advanced Simulation Studies
- Sweep parameter values within defined ranges to identify effects on system response.
- Optimize system performance based on cost functions of specified design variables.
- Determine the sensitivity of performance metrics to variations in model parameters.
- Analyze the effects of statistical variations (e.g., manufacturing tolerances, environmental uncertainty, etc.) on system performance.
- Change variable values interactively to tune performance of the model.
- Connect with ANSYS Workbench™ to construct and manage simulation project workflows with 3-D physics solvers.
- Use ANSYS DesignXplorer™ to construct sophisticated design exploration studies.

Tool Integration and Customization
- Connect with SCADE Suite® and SCADE Display® for interactive white-box and black-box simulation with embedded control designs.
- Dynamically couple with ANSYS 2-D and 3-D electromagnetic (low and high frequency), CFD and mechanical solvers.
- Build custom graphical panels with SCADE Test™ rapid prototyper to control and monitor Simplorer simulations.
- Co-simulate with MathWorks Simulink and PTC® Mathcad®
- Write or record Python or Visual Basic scripts to automate simulation workflows.
- Build custom toolkits with Simplorer comprehensive Python API.
- Add new model libraries and application extensions from the ANSYS ACT store.

Analysis and Reporting
Creating Graphical and Tabular Reports
- Select from a broad range of graphical and tabular reports for displaying and analyzing simulation results.
- Plot time-domain and frequency-domain waveforms and parametric relationships in 2-D and 3-D.
- Display frequency-domain responses as Bode and Nyquist plots.
- Generate data tables and numeric displays.
- Display graphical reports directly on system diagrams and update them as the simulation progresses.
- Apply a range of transformations, markers and measurements to waveform traces.

Export to Other Environments
- Quickly export diagrams, plots, and tables to Microsoft® Excel® or a variety of image formats.
- Automatically generate design summary reports in HTML.
System Requirements

OS Platforms
- Microsoft Windows 7 Professional and Enterprise Edition (64-bit)
- Microsoft Windows 8 / 8.1 Professional and Enterprise Editions (64-bit)
- Microsoft Windows HPC Server 2008 (64-bit)
- Microsoft Windows Server 2012 Standard (64-bit)
- Microsoft Windows 10

Supported Compilers
- Microsoft Visual Studio® 2010
- Microsoft Visual Studio C++ 2010 Express
- Microsoft Visual Studio 2008
- Microsoft Visual Studio C++ 2008 Express
- Microsoft Visual Studio 2005
- Microsoft Visual Studio C++ 2005 Express

CPU
2 GHz or faster

RAM
2 GB minimum (4GB or higher recommended)

Disk Space
10 GB recommended

Graphics
DirectX 9 graphics device with WDDM 1.0 or higher driver

Simpler Product Line

ANSYS Simpler Advanced:
- Integrated modeling & simulation environment
- VHDL-AMS, Modelica SML, C/C++ and SPICE support
- Model libraries of basic and multi-domain components
- Model libraries of analog and power electronics components
- Model libraries of characterized manufacturers' components
- VHDL-AMS model libraries of basic and digital components
- Modelica Standard Library (MSL)
- Application-specific model libraries for Electric Vehicles, Aircraft Electrical Systems, and Industrial Power Systems
- Switch-Mode Power Supply Model Library
- Support for Modelica libraries from Modelon (Hydraulics, Pneumatics, Liquid Cooling, Heat Exchangers, Thermal Power)
- Reduced-Order Model (ROM) creation from ANSYS 3D
- Device characterization tools for IGBTs, MOSFETs, Diodes, and DC/DC converters
- Analog, digital, and mixed-signal simulation
- Time-domain, frequency-domain, and steady-state analyses
- Optimization, sensitivity, and statistical analyses (Optimetrics)
- Co-simulation with ANSYS 3D physics solvers
- Waveform analysis and reporting
- FMI for Model Exchange – Import
- FMI for Model Exchange - Export (for Modelica subsystems)
- VHDL-AMS model encryption
- MathWorks® Simulink® co-simulation
• PTC Mathcad® co-simulation
• Application scripting and automation

**Simplorer Entry**
Simplorer Entry is a problem-size limited edition of the Simplorer Advanced package and is included with ANSYS flagship products.

**Contact Information**
Submit questions to ANSYS Customer Portal at
https://support.ansys.com/portal/site/AnsysCustomerPortal

Contact one of our Sales representatives at
ansysinfo@ansys.com

Discover the latest news on our products and technology at
http://www.ansys.com/Products/Systems/ANSYS-Simplorer

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