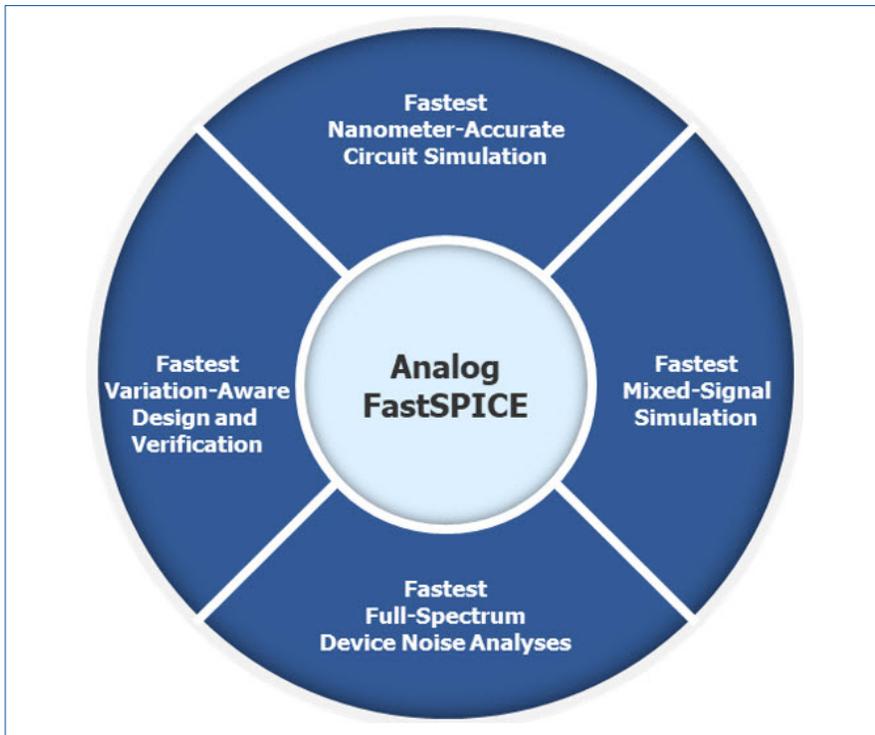


## Analog FastSPICE Platform



Nanometer-scale analog, RF, mixed-signal, and custom-digital circuit design is extraordinarily demanding. Designers must worry about a myriad issues, from tight specifications to intensive physical effects. Successful design demands a fast, full-featured verification platform that never sacrifices accuracy. The Mentor® Analog FastSPICE™ (AFS™) Platform uniquely delivers.

With foundry-certified accuracy by the world's leading foundries, the AFS Platform delivers nanometer SPICE accuracy > 5x faster than traditional SPICE and > 2x faster than parallel SPICE simulators. For large circuits, the AFS Platform delivers over 50M-element capacity and the fastest mixed-signal simulation with Symphony. For silicon-accurate characterization, the AFS Platform includes the industry's only comprehensive full-spectrum device noise analysis and integrates with Solido Variation Designer delivering full variation-aware design coverage in orders-of-magnitude fewer simulations, but with the accuracy of brute force techniques. For memory and other array-based circuits, AFS Mega delivers silicon-accurate simulation with greater than 100M element capacity.

Design teams at over 175 semiconductor companies worldwide rely on AFS to design their nm-scale ADCs, DACs, PLLs, high-speed I/O, high-speed clocking, CMOS image sensors, memories, and RFICs. AFS customers include the world's leading suppliers of consumer electronics, mobile communications platforms, application processors, server ICs, network processors, image sensors, and automotive ICs.

### FEATURES AND BENEFITS

- **Fastest Nanometer-Accurate Circuit Simulation**
  - Certified to FinFET process by leading foundries
  - > 5x faster than traditional SPICE
  - > 2x faster than parallel SPICE
  - > 50M-element capacity
- **Fastest Mixed-Signal Simulation**
  - Supports all leading digital solvers
  - Best-in-class usability, allowing maximum reuse of verification infrastructure
  - Advanced verification & debug capabilities to improve verification coverage
- **Fastest Full-Spectrum Device Noise Analysis**
  - Includes all device noise sidebands/harmonics
  - Transient noise within 1–2 dB silicon data
  - PSS & pnoise with > 100K-element capacity
- **Fastest Variation-Aware Design & Verification**
  - Improved design quality & time-to-market
  - SPICE accurate, high-sigma verification
  - > 1000x faster than brute force simulation
  - Easy to use & deploy

As a single executable, AFS operates either standalone from the command line or integrated with industry leading analog design environments. It uses standard compute platforms from a single core up to 32 cores. AFS supports standard SPICE netlist formats, standard foundry models, and produces outputs in industry-standard formats. Design teams can choose the most appropriate license configuration for their needs. AFS Platform features include: AFS Circuit Simulator, AFS Transient Noise Analysis, AFS RF Analyses, Symphony, AFS Mega, and Solido Variation Designer.

## AFS PLATFORM FUNCTIONALITY

### AFS Circuit Simulator

Nanometer SPICE accuracy  
 > 50M-element capacity  
 > 150 dB transient dynamic range  
 > 5x faster than traditional SPICE  
 > 2x faster than parallel SPICE  
 DC, transient, AC, & noise analyses  
 Monte Carlo, alter, & sweep support

### AFS Mega

Nanometer SPICE accuracy  
 >100M-element capacity  
 Compatible with leading digital FastSPICE flows  
 DC & transient analyses  
 Monte Carlo, alter, & sweep support

### Solido Variation Designer

Full coverage PVT & Monte Carlo verification  
 SPICE-accurate high-sigma verification  
 1000x faster than brute force simulation  
 Full-chip memory & cell-level verification  
 Comprehensive verification of full cell libraries  
 Powerful design sensitivity, debugging, & optimization

### AFS Transient Noise Analysis

Full-spectrum accuracy to noise floor  
 Device noise analysis for any circuit type  
 > 50M-element capacity  
 Validated to within 1–2 dB of silicon

### AFS RF Analyses

Shooting Newton (SN) & Harmonic Balance (HB) analyses  
 Single-tone PSS, Full-Spectrum pnoise, oscnoise, & sampled pnoise  
 > 100K element PSS convergence, no maxsideband  
 Multi-Tone HB for LNA, PA, Mixer, & TX/RX chain for IPn & P1dB

### Symphony Mixed-Signal Platform

Digital HDLs: Verilog, SystemVerilog, VHDL  
 SPICE & Verilog-A support  
 Monte Carlo, alter & sweep support  
 Hi-Z detection & Transient Noise analysis  
 Checkpoint-Restore

### EZwave™ Waveform Processor

Fast & intuitive waveform viewing  
 Customizable waveform calculator  
 Broad application-specific measurement tools

## AFS PLATFORM SPECIFICATIONS

### Input/Output

Leading SPICE netlist formats  
 DSPF back-annotation  
 VCD, .vec  
 FSDB, tr0, PSF, Nutmeg

### Model Support

BSIM3,BSIM4, BSIMSOI, BSIM-CMG  
 MOS11, PSP, HiSIM, HiSIM-HV  
 MOS1, MOS3, JFET, Diode, Juncap  
 S-parameter, W element, bsource  
 Verilog-A, Verilog-AMS  
 Gummel-Poon, HICUM  
 Mextram, VBIC

## AFS PLATFORM SUPPORT

Leading EDA design environments  
 Standalone command line  
 Commercially available Cloud offerings

### Hardware Requirements

Single-core or multi-core systems  
 Minimum memory recommendation:  
 2 GB of disk space for simulation  
 2 GB of physical memory (RAM)  
 2 GB of swap space (virtual memory)  
 Operating System: Linux®

For the latest product information, call us or visit: [www.mentor.com](http://www.mentor.com)

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