

What's New in OptiSystem 8.0

The most comprehensive optical communication design suite for optical system design engineers is now even better with the release of OptiSystem version 8.0 - also available in 32-bit and TRUE 64-bit¹ editions.

The latest version of OptiSystem features a number of new features and enhancements to address the design of passive optical network (PON) architectures using orthogonal frequency division multiplexed (OFDM) signals, optical coherent detection systems and injection-locked Fabry-Perot laser diodes (F-P LD).

OptiSystem API is extended to support OptiSPICE². OptiSystem is the default waveform viewer and signal integrity analyzer of OptiSPICE.

Component Libraries:

Transmitters

- Fabry-Perot Laser: A new model of a wavelength-locked Fabry-Perot laser diode (F-P LD) based on the rate equations for the semiconductor laser diode. Fabry-Perot laser is a cost-effective source for the wavelength-division multiplexed passive optical networks.
- Duobinary, CSRZ and DPSK Transmitters: New transmitters encapsulate the complexity of advanced modulation formats such as duobinary, CSRZ and DPSK facilitating the design of fiber-optic communication networks.
- OFDM Modulator/Demodulator: OFDM can be applied in optical long haul transmission systems and have many advantages over conventional single-carrier modulation format. The new components allow for the simulation of OFDM transmitters and receivers, supporting different types of modulation schemes such as BPSK, QPSK, QAM, etc.
- Electrical Jitter: Random jitter was added to the component. The new version supports random and deterministic jitter.

¹The 'TRUE 64-bit' edition of Optiwave software products are 64-bit applications written specifically for next generation operating systems. The newly optimized code structure results in improved computing performance and efficient memory utilization. Users are now capable of running large scale 'real world' simulations, without memory restrictions limited to 32-bit applications.

²OptiSPICE is the first circuit design software for analysis of integrated circuits including interactions of optical and electronic components. It allows for the design and simulation of opto-electronic circuits at the transistor level, from laser drivers to transimpedance amplifiers, optical interconnects and electronic equalizers. OptiSPICE is a fully-integrated solution for parameter extraction, schematic capture, circuit simulation and waveform analysis.

- Laguerre Transverse Mode Generator: A new option allows for generating orthogonal modes with complex or real fields.

Signal Processing

- T Flip-Flop, D Flip-Flop, JK Flip-Flop, RS Flip-Flop, RS NOR Latch, RS NAND Latch and Clocked RS NAND Latch: Extend the capabilities of OptiSystem when processing digital signals.
- Electrical Downsampler: More control over the electrical signal bandwidth.
- Convert To/From Individual Bits; Serial To Parallel Converter/ Parallel To Serial Converter: New components allow for the simulation and processing of individual bits instead of blocks.

Receivers

- Voltage-Controlled Oscillator: Designed to have the oscillation frequency controlled by a voltage input.
- DPSK Receiver: Encapsulates the complexity of DPSK modulation format, facilitating the design of fiber-optic communication networks

Filters

- Digital Filter (IIR and FIR): Support for loading coefficients from a file and 'poles and residues' format were added to the filter.
- Polarization Filter: Filters X or Y polarization.

MATLAB

- MATLAB Component: Support for M-ary signals was added to the MATLAB component.

OptiSPICE

- OptiSPICE Output: OptiSystem is the default waveform viewer and signal integrity analyzer of OptiSPICE. The OptiSPICE Output component is the connection between the OptiSPICE engine and OptiSystem.

Optical Amplifiers

- Yb Doped Fiber Dynamic: A new time domain Stimulated Brillouin Scattering (SBS) model for high-power Ytterbium doped fiber amplifiers. The new model describes the interplay between the first and second-order Stokes, pump, and signal in double-clad fiber amplifiers.

Visualizers

- BER Analyzer: a new algorithm allows for counting of errors at a user defined decision and threshold. Users can also set the eye opening tolerance to define whether the eye is close or not.
- Spatial Visualizer: A new option controls the calculation of orthogonal spatial modes.

GUI and Integrated Design Environment:

- Extended precision display: A new scientific-engineering format for displaying parameters and results in the layout, project browser and component properties was added to OptiSystem.
- Semi-Log BER Plots: Report page and component viewers support for Log-Log and Semi-Log plots are now supported.

Application and Validation Projects:

Additional applications and validation projects were added to the OptiSystem documentation and sample files, covering broadband optical system based on a passive optical network, optical CDMA, optical OFDM, coherent optical transmission and much more.