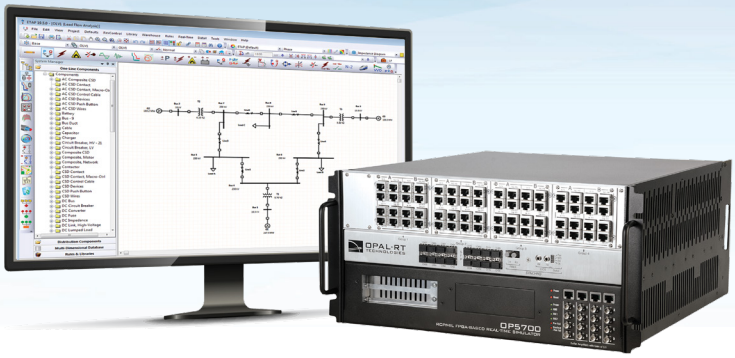
ePHASORSIM

OPAL-RT TECHNOLOGIES

Large-Scale Power System Real-Time Simulation



ANALYZE, TEST AND VALIDATE CONTROLS, MONITORING AND PROTECTION DEVICES ON 100,000+ NODE T&D POWER SYSTEMS

Power grids are increasingly stretched beyond their limits by renewable energy sources, overloaded networks, and cybersecurity requirements. This dramatically increases both the operational complexity and control/protection requirements of these grids. **ePHASORSIM** offers in-depth analysis to simulate, test and maintain these networks in real time, with significant time and money savings.

ePHASORSIM simulates power systems at a few-millisecond timestep in phasor domain mode (voltage/current magnitude and angle, power transfer, and machine speed)

Compatible Modeling Environments

Simulink, Excel, ETAP, PSS®E, CYME, Power Factory, FMU (Open Modelica)

CYME INTERNATIONAL T&D — EATON'S CYME POWER ENGINEERING SOFTWARE

etap Powering Success

OpenModelica

MATLAB® & SIMULINK®

ePHASORSIM Helps Power Labs and Research Facilities to Focus on:

- Wide-area control/protection/state estimation algorithms
- EMS tools and algorithms, such as AGC and load shedding
- PMU streams and PDC applications
- System studies with massive quantities of renewable penetration
- Design and test of local controllers, such as voltage regulators
- Advanced metering and information networks
- Impact studies of load profiles in distribution networks

Microgrids

Wide Area Monitoring, Protection and Control

Power System Controls

Protection System

Hybrid & Electrical Transportation

Renewable Integration

Academia

Operator Training

Learn more at: www.opal-rt.com

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LARGE-SCALE POWER SYSTEM SIMULATION IN REAL TIME

Simulate power grids in real time with 100,000+ node transmission and distribution systems, including thousands of generators, transmission lines, cables, loads and transformers. Simulate synchronous generators with power system stabilizers, excitation systems and turbine governors.

TEST AUTOMATION PLATFORM & LOGGING

Perform test automation using Python™ scripts and modify parameters while the simulation is running, while using ScopeView—our data acquisition and signal processing tool—to record, display and analyze the results.

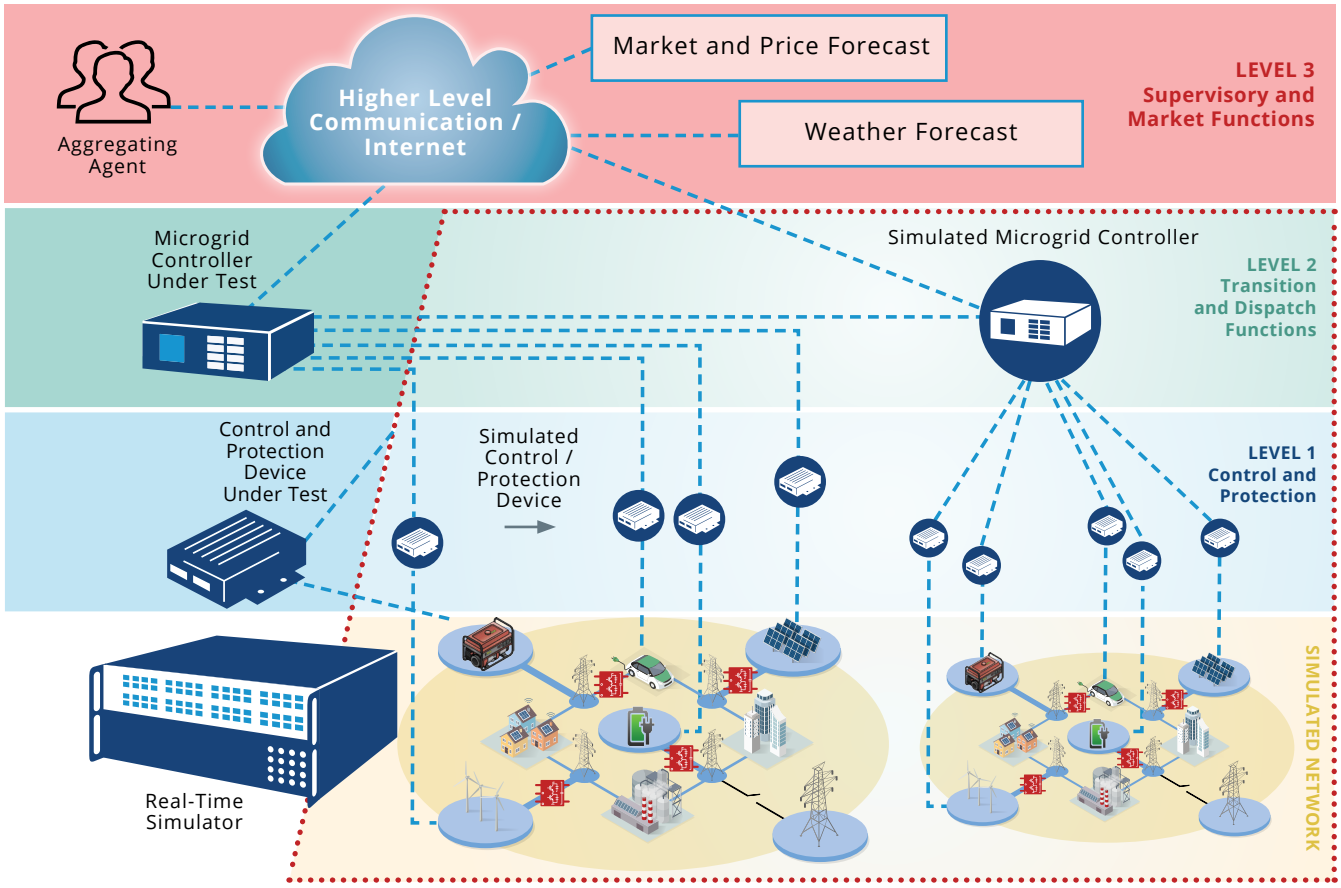
RICH & EXPANDABLE LIBRARY OF MODELS

A built-in library includes generators, voltage sources, loads, transmission lines, power system stabilizers, reactors, external Simulink™ blocks, etc. A Modelica-based library of models including various types of generators and controllers is also available, allowing users to create their own User-Defined Models (UDMs) to supplement the library.

INTEGRATION THROUGH ETHERNET PROTOCOLS & I/O MODULES

ePHASORSIM's support for multiple communications protocols and various I/O modules allows the user to connect the simulation with the SCADA system, EMS tools and wide area control algorithms. Some users have included integration with ETAP's AGC toolbox for load-frequency control, and the RTDMS package from EPG for PMU/PDC streams and visualization applications

TYPICAL MICROGRID APPLICATION



ABOUT OPAL-RT TECHNOLOGIES

OPAL-RT is the world leader in the development of PC/FPGA Based Real-Time Digital Simulator, Hardware-In-the-Loop (HIL) testing equipment and Rapid Control Prototyping (RCP) systems to design, test and optimize control and protection systems used in power grids, power electronics, motor drives, automotive industry, trains, aircraft and various industries, as well as R&D centers and universities.

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