

SIMICS: Virtual Platforms for Power Architecture™



Virtualized Systems Development

Virtutech® Simics® is a high performance, adaptive simulation platform that creates a virtual environment in which products can be efficiently Defined, Developed, and Deployed. Simics supports hands-on system architecture investigations, true iterative development, and the ability to develop, integrate, and test software without access to hardware.

Simics Virtual Platforms for Power Architecture™ allows developers to:

Hardware

- » Fix prototype problems without “blue wire” modifications
- » Quickly add new processors, IO devices, or more boards to the system
- » Unmask bugs that would otherwise be obscured when the system continues to run

Software

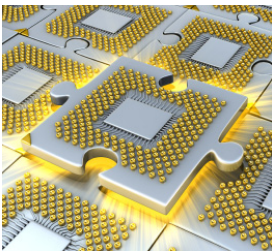
- » Work efficiently on separate tasks even when hardware is in short supply
- » Debug a problem seen by an engineer in Asia, with an engineer in Europe
- » Perform software development even when prototypes are not available
- » Duplicate every bug that has ever been observed
- » Enjoy more control and visibility than offered by JTAG

System Integration and Test

- » Begin system integration long before hardware
- » Test the system's response to hardware failures

Virtutech Simics is the Key to Multicore

Simics Virtual Platforms provide unique development and debug capabilities, and are especially valuable for sophisticated multicore devices. With a Simics virtual platform, you have visibility and control of internal SoC devices and states, can speed-up/slow-down virtual time to flush out timing related bugs, can instantaneously stop all cores to debug synchronization issues, can reverse the execution to discover the source of a particular bug, and can take a snapshot of the entire state of execution for later replay or debugging.



Virtutech provides support for a large number of Power Architecture™ devices, ranging from basic models that include just the SoC and memory — for fast hardware design prototyping and incorporation into your specific system designs, to models of production and reference boards — for efficient evaluation and software development.

Simics for Power Architecture™

Supports

- » AppliedMicro
- » Freescale
- » IBM

At-a-Glance

- » Runs Linux, Hypervisors, most RTOS's, and application stacks
- » User-extendible for custom system modeling
- » Integrates with most major IDEs and software development tools
- » Integrates with 3rd party products for multicore design and verification

Key Uses

- » System prototyping and configuration
- » Board design and prototyping
- » Software development and debug
- » Multi-core debugging and testing
- » Progressive systems integration & verification
- » Debug, test, and optimize sophisticated networking applications
- » Field demos

Unique Virtual Platform Features

- » Scalable from one to hundreds of cores
- » Scalable from reference board to custom system
- » Quick prototyping
- » Reverse execution & debugging
- » Repeatable and deterministic
- » Record & replay system execution
- » Simulate the entire system, not just one SoC or one board
- » PCIe, SRIO, Ethernet, and other external connectors
- » Runs symmetric/asymmetric OS installations
- » Runs complete, unmodified software
- » Networking support: virtual & physical
- » All major blocks of SoC modeled

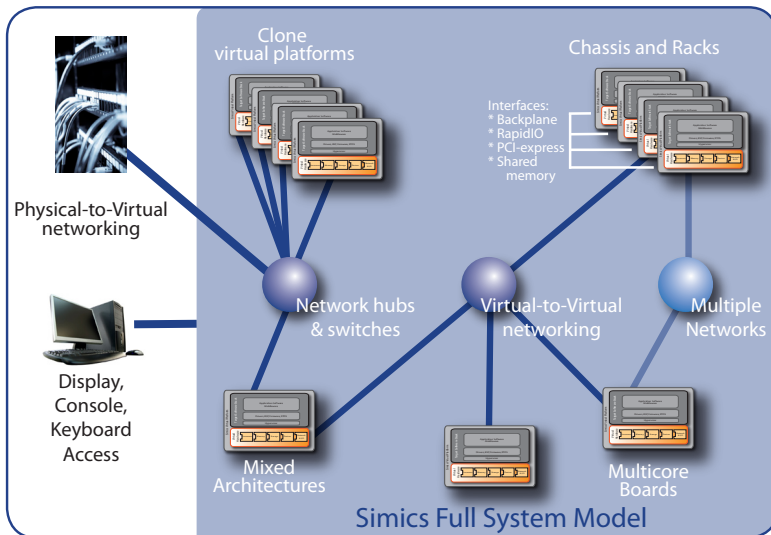
Power.ORG ™

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Simics Virtual Platforms are Unique

Simics Features and Capabilities

- » Accurate & fast virtual platform
- » Much more than just an instruction set simulator
- » Multicore processor and mixed architecture support
- » Runs unchanged binaries
- » Ethernet from virtual-to-virtual or virtual-to-physical
- » RapidIO, PCI-express, shared memory
- » Clone devices or create new ones
- » Add more memory, processors, accelerators, FPGAs, anything
- » SystemC TLM v2, C, C++, Device Modeling Language (DML)



With Simics, developers can expand far beyond a single, pre-defined platform. Any Simics virtual platform can be created or modified to support any standard or custom hardware, including ASICs and FPGAs. These can be modeled using SystemC TLM v2.0, C, C++, or Virtutech DML (Device Modeling Language) or by importing directly from Virtutech's model library containing hundreds of components, or by using these off-the-shelf models as the basis for your custom device model.

Simics has supported application development on simulated systems comprised of over 50 boards and 700 processors including multicore systems, heterogeneous designs, and network distributed systems. Its combination of features, and the ability to create large system models by "gluing" individual platform or device models together with Python scripts, allows complex systems to be quickly, accurately and fully virtualized within Simics.

Extensive Support for Power Architecture™

Processors

- » Freescale e300 (MPC83xx)
- » Freescale e500 (MPC85xx & QorIQ P1/P2)
- » Freescale e500mc (QorIQ P3/P4)
- » Freescale e600 (MPC86xx)
- » Freescale MPC603e (MPC82xx)
- » Freescale MPC750, MPC755 ("G3")
- » Freescale MPC74xx ("G4")
- » IBM PowerPC 403 core
- » IBM/AMCC PowerPC 405
- » IBM/AMCC PowerPC 440
- » IBM PowerPC 464FP core
- » IBM PowerPC 750(FX,GX)
- » IBM PowerPC 970, 970MP
- » IBM Power6

Virtual Development Boards

- » AMCC Ocotea (PowerPC440GX)
- » AMCC Ebony (PowerPC440GP)
- » BAE Systems RAD750
- » Curtiss-Wright SVM-183 board
- » Freescale QorIQ P2/P4 Families
- » Freescale MPC8572E
- » Freescale HP-Net MPC8641D
- » Freescale MPC8323
- » Freescale MPC8360
- » Freescale MPC8540ADS
- » Freescale MPC8548CDS
- » Freescale MPC8555CDS
- » Wind River SBC7447/57
- » Wind River SBC750GX



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