

SIMICS: Freescale QorIQ Virtual Platform



Build Complex Aerospace or Telecommunications Products with Simics

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.

Virtutech's QorIQ Virtual Platforms were used by OS, hypervisor, and application developers long before QorIQ silicon was available. Even with availability of QorIQ silicon, users continue to use Simics because of the unique benefits it offers, and the value that it brings to the product development team:

Hardware

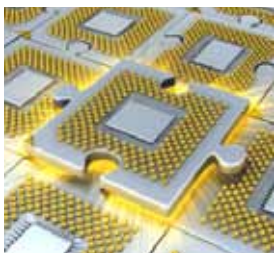
- » Fix prototype problems without "blue wire" modifications
- » Quickly add new processors, IO devices, or more boards to the system
- » Unmask bugs that would otherwise be obscured when the system continues to run

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 such as the QorIQ family. 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 several virtual platforms for the Freescale QorIQ™ family, 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.



For more information, visit: www.virtutech.com/QorIQ

Simics QorIQ Virtual Platform

QorIQ Devices Supported

- » P1/P2 Family (P20x0 - P10xx late 2009)
- » P3/P4 Family (P4080 - Others late 2009)

At-a-Glance

- » Hybrid simulation: cycle-approximate and fast functional
- » Runs Linux, Hypervisors, most RTOS's, and application stacks
- » User-extendible for custom system modeling
- » Integrates with most major IDEs
- » Works with products from Virtutech's and Freescale's partners for advanced multi-core design and verification

Key Uses

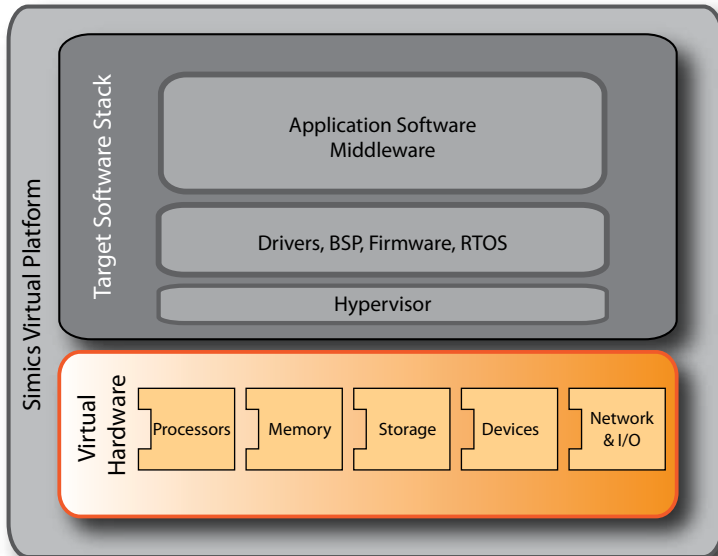
- » System prototyping and configuration
- » Board design and prototyping
- » Software development and debug
- » Multi-core debugging and testing
- » Progressive systems integration & verification
- » Debug, test, and optimize sophisticated networking applications
- » Field demos

Unique Virtual Platform Features

- » Scalable from single-core to many (>8 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 or asymmetric OS installations
- » Runs complete, unmodified software
- » Networking support: virtual & physical
- » All major blocks of SoC modeled



Simics Virtual Platforms are Unique



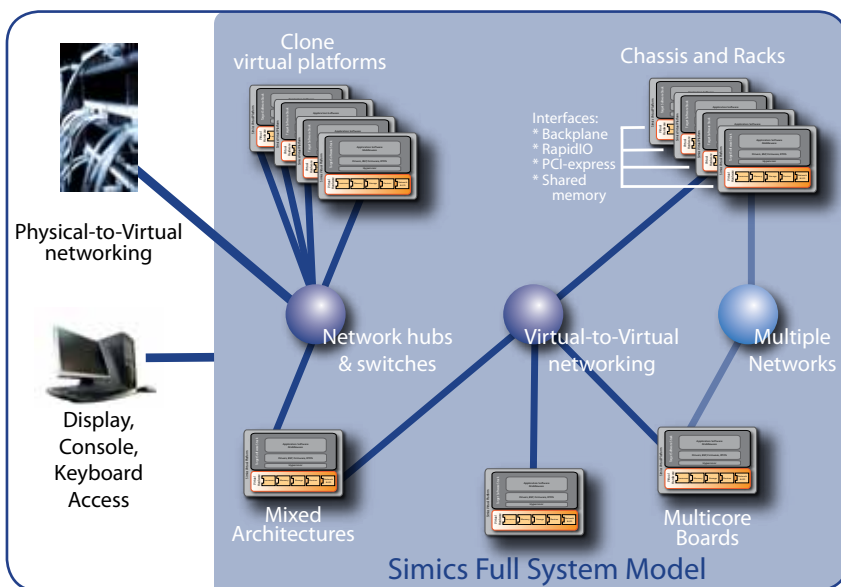
- » Accurate & fast virtual platform
- » Much more than an ISS
- » Multicore processor and mixed architecture support
- » Runs unchanged binaries
- » Ethernet from virtual-to-virtual or virtual-to-physical
- » RapidIO, PCI-express, shared memory
- » Clone devices or create new ones
- » Add more memory, 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.

Hybrid Simulation Capability!

The Simics Virtual Platform for the Freescale QorIQ P4080 includes a unique hybrid simulation capability that combines Freescale's cycle-approximate model of the P4080 with the Simics fast functional model. In a single simulation session, engineers can run in fast functional mode arriving at some code of interest. At this point, the model can switch to cycle-approximate mode for detailed timing and performance analysis and optimization.



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For more information, visit: www.virtutech.com/QorIQ