

WIND RIVER SIMICS

Electronic systems have become increasingly complex in recent years. These systems are software intensive, often containing multiple heterogeneous processors and multi-core processors running multiple software stacks and operating systems. In addition, they are usually part of a larger system connected via a local bus, rack, network, or the Internet.

Because of this increased level of complexity and connectivity, traditional development tools and processes are often less effective when designing, debugging, integrating, testing and maintaining these systems. Wind River® Simics® allows developers to radically enhance the way they develop, debug, and test electronic systems, providing a significant impact on important business metrics such as time-to-market, costs, and product quality.

DEVELOP SOFTWARE ON A SHARED PLATFORM WITH A FULL SIMULATED SYSTEM

Wind River Simics simulates the full target system to create a shared platform for software development. It allows you to break the rules of software development through ground-breaking debugging techniques, on-the-fly test and integration, and mechanisms for collaboration. With ubiquitous access to the shared platform, everyone sees the same thing, work is parallelized, tasks are automated, and product schedules shift left.

Software developers use Simics to simulate the target hardware of everything from a single processor to large, complex, and connected electronic systems. A Simics simulation of a target system can run unmodified target software (same boot loader, BIOS, firmware, real-time operating system, board support package (BSP), middleware, and application) while still inside the simulation framework.

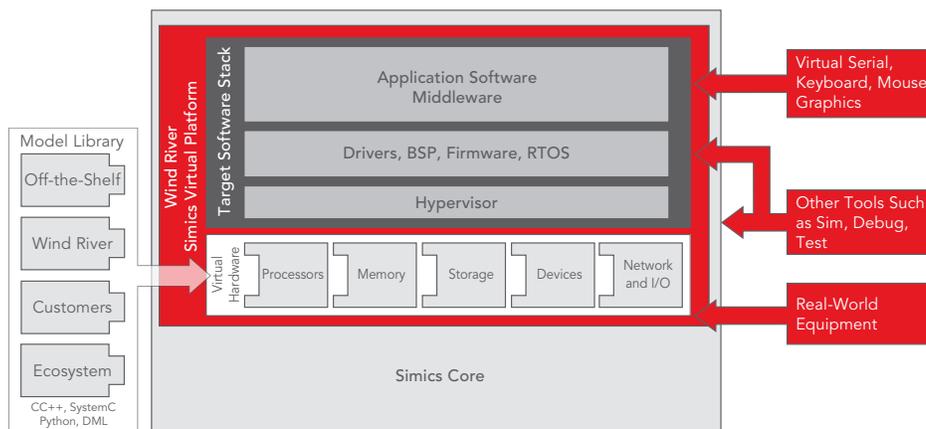


Figure 1: Simulate your entire target system

ACCELERATE PRODUCT DEVELOPMENT

Wind River Simics enables more effective collaboration by making it possible to share a complete virtual system and its entire state, including execution history, which increases efficiency and accelerates software development and testing.

Simics also enables significant improvements to the development process, further accelerating time-to-market. For example, activities such as board bring-up, system integration, and system testing can begin without physical hardware. In addition, Simics offers unique capabilities that speed development, including early and continuous system integration; faster prototyping by utilizing virtual prototypes instead of physical prototypes; and architectural analysis by running what-if scenarios and trying multiple hardware and software alternatives before committing to one.

OPTIMIZE SYSTEM DEVELOPMENT

Complex and connected systems are difficult to debug and manage. While traditional development tools can help you track down bugs related to a single board, finding a bug in a system of many boards can be a daunting task. For example, if you stop one board with a traditional debugger, other boards in the system will continue to execute, making bug isolation almost impossible.

Wind River Simics provides access, visibility, and control over all boards in the system. Single-stepping forward, or even in reverse, applies to the system as a whole, not just a part. Furthermore, a checkpoint—or snapshot—can be made of the entire system and then delivered to another individual. This other person then has access to the complete system, both hardware and software, and can continue execution as if it never stopped. Simics can simulate systems containing hundreds of boards and processors with a performance level that enables real software target loads to execute.

Simics virtual platforms are also easier to configure and manage than physical hardware, and parts of the virtual system can be easily replicated to test scalability. In addition, Simics' unique capabilities such as hardware and software fault injection, control over virtual system time, and access to all hardware registers, provide unparalleled control for software development and testing.

MANAGE FULL-SYSTEM TARGET HARDWARE

One of the biggest obstacles with developing, debugging, integrating, and testing an electronic system is that target hardware is not always available or even operational. Instead, product teams make do with less than ideal substitutes such as reference boards or host-based development. With Wind River Simics, there is unlimited target hardware for all team members. Furthermore, this virtual target hardware is not just a piece of the system; it can be the complete system. This gives product teams the ability to do their work in the context of a complete system, instead of just a part of it.

For those developers who support many different configurations of their target hardware, a Simics virtual platform provides the ability to easily manage multiple configurations of components, which is especially useful for compatibility testing and testing specific customer scenarios.

SUPPORT THE ENTIRE PRODUCT LIFE CYCLE

Wind River Simics supports the entire product lifecycle, from design through product maintenance.

Design

- Explore system design choices and hardware/software interfaces, before silicon is locked down.
- Evolve over product generations—experiment with hardware and software variations, and analyze impacts.

Develop

- Develop, debug, and test low-level software, BSPs, and OS configurations without hardware available.
- Parallelize development of software and hardware.
- Provide all application developers with virtual target hardware to eliminate integration issues later.
- Leverage advanced debugging capabilities such as check-pointing, bug transportation, reverse debugging, breakpoints, and watchpoints.

Integrate and Test

- Build out the virtual system gradually for early and agile integration, expanding to physical hardware as it becomes available.
- Utilize fault injection and corner case testing for any hardware or I/O failures.
- Automate and parallelize tests and test configurations with Simics scripting.

Deliver

- Enable partners and ecosystems by sharing the complete system, or parts of it.
- Distribute and share customer-specific configurations easily by reconfiguring the Simics system into any specific variant of components.

Maintain

- Aid customer support by setting up a virtual lab and equipping geographically distributed teams with a virtual equivalent of the end product.
- Maintain legacy products indefinitely without worrying about hardware obsolescence.

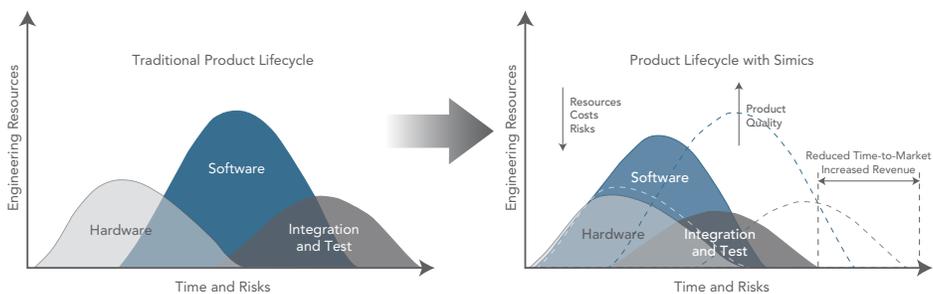


Figure 1: Wind River Simics compresses the traditional product lifecycle

SUPPORTED TARGET ARCHITECTURES

- Power
- Intel
- MIPS
- ARM
- M68K
- SPARC
- Others

KEY WIND RIVER SIMICS CAPABILITIES

- Immediately run a simulation of popular target architectures using the built-in Quick Start Platform that comes with Simics.
- Run any software that runs on the physical target on Simics.
- Enable everyone with access to the virtual system—within teams, across teams, and with partners and your ecosystem.
- Analyze a full system, not just a single board.
- Debug efficiently by running the simulation forward or in reverse.
- Resume execution from the exact point at which you last saved it.
- Share system state, execution history, and virtual hardware setups with anyone, anywhere.
- Inject faults to test system robustness.
- Automate manual steps and repetitive tasks with full scripting capability.
- Use the Simics built-in, Eclipse-based, C/C++ source code debugger, or use your standard software toolset.
- Integrate with your existing environment.
- Simulate your target system including processors, devices, full boards, and systems.
- Use a prepackaged virtual platform from Wind River, build your own, or have Wind River Professional Services build one for you.

