



# DELIVER FASTER, BETTER, AND MORE SECURE SOFTWARE FOR THE INTELLIGENT EDGE

## Wind River System Simulation and Intel® Simics®

Wind River®, the leading provider of software for the intelligent edge, and Intel® have combined the expertise of seasoned intelligent edge experts with the power of Intel Simics, a full-system simulator, to help software developers simulate the hardware of complex electronic systems. Intel Simics allows on-demand and easy access to user-defined virtual target systems and more efficient collaboration between developers, unlocking faster innovation and stable automation. With Intel Simics, you can adopt new development techniques that are simply not possible with physical hardware, enabling you to deliver better software faster.

As a virtual alternative to physical hardware, Intel Simics allows you to:

- Greatly increase engineering efficiency, lower development costs, and enable true DevSecOps.
- Improve a host of tasks within prototyping, development, and deployment processes, from experimenting and testing to configuration and communication.
- Thoroughly test vulnerabilities in relevant security scenarios within a safe and controlled environment, without the associated costs and risks of using real hardware.

## Why Simulation for the Intelligent Edge?

The intelligent edge enables unprecedented use cases and defines new types of workloads that increase the complexity of systems and devices deployed at the edge. This includes multiple processor architectures, multilayered software stacks, and more connectivity — which opens additional security risk, requiring more validation throughout the lifecycle.

Compounding the challenge, developers have turned to DevOps and continuous development practices to meet expectations for quick deliveries. Such methodologies rely on fast iterations for test, feedback, and deployment.

Finally, collaborative and cross-functional teams need tools to communicate and share a common development baseline. They need a robust software solution that simulates hardware targets that are not yet physically available or are caught in a disrupted supply chain.

## Wind River System Simulation Solutions

Based on a long legacy of successful deployment in real-world scenarios at the edge, Wind River provides the industry's most reliable portfolio of operating environments and related tools. Wind River system simulation consists of software solutions and services tailored for enabling DevSecOps, includes support for the Intel Simics simulator and virtual platform, and provides the commercial quality required for complex deployments, even in highly regulated markets.



### Ecosystem component

Intel Simics simulator, Intel Simics virtual platform public releases

### Solutions

Wind River provides commercial support and maintenance as well as professional services for Intel Simics

### Value

- Long-term support throughout the entire product lifecycle
- Extended list of hardware architectures, supported platforms, and targets
- Optimized for Wind River edge operating systems portfolio
- Compatible with Wind River Studio Developer
- Professional services for custom model creation, validation, and optimization

The demand for system-level simulation is growing exponentially as more devices are being deployed at the edge. Overall complexity is introduced by collaboration among various system integrators, hardware types, and software supply chains. Navigating these challenges demands a more cohesive approach when selecting vendors for your next big project, and it requires use of open source technologies to avoid vendor lock-in. With the Intel Simics public release as a solid starting point, users can stand up their suite of requirements before hardware is available or even decided upon. Moving to the next stage in the product lifecycle, the commercial advantage from Wind River system simulation can augment the overall development lifecycle experience, reduce costs, and improve time-to-market.

## Intel Simics Simulator and Virtual Platform

The Intel Simics simulator provides the technology to build fast, functional virtual platforms. The base product contains the simulator core, user interface, framework components, and documentation. It also includes the command-line interface, debugging, inspection, tracing, target control, and checkpointing features. The simulator core includes the Intel Simics simulator API, multi-threaded scheduler, and configuration management. The release includes the Device Modeling Language (DML) compiler and example models:

- **High-performance simulation:** One of the original core goals of the Intel Simics simulator was to run target system code quickly, using a functional level of abstraction with simplified timing.
- **Specific system models:** A key purpose of the Intel Simics simulator is to provide virtual platforms for specific hardware systems, with complete isolation between host and target.
- **Flexible and dynamic framework:** The Intel Simics simulation framework is fundamentally dynamic. It is possible to create objects in the simulation and load new model types into the simulator at any time.

## Wind River's Comprehensive Portfolio of Operating Environments and Related Tools

Wind River has optimized built-in support for Intel Simics, ensuring seamless integration with processes and workflows when using simulation across the portfolio. Select any of the Wind River Edge products for the best out-of-the-box experience when building your next intelligent edge system while leveraging simulation:

- **VxWorks®:** A high-performance real-time operating system (RTOS) for the development of robust mission-critical embedded systems for the intelligent edge
- **eLxR Pro™:** Commercial Linux for mission-critical and data-intensive workloads, including AI, machine learning, and computer vision, with enterprise support, maintenance, and services
- **Wind River Linux LTS:** A comprehensive suite of products, tools, and lifecycle services to build and support intelligent edge solutions, based on the popular Yocto Project open source initiative
- **Wind River Helix™ Virtualization Platform:** A safety-certifiable multi-OS hypervisor enabling mixed-criticality applications onto a single edge compute software platform, simplifying, securing, and future-proofing critical infrastructure solutions
- **Wind River Studio Developer:** A modern DevOps platform that accelerates development, deployment, and operation of robust mission-critical embedded systems for the intelligent edge

## More Information

- Details about Intel Simics simulator can be found at [www.intel.com/content/www/us/en/developer/articles/technical/simics-simulator-technology.html](http://www.intel.com/content/www/us/en/developer/articles/technical/simics-simulator-technology.html).
- Intel Simics simulator public release can be downloaded from [www.intel.com/content/www/us/en/developer/articles/tool/simics-simulator.html](http://www.intel.com/content/www/us/en/developer/articles/tool/simics-simulator.html). For the end-user license, see the [terms of use](#).
- Additional information about system simulation is available at [www.windriver.com/solutions/learning/system-simulation](http://www.windriver.com/solutions/learning/system-simulation).

## SUMMARY

The Intel Simics and Wind River system simulation joint solutions enable developers, product designers, and testers to work in parallel by taking advantage of faster and more agile methodologies to improve quality, mitigate the risks associated with hardware availability, decrease overall costs, and improve time-to-market.

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