

Simics 4.2 Highlights



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The 2009 spring release of Simics is a feature packed version of Simics filled with state-of-the-art virtualization technologies, modeling connectivity functionality and ease-of-use enhancements. Virtutech's continued effort of full system simulation excellence, commitment to open standards and partnerships have resulted in a release with many new important capabilities for both new and existing users. With this release, Virtutech strengthens its unique position of delivering VSD – Virtualized System Development, which is a solution applicable to large systems and whole equipments, not only isolated components.

Simics Accelerator 2.0 – Performance and Scalability

Simics 4.2 builds on the accelerating technologies introduced in Simics 4.0, and now introduces distributed simulation across any host environment. Already with the first version of Simics Accelerator, multicore hosts could be efficiently utilized for speeding up simulation of large target systems through parallelization techniques. Now with the 2.0 version, the simulation can be even further accelerated by distributing the simulation session over a network of host servers, where each host machine can be equipped with several CPUs or cores. It's easy to use a spare set of laptops or other less frequently used computer resources, simply connect them in a network and use them to accelerate a simulation. The result is that with Simics Accelerator, now can take full advantage of

a powerful distributed multi-core host environment to speed and scale up a simulation.

Eclipse UI and API

Virtutech's commitment to Eclipse is in this release reflected by two items. The first being the Simics Eclipse plug-in is extended with powerful viewers of the simulated target, its registers and memory. (See illustration 1.) Via the plug-in, register names, banks and values can easily be inspected and edited, and the same goes for memory content and memory mappings. The editing possibility opens up for useful debug possibilities with runtime fault injection. Simics Eclipse plug-in work in a standard Eclipse installation and install directly from inside Eclipse. The second item is the new Simics Eclipse API, which is an API for simulation control and target inspection. This API is remotely accessible from within Eclipse, which means that Eclipse can be running on a different machine from Simics, and still get access to Simics control and inspection functionality. This API is useful for anyone wanting to integrate Simics with Eclipse based custom toolsets, and as such both large enterprise OEM companies as well as manufacturers of IDE tools can use this API to tie virtualized development into their Eclipse workflow.

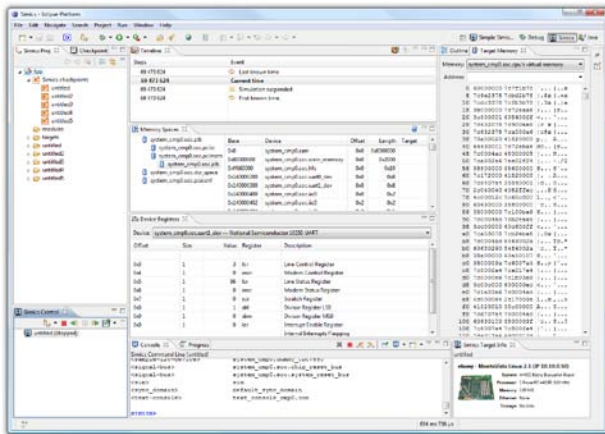


Figure 1 An Eclipse window showing several Simics views.

Modeling Connectivity with SystemC and IP-XACT in Simics Model Builder

In Simics 4.2, a new capability called the SystemC Bridge is introduced. The bridge enables existing SystemC models to be included as part of a Simics simulation. It is possible to build a virtual platform for execution in Simics by mixing DML models, C models, Python models and now also SystemC device models. Thanks to the fact that existing SystemC models can be used un-modified, users can more quickly build complete virtual platforms by taking advantage of Virtutech's large library of fast functional models and combine them with their own SystemC models. The OSCI (Open SystemC Initiative) kernel 2.2.0 version is supported, as is the SystemC TLM 2.0 generic memory mapped bus.

Model availability is of key importance to Virtutech users and we strive towards the goal of being able to re-use artifacts to the largest extent possible. Re-using artifacts reduces redundant work and helps support a company-wide development process by bridging traditional gaps between hardware and software construction. Via an import –

export capability in Simics Model Builder, the IP-XACT standard from the SPIRIT Consortium is now possible to connect to DML. From a given IP-XACT register description, a DML template file can be generated. And from DML code, it is possible to extract and produce an IP-XACT file with register descriptions. IP-XACT versions 1.2 and 1.4 are supported.

Hybrid Simulation

With Simics Hybrid Simulation, device and processor models of different level of detail can be mixed into a single simulation system. This allows for both fast software development and software validation before hardware availability as well as extremely detailed performance analysis of the system in the same environment. This is perhaps the most unique thing with the Hybrid Simulation solution – it allows the user to combine two different use cases in the same environment thus increasing collaboration and efficiency. Simics Hybrid solution in the 4.2 release is available for Freescale's QorIQ P4080 microprocessor. It is also prepared for new model integration through a generally defined API, thus enabling Hybrid simulation for any micro-architecture.

Extended Realtime Operating System Support

The suite of operating system process aware simulation is in Simics 4.2 extended with support for Enea's OSE realtime OS. Simulating a target system based on OSE, tasks and processes can now be followed in Simics via a standard gdb debugger. Simics can detect when processes start, exit and keep track of what process is currently active on the simulated system. This is a very useful debug and analyzing capability,

and can also be used for collecting statistics on a per process basis. Being able to run operating system process aware source code debugging on a virtual target, means having full inspection possibility into intrinsic hardware/software issues that can reveal otherwise near to impossible bugs and deficiencies.

Availability

Simics 4.2 will start shipping on March 30 2009 – we hope our users will take the opportunity to upgrade as soon as possible, we look forward to hear from you and get your feedback on this release! 