



DIGITAL INDUSTRIES SOFTWARE

Veloce HYCON App

Veloce HYCON: Hybrid configurable platform

Key benefits

- Enables software-driven design methodology
- Provides a reference software and hardware platform early in the design cycle
- Ability to run applications and benchmarks to optimize hardware and software simultaneously
- Save and restore hardware/software checkpoints
- Ability to switch from virtual to full register-transfer level (RTL) through run fast run accurate (RFRA) technology

Introduction

Veloce™ HYCON App enables hybrid emulation, which combines virtual prototyping and emulation to enable driver development and intellectual property (IP) validation, as well as power and performance analysis using real workloads boosting operating system (OS) boot performance for RTL system-on-chip (SoC) even when the critical RTL IPs are not ready.

Veloce HYCON

Veloce HYCON stands for hybrid configurable. It references the set of configurable reference platforms included in the product. Veloce HYCON delivers innovative technology that allows customers to engineer and run complex hybrid emulation systems for their next-generation SoC designs and start software-oriented verification and validation from day one.

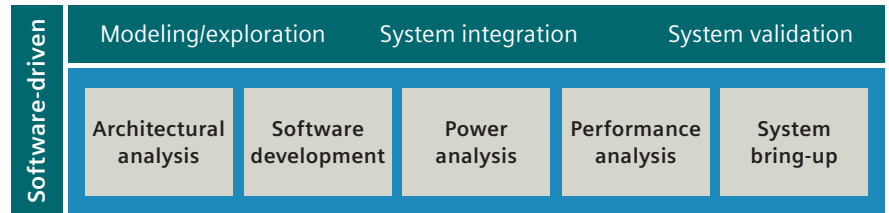
Veloce HYCON brings a new way to accelerate users embedded processor software running on the emulator. It enables running real-world applications, frameworks, and benchmarks very early in the design cycle, enabling power and performance analysis months before it is even possible.

Key benefits *continued*

- Shift left: provide customers with opportunity to produce full-system power estimation and optimization pre-silicon in the context of real application workloads
- Allows for multiple use models: driver development, IP validation, power/performance analysis pre-silicon using real workloads

Veloce HYCON allows users to add more virtual models into the reference platform and provides the means for the RTL IP to communicate with the software (virtual) model.

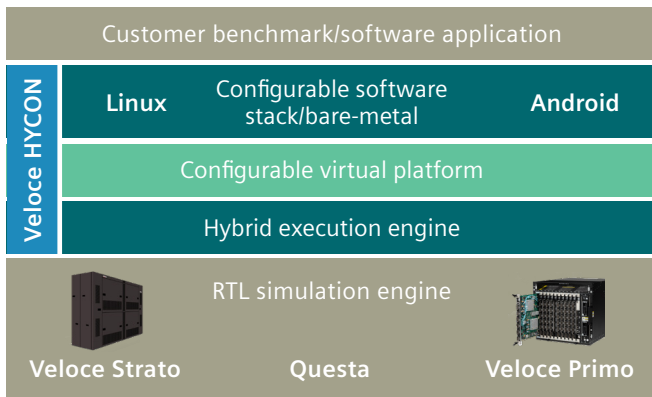
The CPU does not have to be running on the emulator to communicate with the users IP, it might be a complete virtual model.



Capabilities

Reference platforms

Veloce HYCON is a set of reference platforms that can be extended on both the hardware side and software side depending on customer needs. Reference platforms are ready made SoCs that can be used with a different number of operating systems, such as latest Linux and Android versions.



The software platform comes with drivers, operating system, and diagnostic utilities. The hardware platform contains all the necessary components and peripherals to boot operating systems and run real workloads and benchmarks.

Reference platforms supports Arm V8 and Arm V9 architectures.

The Veloce HYCON reference platforms can boot an operating system in order of seconds/minutes and provide customers new ways to accelerate their SoC validation early in the design cycle, which allows customers to focus on their product differentiation not on platform creation.

Reference platforms includes:

- A complete open-source software stack
- Operating systems: Latest versions of Linux/Android
- Compatibility to run on Veloce Strato emulation platform (emulator), Questa™ platform (simulator) and Veloce Primo hardware (enterprise FPGA prototyping)
- Native support for custom ISS, QEMU or AFM
- Transaction-level modeling (TLM) bridge to extend Veloce HYCON platform with external TLM models

Run Fast Run Accurate (RFRA)

Veloce HYCON offers performance when wanted and accuracy when needed. It enables users to switch from the virtualized hybrid environment to the full RTL Veloce Strato emulation platform on the fly. This gives users the ability to execute large amounts of software quickly, then accurately run the software at the point they are most interested in. This capability provides the software team with an ability to run fast as well as addressing the needs of the hardware team by providing a full SoC accurate environment.

Veloce HYCON Checkpoint

Veloce HYCON maximizes users' productivity by enabling a key feature that is built upon Veloce Strato record and replay functionality. Users are provided with the ability to add checkpoints in both their hardware and software, as well as saving multiple checkpoints in a single run. This feature enables users to save hardware and software states at a certain point then replay from this point, resulting in increasing the efficiency and optimizing resource utilization.

Summary

Veloce HYCON is an evolution to traditional virtual platforms and hybrid emulation offerings. It offers a software-driven methodology where the software is used to drive the design of the hardware by providing a software and hardware platform running together from the very beginning of the design cycle.

Veloce HYCON allows easy integration of RTL into that platform and enables the swap of models from virtual to RTL when they are ready. This technology helps bridge the gap between abstraction layers where both the hardware and software teams work together to evolve the software/hardware platform allowing the earliest possible testing and validation in the context of real software.

Veloce HYCON works as a single source for both software and hardware teams to shift left the whole design/validation cycle and helps reduce the time spent in post-silicon debug.

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