Dynamic Duo of Emulation and Prototyping

How emulation and prototyping complement each other during the verification process

By Frank Schirrmeister

Your designs are getting bigger, embedded software is growing and project schedules are shrinking. How do you achieve first-pass success and finish on time?

You need an emulation and prototyping solution for early hardware/software development and verification.

The Cadence® Palladium® and Protium™ platforms provide performance at 10s of MHz and capacity for billion-gate designs all in a unified environment for fast bring-up and debug.

Design teams use emulation for verification when RTL is less stable. Fast bring-up of multiple compiles per day, as well as simulation-like debug, are unparalleled in a processor-based emulation system like the Palladium Z1 platform, as we have full control of the compile, do not need to worry about the timing closure of FPGAs, and debug is not intrusive.

But there comes the time during a project when RTL becomes stable. Now, speed becomes crucial for software development and hardware regressions. You no longer have to compile multiple times daily, so a prototyping system like the Protium X1 platform, using commercial FPGAs with their higher performance yet longer compile times, becomes the right option.

And with a unified environment, not only can the bring-up be done in hours from a stable emulation model, but also when a defect is found at the hardware/software interface or in hardware during a regression, it can be reproduced in emulation with its simulation-like debug.

The joint usage of Palladium Z1 emulation and Protium X1 prototyping is a dynamic duo of verification engines, critical for fast and early hardware/software co-verification of today’s complex designs.

---

**Palladium® Z1**
- Hardware validation
  - Fastest/deepest debug
  - SoC integration and acceleration
  - Rich application models
  - ~1MHz
  - Fast/predictable compile
  - 6+ BG monolithically

**Protium™ X1**
- Early software validation/debug
- Regressions testing
- Highest performance
  - 2.5 to 5MHz ~500MG to BG
  - 10s of MHz for smaller designs
- Fast system bring-up
- Scalable capacity

---

Cadence is a pivotal leader in electronic design and computational expertise, using its Intelligent System Design strategy to turn design concepts into reality. Cadence customers are the world’s most creative and innovative companies, delivering extraordinary electronic products from chips to boards to systems for the most dynamic market applications. www.cadence.com © 2020 Cadence Design Systems, Inc. All rights reserved worldwide. Cadence, the Cadence logo, and the other Cadence marks found at www.cadence.com/go/trademarks are trademarks or registered trademarks of Cadence Design Systems, Inc. All other trademarks are the property of their respective owners. 14235 03/20 5A/55/PDF