Tortuga Logic is a cybersecurity company providing products and services to detect and prevent hardware vulnerabilities. Unlike software and firmware security solutions that do not find underlying hardware flaws or manual penetration testing that only find issues after the device is manufactured. Tortuga Logic’s Radix™ patented technology detects and prevents security vulnerabilities in FPGAs, ASICs and SoCs.

We recognize that not every team has the skill or resources to provide the desired security assurance needed for projects under development. Our team of Security verification experts are available to provide on-sight hardware security verification services to detect and prevent vulnerabilities in your designs.

As part of the services we provide expertise and technology leveraging our Radix solution to identify pre-silicon security vulnerabilities due to architecture, implementations or software and firmware configuration errors. Radix fits into your existing SoC and FPGA flows by using the commercial environments from Cadence®, Synopsys®, and Mentor®, a Siemens Business.

**HARDWARE SECURITY VERIFICATION SERVICES INCLUDE**

- A comprehensive independent security assessment report for internal and external use
- Access to security experts and the industry leading Radix technology
- A repeatable and scalable process to address security of your entire ASIC, FPGA or SoC

*The CryptoManager Root of Trust suite of products serves broad markets such as government, automotive, cloud, machine learning and artificial intelligence, where security is of utmost concern. Tortuga Logic’s Radix gives further assurance to our customers that they are delivering the most secure product possible.*

**Neeraj Paliwal**
Vice President of Products, Cryptography
*Rambus*

*DesignWare ARC Processor IP provides a rich set of security options that help protect systems from evolving security threats such as IP theft and malicious attacks. When integrating an ARC Processor and adding application software, designers must ensure that the resulting end system remains secure.*

**John Koeter**
Vice President of Marketing for IP
*Synopsys*

*Our firmware configures the hardware roots of trust and its surrounding system, so it is imperative for both features to undergo a stringent security verification process. Tortuga Logic's Radix series addresses our need for concurrent firmware and hardware validation to ensure we deliver the most secure products to the markets we serve, including aerospace and defense, automotive, and datacenter.*

**Gaurav Singh**
Corporate Vice President, Silicon Architecture and Verification
*Xilinx*
USE CASES

Hardware Root of Trust Security Verification
- SoC access control verification
- Secure boot sequence verification
- Red/Black separation
- Timing side channels
- Configuration register read/write protection
- Encryption key leakage
- Verification of clearing secret content
- External Debug disablement/analysis
- 3rd Party/vendor IP and interface security

BENEFITS

Ensures correct configuration for maximum security
- Prevents unauthorized access
- Verifies boot data and keys remain secure
- Checks for isolation of redundant systems
- Detect and prevent Meltdown/Spectre variants of attacks
- Ensures SoC access control is maintained
- Ensure keys remain secure during and after usages
- Ensure secure data is cleared prior to switching to non-secure modes
- Ensures JTAG does not access secure data or keys
- Increases assurance that IP is secure and does not contain hardware trojans

ABOUT TORTUGA LOGIC

Founded in 2014, Tortuga Logic is a cybersecurity company that provides industry-leading services and solutions to address security vulnerabilities overlooked in today's systems. Tortuga Logic's innovative hardware security verification solutions, Radix, enables verification and security teams to detect and prevent system-wide exploits in FPGAs, ASICs and SoCs that are otherwise undetectable using current methods of security review.

HARDWARE SECURITY DEVELOPMENT LIFECYCLE


Radix used to specify & verify security objective pre-silicon
A complete SDL with Radix

TO LEARN MORE  www.tortugallogic.com  info@tortugallogic.com