

Overview

The GRSCRUB is an external FPGA configuration supervisor responsible for programming and scrubbing the FPGA configuration memory to prevent accumulation of errors. GRSCRUB is compatible with SRAM-based FPGAs from Xilinx and it can be set to scrub the entire FPGA configuration memory or just a defined memory area.

GRSCRUB externally accesses the FPGA configuration memory through the SelectMap interface. In addition, the GRSCRUB accesses through an AMBA AHB or AXI4 bus a Golden memory that can be ROM or RAM. The original configuration bitstream is stored in the Golden memory, and it is used both to configure the FPGA at start-up and to repair the FPGA configuration memory in case of errors. The Golden memory also stores the mask data and the Cyclic Redundancy Check (CRC) codes used to check the configuration bitstream integrity.

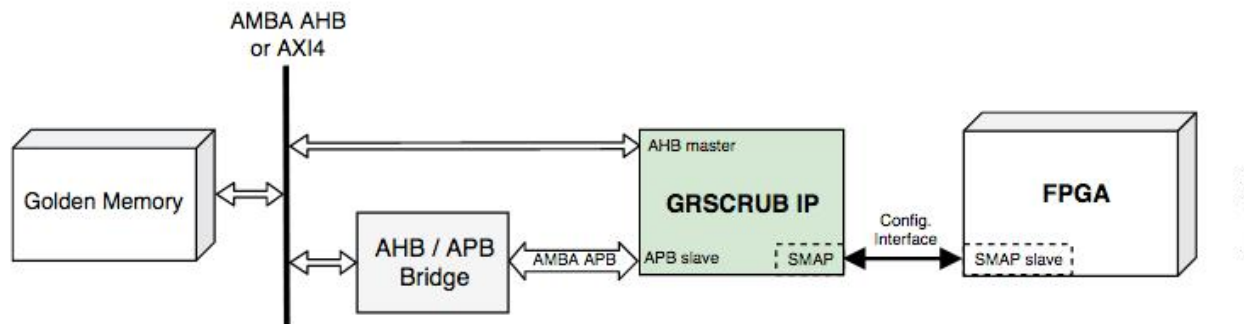


Figure 1 GRSCRUB system integration

The scrubbing mitigation technique fixes bit-flips in the FPGA configuration memory, leaving up to the user to apply any additional method to mask errors and re-establish the state of the system. Scrubbing does not cover soft-errors affecting User memory data. All dynamic data stored in memory elements, such as shift-registers (SRL), LUT RAMs, and Block RAMs (BRAM), are not verified by GRSCRUB.

Features

- FPGA configuration
- Mapping FPGA frame addresses
- Blind scrubbing
- Readback scrubbing: Full Frame Check (FFC) and CRC32 error detection
- Detect and correct single and multiple errors
- SelectMap access (external)

Availability

GRSCRUB is available in VHDL source code for ASIC and FPGA implementations.

Additional information

Please see the GRSCRUB product page www.gaisler.com/GRSCRUB