Tools for debugging core switches



Overview

Debug Tools There are many tools available to address BSCAN Switch core design issues. It is important to know which tools are useful for debugging various.

Key Takeaways

Core switch debugging can be effectively performed using boundary scan tools, multicore debuggers, and JTAG interfaces, depending on the architecture and target system.

Boundary Scan and JTAG Tools

Boundary scan (BSCAN) tools are essential for diagnosing switch core design issues, allowing you to control or monitor I/O pin states during device operation. Tools like UrJTAG and TopJTAG provide open-source and commercial options for interacting with JTAG interfaces, supporting features such as EXTEST for setting pin states and SAMPLE for observing them in real time. The Tigard FTDI-based tool is compatible with multiple JTAG and SPI libraries, offering voltage selection and mode configuration for different target systems.

Multicore Debugging

For multicore processors, tools like Lauterbach TRACE32 are widely used. TRACE32 supports debugging multiple cores simultaneously, either through a single device solution or multiple instances of the PowerView interface. Proper configuration involves setting up batch files for each core, ensuring licenses cover all cores, and using the POWER DEBUG INTERFACE or USB connections.

This setup allows synchronized debugging across cores, which is critical for complex switch designs.

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Processor-

Specific DebuggersProcessor-specific debuggers, such as the TRACE32 TriCore debugger, provide detailed control over core-specific features. The workflow typically involves connecting the debug hardware to the host, powering on the target, loading debugger firmware, and configuring startup scripts for the target system. These debuggers are essential for low-level inspection, trace analysis, and step-by-step execution control.

Software Debugging

For AR

M or aarch64-based cores, GDB can be used for software-level debugging. Tools like gdb-multiarch or aarch64-specific GDB distributions allow developers to attach to the target, inspect memory, and control execution flow. Integration with development environments such as devkitpro or VSCode can streamline debugging workflows.

Best Practices

Always disconnect the debug cable before powering the target to prevent damage. Use batch files or startup scripts to automate debugger initialization for multicore systems. Verify voltage and mode settings on hardware interfaces like Tigard to match the target system.

Combine boundary scan and software debugging for comprehensive diagnostics, especially when dealing with complex switch cores. By selecting the appropriate combination of hardware interfaces, multicore debuggers, and software tools, engineers can efficiently identify and resolve issues in core switch designs, ensuring reliable operation and performance.

Article Content

Debug Tools

There are many tools available to address BSCAN Switch core design issues. It is important to know which tools are useful for debugging various situations.

Multicore Debugging & Tracing | Lauterbach TRACE32

Our tools can debug all cores concurrently via a single debug interface (SWJ-DP). All application and real-time cores can be traced via On-Chip-Buffers or the PCIe interface of the chip.

Lauterbach multicore debugging guide

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There is a possibility to debug dual-core processor with single TRACE32 PowerView window, but for better orientation and easier debugging there is the possibility to start multiple PowerView windows.

Learn the architecture

It also explains the debug system context for software development on Arm processors. Using the guide, you can learn how debugging devices connect to the Arm processor cores within the chip. If you are

Green Hills Probe V4

The Green Hills Probe V4 supports debugging of multiple cores in a single JTAG scan chain as well as multicore trace. The Green Hills Probe V4 can be used in the most complex debug situations.

TriCore Debugger and Trace

TRACE32 supports debugging over a 3rd-party tool using the XCP protocol. For details see Parallel Usage of a 3rd-Party Tool and “XCP Debug Back-End” (backend_xcp.pdf). On-chip tracing requires

Mastering On-Chip Debugging and Debug Tools for SoC Design: A

Multicore debugging can help ensure that both cores operate efficiently, with the AI core feeding data to the communication core in real time without bottlenecks.

Advanced Embedded Testing Using Lauterbach Software (TRACE32)

Advanced embedded system testing using Lauterbach TRACE32 offers non-intrusive debugging, multi-core analysis, and automated verification for safety-critical industries.

Graphical Debugger

Embedded Studio integrates a feature-packed graphical debugger with J-Link/J-Trace integration for direct debugging and analysis on your target hardware. All well-known J-Link features can be used

Debugging of RISC-V-Based Chips Made Easy

Debugging RISC-V Cores RISC-V''s open-source nature and diverse eco- system pose unique challenges in debugging applications. In order to avoid a proliferation of proprietary debug interfaces,

Top 12 Debugging Tools For 2024

Take a look at top 12 debugging tools you should have in your development toolbox for different languages, where you can get them, cost, and how to get started.

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SEGGER J-Link Pro

Tool set J-Link Pro comes with a versatile suite of software tools that enhance its performance and flexibility for debugging and programming. Utilities such as J

PLS Development Tools UDE®

UDE® Universal Debug Engine – Debug, Trace & Test for Microcontrollers and Embedded Processors The UDE® Universal Debug Engine, core product of

Install WinDbg

Previous versions and related downloads To debug older versions of Windows, use WinDbg (classic) available with Debugging Tools for Windows. Download the Windows Driver Kit

How to debug embedded systems

There are many ways to debug embedded systems. Tools that help include simulators, in-circuit emulators, JTAG/BDM debuggers, custom hardware, LEDs and switches, as well as serial

Top 8 Free Network Monitoring Software

At the core of free network monitoring tools are sensors or agents strategically placed throughout the network infrastructure. These sensors capture data packets, log network events, and

Using Vivado Debug Cores

Vivado tool debug cores (such as ILA and VIO) can be placed in any part of a Dynamic Function eXchange design, including within RMs. A specific design methodology is necessary to

Debugging of RISC-V-Based Chips Made Easy

Furthermore, with Lauterbach''s TRACE32® tools, developers can now debug and control RISC-V cores in almost any combination with other CPU architectures via a single debug interface. Many SoCs

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This document is for preliminary research. Verify specifications against current standards, product documentation and project requirements.

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