Data Center Innovator Boosts Test Productivity with XJTAG Boundary Scan

Bamboo Systems, a producer of Arm®-based servers for enterprise-class data centers, is using XJTAG boundary scan to bring extra flexibility to product development and raise productivity in end-of-line test. The team chose XJTAG for its ease of use, extensive test-development support, and integration with third-party tools.

Bamboo Systems, based in Cambridge UK, uses embedded systems methodologies to create high-throughput computing solutions that consume a fraction of the energy and space of traditional servers. The product range addresses a wide range of vertical markets, delivering scale-out solutions designed for next generation data centers, and includes the flagship B1000N series, which puts eight 16-core Linux servers in a 1U enclosure.

The company's engineering team is using XJTAG boundary scan to test the computers' complex digital PCBs. The XJTAG tools are used during board bring-up and at end-of-line production test, in each case helping to enhance flexibility, save time, and increase productivity.

By involving the XJTAG system early in the product lifecycle, engineers can establish confidence in the base hardware while software for the product is still in development. Bamboo Systems uses XJAnalyser during board bring-up to verify basic functionality and allow some functional testing without running software on the Device Under Test (DUT). More testing can then be done using XJDeveloper to test devices such as DDR RAMs and NAND flash ICs in BGA packages that would otherwise require functional tests to be written by the software team.

"XJTAG adds value during the initial bring-up by letting us decouple the hardware activities from direct software support," comments Malcolm Adams, Director of Hardware Engineering at Bamboo Systems. "The XJTAG tools allow us to start developing tests

before receiving the first manufactured systems, which accelerates design verification of low-speed interfaces. This is much faster than traditional development using iterative microcontroller firmware builds."

The first project he and the team tackled involved developing a PCB as part of a computing blade designed to be integrated with a system to form a hyper-converged compute platform. The board's major components include an STM32 microcontroller as the board manager, a 10Gb Ethernet switch, DDR and

NAND flash chips, EEPROMs, RTC, high-density I/Os, I^2C and SPI devices, temperature sensors, LEDs, and an interface for single-board computers (SBCs). Using XJTAG allowed this interface to be tested using 'dummy' JTAG modules to save putting an expensive SBC at risk during testing. A library of XJEase device models is readily available for commonly used ICs, which significantly speeds up test development overall.

Bamboo Systems is also using XJTAG to raise end-of-line production testing efficiency. XJTAG performs initial testing of connections and components to isolate any defective units before the boards undergo higher-level functional tests.

"As part of the support provided with our purchase, XJTAG committed to help develop tests for our first boundary scan project," continues Malcolm Adams. "Working with XJTAG's experts helped us understand the tools quickly and provided insights that will save time on future projects." XJTAG provides ongoing support and also holds frequent boundary scan workshops for engineers.

"Another attractive aspect of XJTAG is the XJRunner system, which allows our manufacturing partner to easily apply the tests we develop," he adds. "XJTAG can also integrate with non-JTAG systems such as our power supply functional tester, as well as producing output that can be understood by the WATS test data management platform we use to analyse and then optimise production performance."

opinion

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Data Bank

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Company	Bamboo Systems
Nature of business	ARM server company
Main products	B1000N series of 1U high throughput, high rack density, low energy servers
Customers	Next generation datacentres in a wide range of vertical markets
Founded	2015
Employees	25
Locations	Cambridge, UK San Jose, CA, USA
Web site	www.bamboosystems.io