

Boundary scan testing saved one network equipment firm more than \$100,000 a year, writes **Dominic Plunkett**

How boundary scan can boost the bottom line

The time taken to debug new board designs has an important bearing on the success of many electronic products, as developers deal with ever-smaller delivery windows and increasing pressure on price.

At the same time, multi-layer boards with densely spaced components and an increasing number of area-array component packages, with no access for test probes, present barriers to traditional probe-based test methods.

To meet the cost and time constraints facing developers, engineers need tools that overcome the limitations of traditional test techniques, but that also allow developers to retest revised assemblies quickly each time the design is changed.

Boundary scan testing provides a means to meet these requirements, by eliminating the need to probe test points and individual device I/Os, and by providing a faster and more predictable way to create, execute and re-use tests for complex assemblies.

For example, Haliplex, a producer of network-edge equipment, is using boundary scan to test densely populated PCBs used in products such as multi-service access terminals. Among the components on each board, there are boundary scan-compatible processors, FPGAs and Asics in BGA packages, alongside high-speed telecom data-path devices and other components, including optical-fibre drivers, I²C, and Ethernet switches.

The test system is able to test many of the non-boundary scan components by calculating how to manipulate devices connected to the scan chain using available board-level connections.

Testing with boundary scan is allowing the engineers to trace faults



accurately and save debugging and repair time. This has reduced the typical time to commission a new design for production by around four days. Given the rate of new design starts, the company calculates it is saving some \$24,000 worth of engineers' time per year.

Haliplex has also installed boundary scan testing at its manufacturing partner's site. Using the system's on-board diagnostic capabilities the CEM is able to fix a high proportion of the boards that fail production test.

Boundary scan has reduced the number of failed boards received by around 90%, effectively saving more than \$64,000 of waste per year as well as around \$12,000 worth of repair technicians' time.

This amounts to combined savings of more than \$100,000 per year, showing how a change in test strategy, running through development and production, can result in a healthier bottom line for technology businesses. ●

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