

## Eaton Power Products Software Testing

### Background

Eaton Corporation has been serving the needs of its customers for over 90 years. During this time, the company has progressed from a small truck parts supplier to a multi-national diversified power management company with sales of \$13 billion in 2007.



Eaton has over 40 years' experience in the power quality and backup power protection industry, and is a global technology leader in electrical systems for power quality, distribution and control. Among its Powerware solutions, the company designs and develops the power supplies used in international landline and cellphone telephone systems.

### The Challenge

Nightside Test Design was contracted in May 2007 to assist Eaton NZ with software testing on parts of a new power system product range designed for a major telecom OEM customer.

The project required collaboration between Eaton NZ and Eaton UK, with NZ providing software development and testing services and the UK primarily involved with the hardware development.

The products encompassed power distribution units (PDU) and battery fuse units (BFU) for use within a cellular application.

The PDUs allow remote operation of individual switches within the cell-sites, while the BFUs allow control and low-voltage disconnect of backup batteries.

The new units were essentially an upgrade from mechanical to solid-state switches, incorporating extra functionality for off-site diagnosis and control of power flow.



Figure 1: Geoff Callander working with power systems at Eaton

### The Technical Solution

With Eaton's UK arm primarily focused on electronic hardware development, Nightside was brought in to assist the Eaton NZ team with software testing on this round-the-clock product development.

At times during the project, material from the UK was received electronically through the internet for assessment, testing and modification, and returned promptly to the UK in time for the following project day. Work on the project was also completed in larger blocks where appropriate.

Throughout the project, Nightside produced hundreds of test cases for the products' different requirements.

Customised software was also developed to allow communication between the project's China-based test computer and the units. This allowed for comprehensive, automated testing of each assembled unit at different stages of development, ensuring faults or inconsistencies could be determined and corrected by the UK team accordingly.

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Three visits were made to the UK at critical stages of the project to provide on-site assistance and expertise, with Nightside assuming overall responsibility for the test team during part of the last visit.

Eaton NZ's product compliance group manager, Andrew Baken, says "Nightside's expertise was an invaluable resource for the project. They demonstrated great flexibility, adapting to meet project demands professionally and providing expert in-house presence throughout critical phases."

## Results

By initially working in remote collaboration with Eaton UK, New Zealand-based Nightside was able to utilise the time difference to achieve rapid turnaround in test services and delivery of work between project days.

Test data and recommendations were prepared and delivered in a timely and cost-effective manner, helping the project's development cycles to progress smoothly.

As the technical requirements of the project grew, Nightside was able to function as an in-house resource for the UK test team, offering the specialised knowledge and test capabilities that the project demanded, on-site.

Dave Settle, engineering director for Eaton UK, says "Nightside provided us with the test engineering resource we needed. With their background and knowledge in the field they were able to integrate quickly into the team and brought skills that we lacked. They showed their flexibility by initially working remotely and then on-site in the UK at critical stages in the project."

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