CASE STUDY

Thales Australia

XENON Supports Thales To Deliver High Fidelity For Australian Army Tiger Helicopter Simulator Visuals Upgrade

"Delivering systems to the Armed Forces is not like mass producing a car. It's a highly specialised and highly critical technical environment that requires niche expertise. Simulator downtime needs to be accounted for, minimised and planned to the most precise point, all while keeping personnel trained, projects on time and costs within budget," said **Harry Tavlaridis**, Programme Manager at **Thales Australia**.

BACKGROUND

Thales Australia is an electronics and systems group serving the aerospace, defence, transport and security sectors. As a major contractor to the Australian Defence Forces, it is responsible for providing the systems, products and services that keep Defence running optimally.

In 2007 Thales, after the successful delivery of the Australian Army's Tiger helicopter simulators, was awarded a contract to maintain and support them. Two are located in Toowoomba a Full Flight Mission Simulator (FFMS) and a Crew Procedural Trainer (CPT) and a second CPT at Darwin. Each of these simulators consists of a number of specialised interconnected technologies that combine to deliver the highest standards of training to Army Aviation Aircrews, including projection, hydraulics, electrics, computing and networking.

THE CHALLENGE

As part of the contract, Thales is responsible for maintaining and upgrading all of these technologies, and it recently undertook a major upgrade to the FFMS projectors and image generators that deliver the visual experience for the Pilot and Battle Captain.

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Technology rapidly becomes obsolete and when it comes to the Armed Forces, access to the latest innovation, best quality and fastest speed for a real experience underpinned by uptime is non-negotiable to deliver the most advanced, accredited training environment.

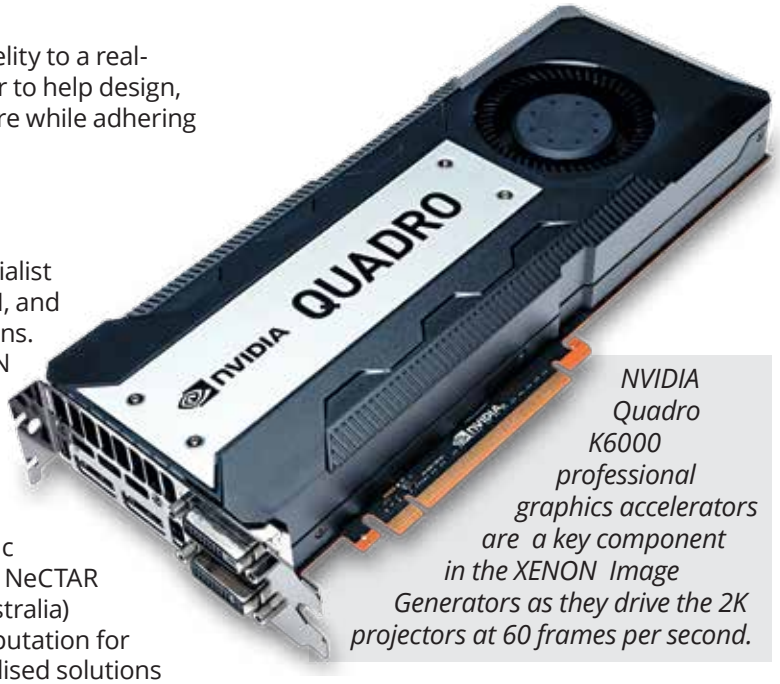
Indeed, the simulators require maximum availability with scheduling for upgrades to be mapped around low activity periods to ensure limited disruption to the aircrew training program.

And of course, all of this comes at a cost – the Government faces an ongoing challenge to ensure Defence spending is efficient, while simultaneously providing the most advanced equipment and technology.

With the aim of delivering the highest possible fidelity to a real-life scenario, Thales reviewed options for a partner to help design, deliver and support the image generation hardware while adhering to strict Service Level Agreements (SLAs).

THE SOLUTION

Thales had originally sourced hardware from specialist high performance computing consultancy, XENON, and was familiar with the quality of its previous solutions. Based on this experience, Thales consulted XENON again both for hardware and technical design, to understand what would deliver the latest processing power and highest visual fidelity system.



NVIDIA Quadro K6000 professional graphics accelerators are a key component in the XENON Image Generators as they drive the 2K projectors at 60 frames per second.

With experience in working with research, scientific and entertainment organisations including CSIRO, NeCTAR and ICAA (Independent Cinema Association of Australia) among others, XENON has carved out a strong reputation for designing and delivering high performance specialised solutions that provide compute processing, user experience and cost benefits. Thales contracted XENON to design the hardware and network infrastructure for the operating system and management software, and then provide prototypes to Thales Australia to load its own software and deploy across the image generators for delivery to the projectors.

XENON delivered a multi-layered solution. Image generators are based on NVIDIA Quadro professional graphics with Qsync technology, dual Xeon processors with Error Correcting memory in a rack mount enclosure with redundant cooling, power and storage. These were designed for maximum uptime through built-in redundancy, world class graphics performance with Qsync capabilities to allow all the image generators to run in sync and all this was done on industry standard commercial off-the-shelf (COTS) equipment which delivers cost savings over proprietary designed equipment.

This was based on centralised storage. To maximise uptime, XENON built a High Availability network attached storage (NAS) solution that works in an active/passive mode. Centralised storage design lowers the total cost of ownership on support of the simulator and increases the uptime and manageability.

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Harry Tavlaridis, Air87 ARH Tiger ATDs TLS Programme Manager for Thales Australia, in the datacentre where the XENON Image Generators are housed.

Finally, the network was designed around a stack of Extreme Networks switches that are partitioned into five virtual LANs. The benefit of this design over the previous network design is to lower the number of switches by half while adding new networks. The XENON design also included 10GigE connectivity for the NAS servers to deliver full non-blocking Gigabit performance to each image generator.

All of this was managed virtually at XENON's specialist lab in Melbourne, where the company also did factory acceptance testing and then dismantled and shipped the equipment for a site acceptance test at the simulator's location in Toowoomba. Once reassembled XENON also provided maintenance training for Thales simulator technicians.

“Increasingly organisations are recognising the value of highly specialised organisations, such as XENON, that have deep expertise in consulting on, and delivering, complex projects within specified time frames and budgets. “In fact, on this occasion, we delivered the upgrade back it into service ahead of time” added Mr Tavlaridis.

THE RESULTS

The original schedule was compressed by four months, and indeed, delivered nine days early – largely unheard of in such complex projects – to be delivered in just over nine months from design to acceptance with minimal downtime.

Thales is now taking much of what it knows and the best practice learned from working with XENON and applying to all future projects.