

# INSPIRING A NEW GENERATION OF SCIENTISTS WITH LARGE-SCALE COMPUTE

Swinburne University of Technology tackles the universe's biggest mysteries with a new supercomputer backed by Dell EMC PowerEdge servers



Academia

Australia

## Business needs

In order for Swinburne University of Technology to stay on the vanguard of scientific research, its scientists require a balanced, scalable, and high-performance data center that solves scientific inquiries faster and more accurately than the current system.

## Solutions at a glance

- [Dell EMC PowerEdge servers](#)

## Business results

- Compresses 31 million years of calculations into a single second.
- Stores up to 5 petabytes of data that can move across the system at 80 gigabytes per second.
- Reduces the carbon footprint of the university.
- Processes greater volumes of scientific data.

*“The goal is always to push the boundaries of knowledge and inspire the next generation of scientists. With this new system from Dell EMC, I believe we can do that.”*

Jarrod Hurley  
Professor of Astrophysics  
Swinburne University of Technology

Academic and research institutions are constantly seeking to enable advanced scientific discovery in the face of technological limitations. It's no different for Swinburne University of Technology, a premier research institution based in Melbourne, Australia. When the university received funding to establish a Center of Excellence for Gravitational Wave Research (OzGRAV), its staff quickly realized that in order to be successful they would need to improve the capacity, performance and flexibility of the aging IT infrastructure.

OzGRAV needed to have the ability to process incredibly large volumes of data delivered from giant telescopes including Advanced LIGO—the first observatory to detect a gravitational wave. With this data at its disposal, Swinburne researchers hope to unlock unanswered questions about the universe, reaffirming Swinburne's position as a global leader in astrophysics research. The university chose Dell EMC as the technology partner to help them design and implement a new supercomputer able to meet its complex computational needs without compromising on reliability.

## A flexible server for diverse needs

To achieve its lofty scientific goals, the university set out to build a new supercomputer, dubbed OzSTAR. OzSTAR would be used by researchers across various scientific disciplines, so Swinburne University needed a multipurpose technology solution. Dell EMC PowerEdge servers provide the ideal balance between flexibility and performance. Jarrod Hurley, Professor of Astrophysics and Supercomputing Manager, said, "The Dell EMC PowerEdge R740 server had an extra aspect of modularity, enabling us to use them throughout the entire system to meet a variety of needs." With PowerEdge, OzSTAR is able to utilize the same server technology whether for storage, large memory needs or high-performance computing.

## Forging a lasting partnership, with 24/7 IT support

Hurley was also attracted by the sense of partnership he and the IT team at Swinburne felt in working with Dell EMC. Working collaboratively with Swinburne University, Dell EMC professionals were able to tailor a set of Dell EMC HPC solutions, expertly combined to fit the needs of Swinburne. In addition to PowerEdge server technology, Dell EMC support services influenced Swinburne University's decision. According to Hurley, "The Dell EMC 24/7 tech support will be vital going forward. Dell EMC engineers work closely with our internal IT support staff to ensure a highly available and efficient system."

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# New technology bolsters energy efficiency

The OzSTAR system will replace legacy computing systems, also provided by Dell EMC. When originally installed, the first supercomputer was called a “green machine” because it was configured to be extremely mindful of power consumption, thereby limiting its environmental impact. Both Dell EMC and Swinburne University wanted to continue their shared history of environmental awareness. The latest generation of PowerEdge servers contain new heating and cooling technology, paired with innovative management solutions to monitor power consumption. Backed by PowerEdge technology, the OzSTAR system seeks to further reduce Swinburne University’s carbon footprint.

With OzSTAR fully implemented, Swinburne University of Technology will use its new supercomputer to understand the extreme physics of black holes and warped space time. Researchers can now compress 31 million years of data into a single second, while storing up to 5 petabytes of data that can move across the system at 80 gigabytes per second. OzSTAR will also serve Swinburne University scientists in a variety of scientific disciplines, enabling scientific discoveries across the spectrum. Professor Hurley reiterates a scientist’s mission and the role technology can play: “As a researcher, the goal is always to push the boundaries of knowledge and in so doing inspire the next generation of scientists. With this new system from Dell EMC, I believe we can do that.”

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