

DELLA LAUNCHES "BIG DELL"

ac3's new Dell supercomputer was officially launched on 25th November by the New South Wales Minister for Commerce, the Hon John Della Bosca MLC, and Professor Lesley Johnson of UTS.



Professor Lesley Johnson, Pro Vice Chancellor (Research and Development) from UTS and the Hon John Della Bosca MLC cut the ribbon at the launch of the new ac3 supercomputer.

In a speech to over 80 guests from the business, government and research sectors, the Minister said the machine was being used for research projects in photonic technology, chemical modelling and the modelling of land and environmental changes.

"The computer has already broken the computing world's version of the sound barrier by performing more than a trillion calculations per second," said Mr Della Bosca.

"It is already being used on a range of groundbreaking research projects including new photonic technology, the design of new pharmaceutical drugs, improved mobile phone communication reception and modelling the effects of land changes."

Professor Johnson, Pro-Vice Chancellor (Research and Development) at UTS, said that the machine's purchase was assisted through a federal government ARC grant, along with contributions from five universities: Sydney University, UNSW, UTS, Macquarie and Wollongong.

"This new computer will become a major component of the *Grid*, which is being established by the Australian research community to provide the required infrastructure for what has become known as *e-research*", Professor Johnson said.

Professor Johnson acknowledged the efforts of Professor Lindsay Botten of UTS, who coordinated the grant response to the ARC that resulted in the purchase of the computer.

UNDER THE HOOD OF THE DELL CLUSTER

According to ac3's senior systems manager, Frank Crawford, the top speed of the new Dell Linux Cluster has a theoretical peak performance of 1.82 teraflops per second (1.8 trillion floating-point calculations).

"Its sustained performance is less than this, however – around 1.09 teraflops", said Crawford, "and this was achieved using the industry standard LINPAK benchmark tests".

The impressive speed is delivered by 155 nodes, each comprising two Intel Xeon processors running at 3.06 GHz. Each node contains 2 Gigabytes of memory, and is about the size of a family pizza box.

The power is obtained by harnessing the nodes together through a very high speed switch from Foundry Networks, which functions very much like a telephone exchange.

But speed is only half the story according to Crawford.

"The machine runs the Linux operating system and a host of other open source software which makes it accessible and user friendly," he said.

"Using open source or public domain software on the machine means our users have much less heartache when it comes to writing code for data analysis."



ac3's new Dell Cluster computer, "Barossa", comprises 155 dual processor nodes, providing a sustained computing power of over a teraflop.

NEW DELL CLUSTER SOLVES BIG WAIT

Chris Cotsapas has a need for speed.

The University of NSW PhD student wants to know how some genes in the mouse genome exert control over thousands of others.

But with data from 15,000 mouse genes in his desktop PC he wasn't getting a quick answer.

In fact he figured he'd have to wait about 5,700 years before he got an answer.

That was when he turned to 'Barossa', the nickname for the new Dell Cluster computer at **ac3**.

"My computer does 20,000 calculations per minute, but the maths I'm doing involves 6×10^{13} , or 60 billion calculations," said Mr Cotsapas.

"Said another way, I'm trying to solve 2 million analyses, each requiring 60 billion calculations.

"At that rate it would take my PC three billion minutes – or about 5,700 years to get an answer. Frankly I can't wait that long – I want to hand in my thesis next March," he said.



Chris Cotsapas, PhD student at UNSW, one of the early users of **ac3**'s new Cluster computer

In contrast, 'Barossa' knocked over the same sum in a mere 32 hours.

The Director of the HPC support unit at the University of New South Wales, Associate Professor Russell Standish, said demand growth for high performance computing was increasing.

"Demand for **ac3**'s facilities by universities has been close to a hundred per cent since the centre opened its doors three years ago," said Standish.

"What's more, research in areas like physics, chemistry and bio-informatics is such that demand is growing to meet the available computing capacity."

LOOKING FOR CO-LOCATION SERVICES?

ac3 provides specialist managed co-location services – i.e. looking after other people's production computers around the clock in a highly secure, highly available and well connected data centre.

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NEVILLE STEVENS APPOINTED AC3 CHAIR

The new Chairman of the **ac3** Board, Neville Stevens AO, says he is excited by the opportunity his appointment brings to contribute to industry development in Australia.

"Supercomputing is continuing to grow rapidly and is absolutely critical for research that a number of our universities and others are doing," said Mr Stevens.



New **ac3** Chairman, Neville Stevens AO

"There's enormous opportunity with the growing connectivity and greater awareness of how advanced computing can be used in industry development."

Mr Stevens' appointment follows the retirement of **ac3**'s founding chair, Mr Phil Singleton.

Mr Stevens is a former Secretary of the Commonwealth Department of Communications, Information Technology and Arts from 1993-2001, and was Secretary of the Industry Department from 1990 to 1993.

TEXAN JIM LOWE CALLS AUSTRALIA HOME

ac3's new Microsoft systems specialist, Jim Lowe, supports clients who are using MS based systems.

Before joining **ac3** in August, Jim ran his own consulting business and worked for Interpath Australia and the University of Texas Southwestern Medical Centre at Dallas.

"**ac3** clients use a range of operating systems including Windows server products. Amongst other services we provide web hosting and data casting services," said Lowe.



ac3's Microsoft specialist, Jim Lowe

"While **ac3** is a commercially focused business, it is also a great culture for learning – in part because of its ties to higher education. For me, this is a great opportunity to be on the cutting edge of both cluster supercomputing and grid technology, and to increase my knowledge of these areas."

The US born Lowe came to Australia in 1999 with his spouse Connie on a working holiday. "It was an opportunity to come to Australia and stay long enough to meet people and see the country properly," he said. "Four years and Australian citizenship later, I think we made a good choice."