

# “Corvus”: more than a new 6 Teraflop supercomputer for South Australian researchers



## Press release

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South Australia's ability to support local and national advanced research and development has taken a major leap forward with the purchase from SGI of a new high-performance supercomputer and data storage and management infrastructure by the South Australian Partnership for Advanced Computing (SAPAC). In the tradition of naming cluster-based supercomputers after stellar constellations, the new South Australian computer will be called “Corvus”, the constellation of the Crow.

Corvus celebrates the power of South Australian research and development.

It will effectively replace the retiring “Perseus”, the oldest of SAPAC's four existing supercomputers and one of the first “Beowulf” clusters built in Australia in the late 1990s. This new purchase continues the successful SAPAC strategy of working closely with the research community to ensure that South Australian researchers always have access to the latest state-of-the-art computational and data management infrastructure that no single state-based institution or organization could implement.

“The new computer represents a major benefit for the South Australian research and development community, in the Universities, in government agencies and in industry,” said Professor Tony Williams, Director of SAPAC. “We believe that Corvus will be the fourth fastest computer in Australia and, for dedicated R&D, second only to the Australian National Facility in Canberra. As such it will be used to tackle some of the most demanding scientific and technical problems, ranging from bioinformatics, fluid dynamics, water resource and environmental management, physical oceanography, computational chemistry and physics to the analysis of synchrotron data.”

“It will also become an integral part of the evolving national Grid, a network of high performance computers, data repositories, scientific instruments and the software and services that allow these to interoperate.”

“So, as well as the supercomputer itself, SAPAC has purchased massive and expandable data storage infrastructure and technologies that will underpin the South Australian Sustainable Repository (SASR) that SAPAC is constructing to manage and maintain the State's burgeoning research data collections. With the powerful supercomputing and massive data storage infrastructure matched by the user support and training e-Research services that we are building around them, SAPAC, on behalf of its partner Universities, is well-positioned to support all the major IT- and data-driven challenges that confront South Australian researchers well into the future.”

“With Corvus and these other advanced technologies, SAPAC is a key component of South Australia's developing advanced knowledge and skills infrastructure and necessary for South Australian researchers to take advantage of the Federal Government's high-funding initiatives such as NCRIS and the e-Research initiative.”

Corvus was funded in part by an Australian Research Council LIEF grant with contributions from the three South Australian Universities and SAPAC itself. It

complements SAPAC's existing supercomputers, which includes "Aquila", an SGI Altix 3700 Shared Memory supercomputer purchased in 2004 through a grant from the South Australian Government.

"We chose SGI again as the supplier since they offered us the best overall package and a total technological solution to create an integrated high-performance computing and data management system. It was an optimal mix of cutting-edge commodity technology, tight integration, low-physical footprint and SGI's high-performance file system and data management software that made them our first choice." added Professor Williams.

Corvus is a general purpose, very high-performance computing platform, and possibly the first 'quad-core' cluster in the world. It is capable of delivering 6 TeraFlops or 6 billion ( $10^{12}$ ) calculations per second of performance. The new SGI Altix XE1300 supercomputer will comprise:

- 68 SGI Altix XE310 compute nodes, with dual Intel "Clovertown" quad-core 2.66GHz processors and 16GB memory per node (this represents over 544 computational "cores");
- 1 SGI Altix XE240 head node, similarly configured;
- 1 SGI Altix XE240 storage node, similarly configured;
- 1 Voltaire InfiniBand 96-port switch, cables and adapters (for Corvus interconnect and connection to other SAPAC computational and data management resources);
- and
- Operating and management software, development tools, storage management software etc.

The associated data storage and management infrastructure includes:

- 1 SGI TP9300 RAID Storage Array, with 28 300GB high-speed disks (8.4TB total);
- 1 StorageTek Tape Library with 2 LTO-3 drives and 150 slots (for back-up/archiving approx 60TB data) – expandable to arbitrary size by adding further modules;
- 1 Brocade Fibre Channel switch to connect data storage and management resources and integrate existing data storage.

All hardware is covered by 5 year maintenance except the tape library (3 years), providing exceptional investment protection and longevity.

Corvus will be installed and commissioned in March 2007.

According to SAPAC's Business Development Manager, Mr Craig Hill, "This technology is truly very impressive. With Corvus and SAPAC's other infrastructure and services, the issue for the R&D community isn't access to world-class ICT technology. The challenge for all of us – SAPAC, the Universities, the State and Federal Governments and especially industry – is how the broad R&D community takes the best possible advantage of this new capability to address its biggest problems, now and in the future."

The South Australian Partnership for Advanced Computing (SAPAC) is a partnership of Flinders University, the University of Adelaide and the University of South Australia; it is also currently serving as the South Australian partner in the Australian Partnership for Advanced Computing. SAPAC's mission is to enable discovery, innovation and collaboration by providing and managing world-class e-Research facilities and services to the South Australian research community at minimal cost. This includes: high-performance computing facilities, research data repositories, high-end visualization centres and remote collaboration and instrumentation. It also offers all South Australian researchers and developers a range of related advisory, consulting and support services including specialized training.

## **Contacts**

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To be sent updated information and/or an invitation to the launch of Corvus, expected sometime in April, please email Sara Boffa ([sara.boffa@sapac.edu.au](mailto:sara.boffa@sapac.edu.au)).