



Who are we?

During 2003, CSIRO's commitment to supercomputing was formed into a new HPSC group with the aim of enhancing High Performance Scientific Computing capabilities across CSIRO.

Dr Rhys Francis took up the position of HPSC Director from last July and is now located with the HPSC group in Lonsdale Street Melbourne.

The HPSC team is available to assist computational scientists and IT professionals to develop computational solutions either within their divisions or located with the HPSC.

We have negotiated to continue a joint facility with the Bureau of Meteorology through to 2007 and will move with the Bureau to a new building in Docklands, Melbourne, in June 2004.

This facility provides CSIRO with access to a vector supercomputer, major storage systems and a large modern machine room. The HPSC group plans to integrate high-end cluster and other non-vector systems into this facility to meet CSIRO's wider computational needs during 2004.

Vector Supercomputing – The New SX-6s



The Bureau with CSIRO support has purchased an NEC SX-6 based vector supercomputer, which is currently being installed (adjacent images). The SX-6 is a commercial derivation of the Earth Simulator operating in Yokohama Japan

This system has 18 SX-6 nodes, each with 64GB of memory and 8 vector CPUs, giving a total peak capability of 1.15 Terabyte and 1.15 Teraflop.

The nodes are linked with an Internode Crossbar Switch

for very high bandwidth, low latency communication.

The SX-6 processors are substantially compatible with the predecessor SX-5 processors which CSIRO has been operating since 2000. Shared memory programs can be run within the 8-processor nodes while larger tasks can be run using the MPI message passing model.

The overall system includes two NEC TX-7 shared memory computers each with 12 IA64 CPUs. The TX-7s manage user interaction and the high bandwidth file and storage access systems needed for effective supercomputer use.



The Upgraded Data Store

As part of the relocation, we are taking the opportunity to upgrade our Data Store with a new StorageTek tape silo (its mid January state is shown here), to give a total storage capacity of 1.3 Petabyte, about 20% of which will be initially configured.



The Data Store will also include an SGI Altix 3700 system with 8 Itanium-2 processors running Linux and the Data Migration Facility.

About 1.75 Tbyte of high-performance disc, and a further 4 Tbyte of lower performance disc (as a cache between the primary high-speed disc and the tape storage) will reduce latency as we expect many file recalls will now come from disc rather than tape.

Australian Partnership for Advanced Computing (APAC)

CSIRO has rejoined the Australian Partnership for Advanced Computing, an affiliation of most of the Australian research oriented supercomputing interest. CSIRO's participation will be through the HPSC group and through the activities of the Tasmanian (TPAC) and West Australian (IVEC) elements of the APAC partnership. These activities will include collaborative research programmes, part funded by APAC, the purchase of computing resource from APAC and the joint development of computational support software tools, also part funded by APAC.

New Staff

The HPSC has recently advertised two new positions to better support cluster development within the HPSC and within Divisions: see CSIRO Jobs Central.

Desktop

CSIRO needs easier access methods for scientists to make use of distributed computing resources, data storage, and software. Part of this development involves a downloadable toolkit for the desktop that deals with connection, data access and security issues when accessing centrally-managed HPSC systems. In time, this development will become part of a GRID infrastructure, tying the disparate needs of users to the resources available, and it will be deployed for both CSIRO and APAC users. Currently a functional Perl/TK prototype is in field trials and an Eclipse/Java based production version is under development.

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