

**IF YOU WANT TO WORK
AT MORE THAN
ONE GIGAFLOP PER SECOND,
SUPERCOMPUTING
POWER IS HERE.**

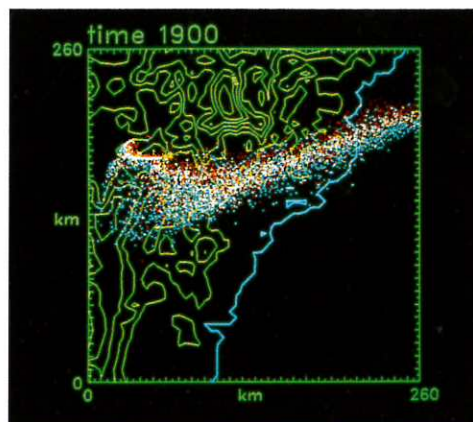
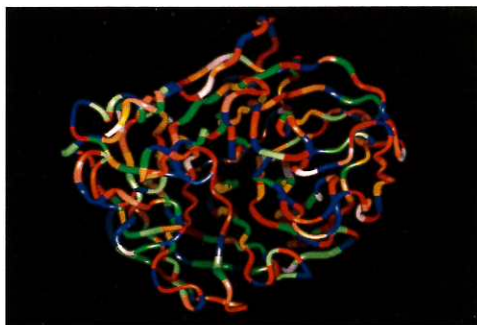


The CSIRO Supercomputing Facility

Readily accessed from your own desktop system, the CSIRO Supercomputing Facility has already proved invaluable to many of our scientists with its exceptional speed, large memory and ability to perform extremely complex calculations.

With a Cray Research Y-MP4E/464 as its base and a peak operating speed of 1.3 Gflop/s, or 1 333 million floating point arithmetic operations per second, it's 50 to 100 times faster than your usual workstation.

The Facility is simple to access and inexpensive to use. The charging scheme allows you to cost your project in advance, as there is no retrospective charge for processor time. The Facility is funded



corporately and users pay for marginal costs related to operating and enhancing the Facility. If you haven't tried it yet, read on. The best in high-performance computing resources awaits your command.

Supercomputer—super ability

Because of its high capacity, the Supercomputing Facility allows you to tackle some of the 'grand challenges' of science involving very long or complex calculations, and problems requiring an overwhelming amount of data to be processed. It can also be used for rapid prototyping of commercial products.

Many CSIRO Divisions already rely on the Facility for complex calculations

and modelling. Major users include Atmospheric Research, Biomolecular Engineering, Food Science and Technology, Coal and Energy Technology and Mathematics and Statistics.

Here's why.

Dr Zili Zhu, Division of Mathematics and Statistics, solved a problem for Shell requiring analysis of the way oil was mixing in a blending tank.

"From Supercomputer simulations, we could see where the oil was blending well and where it was not. That's what Shell needed to know. For such a complicated three-dimensional problem we needed at least 20 000 grid points, more than 100 000 equations. That's why we had to rely on the Supercomputer."

Dr Julie Noonan, Division of Atmospheric Research, is consulting on the behaviour of emissions from proposed power generation plants.

"To predict where the plumes will go, we use a three-dimensional model. We put a grid over it, with each small square about five square

kilometres. We solve for the wind, temperature, pressure and humidity. This is done every 20 seconds of the model for 24 hours. We can solve this entire grid and all these equations ten times faster using the Cray"

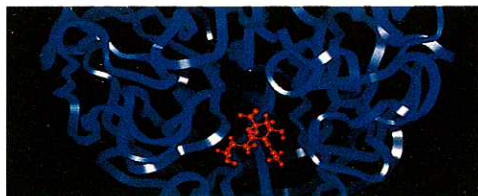
Dr Brian Smith, Division of Biomolecular Engineering, Biomolecular Research Institute, works on molecular design such as the recent anti-flu virus drug.

"We need access to large amounts of memory, disk storage and we need a very fast computer. The Cray meets all these requirements."

Easy to use

Any CSIRO scientist can easily access and use the Supercomputing Facility. The Cray runs under a UNIX-based operating system called UNICOS. So anyone with UNIX experience will have little trouble finding their way around.

High capacity links to AARNet mean easy access from any networked location. File storage is virtually unlimited due to the combination of a Storage Technology robotic tape system and Cray software which automatically moves files between cartridges and disks as required.



If help is needed, you can call the Help Desk. Training and programming assistance is available from the CSIRO Supercomputing Support Group. (For contacts see information on the back page.)

Programs and Software

For scientists who do their own programming, the Supercomputing Facility provides excellent optimising compilers for C and Fortran. A comprehensive range of debugging and performance monitoring utilities help programmers make the most of the Facility.

There is also:

- A NAG subroutine library of over 1 000 mathematical and statistical routines.
- An NCAR Graphics library to assist users to visualise their results.

The Supercomputing Facility also offers application software packages in the following areas:

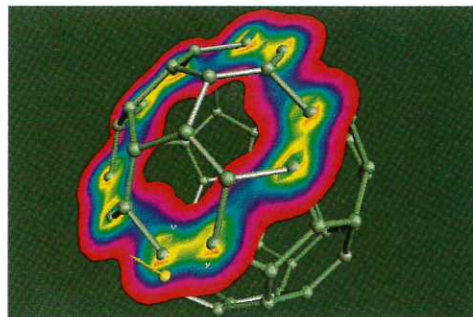
- Chemical Engineering, Chemistry and Biotechnology including codes such as Gaussian, Mopac and UniChem.
- Computational Fluid Dynamics codes such as FIDAP and PHOENICS.
- Graphics and Imaging Processing, including Khoros.

- Structural and Mechanical Engineering, including ANSYS for finite element calculations
- Software catalogues for these and other areas are available by contacting the Supercomputing Support Group.

Our rates are competitive.

To gain access to the Supercomputing Facility, a Division simply pays a monthly fee, normally by standing order. This payment can be varied, as required. A higher payment gives you a higher priority and larger share of the Facility's resources. There is no further charge for using the Facility.

The fees are held in a fund allocated by the Supercomputing Facility Users Management Committee to enhance the Facility.

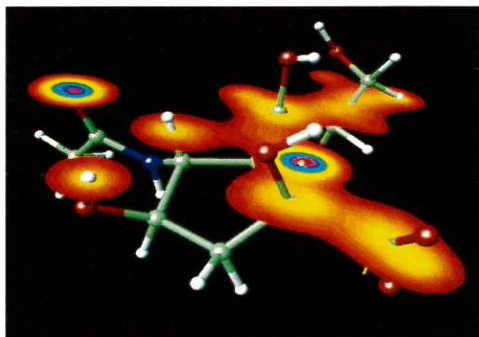


How we allocate Supercomputer time.

The Supercomputing Facility operates 24 hours a day, 7 days a week. Each month, your Division's work is given priority and a share of processing time according to your fund contribution. If you have a conference or special project with time constraints, you can increase your payments temporarily to guarantee receiving higher priority.

Our experience ensures that time is fairly apportioned and that varying priorities are accommodated.

The Cray has proven to be highly reliable. In its first year of operation, it was available for all but two hours during the standard working hours of 9 to 5.



Where the Supercomputing Facility is based.

The CSIRO Supercomputing Facility is managed by the Supercomputing Support Group within the Division of Information Technology in Carlton, Victoria. The Facility itself is situated nearby at the University of Melbourne. Cray Research (Australia) provides a Help Desk and facility management services in conjunction with the University.

Your next step in accessing the CSIRO Supercomputing Facility.

For further information, or to arrange a visit from our Support Staff, contact Len Makin, Manager, User Support on (03) 282 2622.



CSIRO Supercomputing Facility Support Team

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Some technical background.

The Cray Research system has four vector processors (vector length 64), with a clock speed of 6ns, 64 Mword (512 Mbytes) of memory and 17 Gbytes of disk storage space. Secondary storage is provided by a Storage Technology Corporation Automated Cartridge System. This holds up to 1.2 Terabytes of data on up to 6 000 cartridges. Access time to any cartridge is usually under 30 seconds.



The photographs appearing in this brochure represent models of proteins in drug design, a C60 molecule, and the path of plumes emitted from a proposed power station.
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