

Call for Proposals for Computing Time on the New Mexico Computing Applications Center Supercomputer

for the periods:

April 1, 2008-June 30, 2008

and

July 1, 2008-June 30 2009.

Purpose

This is a call for proposals for the usage of computer time on *Encanto*, the main supercomputer of the New Mexico Computing Applications Center. The State of New Mexico has invested in Encanto:

- to drive economic development,
- to drive education and workforce development
- to assist communities in resolving issues

We specify two periods because Encanto will be in an acceptance and test phase until June 30, 2008, during which time we cannot guarantee continuous access. After June 30, 2008, Encanto will be in production mode and we will guarantee access as appropriate to a production machine.

The Resource

Encanto is an SGI/Intel Altix cluster with 172 teraflops peak theoretical speed. The system employs 1792 Intel 3.0 GHz Clovertown nodes for a total of 14,336 cores. The installed RAM is 2GB/core for 28.7TB. The interconnect is Infiniband in a 7D hypercube. The parallel file system is Lustre with a capacity of 176TB and 10GB/sec bandwidth. The machine is connected to the outside world over National Lambda Rail. The resource management system is PBSPro. The Linux environment contains the usual development tools including the Intel compilers, scientific libraries and Intel debugger

During the acceptance and test period, until June 30, 2008, we do not expect the machine to deliver the full capacity and have planned a ramp-up in targeted hours to be delivered to early users.

After June 30, 2008, we plan to reliably deliver 7.2M core-hours/month. This total takes into account a conservative estimate of scheduling spoilage and a management reserve.

This capacity is allocated for the interim period (March 22 – June 30, 2008) in blocks as follows:

- 50% (10% each) to the five founding institutions (NMSU, NMT, UNM, LANL, SNLA)
- 10% to all other institutions of public education, communities, and state agencies in New Mexico
- 40% for general competition through a proposal process described below

We reserve the right to change this distribution of time in a subsequent revision of this call but this distribution will be valid until June 30.

If you intend to propose against your founding institution's allocation, please address your proposal to them. We have asked each founding institution to issue this call through their internal process with their contact information.

If you intend to propose against the "10%" for all other institutions or the "40%" for general competition, please address your proposal to the chair of the allocation committee (see below).

Caveats

Encanto will be operated as a capacity machine. In other words, operations will be biased towards many users with medium sized jobs rather than a few users with very large jobs. This statement is *not* meant to discourage very large jobs, as they will be important. However, throughput rather than job size will be the operating metric. Further, operations will be biased against very small jobs that are better suited to a local cluster or a desktop. *Encanto* must serve a large user community of users. The queue structure will quantify these metrics and will be adjusted as we gain more experience.

During the acceptance and test period (until June 30) NMCAC seeks "very friendly users". We will not have applications-code assistance for porting or debugging available until the production period after June 30. During the acceptance and test period period, the users of *Encanto* understand and accept that NMCAC cannot guarantee availability of time nor does NMCAC guarantee successful outcomes of running codes.

The 50%

Each of the five founding institutions can allocate their 10% share of time according to their own internal processes, procedures and metrics.

However, please remember why the State has invested in this resource (see above).

- We encourage the five founding institutions to consider these issues in determining allocations.
- Collaborations with other institutions are encouraged.
- Each institution needs to put in place a process that assures due diligence is carried out in the allocation process.
- Each institution needs to provide the State with information on the process used.

- Each institution will submit their selected users and individual time allocation to the chair of the allocation committee for implementation.
 - o These allocations must show expected monthly usage, so that we can more effectively plan for demands on the machine.
- Each institution will provide a written quarterly report on usage, which describes the work done and the accomplishments reached.

The 10%

This block is dedicated to all other institutions of public education, communities, and state agencies in New Mexico, beyond the founding members. We will constitute an evaluation committee composed of representatives from those communities. Until this committee is constituted please follow the process described below (the 40%). We will re-issue this call for proposals with the proper information for this committee, when it is constituted.

The 40%

The remaining 40% of the allocated machine time will be distributed through a general competitive process open to all. NMCAC members and participating entities will have access to this 40% in addition to the allocations discussed above, but will compete on a level field with all other proposals.

Proposals should be relevant to the reason that State has invested in this resource (see above).

Preference will be given for applications that require a supercomputing resource and cannot be run on a local cluster or desktop machine (suggested minimum of 256 processors). Very large computations (above ½ of the machine) are still encouraged, but the machine will be run for throughput, rather than capability. Proposals are for the two periods of time specified in the title of this call and expire either on June 30, 2008 or June 30, 2009, or at a published date in between.

Short proposals must be submitted to the Chair of the Allocation Committee (see below).

- The proposals shall not exceed 1 page in length.
- The proposals shall include the following information:
 - o Name, affiliation, and contact information of principal investigator(s) and number and affiliation of participants (including number of students involved)
 - o The allocation period (dates) for which you are applying including possibility for flexibility in allocation timing
 - o Amount of time and storage, as well as number of processors requested
 - o Monthly expected usage
 - o Scope and schedule of work
 - o Deliverables

- Relevance to State goals
- Other issues (potential to obtain future funding, collaborations, ...)

The Allocation Selection Committee will consider the following in making recommendations:

- Quality of the work
- Strategic importance of the work to the State
- Importance to economic/workforce development and education in NM
- Impact on potential to obtain future funding
- Other issues that impact priority for award of time
- Available capacity

Timeframe

Proposals can be submitted at any time. Allocation of time will be done on a weekly basis (with allocations made as soon as possible after submission of a request). All allocations will be subject to available capacity and flexibility in schedule will assist with increasing utilization of this resource.

The Allocation Committee will consist of:

- The NMCAC interim Scientific Director (chair)
- The NMCAC interim Business Development Director
- The NMCAC interim Education Director
- An appointee from the NM Economic Development Department
- An appointee from the New Mexico Department of Information Technology

The Allocation Selection Committee Chair will be responsible for communicating information on the time allocations to the requestors. Requests for time may be submitted electronically (a pdf file listing the required points above is preferred) at any time to the Chair of the Allocation Committee: Dr. Bill Feiereisen, NMCAC Interim Scientific Director, Bill@Feiereisen.Net, Bill.Feiereisen@state.nm.us and Tel: (505) 476-2224. Please use both email addresses when corresponding.