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UND Computational Research Center

Usage Policies

University Research Council Information Technology Subcommittee

AY 2004-2005 Chair: R. R. Schultz

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Mission Statement

The University of North Dakota (UND) Computational Research Center (CRC) is dedicated to helping researchers affiliated with the University of North Dakota solve increasingly challenging problems in science and society. By supporting high performance computing hardware, software, and staff through the Division of Research, the University provides quality computing resources to its researchers and faculty involved in creative activities which require intricate numerical modeling and data-intensive simulations. The primary goals of the UND Computational Research Center are (1) to provide high performance computing resources to the university-wide research community; (2) to make the existing faculty and their collaborators more competitive for federal, state, and private sector funding opportunities; (3) to promote interdisciplinary and multidisciplinary research activities across campus and throughout the region; (4) to assist in the recruiting of faculty, postdoctoral research associates, and graduate students with high performance computing needs; (5) to maintain state-of-the-art facilities in an extremely dynamic research environment; (6) to prepare innovations for technology transfer; and (7) to promote future growth in research, scholarship, and creative activity across all disciplines.

Personnel

UND Computational Research Center staffing requires a Center Director, a Parallel Algorithm Specialist, and a System Administrator. The responsibility of the Center Director is to maintain the day-to-day operations of the CRC, promote the usage of high performance computing throughout campus and the region, enforce compliance with usage policies, commit campus high performance computing resources to projects supported by grant and contract activities, and assist the Vice President for Research in recruiting and seeking support for personnel, equipment, and software. The Parallel Algorithm Specialist has a primary role of helping faculty map their single-processor source code algorithms onto multiple nodes and to fine-tune the parallel and distributed algorithms through performance analysis. The System Administrator has the primary responsibilities of system maintenance and upgrading hardware and software as needed.

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In the absence of a professional Center Director, the Chair of the University Research Council Information Technology Subcommittee (hereafter “URC IT Subcommittee”) will serve as the Interim Center Director.

The URC IT Subcommittee is responsible for setting policies and procedures for the UND Computational Research Center.

Policies

1. User Account Requests

The Center Director will establish processes for individual user account requests with the review of the URC IT Subcommittee. Account approval will be granted by the Center Director within the policies and procedures established by the URC IT Subcommittee.

2. Project Requests

To request high performance computing resources, a Project Request must be made to the Center Director that includes (1) the name of the Principal Investigator; (2) the purpose of the request; (3) an estimate of the amount of computer time required; (4) an estimate of the number of compute nodes required to complete the research project; and (5) a listing of user accounts affiliated with the given project. Depending on the level of estimated high performance computing resources required, scheduling decisions will be made by the Center Director in consultation with the URC IT Subcommittee.

The Principal Investigator of the Project Request will be held responsible for the conduct of all project participants.

Upon completion of the project, the Center Director must be notified and provided with a one-page report listing the research results and lessons learned, as well as any manuscripts submitted for publication, grants and contracts submitted for funding, and patents filed based on the work. For multi-year projects, an annual or interim report may be requested by the Center Director.

3. Resource Allocation

Allocation of high performance computing resources will be the responsibility of the Center Director. This includes the development of time and node usage budgets at least one week in advance of actual high performance computing operations.

High performance computing management software will be utilized to help optimize computational resources through usage tracking.

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Priority of Project Requests will be ranked and allocated as follows: (1) all supported research projects that have been granted high performance computing resource commitments by the Center Director with review by the URC IT Subcommittee; (2) all unsupported research projects that have a written Needs Assessment submitted to the Center Director, which clearly identifies potential funding sources for the scientific research after preliminary results have been collected and analyzed; and (3) other projects which may be considered at the discretion of the Center Director.

Depending on the level of high performance computing activity, the Center Director will decide whether to require the batch processing of a particular Project Request or to allow interactive processing for the project during periods of low activity.

A time limit will be placed on each interactive and batch job, to suspend processing until high performance computing resources become available. The time limit will be determined by the Center Director and the URC IT Subcommittee.

As a general rule of thumb, smaller batch jobs will be allocated to regular business hours and evening hours during the work week, while larger batch jobs will be allocated to overnight and weekend hours. Interactive high performance computing usage will be allowed during specified times.

If a Project Request exceeds the estimated computation time and/or the requested number of nodes, another Project Request must be filed with a justification of the new requirements.

4. System Administration

System administration duties, including but not limited to hardware maintenance; operating system installation and maintenance; compiler installation and maintenance; software application installation and maintenance; user account creation, management, and deletion; backup and recovery; and security will be the responsibility of the System Administrator. Presently, UND Information Technology Systems & Services is involved in system administration of the UND Computational Research Center, in collaboration with an external private sector contractor.

Specific hours of support will be posted by the System Administrator, as agreed upon in writing by the Center Director and the URC IT Subcommittee.

5. Commitment of University Resources

The Center Director will be responsible for committing University high performance computing resources to grant and contract activities. The Center Director will be required to sign grant and contract proposal transmittal forms that list the UND Computational Research Center as a needed computing resource to carry out the research, and the

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Principal Investigator must provide an estimate of the amount of time and an estimate of the number of nodes required for the project.

The Office of Research Development and Compliance transmittal form will be required to have a check box to identify proposals with high performance computing needs. These proposals must be signed by the Center Director prior to proposal submission, but the actual commitment of resources can be made by the URC IT Subcommittee after an award has been granted.

The billing rate for an hour of high performance computing usage will be declared by the Center Director and the URC IT Subcommittee. This billing rate may be used as a fee-for-service or as an in-kind match on grant and contract proposals. The hourly billing rate should be prorated based on a percentage of the number of nodes required.

6. User Misconduct

For any project that has a user account which clearly shows misconduct according to North Dakota University System (NDUS) Policy Section 1901.2 Computing Facilities < http://www.ndus.nodak.edu/services/tech-info/policies/policies_detail.asp?policyID=6>, the Center Director has the authority to shut down the project until the problem has been resolved. The Center Director must notify the Principal Investigator immediately after stopping a project.

The Center Director has the authority to make the decision to shut down a project if there is even a perceived violation of NDUS Policy Section 1901.2 and/or a significant departure from the proposed research activities. The Center Director must confer with the URC IT Subcommittee on any and all projects which have been shut down at the earliest possible time.

The Principal Investigator for a particular Project Request is responsible for all user accounts listed in that Project Request. The Principal Investigator should initially meet with the offending user to discuss the situation, and then both the Principal Investigator and the offending user should schedule a meeting to discuss the problem with the Center Director.

7. Utilization Thresholds for System Expansion

Based on an aggregate utilization threshold level determined by the Center Director and the URC IT Subcommittee, needs for additional hardware will be determined and requested from various sources.